CARL VON OSSIETZKY universität OLDENBURG

2ND WORLD CONGRESS ON

Undergraduate Research

23—25 MAY 2019

Environment

Health

Economy

Communication

Politics

Create

UNIVERSITY OF OLDENBURG
GERMANY

»We must make science humane once more«

Carl von Ossietzky (1889—1938)

Congress Team

Congress Team University of Oldenburg

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Pelle Bernhold
Susanne Haberstroh
Annalena Karweik
Tanja Krusche
Claudia Lehmann
Victoria Marín
Maren Petersen
Glenn Ricci
Carola Schirmer
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Student Congress Team University of Oldenburg

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Antonia Ley
Lukas Lindemann
Abadul Mahade
Radhe Mandal
Jonas Meyer
Jimmi Ndagijimana
Hannah Nuske
Katharina Pooth
Friederike Seidel
Lisa Simon
Dennis Wilke
Marian Wolf

Welcome to Lower Saxony

Dear participants of the 2nd World Congress on Undergraduate Research,

Discussing ideas and sharing knowledge are essential for innovative thinking. Scientists and researchers therefore need the freedom of science and cross-border exchange. I am grateful to the organisers of this congress for bringing together young researchers from almost 40 countries from all over the world to share their ideas for solving the challenges of the 21st century. Moreover, I am proud that you have come to the city of Oldenburg to learn from one another in this global dialogue across many different scientific fields. It is an honour and a pleasure at the same time to take the patronage for this World Congress on Undergraduate Research.

After the 1st World Congress was held in Doha two and a half years ago, the University of Oldenburg is an excellent choice as host for this 2nd conference due to its international spirit and its scientific excellence in many fields. I am convinced that Oldenburg and the open-minded people of Lower Saxony are giving you a warm and affectionate reception.

The World Congress addresses undergraduates presenting their research and their scientific findings to a broad academic audience. I appreciate the concept of giving early stage researchers a platform for their innovative ideas. We consider research based learning to be one of the key objectives to improve the quality of our study programmes.

International collaboration is a core issue for innovative science. Global challenges cannot be tackled within national borders but only in international alliances. We know that science and research need exchange and collaboration. Therefore, the Government of Lower Saxony fosters cross-border projects and transnational cooperation. That is why we are very pleased to support this congress.

Crossing borders is not only a territorial issue. It is also an intellectual one. You have come together from various countries with different cultural backgrounds and different scientific disciplines. This interdisciplinary approach is very much appropriate for fruitful discussions and innovative solutions to global challenges.

Finally, I thank the University of Oldenburg for hosting this conference and I congratulate the Congress Committee on the excellent organisation. I wish all participants an exciting and successful congress. Thank you for sharing your ideas with us and enjoy your stay in Oldenburg.

Kind regards

Björn Thümler
Minister for Science and Culture of Lower Saxony, Germany

Welcome to the University of Oldenburg

Dear participants,

The Carl von Ossietzky University of Oldenburg is proud to be host of the **2nd World Congress on Undergraduate Research**. More than 400 participants from all over the world have come to Oldenburg in order to present their undergraduate research projects and to exchange their knowledge and experience. On behalf of the university we'd like to offer a warm welcome to all of you! The focus of the congress is perfectly suited to the profile and aspiration of our university: Research-based learning is a central element of our university's academic conception.

After having hosted the first German congress in the summer of 2016, we have reached the next level and the Carl von Ossietzky University is proud to be this year's host of the most important worldwide congress for undergraduate researchers. We are more than happy to take the baton from our colleagues from Qatar, thus enjoying the privilege of further enhancing the profile of this still young event.

Science provides an excellent basis for the meeting of people of many various nationalities – on equal footing, with open minds, and without barriers of any kind; to carry this spirit out to the world, for the purpose of tolerance, a fair share, and a peaceful future!

One of the most important strategic goals of World CUR 2019 is the establishment of enduring contacts: The congress is meant to be more than just a one-off event for its participants. It shall serve as a nucleus for long-lasting, interdisciplinary, global networks, connecting young academics who initiate joint research projects. We therefore highly recommend to all of the presenting students to participate in the "thematic session", taking place on Friday afternoon!

In order to achieve this ambitious aim, financial and personnel support of well-committed partners is essential. We would therefore like to express our gratitude to the Federal Ministry of Education and Research for their financing of the congress. A very special thanks also goes to the Ministry of Science and Culture of Lower Saxony who have paid for the travel grants of 65 participants from low- and mid-income countries. Furthermore, we would like to thank Minister Björn Thümler for his willingness to take the patronage. We very much appreciate this sign of esteem.

Hosting the **2nd World Congress on Undergraduate Research** is a demanding challenge and our university can only perform the task because we can rely on the excellent work and great endeavor of the forschen@studium-team, which is part of the Presidential Department of Study Affairs and Teaching. A special thanks goes to Dr. Susanne Haberstroh and Pelle Bernhold, as well as to the highly committed team of undergraduate assistants for their tireless efforts.

We wish all participants valuable input for their research activities, fruitful discussions, and every success in establishing personal and professional contacts.

Prof. Dr. Sabine Kyora
Vice President for Instruction and Equal Opportunities, University of Oldenburg

Prof. Dr. Esther Ruigendijk
Vice President for Early Career Researchers and International Affairs, University of Oldenburg

Welcome Note from the Committee

Dear World CUR participants,

The University of Oldenburg, the Australasian Conference of Undergraduate Research (ACUR), the British Conference of Undergraduate Research (BCUR), the Council on Undergraduate Research (CUR), and Qatar University are proud to be co-conveners and supporters of the 2nd World Congress on Undergraduate Research (World CUR). This dynamic and far-reaching event is the result of three years of planning, building on the success of the inaugural World CUR, held at Qatar University in 2016. At the end of this congress, the initial partner organizations confirmed their shared commitment to global undergraduate research and the establishment of the World Congress of Undergraduate Research Councils through the Doha Declaration on World Undergraduate Research (see next page).

As a World CUR participant, you are at the forefront of the global undergraduate research community's expansion, and are helping to build the world's research capacity to address current and future global challenges and opportunities. Through your participation in this event, you are reaching out to colleagues from diverse institutions and nations to grow international research programs and professional networks. We applaud and thank the University of Oldenburg and the government of Germany for providing the leadership, financial support, and organizational infrastructure to create this transformative conference experience.

Dr. Susanne Haberstroh
Presidental Department for Study Affairs at the University of Oldenburg, Germany

Pelle Bernhold
Presidental Department for Study Affairs at the University of Oldenburg, Germany

Dr. Denise Wood
Professor of Learning, Equity, Access and Participation at Central Queensland University, Australia. She also holds an Adjunct Senior Research Fellowship at the University of South Australia.

Dr. Stuart Hampton-Reeves
Professor of Shakespeare Studies and Research-informed Teaching, and BLASS Director of Research, University of Central Lancashire, Preston, United Kingdom.

Dr. Elizabeth L. Ambos
Executive Officer, Council on Undergraduate Research, USA

Dr. Carlos Escoto
Professor and Chair of Psychology, Eastern Connecticut State University Chair, Council on Undergraduate Research Internationalization Task Force, USA

Liz Fray Hains
Manager for Student Programs, Council on Undergraduate Research, USA

Dr. Julio Rivera
Professor of Management, Marketing, and Geospatial Science, Carthage College President Emeritus, Council on Undergraduate Research, USA

Dr. Maher Khelifa
Associate Professor Psychology, Qatar University, Qatar

Doha Declaration

The Doha Declaration on World Undergraduate Research

On the historic occasion of the first World Congress on Undergraduate Research, we declare that the pursuit of knowledge knows no boundaries and that global challenges and opportunities require nations to work together in peace and co-operation.

We jointly affirm the pedagogic value of learning through research and we unite in our celebration of the amazing achievements of undergraduates across the world.

We declare that we will work together to build a world-wide federation of undergraduate research councils and that through this partnership we wish to foster and support the development of more interconnected regional (including national) organisations devoted to undergraduate research.

We declare that all disciplines are united in their pursuit of knowledge and we affirm the power of scientists, technologists, engineers, and mathematicians working with artists, humanities scholars and social scientists to further our understanding of the world around us.

We declare our intention to establish the World Congress of Undergraduate Research Councils to nurture and help co-ordinate the internationalisation of Undergraduate Research, to facilitate the creation of new undergraduate research bodies, and to host periodic World Congresses around the world.

Signed:

Maher Khelifa,
on behalf of Qatar University

Elizabeth Ambos,
on behalf of the Council
on Undergraduate Research

Stuart Hampton-Reeves,
on behalf of the British Conference
of Undergraduate Research

Denise Wood,
on behalf of the Australasian Council
for Undergraduate Research

Witnessed by the delegates of the First World Congress on Undergraduate Research in Doha, Qatar on 15th November 2016

Program Overview

Wednesday, 22 May

8.45 am — 6.15 pm
Social Program
Day Excursion:
Old Cities in Northwest Germany
or the Netherlands

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4.00 pm — 8.00 pm
Registration

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6.00 pm — 8.00 pm
Welcome Snack

Thursday, 23 May

8.00 am — 9.00 am
Registration

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9.00 am — 9.30 am
Opening Ceremony

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9.30 am — 10.00 am
Congress Photo

——

10.00 am — 11.00 am
Keynote
Lujendra Ojha

——

11.00 am — 11.30 am
Coffee Break

——

11.30 am — 1.00 pm
Oral Session 1

——

1.00 pm — 2.15 pm
Lunch Break

——

2.15 pm — 3.45 pm
Oral Session 2

——

3.45 pm — 4.15 pm
Coffee Break

——

4.15 pm — 5.15 pm
Poster Session 1

——

5.15 pm — 8.00 pm
Get Together

Friday, 24 May

8.00 am — 9.00 am
Registration

9.00 am — 10.00 am
Keynote
Anne Dippel & Sonia Fizek

10.00 am — 2.00 pm
Master and Graduate Fair

11.00 am — 12.30 pm
Oral Session 3

12.30 pm — 1.45 pm
Lunch Break

1.45 pm — 2.45 pm
Poster Session 2

2.45 pm — 5.45 pm
Thematic Sessions

2.45 pm — 5.45 pm
Poster Session
Faculty & Coordinators

5.45 pm — 6.15 pm
Transfer City Center
Departure Time Depends on the Chosen Tour

6.15 pm — 8.15 pm
Social Program
Afternoon Excursion:
Oldenburg City Tours

Free Time to Explore Oldenburg
and Its Culinary Delights
See Food and Restaurant Guide in the Congress Booklet

Saturday, 25 May

8.00 am — 9.00 am
Registration

9.00 am — 10.30 am
Oral Session 4

10.30 am — 11.00 am
Coffee Break

11.00 am — 12.30 pm
Oral Session 5

12.30 pm — 1.45 pm
Lunch Break

1.45 pm — 3.15 pm
Oral Session 6

3.15 pm — 3.45 pm
Coffee Break

3.45 pm — 5.15 pm
Oral Session 7

5.15 pm — 5.30 pm
Coffee Break

5.30 pm — 7.00 pm
Closing Ceremony

7.00 pm — 8.00 pm
Free Time to Explore Oldenburg
and Its Culinary Delights
See Food and Restaurant Guide in the Congress Booklet

8.00 pm
Congress Party & Late Night Café

Sunday, 26 May

9.15 am — 8.30 pm
Social Program
Day Excursion:
Harbors, Islands and Nature
in Northwest Germany

Keynotes

Keynote, Thursday, 23 May

Grand Challenges Related to Resources Scarcity in the Future: Synopsis, Solutions, and Undergraduate Involvement

Dr. Lujendra Ojha (Johns Hopkins University, USA) started his career in the space exploration sector as an undergraduate research assistant at the University of Arizona. As an undergrad, Dr. Ojha was involved with the High Resolution Imaging Science Experiment (HiRISE) mission, where his work led to several new discoveries about our neighboring planet Mars.

He went on to earn his PhD from the Georgia Institute of Technology. Dr. Ojha is currently a research scientist at the Johns Hopkins University in Baltimore, MD. Dr. Ojha will share his experience with undergraduate research and the need for more involvement of undergraduate students in STEM research.

Keynote, Friday, 24 May

Playful Research by Design: Why the World Needs Thinkers, Tinkerers, and Team Players

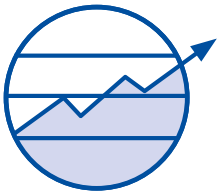
Dr. Sonia Fizek (Abertay University, UK) is a digital wanderer and a ludic thinker with a passion for storytelling and design; on a more formal note, a digital games and media theorist. Her current research explores the relationships between play and automation to conceptualize new ways of intra-acting with technology.

Dr. Anne Dippel (University of Jena, Germany) is an anthropologist and media theorist exploring the playgrounds of science, technology and society. Her recent work investigates the ludic dimension of high-energy physics. She asks how humans, machines and data are making (sense of) nature at the European Organization for Nuclear Research (CERN).

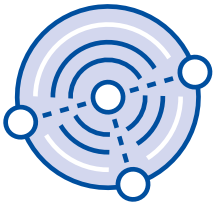
Research Themes

Environment

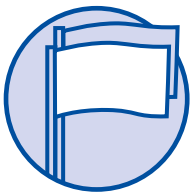
Health



Economy



Communication



Politics

Create

23
05

Program Overview

Thursday, 23 May 2019

8.00 am — 9.00 am	Registration
9.00 am — 9.30 am	**Opening Ceremony**
9.30 am — 10.00 am	**Congress Photo**
10.00 am — 11.00 am	**Keynote** Dr. Lujendra Ojha, Johns Hopkins University, USA
11.00 am — 11.30 am	Coffee Break
11.30 am — 1.00 pm	**Oral Session 1**
1.00 pm — 2.15 pm	Lunch Break
2.15 pm — 3.45 pm	**Oral Session 2**
3.45 pm — 4.15 pm	Coffee Break
4.15 pm — 5.15 pm	**Poster Session 1**
5.15 pm — 8.00 pm	**Get Together** with Light Refreshments and Music

OS 1

Oral Session 1

Environment
11.30 am — 1.00 pm
Hörsaal 2
A 14 – 1 – 102

Health A
11.30 am — 1.00 pm
Hörsaal 1
A 14 – 1 – 101

Health B
11.30 am — 12.30 pm
Seminarraum 113
A 14 – 1 – 113

Economy
11.30 am — 1.00 pm
Senatssitzungssaal
A 14 – 1 – 111

Communication
11.30 am — 1.00 pm
Seminarraum 031
A 14 – 0 – 031

Politics
11.30 am — 1.00 pm
Seminarraum 112
A 14 – 1 – 112

Create
11.30 am — 1.00 pm
Seminarraum 030
A 14 – 0 – 030

Using Environmental Awareness Clubs to Address Solid Waste Pollution in and Around Township Primary Schools in Motherwell, Port Elizabeth

Abongile Gagaza | Bonisile Gebenga
→ **Educational Research**
Nelson Mandela University, South Africa

The problem of solid waste generation and management has become a serious issue globally. There is a mutual agreement amongst educators that sustainability challenges require new ways of knowledge production and decision making. If Africa and the rest of the world are to achieve Sustainable Development Goals: 6, 13 and 15, it is imperative that relevant action is taken to address issues of pollution. Research has shown that science education remains a tool for facilitating the achievement of sustainable development goals which will help to stimulate a circular economy, encourage proper environmental ethics, and reduce solid pollution (Vogel, 2013). Therefore, this study aimed to explore how environmental awareness clubs can be used to create awareness among fourth grade students at a selected township primary school in the Eastern Cape, South Africa. This qualitative study, within the critical transformative paradigm, employed participatory visual methodologies to generate data with students in one fourth grade classroom. The study was framed within Bandura's Social Learning theory that asserts that behavior is a result of cognitive and environmental factors interplaying with each other. Students were introduced to an Environmental Awareness club. Pre- and post-intervention drawings and photovoice were used to generate data on students' understandings of solid waste pollution and its effects on the environment. The preliminary findings show that the club created a safe space for students to talk about and take action on their environmental concerns, while also creating awareness within their communities. These findings have implications for Education for Sustainable Development and Environmental Education, in particular in terms of creating safe spaces for young students to take action against environmental degradation, and creating policy and curricular interventions that will promote environmental justice.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Judith Pajo

Waste Recycling Through Ecofriendly Art Techniques

Aisha Al Ahmadi
→ Materials Engineering, Environmental Science
Zayed University, United Arab Emirates

The purpose of this study is to address the pressing issue that one can no longer turn a blind eye to: the ecological footprint that we have left on the planet. The deteriorating state of our environment is alarming, and it is our duty to be more conscious of the amount of waste we produce and to think about how we could potentially contribute to maintaining if not restoring the natural resources that we have almost completely exhausted. This study seeks to answer the following research question: how can we as artists and designers be more aware of our ecological footprint and how we can aid in the reduction of waste production? To answer this question, the paper primarily looks at American artist Joseph Cornell among other artists who work with found materials. Ideally, the results of working in such a manner in the fields of art and design would result in a reduction in waste production and would push us as artists to work innovatively with the available materials instead of adding to the devastating ecological footprint. In addition to the employment of found materials, the paper also looks at the potential changes in architecture and other changes in design that may appear minor but make a difference. There would be no concrete method to assess the waste reduction levels but it is more about adopting a more conscious attitude. This paper aims to explore the numerous ways in which art and design can be employed as a vehicle for environmental change; as artists and designers, we could contribute in aiding the environment through the use of ecofriendly art techniques and recycled materials. Moreover, it presents the most critical environmental issues that we are facing today and attempts to offer solutions through art and design. This paper does not presume that artists and designers are the sole contributors to ecological footprint, but it is a starting point to raise awareness.

Hörsaal 2 / A 14–1–102
Discussant: Judith Pajo

A Buddhist Perspective on Global Warming – Our Irresistible Fate?

Shimo Sraman
→ **Religious Studies, Ethics**
International Buddhist Studies College, Thailand

As far as it is concerned, the issue of global warming has been debated around the world and it is being brought to the attention of more people. This is perhaps owing to recent natural catastrophes witnessed in different parts of the world in which scientists have expressed their concerns about the imminent environmental crisis that is believed to be caused by humans upsetting the balance of nature. From a Buddhist perspective, this paper will attempt to consider how the core Buddhist teachings reflect on this global issue which is threatening human well-being worldwide. There are many interesting points to be considered, some of which might have already been studied by others such as scholars, researchers, or authors. However, in this paper, I will be trying to point out which are Buddhist teachings and fatalism. So, the question is raised as follows: is global warming our irresistible fate? If so, what is the Buddhist attitude towards this fate? Furthermore, this paper has been divided into four parts. To depict global warming, first, I will discuss background information regarding the global warming phenomenon. The second part will deal with an analysis of this phenomenon according to the principle of dependent origination, however, other Buddhist tenets will be mentioned and referenced where it seems relevant. In the third part, which is central, an argument on Buddhism and fatalism will be debated. Herein, the teaching of action will be analyzed in comparison and contrast with the concept of fatalism. Last but least, from the proceeding discussion, this paper will culminate with some Buddhist stances towards the global warming crisis.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Judith Pajo

Online and Face-to-Face Victimization about Appearance: Perpetration, Victimization, Witnessing, and Source as Correlates of Appearance Anxiety

Leah Henderson | Haley Webb | Melanie Zimmer-Gembeck
→ **Psychology**
Griffith University, Australia

Previous research has shown that peer victimization is associated with higher appearance anxiety in adolescents. The aims of the current study were to examine peer appearance victimization as a correlate of appearance anxiety during adolescence. Peer appearance victimization form (online and face-to-face), victimization source (online victimization by same-sex and other-sex peers, face-to-face victimization by popular-peers, older-peers, and average-peers), and online victimization role (perpetrator, victim, or witness) were examined. Gender was also examined as a moderator of each of these variables with appearance anxiety. Previous evidence of associations of age, BMI, and gender with appearance anxiety in adolescent samples led to the inclusion of these demographic variables as controls. Participants consisted of 363 (45.1% male) adolescents, aged 12 to 17 years old (M=16.15, SD=1.22) from four independent private schools on the Gold Coast (76.9%) and from Griffith University (23.1%). Measures included the Appearance Anxiety Inventory, self-report measures of perceived victimization, perpetration, and witnessing of victimization, age, BMI, and gender. Correlation analyses, t-tests, hierarchical regression analyses, and moderated hierarchical regression analyses found that online and face-to-face appearance victimization, face-to-face victimization by older peers, and both same-sex and other-sex online and face-to-face appearance victimization were associated with higher appearance anxiety in their respective models, when age, BMI, and gender were controlled for. Online perpetration and witnessing of appearance victimization, and face-to-face appearance victimization by popular peers were not associated with appearance anxiety in their respective models when age, BMI, and gender were controlled for. Finally, gender differences were found in appearance anxiety but not in online and face-to-face victimization, nor was gender found to be a moderator of any models in the current study. Results of the present study have important implications for the field of adolescent psychology, in regards to peer appearance, victimization, and appearance anxiety.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Karina Kedzior-De Santis

Investigating the Acceptability of Cosmetic Surgeries Among Adults in Abu Dhabi Emirate: A Pilot Study

Dhuha Alwahedi
→ **Psychology**
Zayed University, United Arab Emirates

Recently, there has been an increase in the prevalence of performing cosmetic surgeries worldwide. People have started to consider cosmetic surgeries as normal procedures despite the post-surgery complications that could happen. Many studies have investigated the level of acceptability of cosmetic surgeries in different countries, however none have been reported for the United Arab Emirates. This cross-sectional study aims to assess the acceptability level of cosmetic surgeries among adults in Abu Dhabi, the capital of the United Arab Emirates. It aims also to investigate the reason for considering a cosmetic surgery. A total of ninety-one adults aged 18-50 years old participated in this study. Most participants were female (77% female and 23% male). Participants had been selected by convenience through social network. Participation was voluntary. All the participants agreed to complete an online questionnaire and acceptance cosmetic surgery scale. The data were analyzed using Microsoft Excel version 15.33 (USA, 2017). The acceptability of cosmetic surgery was 34% and most those who accepted cosmetic surgery were women. The main motivation to accept cosmetic surgeries was to increase self-confidence and to avoid aging. The prevalence of the acceptance of cosmetic is 34% in Abu Dhabi capital district, and this is considered lower than excepted. More studies with larger samples must be done on cosmetic surgeries in the UAE as there are no publications on this topic.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Karina Kedzior-De Santis

Developing the Level of Intercultural Competency in the College of Allied Health and Nursing

Sarah Hagar | Rebecca Peterson | Nicole Stalcar
→ Medicine, Communications
Minnesota State University Mankato, Minnesota, USA

This study examined intercultural competence (ICC) among a group of university undergraduate students who were early in their studies. Mareno & Hart (2014) noted that demographic patterns have shifted toward becoming more racially and ethnically diverse. Therefore, health care providers must be equipped to provide culturally competent care to patients. This study will help universities develop curriculum that fosters student development of their ICC. For this study, ICC was defined as the capability to accurately understand and adapt behavior to cultural difference and commonality (Hammer & Bennett, 2010). The study responded to these research questions: (1) What is the starting level of cultural competence among undergraduate students in the College of Allied Health and Nursing? (2) How does the intercultural competence of undergraduate students in the College of Allied Health and Nursing change during their experiences in general education classes? Data was collected using a computer-based, online inventory. Students enrolled in an introductory course completed the Intercultural Development Inventory (IDI), developed by Hammer and Bennett (1998, 2001). The IDI was based on Bennett's Developmental Model of Intercultural Sensitivity (1986), which identified five orientations toward cultural differences: denial, polarization, minimization, acceptance, and adaptation. Investigators expect that the study may show that students' ICC will grow over the period of a semester-long course when it is supplemented with cultural activities such as a mentor partnership with an international student. The results of this study will provide institutions with information about the level of ICC of their students and how those levels can be improved so their students are better equipped to help others in the future.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Karina Kedzior-De Santis

Psychological Sequelae of Marijuana Intoxication

Vine M. Ikpe | Gboyega E. Abikoye
→ **Psychology**
University of Uyo, Nigeria

This experimental study investigated the psychological and physiological sequelae of marijuana intoxication. Ten Wistar rats (five females and five males) were observed before and after varying dosages of marijuana extract were administered to them, based on their body weights and following LD50. Such psychological parameters as memory, anxiety, sleep/wake behavior, eating behavior, social interaction, and motor skills of the rats were observed and recorded. It was hypothesized that marijuana would cause physiological, psychological, and physical changes in the rats and that these would vary between female and male rats. Findings indicated that onset of intoxication occurred within 45 minutes of orally ingesting the marijuana extract. Marijuana exerted important changes in all six psycho-physiological parameters (memory, anxiety, sleep/wake behavior, eating behavior, social interaction, and motor skills). Among other recommendations, subsequent experimental studies should endeavor to account for specific proportions of cannabinoids present in the cannabis strain used.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Fatme Al Anouti

Nanoformulated Anandamide Decreases Blood Pressure, Neuroinflammatory and Oxidative Markers in a Rat Model of Hypertensive Disease

Feres José Mocayar Marón | Virna Margarita Martín Giménez | Sebastián García Diego Enrique Kassuha | Emiliano Diez | Natalia Prado | Roberto Yunes | Walter Manucha
→ Pharmacology
Universidad Nacional de Cuyo, Argentina

Hypertension is considered one of the significant risks of cardiovascular diseases; it is frequently related with upregulation of the renin-angiotensin system over-excitation of brainstem centers, sympathetic hyperactivation, and systemic and neural inflammation. Spontaneously hypertensive rats (SHR) are a validated model of hypertension, plus several neurocognitive deficits. To highlight, the endocannabinoid anandamide (AEA) protects neurons from the inflammatory damage, and cannabinoid signaling decreases in brains of hypertensive animals. However, several side effects were described at the central nervous system level by anandamide; while drugs delivery by nano-formulations could reduce it. The aim of this research was to assess whether nano-formulated anandamide could produce a decrease in blood pressure values as well as a reduction of the systemic inflammatory state and the central nervous system. We used adult male rats normotensive (WKY) and hypertensive (SHR), treated with or without nano-formulated AEA in polycaprolactone (AEA/PCL), at a weekly dose of 5 mg/Kg IP, for four weeks. Systolic blood pressure was obtained by the tail-cuff method. Plus Maze Test and Open Field Test were performed at the end of the treatment. Animals where sacrificed, peripheral blood extracted and frozen, and brain cortex harvested for Western Blot. Inflammatory markers (IL-1, IL-6, TNFα, ultrasensitive CRP and plasma Hsp-70) were dosed in plasma by ELISA. AEA/PCL produced a significant reduction of systolic blood pressure, a decrease in inflammatory markers and oxidative stress markers (NADPH oxidase and nitrites). Protein expression of WT-1, AT-1, and iNOS was higher in SHR brain cortex, while AEA/PCL decreased it. Conversely, Hsp-70 expression increased after treatment within the cerebral cortex. Abnormal behaviors observed in Plus Maze Test (time of permanence in the open arm), and Open Field Test (time of exploration) also decrease after AEA/PCL treatment. These preliminary results suggest antihypertensive and anti-inflammatory properties of AEA. This nano-formulated cannabinoid might regulate inflammation through the AT-1-Hsp-70-iNOS pathway.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Fatme Al Anouti

Earth's Treasures

Anna-Lena Mauz | Joshua Senne | Maximilian Schambeck
→ **Economics**
University of Hohenheim, Germany

One-third of human food production is lost along the value chain. A total loss reduction could feed about ten billion people. Part of the problem is that vegetables with little flaws, classified as second class, usually end up as waste material. These vegetables have, however, the same level of healthy ingredients as compared to first class vegetables. The question is whether consumers, in our case the students of the University of Hohenheim in Germany, are willing to overlook aesthetic demands to prevent food waste. A student research project was conducted in cooperation with a local organic vegetable farm to identify a suitable marketing strategy. A consumer survey was conducted amongst the students of Hohenheim University to elicit their willingness-to-pay and additional requirements for a commercialization of a vegetable bag that contains so-called "ugly veggies." The questionnaire was distributed via a multi-channel approach (social media, posters, and personal approach) amongst all students of the University of Hohenheim. A high response rate of n=1013 (10.6% of all students) was achieved, which reflects a huge interest in and awareness of this topic amongst the students. The majority of all respondents (87%) stated they are willing to buy a bag with seasonal organic second-class vegetables (53% "for sure;" 34% "most likely"). Further, a day for delivery, the students' willingness-to-pay, and the name for the bag was elicited. Results were discussed with the farm management and it was recommended to launch the vegetable bag for Hohenheim students. During the summer semester 2018, the bag with the name "Bodenschaetze" (earth's treasures) was launched with great success.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Femi Odebiyi

Determinants of Residential Water Demand in Harar, Ethiopia

Daniel Sitota Regassa
→ **Economics**
Haramaya University, Ethiopia

This empirical study aimed to analyze the determinants of residential water demand and performed water use practice at the household level in Harar, Ethiopia. This study will fill the research gap and information on factors affecting household water demand in regions being water-scarce and will provide useful information for policy-makers and water utility planners in order to use scarce drinking water resources more efficiently. Cross-sectional survey was done in 100 randomly selected households. The collected data was analyzed using multiple regression models. Heteroskedasity corrected model was also used in each of the functional forms to examine the structural relationship between the quantity of water demand and explanatory variables. Given the result of the model, to know whether the estimated partial regression coefficients are statically significant or not, testing the significance of each explanatory variable is mandatory. The regression result shows that the explanatory variable such as household size, monthly income of the household, monthly household expenditure, education level of household, household awareness towards water conservation, household connection to tap water, water quality, and household use of water for the garden are statically significant at 5% level of significance (using 95% of confidence interval) test. Moreover, the research will also recommend the following policy recommendations: 1) water use for the garden should be considered as domestic and 2) the productive demands of the poor need to be considered in a more comprehensive manner. The provision of household water supply should not only depend on the public provider, as it requires a great capital commitment. Water value as an economic good or service may affect household water use pattern and induce saving behavior, and most importantly, the municipality's water policy should prioritize the socioeconomic changes, mainly rapid population growth.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Femi Odebiyi

LCC International University Students' Attitudes Towards the Purchase of Counterfeit Products

Sara Trajchevska
→ **Economics**
LCC International University, Lithuania

This research is within the realm of economics. The purpose of this paper is to examine the attitudes of students at LCC International University towards the purchase of counterfeit products. It mainly focuses on the factors which influence the attitude of students. However, the central research objective is to establish whether there is a causal relationship between the attitude of the student and his/her actual purchasing behavior. The theoretical framework for this research paper is derived from Norakishin's study (2009) on consumers' attitude towards counterfeits in Malaysia. The researcher identifies the personality factors (integrity, personal gratification, or status consumption), the monthly budget, and the type of counterfeit products as factors that influence the attitude of the student. A questionnaire was designed in order to collect data from the students. The data was collected with the help of convenience sampling and analyzed using the SPSS software. The sample size was calculated according to a sample size formula. The data is analyzed with the help of descriptive statistics, reliability analysis, bivariate analysis, chi-square test, and cross tabulation technique. The results show that most of the students had already been involved in a counterfeit purchase. The researcher did not find any significant correlation between the personality factors and the likeliness to buy a counterfeit product. Also, no correlation was found between the likeliness of the future purchase and the monthly budget of the student. However, the previous experience in counterfeit purchase appeared to positively influence the future purchase of a counterfeit product. The findings, however, are limited only to LCC student population.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Femi Odebiyi

Addressing the Level of Internet Privacy Awareness in the Emirates Using Data Analytics

Shaima Aljneibi | Aysha Alkaabi
→ **Electrical Engineering, Information Technology**
Zayed University, United Arab Emirates

This research looks to examine the level of awareness the residents of the United Arab Emirates possess in regard to internet privacy. The main objective of this research is to determine the level of understanding people in the Emirates have toward how the information they share with their ISP (Internet Service Provider) or any other entity on the Web is used, stored, processed, and later on analyzed. User privacy concerns have not been documented in the Emirates, and this is what this paper hopes to achieve by collecting information from users and analyzing what their biggest concerns are when it comes to their information being used online. The survey was designed and disturbed within the university's community and social media applications in the United Arab Emirates. The survey had a total of 367 responses from residents and citizens alike. The results showed that internet users were mostly aware of their privacy on the web. As a matter of fact, only a small portion of the participants answered the questions in a manner that can be perceived as reckless. Additionally, another finding in this survey showed that users' awareness in regard to personalization of their data is not a major concern, and the data shows a future decline in that aspect in the United Arab Emirates.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Heather King

The Use of Keystroke Dynamics as the Primary Basis of Authentication

Kwesi Elliot | Dave Sarran | Lenandlar Singh | Troy Thomas
→ Computer Science
University of Guyana, Guyana

The use of alpha-numeric passwords is the most popular authentication method employed today in computer systems. However, password breaches are very common and though biometrics offer secure alternative authentication, this generally requires additional hardware. This study explored users' keyboard typing rhythm as an alternative authentication mechanism. It developed software to capture users' data as they typed and to facilitate authentication. A prototype was tested with a sample of 17 students and faculty who were asked to type their first names and a selected sentence (test case) 10 times. The time each letter was held down by the user was recorded along with the time interval between tapping of consecutive letters. The users were then asked to authenticate 10 times. The average time between keystrokes when typing one's name during the registration phase was compared with the time between successive keystrokes when typing one's name during the authentication phase. A second phase of authentication involved comparisons of the times for which keys were held down during the registration and the authentication phases. A third phase involved the use of digraph timings and eight digraphs were selected to create a reference during the authentication phase. The average time interval between successive keystrokes when typing digraphs were compared with that obtained during the authentication phase. The final evaluation of the system was done with 153 users of which 41 attempts were successful. There were also 55 attempts by users to authenticate as someone else with none of those attempts being successful. Therefore, the system is robust against false acceptance, but the false rejection rate stands at 73%. This demonstrates that keystroke dynamics for static authentication is potentially useful and should be explored further.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Heather King

The Mathematics of Bitcoin

Christopher Nguyen
→ **Mathematics**
University of Warwick, United Kingdom

Bitcoin is the world's first purely peer-to-peer decentralized cryptocurrency. Decentralization allows users to digitally transfer value without relying on a third party, but this already introduces various issues. How can we ensure that transactions are legitimate? How is stored currency kept secure? How do we know that users cannot simply duplicate their Bitcoins? Typically, a bank would deal with the first two issues, and a mint with the last, but these services introduce unnecessary fees and processing times. Furthermore, using financial institutions means that payments between people must first be approved - giving way to expensive international transaction fees. Clearly, we need another way of resolving these issues, otherwise Bitcoin is no better than regular fiat currency. In this talk we will discuss solutions to the above problems, with a focus on the security of owned currency, i.e., ensuring that only the rightful owner may spend their Bitcoin. This requires the use of elliptic curve cryptography – similar to classical cryptography, but with significantly more complexity and security. We will build the theory for this from the ground up by introducing fundamental mathematical concepts such as algebraic groups, rings, and fields, before moving on to the basic elliptic curve theory. We will then be able to look at Bitcoin's security mechanism: the Elliptic Curve Digital Signature Algorithm, which we will mathematically analyze the security of. Elliptic curve cryptography is also useful outside of Bitcoin, and so we will make more general comparisons with classical cryptosystems such as RSA and DSA. Regardless of the ultimate destination of the cryptocurrency's fluctuations, Bitcoin has successfully provided an intersection point for various disciplines such as mathematics, network theory, economics, politics and human rights; just as this talk aims to showcase a mathematical success story to a multidisciplinary audience.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Heather King

New Champions for International Rules-Based Order? A Methodological Guide for Emerging Historians

Jordan Gray
→ **History, International Studies**
Carleton University, Canada

The international rules-based order has been brought into crisis, ushering in an unprecedented disruption within the international system. As this disruption continues, how will history and how will historians work within a changed international system? Among the many challenges presented to international order by global disruption, there is a great opportunity to renegotiate the terms that govern how historians look at and record the past. This project has used a literature review of historical sources in Poland and Venezuela to create two illustrative case studies presenting challenges with the international rules-based order that currently dominates the international system, how these rules have come to pass, and their effects on history. A historiography or historical overview of how history as a discipline previously approached disruptions in the international system has been assembled as evidence that history may again face a need to renegotiate the terms that bind our discipline. A literature review and an evaluation of global and international history course syllabi has also been undertaken to demonstrate the innovative approaches undertaken by historians to work in new ways given global disruption. As a flagship deliverable, a multifaceted toolkit for new historians to both articulate change and work in a world encompassed by a changed international system has been assembled. A prior explanation of the history of historical discourse in relation to the international rules-based order will be pivotal in providing the historical toolkit credence. This project has found that history has long been bound to the international system and disruption within that system means a disruption in the methods historians utilize in historicizing the past. Will historians emerge as champions in the articulation of the new world order or will they reaffirm a commitment to the international rules-based order to which history as a discipline has long been bound?

Seminarraum 112 / A 14 –1–112
Discussant: John Scott

Hirsch V. Protestant School Board: A Testament to Division in Montreal's Jewish Community, 1920–1930

Olivia Kurajian
→ **Canadian Studies**
McGill University, Canada

Montreal's geographical, social, political, educational, and historical spheres have been indisputably influenced by the Jewish community as early as the British Conquest of New France. While making vast contributions to the society, the Jewish community has been met with a fierce anti-Semitism. Thus, in Quebec, a government-mandated division between Catholic and Protestant schools furthered the plight of Jewish children and their families. This division ultimately excluded an influential cohort of people in Montreal – its Jewish schoolchildren. Yet, many scholars advance that idea that the Jewish population was given the right to choose between Catholic and Protestant schools in exchange for their tax dollars and some freedoms. This assumption ignores the pervasive anti-Semitism in Montreal that led to a much different reality in terms of the rights of the Jewish community regarding education in the city. Jewish schoolchildren were most often allowed to attend Protestant institutions but were expected to engage in several types of assimilating and Christianizing narratives, consistent with the anti-Semitic society that engulfed them in their everyday lives. Nevertheless, this anti-Semitism did not erase the political and social agency that erupted within the community. A division between the so-called "uptowners" and their contending group, the "downtowners" culminated in what is now known as the Jewish School Question. As such, a landmark legal case, Hirsch v. Protestant School Board was a testament to division in Montreal's Jewish Community in the interwar period between 1920–1930. The dearth of study on this particular legal case prompted this research. I argue that the Hirsch v. Protestant School Board case of 1927 served as a milestone case in the historiography of the Jewish School Question and highlighted the anti-Semitic rhetoric and actions perpetrated against the Jewish community of Montreal during the interwar period.

Seminarraum 112 / A 14 –1–112
Discussant: John Scott

A Plan to Develop Sustainable Economic, Political and Social Institutions Within MENA

Dylan McClain
→ **Political Science**
University of Arkansas at Monticello, Arkansas, USA

This social and behavioral sciences project develops a hybrid quantitative-qualitative schematic plan to target political strategies whereby Middle Eastern North African (MENA) states can foster (U.N. defined) sustainable economic, social, and political infrastructure. This study asks: How do MENA states, given the region's diverse ethnic/religious identities, create political unity, social equality, and strong economic institutions within their borders, which in turn will help to create a highly stable state? Using the theories of Anthony Smith and Eric Hobsbawm, this paper explores the potential role of nationalism to act as a political bonding agent. The nationalist practices of Stalin in the Soviet Union and Nasser in Egypt are used as case studies. Despite the former's non-democratic nature, and the latter's set-backs, this paper extracts the way nationalism was used in both cases to promote services benefiting the state and its people. The insight gained is then be applied to a typology comparing stable MENA states (the U.A.E., Qatar) against problematic states (Egypt, Sudan, Yemen) and their recent development strategies (as sourced in the Fragile State Index and international statistical rankings) to highlight which best promote sustainability. As the world enters into the new era of globalization, this project argues that more focus needs to be on educational programs within the state to create what Fareed Zakaria describes as "the global citizen": an individual highly educated in the workings of the world while remaining highly nationalistic to his home state. To achieve this, states must combine their focus on economic growth with those political practices (e.g., nationalist endeavors, universal suffrage, infrastructure building) that increase state legitimacy. The conclusion drawn is that states should favor educational programs fostering critical thinking skills so that citizens can take what they learn from the international community and apply it to the specific context of their home state.

Seminarraum 112 / A 14 –1–112
Discussant: John Scott

Preparing Scientists with Global Cultural Competency

Zachary Koestler | Harrison Wong | Lydia Jagodzinski
→ Teacher Education, Diversity Studies
Minnesota State University Mankato, Minnesota, USA

The mission of our College of Science, Engineering, and Technology (CSET) is to "prepare students for professional careers and advanced study, while connecting with local, regional and global communities" (Minnesota State University, Mankato, 2018). Faculty members face a significant challenge: preparing the next generation of increasingly diverse scientists. Culturally responsive teaching uses "the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them" (Gay, 2010, p. 31). In one example, Downey, Lucena, Moskal, et al. (2006) suggested that an integrated experience will enable larger numbers of engineering students to take the first steps toward global competency. They noted that engineers from different cultures actually view the same problems differently. When those different views are coordinated, the results may be creative responses to those problems. This investigation hypothesized that course experiences would have a positive impact on the intercultural competence (ICC) of undergraduate students. The questions under investigation were: (1) What is the starting level of ICC among undergraduate students? (2) How does the ICC of students change during their experiences in a specially-designed course? The course instructor integrated strategies to enhance global cultural competency (GCC). Global cultural competency was defined as "a set of cognitive, affective and behavioral skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts" (Bennett, J., 2011, p. 1). For this study, the IDI version 3 (Hammer, Bennett, & Wiseman, 2003) was used as a measure of cultural competency. This project used archived data collected from 2010 to 2018 for instructional purposes. College and university leaders can use the results for course design and for procedural recommendations.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Elizabeth Sandell

Education for All: Creating Inter- and Multi-Cultural Connections

Henry Paul Sekaayi
→ **Education**
Makerere University, Uganda

The Uganda society has diverse local cultures. Additionally, due to conflicts within the Great Lakes Region, Uganda has, because of its open policy, become a hub for refugee resettlement, e.g., during the month of June 2018, 8,729 persons from South Sudan (UNHRC 2018) took refuge. Others come from Kenya, Somalia, Ethiopia, DRC Congo, Rwanda, and Burundi. The Uganda government, UNHCR and Non-Governmental Organizations have come up with various interventions to resettle refugees within Uganda. However, there have been inadequate efforts to re-settle students within Uganda's education system. As a teacher trainee of English language and literature, I experienced this cultural diversity in my classrooms in a big secondary school with close to 900 students of which approximately 15% were non-Ugandans. The Non-Ugandan students would not express themselves while others were silent throughout the lessons. These students came from either French or Arabic speaking countries to study in an English-speaking country which makes it hard for them to catch up. This research will explore and propose how schools can effectively teach students from a multi-cultural setting so that all may learn with ease. The research will target students, teachers, and managers in a selected school to establish the challenges non-Uganda students' face, measures taken by the school to address the challenges, and the un-addressed gaps in teaching and learning. The total sample (135) of non-Ugandan students, teachers (34), and the school managers (5) will participate in the study. Data will be collected using a questionnaire (students), focus group discussion (teachers), and key informant interviews (managers). This will be analyzed using quantitative and qualitative approaches. Based on the assimilation theory (Gorddon 1978), the researcher will propose and share the model with the school to address the gap. The findings will be presented and conclusions will be drawn after the research has been undertaken. The research is a concern on multi-culture, however based on refugees in particular in line with how they are catered to in the education system of Uganda.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Elizabeth Sandell

Preparing Teachers for Diverse Classrooms

Sean O'Rourke | Tori Smith | Jonathon Arndt
→ **Educational Research / Teacher Preparation**
Minnesota State University, Mankato, Minnesota, USA

This project investigated the research question: How do changes in inter-cultural competency (ICC) compare among pre-service teachers at three data collection points? Intercultural competency was defined as "the capability to accurately understand and adapt behavior to cultural differences and commonalities" (Hammer & Bennett, 2010). The study was based on the Developmental Model of Intercultural Sensitivity (Bennett, 1986), which identified five orientations toward cultural differences: denial, polarization, minimization, acceptance, and adaptation. Data was collected from 48 undergraduate students who majored in elementary education. Investigators hypothesized that students would have a statistically significant change in their ICC from the beginning of their academic studies until just before student teaching. Subjects completed the Intercultural Developmental Inventory (IDI) (Hammer & Bennett, 2012), which calculates a score that reflects capacity for cross-cultural adaptation. The IDI is based on Bennett's Developmental Model of Intercultural Sensitivity (1986). Results showed that (1) students who completed the one-semester course (Human Relations) improved their ICC by an average of 5.874 points and (2) students who completed the professional education program (three more semesters) improved their ICC by an average of 15.805 points. Most importantly, students improved their ICC by an average of 21.679 points from the beginning of their academic studies until the beginning of student teaching. The data analysis showed that students did have a statistically significant change in their ICC, and results suggested that the program's content, pedagogy, and mentorship have a positive impact on pre-service teachers. Outcomes are being shared with MSU's faculty to help determine the efficacy of teaching methods used by the instructors to develop cultural competency. Data and information will be reviewed with administrators for program planning, implementation, and assessment.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Elizabeth Sandell

OS 2

Oral Session 2

Environment
2.15 pm — 3.45 pm
Hörsaal 2
A 14 – 1 – 102

Health A
2.15 pm — 3.45 pm
Hörsaal 1
A 14 – 1 – 101

Health B
2.15 pm — 3.45 pm
Seminarraum 113
A 14 – 1 – 113

Economy
2.15 pm — 3.45 pm
Senatssitzungssaal
A 14 – 1 – 111

Communication
2.15 pm — 3.15 pm
Seminarraum 031
A 14 – 0 – 031

Politics
2.15 pm — 3.45 pm
Seminarraum 112
A 14 – 1 – 112

Create
2.15 pm — 3.45 pm
Seminarraum 030
A 14 – 0 – 030

An Examination of Selected Physicochemical Water Quality Parameters of the Rivers Within the Vicinity of Kaieteur National Park

Benita Davis
→ **Water Research**
University of Guyana, Guyana

Gold-mining operations have increased within the vicinity of Kaieteur National Park, yet its impacts on freshwater systems cannot be assessed due to an absence of baseline data for water and sediment quality in the area. This study examines the total mercury and non-metallic physiochemical water quality parameters for four sampling sites: Echerak River, Muri-Muri River and the Potaro River (both before and after Kaieteur Falls). The physicochemical parameters (e.g., pH, turbidity, total dissolved solids, electrical conductivity, and water temperature) were measured in situ for both sub-surface and depth samples close to the sediment. The concentration of mercury in sediment and water sampled from Echerak and Potaro (after Kaieteur Falls) rivers were determined during the laboratory analyses. One-way ANOVA, Pearson Product Moment Correlation, and T-test were employed to analyze the data. The range of turbidity (0.64 – 42.30NTU) for the samples was above the WHO guidelines for healthy drinking water, except at Muri-Muri. However, the other physicochemical parameters of the river system were below the WHO guidelines: mean pH (3.4 – 7.7), TDS (0.00 – 12.64 mg/L) and Conductivity (0.00 – 25.20 µS/cm). Mercury concentrations in water and sediment samples from Echerak River (0.082 µg/L & 0.021mg/kg) were higher than that of Potaro River (after Kaieteur Falls) (0.065 µg/L & 0.008mg/kg). In both areas, total mercury in water and sediments were below the guidelines set by WHO (0.6 µg/L) and CCME (1999) (0.17 mg/kg), and are thus safe for humans and aquatic life. The results of this study can serve as the baseline for physicochemical and mercury evaluation of the area, and we furthermore recommend that an effective monitoring system is implemented to allow continuous evaluation of the potential impact of mining on the rivers of this important national landmark.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Haider M. Hamzah

Investigating the Level of Microfiber Contamination in Oysters Within the United Arab Emirates

Hind Alriyami
→ **Environmental Science**
Zayed University, United Arab Emirates

The United Arab Emirates (UAE), one of the youngest and most rapidly evolving countries in the world, is a hub for global commerce, tourism, and fashion. The enormous demand on the textile industry and production of clothing, together with the high occupancy rate of hotels and motels, incur a simultaneous rise in the level of microfiber (MF) production within the country. This pilot study aims at investigating the possible contamination of a sample of oysters collected from two different emirates in the UAE with MFs. Methodology: This cross-sectional exploratory study was conducted between March and May. A total of 40 oysters (N = 40) were randomly collected from fish markets from different coastline sites within Abu Dhabi (Saadiyat Island (tourist area), Musaffah (an industrial area), and Albateen (residential area)) and the Fujairah emirate. Fujairah is a northern emirate that shares coastline with Oman through the Oman Gulf in Indian ocean. Abu Dhabi, the capital, is a southern semi-island, bordering the Persian Gulf from the north. Abu Dhabi is the second most populated emirate. After collecting and subjecting the samples to depuration and acid digestion technique, MFs were detected by microscopic inspection and Fourier Transform Infra-red Spectroscopy (FTIR). Results: This pilot study revealed the presence of detectable MFs in approximately 50% of the samples. Additionally, there was a difference in the level of contamination according to the source of sample, with most of samples from Musaffah, Abu Dhabi being rich in MFs. Conclusion: MF contamination of oysters in different marine areas should be considered, especially those nearby abundant factories and hotels. Further research investigations with larger sample sizes are needed before solid conclusions are drawn. Nevertheless, the implications of this study warrant efforts to identify hot spots and mitigate the problem which could have serious consequences through the food chain and bioaccumulation.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Haider M. Hamzah

The Air Pollution Menace: A Case Study of Nairobi, Kenya

Kelvin Brian Nyaga
→ **Geography**
Moi Universtiy, Kenya

Air pollution is as widespread as air itself, and this has had adverse impacts on the unsuspecting citizens living within environmentally dangerous conditions. This research gave an insight into the geoscience/earth science, geography, and more specifically the environmental-health discipline focusing on air pollution by examining the causes and effects of air pollution and seeking measures to mitigate the silent killer, air pollution. The urban centers face this problem at a higher rate, hence the selection Nairobi, the capital city of Kenya, with a target population of 3,138,369 and a randomly sampled population of 350 people participating in the research. The data collection methods primarily utilized were interviews and closed questionnaires. Document analysis of the various records at the county environmental offices came in handy too. Data analysis was through the use of means and percentages. Based on the findings, the causes of air pollution are industrialization, residential congestion, the high rate of vehicle utilization, and unmanaged dumping sites. 57.1% of the respondents believed that air pollution can lead to global warming and climate change as well as cause health problems. The research concluded that the solution to the air pollution problem lies in the hands of the government and the people through collaboration with the relevant NGOs and the environmentalists. Amongst the recommendations is that the government should expand the base knowledge of the impact of air pollution and give possible ways to avoid polluting the air. If the suggested remedies are employed not only in Nairobi, Kenya but everywhere in the world, air pollution, the latest killer lurking within us, preying on both the old and young, will be a thing of the past. And thus having the whole globe working together through achievements for a pollution-free planet earth.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Haider M. Hamzah

IoT-Based Fall and ECG Monitoring System

Alhusain Abdalla | Mohamed Gastli | Lisan Shidqi | Walid Aboueata
Ayman Al-Kababji | Abdulah Jarouf
→ Electrical Engineering, Information Technology
Qatar University, Qatar

According to recent statistics, people aged 65 and above are almost 9% of the current world population and are expected to represent more than a fifth of humanity by the year 2050. Those numbers have urged scientists and researchers to keenly investigate solutions that would offer senior citizens a better quality of life and ease many of their hardships. Certainly, one of the major related issues are old people who live on their own and are more prone to getting serious injuries caused by falls without receiving quick medical care. Therefore, this research aims to study and implement an enhanced application of Technology-Enabled Care (TEC) that monitors the vitals of the elderly and urgently informs caregivers in cases of emergency, such as a drastic change in their vitals due to a dangerous fall or an abnormal change in their ECG signal. In this project, raw ECG and accelerometer data is collected from a customized wearable device. Subsequently, this collected data is compressed and transmitted to a gateway device – either a single-board computer (SBC) or a smartphone application – for processing. For this stage, Compressive Sensing (CS) techniques are used to reduce the amount of data transmitted, and thereby reduce power consumption and increase the battery life of the wearable device. On the receiving side, received data on the SBC/smartphone is decompressed and classified to either falls – with the severity of the fall clearly presented – or normal activities using machine-learning-based high accuracy classification algorithms. Therefore, when a fall occurs, caregivers (hospital and relatives) are immediately notified and the corresponding ECG information will be available through Internet of Things (IoT) for any further inspection. Thus, this system will ensure the fastest possible medical intervention to the patient and avoid an undesirable crisis.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Michael Levelink

Robot System for Learning Assistant in Child Therapy

Penpitcha Wanglavan | Wisanu Jutharee
→ **Artificial Intelligence, Public Health**
King Mongkut's University of Technology Thonburi, Thailand

The number of children with an autism disorder have been increasing every year, in contrast to the number of therapists which are small and insufficient. Thus, many autistic children have not gained enough access to the therapy sessions. One of the solutions is to use robots as mediator in therapeutic activity so that the therapist can treat many children at the same time. In this study we aim to develop the robot system to be a learning assistant in child therapy. We implemented the software on the robot called BLISS to be used in therapeutic activity. BLISS robot is a mobile robot which has a toy-like and friendly appearance with facial expression. Various games and therapeutic activities can be implemented on the robot and they can be customized specifically for different levels of development in children. Sensors and other equipment allow the robot to respond and interact with children in order to let them know how other people would feel from their actions. The expression of the robot is carefully designed so that there are no negative emotions or behaviors that could make children afraid and avoid interacting with the robot. To develop an autonomous interaction system, we observed and recorded the actions of children during the therapeutic activity with the robot. A machine learning algorithm is employed to predict the child's interest based on their behaviors, emotions, and environment. The robot will then choose an appropriate interaction according to the child's interest. This mechanism should provide better support and encouragement for the child during the therapy session. Furthermore, the robot will also learn the behaviors of a child, and with help from the therapist, the system can be adapted and customized for better performance toward a specific child.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Michael Levelink

The Efficacy of Virtual Reality Exposure for Blood-Injection-Injury Fearful Individuals

Rebecca Simpson
→ **Psychology**
Griffith University, Australia

Blood-injection-injury (BII) phobia is a chronic and pervasive specific phobia characterised by a persistent fear or apprehension when confronted with blood, needles, or injections. BII phobic avoidance and chronicity can result in a debilitating condition, immense societal economic burden, and intangible costs to the individual. Historically, exposure therapy for BII phobia has been conducted in real life (in-vivo). However, the invasive and fear-provoking nature of in-vivo exposure frequently results in phobia sufferers not seeking therapy. Thus, there is a need for effective, non-invasive and non-threatening treatment for BII phobia. The aim of the present study was to investigate the efficacy of one-session virtual reality exposure treatment (VRET) in a clinical-analogue BII-fearful sample. Previous VRET research for BII phobia has been limited to visual stimuli to elicit the phobic response. The unique contribution of the proposed study is the aim to increase participant immersion through the addition of multi-sensory stimulation with VRET. Sixty-two participants were randomly assigned to one of four conditions (virtual reality with multi-sensory stimulation, virtual reality only, in-vivo and control). Participants were gradually exposed to their entire fear hierarchy in one single session. The findings confirmed that VRET is an efficacious treatment modality for BII phobia. Results revealed a reduction of fear on all dependent variables for all active conditions. Importantly, no significant differences were found between the VR multi-sensory condition and the gold-standard in-vivo condition. In fact, the VR multi-sensory condition revealed the greatest treatment efficacy. The most clinically relevant finding was that the VR multi-sensory condition reported highest scores on immersion and realism, resulting in superior treatment outcomes. Both findings have implications for theoretical and applied research, clinical psychology, and BII Phobia treatment. These findings will have broad impacts for individuals, society and health economics.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Michael Levelink

Vitamin D Status in Relation to Hematological & Iron Indices: Characterizing Anemia of Chronic Inflammation Among Healthy Qatari Young Cohort

Khoulod E. Mohamed | Samer H. Ali | Duaa M. Haggeer | Farah S. Hijazi | Maryam H. Al-Hitmi | Samah H. Taha | Hamad K. Al-Sulaiti | Luis F. Kanamori | Susu M. Zughaier
→ Medicine
Qatar University, Qatar

Vitamin D insufficiency and deficiency represent a health concern globally and locally. They are notably prevalent in Qatar and are associated with anemia. Vitamin D can influence hematological and iron indices via altering levels of inflammatory mediators and modulating iron-hepcidin-ferroportin axis. Accordingly, this research aims at investigating the unknown association of vitamin D status with hematological and iron indices among Qatari population. This cross-sectional study included a cohort of 874 healthy Qatari subjects aged 18 to 40 years. Subjects were chosen through simple random sampling. The data was obtained from Qatar Biobank on April 2018, after obtaining ethical approval from the Qatar University's Institutional Review Board to investigate the association between vitamin D levels defined as sufficient (30–80 ng/mL), insufficient (10–29 ng/mL) and deficient (< 10 ng/mL) and the following indices (RBCs, WBCs, hemoglobin, hematocrit, MCV, MCH, MCHC, iron, iron saturation, ferritin, TIBC, vitamin B12, folate, and phosphorus). A multinomial logistic regression model was used to further investigate the association of concern while adjusting for age and gender. All statistical analyses were conducted using SPSS version 25. Within the cohort, 74 had sufficient, 400 had insufficient, and 400 had deficient vitamin D status. Vitamin D was significantly associated with low levels of ferritin ($P = 0.027$), folate ($P < 0.001$), vitamin B12 ($P < 0.001$) MCV ($P = 0.011$), RBCs ($P = 0.044$) and MCH ($P = 0.048$), while other indices showed no significant association. Predictive validity of aforementioned indices was assessed using serum ferritin as gold standard. They continued to show significant variation among vitamin D levels after adjusting for age and gender except for ferritin. Our findings indicate a high prevalence of vitamin D insufficiency and an association of vitamin D status with altered hematological and iron indices, emphasizing the value of vitamin D supplementation in managing anemia.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

Using Big Data to Explore the Gene Expression Patterns to Provide Evidence on Iron Biology in the Human Brain

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Human health requires the essential mineral iron. Iron is needed for generating energy, carrying oxygen in the blood, and overall growth. The health of the human brain is also affected by iron. Too little iron is linked to poor brain performance and low energy. Too much iron contributes to various brain diseases, including rare diseases where high levels of iron are present in the brains of patients with convulsions or other movement problems that may reflect abnormalities in electrical signaling. My research is providing clues to the mechanisms the brain uses to handle iron by studying the expression pattern of genes, providing a measure of gene activity which can give insights into biological mechanisms and functions. The specific research question addressed by my work is whether there are relationships in the human brain between the expression patterns of iron-related genes and the expression patterns of other sets of genes with functions relevant to electrical signaling. My research has used advanced 'big data' computational methods to identify different sets of genes that have similar expression patterns to iron-related genes across human brains. The analysis used gene expression data from the UK Brain Expression Consortium project, which contains data from over 100 human brains, and the US Genotype-Tissue Expression (GTEx) project, which contains data from almost 1000 human brains. The results revealed that a subset of iron-related genes was consistently co-expressed with a set of genes related to myelin, a fatty substance that insulates nerve cells and helps regulate electrical signals in the brain. In conclusion, the global availability of 'big data' relating to brain genes has enabled novel research providing new evidence for relationships between iron-related genes and myelin-related genes that may help understand how high levels of iron can contribute to various brain diseases.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

Holographic Visualization for Performance of Percutaneous Ablation of Solid Liver Tumors: Translating from Bench to First-In-Human Evaluation

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Percutaneous thermal ablation (PTA) of solid tumors is the leading, minimally-invasive treatment used in Interventional Oncology, especially in the liver. Liver cancer is the sixth most common cancer in the world, with 782,000 new cases in 2012. Of these, 83% occurred in less developed countries. These liver tumors are ablated, often in combination with chemoembolization, radiation, or systemic drugs. PTA is locally performed without general anesthesia decreasing risk, cost, and recovery time compared to surgical removal. However, in regard to image guidance, surgeons currently use 2D screens for an inherently 3D task, which can lead to inaccurate ablation probe placement, tumor recurrence, and complications. The objective of this study was to develop and evaluate true 3D-holographic guidance for PTA (3D-HPTA) from bench to first-in-human clinical evaluation for liver tumors, leading to increased ablation accuracy and usability. 3D-HPTA was developed with our augmented reality (AR) platform for medical applications. Holograms of the patient's anatomy and mini GPS-tracked probes are projected directly onto the operative site with HoloLens (an untethered, head-mounted AR display) to overcome limitations of 2D screens. Probe placement accuracy was assessed on the bench by targeting small simulated tumors in an abdominal biopsy phantom. HoloLens's ease of use was assessed by 10 interventionalists via a standard system usability survey (SUS). Next, we evaluated early feasibility in an internally pre-approved clinical study while adhering to current standard of care. HoloLens image captures were reviewed from the first-in-human evaluation. In bench testing using 3D-HPTA, the probe tip was placed in 9/9 target tumors. The preliminary SUS resulted in a mean = 4.26 (SD = 0.51, n = 10, scale 1–5 = ease of use (5 = strongly agree, "Easiest"). Preliminary results with 3D-HPTA show significant potential to improve PTA accuracy. This new imaging technique plays a novel role in revolutionizing surgery and cancer treatment, leading to improved patient care and healthcare globally.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

The Impact of Women on the STEM Workforce: A Global Perspective

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Countries in many parts of the globe are confronted with the question of how to promote technological innovation and fuel a robust economy. At the same time, they face dramatic gender-based inequalities. Many of the jobs with the best long-term forecast and potential for upward social mobility are in STEM fields. In every country these are also the fields that have the most significant gender gaps. At the same time, international demographic data shows there are more households solely led by women than ever. These households consistently fall below the poverty level. Internationally, women are systematically excluded from the most financially sustaining careers and nations are robbed of the innovative potential of nearly half the population. Our study focuses on the inequalities of women's participation in STEM, the economic and social impact of these disparities, possible causes, and what interventions could increase their participation. Economies are not reaping the benefits of full participation in STEM. This is affecting the gross domestic product of many nations (GDFP) in terms of lost innovation, modernization, advancement, and revenue. To identify and assess inequalities, we compared international data on STEM degrees earned by women and compared that to patents, professorships, prestigious STEM awards, current STEM workforce employment rates, and current STEM workforce needs. To measure the impact of these disparities, we analyzed economic data compiled by the International Monetary Fund (IMF), World Bank (WB), Organization for Economic Co-operation and Development (OECD), and the Integrated Public Use Microdata Series (IPUMS). Informed by communities of practice framework, we identified root causes of unequal access to STEM and developed criteria for effective intervention. Applying this data and analysis, we described the cost of limited participation and provided evidence-based solutions to inequality in the STEM workforce in ways that promote a nation's overall economic health and growth.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Dana Jackson-Hardwick

Older but Wiser? Age and Loss Aversion in Professional Tennis

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We investigate the relationship between age and loss aversion by using a novel "real," non-laboratory dataset from professional tennis and by using panel data regression methods. Our data comes from 2013 Dubai Tennis Championships, which featured top male and female tennis players. We use serve speed, measured by Hawkeye technology as a proxy for loss aversion. While the age range in our dataset is rather limited, our results show that older female players serve faster than younger ones when they are behind and are, therefore, more loss averse. This result contradicts Rodney et al. (2013) result that shows young males are more loss averse than old males, yet our results are partially consistent with Gachter et al. (2007) who show that young adults are less loss-averse. Our results imply that age is a more important demographic characteristic in understanding loss-aversion for females rather than it is for males.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Dana Jackson-Hardwick

The Influence of Corporate Factors and Development Indicators on the Environmental, Social, and Governmental Performance of Companies – An Empirical Analysis

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University of Oldenburg, Germany

This study examines the influences of corporate and national level variables on companies' Environmental, Social, and Governmental (ESG)-Score. Using a dataset of 3,500 firms from 40 countries over 14 years, the results mainly prove corporate level variables, like a firm's financial performance or size, to be of great importance for its ESG-commitments. On the national level, economic and social factors, like employment- or age-structure, and successful trading of a country, appear to be significant. Nevertheless, these were important drivers of companies' ESG-performance. Building upon previous research, this study enhances the methodology testing for unobserved heterogeneity with a fixed effects model. The findings appear to be increasingly necessary due to a growing demand for sustainable investments in the financial sector on the one hand, and a growing general interest for corporate social responsibility on the other.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Dana Jackson-Hardwick

A Portable Mobile System for Poultry Farms

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The dynamic growth of mobile communications technology has increased and created more opportunities for economic growth, social empowerment, and grassroots innovation in developing countries. One of the areas with the greatest potential impact is the contribution that mobile applications can make to agricultural and rural development. The academic fields that are to be addressed are information technology and science in poultry farming and business. This is because of the digital divide between poultry farming in Uganda with the use of technology. The purpose of this research was to find ways of how to raise standards of poultry farmers by involving the use of information technology as one of the ways for boosting the poultry farming sector not only within Uganda but also in the neighboring countries but also to increase the competitive level of Ugandan poultry farmers on the world market. The scope of our research was mainly focused in the central region of Uganda. This was because poultry farming is one of the major activities carried out by people living in those areas today. The research methods used for the data collection were the survey method and the observation method.

During our research, the following problems were discovered in the poultry farming sector: Many poultry farmers in Uganda are ignorant about the ways a farmer should employ to be successful in the practice of poultry farming. The first challenge makes many poultry farmers face high death rates for their poultry birds which results into higher levels of economic losses. As a result, these farmers are discouraged from continuing with the business of poultry farming which also discourages those who were willing to venture into this economic activity. Due to discouragements, this causes limited supply of poultry produce to the marketplace which results into higher prices for the existing products. Since some poultry farmers leave the poultry farming business, it has led to an increase of unemployment in the country. However, the government of the Republic of Uganda together with some Non-Government Organizations have tried to come up with solutions which can address the challenges mentioned above.

Though there have been solutions deployed to improve the poultry farming sector, there are still some gaps which can be successfully addressed through the use of mobile technology in this farming sector.

Seminarraum 031 / A 14 – 0 – 031
Discussant: John Chang'ach

The Role of Radio in Community Mobilization for Sustainable Development in Uganda: A Case Study of Voice of Kigezi Radio in Western Uganda

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Uganda Christian University, Uganda

In developing countries like Uganda, radio plays a crucial role in community mobilization, which is important in achieving sustainable development at both the local and national level. Being an integral part of the social system, radio is a major stakeholder in the realization of sustainable development in Africa. The researcher was interested in establishing the role of radio, the tools used by radio, and the challenges faced by radio in community mobilization for sustainable development in Uganda. The researcher employed a descriptive case study research design with both qualitative and quantitative approaches using Voice of Kigezi Radio in Western Uganda as a case study. Data was collected using a questionnaire and key informant interviews from 380 respondents. Qualitative analysis was done using descriptive and inferential statistics, while the researcher used thematic analysis for quantitative analysis. Research findings revealed that radio is an important resource for mobilizing an entire nation towards sustainable development by using tools such as: discussion panels, documentaries, magazines, music, dramas, interviews, features, and jingles to increase audience member's knowledge about an issue, create favorable attitudes, shift social norms, and change behavior consequently creating awareness, focusing people's attention, monitoring government policies, creating a climate of development, and exposing dangers. However, factors like poor communication skills, poor needs assessment, poor monitoring and evaluation, high illiteracy rate, and lack of funds has continued to pose great challenge towards the radio's efforts in mobilizing communities for sustainable development in Uganda. Considering the fundamental role the radio occupies in community mobilization, the report argues that for sustainable development to become a reality in Uganda, the identified issues that impede the radio's effort in mobilizing communities should be addressed. By doing so, the radio can effectively succeed in its efforts to mobilize communities in order to achieve sustainable development in all the sectors of the economy.

Seminarraum 031 / A 14 – 0 – 031
Discussant: John Chang'ach

"Annexation or Reunification?" Linguistic Appraisal of German and Russian News Reporting on Crimea

Lauren Cassidy
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"Fake News" has reached new heights of contestation within recent times around the globe. Appraisal Theory provides a framework through which instances of news platforms' positive and negative judgments can be identified, including their stances toward what counts as truthful reporting. Previously, researchers have identified the stances of news agencies by conducting linguistic analyses on news articles, showing how news agencies are able to assert their views through textual constructions. However, the expression of stance in German and Russian news articles showing different sides to the same conflict involving the Russian annexation of the Crimean Peninsula has remained largely unexplored. To address this gap, I selected articles reporting on Russian involvement in Crimea from a liberal German news source, a conservative German news source, and a Russian-state sponsored news source based in Germany. Using a manual linguistic coder, I identified each instance of positive and negative attitude towards Russian involvement in Crimea within each news article. The analysis reveals that German and Russian news sources use different linguistic constructions to moralize Russian actions in Ukraine, with each side reporting information to support a German or Russian worldview respectively. The study shows how news agencies attempt to align readers with a particular worldview and that even if news sources appear to provide information from multiple sources or perspectives, they can still constitute bias.

Seminarraum 112 / A 14 –1–112
Discussant: Amani Elshimi

Changing Perspectives: Re-Framing Terrorism in the US (and Global) Media

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Current theoretical discussions in International Relations and Cultural Studies impart great importance to the role of the media, particularly to its representations of the current global war on terror. Judith Butler's Frames of War (2009) critically examines the framing of war in the media, questioning to what extent lives lost to warfare are represented as "grievable." In her seminal text Regarding the Pain of Others (2003), Susan Sontag criticizes the inadequacy of photographs as a medium to understand trauma and war, particularly due to photography's inability to contextualize. Drawing on Butler and Sontag, this interdisciplinary project critically examines the ways in which US media coverage, through sensationalism and lack of contextualization, disseminates fear and promotes the internal polarization of the American public while cultivating the image of the homegrown terrorist as the other within American society. Given the immense impact of US media, such framing potentially distorts global perceptions of terrorism as well. The particular domestic terrorist incident I consider is the 2013 Boston Marathon bombing. I examine the way liberal, conservative, and relatively unbiased media outlets in the US (CNN, Fox News, and ABC respectively) framed the bombing. I look at reportage from all three channels, focusing on the selective use of violent images, the immediate news coverage from the site of the attack, as well as the construction of a coherent narrative of terror and the recurrent use of particular visuals (photos and live video recordings) in order to tell the story of the bombing and to frame it. The various framing techniques employed by these three major US news outlets often promoted racial profiling, most often of Arab Americans or Muslim Americans as domestic terrorists. I argue the importance of reframing such coverage of terrorist attacks, whether in the form of providing more context, or adopting a more thematic approach to news casting.

Seminarraum 112 / A 14 –1–112
Discussant: Amani Elshimi

Ethical Questions and Simulative Evaluation of Coping Strategies for Dilemma Situations in the Context of Highly Automated Driving

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Today, the vision of autonomous driving is no longer wishful thinking. Technological advances now allow the first driving tests to be performed with highly automated vehicles. In addition to the further development of assistance systems, which are essential for automated systems, there is the question of how to deal with traffic accidents. Highly automated vehicles can also cause accidents. Likewise, there is no guarantee of robustness against any interference in combined sensor systems. However, the technical systems are becoming ever faster. This could result in a lower accident rate in traffic. To achieve this, it is essential to teach the systems to look ahead. But what happens if the vehicle finds itself in a situation in which an accident or even human casualties cannot be avoided? Which coping strategies are technically realizable and ethically acceptable? To achieve this, studies have to deal with the specific individual ethics of each country and evaluate these through coping strategies. The evaluation of strategies with ethical questions in dangerous situations during highly automated driving is nowadays conducted in virtual simulation environments. In the context of this bachelor thesis, a universal framework for the evaluation of coping strategies for driving simulators was designed. Furthermore, a first pilot study with US-American and German test persons was conducted in which the acceptance of a coping strategy and the framework itself were evaluated. The study has shown that the framework works. Another result is that there was no difference between the test groups in the acceptance of a specifically tested coping strategy. An interesting aspect is the different behavior of the test groups with a highly automated vehicle, which can probably be traced back to societal experiences with the technology. Thus, an essential part could be created to answer ethical questions in the context of highly automated driving.

Seminarraum 112 / A 14 –1–112
Discussant: Amani Elshimi

Social Phenomena in the Course of Time – A Field Study to Trace Ulrich Jasper Seetzens Observations in 19th Century Constantinople

Sophia-Elisa Segler | Marcel Prigge
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University of Bremen, Germany

The research subject of this paper concerns the dervish groups. Among them the Mewlevi-Dervish-Order is one of the most famous Sufi congregations, founded in the 13th century by the Persian mystic Dschalāl ad-Dīn Muhammad ar-Rūmī (in short: Rumi). The term Sufism in a contemporary meaning sums up various groups in Islam who have a spiritual-mystical orientation and an ascetic life-style in order to connect to god. The Mewlevi-Order is known for its whirling dervishes, who, by the means of dance and music, try to reach a state of spirituality. The research question of this study is, if the rituals that use music instruments as material culture and the practice of whirling dervishes as intangible living cultural heritage, as found among the dervish groups, have changed or remained over the course of time and if it affects the collective memory. Our research is guided by the findings and observations of Ulrich Jasper Seetzen, born in 1767 in Germany. He is considered a polymath, who travelled from Europe to the Ottoman Empire and during his eight-year long journey wrote detailed observations about various significant social phenomena. We are interested to learn, if the observations and findings of Seetzen are still valid today for the collective memory or did they change? Which role did and still do music rituals and dances for dervish orders play? And how was and how is it distinct to other orders? Do dance and music rituals of the dervishes still have the same meaning and function as they did 250 year ago? In order to answer these questions, we will make a field study at Istanbul and observe if we can still see and experience what Seetzen described during his visit. In addition, we will conduct interviews with members of different orders, to find out about their meaning of practices and rituals.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Colleen Carpenter

The Lexington Camera Club: Zen in the Heart of Middle America

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University of Kentucky, Kentucky, USA

America of the 1950s and 1960s was defined by its dualities: economic prosperity with racial discrimination, rampant nationalism next to a thriving anti-war movement, and the dominance of traditional Christian values alongside a growing interest in "alternative" spiritual traditions. Many artists and writers of this time were exploring Zen, a school of Buddhist thought that emphasizes direct experience as a means to awaken from the suffering of everyday existence. Zen gave artists a non-binaristic lens with which to interpret categories such as gender, race, and class. This can be seen in the work of major artists such as Robert Rauschenberg and John Cage just as much as it can be seen in the work of amateur artists living in middle America. The Lexington Camera Club was one such group of amateurs. Under the influence of Ralph Meatyard, members were encouraged to create work that was experimental; playing with shadow and lighting, out-of-focus shots, and multiple exposures. This group of doctors, lawyers, teachers, and other working professionals created photographs of their daily life but were informed by the changing discourse of 1960s America. Their photography breaks down the dualities of professional and amateur, artist and hobbyist; and points to a cultural shift taking place in both urban and rural America. This project will explore how the Camera Club developed a unique style, set within rural America but influenced by Zen thought. Using a cultural-anthropological methodology, it will analyze the work of amateur artists working in post-war rural America and will address an under-explored topic outside of the art historical narrative. Research will be conducted utilizing the archives at the University of Kentucky Special Collections Research Center.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Colleen Carpenter

An Ethnography: The Emirates Riders Club as a Subculture

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Since the discovery of oil in the early 1960s and the establishment of the United Arab Emirates in 1971, the great transformation of the Emirati society has been associated with major social, economic, and cultural changes. One of these changes concerns the rise of pseudo-deviant cultures, also known as subcultures. My research paper aims to underline one of the alterations in the traditional Emirati society through an ethnographic study of a motorcycle group called the Emirates Riders Club (ERC). The main motives behind highlighting such a theme is to understand the challenges facing the Emirati traditional society, and to give a reliable and non-stereotypical picture of the motorcycle subculture. In addition, the paper considers the prominent impact of globalization on the local community. In researching this paper, both qualitative and quantitative approaches were used to build a comprehensive understanding of the case. The study included three interviews with the founding fathers of the group, and two online surveys that were conducted for different purposes. There were 17 bikers who participated to answer the first online survey, which aimed to collect general information regarding the ideal image of bikers. The second survey gained 12 responses from the ERC members on various topics such as consumption, customization, and clash of cultural ideologies. The remaining approaches involved using internal informants, and exercising participant and non-participant observations. The descriptive analysis concludes that the ERC group is heavily influenced by the Western ideology of motorcycling and that the group does not pose a threat to the Emirati society despite its origin and the perception that it is a pseudo-deviant subculture. As a matter of fact, the emergence of motorcycle subculture within the UAE society has resulted in the evolution of minor socio-economic changes that are controlled and restricted by higher authorities and institutions.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Colleen Carpenter

PS 1

The Correlation Between Daily Tidal Variations and Electrical Conductivity (EC) of Groundwater in Maldives

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The purpose of this research was to investigate and determine whether there is a correlation between the daily tidal variations and electrical conductivity (EC) of groundwater of the Maldives. Electrical conductivity of groundwater in three selected locations in Aa. Thoddoo island was taken at one-hour interval for 24 hours. The tide data obtained from the Maldives Meteorological Services (MMS) were utilized to determine the correlation between these two variables. Through the analysis, it was known that there is a positive correlation between daily tidal variations and electrical conductivity of the groundwater. This happens as the saltwater intrusion occurs due to tidal forcing, which is a natural and common phenomenon in the coastal environments of the Maldives. It was observed that there was no time lag and a simultaneous change in both tide and electrical conductivity of the groundwater was observed. This could be attributed to the high porosity of soil found in the island and proximity of sampling locations to the coast. Even though all of the sampling wells showed the similar trend in changes in electrical conductivity with the tidal variations, the level of changes and fluctuations were different. The possible factors responsible for these variations are differences in the rate of water extraction and usage of fertilizers and pesticides. It is recommended to use purpose-built sampling wells for data collection, and to have consistency in time interval for collecting data for both variables, and to collect data for a long period of time in order to draw a more solid conclusion. Even though there is a correlation between these two variables, it is not possible to conclude that the changes in electrical conductivity in the groundwater are caused by the tidal variations. Hence, it is important to study other possible factors which could cause these changes.

Hörsaal 3 / A 14 – 1 – 103

How Do Algal and Sedimentary Turbidity Affect the Swimming Performance of Emerald Shiner and Golden Shiner in Lake Erie?

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Common agricultural practices and urbanization have resulted in the deterioration of aquatic ecosystems globally and the loss of aquatic biodiversity. Aquatic systems affected by human-induced environmental change have consequently experienced new water quality regimes. Impacted water bodies, especially lakes harboring economically important fish species, have become increasingly warmer, deoxygenated, and have been exposed to higher levels of turbidity (i.e., cloudiness of the water from suspended particles). Turbidity can have deleterious effects on the persistence of fish populations around the world. Direct effects include damage to the gill structure of fishes from clogging and abrasion. Metabolically challenging processes such as swimming can become impacted in the case of gill damage from increased turbidity loads, since it is harder for the fish to take up oxygen. In Lake Erie (North America), there are instances of both high sedimentary turbidity from increased runoff and high algal turbidity from excessive nutrient inputs. The physiology of fishes (i.e., the ability of the fish to engage in normal metabolic processes) can be quantitatively determined through the measurement of swimming performance. This study is a manipulative experiment to determine whether the exposure of Emerald Shiner (Notropis atherinoides) and Golden Shiner (Notemigonus crysoleucas) to sedimentary turbidity or algal turbidity affects swimming performance relative to clear-water-acclimated fish. Both shiner species are non-game forage fishes essential to the Lake Erie ecosystem. Analyses indicate that Emerald Shiner exposed to algal turbidity had decreased swimming performance compared to those in clear-water conditions. Conversely, neither algal nor sedimentary turbidity had a significant effect on the swimming performance of Golden Shiner. These results suggest species-specific physiological responses to elevated levels of turbidity. It is important to quantify the effects of human-induced environmental changes on native biota in order to encourage swift environmental policies and conservation efforts.

Hörsaal 3 / A 14 – 1 – 103

Research About the Ability of the Microalgae Chlorella Vulgaris to Remove the Organic Contamination of Wastewater from Hydrothermal Carbonization

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This work researched an environmentally friendly way to lower the total organic carbon (TOC) content of an HTC-wastewater using the microalgae Chlorella vulgaris. The growth of the algae in various HTC-wastewater of different TOC concentrations (200–400 mg/L) was observed. TOC-analysis proves that the algae decrease the organic matter in the wastewater by up to 90% within ten days or less. The wastewater shows a reproducible carbon loss of 54.4–67.6%. Furthermore, analysis of the fatty acid composition of the algae was carried out, showing that Chlorella vulgaris produce high amounts of valuable fatty acids. Without need of any fossil raw materials, hydrothermal carbonization (HTC) converts agriculture wastes or sewage sludges into valuable hydrochar. In a sealed autoclave at 180–230°C and 20–50 bar, several reactions take place, e.g., hydrolysis, dehydration, decarboxylation, aromatization, and polymerization. In this process, oxygen and hydrogen are removed from the organic material, whereby the hydrochar becomes structurally and energetically very similar to fossil brown coal. In the HTC-process, wastewater with high organic contamination (TOC >1 g/L) is formed as a by-product. A purification of the wastewater for an industrial application is mandatory. HTC is a promising process to reduce the anthropogenic impact on climate change. Every year, the worldwide population is growing. Thus, the consumption of food and the production of agricultual wastes increases. By converting these wastes into valuable hydrochar, the released amount of carbon dioxide is significantly lower than in the energetic utilization. To summarize, the microalgae Chlorella vulgaris can live and grow in contaminated HTC-process-water and is capable of converting TOC into fatty acids which could be useful supply for industry.

Hörsaal 3 / A 14–1–103

Potential Effects of Perchlorate Exposure on Wild-Caught Rodents in Yuma County, Arizona, United States

Ashley Menard | Michael Minicozzi | Frank A. von Hippel | Julie Baldwin | Robert Trotter
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Perchlorate is a widespread water contaminant. This ion occurs naturally in dry regions and is synthetically made for many applications (e.g., air bags, fireworks, rocket fuel). Perchlorate is easily transported in water sources and accumulates in leafy vegetables such as lettuce. Elevated exposure to perchlorate can have adverse effects on the health of people and wildlife. It can cause hypothyroidism by reducing production of thyroid hormones, which play a crucial role in development and growth. Many studies have found alterations to animal tissue morphology due to perchlorate contamination. For example, threespine stickleback fish chronically exposed to perchlorate developed numerous abnormalities in and around thyroid tissue (e.g., increased vascularization, proliferation of small thyroid follicles) and reproductive tissues (e.g., delayed development of male and female gonads). The aims of this study were to test perchlorate concentrations in rodents and examine effects of exposure on gonadal tissue morphology. Rodents from Yuma County, Arizona were collected to serve as an animal model for potential human health impacts given the historical contamination of the region with perchlorate. Gonads and thyroid were dissected from rodents for histological analysis and the remaining body was used for quantification of perchlorate accumulation. Images were taken of 84 rodent gonad slides and analyzed using Leica Applications Suite X imaging software. We found in multiple rodents a growth in vascular area, possible tumors, multinucleation and an increase in male germ cells. Perchlorate quantification is not yet complete, so future analyses will examine any potential relationship between perchlorate and the observed abnormalities.

Hörsaal 3 / A 14 – 1 – 103

Effects of Mercury Contamination on Microbiome Structure-Function in a Neotropical River: Implications on Aquatic Ecosystem Sustainability and Global Human Health

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→ **Microbiology, Ecology**
Sam Houston State University, Texas, USA

Mercury (Hg) contamination of freshwater ecosystems due to anthropogenic activities, such as gold-mining, poses a serious problem for environmental sustainability, global human health, and food and economic security in many developing and underdeveloped countries. Previous studies demonstrated a high concentration of Hg and methyl mercury (MeHg) in soil sediments collected from gold-mined sites, and increasing concentrations of MeHg through the food chain, highest at the upper trophic level. The formation, biomagnification, and bioaccumulation of MeHg are facilitated through metabolic processes in iron- and sulfur-reducing bacteria, green algae, and plants. The Mazaruni River in Guyana, South America has been highly impacted by gold-mining operations that use Hg for gold amalgamation. The physical, chemical, and habitat descriptors of mined and non-mined sites were recorded, and water and soil sediment samples were collected from corresponding sites for elemental and microbiome analysis. Results revealed that specific physical, chemical, and habitat descriptors (e.g., temperature, turbidity, total dissolved solids, pH, electrical conductivity, and macrophytes) are significantly different between mined and non-mined sites. This suggests that mining activities alter these parameters, which can potentially be useful for monitoring Hg contamination. Results further demonstrated that gold-mined sites have significantly higher concentrations of Hg and MeHg than non-mined sites. Microbiome analysis revealed that mining activities significantly affect microbial community composition and diversity. These sites harbor an abundance of iron- and sulfur-reducing bacteria which mediate Hg methylation. Additionally, at the genus level, a significant difference was revealed in the abundance of bacteria which contain Hg resistance mechanisms. This work will increase understanding of Hg methylation and the metabolic role of microorganisms, providing tools for Hg biomonitoring and bioremediation in freshwater systems. Future analysis of the protein and gene profiling of these groups of bacteria may provide an insight into the synergistic metabolic adaptation of these microorganisms to that stressed environment.

Hörsaal 3 / A 14 – 1 – 103

The Ecological Consequences of Trading and Domesticating Scarlet Macaws

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Since scarlet macaws (ara macaos) became one of the endangered species that are threatened by continuous deforestation and illegal international pet-trade, the future of this species seems to be unknown. Statistics from the IUCN's (International Union for Conservation of Nature and Natural Resources) Red List of Threatened Species shows that the scarlet macaw population in the wild is decreasing, while the domesticated population is slightly increasing. Existing literature shows that there are research papers that discuss the living conditions of wild and captive scarlet macaws and other studies that focus on the behavior of ex-pet macaws. However, there is no study related to the living conditions in captivity directly with the different behavior in the wild, which reveals a gap in literature. In addition, the ecological consequences of these changes need further investigation. To fill this literature gap, this paper compares and analyzes the conditions of free-living scarlet macaws and captive ones during the seven stages of development, such as diets, flight, breeding and socialization with other birds. Then, it uses these differences to predict possible changes in the behavior of the domesticated population. Using this analysis, the research explains the abnormal behaviors which are observed in two case studies of released ex-pet scarlet macaws. The findings show that captivity and the lack of important nutrition in the diet of pet scarlet macaws can make the macaw suffer from serious health issues, social problems, and difficulty in flying. The purpose of this research is to highlight how the illegal pet trade and domesticating scarlet macaws can lead to serious ecological consequences on the species other than decreasing the number of the population in the wild.

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Visualizing Connectivity of Ecological and Evolutionary Concepts with Network Analysis: An Exploration of Research on Species Rarity

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The question of why some congeneric plant species are rare while others are common is enduring and has important implications for ecological theory, rare species conservation, and overall biodiversity. As part of a broader research agenda to help address this question, network analysis – a computational tool that uses mathematical graph theory to link different concepts as a visual map – was used to characterize the comprehensive body of research comparing rare and common plant species, an area that has not been comprehensively reviewed in 16 years. The aims of this study are to 1) explore the integration of ecological and evolutionary concepts in this body of research, 2) identify overall strengths and gaps in research foci, and 3) reveal shifts in research foci through time. Keywords associated with a previous study that used network analysis to explore research on invasive plant species were modified into 19 ecological and evolutionary concepts pertaining to plant rarity. Relevant papers were searched for keywords and results were used to generate connectivity values, the ratio between percentage of papers connecting two concepts, and the total number of keywords involved in the search criteria. Gephi, an open-source visualization software, was then used to define and weigh connections between concepts. Our use of network analysis resulted in a comprehensive, updated characterization of all published research in this area as well as networks specific to consecutive time intervals of research activity to explore how research on plant species' rarity has evolved through time. Results show an overall lack of connections between ecological and evolutionary concepts in the explanation of rarity as well as some anomalies in the research field that have had little to no impact on scientists' current knowledge of rarity. These results frame both current empirical investigations of congeneric rare and common plant species and future implications for ecological and evolutionary theory.

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A Mutant Screen of Smax1Smxl2 to Achieve a Better Understanding of the Karrikin Reception Pathway

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Karrikins are a group of plant growth regulators that are found in smoke and normally activate seedling germination, photomorphogenesis, and are involved in stress response, such as water deficiency and excess, weather extremes, and salinity. Striga, a parasitic weed that causes millions of dollars of damages to crops in Central Africa, uses an adaptation where the karrikin receptor is changed to instead detect strigolactones, a plant hormone, which then triggers growth. A deeper understanding of the karrikin pathway will become more important as climate change creates more weather extremes as crops need to withstand temperature and water extremes. The karrikin reception pathway (KRP) begins with the KAI2 receptor which then activates a MAX2 F-box protein. MAX2 recruits an ubiquitinase which causes the breakdown of Suppressor of MAX2 (SMAX1) and SMAX1-like 2 (SMXL2). SMAX1 and SMXL2 work together with TOPLESS, a transcriptional corepressor, to repress an unidentified transcriptional factor or some other regulatory element. Regardless the element, we will identify and characterize it. Our experiment functions in four distinct steps: I. Isolation of mutants in a smax1 smxl2 background. II. Whole genome sequencing of mutant DNA. III. Identification of candidate genes. IV. Protein characterization. We have already identified two different strains of mutants that are independently exhibiting the mutant tall phenotype we are looking for. We are currently waiting on step II, genome sequencing, to find the causative mutation. So far one strain appears recessive while the other appears dominant which helps ensure that they're caused by different mutations. Once both strains are sequenced, we will conduct linkage mapping to find the candidate genes that are most likely responsible for the mutant phenotype. We will confirm that the two strains are caused by different mutations by using complementation. Once we have confirmed the genes responsible, we will characterize the products' functions.

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Mild Traumatic Brain Injury Increases Vulnerability to Stroke in Mice

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Traumatic Brain Injury (TBI) is one of the leading causes of death and disability in the world, resulting commonly from motor accidents, falls, sports injuries, and military combat. Characterized as a complex injury due to sudden trauma to the brain, TBI causes direct damage to the nervous system and renders the brain more vulnerable to subsequent insults. Interestingly, TBI is also a key risk factor for subsequent strokes; moreover, individuals that experience a TBI could be more likely to have a stroke capable of producing more damage. Although the mechanism by which TBI increases vulnerability to stroke is not fully understood, evidence points towards TBI-induced impairments in metabolism, a well-known risk factor for stroke. In this study, we explored the relationship between TBI, impaired neurometabolism, and vulnerability to subsequent stroke. Adult male mice underwent a mild closed head TBI, followed by a stroke, induced via middle cerebral artery occlusion (MCAO) one week later. Mice that had initially experienced a TBI showed larger infarct sizes after MCAO that had more than tripled in volume compared to those without prior TBI. In addition, functional deficits and neuroinflammation after MCAO were exacerbated in mice that had a prior TBI. Administration of a drug that targets metabolic recovery (Pioglitazone) immediately after TBI prevented the TBI-induced worsening of stroke outcomes, indicating that metabolic dysfunction after the TBI increases vulnerability to a subsequent brain insult. These findings are crucial to international public health given that TBI is of large concern worldwide as it affects all communities, demographics, and ages, and has the potential to result in more severe consequences as a result of subsequent strokes. This study gives insight into the therapeutic potential for treating neurometabolic impairments after TBI as a method of alleviating the risk of more severe subsequent strokes.

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Identifying Novel Genes in the Ras Pathway

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Ras genes function in multiple signaling pathways, including the conserved epidermal growth factor receptor (EGFR) pathway which regulates cell signaling and growth. Ras gene mutations have been implicated in approximately 30% of human cancers including 90% of pancreatic cancers. This makes Ras an important target for therapy; however, previous attempts to target Ras directly have had limited success. This project aims to identify novel genes in the Ras pathway, which offer potential new targets for drug therapies. Previous work in the lab used Drosophila cell cultures to identify more than 300 genes that were significantly upregulated when Ras was expressed and are therefore potential targets of the Ras pathway. These candidates were tested in RNAi assays to examine alteration of wing vein patterning, which is a sensitive readout of Ras signaling. Three novel genes, CG31689, CG12009, and G protein gamma 30A (Gγ30A) were positive in this assay and showed wing abnormality. To provide more evidence that these genes function in the EGFR/Ras pathway, I performed RNAi knockdowns in a genetic background in which EGFR/Ras signaling was upregulated using a constitutively-active mutant of EGFR called EGFREIp. If CG31689, CG12009, or Gγ30A interact genetically with EGFREIp, the wing vein phenotypes are expected to be enhanced or suppressed depending on whether the candidate gene is a putative positive or negative regulator in the pathway. In keeping with the idea that CG31689 and CG12009 are positive regulators, the loss of vein phenotype was suppressed. Experiments with Gγ30A are ongoing. The genetic evidence that these genes are novel components in the Ras pathway is an important result and ongoing work is testing how these genes function at the molecular level.

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Screening the Effects of Brain Targeting Compounds on Sensory Behavior and Decision-Making in C. Elegans

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Neuro-pharmacological agents and their actions have been an intensive area of research in relation to treatment of neurological disorders and understanding human behavior. Both medically relevant and recreationally used chemical compounds have profound short-term and long-term effects on influencing the mechanisms of the mammalian brain, and therefore exert significant changes in behavioral responses to various stimuli. Despite the use of multiple therapeutics for targeting neurological mechanisms involved in behavioral control and behavioral responses associated with sensation, information processing, and decision-making, the understanding of the mechanisms underlying these processes and the exact targets of these pharmacological agents are still not clear. We use the invertebrate nematode, Caenorhabditis elegans, to investigate the effects of these various classes of drugs (including antipsychotics, anxiolytics, antidepressants, and addictive compounds such as stimulants and depressants) on a multi-sensory behavior. This behavior assesses a worm's ability to sense and process repulsive danger cues that promote food leaving. Our lab has previously identified a number of neurons and neuronally expressed genes required for worms to leave food during exposure to dangerous sensory cues. This provides a platform to investigate the neural circuits further and examine the effects of nervous system targeting pharmacological agents. We hope to use this behavioral assay to: 1) identify effects from the pharmacological application on this multi-sensory-dependent decision-making behavior, and, 2) identify potential targets in the nervous system for these neurological compounds. This will ultimately provide insight into how brain-targeting compounds modulate brain chemistry to regulate sensory behavior and decision-making. With 302 neurons, C. elegans share significant conservation with mammalian systems. This is beneficial because C. elegans already have their: neuronal connectivity mapped, genomes sequenced, and mutants for most neuronally expressed genes available. This provides an avenue to identify effects of mammalian neurological compounds on cellular mechanisms and neural circuits that control decision-making behavior.

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Molecular Analysis of Calmodulin Mutations Associated with Arrhythmias and Early Onset Sudden Cardiac Death

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Calmodulin (CaM) is a multifunctional calcium (Ca2+)-binding protein that is ubiquitously expressed in all eukaryotic cell types and regulates many vital cellular processes in the human body. Calmodulin is comprised of 148 amino acids and consists of two symmetrical globular domains each containing a pair of EF-hand motifs (the N- and C-domain) separated by a flexible linker region. Each EF-hand motif binds one Ca2+ ion. Calmodulin can bind a wide variety of target proteins. In cardiac cells, CaM directly interacts with the cardiac ryanodine receptor type 2 (RyR2), a large Ca2+ channel that mediates Ca2+ release from the sarcoplasmic reticulum activating cardiac muscle contraction. Numerous recent clinical and genetic reports have identified CaM missense mutations in patients with a history of severe cardiac arrhythmogenic disorders and have directly linked them with the pathogenicity of these diseases. Herein, we have investigated the effect of novel missense CaM mutations, identified in patients presenting with long QT syndrome (LQTS) and catecholaminergic polymorphic ventricular tachycardia (CPVT), relative to the biophysical and biochemical properties of wild type CaM (CaMWT). We used site-directed mutagenesis and we generated three pathogenic CaM mutations associated with these arrhythmogenic disorders. CaMWT and its corresponding mutant constructs were then subcloned into pHSIE plasmid expression vector. The four constructs were bacterially expressed and recombinant proteins corresponding to these constructs were affinity purified. We finally used biochemical and biophysical techniques to investigate how these mutations alter the molecular properties of CaMWT protein. In summary, our Ca2+-binding studies reveal that all CaM mutations significantly reduce the Ca2+-binding affinity of CaMWT and also that all CaM mutants display a dramatically reduced RyR2 interaction, leading to defective modulation of [3H]ryanodine binding to RyR2. Our findings might propose a molecular mechanism explaining how these CaM mutations lead to arrhythmogenic cardiac disease and early onset sudden cardiac death.

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Stretchable Elastic Shape Memory Fibers with Electrical Conductivity

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Traditionally, electronics have been comprised of stiff components, such as copper wires. The immobility of these parts has led to limitations in the use of traditional electronics in many fields where soft materials are relevant, including in biomedical devices, soft robotics, and wearable electronics. Soft materials that are electrically conductive have the potential to eliminate the problems associated with traditional electronics. Shape memory polymer fibers consisting of an elastic shell and a gallium core are interesting because they have metallic electrical and thermal conductivity, elastic mechanical properties, and excellent shape memory capacity due to the ability to change the phase of the core from a low viscosity liquid to a solid metal. These fibers were created by simply injecting gallium into a hollow elastomeric shell. The ability to change the core of the fiber from liquid to solid allows an enormous stiffness change, and the ability to have shape-memory effects; the fiber can preserve a deformed shape and then return to its original shape upon heating. The elastic energy stored in the fiber allows it to relax back to its original geometry upon melting the solid gallium. Recovery time is effectively minimized due to the elastomeric shell providing minimal resistance as well as the rapid conversion of the solid metallic core to a liquid. Notably, the use of gallium, which has a melting point above room temperature but below body temperature, allows the user to melt and deform local regions of the fiber by hand. These stretchable elastic shape memory fibers may enable new applications in both external and internal biomedical devices, stretchable and wearable sensors, and bioinspired electronic skins while increasing the functionality of electronics in traditional applications.

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Characterization and Complete Genome Sequence of a Novel Bacteriophage Infecting a Multiple Antibiotic Resistant Strain of Enterococcus Faecalis

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Ras genes function in multiple signaling pathways, including the conserved epidermal growth factor receptor (EGFR) pathway which regulates cell signaling and growth. Ras gene mutations have been implicated in approximately 30% of human cancers including 90% of pancreatic cancers. This makes Ras an important target for therapy; however, previous attempts to target Ras directly have had limited success. This project aims to identify novel genes in the Ras pathway, which offer potential new targets for drug therapies. Previous work in the lab used Drosophila cell cultures to identify more than 300 genes that were significantly upregulated when Ras was expressed and are therefore potential targets of the Ras pathway. These candidates were tested in RNAi assays to examine alteration of wing vein patterning, which is a sensitive readout of Ras signaling. Three novel genes, CG31689, CG12009, and G protein gamma 30A (Gγ30A) were positive in this assay and showed wing abnormality. To provide more evidence that these genes function in the EGFR/Ras pathway, I performed RNAi knockdowns in a genetic background in which EGFR/Ras signaling was upregulated using a constitutively-active mutant of EGFR called EGFREIp. If CG31689, CG12009, or Gγ30A interact genetically with EGFREIp, the wing vein phenotypes are expected to be enhanced or suppressed depending on whether the candidate gene is a putative positive or negative regulator in the pathway. In keeping with the idea that CG31689 and CG12009 are positive regulators, the loss of vein phenotype was suppressed. Experiments with Gγ30A are ongoing. The genetic evidence that these genes are novel components in the Ras pathway is an important result and ongoing work is testing how these genes function at the molecular level.

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Ultrasound Elastography Provides a Screening Tool for Human Carotid Plaque Composition

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Ischemic stroke is a leading cause of death and disability worldwide, killing more people each year than AIDS, tuberculosis, and malaria combined. One major cause of ischemic stroke is carotid artery stenosis (CAS), which is commonly diagnosed using ultrasound. Ultrasound has the advantage of being inexpensive, portable, and non-invasive. Use of ultrasound to characterize CAS in asymptomatic patients is limited to determining the degree of stenosis but is currently unable to determine the composition of the plaque. Specifically, previous studies have shown that plaque with a soft, lipidous core is more likely to cause a stroke than fibrous or calcified compositions. The risks from surgical interventions like carotid endarterectomy (CEA) or stenting often outweigh benefits when plaque is relatively stable, meaning there is a need for improved risk assessment. Our study tested the use of Acoustic Radiation Force Impulse (ARFI), a type of ultrasound elastography that can be implemented alongside conventional B-mode imaging, to distinguish between different plaque compositions. ARFI constructs a grayscale image in which brightness corresponds to tissue elasticity. Human subjects with CAS were imaged using ARFI and B-mode ultrasound. The plaque was then excised through CEA and regions of interest (ROI) corresponding to necrotic core, fibrous, or calcified tissue were identified through histology staining. The brightness of the corresponding ARFI image area for each ROI was compared, and a significant difference in average brightness was found between necrotic core and calcified regions. This result indicates that information from ARFI can be used to distinguish between different plaque compositions. Going forward, we plan to perform further analyses of the ARFI data to improve the determination of carotid plaque composition.

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Trends of Use of Antiplatelets in Qatar: A Retrospective, Cross Sectional, Descriptive Study

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Clinical trials have proven the efficacy of newer P2Y12 inhibitors (P2Y12i) prasugrel and ticagrelor over clopidogrel in reducing mortality and cardiovascular events such as thrombosis, whilst increasing the risk of bleeding. Limited studies have investigated trends of newer P2Y12i given their lack of approval from the Middle East region. The study aims to evaluate the trends of use of P2Y12i and the extent to which clopidogrel was replaced by novel P2Y12 inhibitors in Qatar. Method: This study used a descriptive, retrospective, cross-sectional study consisting of 15,880 patients performed across Hamad Medical Corporation (HMC) in Qatar. Data were retrieved from Cerner from January 2015 to June 2017. All patients receiving P2Y12i for at least 3 days during the designated period were included. Data was stratified based on the semi-annual period (S1–S5) and by P2Y12i (clopidogrel, ticagrelor, and prasugrel). The frequency of patients on dual antiplatelet therapy (DAPT) and triple oral anticoagulant (TOAC) was assessed. This study was approved by HMC and Qatar University review boards. Results: Average patients were aged between 50–65 (50%) and male (86.5%). There were 15,292 patients in the clopidogrel, 561 in the ticagrelor and 27 in the prasugrel group. The trend of use across the five-semi-annual blocks ranged from 95.9%–96.9% (S1–S5) for clopidogrel, 3.9%–3.0% (S1–S5) for ticagrelor and 0.2%–0.1% (S1–S5) for prasugrel. These trends remained relatively constant throughout the 5 periods. Conclusion: Clopidogrel remained the most commonly used P2Y12i followed by ticagrelor and then prasugrel throughout the study period. The trend changes of the drugs are minor, showing little change in prescribing practice. This raises the question of why newer drugs are not incorporated into practice despite being recommended by international guidelines.

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Modeling Human Cancer Gene Interactions in Worms: a fos-1 Transcription Factor Inhibits Odd-Skipped Gene Expression in C. Elegans

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Cancer is a leading cause of death worldwide, yet much remains unknown about this disease. Human odd-skipped genes (OSR1/OSR2) are poorly studied genes that play important roles in tissue and disease development. Decreased expression of OSR1 has been shown in some cancers, including lung, gastric, and renal cell cancer. Identification of genes that control OSR1 expression will provide important information about cancer development. Genes that control the expression of other genes are known as transcription factors. Because important genes, like transcription factors, have been preserved throughout evolution, model organisms, such as worms or flies, can be used to study interactions between these genes. We utilized a microscopic worm, C. elegans, to study odd gene expression. Worms have two odd genes, odd-1 and odd-2. Odd-2 is evolutionarily most related to the human genes, OSR1 and OSR2, and is structurally most similar to OSR1. Odd-2 is normally expressed in the intestine and rectal gland cells. To identify transcription factors that regulate odd genes, we knocked down candidate transcription factors using RNA interference, a process that destroys mRNA that matches a gene sequence, so no protein can be produced. Gene expression was visualized using strains of worms with either odd-1 or odd-2 fused to green fluorescent protein. Cells that fluoresced under confocal microscopy indicated expression of the odd gene. From 23 transcription factor genes tested, we identified several, including fos-1, that changed odd gene expression when knocked down, compared to a control. Upon fos-1 knockdown, odd-2 expressed in the reproductive tissue, where it is not normally expressed, indicating that fos-1 normally inhibits the expression of odd-2 in that tissue. Because the human Fos and OSR1 genes are involved in cancer development, these experiments could eventually lead to a novel diagnostic test or therapeutic target that could improve cancer detection/treatment.

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Investigation of Neuropeptides of the Insulin-Like Peptide Families in Mediating Repulsive Cue-dependent Food Leaving

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Both vertebrates and invertebrates are capable of responding to a variety of external sensory cues. This allows appropriate behavioral responses to be performed, which are essential for organisms to survive in variable and harsh conditions. Despite the appreciation of organisms having the ability to sense environmental cues and therefore execute a particular choice, the cellular mechanisms and neural circuits that mediate these behaviors are still not well understood. A number of neuronal pathways have been implicated in sensory dependent behavioral repertoires across many organisms, including pathways involving serotonin, dopamine, glutamate and neuropeptides. We investigate the role of insulin-like peptides. Insulin dependent neuropeptides (ILPs) have been previously implicated in a variety of behaviors, including learning, memory and decision making, and olfactory behaviors. They are also shown to be expressed in key areas of the mammalian brain required for sensation, neural processing of sensory information, and other critical brain regions associated with decision-making behaviors. Interestingly, the roundworm, C. elegans, contains over 40 genes that are predicted to encode ILP-like peptides. Using a combination of genetics and behavioral analysis, we will characterize the role of insulin-like peptides in the regulation of sensory-dependent behavior. In the Harris lab, we are currently examining available mutants that lack specific functions of ILP-like peptide signaling pathways in a multi-sensory behavioral assay known as nonanone-dependent food leaving. We will determine if any of these insulin-like peptide genes mediate this aversive behavior through genetic manipulation of the worm. We hope examination and characterization of the role of insulin-like peptides will provide potential insight into how these pathways may mediate multi-sensory behavior and how ILPs shape decision-making.

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A Non-Toxic Approach for Treatment of Breast Cancer and Its Metastases: Capecitabine (Xeloda™) Enhanced Photodynamic Therapy in a Murine Breast Tumor Model

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Breast cancer (BCA) is the most frequently diagnosed cancer in women with distant metastases to lung, liver, bone, and skin in approximately 40% cases. Ionizing radiation therapy (RT) and chemotherapy have been successfully employed for the treatment of disease; however, multiple rounds of treatment are associated with undesirable side effects. This study explores Photodynamic therapy (PDT) as an alternative to RT or chemotherapy. Aminolevulinic acid based photodynamic therapy (ALA-PDT), involving protoporphyrin IX (PpIX) as a photosensitizer to induce target-specific cell death in the presence of light and oxygen, is a popular and efficacious treatment for cancer. We have developed differentiation-enhanced combination PDT (cPDT), in which a differentiation-promoting agent (methotrexate; vitamin D; or 5-fluorouracil, 5FU), when given prior to ALA, increases the levels of PpIX in cancer cells and leads to better PDT efficacy. However, the neoadjuvants have toxicity issues when administered systemically. Here, we use a nontoxic 5FU precursor called Capecitabine (CPBN) for cPDT. CBPN is a standard chemotherapeutic drug for metastatic BCA that is metabolized to 5FU specifically within tumor tissue. Murine (4T1) BCA cells were injected into breast fat pads of nude mice. After tumor nodules appeared, CPBN (600 mg/kg/day) was administered by oral gavage for 3 days followed by intraperitoneal ALA administration and PDT with red light (633 nm) on day 4. CPBN pretreatment of 4T1 tumors led to increased tumor cell differentiation, homogenous elevation of PpIX levels, and enhanced tumor cell death post-PDT, relative to vehicle control. Using an in vivo imaging system (IVIS), a decline in tumor growth following cPDT and metastases to distant organs was observed in the CPBN-PDT group. In summary, the data from this study using non-toxic CPBN as a neoadjuvant for PDT suggests a combination approach that has significant potential for translation into the clinic.

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Influence of BRAF V600E Mutation on Papillary Thyroid Carcinoma

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The BRAFV600E mutation is the most common genetic cause of papillary thyroid carcinoma (PTC) and is considered a specific diagnostic marker. Studies suggest that the mutation status is associated with aggressive tumor characteristics and recurrent progressions. It is, therefore, being discussed whether a more extensive surgical strategy should be pursued in the case of preoperative mutation detection in fine needle puncture. A retrospective study for the analysis of histological tissue in PTC from 2007–2016 was conducted, which investigated the extent to which BRAF+ was present in our patient population and the influence of positive mutation detection on various outcome parameters. N = 270 patients met the inclusion criteria. The consent for the evaluation of the resected tissue was granted by n = 198 patients. Results: n = 186 (m = 46; f = 140) tissue samples were successfully pyrosequenced with n = 98 BRAF+ and n = 88 BRAF-. There is no significant difference in gender distribution, body mass index, lymph node metastasis and distant metastasis. Significant differences (BRAF+ vs. BRAF-) exist in age at the time of primary treatment (49.5a vs. 43.9a, p = 0.022), malignancy detection in fine needle puncture (64,9% vs. 35,8%, p = 0.009), tumor size (14.4mm vs. 18.3mm, p = 0.024), multifocal growth (30.6% vs. 17.0%, p = 0.047), and extrathyroid extension (22.4% vs. 10.2%, p = 0.047). In multivariate analysis, a model with localization and number of lymph node metastasis and distant metastasis best describes recurrence development (p = 0.011). BRAF+ incidence in our collective is comparable to literature. The results suggest a connection of the BRAFV600E mutation with more aggressive tumor characteristics, as evidenced for instance by extrathyroid extension, multifocal growth, and simultaneously smaller tumor size, but a sole influence of BRAF+ on recurrence rate could not be proven. However, if a BRAF+ patient is treated surgically, one should take into account the seemingly more aggressive tumor behavior.

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Do Distinctly Located Caenorhabditis Worm Strains from Various Geographical Locations Show Differences in Sensory-Dependent Decision-Making Behaviors? Different Places, Different Decisions Made!

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Variation in animals' behavior across populations of all types of organisms has been an area of study across nematodes of various species. Despite the appreciation of variation in behavioral strategies across natural isolates, the mechanisms that make each behavior distinct from organism to organism is still not clear. My project's aim is to understand, using a combination of genetics and behavioral analysis, how sensory-dependent behavioral strategies vary across different species of the Caenorhabditis nematode. This question will specifically address how different natural isolates of both C. elegans strains and other Caenorhabditis strains respond in various decision-making/sensory behavioral paradigms. I hope to identify differences in behavioral strategies to attractive and dangerous sensory stimuli across nematodes originating from distinct environments previously isolated from areas across the globe. In Dr. Harris's laboratory, I will specifically examine strains originated from all over the world that are available to determine the ability to perform chemosensory behaviors and multi-sensory dependent decision-making behaviors. Distinct natural isolates will be examined across a behavioral paradigm where worms are challenged with both food and danger cues and their escape and food leaving behavior will be assessed. Preliminary results suggest different strains of nematode perform multi-sensory behaviors differently. I aim to continue to overall generate a profile of strains and their ability to perform multi-sensory behavior and identify potential differences in behavioral preference across various natural isolates of nematodes.

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The Effect of ABCB1 Polymorphism on Clopidogrel and MACE Outcomes in Arab Population in Qatar: A Nested Case Control Study

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Clopidogrel is important for prevention of cardiovascular events after the percutaneous coronary intervention. It has been reported that some patients exhibit inadequate clopidogrel response known as "clopidogrel resistance". The rationale behind the resistance is still unclear; however, some studies have found it to be associated with variants in ATP-binding-Cassette-subfamily-B-member1 (ABCB1) gene (codes for the intestinal efflux protein) among other genetic and non-genetic factors, but results are controversial and inconclusive. Our objective in this study was to estimate the prevalence of ABCB1 (rs1045642) mutation in Arabs and to determine the association between ABCB1 mutation and major adverse cardiovascular events (MACE). A nested case-control study was conducted on Arab patients who experienced MACE from an ongoing prospective cohort study. 39 MACE cases were matched with a group of control in 1:1 fashion using propensity score. DNA was extracted from the blood samples using the PureLink® Genomic DNA mini kits, InvitrogenTM. Genotyping was performed for ABCB1 (rs1045642) variant using TaqMan assay. Chi-Square and logistic linear regression were used to assess whether there is an association between ABCB1 genetic variant and MACE. Ethical approvals were obtained from IRB of Hamad Medical Corporation and Qatar University. 78 participants were included in the analysis (1 sample was excluded from the analysis due to an error in genotyping). Patients' mean age was 58.7 (37–83) years and the majority were male (91.8%) and diabetic (80.5%). All baseline characteristics were not different between both groups (cases and controls). Genetic analysis on 77 participants showed that the (rs1045642) minor allele frequency was 0.6. ABCB1 mutation did not show an association with MACE (36.4% of patients with the mutation developed MACE outcomes versus 53% of those without mutation, $p = 0.3$). In Arab patients, polymorphism in ABCB1 gene (3435A>G) is not associated with MACE. Further investigations with larger sample size are warranted to confirm such finding.

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Electronegative Clusters Play an Important Role in the Stability of Proteins

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There are currently 47 million people worldwide who are living with dementia (WHO, 2017). Dementia, such as Alzheimer's Disease, is associated with the instability of RNA-binding proteins (RBPs). RBPs have enriched intrinsically disordered regions, but the functions of the disordered regions are unknown. In previous studies, we found that electronegative clusters (ENC) are more enriched in RBPs. We hypothesized that the formation of ENCs in RBPs are not made by chance and that they have a role in the enhancement of RBPs stability. First, a python program was created to scan all the RBPs and non-RBPs from UniProt, a protein database, and the probability for these ENCs in RBPs were calculated to be lower than non-RBPs. In addition, fluorescence and stopped-flow fluorimeter spectroscopy were used on the model protein, Nop15, to measure its stability and ΔG. Nop15 was chosen because it had a natural occurring ENC and RNA-binding domain (RRM). In the stopped-flow fluorimetry, the folding rate constant for the two variants were similar, while the unfolding rate constant for the protein mutant without ENCs (No E) was two-fold higher compared to the wildtype. The graph of fluorescence data showed that the wildtype is more resistant to urea denaturation compared to the No E variant. The results show that the occurrence of ENCs in RBPs are not random and serve as a key element in protein stability. In Alzheimer's Disease, TDP-43, an RBP, and other proteins tend to coagulate together and become dysfunctional. For this to happen, both the RRM and disordered regions are needed. In the next step, we will attach an ENC onto TDP-43 and determine whether its stability will be improved by the engineered ENC. We believe that this may stabilize the RRM, which may be useful in preventing the coagulating problem and mitigating the effects of Alzheimer's.

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Evaluation of a Field-Based Porcine Ingredient PCR Assay as an Indicator of Infectious Agent Contamination of Livestock Trailers

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Disease transmission via livestock transport equipment is important to producers, packers, and hauling companies. Infectious agents, like PRRSv (porcine reproductive and respiratory syndrome virus), can affect productivity in a swine unit, particularly if sows are infected and either abort or farrow prematurely, leading to 60% mortality in piglets. Traditional detection is conducted by swabbing a trailer, sending the samples to a diagnostic lab, and receiving results within one to three days. As a result, companies do not have results in hand quickly. In the interest of keeping operations moving, trailers later testing positive may be allowed to leave the site, potentially carrying diseases to another animal unit or packing plant. This study aimed to determine the efficacy of the porcine ingredients assay in identifying trailers positive for multiple infectious agents. A field-deployable magnetic bead RNA extraction machine and insulated isothermal RT-PCR analyzer were used for truck-side disease detection. One hundred forty-six swabs were collected from the threshold of swine trailers and/or the pedals of truck cabs going through the swine production unit's sterilization process. Following extraction, each sample was PCR tested for porcine ingredients (presence of a swine-specific gene,) PRRSv, and porcine epidemic diarrhea virus (PEDv.) Of these 146 samples, 127 have been tested to date. Fourteen were positive for porcine ingredients, zero positive for PRRSv, and eight were positive for PEDv. No correlation was found between porcine ingredient presence and PEDv presence (sensitivity: 0%). Testing for porcine ingredients would not be considered a useful indicator of diseases, and this assay alone cannot identify trailers carrying infectious agents.

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Interleukin-1 Receptor Type 1 Exercises a Critical Role in Neurodegeneration Following Magnetic Nanoparticle-Induced Focal Cerebral Ischemia

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Cerebral ischemia, more commonly known as stroke, afflicts approximately 15 million people worldwide and is the leading cause of long-term disability in the United States. Cerebral ischemia is characterized by a local buildup of plaque in the brain's circulatory system leading to ischemia – a decrease in hemoglobin circulation. Consequently, the lack of oxygen circulation to cerebral regions causes cerebral infarctions – severely damaging components of strokes – which activate the neuroimmune system and induce the release of pro-inflammatory cytokines, such as Interleukin-1 beta (IL-1b). Previously established, cerebral ischemia-related damage significantly decreases with IL-1b deficiency in mice; however, the role of its cognate receptor, Interleukin-1 receptor type 1 (IL-1R1), in cerebral ischemia was not investigated. Our lab has shown IL-1R1 is expressed in many cell types throughout the CNS; however, each IL-1R1-expressing cell type responds to IL-1b in a unique manner and their respective roles in the context of ischemia are unknown. Using a genetic mouse model, our lab can restrictively express or selectively delete IL-1R1 in a specific cell type utilizing the Cre-Lox system. Additionally, a novel method of focal ischemia-reperfusion utilizing cranial magnet implantation and intravenous magnetic nanoparticles was used to emulate cerebral ischemia and subsequent reperfusion. We found induction of ischemia in wild type (WT) animals reduced NeuN+ cell bodies and activated glia in the ipsilateral cortex, thus verifying that the model accurately mimics focal ischemia. Mice lacking IL-1R1 (IL-1R1r/r) were found to have smaller infarct sizes, suggesting Il-1R1 plays a critical role in neurodegeneration following ischemia. Further studies are required to detail the roles of cell-type specific IL-1R1. Since endothelial cells are known to express the highest levels of IL-1R1, along with mediate release of neurotoxic reactive oxygen species (ROS), we hypothesize endothelial IL1-R1 may contribute to the neuronal damage and infarct volume.

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Identity in Project Management

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Identity is necessary in the contemporary world (Walsbord, 2004). We desire to establish one to bring validation, comfort, and security. Within project management, having a sense of the type of person we are makes complex decision-making easier (Saaty, 1990). Unfortunately, due to multi-faceted task demands, project managers occupy a liminal position where identity formation becomes difficult, due to conflicting loyalties between their profession and their organization. Project managers have existed in transience and structural ambiguity due to the temporary and unique nature of projects, leading to intensive 'identity work' whereby individuals attempt to make sense of one's position in the professional world by continuously informing, maintaining, and reinforcing elements that create a precarious sense of distinction and unity (Alvesson and Willmott, 2002). Whilst project management accredited bodies have attempted to prevent the negative impact of liminality by licensing practice on a body-of-knowledge (BoK) followed by the recent introduction of a 'Chartered Status' for the Association of Project Management (APM), existing research indicates there is still a struggle to mark its identity to an equivalent level with other professions (Marshall, 2003). This study has been conducted in a large project-based organization and delves into lived experiences of those within the profession itself (n = 218). Hermeneutic phenomenological interviews (n = 8) were conducted followed by thematic analysis to identify key themes surrounding the extent of which this lack of identity is problematic and why. This research suggests identity correlates strongly with self-esteem and satisfaction and is imperative to achieve intrinsic and extrinsic motivation. Without it, the profession will continue to suffer at the hands of an infinity bias spiral, predominantly impacted by prejudice of second-generation project managers. Therefore, a significant shift is necessary to overcome barriers and establish a coherent identity recognized and respected across communities.

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Making Changing Stick, Realising the Benefits: A Theoretical Explanation of an Observed Organisational Behavior

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This research study began with what could be described as a noticed pattern in organisational behavior. It was observed that the organisation of the researcher was continually attempting to implement changes and from an outsider's perspective it appeared many of the changes were delivered; However as time went on old habits returned and the change did not "stick." Once the focus had moved on to the next change program, the previous change program was forgotten about leading to the once important benefits no longer being realised. Studies suggest that between 50–70% of changes fail to meet their original objectives and expected benefits (IBM, 2006). Using a 'Glaserian' classic grounded theory process, the purpose of the study was to understand why change projects are not successful and what must be improved to make change stick. The methodology employed allowed data to evolve inductively with the purpose of understanding behaviors and patterns for a new theory rather than describing a phenomenon. Active interviews (Holstein and Gubrium, 1995) were used to gather lived experience of interviewees. Interview results were coded, and themes were developed through data analysis until data saturation was reached. Two key themes, 'The Environment for Change' and 'Competencies' and five sub-categories of each theme were identified. Both were discussed and compared with literature and change models. This analysis highlighted that academic literature and models do not address all of the findings of the research and therefore the study proposed a model that could be adopted to increase the success rate of change projects. From the methodologies used it can be concluded that there is not one single reason that change failure can be attributed to, however the two prominent reasons are failing to change the environment and insufficient skills to manage the change.

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The Design Flaw: Uncovering Past and Current Issues in Lexington's Low-Income Housing

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Lower income housing is a problem that many communities across the world face. The American city of Lexington, Kentucky, is an excellent example of a mid-sized city that grew exponentially during the 20th century, but inadequately addressed the needs of its poorer citizens while enjoying robust growth in economy and prestige. Analyzing the William H. Qualls Urban Planning Papers at the University of Kentucky Special Collections Research Center to investigate how housing divisions were created and designed, and comparing this with current city data to understand how the early plans contributed to current inequities in housing, is crucial. The collection contains reports on neighborhood zoning; transportation; water quality and management; housing for low, middle and high-income families; and business development during the 1960s to 1980s, when the city experienced a period of great expansion. The collection mentions several issues that arose when constructing these low-income housing areas for residents. Some of the inequities in lower income areas have never been fixed, despite attempts to do so in the past and present. Through research into successes and failures of prior attempts to create thriving lower income housing for residents, this study plans to identify past barriers to success and build a new plan for improving low-income housing for its residents. This research will help other mid-sized communities around the world that are facing similar problems.

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The Influence of the Irregularity of Language Irregularities

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In many non-English speaking countries, English is a mandatory subject for all educational levels. Regular verb conjugation and pluralization are usually one of the first grammatical rules taught, because these are the most productive and one of the most frequent grammatical aspects of the language. The irregular verbs are often taught through explicit instruction next to the regular verbs, yet the irregularities of pluralization are not given the same amount of attention. This study set out to find whether or not the students' native language (L1) can influence the acquisition of the irregularities of their second language (L2), in this case English, and subsequently, if English language teaching needs to pay more attention to irregular pluralization. 198 Dutch secondary school students were tested on three different age ranges and two educational levels using a lexical decision task, where students specifically had to distinguish the items on number and gender. The results showed most importantly a statistically significant influence of congruity of irregularity of Dutch and English ($F(1,43) = 7.636$, $p < 0.01$). The results suggest that incongruity of L2 pluralization should get more attention, both in education and in research. For education, English teaching methods could integrate this outcome either explicitly through grammar by making students aware of the incongruities, or implicitly through their vocabulary lists by including (more) (incongruently) irregular English plurals. Further research could look into the productional side of L2 pluralization, and/or investigate if the same outcome can be achieved when the items are presented auditorily. Moreover, the irregularities of other English morphological phenomena could be studied if they are similar to other languages' in either written form or meaning-wise. Lastly, this study could be repeated with other L1s that have either similar pluralization to Dutch and English (i.e., affixation) or other similar morphological phenomena.

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Applying Mobile-Based Augmented Reality for Physics Learning in Mechanical Wave Topic

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Physics is an important subject since it is the basis of most modern technology, used in scientific, engineering, and many other fields. However, physics appear to be hard for most high school students by itself with some topics such as mechanical wave being harder to understand since they are not able to be observed in normal situations but only by a computer which can create non-existing objects to represent something we want to observe and then display it in the form of visible objects. However, general computer simulations interfaces take a lot of time to be understood by the users while augmented reality (AR) can improve this by enhancing the interface of normal simulations. The aim of this research was to study an outcome of using an interactive learning material that applies marker based augmented reality technology to the topic of mechanical wave of physics for high school students. A freshman of robotics and automation engineering created a prototype by using the Vuforia augmented reality in the form of an Android application that applies marker based augmented reality to a control view angle and other variables. It receives input as video frames with applied markers to calculate each marker position, then simulates the phenomenon and displays through device's screen. The prototype contains six examples of interactive 3D simulations. Each of the simulations has interactive functions such as being able to change position and view point by tilting and using data from device's sensors to get input variables. The application's performance was tested by running it on several devices with different specification and API levels and assessed by the 23 evaluators who were high school students. It was found that the interactive learning material that utilize marker based augmented reality technology for the topic of mechanical wave could be used for learning intuitively and effectively.

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The Development of Interactive Tutorial of Robot Operation Using Mixed Reality

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Using robot and automatic systems in production is one part of improving Thailand's industry level. It requires a skilled operator who can operate the robot and automatic system. The aim of this research is to develop an application that can train the trainee to be the robot operator using an on-the-job training model along with a augmented reality system which is a system that mixes between scenes of virtual world and real world. The user in the system can interact with both the real and the virtual environment at the same time using the Microsoft HoloLens device. This device allows the user to enter the mixed reality system by displaying the hologram on its transparent lens. This enables users to learn how to operate the robot effectively even without the instructor and decreases risks. In this research, a team of freshmen of robotics and automation engineering class proposed a Dobot magician as the robot manipulator. The user needs to wear a HoloLens device, which captures the user's movements and voices to receive the user's decision. The HoloLens device utilizes AR marker recognition to detect and locate the position of the marker attached on the Dobot to identify type and position of each part of the Dobot to be controlled and moved. After processing all of the input information, HoloLens will display the related graphic images overlaid on the real robot to explain how to use Dobot. In addition, the application allows the user to select the topic that user wants to study about. The evaluation will be made by comparing the amount of time for usage and usability of the Dobot between 2 groups of users, who learn through the developed application and by manual. The expected outcome is that people who learn how to use robots through the application can learn faster than those who study it by themselves, and that they will not damage the robots. This project can be developed to train people how to use the other kinds of robots and can be a part of the development of the production industry in Thailand.

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Tele Operation and Haptic Sensing Feedback for a Robotic Arm

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If a human operator can operate a robot to perform a task in an environment inaccessible to humans, while being able to feel what a human would feel when performing that task, then it would be revolutionary. Therefore, this research project presents a tele-operated robotic arm with remote vision, tactile sensing, and haptic feedback. Entire system is driven by two microcontrollers and a real-time internet database server. A wireless remote controller is connected to microcontroller at operator's end. The operator who views the live camera feed of patient's end can operate the wireless remote controller which would vary motor angle values in the database. The patient's end microcontroller would receive those motor angle values and drive the robotic arm motors accordingly. If the robot end effector hurts the patient, then such force level would be sensed by force sensitive resistors mounted at the end effector of the robotic arm. Those force values will be sent to the database by patient's end microcontroller. Those values would be received by the operator's end microcontroller and it would generate haptic feedback through vibrato wearable attached to the operator. Tasks such as cotton pickup and cotton disposal where human control is not necessary are automated using inverse kinematics. The force sensing range is 0.05 N to 0.1 N. After tests, it was found that repeatability error of the system is less than +/- 0.01 mm and response delay is 3.88 seconds. In order to give real-time experience to the operator, it is recommended to have system response latency less than 100 milliseconds. The designed system is suitable for operations such as cleaning wounds for patients with contagious disease conditions. By performing further platform modifications, this system can be integrated into any platforms which require remote operation, tactile sensing, and haptic feedback capabilities.

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Forgiveness after the Genocide in Rwanda: What Religious Narratives Reveal about Agency

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After the 1994 Genocide against the Tutsi, the Rwandan government revived and modified a community-based form of justice called the Gacaca courts, during which genocide perpetrators were incentivized to confess their crimes and survivors were encouraged to forgive. This study sought to understand the ways religious teachings regarding confession and forgiveness may have impacted participants' perceptions of post-conflict reconciliation in Rwanda. We relied on 58 interviews with Gacaca defendants, judges and witnesses, and nine interviews with religious leaders and laypersons in Rwanda who elaborated on questions about religious teachings and forgiveness. From this sample, we analyzed narratives about forgiveness, with particular attention to participants' explanations of motives and attributions of blame. We found that the influence of religious teachings on participants' perceptions of forgiveness can be best described using the sociological concept of agency, defined as the ability to freely make and act on one's own choices. Participants used religious reasoning to express judgements about agency during the justice process, such as to describe who should or must forgive and who should be considered responsible for genocidal violence. These religious narratives about forgiveness elucidated several themes regarding: 1) the influence of religious structures and institutions on the agency of a forgiver, 2) a forgiver's perceptions of the effects of forgiveness, and 3) the agency attributed by forgivers to the perpetrators of genocide. We discuss the implications of these themes for post-conflict reconciliation. This research can help scholars and policymakers alike better understand how culturally-specific factors, like religion, can affect the operationalization of forgiveness in transitional justice regimes and inform the design of future processes.

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How Did It Become Possible for the Korean Rapprochement Process to Intensify in Light of the Winter Olympics 2018?

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This essay conceptualizes the Democratic People's Republic of Korea using path-creation rather than the commonly used path-dependency theory. This perspective is used to explore "how it became possible for the Korean rapprochement process to intensify in the light of the Winter Olympics 2018." Underlying the differences between the two theoretical approaches, this essay examines to what extent the discourse treats North Korea as an actor endowed by free will or bound by fatalism. The interpretative methodology combined with organizational theory allows for an analysis of the discourse in the form of academic texts, news, and public speeches of relevant political leaders. Through this, we elude how agency has been overlooked in the discourse until the Winter Olympics and, hence, impeded progressive rapprochement. Being traditionally influenced by path-dependency theory, the 'DPRK-discourse' depicted the country as a totalitarian, militaristic, and anti-Western state on a path lock-in, which was malleable only by external forces. Accordingly, to avoid nuclear armament, the world community led by the United States imposed harsh sanction regimes and curtailed North Korean economic and political rights from the outside. On the other hand, the shift in discourse related to path-creation portrays the DPRK as a reasonable actor, suggesting that cooperative diplomacy works better than international isolation. Problematizing the deterministic nature of the old discourse/paradigm, we suggest that North Korean agency and venues for cooperation have been overlooked, whereas the new discourse/perspective on the DPRK suggests that it could be a threatened, independence-seeking nation which seeks a full denuclearization, and peaceful re-unification of the Korean Peninsula. Thus, a shift in discourse from seeing North Korea as path-dependent to having internal creative agency, facilitated the rapprochement process during the Winter Olympics, as evidenced in how diplomatic solutions were sought over violent struggle.

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How Do Students of Gender Studies and Sports at the University of Göttingen (Re-) Produce Conceptions of Beauty? An Empirical Research on Parameters of Beauty

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To do our research we chose two ways to try to answer our question: a qualitative and a quantitative one. In the quantitative part we designed a questionnaire which also consists of two different parts: A valuation of animated body images and the FGE-test including the topics of self-images, overweight, and beauty-ideals. In the other part we did qualitative guided interviews with six sports students and six students of gender studies. To evaluate these interviews, we used the summary content analysis by Mayring (2010) and built inductive categories to figure out parameters and reasoned relations. Scientific literature dealing with body and beauty often focuses on women. Sieverding (1993: 236f.) emphasizes that while women were more pressured to be beautiful, most men had the possibility to define themselves additionally with other attributes such as character, money, or power. In our research we recurred to the studies of Coy, Green & Price (2014) and Mousally et al. (2016). Looking at the interviews one could say, that students of gender studies see themselves as less focused on physical characteristics concerning beauty, but at the same time, these characteristics were often pointed out as important. The sports students on the other hand named naturalness or same interests in sports and a healthy lifestyle as important parameters of beauty. The analysis of the questionnaire showed, that there are no big differences in the conceptions of attractive bodies, although the sports students preferred more muscular bodies. Both the qualitative and the quantitative part indicate that many students of both study programs do not like their self-image. Nevertheless, there are differences between important characteristics of attractiveness and the question of attractive bodies. Sports students name naturalness as an important characteristic, but the most valued as attractive body was that of a Barbie.

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"Your Hair is as Messed Up as your Government": Gender and Personalized Politics on Rachel Notley's Twitter

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Social media provides unique opportunities for citizens to participate in democratic processes; however, the anonymity and personalization of politics through social media creates a new space for increased hostility and threats of violence. Understanding these threats through a gendered lens is necessary to determine if the treatment of female politicians is mediated by gendered violence or the threat thereof. Recent news articles indicate that Rachel Notley, the Premier of Alberta, Canada, received violent threats at a much higher rate than other Albertan Premiers during their time in office (CBC News, 2017). This project tests the idea that Notley faces higher-than-average threats and explores their gendered nature. My research explores the interactions of female politicians with the public on social media and examines the presence of gendered comments, hostility, and violence. In particular, I ask: how does gender impact politicians on social media? This presentation is based on a qualitative analysis of replies to 30 Twitter posts (the first of each day for a month) preceding the Alberta provincial election. The research draws from the literature on women in politics to provide a foundation for understanding Premier Notley's experiences, uses a gendered lens for the analysis, and employs research methods more common in communication and women's studies – specifically discourse analysis and content analysis – to help us understand the political implications of the gendered nature of the Twitter posts. This research contributes to the scholarly literature on media coverage of women and politics (Trimble, 2007; Meyerhoff and Meyerhoff, 2005; McAllister, 2007; Gigengil and Everett, 2003). Although the case study is local in nature, the analysis has broader implications for understanding women and politics because issues female politicians face on social media are experienced globally and reflect deeply embedded gendered cultural stereotypes, common throughout the western world.

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A Narrative to Live: Questioning Youth Centres' Typology in Egypt

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This project represents an "architecture that engages with the history of a site, respects existing conditions of a place, relates to present needs, and provides the potential for future use and adaptation" (Wallace, 2007). The chosen location is El Diwan village in Nasr El Nuba, Egypt. The defined problem is how the Nubian youth and community mindsets and feelings are split between going back to their heritage of their old land, and the ambition to advance and cope with modernization. With a special use of 'memory' and phenomenological concept strategies, this research acts as a journey of stories leading to architectural solutions for the issue of cohabitation in Nasr El Nuba. The Nubian culture is mostly verbal and visual, and a main part of their life patterns is observed to be storytelling and reminiscing about the old days. Instead of letting this interesting pattern go to waste, this project focuses on allowing the youth and the whole community to take advantage of this pattern to develop their skills, and open new perspectives for them. The proposed design allows the users to design their story, live it, learn from it, and eventually see it documented along with their culture that used to be only a past. Narrating a story can have multiple structures: linear, open, closed, or circular structure. This project adopts the open structure of narration, in order to create open-ended spaces that have the potential to evolve harmoniously. Thus, allowing the youth and the whole community to create their own story and go through it, where the story doesn't have a fixed ending or one-dimensional moral.

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Grandma, Grandpa, How Did you Grow Up Being Deaf? A Student's Exhibition on the Life Stories of Deaf Seniors

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Being deaf and growing up in a hearing world, can be a great challenge, especially when growing up in the 1930s and 1940s in Germany. At that time, where did deaf children go to school? How was the oral education? What jobs could they learn? And where did they meet other deaf people? These are some of the questions that were asked in interviews with deaf seniors. The aim of the project "Life stories of deaf elderly signers" is the documentation and evaluation of the linguistic and cultural heritage of deaf people, who were born prior to 1945 (project funded by EU Horizon 2020). These interviews are the first detailed documentation of the life stories of deaf people in the post-war period. Based on these interviews, we – i.e., a team of fourteen students – conducted an interactive exhibition, which shows the various life experiences of deaf seniors in Germany. In order to evaluate the content for the exhibition, we collaborated in groups of six, each group focusing on one specific topic. These topics were crucial milestones in the deaf seniors' lives: family, school, occupation, deaf associations, communication, and National Socialism. Each group researched in more detail their topic, analyzed a first set of the interviews, met some of the seniors, and visited schools and archives for a more in-depth analysis. The interviews were conducted and analyzed with a qualitative and descriptive methodology. With regard to actually constructing the exhibition, we worked on the logistics of the exhibition itself, searched for sponsors, designed advertisement and public visibility, and planned a cultural supporting program around the exhibition. Deaf people are a special cultural and linguistic minority, which is mainly invisible for hearing Germans. Deaf seniors especially should get a chance to share their life stories and experiences of the post-war period. We will present our first findings of the life stories, with regard to the deaf seniors' experiences in school, education and deaf associations.

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Correction of Spatialization Issues in Acousmatic Music: Remedying Incompatibility between SpatGRIS and Logic Pro X

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In this project, a technical solution for incompatibility among software programs involved in the spatialization of sound in multichannel speaker arrays was designed and implemented. Acousmatic music is a genre of electronic music intended for playback by a group of loudspeakers with the central concept being calculated ideation by the composer on how sound moves in space. Dr. Robert Normandeau, a pioneer in both acousmatic composition and sound spatialization research, describes the genre as "Cinema for the Ear." Through his efforts with Groupe de Recherche en Immersion Spatiale (GRIS), Dr. Normandeau created a software plugin, SpatGRIS, which allows composers to send sounds around the space to come seemingly from anywhere in relation to the listener. This allows acousmatic composers to send sounds around, over, or through the audience for a completely immersive experience. Through use of SpatGRIS in conjunction with Logic Pro X, one of the most globally popular Digital Audio Workstations, the plugin has proven useful to create complex sonic movements in acousmatic compositions produced throughout the completion of this research. However, when trying to export these projects in their entirety for playback and sharing, both programs labeled and exported channels differently in octophonic (eight channel) compositions. This difference resulted in sounds from the composition being spatialized incorrectly. Therefore, a method using a free third-party software, which can easily remedy this error and correct the final recordings to their originally intended state, was created to serve as a solution.

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Poetas de Hoy – Hispanic American Poetry in Berlin: An Artistic Research Project

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The project "Poetas de hoy" studies the potential of artistic research for the analysis of literary texts, using current Hispanic American poetry in Berlin as an example. According to Borgdorff (2006), artistic research investigates art from an immanent perspective, incorporating it into the research process, which makes revealing the implicit knowledge embodied in art possible. This leads to the following research question: Which interpretive potential does artistic research offer for the analysis of contemporary Hispanic American poetry in Berlin? The analysis focuses on works by Hispanic American authors who have lived in the German capital since 2000. They are part of an emerging Berlin-based Latin American literary scene and often use multimedia and transdiscursive approaches (cf. Pompeu and van der Heusen 2017). The research methodology used combined the application of artistic research and a written documentation. Artistic research was applied to explore the multimedia and transdiscursive dimensions of the poetic works. This process involved the utilization of creative writing, photography, and filming among others. The documentation was conducted to reflect on the research process and findings as well as to evaluate artistic research as an interpretive tool. For this purpose, the project worked with the methodological map of reflection by Hannula (2005), a documentation scheme designed for artistic research. Based on the outcomes of the research and the documentation, it is possible to identify three ways in which artistic research offers new interpretive insights into the analyzed poetic works. Firstly, it reveals their potentially different readings more clearly than conventional literary analysis. Secondly, it helps to understand and illustrate specific formal features of the works, particularly their multimedia aspects. Finally, it allows for better comprehension of the creative process through which the works were made. Thus, artistic research proves to be a useful and innovative interpretative tool for literary texts.

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The Influence of Stereotypes on Culture Bearers: Music and Storytelling in Rural Kentucky

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Since the development of the recording industry and proliferation of mass media in the early 20th century, musicians and writers from rural areas of the American South have had to confront deeply entrenched and often negative stereotypes that dominate mainstream American understanding of rural Southern ways of life. James Hines (1926–2017) of western Kentucky was one such individual, who by the mid-1950s had established himself as a writer of short stories in periodicals published throughout the United States and was actively exploring his rural Kentucky roots in his writing. Several volumes of Hines' published musical and literary works, along with relevant incidental materials, now form a permanent archival collection at the University of Kentucky Special Collections Research Center. Through analysis of both published and unpublished writings found in this collection, including Hines' extensive correspondence with publishers and creative collaborators, this project will examine whether lived experience of local culture or capitulation to prevailing stereotypes of rural Southerners played a greater role in shaping Hines' portrayal of rural Kentucky life. The ways in which a difference in creative medium (music versus print) shaped the subjects and idiom of Hines' creative output will also be considered.

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Origins of National News Discrepancies in the United States: A Study of Newspaper Coverage during the Civil Rights Movement in Lexington, Kentucky

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→ **Journalism and Media Studies, History**
University of Kentucky, Kentucky, USA

Coverage of the Civil Rights Movement was largely neglected by local newspapers of Lexington, Kentucky. This decision caused a collective African American voice to be excluded from Central Kentucky's overarching narrative. Primary sources held at the University of Kentucky Special Collections Research Center and the Louie B. Nunn Center for Oral History will be examined for their portrayal of the Civil Rights Movement in Lexington, Kentucky. Research will establish discourse between a collection of historical images taken by the city's local newspapers at the time – the Lexington Herald, and the Lexington Leader – and audio and video interviews of Kentuckian civil rights activists. What events were covered by the newspapers? What events did not receive coverage? How did the neglect from a mainstream news source affect individuals in the struggle for equality? Events that were covered by the Lexington Herald and Lexington Leader during key moments of the movement will be identified, and the depiction of the city and surrounding regions by mainstream news sources will be compared to testimonies told by members of the African American community. By analyzing these two accounts of the Civil Rights Movement in Lexington, Kentucky, research will explore implications to solving the continued issues of wide discrepancies and exclusions of communities made by news sources today.

Hörsaal 3 / A 14 – 1 – 103

24
05

Program Overview

Friday, 24 May 2019

8.00 am — 9.00 am	Registration
9.00 am — 10.00 am	**Keynote** Anne Dippel & Sonia Fizek
10.00 am — 2.00 pm	**Master and Graduate Fair**
11.00 am — 12.30 pm	**Oral Session 3**
12.30 pm — 1.45 pm	Lunch Break
1.45 pm — 2.45 pm	**Poster Session 2**
2.45 pm — 5.45 pm	**Thematic Sessions**
2.45 pm — 5.45 pm	**Poster Session** Faculty & Coordinators
5.45 pm — 6.15 pm	Transfer City Center Departure Time depends on the Chosen Tour.
6.15 pm — 8.15 pm	**Social Program** Afternoon Excursion: Oldenburg City Tours
	Free Time to Explore Oldenburg and Its Culinary Delights See Food and Restaurant Guide in the Congress Booklet

OS 3

Oral Session 3

Environment
11.00 am — 12.30 pm
Hörsaal 2
A 14 – 1 – 102

Health
11.00 am — 12.30 pm
Hörsaal 1
A 14 – 1 – 101

Economy
11.00 am — 12.30 pm
Senatssitzungssaal
A 14 – 1 – 111

Communication
11.00 am — 12.30 pm
Seminarraum 031
A 14 – 0 – 031

Politics
11.00 am — 12.30 pm
Seminarraum 112
A 14 – 1 – 112

Create
11.00 am — 12.30 pm
Seminarraum 030
A 14 – 0 – 030

Characterizing the Biodiversity of Inland and Coastal Sabkhas in the United Arab Emirates

Eman Al Messabi
→ **Environmental Science, Sustainability Studies**
Zayed University, United Arab Emirates

Sabkha is an Arabic term for coastal and inland saline flat mud that is built up by the deposition of silt, clay, and sand in a shallow area. Sabkhas are commonly saturated with brine and thick salt crusts. The sabkha ecosystem offers a natural habitat for migratory birds and plant communities. Sabkhas are very important for biodiversity conservation and have a potential use in eco-tourism and environment education. There are two main types of sabkha areas: coastal and inland sabkha. In the United Arab Emirates (UAE), coastal and inland sabkhas are very abundant and despite the presence of several studies about sabkhas none have attempted to characterize the biodiversity aspect. This study aims to characterize the biodiversity in both inland and costal sabkhas in Abu Dhabi, the capital of the UAE. The design of the study is observational and experimental. Two inland and costal sabkhas were selected by random stratification for observation over the summer and winter season. Temperature and humidity were measured on site using specialized instruments for the soil and atmosphere. Moreover, temperature, PH, conductivity, and total dissolved solid (TDS) were tested for water. The visit was done twice in the summer during October and November and once during the winter in January. Plant biodiversity was collected by taking photos and online search for the name of species. The concluding results will be present at the time of the conference.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Judith Pajo

Evaluating the Effectiveness of Baa Atoll Biosphere Reserve: Assessment of Beneficiaries and Their Perception Towards Management

Fathimath Shazra Mueen
→ **Environmental Management**
Maldives National University, Maldives

The purpose of this paper is to provide an overview of the effectiveness of the Baa Atoll Biosphere Reserve (BABR). The study was done amongst the guesthouses, resorts, and fishermen to assess their perception towards the implementation of BABR and beneficiaries they get from the implementation of the BABR. Such studies are of paramount importance since it can give the insights of the effectiveness of the management of these projects. Moreover, it also helps to further understand the areas, which is needed in order to improve the effectiveness of the project. The data for the study was collected by conducting surveys and interviews among 29 respondents. Two sets of questionnaires with 10 questions were developed and given to the guesthouses, resorts, and fishermen. An interview was carried out with the BR office, outreach officer. Both fishermen and people engaged in tourism industry showed a positive attitude towards the declaration of Baa Atoll as a biosphere reserve. In terms of beneficiaries, the tourism industry seems to be receiving more benefits than the fisheries industry. The area is known for the abundance of two megafauna species, whale sharks and manta rays, most of the tourist visits during the off-season, where these giant species are spotted frequently. Hence, the number tourist arrivals increases during this particular period, benefitting the resorts and nearby islands within the area. Although fishermen did show a positive attitude towards a declaration of Baa Atoll Biosphere Reserve, some believe that it is quite disadvantageous for them since some reefs which were before used for bait fishing are now protected areas and such decision has made them travel farther from the island to get bait. The study could be further improved by increasing the sample size, locations, and additional stakeholders (students, women, farmers, and NGOs).

Hörsaal 2 / A 14–1–102
Discussant: Judith Pajo

Antibacterial Activity of New Sponge Species Isolated from the Qatari Marine Zone

Kamilia Zubir | Asma Ahmed
→ **Environmental Science, Basic Biological and Medical Research**
Qatar University, Qatar

The world is running out of antibiotics to combat bacterial pathogens. Sponges, which have evolved for over half a billion years are an excellent new source for the discovery of new antibiotics. Sponges are the most primitive multicellular invertebrates. They lived and have evolved in an aquatic environment that is constantly exposed to a wide variety of pathogens (Gonzalez & Moran 1997; Vogel 1977). Under these harsh conditions, sponges have developed effective antibacterial substances to fight infections (Gonzalez & Moran 1997; Proksch 1994). The western and southern coast of the Qatar Marine Zone (QMZ) is a unique ecological environment harboring sponge species. Little is known about the marine biodiversity of the QMZ or nearby regions. Unidentified sponges may offer an untapped resource for the discovery of new antibiotics. The aims of this research were to identify novel marine sponges and screen them for antibacterial activity. For this study, two sponges were isolated. Taxonomical examination was done on their skeleton and spicules. For the antibacterial activity, the crude extract for each sponge was separated into five fractions and were tested against 18 different reference pathogenic strains. We discovered two new species of sponges and classified them under the Aaptos and Chalinula genera, based on their morphological identification. Moreover, when their extract was tested against 18 pathogenic bacteria, we discovered that sponge Aaptos sp have antibacterial activity toward three Gram-positive bacteria. Specifically, Staphylococcus epidermidis, Staphylococcus aureus, and Enterococcus faecalis.

Hörsaal 2 / A 14–1–102
Discussant: Judith Pajo

Intergenerational Health Transmission in Uganda: Its Moderators and Persistence

Julia Ran
→ **Sociobiology**
University of Chicago, Illinois, USA

Children born to malnourished mothers are more likely to suffer from growth impairment – such is the phenomenon of intergenerational health transmission. Stunting affects more than 33% of children under five in Uganda, yet the connection between a child's nutritional status and maternal health is seldom studied in sub-Saharan Africa in general. Using maternal height as a proxy for long-term maternal nutritional status, this study explores the intertwined influence of health endowment from the previous generation and socioeconomic environment on childhood stunting. Logistic regressions and marginal analysis are performed on anthropometric measurements from 9,190 mother-child pairs recorded in Uganda Demographic and Health Surveys between 2001 and 2010, to examine the effect of maternal height, location of residence, and maternal education attainment on child's age-standardized height. The study found stunting to be almost twice as prevalent for children of the shortest fifth of mothers than for the tallest fifth. While urban residence and maternal secondary education magnifies the protective effect of maternal height against childhood stunting for non-stunted mothers, the high risk of stunting for child born to a stunted mother (<145cm) is unmoderated by socioeconomic improvement. A life-course approach to improving long-term maternal health is critical in tackling the global stunting epidemic.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Lynette Engeswick

The Influence of Sleep Practices, Chronotype, and Life-Style Variables on Sleep Quality Among Students at Rusangu University, Zambia

Joel Saboi Mvula | **Jimmy Kijai**
→ **Psychology**
Rusangu University, Zambia

While mysteries about sleep abound, studies propose sleep is pivotal in homeostatic restoration, thermoregulation, tissue repair, immune control, and memory processing (Walker, 2008). Sleep restores efficient learning ability (Mander et al, 2011) and poor sleep quality is associated with low Grade Point Average (Gilbert and Weaver, 2010). Students are unaware of how sleep deprivation negatively affects their cognitive competence (Pilcher and Walters, 2010). Universally, students develop poor sleep habits in attempts to meet various demands. The variations in statistics are based on cultural, country, and academic orientation. No statistics account for African central and southern regions on sleep practices among university students. The purpose of this study was to examine the influence of sleep practices, chronotype, demographic and selected life-style variables on sleep quality among students at Rusangu University, Zambia. A cross-section of students at Rusangu University ($n = 212$) reported about their sleep practices, chronotype, demographics, selected life-style variables and sleep quality as measured by the Pittsburgh Sleep Quality Index. While 79.2% reported poor sleep quality, the correlation of sleep hygiene and sleep quality was negligible ($r = .014$ to $r = .144$). Evening-types ($M = 2.17$, $SD = 0.28$) had significantly higher sleep disturbances than morning-types ($M = 1.11$, $SD = 0.17$) or neither-morning-nor-evening-types ($M = 1.20$, $SD = 0.15$). There were no gender differences on the linear combination of sleep quality indices. Neither were there differences in sleep quality across year of study. Staying up late significantly correlated with drug use ($r = .49$, $p < .001$) and sleep disturbances ($r = .21$, $p < .01$). Students with bad sleeping habits were more likely to take caffeine, psychostimulants, alcohol, and experience sleep disturbances. Thus, sleep quality may be related to sleeping hygiene, chronotype, and certain lifestyle variables.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Lynette Engeswick

SAM: A Development of Intelligent Medical Platform

Sippakorn Saeng-Aroon | Thanapong Chuangyanyong | Worachit Ketrungsri
→ **Robotics**
King Mongkut's University of Technology Thonburi, Thailand

Clinical Decision Support System (CDSS) and early stages diagnosis could benefit from the advancement in Artificial Intelligence (AI) and Machine Learning (ML) for medical purposes. However, research about the scalable, ML-based platform for medical purposes has seldom been discussed. Here, we present SAM MD, a cloud-based, open-source medical platform for CDSS, designed for detecting diseases that are recognizable by visual and patient assessment. To prove the capability of SAM MD, we test our platform by predicting the probability of Melanomas disease from images. The platform uses an open-source dataset provided by the International Skin Imaging Collaboration (ISIC), which has more than 30,000 pictures and metadata, and can classify melanomas disease using multiple models with high specificity and sensitivity. Our platform also offers plug and play devices and ML models to extend its capability providing CDSS for other diseases.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Lynette Engeswick

Profitability and Resource Use Efficiency of Pond Fish Production in Morang, Nepal

Dikshit Poudel | Hasta Bahadur Bista | Narayan Prasad Pandit
→ Agricultural Science
Faculty of Agriculture, Agriculture and Forestry University, Nepal

With absence of sufficient information regarding allocation of resources for pond fish production, fish farmers of Eastern Nepal are devoid of the remunerative profit of their product. The study was designed to determine the profitability and resource use efficiency of pond fish culture by applying Cobb-Douglas production function on the primary data collected from 30 commercial and 30 subsistence farmers. This study employed face-to-face interviews at the Prime Minister's Agriculture Modernization Project – zone (fish) implementation sites, Morang, Nepal. Primary data collected during December 2017 to April 2018 were also supported and cross validated using focused group discussion and key informant survey. The study revealed that the average cost of fish production was NRs. 128.57/kg and NRs. 205.25/kg with average net margins of NRs. 96.41/kg and NRs. 19.72/kg; and productivity of 4.32 t/ha and 3.12 t/ha, respectively in commercial and subsistence farms. Similarly, pond fish culture enterprise was found profitable in the study area as indicated by benefit cost ratio greater than one (1.87 in commercial farms and 1.33 in subsistence farms). The income of commercial farms was significantly higher (NRs. 76.94) than subsistent farms ($p < 0.01$). Lime and fertilizer, other costs, and pond rent per year were significantly affecting pond fish farming at $p < 0.1$, $p < 0.01$ and $p < 0.05$, respectively with 0.62 value of R2. According to study, it is suggested to reduce feed and labor; increase the use of lime, fertilizer, other costs, and pond. Adjustment of these resources as suggested from this study can enhance the productivity and efficiency of pond fish farming and ultimately the effectiveness of Prime Minister Agriculture Modernization Project – Fish Zone. Therefore, the fishery enterprise is in a stage of higher potentiality to increase its production in the study area.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Harald Mieg

Measurement, Quality Analysis and Improvement Strategies for Retail Services Companies in the City of Piura, Peru

Eduardo Sánchez | Stephanie Villanueva | Karen Alvitez | Fiorella Ruiz | Wenceslao Nuñez
→ Quality Management
Universidad de Piura, Peru

It is very complex to measure quality in the service industry. One of the reasons for the complexity is that the client is present while the service is done. Academics call this fact simultaneity (Lescano Duncan, 2003). A client considers that a service has high-quality standards when it meets their needs and expectations. The top management of the organizations is truly interested in this fact because it would allow them to identify strengths and weakness of the service. Retail is an economic sector in Peru that encompasses companies specializing in the mass marketing of products or services to large numbers of customers. According to the Peruvian Institute of Economics (IPE) it is estimated that by 2018 Peruvian retail industry will grow more than 4%. This is because Peru has a good policy of trade and low tariffs for most products that enter to the country. Through this research, the quality level of service companies in the retail sector of the city of Piura, Peru will be measured. The methodology proposed in the scientific article Determination of Indicators, Standards and Features of Quality Level in Service Companies is applied. This paper was presented in the WCECS: World Congress on Engineering and Computer Science 2015, organized by IAENG (International Association of Engineers), held in the city of San Francisco, United States of America, in October 2015. For the results of the study in the sub-sector department stores, they gave three standards for each sub-sector studied: department stores and supermarkets. Once the quality level has been evaluated, an exhaustive comparative analysis of the characteristics of each standard within the sector is carried out, and strategies are proposed that contribute to the improvement of the service, with the purpose of increasing these companies' level of quality.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Harald Mieg

Debt Financing and Profitability of Savings and Credit Cooperatives (SACCOs) in a Rural Economy: A Case Study of Rukiga SACCO in Western Region in Uganda

Faith Tumwebaze
→ **Social Sciences**
Uganda Christian University, Uganda

In developing countries, financing for small and medium enterprises (SMEs) is often provided by Savings and Credit Cooperatives (SACCOS) that are alternatives to the formal banking system in rural areas. These SACCOs are informal membership organizations that mobilize savings and offer credit facilities to SMEs and individuals to finance their businesses. The researcher was interested in establishing the nature of services offered by the SACCOs, the management challenges, and how debt financing impacts profitability of SACCOs in a rural economy. The researcher employed a descriptive case study research design with both quantitative and qualitative methods using Rukiga SACCO as a case study. Data was collected using questionnaire and key informant interviews from 50 respondents. Qualitative analysis was done using descriptive and inferential statistics while qualitative analysis was done using thematic analysis. Research findings revealed that SACCOs offer loan and credit schemes to its members, and many of the members are owners of SMEs as well as single business enterprises in local communities. The SACCOs promoted a conducive environment for the development of the businesses of its members. The management processes were more informal and flexible for members without prudent and high bureaucratic procedures for members to access the services. This explains why business owners in the rural economy find these SACCOs more attractive for debt. Correlation analysis revealed a positive relationship between debt financing and profitability of SACCOs in a rural economy. However, many of the SACCOs do not do a cost benefit analysis before going for debt financing which puts them at a risk. The researcher recommended that a selection of debt as a source of capital finance should be done in line with the costs and benefits associated with its use. Costs such as interest and agency should be weighed against the tax benefits of debts.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Harald Mieg

On the Influence of an Opponent's On-Court Position and Skill Level on Visual Anticipation of Stroke Direction in Tennis

Kim J. Huesmann
→ **Sport Psychology**
University of Oldenburg, Germany

In tennis, high spatiotemporal pressure requires that players predict an opponent's action outcome (e.g., stroke direction) to ensure timely reaction before definite ball flight information is available. Predictions may rely on movement- (i.e., kinematic) and non-movement-related (i.e., contextual) cues (Loffing & Cañal-Bruland, 2017). While the opponent's on-court position is a contextual cue known to affect skilled players' predictions (Loffing & Hagemann, 2014), the opponent's skill level might constitute another cue. Specifically, since shot placement is more precise in skilled than novice players, the latter might particularly prefer safer cross-court shots (Brody, 2006). Here we tested the combined influence of an opponent's on-court position and skill level on visual anticipation of stroke outcome. Thirty-two skilled tennis players watched videos of point-light animated forehand groundstrokes from the view of a player in the opposing half of a court. Strokes were executed at two positions (near to and far from midline) and they stopped at one of three time points (800ms [t1], 400ms [t2] before or at the moment of racket-ball contact [t3]). Upon the end of a video, participants were asked to predict shot direction (i.e., cross-court vs. down-the-line). The experiment comprised three blocks showing identical videos ordered randomly. While block 1 sought to replicate the isolated on-court position effect, blocks 2 and 3 aimed at testing the additional effect of an opponent's skill level (novice vs. expert; order counterbalanced). Analysis revealed that players predicted more cross-court shots against far than near midline shot at early occlusion (i.e., t1 and t2) and this pattern was reversed for shots stopping at t3. Skill level, however, was not found to substantially affect response behavior. Collectively, while our findings underline the impact of on-court position but not skill level, we still encourage continuing the investigation of the complex interaction of different cue sources on visual anticipation.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Karina Kedzior-De Santis

Physical Activity Counseling with Respect to a Set of Objectives and with a Taxonomy of the Muscular System

Geanina-Monica Tudor
→ **Computer Science**
University Politehnica of Bucharest, Romania

In today's society, which is heading towards a sedentary lifestyle, there is a greater need than ever to increase the daily activity level. More exercises are necessary for improving the physical condition, maintaining a healthy lifestyle, and reducing the risk of diabetes or coronary heart disease. Hence, the current European health policy is specifically encouraging the physical activity of children and young people. This goal is also supported by various applications available on the market, oriented towards specific goals like: planning individual training, finding a personal coach, or physical monitoring over time. In this context, our research targets an integrated approach, to provide such functionalities within a single application, by recommending a personalized training plan based on the objectives and the physical particularities of the user. The analysis phase consisted of: (i) a comparative study of free software available for various platforms; (ii) a study of the muscular system taxonomy; and (iii) a collaboration with a personal trainer, who was a world gymnast champion and provided useful information about the rules for generating a training plan based on predefined targets. Based on the resulted specification, the application was implemented using Eclipse IDE for Java EE Developers, MySQL, JavaServer Pages and servlets; HTML, CSS, and JavaScript were used for the frontend. A customized training plan was generated by adapting a bat-inspired metaheuristic algorithm for numeric intelligence, which looks for an optimal solution, where all the imposed constraints are respected; thus, the application maps the user's goals – regarding physical level, training purpose and bodyweight – to a relevant set of exercises, organized based on the muscle taxonomy and the recommendation rules. For validation, personalized training plans were elaborated for several test scenarios, and they were subsequently analyzed and approved by a professional personal trainer.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Karina Kedzior-De Santis

Lack of Reading Comprehension by Students of Grade 11 Stream "C" at Cristiano Paulo Secondary School

Helio Eugenio Antonio Rapassola
→ **Education**
Universidade Pedagogica, Mozambique

This theoretical paper discusses lack of reading comprehension by students of grade 11 stream "C" at Cristiano Paulo Secondary School. Reading comprehension plays an important role in the teaching process, especially in the Mozambican context, where English is a foreign language, and the process of learning depends mostly on the development of all language skills, mainly speaking, reading, writing, and listening. Therefore, it was observed that students of this class had a lack of reading comprehension skills, which lead them to score low results on marks resulting in inefficient learning of the English language. The ELT program emphasizes that students should be taught all language skills since the early stages of the learning process, in order to enable the efficient learning and use of them. The study was conducted with a total of five teachers and 82 students, whereby the sample was composed of two teachers and 12 students. In fact, the lack of reading comprehension skills is most related to inefficiency in teaching reading comprehension, reading comprehension strategies, and models not being applied effectively. This research concluded that teachers do not do efficient reading comprehension with students and there is a low-frequency of teaching reading comprehension skills. This problem can be overcome if teachers do efficient teaching of reading comprehension skills. They should also select effective reading strategies and models while teaching a reading comprehension lesson, and with that, students will be able to decode the meaning from varied types of texts, develop critical thinking, and bring better results to the ELT program.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Karina Kedzior-De Santis

Refugee Crisis: An Insight into the Resettlement of School-Age Children

Allison Haynes
→ **Cultural Studies, Human Rights**
University of Alabama at Birmingham, Alabama, USA

According to the United Nations, there are 25.4 million refugees worldwide, yet the resettlement rate is merely 0.4%. Over 13 million refugees are school-aged children who may not have access to proper education. Studies have shown that refugee students require more attention and resources than other language learners due to trauma, displacement, and limited educational backgrounds. To analyze this issue, I conducted a study to determine how language teachers perceived their ability to teach refugee students in Tennessee, USA. Through interviewing and surveying public school language instructors, I collected preliminary data suggesting a lack of teaching materials and time hindered teacher creativity. Additionally, inadequate training on students' backgrounds prevented teachers from providing individualized instruction, and teachers expressed that they wanted more collaboration with community organizations. After identifying these issues, I now propose that connecting community organizations with the public school systems can make the resettlement process easier. To test my hypothesis, surveys with open-ended questions and Likert-scale questions are being distributed to both community organizations and language teachers. Afterwards, I will interview them to learn their perspectives and ideate solutions. The findings of this study will translate into a global scale because the population of refugees has been increasing steadily, along with the need for resettlement. The results of my research promise to shed light on the refugee crisis, showing that resettled refugees benefit society, especially when they have access to a proper education. Ultimately, I am proposing a collaborative system that will assist the socialization of refugees in their new homes, thereby empowering them to become self-sustained and reducing the concerns over refugee crisis. Having an innovative system in place will expedite the acclimation of refugees to their respective regions while being conscious of their unique needs, thereby empowering them to finish their education and obtain a career.

Seminarraum 112 / A 14 –1–112
Discussant: Dana Jackson-Hardwick

How to Develop a Fair College Admission Test for Foreign University Students in Germany: An Overview

Benjamin Goecke | Johanna Hartung | Mattis Geiger | Selina Weiss
→ **Psychology**
Ulm University, Germany

Migration towards Germany is part of a common cultural heritage. Additionally, students from other countries also seek university education there. Therefore, the development of fair admission procedures for foreign students in Germany is of high relevance and especially interesting in the applied field of psychological assessment. In this context, test fairness is best understood as equal access to educational opportunities for subjects of equal ability level – independent of socio-economic status, cultural background, gender, and other variables. Hence, fair and psychometrically sound college admission tests are of utter importance for admission procedures, because these tests eventually ensure the eligibility of a person for a desired university education. However, the development of fair college admission tests is not trivial: previous research has shown that test fairness is still subject of scientific controversies. With our current project, we are providing a systematic overview of how to develop a fair college admission test. We demonstrate the development of fair admission tests and the evaluation of their fairness in the field of engineering sciences. We first compiled a tutorial for developing fair admission tests. Based on this tutorial, we systematically developed reasoning and reading comprehension tasks. These tasks were designed to fairly test the eligibility of applicants to study engineering sciences. The taxonomy of the reading comprehension test part was validated by a rating study with N = 68 German university professors. After the reasoning tasks were tested on N = 400 foreign and non-foreign students, their psychometric features were evaluated through established statistical methods (multiple group confirmatory factor analysis and item response theory). In general, working memory capacity demands were shown to be an important predictor of item difficulty. From a psychometrical perspective, the deployed tasks can be considered fair. Further implications for the development and the deployment of college admission tests are discussed.

Seminarraum 112 / A 14–1–112
Discussant: Dana Jackson-Hardwick

Academic Labor: The Race and Struggle Against Proletarianization

Nour El-Hakim
→ **Political Science**
The American University in Cairo, Egypt

The institution of the university is in crisis. Not only does the university emulate a model of corporation, but also higher education has become abstracted from its purpose: the exchange of useful knowledge. What is defined as useful is only useful for capital, not for the workers. The current corporate university needs to be analyzed in pure class terms, not in other fetishized frameworks that necessarily conceals the power relations embedded in it. In this current conceptual paper, I use a Marxian analytical framework to analyze academic laborers inside the institution of the university; a dialectical materialist analysis is imperative in exhibiting the processes of the capitalist mode of production, its contradictions, and the various ways it can be transcended (Ollman, 1978). I argue that academic labor does not fall astray from the mechanisms of domination and exploitation that the capitalist mode of production deploys to necessarily develop its production process. Professors who are waged workers, and students who are unwaged workers, are increasingly obliged to abide by the rules of the factory to increase and facilitate the accumulation of capital (Cleaver, 2000), namely through piecework, quality control, and overwork. Even though academic laborers perpetuate the values of the capitalist mode of production, their struggle against capitalist domination and exploitation inside the social factory has not gone unnoticed (Cleaver, 2017). This paper explores the ways in which academic workers constantly fight to achieve, on the one hand, a more critical pedagogical experience and, on the other, means of going against the rules prescribed by capital as a closer step to reach a just and equitable society for everyone. The institution of the university does not need further reforms, it needs to be revolutionized.

Seminarraum 112 / A 14 –1–112
Discussant: Dana Jackson-Hardwick

Critical Thinking in Mathematics Teacher Preparation: Teacher Educator Understandings, Beliefs and Use of Critical Thinking Teaching Strategies

Bukelwa Kumalo | Lukhanyo Boligello
→ **Mathematics Education**
Nelson Mandela University, South Africa

Critical thinking is believed to be one of the most valuable skills that schools provide for children and it has been a strategic learning goal across all subjects and levels for decades (Thompson, 2011). However, many students leave school without the critical thinking skills that are necessary to succeed in higher education or in the workplace. This situation has been attributed to an emphasis on test scores (Smith & Szymanski, 2013). Another reason why teachers do not teach critical thinking is that they have not been taught to do so during their teacher preparation programs (Choy & Cheah, 2009). This small-scale case study uses purposive sampling to investigate the knowledge and perceptions of four mathematics teacher educators' critical thinking teaching strategies in two universities, one in South Africa and the other in Germany: one in each university who teaches students who will teach at senior high school level, the others those who will teach at junior high school level. Data will be generated using a five-point Likert scale questionnaire on teacher educators' knowledge and perceptions of the importance of teaching strategies identified in the literature as being effective in terms of promoting critical thinking (Lai, 2011). Semi-structured interviews will be used to identify why the teacher educators believe that the strategies are important or not. Self-reflection will be prompted to explain why they believe these strategies are effective in terms of promoting critical thinking in their students and how often they use these strategies during their teaching. Concrete examples will be solicited whenever possible. The descriptive statistics generated will be used to frame the findings while the qualitative data will provide in-depth insights into the strategies the teacher educators' use, explicit examples as to how they use them, and why they believe they are important.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

Life, Liberty, and the Pursuit of Health: An Immigrant's Decision-Making as Influenced by Borders

Ayling Zulema Dominguez
→ **Social and Cultural Anthropology**
University of Chicago, Illinois, USA

Nicholas de Genova's concept of the border spectacle allows us to view borders as more than just lines on a map or a means of separating nations: they can and should be viewed as spaces of interaction, collaboration, and contestation which bring about the classification and filtering of peoples. Thus, it becomes easier to understand how physical borders are recreated in everyday life, one such way being the notion of illegality and the ways in which citizenship status affects migrants' experiences, encounters, and claims to rights and resources. These labels, incidences, and feelings become internalized by migrants. In doing so, borders and immigration impact personal health and well-being. This paper presents the story of an undocumented immigrant living in New York City, navigating the reconstructed borders found within the U.S. healthcare system. Upon analyzing this particular narrative, obtained via phone interview, I argue that immigration practices have a direct impact on physical and mental health, as well as an indirect impact through altered and limited decision-making. The results of hampered decision-making are not only confined to choices made surrounding one's health, but rather go so far as to impact the possibility and likelihood of an immigrant's repatriation. This paper aims to bring to light the distinct predicaments that an undocumented immigrant may face in trying to manage their health, in the hopes of overcoming misconstrued perceptions and prompting meaningful resolutions. Undocumented migrants need greater healthcare coverage and to be able to access it without a fear of deportation or of encountering recreated borders in places like the hospital or pharmacy. The stories and difficulties of undocumented immigrants navigating healthcare systems must be brought to light, with an emphasis on their physical and emotional resilience, as well as their willingness to demonstrate agency in decisions if granted the chance.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

Development of a Survey to Investigate Study Abroad Destination Choice

Nam Nguyen
→ **Psychology**
Washington State University, Washington, USA

Many students nowadays consider studying abroad during their undergraduate studies. We wish to learn why certain study abroad destinations are more common, and to understand better the different factors that influence destination choice. This study comprises two complementary efforts to produce a high-quality survey instrument to investigate the factors that influence study abroad destination choice. The first phase of this study used the cognitive interviewing technique. In this method, the interviewer sat down with a respondent and asked the respondent to verbalize what they were thinking as they complete survey items. This process provided a window into how respondents perceived, interpreted, and formed a response to survey items. Additional follow-up questions gauged reaction to the survey and solicited recommendations for improving it. The second phase of the study involves pilot testing a survey revised after the cognitive interview findings. Representatives of the study population will be invited to complete a paper version of the survey voluntarily. Item responses will be analyzed to guide further revisions. Eighteen (18) cognitive interviews were conducted, recorded, and transcribed. Each item from the interview was coded and assigned one of the following five themes: missing, misaligned, confusing, arduous, and success. Out of 32 items, 17 items received a "success" code ≥ 90% of the time and can be identified as highly-functioning items. The 15 remaining items went thorough consideration for revisions, and six categories of revision were explored: leave as is, eliminated, moved, phrasing revision, splitting revision, and exemplify revision. The survey has been revised and prepared in a professional, paper format for the second phase of the study. By completing these study phases, the research team will produce a tool for collecting high-quality data that significantly informs our understandings of undergraduate students and guides programming designed to counsel students through their study abroad experience.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

PS 2

Sustainable Approach for Green Pesticide Production in Kenya from the Croton Megalocarpus Trees

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Croton megalocarpus is a nut-producing tree found all over sub-Saharan Africa. While this tree offers many benefits to the local people such as shade, wind protection, and soil conservation, the inedible nuts it produces have long been thought of as a waste product. Currently, efforts are underway to press oil from the nuts for use as a biofuel, and the left-over seed cake has been found to be a great animal feed product. This still results in a waste product: the husks from the shelled Croton megalocarpus nuts. Using a process developed by the University of Kentucky Appropriate Technology and Sustainability (UKATS) research team, those wasted croton nut husks can be converted through slow pyrolysis into a product called wood vinegar. Studies suggest that diluting wood vinegar with water creates an effective non-synthetic pest repellent. The left-over biochar can also be pulverized and added to the soil as an organic fertilizer, resulting in almost a zero-waste use of croton nuts. The focus of this research is to determine both the effectiveness and the yield of wood vinegar from Croton megalocarpus husks as a function of moisture content, pyrolysis temperature, and condensing method. Response surface methodology (RSM) has been used to construct an experimental plan for the laboratory experiments. Results from large-scale testing in Kenya will also be analyzed to draw parallels between production in laboratory settings and production in underdeveloped regions. The purpose of this research is to analyze the effectiveness of the vinegar as well as optimize the recovery of wood vinegar and biochar from the waste husks.

Hörsaal 3 / A 14 – 1 – 103

Environmental Sustainability Implementation Process in Higher Education Institutions: An Exploratory Case Study of Klaipėda's Universities

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In higher education, the term "sustainability" is used to describe a positive movement towards environmental accountability, and social and environmental responsibility. Sustainable development (SD) is a contentious concept that has been present in many official agendas at higher education institutions (HEI) in the past, although progress on campuses has not been as fast due to lack of awareness, adequate conditions, and conservative structures. Thus, this research aims to explore how environmental sustainability (ES) is implemented in the three HEI in Klaipėda, namely LCC International University (LCC), Klaipėda University (KU), and Lithuanian Maritime Academy (LMA), and what barriers these institutions face during the implementation process. Facility managers of each HEI were interviewed, using questions drawn from Campus Sustainability Assessment Framework (CSAF) as well as previous research in the same field. The data was triangulated by a follow-up observation of the facilities based on interviewee responses. Content analysis, through hierarchical categorization, and testing the propositions with observation data revealed that European Union funding is a significant determinant of ES implementation, confirming the positive correlation between leadership initiation and implementation of ES. Additionally, a lower consideration for ES among the researched HEI was found to be a barrier. Energy reduction and energy stimulation practices were enforced in the HEI and community awareness of sustainability appeared to be high. Based on the findings, the institutions were ranked from highest to lowest ES implementor accordingly: KU received the early adopter rank, meaning SD is not the priority, while LCC and LMA were in the early majority rank, indicating SD is adopted slowly with reservations, based on the phases of implementation of SD model. Findings of this research indicate that HEI in Klaipėda are not fully adopting SD practices; however, suggestions provide a pathway to improvement for all HEI.

Hörsaal 3 / A 14 – 1 – 103

Energy Harvesting Using a Triboelectric Generator

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American University in Cairo, Egypt

The quest to exploit new energy sources has spurred interest in the field of energy harvesting, in which small amounts of energy can be extracted from environmental sources that are often wasted. In this research, a novel class of energy harvesters is designed using low-cost and commercially available materials. The harvester relies on the phenomenon known as the triboelectric effect, in which two dissimilar materials produce an electric charge when brought into physical contact. By designing suitable material pairs, the device can be engineered to produce an output energy that can be stored in a capacitor, which in turn can be subsequently used to operate wireless sensors. The development of autonomous devices represents a major leap in wireless sensor networks, since the costs of battery replacement would be substantially reduced, especially if these sensors are deployed in large numbers in inaccessible areas. The proposed device relies on cyclic contact and separation between a Teflon sheet and a polyurethane layer. These materials are chosen on opposite ends of the so-called triboelectric series for maximum power output. Unlike previous research efforts involving nano-fabricated surfaces, the chosen materials enable the extraction of significant amounts of power using cost-effective manufacturing processes. The materials are provided with conducting copper tape to serve as electrodes for collecting the generated charges. An experimental device has been fabricated and yielded an open-circuit voltage of almost 40 V when the two layers are manually brought into contact. Research is being conducted to study the effect of various parameters, such as speed, surface area, and separation distance, on the generated power in an attempt to optimize the design parameters. The device is designed to operate under cyclic loads, as every pulse produces power. These triboelectric generators can be used in various applications, such as wearable and remote sensors.

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The Growth of Super Foods Under Mars Lighting Conditions

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This report considers the challenges NASA, SpaceX, and other private companies will face in the approaching two decades when sending astronauts on missions to Mars. The longest exploration is planned to take place in the 2030s, sending a crew of, at minimum, four astronauts to Mars for a year of research. The research conducted is assisting NASA, SpaceX, and alike companies, to explore the ways to grow a complete diet on a planet that does not receive enough sunlight. Agriculture in enclosed and buried structures on Mars will enable astronauts to conduct extended surface exploration missions. We evaluated a deep-water culture indoor hydroponics system to grow Moringa oleifera, a nutrient- and antioxidant-rich plant with leaves containing all nine essential amino acids. After initial aquaponic growth and three prior harvests, the lighting intensity was set to 590 W m-2 in a twelve hour on/off cycle, in normal indoor atmosphere. This simulates an ambient light collection and reflection system on Mars illuminating an insulated, pressurized underground chamber for agriculture. All plants (N = 32) were harvested 17 times over a 9-month period at regular intervals, when plant heights reached an average of 0.9 m. Consumable leaf yield averaged 0.18 dry g per plant per day. Data suggest M. oleifera as a perennial hydroponic crop is possible under reduced illumination, and is a candidate food source for Mars explorers. Preliminary research has expanded to utilizing natural light, five additional plants, three more hydroponic systems, and solar power. Currently, a solar powered eight by twelve-foot greenhouse is being used to hydroponically grow goji berries, moringa, bamboo, kale, chia, and sweet potatoes. When these foods are combined, they contain a complete necessary set of amino acids, vitamins, minerals, fiber, carbohydrates, and nutrients for a balanced human diet. The plants receive 590 W m-2 by utilizing a shade cloth over the entire greenhouse and the solar panels. In conclusion, the report states that NASA and alike companies will obtain valuable stepping stones in future missions to Mars by maximizing the growth of superfoods with utilization of natural light, and a focus on a hydroponics system as the farming method for space.

Hörsaal 3 / A 14 – 1 – 103

Investigation of the Catalytic Activity of Zeolites in the Conversion of Ethanol

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The scientific community is now looking for alternative sources of fuel and chemicals, which are the products of oil refining, for several reasons. Firstly, oil reserves are limited and, secondly, its processing is harmful for the environment. The precursor of bioethanol is a variety of biological waste and because of it this is a cheap and renewable resource, which can be obtained by fermentation. For this reason, catalytic dehydration of bioethanol is a very promising reaction. During this process two very valuable products are formed for industry application: ethylene and diethyl ether. One of the most common catalysts for ethanol conversion are zeolites. They are aluminosilicates with unique properties, such as well-defined pores and high catalytic activity, which is caused by the presence of acid centers. A great number of types of frames exist in zeolites, and the type of frame affects the catalytic properties. In addition, these aluminosilicates have different molar ratio of silicon/aluminum. Moreover, particles of different metals and their oxides can be introduced into the zeolite. All these factors, of course, affect the catalytic activity. Therefore, the investigation of zeolites with a different ratio of silicon/aluminum and with various additives is relevant. The main goal of this work was study of the transformation of bioethanol into ethylene and diethyl ether with zeolite catalysts of ZSM-5 type: ZSM-5(25), TiO2/ZSM-5(25), ZSM-5(40), and TiO2/ZSM-5(40). The results show that ethanol conversion was the same on all samples. Moreover, doping with titanium dioxide does not significantly affect the catalytic activity of the samples, but a system with a low ratio of silicon/aluminum with the addition of titanium dioxide led to complete deactivation. In this way, adding titanium dioxide is irrelevant for obtaining ethylene and diethyl ether.

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Fungal Degradation of Polyurethane Foam in the Home Environment

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People spend about 90% of their time in an indoor environment where there are many exposures to toxic compounds that can be unintentionally inhaled or ingested. One carcinogenic compound that is of concern is 2,4-diaminotuleune(2,4-DAT). This is a human carcinogen that is released into the indoor environment during the degradation of polyurethane foam. Polyurethane foam is a very common household material found in many objects such as mattresses, cushions, and sports equipment. Degradation of polyurethane may occur due to biological growth of different fungal species on the foam that are naturally present indoors. This is relevant not only to the United States but also to many other countries that commonly use polyurethane foam and want to limit harmful exposures to its citizens. The goal is to study fungal degradation of polyurethane foam. This was done through incubating new and old foam samples with fungi for 21 days. Some samples were spiked with Aureobasidium Pullulans and some were blank as controls. Different agars were used to test nutrient needs for growth. Data indicates the fungi need another carbon source to degrade the foam which could come from dust in homes. Weights of the samples were recorded before and after moisture levels were controlled to 30% relative humidity. An average weight lost per sample was 31 percent ranging from 0.0013 grams to 0.1583 grams lost. Images of the samples were taken before and after incubation on a Scanning Electron Microscope to show fungi growth and foam structural changes. Spore chains and hyphae were observed wrapped around the foam indicating growth. The samples were examined under a light microscope and structural changes after incubation were evident. Ultimately, fungi have been observed causing structural and weight changes in polyurethane foam and growing on it. More studies are required to learn whether 2,4-DAT is released as a result.

Hörsaal 3 / A 14 – 1 – 103

Mind Over Matter: Intelligent Quantum Dot Synthesis Enabled by a Modular Continuous Flow Reactor

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Inspired by biological processes, artificial neural networks (NNs) and computer-simulated genetic algorithms are affordable, accurate approaches for rapid input/output parameter space mapping and optimization of complex, multi-variable processes with large, diverse data sets. In this project, we capitalize on the immense set of data points obtained and the complex nucleation and growth pathways observed for quantum dot (QD) production in an automated flow synthesis platform to precisely map the synthesis input conditions to the final optical attributes of the nanocrystals (e.g., emission bandgap, size distribution, and quantum yield). Such NN frameworks can enable on the fly optimization and on demand synthesis of high-quality QDs with desired optical properties tailored toward a target application in optoelectronic devices. A feed-forward NN with a set of predetermined layouts and training algorithms was screened to achieve the optimum NN structure resulting in minimum validation error while avoiding overtraining. The optimized NN model was then utilized for rapid property optimization of colloidal cesium lead halide perovskite QDs using a genetic algorithm. The "fitness" of randomized precursor sets was scored based on their predicted performance in maximizing quantum yield and minimizing the polydispersity of nanocrystals for a target emission bandgap. These fitted sets were then randomly altered to simulate a variable "mutation" to create a new, "fitter" precursor generation. Population sizes, number of generations, and frequency of "cross-over" and "mutation" were varied systematically to determine the best optimization model. The developed NN-based optimization strategy was then integrated with the automated microfluidic platform to enable autonomous synthesis of high-quality perovskite QDs at a throughput relevant to large-scale photovoltaic manufacturing. The creation of monodispersed, high yield, and chemically stable QDs has implications in affordable, accessible photovoltaics, LEDs, and solid-state lighting worldwide, and the modularity and versatility of this approach will allow other solution-phase processes to similarly be optimized in flow.

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Virtual-Reality Training Enhances Children's Working Memory, Processing Speed, and Visual-Spatial Memory

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Pedestrian injury mortalities comprise one-third of all child road traffic deaths worldwide (WHO, 2014). Virtual reality (VR) pedestrian training has successfully taught children safe street-crossing skills, allowing them to practice perceptual and cognitive skills needed for pedestrian safety (Schwebel et. al, 2017). For example, schoolchildren in Changsha, China improved self-efficacy to cross streets after training in pedestrian environments using smart-phone based VR (Schwebel et. al, 2017). While VR is effective, little is known about mechanisms that may underlie its efficacy: What aspects of children's cognition improve through pedestrian training in VR? This study investigated three possible factors: working memory (short-term memory of stimuli), processing speed (speed to process learned information), and visual-spatial memory (short-term memory of visual-spatial stimuli). 120 schoolchildren ages 7–8 (mean = 8.0 years, SD = 0.6; 41% male; 52% African-American, 43% Caucasian) completed working memory and processing speed assessments using the WISC-V, a standard measure of intelligence. Visual-spatial memory was assessed using "Mr. Peanut," a computer-based interactive game in which children viewed a figure decorated with colorful stickers and then recalled sticker colors and locations. Assessments were completed before and after children completed a series of smartphone-based VR street-crossing training sessions. On average, children mastered adult-level safety after 10 VR training sessions (SD = ±3). After training, statistically-significant improvements were found in children's working memory ($t(119) = 2.83$), processing speed ($t(119) = 2.87$), and visual-spatial memory ($t(119) = 2.41$, all $ps < .01$); results remained consistent after stratifying by sex, race, or baseline age. VR training on street-crossing led to clear improvements in working memory, processing speed, and visual-spatial memory, suggesting cognitive-skills training could enhance safe child pedestrian behaviors and VR could improve cognitive skills that extend beyond the primary goals of the VR training. With ready access to smartphones, gradual implementation of VR-based training could improve global child pedestrian safety.

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Impact of Body Composition on Global Esteem in College Age Women

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Previous research has shown that women tend to score lower on surveys regarding their physical self-concept. There is much speculation regarding the reasons for decline of physical self-concept with age. The purpose of this study was to determine if the classification of BF% impacts global esteem in women. Forty-two traditional-aged (18 – 25y) women participated in this study. Anthropometric data were recorded and BF% was measured using an iDXA (GE Lunar iDXA, Waukesha, WI). Each participant completed the PSDQ survey. A multivariate analysis of variance (MANOVA) was used to determine whether a difference between groups existed in global esteem, a global component of physical self-concept. The women were divided into two categories based on BF% (Healthy ≤ 32%, n = 19; Overfat > 32%, n = 23). Results: There were no significant differences between groups in global esteem indicators based on body fat, Wilks' lambda = .865, $F(5, 36) = 1.120$, $p = .367$. Discussion: The lack of significant differences in the global esteem measures may be attributed to an outward appearance in line with societal norms associated with beauty, further strengthened by waist hip ratio and waist circumference data. Additional research is needed to further elucidate the mechanisms associated with physical self-concept in young women.

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Evaluation of Lung Capacity Utilizing Serial Peak Flow Resulting in Students from 6–12 Grade Participating in Band

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Improving lung function and addressing breathing difficulties among younger children with asthma or similar pulmonary dysfunction is a common challenge in pediatric practice. To explore spirometry testing on middle school adolescents, we hypothesized that participating in the school band using wind instruments would improve lung capacity. 90 students originally participated in data collection for the study. The project, measuring pulmonary functioning through spirometry testing, involved various components including force vital capacity (FVC) and force exertion volume in one second (FEV1). Data collection included height, weight, age, history of pulmonary issues, specific instruments played, smoke exposure, and athletic participation. From the original 90 students that participated, only twelve were selected to view data based on criteria such as performing a wind instrument. Upon our preliminary results in this longitudinal study, we currently have inconclusive findings based on the data gathered. There seems to be a trend within the wind instruments that demonstrates an increase in FEV1 and the ratio FEV1/FVC. With regards to the FVC, more than 50% of the participants demonstrated a decrease during post testing. These results should be interpreted with caution due to the preliminary nature of this study. The unexpected decrease in FVC would suggest reduced expiration of air with band participation. However, this research had unique considerations and limitations. There was only one school that agreed to participate in all parts of the research. Additionally, we faced certain challenges that could have affected our data, such as improper use of the spirometer and participation in other activities that may have influenced the tested variables.

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Assessment of Oral Health Knowledge, Attitude and Practices Among Pupils in Buleega Primary School (Buikwe District) and Those in Nakasero Primary School (Kampala District)

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The knowledge, attitude, and practices on oral health care can highly affect one's future appearance and general health. Although resources are being directed towards oral health promotion, the impact of the oral health care system in Uganda has not yet been comprehensively measured in terms of effectiveness, coverage, efficiency, and equity thus raising concerns due to a lack of means of measuring how resources allocated to oral health are being utilized. This research intends to address the academic field of public health. The purpose of this research is to assess oral health knowledge, attitude, and practices of pupils in Buleega primary school, Buikwe District, and those in Nakasero primary school, Kampala District. A review of the literature on the oral health knowledge, attitudes, and practices among pupils in Uganda demonstrates poor results on the issue with an increasing prevalence trend. The study design will be a descriptive cross-sectional study employing a quantitative and qualitative approach using interview methods for data collection and analyzed manually. Collected data showing the situation of respondents will be presented in numbers to the second World Congress on Undergraduate Research. In conclusion, the research results will provide epidemiological data at a baseline for appropriate planning, implementation, and education of oral health care programs thus improving and promoting oral health status not only in Uganda but also Africa and worldwide.

Hörsaal 3 / A 14 – 1 – 103

Brain Activity During Viewing and Describing of Emotional and Neutral Pictures

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Emotions, such as anger, fear, or disgust, are central aspects of human life. What happens in the brain if someone views an emotional scene expressing, e.g., fear or disgust compared to a neutral one? And what happens in the brain if someone describes an emotional scene? We used functional magnetic resonance imaging (fMRI) to study brain activity during picture viewing and describing in 12 young healthy participants. fMRI is able to localize brain activation during different experimental conditions. fMRI was performed on a Siemens Prisma MR scanner at 3 Tesla field strength. Our experimental conditions were: NV (viewing a neutral scene), ND (describing a neutral scene), EV (viewing an emotional scene), and ED (describing an emotional scene). Neutral and emotional pictures were taken from the Nencki Affective Picture System. fMRI data were analyzed using standard statistical methods based on the general linear model as implemented in the software package FSL. During viewing (NV, EV) we found strong and widespread activation of the occipital cortex. During describing (ND, ED) we found bilateral activation in the supplementary motor area, pre- and postcentral cortex, basal ganglia, cerebellum, and superior temporal cortex, in addition to occipital activation. Viewing an emotional scene is associated with increased activation in parts of the bilateral occipital cortex and the right postcentral gyrus compared to viewing a neutral scene (EV-NV). Describing a neutral scene is associated with stronger activity in the bilateral parietal cortex as well as the right frontal and temporal cortex compared to describing an emotional scene (ND-ED). These results suggest that the emotional valence of visual stimuli modulates not only the activity of the visual cortex during viewing, but also of more widespread parietal, temporal, and frontal areas during speaking.

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Development of an Infant-Specific Toy Kit for Research in Rehabilitation of Arm and Hand Function

Brianna Sowers | Helen Carey | Olena Chorna | Ellyn Hamm | Mary Ann Nelin
Jill Heathcock | Jennifer Williams | Nathalie Maitre
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Cerebral palsy (CP) is the most common movement disorder in children. Two effective and well-studied interventions to improve upper extremity function in children with hemiparetic CP are constraint-induced moment therapy (CIMT) and bimanual therapy (BIMT). While researchers and therapists have identified toys for these interventions in older children, none existed for infants under two years. Our goal was to develop infant-specific toy sets to facilitate goal-directed tasks and developmental progression during effective rehabilitation. This project was part of the APPLES study, "A Positive Parent-focused training for upper Limb Experience with Sensory-motor feedback study". This NIH-funded randomized controlled trial uses BIMT and CIMT to train reach and improve sensorimotor function in 72 infants with hemiparetic CP (9–24 months corrected age). Four categories of toys were identified based on their intended task: 1) bimanual toys, 2) unimanual toys for sensory therapy, 3) unimanual toys for reach-training, and 4) toys used for distraction during study assessments. Initial selection was from published literature, then modified based on child size, developmental abilities, and task. Three treatment fidelity sessions in four weeks allowed refinement of the toys based on scored examiner and parent feedback. Based on parent treatment fidelity and infant performance on standardized tests, we developed four sets of toys with three to five toys in each set, allowing for four developmental/ability stages. Results indicated that the initial selection of primarily auditory and visual characteristics was insufficient to maintain infant interest and textural elements were added. Additionally, a full range of weights within object categories was developed (e.g., balls from 0.25 to 1.5 kg) to allow for increasing effort. We developed infant-specific toy sets easily used by parents during BIMT and CIMT. Because our study follows infants to 36-months, the next project will address the developmental needs and cognitive abilities of toddlers.

Hörsaal 3 / A 14 – 1 – 103

Social Cognition in Adults with Attention-Deficit Hyperactivity Disorder (ADHD) and the Relation Between ADHD Symptoms and Depression Scores

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Attention deficit-hyperactivity disorder (ADHD) is a psychiatric disorder with childhood onset and high rates of persistence into adulthood. Beside the core symptoms of hyperactivity, impulsivity, and inattention, social dysfunction is a characteristic symptom from which young and adult patients suffer. Despite this, social cognition in adults with ADHD has been rarely investigated. A frequent comorbidity of adult ADHD patients is depression, which can also be associated with social cognition deficits. However, the occurrence of depressive symptoms in adults with ADHD might also partly arise from severe interpersonal problems that result from social cognitive impairments. Thus, deficits in social cognitive abilities can considerably decrease patients' quality of life. A more detailed exploration of social cognitive deficits and depressive symptoms in adult ADHD patients seems important, since a profound knowledge about these aspects and their interrelations might assist in the specification of ADHD treatment plans. The present thesis was firstly intended to explore whether adult ADHD patients show significant deficits in performance on a social cognition task when compared to healthy controls. The second aim was to examine whether a relation between the degrees of ADHD and depressive symptoms exists concerning the ADHD group. To approach this, for 26 adult ADHD patients and 26 healthy controls scores of neuropsychological tests evaluating theory of mind (ToM) abilities, level of depressive symptoms, present ADHD symptoms, and retrospectively assessing ADHD symptoms in the participants' childhood were analyzed. Considering the limits of the present study, the results implicate distinct social cognitive abilities for distinct exhibited characteristics of adult ADHD patients, and, therefore, challenge the purpose of general statements about social cognitive impairments and depression symptoms in adults with ADHD. The findings further highlight the importance of regarding the particularities of ADHD and comorbid symptoms concerning the design of individual treatment plans for ADHD therapy.

Hörsaal 3 / A 14–1–103

Photocaging Technique for the Targeted, Spatiotemporally Controlled Release of Substances That Alter Hormone Metabolism

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This research project is a proof of concept to determine the viability of a technique using photocaging and de-caging for targeted, spatiotemporally controlled release of chemical compounds that alter the activity of cytochrome P450s, enzymes that metabolize eicosanoid hormones, steroid hormones, drugs, and other medically important compounds. This technique involves the attachment of a p-hydroxyphenacyl photo-sensitive protecting group onto an active compound and subsequent release of the protecting group using UV irradiation. If effective, this technique can be transferred to a wide variety of applications. For example, this caging and de-caging technique could be used to interfere with the production of a hormone found in the human body, 14,15-epoxyeicosatrienoic acid (14,15-EET). The eicosanoid 14,15-EET is important for cardiovascular function and has a multitude of biochemical effects on the human body. The metabolism of arachidonic acid by a specific cytochrome P450 enzyme is known to selectively produce 14,15-EET. In patients with cancer, 14,15-EET has been found to increase resistance to the chemotherapeutic drug cisplatin and to promote proliferation of tumor cells and metastasis. Therefore, the inhibition of this hormone has promising biological and medical significance. To test the practicality of this caging and de-caging technique, photocaged acyl amino acids were synthesized as protected substrates for the enzyme P450BM-3, a fatty acid monooxygenase. UV irradiation was found to provide effective release of the acyl amino acids from the p-hydroxyphenacyl protecting group. Enzyme kinetics and interaction assays were used to determine that caged N-palmitoyl glycine, N-palmitoyl leucine, and N-palmitoyl-L-methionine bind with much lower affinities to P450BM-3 than their natural, uncaged forms. The use of these photocaged compounds to interfere with the production of the hormone 14,15-EET is currently being investigated. Altogether, these results support the viability of this technique for medicinal applications involving lipid hormone production by cytochrome P450 enzymes.

Hörsaal 3 / A 14 – 1 – 103

Castor Oil: A Novel Topical Treatment for Blepharitis

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Dry eye disease is one of the most common reasons for ophthalmological patient visits globally, affecting as many as one in every two people. It is commonly associated with chronic eyelid inflammation (blepharitis), causing symptoms that range from ocular dryness and discomfort to loss of ocular surface integrity and even vision loss. With no known cure for blepharitis, current treatment strategies are largely palliative, with inflammatory episodes managed with broad-spectrum antibiotics and steroids. Home-applied therapies are often perceived to be inconvenient, expensive, and relatively ineffective, leading to dissatisfaction in both clinicians and patients. Castor oil, a derivative of the Euphorbiaceae plant family, has been widely used therapeutically in traditional medicine due to its antibacterial, anti-inflammatory, and emollient properties. In vitro, castor oil inhibits the growth of Staphylococcus aureus, a microbe that over-colonizes the eyelids of 46 to 51% of blepharitis patients. In vivo, castor oil has demonstrated anti-inflammatory properties in an animal model of blepharitis. This study sought to evaluate the clinical safety and efficacy of 100% organic cold pressed castor oil applied to the eyelids for the management of blepharitis in humans. In a prospective, randomized, paired-eye, investigator-masked clinical trial, 28 blepharitic subjects applied castor oil immediately adjacent to the eyelash line on both upper and lower eyelids of one eye (randomized) twice daily for 4 weeks. Clinical signs and symptoms assessed using validated methods at baseline and day 28 were compared between the treated and untreated eyes. Treated eyes showed significant improvements in the lid margin disease characteristics associated with blepharitis ($p<0.05$). Well tolerated by participants, and with no reports of irritation or discomfort, preliminary data suggest that topical application of castor oil to the eyelids may offer a safe, effective, and natural treatment alternative for blepharitis.

Hörsaal 3 / A 14 – 1 – 103

Environmental Enrichment and Optimal Physical Activity Modulate Recovery to Traumatic Brain Injury

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Traumatic brain injury (TBI) is a major public health issue affecting two million people in the United States each year, and millions more worldwide. Primary insult prompts a rapid neuroimmune response characterized by inflammation and metabolic dysfunction, increasing the nervous system's vulnerability to subsequent TBI. To prevent excessive strain on vulnerable cells, an extended period of physical rest is the current standard of care for TBI, yet there is little consensus on the benefit of this recommendation. In practice, aerobic exercise is consistently neuroprotective in animal models of brain injury. Mice in enriched housing with greater social stimulation and physical activity have also been shown to have greater motor, cognitive, and histological benefits after injury. Furthermore, prolonged rest has been shown to exacerbate post-concussive symptoms (depression, cognitive deficits, headaches, etc.). We hypothesized that housing animals in enriched environments after a mild TBI would render animals less vulnerable to a subsequent brain injury, and that moderate physical activity would minimize pathology/decline after TBI. In two studies, young adult mice received an injury replicating TBI, before being placed in enriched environments or varied-intensity exercise conditions. Animals were then assessed for cognitive deficits, anxiety- and depression-like behaviors, motor deficits, and tissue damage. Our data indicate a modulation of cognitive measures in animals from enriched housing environments and increased exercise intensity conditions. With long-lasting consequences for behavior, cognition, and brain health, these outcomes suggest a potential need for revised clinical approaches to physical and cognitive rehabilitation of patients. The ideal course of treatment for improved outcomes from TBI is of immense importance to the field of medicine and larger society itself.

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Home Dialysis Patients' Perspectives on the Utilization of Patient-Reported Outcomes: Keep Me Involved!

Rita Iradukunda
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Patient-reported outcomes (PROs) have increased in importance as a means of improving person-centered care. However, the integration of PROs in dialysis remains unexplored. Furthermore, patients living with end-stage kidney disease and on dialysis have not been consulted about how they would like their PRO information to be used in their care. The purpose of this research was to explore how home dialysis patients would like their PRO information to be used in their routine care. Using a qualitative descriptive design, we conducted six patient focus groups (n = 27), and seven patient interviews (n = 7). All interviews and focus groups were audio-recorded, transcribed, and coded using NVivo. Thematic analysis was undertaken to answer the research question. The average age of the 34 patient participants was 53.2 years. The majority were men [21/34 (61.8%)]. Home dialysis patients identified that they would like their PRO data to be used in their care for 1) following-up on "how are you doing?", 2) integrating with "the big picture" over time, 3) sharing information within and across healthcare providers, and 4) engaging in shared decision-making. As recommended by these participants, use of PRO reports and trends over time may enable patients to participate in their care as they collaborate with their multidisciplinary care providers. Integrating PROs in their care may create opportunities for patients to advocate for themselves and join in care decision-making, thereby promoting a person-centered approach to care.

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Screening for Lower Extremity Peripheral Artery Disease in Patients with Type 2 Diabetes and Hypertension

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Simultaneous occurrence of hypertension and type 2 diabetes results in accelerated atherosclerosis. Moreover, narrowing of arteries in lower extremities can stay asymptomatic for a longer period. Aim is the screening of lower extremity peripheral artery disease in diabetic and hypertonic patients with elevated risk of cardiovascular disease and the determination of the frequency of asymptomatic peripheral artery disease. The ankle brachial index (ABI) was examined in 430 patients with hypertension and type 2 diabetes. The certified BOSO ABI-100 System was validated and used to measure ABI. ABI was abnormal under 0.9 according to guidelines. The average age of patients (202 males and 228 females) was 68.6 ± 8.1 years. 80.9% were regularly on antihypertensive drug regimen. Diabetes was treated with lifestyle changes (5.1%), by oral medication (62.6%), exclusively with insulin (23.7%), and only 8.6% received tablets in combination with insulin. Statin was taken by 48.4% of patients. More females took antihypertensive drugs and more males took statins (77.2% vs 84.2%, $p < 0.01$ and 50.5% vs 46.5%, $p < 0.05$). 17.8% of our patients had previously experienced acute coronary syndrome and 5.3% had a stroke. As for male patients, we measured reduced ABI for 29.7% on at least one side. ABI was abnormal on both sides for 17.3%. 17.1% of all females had abnormal ABI <0.9 and for 7.9% ABI was less than 0.9 on both sides. ABI is a painless screening method for patients without ailments but with high cardiovascular risk. Since we found abnormalities in 23% of our sample, ABI screening is highly recommended as a quick method of prevention. Early diagnosis and a timely introduced treatment can result in remission of disease progression.

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Estimating Seroprevalence of Dengue and Chikungunya Viruses Among Blood Donors in Qatar

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Data describing the seroepidemiology of dengue and chikungunya are lacking in Qatar despite increasingly frequent reports of outbreaks and endemic transmission in the greater Middle East and North Africa (MENA). Our method involved collecting sera from blood donors ≥ 18 years of age attending Hamad Medical Corporation in Qatar from 2013–2016. Sera were tested for DENV and CHIKV IgG using commercial microplate enzyme linked immunosorbent assay (ELISA) kits. Age-specific seroprevalence was summarized by region/nationality: Asia (India, Philippines), Middle East (Iran, Jordan, Lebanon, Pakistan, Palestine, Syria, Yemen), North Africa (Egypt, Sudan), and Qatar. Logistic regression was used to estimate adjusted odds of DENV and CHIKV seropositive. Among 1,992 serum samples tested, the country-specific prevalence for DENV and CHIKV IgG, respectively, was: Egypt (20.1%, 5.5%), India (62.5%, 11.0%), Iran (5.3%, 0%), Jordan (4.5%, 0.5%), Lebanon (5.2%, 0.9%), Pakistan (20.0%, 1.5%), Palestine (8.5%, 3.0%), Philippines (95.8%, 17.7%), Qatar (3.5%, 3.5%), Sudan (48.5%, 5.2%), Syria (13.0%, 0.5%), and Yemen (24.2%, 2.7%). Asia nationals had significantly higher adjusted odds of being DENV (62.5–95.8%) and CHIKV (11.0–17.7%) seropositive compared to MENA nationals ($P < 0.001$). The adjusted odds of being DENV seropositive were significantly higher among CHIKV seropositive adults, and vice versa (aOR 1.94, 95% CI 1.09–3.44). The study concluded that exposure to DENV and CHIKV is low among Qatar and other MENA nationals compared to Asian nationals, suggesting a lower burden of DENV and CHIKV disease in the MENA. Antibodies to both viruses were detected in nationals from all MENA countries except Iran, supporting the need for further research to understand the epidemiology of DENV and CHIKV in the MENA.

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Tai Chi in the Treatment of Parkinson's Disease: The Quality of Systematic Reviews

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Parkinson's disease (PD) is a new global challenge due to the aging of the world population. One alternative method to managing PD is the traditional Chinese mind-body practice of tai chi. The current study aimed to assess the quality of systematic reviews regarding the therapeutic use of tai chi in PD. Following a search of electronic databases (PubMed and PsycInfo until February 2018) both authors independently selected ten systematic reviews with terms 'tai chi and PD' in titles/abstracts, published in 2008–2017. The review-quality was assessed independently by both authors using A Measurement Tool to Assess Systematic Reviews version 2 (AMSTAR2). The overall quality of all reviews was low to critically low according to AMSTAR2. High quality scores were given for the comprehensive literature searches, explicit study selection criteria, objective data coding done in duplicate, adequate description of studies, and reporting if the conflict of interest occurred (90% of reviews each). Although 100% of the reviews assessed the quality of the included studies, only 70% of the reviews included this assessment while discussing the differences among study results. Low quality scores were given because only 50% of the review authors selected studies in duplicate, 20% investigated the differences among included studies statistically, and 10% pre-registered their review protocol or provided a list of the excluded studies. Critical problems were that none of the reviews used appropriate statistical methods to pool the quantitative results, assess the publication bias, or report the funding sources for the studies in the reviews. Although most reviews showed that tai chi improves some PD symptoms, the clinical application of these effects remains unclear due to the insufficient quality of the systematic reviews. The quality of systematic reviews could be improved by adhering to AMSTAR2 and other current guidelines for such reviews.

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Limited Changes in Impedance and Current with Constant Voltage in Patients with Bilateral STN or VIM DBS

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There exists an ongoing debate about the modification of constant voltage or constant current stimulation and their effects on long-term changes in impedance in studies evaluating the use of Deep Brain Stimulation (DBS) over time in patients with Parkinson's and Essential Tremor. As a common practice, changes in voltage are used to better control the motor symptoms over time after the implementation of the electrodes. However, other changes to stimulating parameters such as pulse, width, frequency, or the configuration of the active contacts (different active contact or switching from monopolar to bipolar settings) are also made to improve the motor symptoms or reduce the side effects during patient visits. Therefore, to analyze the true changes in impedance over time, this study looks to control conditions of these additional stimulating parameters. Understanding if there exists a necessity for changing modifications from constant voltage to constant current is essential for the quality of long-term treatment for patients with Parkinson's Disease and Essential Tremor using DBS. The study was approved by Institutional Review Board at the University of Chicago. Retrospective data was collected from the charts of patients with bilateral DBS (STN and VIM) conducted at the University of Chicago Medical Center Neurology Department. Patients had DBS implanted for at least 3 months to ensure the exclusion of any microlesion effects, which otherwise could affect the impedance. Based on data collected, impedance and current are very stable over the long period of time studied to a given unchanged voltage. Conclusions can be drawn that changes from constant voltage to constant current would not yield a significant difference as long as the impedance remains largely stable, according the Ohm's law.

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Prevalence of Polypharmacy in an Elderly Population with Chronic Noncommunicable Diseases

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In the context of health sciences, polypharmacy is defined as the use of more medications than those clinically indicated, or when the consumption of drugs is considered inadequate. It is more frequent in older adults, due to the general deterioration of the organism, typical of aging, which favors the presence of multiple pathologies and comorbidities. The prevalence of polypharmacy has not been specifically defined since the studies carried out show very variable prevalence data (5–78%), suggesting that there are characteristics of the population that make the prevalence different from one region to another. In Colombia, there is not enough information about the prevalence or the average number of medications taken by a polymedicated patient, making it difficult to assess the problem, its implications, and associated factors. The objective of this study was to determine the prevalence of polypharmacy in the elderly population with chronic noncommunicable diseases, in an institution in eastern Colombia in 2019. Analytical cross-sectional study in adults ≥ 65 years with chronic noncommunicable diseases, which are oriented in the three spheres or accompanied by a caregiver with knowledge of the prescriptions of the patient, who has lived with him for at least 6 months. Polypharmacy was defined as the consumption of more than three medications and was classified as minor, moderate and major (>3, >5 and >9 respectively), without taking into account the use of medications indicated for periods of less than one month or prescribed for treatment of acute pathologies. From the study we expect to know the prevalence of polypharmacy in an outpatient population; to identify the factors associated with the presence of polypharmacy in older adults under study; to describe the most frequent medications by pharmacological group, adverse effects, and type of formulation; and to determine the frequency of polypharmacy in relation to the demographic, social and cultural characteristics of the older adult population studied.

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Nutritional Status of Mothers and Children from Farmer Family Background in Indonesia

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Our project is part of the field of nutrition and is based on a database of surveys taken in Demak (Central Java, in Dec. 2014) and one in Buol (Central Sulawesi, Dec. 2015), focusing on the nutritional status and economic situation of women farmers. Both regions are main rice-production areas of Indonesia but are also known for chronical child malnutrition. 373 women from Demak and 200 from Buol were interviewed about their eating habits. Their height was measured using microtoise and their weight was measured using the SECA body scale. From this data the BMI was calculated, and the two regions were compared. We exposed that 7.77% of the participants from Demak were considered underweight, 47.45% showed a normal BMI and 44.77% are considered overweight or obese. In Buol, 8.04% of the women are underweight, 49.25% have a normal BMI and 42.71% are overweight or obese. There were no significant differences between the two regions found. This leads to the conclusion that overweight and obesity starts to be a problem in both regions. This trend may be caused by the fact that both regions are the main producers of rice in Indonesia. The consumption and production of rice is highly supported by the government, leading to a one-sided and carbohydrate-high diet. Dietary intake and habitual activities should be further investigated. Improvement of diet quality of the women is proposed to be included in the national health/nutrition extension program for prevention of overnutrition and its consequences in later life.

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A Novel Approach Against Conformational Diseases: Unfolded Protein Response Initiated Stress Communication

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Conformational diseases range from metabolic (e.g., diabetes), through neurological (e.g., Alzheimer's), to genetic (e.g., sickle cell anemia) disorders, affecting a large human population and posing a significant threat to global health. They are caused by mutations or post-translational modifications that alter protein folding. Accumulation of mutated/misfolded proteins disrupts endoplasmic reticulum (ER) homeostasis and activates an adaptive signaling network, the unfolded protein response (UPR). As reported in the literature, UPR hyperactivation leads to inflammatory responses and fibrosis thereby undermining tissue architecture and organ function. Since the UPR regulates both pathological and physiological processes, it has become a therapeutic target. Understanding this stress communication will pave the road for developing modulators that inhibit or activate specific stress response pathways, thereby hindering disease progression and prolonging patients' lives. As a fraction of the whole, my project concentrates on UPR-initiated intercellular signaling between epithelial cells and fibroblasts. I hypothesize that UPR-induced signals are transferable from epithelial cells to fibroblasts, leading to fibroblast specific responses. To test this hypothesis, I co-cultured a model epithelial cell line (as inducer cells) with fibroblasts and analyze gene expression changes in both cell lines using fluorescent stress bioassay, qRT-PCR, Western blot, and fluorescent confocal microscopy. Although no direct UPR activation was observed in fibroblasts after triggering UPR-related transcriptional factors in the inducer cells, we measured enhanced cell proliferation and alterations in the fibroblast's endosomal and secretory compartments, supporting UPR-associated signal transfer and fibroblast-specific responses. In conclusion, XBP1- or ATF6-mediated signals elicit gene expression changes in fibroblasts. These findings support the viability of using modulators against fibrosis-mediated pathological changes in conformational diseases. Moving forward, identifying the signals and elucidating the mechanisms of intercellular stress communication will lead to novel stress response modulators, which enable a cost-effective and easily accessible treatment worldwide, bringing hopes to patients from underdeveloped regions.

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Association Between Fat Distribution and Iron Status Among Qatari Obese Adults

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The prevalence of obesity in Qatar has reached an alarming rate. Moreover, high prevalence of iron deficiency is observed in Gulf countries. The prevalence of iron deficiency anemia (IDA) in Qatar was reported to be 28% and 26% for women and children respectively (SCH, 2012). In the early 1960s, an inverse relationship between plasma iron and adiposity was reported. To examine the relationship between fat distribution (waist circumference (WC), total body fat (%), and trunk fat (%)) and iron status biomarkers in Qatari adults who participated in Qatar Biobank (QBB). Secondary data was obtained from QBB. The sample size consisted of 200 Qatari obese (male and female) aged 21–50 years free of chronic diseases. Collected data included anthropometric measurements (weight, height, BMI, WC, % total fat and % trunk fat) and iron status biomarkers (iron, ferritin, TIBC, hemoglobin (Hb), RBC). The chi-square test was used to describe the categorical variables. t-test and ANOVA were used to describe differences between groups. A p-value <0.05 was considered as statistically significant. A high statistically significant association ($p < 0.05$) was observed between IDA and the increase in trunk fat (low class: 3.0%, medium: 10.1%, and high class: 10.6%). Results revealed a decrease in ferritin, Hb, serum iron and RBC with an increase in % total fat. There was a statistically significant correlation between the trunk fat% and iron status indicators: ferritin ($r = -0.48$), Hgb ($r = -0.64$), serum iron ($r = -0.29$) and RBC ($r = -0.51$). Moreover, a positive significant correlation was noted between WC and all iron status biomarkers. The present work is the first that demonstrated the association between iron status and fat distribution among Qatari. The results of this study reported a high prevalence of IDA among obese. Abdominal obesity determined by WC was correlated with iron biomarkers.

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Exploring Ownership: An Analysis of Early Kentucky Court Records

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Prior to its statehood, Kentucky was seen as a promising frontier that attracted settlers who wanted to own their own land and to be independent, self-sufficient citizens. However, many people who migrated to Kentucky, such as women, African Americans, and the poor, instead found a continuation of the institutional poverty and the owning of people that structured the original thirteen colonies. By analyzing an archival collection of Kentucky court records from the early 1800s at the University of Kentucky Special Collections Research Center, research will uncover how the idea of ownership, specifically land acquisition and debts, affected Kentucky settlers. These court records comprise different types of bonds that ensure the exchange of property and sums of money in accordance with the rulings of the courts. Through the study of these early bonds, we can understand the role that the government played in issuing debt and controlling ownership between different parties. By tracing the lives of the individuals that appear in these records, we can better understand how the court's control of property shaped the lives of early Kentuckians and how this institution of ownership went against the frontier's promise of becoming an independent citizen. Further research will uncover how ownership was dealt with in the early history of the Commonwealth and explain how the judicial system shaped modern ideas and boundaries of ownership.

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Carsharing in Vienna: An Economic-Geographical Analysis of the Spheres of Influence for Actors in Car-Sharing

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The need for a transformation to a sustainable way of life is widely accepted. In this paper, a theoretical framework – founded in theories of the multi-level-perspective (MLP) and applied to car-sharing in Vienna – is presented to analyze spheres of influence for different actors in this transformation. To enable a deeper insight into these spheres of influence, aspects of path creation theory complement the MLP. Particular attention is given to the application of this synthesis of theories, outlining the strength of the MLP as a way to present local struggles of government-stabilization and -destabilization in a global context. Furthermore, the advantages of path creation theory are discussed, specifically the ability to demonstrate how expectations, held by various actors, can influence future trajectories of innovation in the present. Following the extensive discussion of the theoretical framework, the empirical part of this project provides an overview of current expectations of the future for the automotive industry. This is achieved by a review of mission statements of various car-manufacturers. Consequently, mobility in Vienna, specifically the importance of car-sharing, is discussed and leads to the analysis that answers the research questions, supplemented by interviews with involved actors from the public as well as from the private sector. To embed the insights from these interviews in a wider context, accessible literature such as interviews in newspapers and magazines, as well as press releases of private and public actors will be regarded as a valuable source and included in the analysis. The final part of the paper reflects on the application of the theoretical framework and provides an outlook for research on the contextualization of the MLP in a geographical manner.

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What is a 24-Hour City?

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The objective of this study is to answer: What is the 24-hour city and how do increasing hours of economic activity affect a city's economic health? First, I had to define the concept of various schedules of a city's economic activity, because there is no universally accepted one. I conducted a literature review of academic databases and urban policy research to gain a crucial understanding of the terminology regarding the 9–5, 18, and 24-hour cities. From this, I found that the 18-hour city is prevalent in the United States, along with the progression of a "night time economy" (NTE). Due to its relevance, I included the 18-hour city in my analysis alongside the 24-hour city, which I then compared to the traditional 9–5-hour city. Next, I used secondary sources to construct a preliminary cost-benefit analysis of the most prominent examples of 18/24-hour cities that exist worldwide in an attempt to identify and quantify associated benefits and costs. Such analysis weighed the allure of potential benefits such as rises in tourism, aesthetics, and employment opportunities against the potential risks including over legislation, damage to the city's reputation, and the health and safety of residents. I then examined the effectiveness of various public policy interventions that either encouraged or discouraged 18/24-hour economies of the past and their potential effectiveness looking forward. My research suggests that there is a net benefit associated with prolonged hours of economic activity and an 18/24-hour economy is a legitimate public policy objective for certain cities, dependent on variables such as geographic location, demographics, and culture. With this new understanding of the 18/24-hour city, I developed policy recommendations for the city of Philadelphia.

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Quantifiers in Passive Sentences: Spreaders' Interpretation

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Many researchers have looked at children's interpretation of universal quantifiers, which are words such as 'every' and 'all,' and found an atypical pattern of interpretation called 'spreading,' as coined by Roeper and De Villiers (1993:120). In this interpretation, the quantifier seems to be spread to all nouns in the sentence instead of just the noun following it. Thus, the sentence 'All men are carrying trees' will be interpreted as 'All men are carrying all trees,' and some children will reject the sentence if there is an extra tree, even if all men are carrying trees. Earlier studies (cf. Hollebrandse, 2004; Smits et al., 2015) found that these interpretations are heavily influenced by the context in which the sentences were presented, since these contexts can shift the children's focus to only one noun in the sentence. However, the present study tries to investigate if the children's interpretations can be influenced through syntactic cues as well, rather than just contextual ones. In passive sentences, the focus shifts to whoever or whatever is undergoing the action, whereas the agent of the sentence is no longer as prominent. Thus, a grammaticality judgement task is used, where both active and passive sentences are presented either correctly or incorrectly, and the children will have to correct the incorrect sentences. A group of English-speaking children will first be selected with a pre-test to check their interpretation of universal quantifiers, as not all children are spreaders. Then, the spreaders in that group will be tested with the grammaticality judgement task as described above. The results will be analyzed and discussed to see whether or not quantifiers are interpreted differently by the spreaders in passive sentences as compared to active ones, and thus to see if the children are sensitive to syntactic cues in the absence of contextual ones.

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Cubano Polaco Americano: A Study on the Globalization of Capitalist and Socialist Poster Art During the Cold War

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As the United States became a world power following World War II, American arts were exported globally, particularly in the form of cinema. Many movies exported abroad were accompanied with posters, a form of advertisement. However, artists in socialist countries like Cuba and Poland created their own poster designs for the films. I will compare and contrast Cuban, Polish, and American posters advertising the two American films, George C. Scott's Rage (1972), and Francis Ford Coppola's The Godfather (1972), utilizing art historical studies and a semiotic analysis. I argue that these cinematic posters exemplify the globalization of cinema and poster art during the Cold War, which is usually understood as a time of minimal, tense contact between the capitalist and socialist worlds. At the same time, I argue that the cinematic posters from each society served as a vehicle for the creation of specific visual languages within the context of each nation's struggle amidst changing international relationships during the Cold War. This comparative examination of cinematic poster art produced in the early 1970s, contributes to rather limited scholarly research on the artistic exchange between socialist countries and the United States during the middle stages of the Cold War period.

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Technology-Related Analytical Competences of Pre-Service Teachers: An Intervention Study

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Information and communication technologies (ICT) can offer a high potential to foster learning if used in the right manner. However, teachers seem to struggle using these technologies properly. Recent research indicates that the way they use digital technologies mainly initiates passive student engagement which has been shown to be less effective than an engagement in more active activities. This suboptimal use of digital technologies in the classroom might be caused by a lack of teachers' technology-related analytical competence (TRAC), which encompasses the ability of teachers to analyze ICT-supported lessons adequately by describing, explaining, and solving pedagogical problems that may occur when digital technology is being used in the classroom. This paper investigates how pre-service teachers can be supported in developing TRACs by using three differently structured "external scripts" that guide them in their analysis of problematic technology-supported classroom situations. N = 63 pre-service teachers were randomly assigned to three groups, each facing another type of external script to analyze a case vignette, namely an ICT-supported classroom scenario. In the posttest, all participants were instructed to analyze a second case vignette without any further instructions to evaluate differences in the TRAC. The analyses were coded to rate their quality regarding the completeness of the described activities (i.e., describing, explaining, and solving pedagogical problems). Surprisingly, the different external scripts had no differential effects on the completeness of the analyses (Welch's $F(2, 36.31) = .39$, $p = .68$). Thus, the results indicate the need for a more long-term intervention. Further implications concerning the promotion of the competence are discussed.

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Transitional Justice Preferences among Syrian Refugees in Jordan: An Analysis of Sociopolitical Factors

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In the aftermath of violent conflicts, societies often implement transitional justice mechanisms – like trials, truth commissions, and reparations programs – to reckon with past human rights abuses, restore the rule of law, and strive toward inter-communal reconciliation. Recognizing the context-dependent nature of justice and seeking to understand what makes transitional justice processes work, recent scholarship has begun to consider who prefers which justice mechanisms and why. This study explores the influence of sociopolitical factors on individuals' transitional justice preferences, using the ongoing conflict in Syria as a case study. It draws from 40 interviews with Syrian refugees in Jordan, evaluating participants' 1) social identities and 2) conflict-related cognitive frameworks vis-a-vis their transitional justice preferences. Participants' social identities (particularly nationality, gender, ethnicity, and religious sect) are salient variables in this context, as sociologists have observed how individuals tend to rely increasingly on group membership to define their identities during divisive conflicts. To help qualify the extent to which participants rely on their social identities to interpret the Syrian conflict, this study uses qualitative analytic methods to gauge participants' conflict-related cognitive frameworks, specifically how they frame the causes of the conflict and how they construct images of the conflict's actors. The researcher hypothesizes that participants possessing cognitive frameworks that emphasize stark social differences will correlate to preferences for more punitive transitional justice policies. This study's findings will deepen understanding of how sociopolitical environments are constructed in the minds of those who have experienced conflict. By discussing the potential implications of these perceptions for implementing transitional justice regimes, this research can both develop theory and inform policymaking, particularly the design of a tailored justice process in Syria.

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The Role of Religion in Solidifying Group Identity Among Females

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Although religion is not practiced universally and individual identity is not created solely on the basis of religion, it is a social and cultural fact that religion plays a dominant role in influencing and solidifying identity and social relations cross-culturally. Consequently, many scholars believe that religious communities and experiences create a basis for an individual's social identity and sense of belonging. In this research, I examine how group social identity becomes solidified through the effects of religious adherence and practice in the U.S. by focusing on a group of post-adolescent females on a college campus. Using anthropologist Victor Turner's concept of communitas (1967), I seek to understand what prompts the development of group unity and how religion serves as a bonding agent among females during their first years of autonomy from the social norms and roles associated with childhood and adolescence. Using ethnographic field methods, including informal interviews, life histories, and participant observation, I will conduct an in-depth study of fifteen female participants who actively identify with a religion and are affiliated with one or more religious groups. I will then compare these females to a wider group of non-religious affiliated females to determine the role of religion in solidifying identity and social groupings. By understanding the specific socio-religious groups women align themselves with, I argue that those females with social ties and alliances to religious groups and organizations develop unique characteristics of group identity that allow them to persevere as women in male-dominant societies by having a more public gender status. My study will show that enduring female social identity is formed and solidified through post-adolescent socio-religious interactions in religious environments and that the experiences of communitas that religion provides allows women to weave a sense of personal and social significance within their communities.

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Period Transfer of "Fuenteovejuna"

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The purpose of my research is to discover whether or not Lope de Vega's play, Fuenteovejuna, is accessible to a contemporary audience. I plan on creating a period transfer of the play which would have me imagining it in a contemporary setting. Although the script will be cut to save on time, the language will not be altered. The purpose is to see how a contemporary audience will react to the themes and social issues of the period in which the play takes place (the fifteenth century) and how or if the audience would recognize them from a context they are more familiar with (2019). I will visualize my research through my presentation using photographs, news stories, and dialogue, and compare them with the period transfer itself. Then I will present the audience's reaction on whether or not they feel that the play itself is accessible to them and why. I believe that reimagining Fuenteovejuna as a contemporary production will enlighten some people on the political climate of the world, and by maintaining the original language, it will speak on the timelessness of certain societal struggles such as political crimes, torture, women's rights, and government sanctioned brutality.

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East Meets West: How Chinese Foot Binding and Victorian Corsetry Altered Women's Anatomy

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Far too often the subject of beauty standards pertains to the growth of popular culture; in today's age, the normalcy of botulin injections and cellulosic reductions are what shape the concept of a woman's body. The notion of alterations, even as it may have taken a new image in modern times, had its conception long before digital influence. Since the age of Confucius, the "art" of Chinese foot binding was an arduous and patriarchal secret that was kept in practice by individuals of power, that, until legislation outlawed its practice, affected many Chinese girls from an age as early as four. Similarly, the process of waist-training with corsets in the age of Queen Victoria was a standard evocation of beauty, that ultimately effected women's health leading to an early death. Elongated life was never promised; women's passion to pursue such methods of perpetual "elegance" at the height of its popularity seemed to outweigh the loss in structural capacity. More women deemed it worthwhile to entertain this dangerous practice for the sake of social acceptability, especially in marriage contracts. In both cultures, the idea of a small waist or foot enticed private and public eyes. Today, women continue to practice similar processes, hoping to achieve feminine beauty. My research seeks to understand the sensibility behind body resizing, which frequently caused physical discomforts or irreparable medical disabilities in Asia and in the West. I strive to strengthen the voices of women in duress as their legacy lives within the practices of two different cultural practices with the same lasting effects. The research for this project will draw on archival images and documents that will provide insight to this project.

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Autonomous Navigation and Obstacle Avoidance for Indoor Reception Robot

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In many tourist sites, a human guide may encounter problems in providing accurate information and entertaining tourists when the guides are exhausted from routine tasks such as guiding visitors through repetitive locations and reciting tour narrations. To resolve such issues, intelligent robotics can be adopted to guide and enhance the visitors' experience. Our research presents an autonomous mobile robot for guided tours inside a public space such as museums and universities. This mobile robot can navigate autonomously between attraction points within the indoor environment, give useful information about each attraction to visitors, and interact with them naturally via gestures and sounds. We focus on developing both hardware and software of the robot. Since the robot utilizes an active tricycle platform, each wheel is kinematically synchronized by a feedback control system to ensure accurate and precise motion of the platform by minimizing wheel slippage and effective waypoint tracking control. Furthermore, to estimate the states of the robot, Adaptive Monte Carlo Localization (AMCL) is implemented along with a virtual map from Simultaneous Localization and Mapping (SLAM) and a series of QR codes as landmarks allowing for more accurate estimation. The arm gestures of the robot can be manually adjusted by memorization and play-back, providing natural arm movement during interaction with visitors. Both the simulation and experiment in real environment were conducted to measure and analyze the performance and effectiveness of this approach.

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First-Year Students' Transition to University: A Study in the Effectiveness of First Year Seminar Courses

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→ Interdisciplinary Studies, Education
University of Wyoming, Wyoming, USA

The first-year experiences of a university student are crucial to their adjustment from secondary to higher education. "During the transition from school to higher education, young adults experience a substantial amount of change where they progress from the highly controlled setting of school to the autonomous and self-motivated environment of university" (Gibson et al. 2016). First Year Seminar programs (FYS), used in many colleges, are designed to aid first year students of all disciplines of study in this transition. This study analyzes the effectiveness of FYS programs at teaching first year students to develop practical studying strategies, navigate college campus resources, and think critically. We will specifically be looking through the lens of discipline-specific versus non-discipline specific FYS courses and their students' responses in order to determine the most adequate method of facilitating student learning. To investigate these questions, we administered pre- and post-semester open-ended surveys to approximately 40 FYS classes at the University of Wyoming and surveyed instructors on their teaching of and preparation for these classes. We also conducted semi-structured interviews to these FYS instructors as well as 2nd, 3rd, and 4th year students who had taken an FYS class in their first year. The data presented in our pre-semester surveys show that many students recognize that the class is for transitional purposes and expressed anxieties over time-management, making friends, and adjusting to a more independent lifestyle than what they have previously experienced. As we collect and analyze more data, this study will present factual information on first year class effectiveness to educate instructors on ways to improve learning environments for first-year students. With this additional data, this study of First Year Seminar classes can be used to widely examine the first-year experience in any university setting.

Hörsaal 3 / A 14–1–103

Blunting Drug Related Gene Expression Changes Using a CRISPR/dCas9 Strategy

Saakshi Thukral | Katherine E. Savell
→ **Neurosciences**
University of Alabama at Birmingham, Alabama, USA

Drugs of abuse increase dopamine concentration in the nucleus accumbens, a key reward structure that integrates contextual and cue-related information and regulates motivated behavior. This surge of dopamine triggers cell signaling cascades that converge in the nucleus to cause changes in gene expression. These changes are thought to lead to the observed functional and structural alterations in the reward circuit after exposure to drugs of abuse. One alteration is the chronic induction of Fosb, a Fos transcription factor family protein that is induced in the nucleus accumbens and dorsal striatum as a response to exposure to drugs of abuse and signals downstream changes in gene expression. To attempt to blunt the initial elevation of Fosb mRNA following dopamine receptor activation, we employed a neuron-specific CRISPR-dCas9 repressor system in cell cultures to achieve decreases in gene expression. Different parts of the Fosb promoter were targeted, including the promoter region, transcription factor binding sites, and the first exon of the gene to block transcription. Primary embryonic rat striatal cultures were transduced with the CRISPR-based repressor system, and cells were treated with a D1 dopamine receptor agonist to mimic the signaling cascades found in vivo after exposure to drugs of abuse. Preliminary results suggest that targeting of the exon region in the Fosb promoter can block Fosb mRNA induction. Future directions involve infusion of these constructs into the adult nucleus accumbens in a rodent model system to see if the blunting of Fosb can affect drug-related reward learning.

Hörsaal 3 / A 14–1–103

A Development of Smart Farming System

Passakorn Rattanagulvaranon | Purin Satthamnuwong
→ Production Technology, Biostatistics
King Mongkut's University of Technology Thonburi, Thailand

Nowadays, organic vegetables have been very popular, but it is difficult to make sure that the vegetable is purely organic, not to mention people cannot plant it by themselves because of limited time and area, especially in Bangkok, Thailand. So, a freshman team from the Institute of field robotics, KMUTT, purposed a box set of a smart farming system which has six slots for hydroponic organic vegetables and can be controlled by an application on a mobile phone. In this system, the light, humidity, oxygen, and pH information were obtained by sensors to precisely control the actuator, including the LED light and oxygen pump. This process was suitable for growing of vegetables in the system. The information of the suitable parameters such as amount of water and brightness of light for each vegetable was first studied. Then, a model of farming system and places to set up the sensors and actuators were designed. The application running on mobile phone was next created to monitor real-time data from the device and control the farm's actuators. Last, the real planting was compared with our proposed system to get the best parameters which are suitable with that vegetable. Normally, smart farming systems are not popular in Thailand. But, with our proposed smart farming system, everyone can plant any organic vegetables they want in their residence. In summary, this project provides the best box set of smart farming system with a low-cost, using robotic technology

Hörsaal 3 / A 14 – 1 – 103

25
05

Program Overview

Saturday, 25 May 2019

8.00 am — 9.00 am	Registration
9.00 am — 10.30 am	**Oral Session 4**
10.30 am — 11.00 am	Coffee Break
11.00 am — 12.30 am	**Oral Session 5**
12.30 am — 1.45 pm	Lunch Break
1.45 pm — 3.15 pm	**Oral Session 6**
3.15 pm — 3.45 pm	Coffee break
3.45 pm — 5.15 pm	**Oral Session 7**
5.15 pm — 5.30 pm	Coffee Break
5.30 pm — 7.00 pm	**Closing Ceremony**
7.00 pm — 8.00 pm	Free Time to Explore Oldenburg and Its Culinary Delights See Food and Restaurant Guide in the Congress Booklet
8.00 pm	**Congress Party & Late Night Café**

OS 4

Oral Session 4

Environment
9.00 am — 10.30 am
Hörsaal 2
A 14 – 1 – 102

Health A
9.00 am — 10.30 am
Hörsaal 1
A 14 – 1 – 101

Health B
9.00 am — 10.30 am
Seminarraum 113
A 14 – 1 – 113

Economy
9.00 am — 10.00 am
Senatssitzungssaal
A 14 – 1 – 111

Communication
9.00 am — 10.30 am
Seminarraum 031
A 14 – 0 – 031

Politics
9.00 am — 10.30 am
Seminarraum 112
A 14 – 1 – 112

Create
9.00 am — 10.30 am
Seminarraum 030
A 14 – 0 – 030

Application of the City Blueprint Approach in Developing Countries: A Case Study in Ulaanbaatar City, Mongolia

Enkhuur Munkhsuld | C. J. van Leeuwen | Stef Koop
→ **Environmental Science**
National University of Mongolia, Mongolia

Cities are concentrated centers of production, consumption, and waste disposal that drive land change and a host of global health and environmental challenges such as climate change, hazards, human health, sanitation, urbanization, water use, and water scarcity. Therefore, there is a requirement to assess those challenges at the city level. The City Blueprint Approach which was developed by Kiwa Water Research Watercycle Institute in the Netherlands, is a diagnosis tool for urban water management and consists of three complementary frameworks. The Trends and Pressure Framework (TPF) summarizes the main social, environmental, and financial aspects on which cities have hardly any influence, whereas the City Blueprint Framework (CBF) provides a clear overview of Integrated Water Resources Management (IWRM) performance and its bottlenecks in municipalities and regions. The Governance Capacity Framework (GCF) is the first result of the operationalization of the capacity of urban water governance into a balanced framework. To calculate and assess each of the main three frameworks, the need to gather information and data and interview experts in the water sector of the city or country is being assessed. Currently (April 2018) more than 70 municipalities in more than 37 countries, of which most are developed countries, have been assessed with the City Blueprint Approach. We assessed urban water management of Ulaanbaatar city, the capital of Mongolia, which is one of the developing and landlocked countries. There are some indicators in the approach that are based on the situation in developed countries and related to sea level. Therefore, minimum and maximum values of these indicators are unsuitable for developing and landlocked countries. Based on this research, we concluded that if we develop more flexible indicators for different regions and countries with varies stages of development, City Blueprint Approach can be an assessment tool for urban water management all around the world.

Hörsaal 2 / A 14–1–102
Discussant: J. Robert Hatherill

Probiotic Encapsulated Cellulose Fibers Derived from Industrial Pineapple (Ananas comosus L.) Peel Waste for Value Addition

R. A. D. Rajapaksha | M. D. J. C. Sandarani | N. M. Adassooriya | C. V. L. Jayasinghe
→ **Food Science and Technology**
Wayamba University of Sri Lanka, Sri Lanka

Sri Lanka produces around 710,000 metric tons of vegetables and around 540,000 metric tons of fruits annually. The average post-harvest loss of fruits and vegetables is more than 30%–40%. The study was intended to evaluate the feasibility of utilizing extracted cellulose fibers from industrial pineapple peel waste in probiotic encapsulation for additional value and to evaluate the structural characteristics of extracted cellulose. Cellulose fibers were isolated using alkaline treatment methods followed by bleaching. Wet milled pineapple pulp was treated with an alkali solution and bleached with equal parts of commercial bleaching powder or sodium hypochlorite, acetic buffer (pH 4.5), and distilled water. After bleaching, fibers were dried and the cellulose structure was studied using scanning electron microscopy (SEM), powdered X-ray diffraction (PXRD), and fourier transforms infrared (FTIR) spectroscopy. Probiotic encapsulated cellulose fibers were studied using SEM and PXRD. Relatively higher yields of extracted cellulose were obtained, within the range of 30.38–21.90% in dry basis. Yields of extracted cellulose fibers using 2%, 5%, 7.5% and 10% NaOCl were 30.38 ± 0.01%, 27.51 ± 0.01%, 24.34 ± 0.01% and 21.90 ± 0.01%, and yields of extracted cellulose fibers using 2%, 3% and 4% of commercial bleaching powder were 30.33 ± 0.03%, 28.29 ± 0.02%, and 24.08 ± 0.02% respectively. Cellulose fibers showed improved crystallinity after bleaching followed by acid hydrolysis due to removal of amorphous regions exposing crystalline phase. Crystallinity indexes of cellulose fibers extracted using 2%, 5%, 7.5%, and 10% NaOCl were 34.78 %, 54.77%, 57.17%, and 43.04% respectively. Crystallinity index of acid treated cellulose fibers extracted with 10% NaOCl was increased as 55.96%. SEM images of encapsulated fibers showed that probiotic cells were attached on the fiber surface. Cellulose fiber surfaces became smoother and reduced in size after acid hydrolysis. FTIR spectrum of extracted cellulose of cellulose fibers showed O-H groups (3335 cm-1) and C-O stretching at C-6 (1030 cm-1) peaks. The study offers a great potential for successful extraction of cellulose fibers from pineapple peel waste and is useful for the probiotics encapsulation given the high yields and low-cost of raw materials allowing the productive usage of industrial fruits waste.

Hörsaal 2 / A 14 – 1 – 102
Discussant: J. Robert Hatherill

Tolerance of Two Grafted Tomato Plants (Calinago f1 and Buru Buru; f1 Mongal and Buru Buru) to Diseases

Jomesha Stewart
→ **Agricultural Science**
University of Guyana, Guyana

Tomatoes (Solanum Lycopersicum), a perennial, horticultural crop, can be affected by many pathogens that causes reproductive and vegetative abnormalities. These organisms are often contagious as they can spread rapidly from plant to plant in a field under favorable conditions. Grafting can be an alternative solution to pesticide usage, which can benefit the environment as well as reduce farmers' expenditure while increasing plant yield. It is a plant propagation technique which involves connecting two plant segments to achieve plant union. In this experimental study, Buru Buru, a wild member of the Solanaceae family, was used as a rootstock for common varieties of tomato (F1 Mongal and Calinago F1) to determine their tolerance to diseases under greenhouse conditions. Disease pathogens were introduced to the plants and they were observed for four weeks. The grafting process required a higher amount of Calinago F1 (45) than the F1 Mongal (33) for successful grafts. Results indicated that there was a higher survival rate and visible tolerance to diseases for the non-grafted F1 Mongal plants when compared to the grafted F1 Mongal plants. There were similar results for the grafted Calinago F1 plants when compared to the non-grafted Calinago F1. The percentage of diseased plants in a sample population (disease incidence) and the degree to which these plants are affected by diseases (disease severity) were parameters used to determine tolerance of the grafted plants to diseases. This study demonstrates that there was a perceptible difference in the performances between the grafted and non-grafted entries of each variety with respect to these parameters.

Hörsaal 2 / A 14 – 1 – 102
Discussant: J. Robert Hatherill

A New Commensal Microbe Confers Protection Against Autoimmunity

Ayushi Thakur | Arthur Mortha
→ Cell and Molecular Biology
University of Toronto, Canada

Autoimmune diseases, including arthritis, multiple sclerosis, and asthma, currently afflict millions of people globally, and are rising in incidence in developed and developing countries alike. A growing body of evidence points towards a role of gut bacteria in modulating the immune system to attack our own body and induce autoimmunity. Although the composition of gut bacteria differs significantly across healthy individuals, there is evidence to demonstrate that certain compositions may be more favorable in protecting from autoimmunity. Our laboratory recently identified the commensal protist Trichomonas musculis (T.mu) as a widely distributed new member of the gut microflora. Colonization with T.mu in mice has been shown to confer protection against pathogens causing food poisoning, suggesting a possible role for T.mu in shaping our immune system towards protection against diseases. Interestingly, colonization by T.mu initiated a strong increase in the production of IgA, a type of antibody critical in protecting our intestines from invading pathogens. Further analysis of the gut immune system demonstrated a dramatic increase in IgA-producing cells. Most strikingly, their antibodies were reactive against gut bacteria, which initiated a significant shift in bacterial composition, protecting the colonized mice from the development of arthritis and multiple sclerosis. This project aims to dissect the cellular and molecular mechanisms involved in the generation of this protective antibody-mediated immune response. We are presently analyzing colonic samples from T.mu-colonized mice by immunofluorescence microscopy followed by the implementation of new software-based algorithms for the tissue-wide quantification of protective antibody-producing cells. The numerical assessment of antibody-producing cells will shed light on the unique relationships between protozoan commensals, our immune system, and bacterial microflora. By delineating the complex links between the host microflora and disease susceptibility, this project holds the potential to provide insight into autoimmune disease pathology and potential diagnosis in patients.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Fatme Al Anouti

How Do Immune Cells and Gut Microbes Talk to Each Other?

Sung Min Lim
→ **Basic Biological and Medical Research**
University of Toronto, Canada

The intestinal tract is home of a large collection of microbes, collectively known as the microbiome. These microorganisms play a critical role in nutrient uptake, growth, mental development, reproduction, and immunological development, thus being indispensable for normal physiology of body. The gut immune system, located at the interphase of body and microbiome, plays an essential role in preventing gut microbes from damaging the body, hyper-activating our immune system, autoimmunity and long-lasting pathologies like multiple sclerosis, inflammatory bowel disease, or asthma. Therefore, even though the microbiome supports vital processes in our body, it needs to be contained and balanced. The intestinal immune system has a specialized branch capable of sensing the health of our intestine, called the innate immune system, composed of tissue-resident macrophages and innate lymphoid cells (ILCs). Our laboratory recently demonstrated a microbiome-driven crosstalk between the innate immune cells, which fosters the immunosuppressive regulation where the lack thereof disposes man and mouse to develop severe autoimmune pathologies. This prompts us to identify the signal coming from the microbiome, leading to the induction of the macrophage-ILC crosstalk. My project specifically focuses on the signal the microbiome sends to activate intestinal macrophages. My preliminary results suggest that, Adenosine-Tri-Phosphate (ATP), the universal currency for biochemical energy, is produced by all gut microbes and released into the lumen. Released ATP activates macrophages and initiates their communication to ILCs. It is however unknown whether the released ATP by microbes reflects a specific bacterial physiological state. We are using a combination of genetically modified microbes for analysis of bacterial intracellular ATP, luminescence assays for analysis of extracellular ATP, and in vivo systems to determine the physiological state at which the microbiome releases ATP into the lumen. Results suggest a relationship between ATP concentration of extracellular space and the intracellular space of bacteria, where the abundance or scarcity of ATP in the environment seem to be reflected in the release or retainment of intracellular ATP by the bacterium. Uncovering how the microbiome and our immune system communicate will help us to understand the language used by these critical forces to sustain immunological peace.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Fatme Al Anouti

The HAILO Splint: A Remote Compliance and Force Sensing Splint for Base of Thumb Osteoarthritis

Belquis Haider | Angela Kedgley | Matthew Gardiner | Tonia Vincent
Ali Alazmani | Peter Culmer
→ Engineering
The American University in Cairo, Egypt

Osteoarthritis is a common degenerative inflammatory joint condition primarily affecting smaller joints such as the thumb's base. During early diagnosis, splints are prescribed to constrict joint movement and reduce pain. However, little is known about the mechanics by which splints interact with the patients' hand and affect their condition. This research introduces wearable technology to address these clinical issues in the form of 3D-printed splints with integrated soft pressure sensors based on patients' 3D hand-scans. Additionally, an Android mobile application is developed to remotely receive data from the sensors via a micro-controller. This leads to monitoring and storing information on patient-compliance to the treatment, and recording the shear and normal forces between the patient's hand and the splint. This contribution reports proof-of-concept implementation of the technology which is a key step towards understanding the interaction between the splint and patient's hand to optimize future splint designs and provide personalized healthcare to patients suffering from base of thumb osteoarthritis. This research contribution would not have been possible without the support I received from the Office of Undergraduate Research at the American University in Cairo and from the co-authors and faculty project supervisors. This research also forms part of a wider multidisciplinary collaborative project that is continually being carried and developed by a wider research group from University of Leeds, University of Oxford, and Imperial College London. This research would not have been possible without the funding it received from the Dunhill Medical Trust.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Fatme Al Anouti

School Girls' Perceptions of HIV Risk in a Township School in Korsten, Port Elizabeth

Liliso Mangcunyana
→ **Educational Research**
Nelson Mandela University, South Africa

The HIV and AIDS epidemic continues to ravage communities worldwide and is a major crisis, particularly in South Africa with 7,100,000 people living with HIV in 2016 (SANAC, 2017). Despite the government's efforts to reduce the spread of the HI virus, young women between the ages of 10 and 24 years are twice as likely to be infected with HIV compared to young men their age. Globally, the HIV epidemic is growing faster amongst young women as compared to young men, with the trend being more apparent in sub-Saharan Africa than in any other region in the world (UNAIDS, 2016). HIV and AIDS statistics in sub-Saharan Africa remain alarmingly high, with 75% of all young people living with HIV being women (UNAIDS, 2016). This qualitative research, operating within the transformative paradigm, employed participatory visual research methodologies, drawings and participatory video with ten girls in the eleventh grade from a township school in Korsten. The research aimed to respond to the question: What are school girls' perceptions of the risk factors for HIV infections among South African girls? The study was framed within Bandura's Social Learning theory, which asserts that behavior is a result of cognitive and environmental factors interplaying with each other. Preliminary findings suggest that the predominant HIV risk factors include the influence of social media, poverty, and rape. These findings have implications for teacher training, curriculum development, and teaching and learning in particular in order to address and reduce the factors that make young girls vulnerable to the HI virus.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Haleama Al Sabbah

Mental Health Stigma in the UAE: Female University Students' Awareness and Opinions

Zainab Abdulla
→ **Psychology**
Zayed University, United Arab Emirates

Mental health stigma (MHS) is a phenomenon that can be found all over the world. The reason why the stigma is so widespread is due to a lack of awareness and misinformation on what mental illness is. The purpose of this research is to learn what female university students in the UAE know about mental health, the stigma towards those diagnosed with psychopathologies, and their perceptions about the main contributors of stigma in the UAE. This study is an observational cross-sectional descriptive study, conducted on 159 female university students. Participants were randomly selected from various colleges from one of the federal universities in Dubai, UAE. Students in their first year and those who major in psychology were excluded from the selection. Data was collected using a survey consisting of five sections. From these sections, it could be determined how individuals perceive and react towards mental illness, and whether they possibly stigmatize it as well. The results were analyzed using SPSS. They showed that more students are aware of mental health than was hypothesized. Almost 60% of the participants showed having adequate knowledge of psychology, and 47% of the total participants suggested spreading awareness to combat mental health stigma in the community. However, when asked about their preference in seeking mental health care, almost 50% of the participants chose their friend, while only 24% considered counseling. This could be due to family background, which 29% of the participants consider to be the main contributor of MHS in the UAE. While this study suggests that the youth are becoming more aware of mental health and realizing its importance, they would still refuse to seek help. This shows that MHS is still high in the UAE, but there is hope for reducing it.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Haleama Al Sabbah

Discussions of Suicide in Guyana: The Insiders' Perspectives

Shikema Dey | Nerissa Persaud | Diana Mohamed | Pamela Rose
→ **Literary Studies, Public Health**
University of Guyana Berbice Campus, Guyana

The purpose of this documentary was to provide the insider's perspective of a mental health issue in Guyana. It is a response to a British Broadcasting Company (BBC) clip on suicide in Guyana published on its network in 2018. This clip received much criticism from the media in Guyana for its use of a limited number of sources to generalize about attitudes towards suicide. In contrast to the BBC clip, this documentary sought to provide the insiders' perspective of suicide in Guyana. It gathered data by means of semi-structured interviews, conducted with a wider range of authoritative sources to show how rhetorical strategies, such as narration and cause and effect, combine in a visual medium and provide insights into features of this mental health issue. The documentary revealed that though Guyana might have the highest rate of suicide in the world, generally, Guyanese are concerned about suicide. It is a complex issue with many inter-related drivers. This documentary has the potential to raise awareness of suicide at a global level, especially the challenges that authorities in developing countries face.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Haleama Al Sabbah

A Case Study of Investment Performance of Safaricom Limited Company

Dan Muthomi
→ **Economics**
Kenyatta University, Kenya

This case study investigates business investment performance analysis of Safaricom Limited Company, which is the largest telecommunication company in Kenya by market capitalization. It is listed on the Nairobi Stock Exchange. Their set of accounts is always made public, hence one can easily access the accounts on their website. This study utilized one key ratio of analysis of the company investment performance. The analysis and interpretation of the ratio was done from the viewpoint of a supplier, customer, and competitor. The objectives of the study were to investigate investment performance ratio analysis of Safaricom Limited; interpret what the results of the investment ration performance indicate about the company; and finding out how it enables various users of the accounts to make informed decisions. A case study design was utilized, primary data was collected using focus group discussions (FGDs) with college students doing their bachelor of economics and statistics and lecturers at Kenyatta University. Secondary data was collected using library literature review and internet. The instruments were valid and reliable because the company's accounts are audited by external auditors, namely PricewaterhouseCoopers. Furthermore, by the time this study was done, data for 2017/2018 was unavailable; therefore, taking the financial data for a period of five (5) years, from 2011 to 2015, was a good indication of the company's historical performance. This data was analyzed to reach collusions. The study found out that Safaricom Limited is in very good financial health; it will continue to launch new products in the market; and purchasing its shares is advisable. The study recommends that Safaricom Limited could make a good customer and a good supplier but not a good competitor.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Femi Odebiyi

The Asymmetric and Nonlinear Impact of Public Investment on Economic Growth

Sachin Khurana
→ **Economics**
Mercer University, Georgia, USA

Proponents of the new growth theory argue that public expenditure affects the steady state economic growth rate. This theory is based on the endogenous growth model. In contrast to the new growth theory, the neoclassical theory asserts that the steady state growth rate is primarily propagated by exogenous factors such as technological development and population growth. Therefore, public expenditure and the accompanying public policy can only direct the transition path of the economy towards a steady-state growth rate. The debate regarding the impact of public investment on the long-run economic growth rate remains unsettled. On one front, public investment may spur private investment by providing infrastructural support, which can stimulate capital productivity, employment, and increased output by expanding resource availability in the economy. However, public consumption expenditure and investment (PCEI) can negatively impact private investment (and economic output) through the crowding-out effect. In summary, while PCEI is among the primary catalysts of economic growth, the impact of crowding out the private sector by the public sector may result in economic deterioration. We extend the existing literature by assessing the long and short-run asymmetric and nonlinear impact of PCEI on economic growth. Specifically, we investigate whether increases and decreases in PCEI linearly impact economic growth. The policy implication of this study includes short-run and long-run public policy design in response to permanent and transitory shocks. The preliminary results, which indicate a positive (negative) and significant (insignificant) GDP impact from an increase (a decrease) in PCEI, highlight the need for resource allocation between the public and private sectors, especially granted that excessive public investment may dampen economic growth by depressing physical and financial resources available to the private sector. The evidence is important to developing countries in resource allocation between public and private sectors to achieve a positive long-run economic growth rate.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Femi Odebiyi

Shuttle Alert

Elijah Gatale
→ **Computer Science**
Makerere University, Uganda

This research project, Shuttle Alert, was undertaken to address challenges that Makerere University students who reside in hostels face in their daily commute to campus in Kampala, Uganda. Many students do not reside in the halls of residence because of limited accommodation space and because university halls remind them of school dormitories with strict rules and routine checks. The students rely on the hostel shuttle for their daily commute, but at times they have to wait long for their hostel shuttle to arrive. The inconsistencies around shuttle pick up times frustrate students, leading many to walk to and from the university campus. The situation puts their lives in danger, especially at night. This inconvenience makes it necessary for students to know the real-time location and estimated time of arrival of their hostel shuttle buses. This study designed a mobile application Shuttle Alert, to give students a real-time visualization of the shuttle's location and its estimated time of arrival. To collect data, I administered questionnaires to students and interviewed hostel custodians and shuttle drivers to identify key users and system requirements. I then implemented the native Android application using Android Studio, Java, XML, PHP and MySQL. I tested Shuttle Alert with the project supervisor and other users for feedback, which allowed me to check consistency with the specifications before deployment. The study findings showed that Shuttle Alert uses the driver's smart phone to track the shuttle's location in real-time. The system indicates to the driver the number of students waiting at each pick up point. It also sends alerts to students in case of any shuttle service interruption. This tremendously reduces the time students waste while waiting for their hostel shuttle to arrive at a particular pick-up point.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Harald Mieg

The Development of a Linear Regression Model of Cotton Seeds Crushing

Vitaliy Pak
→ **Computer Science**
Tashkent University of Information Technologies, Uzbekistan

The aim of this research was to optimize the technological process of cotton seed crushing. The object of the research was one of the oil extraction factories in Urgench. The developed linear regression model of the technological process of cotton seed crushing is a prediction of potential results based on experimental and statistical studies using the method of the full factorial experiment. The homogeneity of dispersion, the significance of the coefficients of the linear model and the adequacy of the resulting model were defined and analyzed. The entire set of parameters determining the current state of the technological process of crushing cotton seeds can be divided into two groups of parameters: 1) The set of primary (input) process parameters characterizing the quality and quantity of the initial processes X = {x1, x2, x3}, where: • x1 – the intensity of seeds supply, in t / h; • x2 – damage to cotton seeds, in %; • x3 – a gap of the crushing machine-tool, in mm. 2) The set of secondary (output) process parameters characterizing those generalized technical and economic indicators that assess the quality and economic efficiency of the technological process of crushing cotton seeds Y = {y1, y2, y3}, where: • y1 is the output kernel of cotton seeds (crushed seeds), in %; • y2 is the output of cotton husk, in %; • y3 is the output of not crushed cotton seeds, in %. The results obtained can be applied: a) to select the optimal technological mode; b) in case of machine simulation for the purpose of checking and evaluating the process control algorithms for cotton seed crushing, as well as for creating a process control system; and c) to select an effective plan for the main production process of cotton seed processing based on the linear regression model.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Harald Mieg

Predatory Journals in Oncology: A Critical Appraisal

Ibrahim Abdelhafez | Mohamed Badie Ahmed | Yaman Farid M. AlAhmad
Ala-Eddin Al Moustafa | Faruk Skenderi
→ Medical Education, Research Ethics
Qatar University, Qatar

Predatory journals have gained the attention in scholarly publishing landscape since Jeffrey Beall established his list of predatory journals and publishers in 2011. Recent papers have highlighted this urgent problem in several biomedical fields (neuroscience/neurology, urology, pathology). In the present study, we critically appraised the presence and role of predatory journals in oncology. We used Beall's list as a starting point to explore potential predatory journals and publishers. Legitimate oncology journals were retrieved from the major bibliographic databases: PubMed/MEDLINE, and Science Citation Index/Science Citation Index Expanded (SCI/SCIE). The journals' assessment was based on the previously established criteria: web-site integrity, assessment of indexing and impact factor, clarity of peer-review process, legitimacy of editorial board, the status of ISSN number, and the amount of article processing charges (APCs). Results: We identified 222 legitimate journals (PubMed/MEDLINE and SCI/SCIE), and 300 potential predatory journals in oncology. All potential predatory journals in oncology shared at least one common poor-quality characteristic: Lack of web-site integrity, absence of ISSN, irregular and/or unreal number of issues per year, emphasis on open-access, anonymous and/or misused names of editorial board members, ambiguous or absent peer-review process, and considerably lower APCs. In addition, we identified 14 potential predatory journals in oncology having misleading titles, similar to those of legitimate ones. In contrast to legitimate, several predatory journals promoted bogus and/or unauthentic impact factors (e.g., Index Copernicus, Cosmos Impact Factor). Only two of the identified journals were indexed in the DOAJ whereas none (0%) were indexed in PubMed/MEDLINE and SCI/SCIE nor had a legitimate impact factor in the Journal Citation Reports. This study highlights the substantial burden of predatory journals in oncology that could potentially pose a significant threat to this academic community. This study may aid researchers when submitting manuscripts for publication in oncology journals.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Harald Mieg

The Evolution of the Modern Presidency in the United States and Its Impact on the World

Daniela Delgado
→ **Political Science**
University of Arkansas at Monticello, Arkansas, USA

Every four years, on the first Tuesday after the first Monday of November, Americans go to the polls to secretly choose a new leader in a free and open election. Due to the wording of the U.S. Constitution, Congress initially dominated the executive branch. This progressively changed under the leadership of Andrew Jackson, Abraham Lincoln, Theodore Roosevelt and Woodrow Wilson and ultimately culminated in the emergence of the "modern era presidency" in the twentieth century. This paper will explore the evolution of the presidency and those who hold power over the years, comparing how modern presidential powers exceed those of the traditional era. The focus is on those changes that prompted the evolution from the presidency as it was during colonialism to the executive branch of today; in particular, the trend whereby presidential decision making has become increasingly important and the modern president is expected to dominate domestic and international affairs in the interest of the American citizens. The purpose of this research is to evaluate how the role of the modern and traditional presidents in the U.S. have impacted and continue to make an impact on international politics.

Seminarraum 112 / A 14 –1–112
Discussant: Carol Strong

Pro-Israel PAC Expenditures and Candidate Decision Making

Cassidy O. Neri
→ **Political Science**
Eastern Connecticut State University, Connecticut, USA

The legislative process in the United States is heavily influenced by a few contributing factors including special interest groups. Interest groups make donations to political campaigns through Political Action Committees (PACs). The purpose of this project is to better understand the effect of PAC donations on legislative votes. This research specifically attempts to determine the effect of PAC donations from pro-Israel organizations on U.S. Senate decision making. Pro-Israel groups have been involved in guiding United States foreign policy for years under the broad umbrella of the American Israeli Public Affairs Committee (AIPAC). Because of the amount of foreign aid funding that the U.S. provides, it is clear that pro-Israel groups have a stake in the outcome of Congressional decisions. As a result, this paper starts with the assumption that pro-Israel groups want to have good relations with members of Congress. So, they will try to support the political campaigns of anyone in a position to impact the outcome of those foreign aid decisions. Data over time tracking campaign donations by pro-Israel groups and roll call votes of members of the Senate is being collected. Voting records will be used to rank senators on their support of Israel compared to donations. Other independent variables such as state demographics, party affiliation, home state of the senator and party of the president will be included in the model.

Seminarraum 112 / A 14–1–112
Discussant: Carol Strong

Forgotten and Forsaken Bodies: Black Trauma and the Problematic Construction of History in Public Memorials

Iceline King
→ **Theology, Sociology**
St. Catherine University, Minnesota, USA

Afro-Pessimism is a critical framework describing the ongoing effects of racism, colonialism, and enslavement on Black people, including their individual experience, embodied social reality, and transnational identity. Using the lens of Afro-Pessimism and the disciplines of theology and sociology, we designed this project to evaluate public memorials with respect to their representation of Black people's experience. Public memorials engage visitors by constructing a vision of the past that shapes a community's shared identity in the present; their truthfulness is therefore extremely important. We focused on the American South, investigating whether public memorials to victims of Hurricane Katrina told the truth about how the hurricane's devastation was linked to race and racism. Our methodology included both textual research and site visits to memorials to Katrina, the Civil Rights movement, and victims of racial terror lynching. We conducted literature reviews on theological understandings of memory, starting with Miroslav Volf but focusing on womanist theologians such as Shawn Copeland and Monica Coleman. We also read historical accounts of the hurricane and sociological accounts by Angela Davis and W.E.B. DuBois on race and class, noting how divisions and hierarchies of people in the United States are heightened by race, leaving those at the bottom to suffer. Finally, we conducted in-person content analysis in our visits to the memorials. Our analysis determined that – unlike the other memorials – the Katrina memorials neither tell the stories of Black people nor teach about how race/class/gender were central to the lived experience of those who endured the storm. We argue that the erased social reality of Black people falsifies the history these memorials purport to honor. Moreover, given the global nature of the issues addressed by Afro-Pessimism, we argue that our approach to public memorials could be useful throughout the African diaspora.

Seminarraum 112 / A 14 –1–112
Discussant: Carol Strong

Widening Participation in Higher Education Through Undergraduate Research

Dan-Emil Nădășan | Anoshamisa Gonye | Katie Hall | Wangi Pandan Sari
→ Educational Sciences
University of Warwick, United Kingdom

Our research focuses on theoretically bridging two institutional movements that have gained increasing momentum in the UK academic landscape: Widening Participation and Undergraduate Research. Whilst Widening Participation (WP) is a policy-movement seeking to increase the participation of underrepresented groups in Higher Education (HE), Undergraduate Research (UR) has instilled a paradigmatic shift towards considering undergraduate students as intra-institutional partners in producing academic knowledge. In light of this context, our research focuses on arguing that UR constitutes an effective institutional tool for the integration of underrepresented students into a community of academic practice. Thus, we have adopted a holistic approach to consider how UR can enrich the qualitative experiences of WP students within the whole student lifecycle, positively impacting their retention and post-university progression. This goes beyond the traditional, quantitative measurement of WP activity at the outreach and recruitment stages. In our research, we have identified a disparity in the literature between theoretical approaches in promoting UR as a high-impact practice for improving undergraduate academic experience and outcomes. As such, our comparative methodological approach, centered around an extensive, empirically-oriented review of literature from diverse international academic contexts, corroborates the thesis that, through UR, WP students can develop a sense of self-authorship and scholarly independence, which can substantially improve their academic engagement, retention, and educational outcomes. Thus, our research suggests that, for undergraduate research schemes across the globe to fulfill their inclusive potential, a stronger emphasis should be placed on UR as a holistic, immersive, and community-based endeavor. We argue that this highlights the nature of UR as both a process of creating knowledge and creating opportunities, suggesting that UR represents the type of learning which is most suited for providing the original and diverse answers that are needed for the challenges faced by the global society in the 21st century.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

The TAB Choice – Teaching for Artistic Behavior: Student Learning in a Choice-Based Art Classroom

Cady Parker
→ **Education, Art Education**
Bridgewater State University, Massachusetts, USA

TAB-Choice (Teacher for Artistic Behavior in a Choice-Based Setting) is a student-led art curriculum that focuses on the development of a student's individual creativity. Rather than explicit instruction, it shifts creative control of learning from teacher to student. According to TAB-Choice curriculum founder Katherine Douglas, "Artists choose both the content and process for their expression, relying on their artistic behaviors and seeking knowledge, as needed to complete their work. [TAB-Choice Teachers] want their students to do the same." The purpose of this qualitative research study was to determine what art teachers perceive to be the major benefits to students in a TAB-Choice classroom. Participants were identified through a posting on social media, through a Facebook group named Teaching for Artistic Behavior (TAB) Art Educators. The researcher posted an invitation to participate in the study, calling for K-12 TAB-Choice art instructors in the Massachusetts area. After sending additional information about the project, four participants volunteered for the study. Through the use of interview, observation, and collection of artifacts, the researcher was able to identify three emergent themes in response to the study question, "What do art teachers perceive to be the major benefits to students in a TAB-Choice classroom?" Those themes were: TAB-Choice allows students to be more creative; TAB-Choice increases student engagement; and the process utilized in a TAB-Choice classroom develops skills that can be used in all areas of life. According to a 2011 study conducted by Kyung Hee Kim at the College of William & Mary, "traditional methods of art instruction are not successful in producing students who can think critically and in original, innovative ways." The major limitation of this study was the small number of participants. Future research should include a larger participant group. Further research may include a comparative study between TAB-Choice and traditional art curriculum.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

Intercultural Competencies Among Undergraduates in the College of Arts & Humanities at Minnesota State University, Mankato

Jonathon Arndt | Olivia Thomas
→ **Ethics, Cultural Studies**
Minnesota State University, Mankato, Minnesota, USA

This study examined the impact of an intercultural communication course in arts and humanities on the intercultural competency (ICC) among a group of university students. ICC was defined as "the capability to accurately understand and adapt behavior to cultural difference and commonality." Globalization has led to increased contact between different cultures, so individuals must know how to communicate between one another and to understand the culture behind the communication (Melles & Frey, 2017). Students must strive for acceptance and understanding of religion, language, communication style, music, or any other aspect of culture. The research questions were: (1) What is the starting level of ICC among students in the intercultural communication course? (2) How does the ICC of students change after their experiences in an intercultural communications course? Data was collected using the computer-based, online Intercultural Development Inventory (IDI), developed by Hammer and Bennett (1998, 2001), which identifies five orientations toward cultural differences: denial, polarization, minimization, acceptance, and adaptation. For comparison data, investigators used previously collected data from more than 700 undergraduate students enrolled in a human relations course between 2010 and 2018. Additional data was collected at the beginning and at the conclusion of the communications 16-week course, in order to measure changes that possibly occurred as a result of the course experiences. This provided baseline and comparison data. Additional data will be reviewed after collection in an intercultural communications course. Investigators expect that the study may show that the instructional methods of the professors and the course work in the College of Arts and Humanities will lead to a positive growth in ICC among undergraduate students. The study offers insight to help determine the efficacy of teaching methods to develop ICC. Results were shared among faculty members seeking to infuse instruction with strategies to foster ICC.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Emily Kashka

OS 5

Oral Session 5

Environment
11.00 am — 12.30 pm
Hörsaal 2
A 14 – 1 – 102

Health A
11.00 am — 12.30 pm
Hörsaal 1
A 14 – 1 – 101

Health B
11.00 am — 12.30 pm
Seminarraum 113
A 14 – 1 – 113

Economy
11.00 am — 12.00 pm
Senatssitzungssaal
A 14 – 1 – 111

Communication
11.00 am — 12.30 pm
Seminarraum 031
A 14 – 0 – 031

Politics
11.00 am — 12.30 pm
Seminarraum 112
A 14 – 1 – 112

Create
11.00 am — 12.30 pm
Seminarraum 030
A 14 – 0 – 030

Rock-Water Analysis and an Account for the High Fluoride Content in Groundwater

Temwani Chisunkha
→ **Water Research**
Malawi University of Science and Technology, Malawi

In recent years most parts of Africa have been affected by droughts so that surface water has become limited. Several global communities are now utilizing groundwater as a clean water source. Therefore, groundwater studies are vital in areas where clean surface water is limited. Fluoride is one of the critical ions that affect groundwater quality. Over 200 million people in the world suffer health problems related to high fluoride in the groundwater. This paper accounts for rock-water interactions that lead to high fluoride in the groundwater. The results will be crucial to assess water quality in boreholes of different geological settings and to help in locating suitable areas for drilling boreholes. Fluoride problems are common in geological settings with crystalline rocks containing minerals such as fluorite, micas, and apatite. Fluoride ions easily replace hydroxyl ions during chemical reactions. Rocks with high calcite minerals accelerate dissolution of fluoride from fluoride-rich minerals. Pumping the borehole for 3 minutes before collecting the sample ensured that the samples collected were a true representative of fresh groundwater. 15–20 water samples in 0.5 – 1-liter polythene bottles were collected. 15 to 20 rock samples at the depth of the aquifer by drilling core logs were also collected. An analysis for fluoride, chloride, nitrate, sulphate and calcium in both water and rocks was carried using ion chromatography system and atomic absorption spectrometry. The results show that areas with high crystalline minerals have high fluoride concentrations. The presence of sodium bicarbonate, low calcium and magnesium, and high pH values in the samples correlate with the chemical equations of rock-water interaction that accelerates fluoride contents. Most areas have high fluoride content exceeding WHO standards of 1.5mg/l and such communities are prone to health hazards such as Fluorosis. Therefore, a special attention is needed to ensure the quality of borehole water.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Harald Mieg

A Bridge Over a Dry River: An Anthropological Exploration of the Water Crisis in Iran

Laura Muns
→ **Social Sciences**
University of Amsterdam, Netherlands

Although overshadowed in the field of environmental studies, anthropology can provide an important contribution in finding an answer on the increasingly pressing question of how to live sustainably on this planet. Because a shortage of water tops the list when it comes to environmental problems humanity is challenged with in the future, it is important to understand and expose the socio-economic and political dimensions of water scarcity. Starting from 1950, my thesis provides a genealogy from Iran's 'hydraulic mission' up to the current water crisis. The central question to be answered is how water scarcity, which has been recognized in Iran since 1999, could have grown into a water crisis of disastrous proportions. To answer the research question, Foucault's conceptualization of discourse provides a useful starting point for a constructionist approach to the framing of water scarcity in Iran and its consequences, leading to a socio-historical understanding of how water availability can serve both economic and political purposes. In addition, I explore how technology and expert knowledge plays a part in the social construction of reality. By applying a broad anthropological framework to the Iranian water crisis, we can begin to understand how "natural" disasters become embedded in socioeconomic relations and in what way the water crisis in Iran could generate new knowledge about the interconnectedness of people and their natural environment. Ultimately, this opens up the possibility to critically examine the limitations of technology and expert knowledge in the specific context of water management. In order to successfully pursue the most needed "ecological turn" towards long-term sustainability, it is important to understand how well newly acquired knowledge becomes incorporated into society, which depends on multiple factors including social, economic, and power relations. I thus conclusively argue for a revision of the conventional separation of scientific disciplines in the execution of hydrological projects.

Hörsaal 2 / A 14–1–102
Discussant: Harald Mieg

The Effect of Microzooplankton Grazing on Phytoplankton Biomass in the North-End Lake, Port Elizabeth, South Africa

Lethukuthula Mhlongo
→ **Planet Sciences**
Nelson Mandela University, South Africa

We conducted a study at the Estuarine and Freshwater Laboratory (33°S, 25°E) using the dilution technique. The study aimed at investigating the effects of microzooplankton grazing on phytoplankton biomass. Water samples were collected from the North-End Lake, in Port Elizabeth (33°S, 25°E), where three treatments with three replicates each were setup – a control treatment consisting of no grazers, a low-grazing treatment, and a high-grazing treatment. An inversely proportional relationship was predicted between zooplankton grazing and phytoplankton biomass, where increased grazing by microzooplankton will cause a decrease in phytoplankton biomass. The results of the study found that at higher microzooplankton densities, phytoplankton biomass reduced significantly as compared to lower microzooplankton densities. Chlorophyll, a biomass, decreased weekly throughout the four weeks. Initially, all three treatments had an average of 67 µg/L which significantly dropped to 10 µg/L and 0 µg/L in the last two weeks of the study for the low-grazing and high- grazing treatments respectively. In the last two weeks, the high-grazing treatment recorded no biomass. The physicochemical parameters across all treatments remained relatively constant throughout the course of the study. A statistical analysis performed outlined that these had a less significant impact across all treatments. The microzooplankton community largely comprised of Copepoda and Rotifera species with only a low number of Cladocera species present.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Harald Mieg

A Three-Dimensional Study of Infant Gastrocnemius and Soleus Architecture

Luke Bradshaw | Ethan Breinhorst | Susan Stott | Anne Agur | Ali Mirjalili
→ **Anatomy**
The University of Auckland, New Zealand

Gastrocnemius and soleus are important muscles in gait and maintenance of posture. However, how their architecture changes from the infant to the adult is unknown. Knowledge of infant muscle architecture may aid the diagnosis of disorders that impair the development of normal muscle architecture (e.g., cerebral palsy). Therefore, the aim was to quantify the 3D architecture of the fiber bundles (FBs), aponeuroses, and tendons of an infant gastrocnemius and soleus, and compare this to current literature on the adult architecture. The gastrocnemius and soleus muscles of a 6-month-old, formalin embalmed specimen, were serially dissected and digitized in situ, using a Microscribe® G2X digitizer. Digitized data was then exported to Autodesk® Maya®, where three-dimensional muscle models were developed. In addition, the data was imported into software developed by our laboratory to compute the fiber bundle length, pennation angle (PA), and physiological cross-sectional area of each muscle. The medial (MG) and lateral (LG) heads of gastrocnemius had mean PAs of 17.1° and 10.4°. Soleus had marginal, posterior and anterior partitions, with mean PAs of 13.4°, 16.4° and 23.6°, respectively. Distal attachment of the anterior partition was to the medial aspect of a tendon joining the calcaneal tendon (CT) distally. Architectural differences were evident when comparing infant to adult. Mean PA of MG and LG are approximately 2.4x and 1.5x greater in the infant. For soleus, mean PA of the marginal partition is approximately 2.5x greater in the adult. Additionally, distal attachment of the adult anterior partition is to the medial and lateral sides of a septum joining the CT. Following further study to define normal infant architecture, ultrasound protocols could also be used for identification of abnormal architecture in at-risk populations (e.g., cerebral palsy in preterm babies) allowing for early treatment to minimize disease severity.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Dorothea Kaufmann

Effect of Brachial Plexus Birth Injury Location on Muscle Composition

Margaret K. Tamburro | Emily B. Fawcett | Nikhil N. Dixit | Katherine R. Saul
→ **Biomechanics**
North Carolina State University, North Carolina, USA

Worldwide, brachial plexus birth injury (BPBI) is the most common nerve injury in children, with an incidence of approximately 1.5 per 1,000 live births. BPBI occurs when difficult childbirth damages the brachial plexus, a peripheral nerve bundle innervating the shoulder and arm, leading to lifelong impairment. Impairment severity is dependent on BPBI location relative to the nerves' dorsal root ganglia, either proximal (preganglionic) or distal (postganglionic). Using well-established BPBI rat models, we previously measured more detrimental changes in muscle structure with preganglionic than postganglionic injury, but the differential effects of these injuries on underlying muscle composition are unknown. We hypothesized that expected BPBI-induced increases in muscle fibrosis, indicative of abnormal muscle composition and impaired muscle function, would be more severe following preganglionic injury. Sprague-Dawley rat pups received either preganglionic, postganglionic, or sham (control) neurectomy ($n = 8$ each) at postnatal day three. After eight weeks, rats were sacrificed, and muscles of interest in the arm and shoulder were harvested bilaterally, snap-frozen, and cryosectioned. Sections were stained with Masson's trichrome to identify collagen deposition (indicative of fibrosis), imaged, and analyzed with a custom color-thresholding protocol (ImageJ, National Institutes of Health). Group comparisons were made on affected/unaffected ratios of collagen content (fibrosis) using one-way ANOVA with Tukey's posthoc tests. Preliminary results indicate an average of 20–30% increased tissue fibrosis in biceps muscles for both preganglionic and postganglionic groups compared to sham ($p < 0.05$) but no significant differences in fibrosis between the two injury groups. These results suggest changes in underlying muscle composition are independent of injury location, unlike previous location-specific changes in muscle structure. Accordingly, factors besides fibrosis may contribute to the more severe preganglionic muscle structure changes. Understanding the dependence of muscle changes on BPBI location is crucially important for developing targeted treatments and therapies for different clinical injuries.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Dorothea Kaufmann

African Spiny Mouse (Acomys) Regeneration Following Acute, Chronic and Volumetric Muscle Loss Injuries

Aaron Sandoval
→ **Regeneration Biology**
University of Florida, Florida, USA

Regeneration is the perfect regrowth and repair of damaged tissue. In humans and most mammals, a scar remains even after a wound has healed completely. Scars are generally an inevitable consequence of tissue repair and prevent regeneration from taking place. However, the African spiny mouse (Acomys) is the only known mammal in the world that is capable of scar-free tissue regeneration. Discovered by University of Florida researchers in 2012, Acomys has been shown to perfectly regenerate skin following excision and burn wounds; the spinal cord following crush injuries; and cardiac tissue following heart attacks. In the laboratory, the regenerative capabilities of Acomys are being studied by comparing it to a normal lab mouse (Mus). After a full-thickness ear punch wound, Acomys fully regenerated hair, fat, cartilage, sweat glands, and, most notably, skeletal muscle. To further study Acomys's muscle regeneration capabilities, we focused on the tibialis anterior, a leg muscle also found in humans. The muscles of both Acomys and Mus were injected with snake venom to induce a wounding and regeneration response. After giving the mice three weeks to regenerate, they were again injected. This was repeated for a total of 5 injections with a 3-week healing period between each injection. Afterwards, the muscles were harvested from the mice, placed on slides, and stained. In Acomys, the muscles regenerated almost perfectly. In Mus, however, high amounts of scarring were observed. Furthermore, we noticed large numbers of fat cells had appeared in the muscle. This finding was unexpected, but humans who suffer from Duchenne muscular dystrophy similarly have their muscle cells replaced by fat cells. Continued study of Acomys will help us to better understand this debilitating disease as well as hopefully give us insight into recapitulating the phenomenon of regeneration in human beings.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Dorothea Kaufmann

The Concentration of Heavy Metals in Tilapia Fish, Sediments and Water in River Enyau in Arua District

Ayoo Polycarp | Oloya Benson
→ **Analytical Chemistry, Method Development (Chemistry)**
Muni University, Uganda

Bio-magnifications of toxic heavy metals to humans through aquatic life occurs via industrial runoff, agricultural, municipal, and urban waste. Heavy metals, such as lead, nickel, iron, manganese, mercury, and cadmium, have WHO limits above which are toxic. Some of the effects include: reduced growth, cancer, damage to the nervous system, and in most extreme cases death. The river Enyau is the longest river in the Arua district with its source in a densely populated area which has industrial and agricultural activities like coffee plantations, tobacco plantations, and maize plantations. Some of its small tributaries flow through the Asa and Osuu Rivers. These flow through the town center and the river risks untreated discharge and run off from the activities. Nonetheless, it is used for small- and large-scale farming and domestic purposes while a variety of fish in this river, including Tilapia, are edible which could lead to accumulation of toxic metals in mankind. These pose a threat to human life, hence the need to assess the levels of Pb, Ni, Zn, Cd, Fe, and Cr in the river Enyau. This study aims at determining these metals in Tilapia fish gills, tails, eyes, muscles, and the head region, as well as sediments and water. Purposive sampling will be done from four sample stations for fish and three stations for sediments and water. Atomic Absorption Spectroscopy will detect the levels of these metals. Due to the rapid development of Arua in a quest for city status, there are rapid industrialization activities in the area. This brings the expectation of increased levels of the metals above the permissible limits by the WHO; a reason why this study will be done to save the already endangered lives of people in the Arua district.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

Exploring the Level of Heavy Metals, Hormones and Antibiotics in Imported Meat at the UAE Market

Afnan Alblooshi
→ **Public Health**
Zayed University, United Arab Emirates

Life style habits, including dietary preferences, are associated with risk or protection against some diseases. Consumption of different kinds of meats that are contaminated with heavy metals or antibiotics may cause many health issues like cancer. The goal of this study is to investigate the presence of heavy metals and certain antibiotics in a representative sample of frozen poultry products imported from several countries to the United Arab Emirates market. The variables selected depended on the availability of products in the market. A total of 24 samples of frozen poultry from different countries of origin were selected from the main supermarkets within Abu Dhabi city. Three different chicken samples of each country of origin were collected depending on the date of production (newest date, middle, and oldest date) from each supermarket, however only one local chicken and two livers samples were collected. In each sample the muscles and the skin were tested separately, which makes the total number of samples 41 for each test. The testing of heavy metals such as Cu, Cd, Zn, Pb, and Cr was done using AAS – Atomic Absorption Spectroscopy; and the testing of antibiotics such as ciprofloxacin, streptomycin, and tetracycline was done using HPLC – High Performance Liquid Chromatography. The residues of antibiotics and heavy metals in the muscles were compared with those found in the skin and the livers of the chicken. Data collection was done. The dissemination of the data analysis will be finalized shortly, and the results will be discussed at the time of the conference. Hypothesis: The levels of heavy metals that will be detected in imported frozen poultry products will be at concentrations below the maximum residue level set by the international health organizations. This is resulting from the fact that there are many strict rules and regulations towards this matter in the United Arab Emirates.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

Rapid Bioassay of Pesticide (Organophosphorus and Carbamate) Residues in Vegetables at Kalimati Market, Kathmandu, Nepal

Dikshit Poudel | **Narahari Prasad**
→ **Agricultural Science**
Agriculture and Forestry University, Nepal

The extensive use of pesticides have left their noxious residues in the vegetable products available in the consumer market which is a matter of serious concern. The prospective study was conducted from June 2014 to July 2018 in Rapid Bioassay Pesticide Analysis Unit, Kalimati Market, among 7445 vegetable samples. The insecticide organophosphates and carbamates can block the action of the enzyme Acetylcholinesterase based on absorbance percentage calculated using spectrophotometer at 412 nm. Meanwhile, cauliflower, tomato, bean, and potato cultivation were reported with the highest pesticide residue (from 35–45% and above) mostly among samples imported from Kavre, Sarlahi district of Nepal and India. The results, however, depicts the decreasing trend of pesticide residue among every province under consideration. The analysis illustrates the exponentially decreasing trend among insecticide use in vegetable from 2014 to 2018. All in all, proper quarantine, disposal, field inspection, and alternative plant protection measures to farmers are required to be suggested to protect the consumers and environment of Kathmandu valley from pesticide poisoning in both short- and long-terms.

Seminarraum 113 / A 14 – 1 – 113
Discussant: J. Robert Hatherill

The Economic Development of Egypt: Steps Towards the Future

Haya Anis
→ **Economics**
American University in Cairo, Egypt

This research paper explores the nature of economic development in Egypt. More specifically, it investigates how Egypt can pursue astute policy and mindset shifts that can render its endogenous variations hospitable to economic development. In light of recent efforts to turn the tide of Egyptian economic performance, encapsulated in the inauguration of several mega projects and the publication of the Five-Year Macroeconomic Framework and Policy in 2017, this research is important for tilling the fecund soil of economic policy evaluation, which lays the groundwork for future developmental trajectories. In order to construct a cohesive conception of Egypt's economic development, this research paper addresses the issue of defining economic development; Egypt's economic performance, in terms of its current macroeconomic policies, experience with industrialization, and status as a rentier state; and the endogenous variations that underlie this development, using an ethnographic approach. The research yielded three important outcomes: firstly, parameters of economic development must be clearly defined in order to be achieved. Secondly, institutional reform and non-politicized economic reforms are necessary for Egypt to realize its economic potential. Thirdly, while Egypt is taking steps towards short-term economic success, long-term success will be determined by the efficacy of its institutional reforms. This research adds to the existing monolith of knowledge on the Egyptian economy, and more generally, elaborates on the nature of economic development in emerging markets worldwide, by offering a totalizing view of economic development through innovative modalities that are qualitative in nature, thereby transcending the confines of mechanistic economic analyses.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Carol Strong

Rational Exuberance: Is the Cryptocurrency Market a Speculative Bubble or a Viable Currency for the World?

Lukasz Bartoszcze
→ **Economics**
University of Warwick, United Kingdom

Throughout the first three quarters of 2017, the price of bitcoin increased tenfold, attracting the attention of speculative investors, media, and financial institutions. Its proponents see it as a revolutionary, decentralized way to bypass the increasingly distrusted financial system, while its opponents stress the high volatility and potential threats it carries with anonymity and lack of governmental control. In the paper, I use a set of newly produced asset bubble timestamping methods in order to analyze the process of asset bubble formation. The methodology follows closely Philips, Wu and Yu, who created a generalized method of sup-ADF test. This is particularly interesting, as the method had not been widely used. Using cryptocurrencies as a particular example tests existing tools in a new setting and provides much-needed evidence for the speculative character of bitcoin price growth. The paper tries to examine investor's motivation in order to determine the nature of the cryptocurrency, taking into account recent events and social processes that enhance the pace of bitcoin adoption, especially among the millennials. Aiming to fill the existing gap in cryptocurrency literature, the paper uses the framework built by literature concerning the dotcom bubble, in order to compare and contrast it with the current cryptocurrency growth. A focus is placed on analyzing the role of independent, decentralized system in the current economy, emphasizing the need for a better monetary system for the increasingly unequal and unstable world. Timestamping the asset bubble provides a clear distinction between speculative and rational growth. Hedge funds and individuals aiming to invest in these types of assets, as well as the governments enforcing new legislation could use this paper to become more aware of speculative periods of cryptocurrencies and, as a consequence, invest more rationally.

Senatssitzungssaal / A 14 – 1 – 111
Discussant: Carol Strong

Suitable and Affordable Technologies for Profoundly Hearing-Impaired Mothers with Infants

Zukile Bright Mxhego
→ **Electrical Engineering and Information Technology**
Nelson Mandela University, South Africa

Being a hearing-impaired mother is difficult, scary, and has a deep impact on the quality of life. Profoundly hearing-impaired mothers depend heavily on technologies for support in taking care of their infants. Current and emerging technologies aim to improve the parenting abilities of these mothers, but the problem is a lack of knowledge about the suitability and affordability of these technologies for profoundly hearing-impaired mothers. This paper aims to understand mothering challenges of women who are hearing-impaired and technologies available to them. A literature review was conducted to investigate mothering techniques used by hearing-impaired mothers and the challenges they face, current available and emerging technologies to support them, and affordability of the technologies. With the use of logical argumentation, twelve requirements for technologies for mothers with profound hearing impairment were formulated. Five selected devices, namely: cochlear implant, video monitor, movement and sound monitor, senso device, and the fil'O prototype, were assessed against the identified requirements, using a weighted scoring approach. The assessment identified the movement and sound monitor as the highest scoring device, achieving 66%. The lowest scoring device was the cochlear implant, having a score of 39%. The analysis lead to a better understanding of the strengths and weaknesses, and therefore the suitability, of the devices that were assessed against the requirements for technologies for mothers with profound hearing impairment. The limitations of this research are that the identification of the requirements and the assessment of the devices were based on literature only. Suggestions for future research include expanding and validating the identified requirements through empirical data collection. A comprehensive set of requirements will assist to inform the improvement of technologies for profoundly hearing-impaired mothers.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Michael Levelink

A Low-Cost Stand-Alone Eye Tracking System for Motorized Wheelchair Control

Mahmoud Dahmani | Abdalla Hefny | Khaled Al-Jayyousi
→ **Artificial Intelligence**
Qatar University, Qatar

In the 34 developed and 156 developing countries, there are about 132 million disabled people – constituting 1.86% of the world population – who need a wheelchair. Additionally, there are millions of people suffering from spinal cord injuries, who cannot even exploit technically advanced wheelchairs due to their motor disabilities. Being unable to move is a severe restriction on the capacity to engage with society, and thus eye-controlled wheelchairs could significantly improve the living standards of these people. This project will not only empower any immobile wheelchair user but also provide organizations that assist wheelchair users with a low-cost solution. The proposed eye tracking system comprises two modules: a data acquisition subsystem (DAS) and a decision-making subsystem (DMS). The DAS was designed using a custom-made image acquisition device and an array of ultrasound sensors. Output signals from the DAS are subsequently processed by the intelligent DMS which is a mini-computer, namely an UDOO x86, that performs gaze estimation in real-time. Moreover, if the distance between the wheelchair and any obstacle goes below a safety margin, the DMS will immediately halt the wheelchair's motion regardless of the user's point of gaze. The novel contribution of this work is a computationally inexpensive implementation of a deep learning-based gaze estimator. It is essentially a compact convolutional neural network (CNN) that accurately classifies the user's gaze at a rate of 30 frames per second. Relatively small user-specific data is collected to train a dedicated CNN for each user before they first utilize the eye-controlled wheelchair. This project renders motorized wheelchairs driven by eye movements and therefore helps people with motor disabilities by restoring their ability to move effectively and effortlessly without having to rely on others.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Michael Levelink

Autonomous Operation for Multi-Floor Robot Navigation

Sorawit Inprom | Jirat Nakarit | Supat Limsamutchaikul
→ Complex Systems, Artificial Intelligence
King Monkut's University of Technology Thonburi, Thailand

Recently, there are many emerging applications which require robot navigation in indoor environments such as floor cleaning robots, mail delivery robots, etc. However, most of them can operate only on a single floor which greatly restricts their working area. In this paper, we present the navigation strategy for a mobile robot on a multi-floor building focusing on elevator usage. In an autonomous elevator operation, there are a number of challenges including an elevator state recognition system, an elevator's button manipulation, and variation in the lighting and environmental condition. First, in order to detect, localize, and label the buttons of an elevator, we use state-of-the-art vision algorithms together with machine learning techniques for maximizing labeling precision as well as minimizing localization error. We collected an image dataset of elevator panels and buttons at different lighting conditions for training and testing the proposed vision algorithm, so that we can select the best method for our vision-based recognition system. Second, we designed and developed a wheeled mobile robot with a six degree of freedom serial manipulator and a robot finger. This robot is designed to move in and out of the elevator as well as operating the elevator by pushing buttons on the front and side panels. A force sensor is also installed at the robot finger for force interaction with the environment. The third task is to implement a robot navigation system which allows the robot to plan its path within the elevator environment. By constructing an occupancy grid map of the environment, the collision-free path is calculated. The proposed mobile robot system is validated by experiments in which the robot has to autonomously navigate within the elevator area. Different operations are tested including pushing the elevator call button, navigating into the elevator, selecting the target floor and navigating out of the elevator.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Michael Levelink

Soup Kitchens in Street Corners: The Rationalized Compassion

Shen Yang
→ **Social Sciences**
Pace University, New York, USA

Soup kitchens in New York City are providers of compassionate care for people who suffer from poverty or homelessness. This research adopts the methodology of William Foote Whyte's classic study of Boston's Italian North End, which he calls "street corner society" (1981). Since then, his work has given rise to the field of Urban Studies. Adapting his ethnographic methods, including participant observation and interviews, I volunteered in two soup kitchens, one in Greenwich Village and the other in Chinatown, obtaining qualitative data through participation in providing meal services, conversations with people, taking field notes during breaks, and interpreting the meanings in the data. This paper addresses the specific challenges of street-level work faced by frontline workers. The staff in both kitchens, especially short-term volunteers, constantly changes, but the number of diners in both locations remains high. Accordingly, both institutions adopt a rational system to set up a model of accountability. To avoid risks and maintain order, the Greenwich Village kitchen controlled volunteers' behavior by enforcing the same procedure each time, while the amount of food waste exemplifies how the Chinatown kitchen presents their control in the service to the public. Although the performance ought to be controllable and predictable, the rational system relegates individuals' status and aggregates particularly the diners' alienated social identity. As Bernardo Zacka describes in his book, When State Meets the Street (2017), street-level agencies, including soup kitchens, face challenges from daily service provision. Therefore, they have to make sensible compromises between efficiency and normative considerations. In a highly heterogeneous urban environment like New York City, sentimentality will be swept away, and compassion will be rationalized. Drawing on the data I collected, I hope to offer a theoretical analysis of human behavior and a framework for a more accurate picture of normative sensibility.

Seminarraum 112 / A 14 –1–112
Discussant: Elizabeth Sandell

The Challenges Faced by Orphanage Direct Care Workers in Guyana

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→ **Sociology**
University of Guyana, Guyana

Around the world, caregivers are caring for millions of children with traumatic experiences in institutional care organizations (i.e., orphanages and/or foster care systems). Such care of children is also being given in Guyana. This study explored the challenges faced by direct-care workers who have the responsibility of caring for children in institutional care organizations in Guyana. The aim was to investigate the essence of the experiences of orphanage direct-care workers in working with the children in their care. The existing literature highlighted how the challenges encountered can affect the quality of care the children receives and the impact it has on the development of the children. Additionally, the transactional model of stress developed by Lazarus and Folkman explains the stressful nature of caregiving by accounting for the differences in emotional, social, and psychological factors of the caregiver. This study used semi-structured interviews to collect data from eight caregivers at three orphanages. It was found that there were no specific requirements to get a job as a direct-care worker in the three orphanages assessed; training was infrequent; and, in some cases, training was given to specifically chosen direct-care staff members and not to everyone. In addition, the caregivers found it challenging to work with the children who displayed certain antisocial and emotionally troubled behaviors. Some caregivers felt that they experienced further difficulties because social workers misdiagnosed the conditions for some of the children. Some caregivers also believed that the social workers detached themselves from the children while the children still depended on them and as such contributed to the difficulties they experience in working with the children.

Seminarraum 112 / A 14 –1–112
Discussant: Elizabeth Sandell

Violation of Human Rights and Humanitarian Law in Kenya

Lydia Makena
→ **Humanitarian Law**
The Catholic University Of Eastern Africa, Kenya

This project investigated a case study of Internally Displaced Persons (IDPs) in Kenya and its implications on violations of human rights and humanitarian law. Objectives of the project were to investigate whether rights accountability framework for the IDPs in Kenya safeguards them against violations of their human rights; gains realized by the government in giving their support; establish challenges faced by the government in giving them support; and considering policy that safeguards the gains and mitigates the challenges for sustainable solutions for them. Utilizing Riggs theory of 'prismatic society,' qualitative methodology, interviews, Focus Group Discussions (FGDs), documentation, and purposive sampling techniques; the study included a sample of 302 selected participants from a target population of 5,392. The respondents included 249 IDPs and 53 administrators for displaced persons. The results indicate that there are violations of human rights of IDPs contrary to humanitarian law. The protection and assistance provided to IDPs is questionable and discriminative. The government has given IDPs financial assistance as a start-fund and reconstruction fund and resettled many from the main camps to self-help camps and others to their farms or homes or to be intergraded. The main challenge encountered by IDPs in Kenya continues to be the absence of political solutions to local and regional conflicts. Finally, there is absence of clear legal reform framework to determine how to go about resolving IDPs predicaments based on non-violation of human rights and humanitarian law. The project recommends that the government should ensure that protection and assistance provided to IDPs is not questionable and is void of discrimination. Furthermore, the government should monitor the financial sustainability and any other assistance given to IDPs while local and regional political solutions are made to solve armed conflicts and violence. Finally, the government needs a clear legal policy framework for resettling IDPs.

Seminarraum 112 / A 14 –1–112
Discussant: Elizabeth Sandell

Uncovering Sartre: Analysis of an Unpublished Journal

Dealla Samadi
→ **Philosophy**
University of Kentucky, Kentucky, USA

Discovering a French journal in the collection of the University of Kentucky Special Collections Research Center purported to be written by the famous existential philosopher Jean-Paul Sartre led to questions regarding its provenance and what secrets it contained within its covers. Beyond the excitement of reading a famous author's text that had not yet been analyzed, the first research question that demanded to be answered was whether or not it was truly written by Jean-Paul Sartre. Unsigned and undated, there was no physical evidence that the journal was written by the hand of Sartre other than the item's accession record in the archives' database. During a year-long internship in the archives, research was conducted to ascertain the authenticity of the journal by transcribing the handwritten French script and translating the transcribed French into English. The translated text was then analyzed for content to determine what he was doing at what time and the location, which was then compared to Sartre's highly documented life as a public figure. The text was also compared to Sartre's handwriting in other collections and known writing style from his numerous published journals. Once the provenance was established with relative certainty, examples of the text and findings were forwarded to a Sartre expert for validation. It was found that this unknown and undocumented Sartre journal is the opening chapter of a book Sartre wrote in 1951 entitled "La Reine Albemarle". Unread for over 50 years, this text has provided valuable insights into the life of the famous French philosopher and has allowed Sartre experts a new opportunity for scholarship and research. A digital humanities project was created to retrace Sartre's steps in Rome, Italy as outlined in his 15-paged journal.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Gregory Young

A Memoir of Eric Funk: Music Influences in a Global Environment

Peter Pomajevich
→ **Fine Arts, Dance, Music and Theatre**
Montana State University Bozeman, Montana, USA

Historically, biographies have been a central source of knowledge about composers that inspire others to meet their own challenges, accomplish goals, and make significant contributions to the world. Growing up in a small town in the rural state of Montana, USA, Eric Funk has made global impacts through his musical compositions. Funk has composed a total of 149 major works, won numerous awards nationally and internationally, and his music has been performed around the world for over 40 years. This research will be the first comprehensive documentation of the musical innovations of this composer, conductor, performer, presenter, and teacher. Throughout his career Funk has been interviewed on live television and radio shows sharing stories from, and aspects of, his life and music. Funk is most well known as an American classical contemporary composer, and host of the regional Emmy-award winning PBS television show "11th & Grant with Eric Funk." This study recovers experiences and events of Funk's life through interviews, analyses of recordings, and open sources to collect further data. This data will then be used for the final construction of Funk's memoir. Innovative technologies for the dissemination of this study will be used to reach a global audience. This research will address how music has transformed Eric Funk's life, detailing the events and the people that have led to his comprehensive artistry, and finally how he influenced the world around him with his music.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Gregory Young

Escape Stories: Experience and Entering. A Student Project

Julia Kreuch
→ **Theology**
Ruhr University Bochum, Germany

For decades, reports about a crisis-ridden region, the Middle East, have continued in the daily media. These reports about political machinations, armed conflicts, humanitarian catastrophes, and refugee issues are part of the daily media presence. Starting out from several study visits to Lebanon and Iraq, as well as a seminar on the subject of Doing History: Experiencing and Capturing Refuge Narratives of the chair of Church History at the Protestant Theological faculty of the Ruhr-University Bochum, a student project was developed. Ethno-religious minorities from the Syrian and Iraqi region were interviewed. Then these interviews were transcribed and partially translated. These should stimulate a discourse by giving affected people a voice and talking about their different impressions and experiences. In the language of historical research this is understood as a source-critical documentation and as a starting point and basis for further researches. In disciplines concerned with culture, such as anthropology, ethnology, sociology and history, this approach is known as life history method. The driving force behind the project, was the students' interest the in life-stories of people who experienced escape and expulsion in the current confusion in Middle East. The minorities are particularly affected by these, but they are still part of the mosaic of the "Orient" and make up the diversity of the Middle East. The constructive examination of the socio-political events was important for us in order to face the topic of the "refugee crisis," to understand it, as well as to find instructions for action for the various fields of activity. This is why this student project represents a beginning, which shall find continuation to deepen the acquired expertise and to provide material for further researches. Another aspect which might be interesting for research could be the role of religion in escape and expulsion.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Gregory Young

OS 6

Oral Session 6

Environment
1.45 pm — 3.15 pm
Hörsaal 2
A 14 – 1 – 102

Health A
1.45 pm — 2.45 pm
Hörsaal 1
A 14 – 1 – 101

Health B
1.45 pm — 3.15 pm
Seminarraum 113
A 14 – 1 – 113

Communication
1.45 pm — 3.15 pm
Seminarraum 031
A 14 – 0 – 031

Politics
1.45 pm — 3.15 pm
Seminarraum 112
A 14 – 1 – 112

Create
1.45 pm — 3.15 pm
Seminarraum 030
A 14 – 0 – 030

Development of an Eddy Current Drive Based on Permanent Magnets

Jaspar Halbey | Mirko Kemna
→ **Applied Physics, Engineering**
University of Applied Sciences Emden-Leer / University of Oldenburg, Germany

As the urge to reduce greenhouse gas emissions is becoming more pressing, it is clear that sustainable alternatives to airplane travel need to be developed. Promising concepts, such as the one popularized under the catchphrase "Hyperloop," – often involving levitating capsules travelling through an evacuated tube – require novel innovative solutions to technological challenges. Against this backdrop, the presented research project explores the concept of using a rotating chain of permanent magnets for contactless vehicle propulsion by utilizing eddy current forces. When a magnet moves relative to a conducting material such as aluminum, it will be subject to a drag force slowing it down and a lift force pushing it outwards. The former is utilized in eddy current brakes, while the latter can enable magnetic levitation. This research effort aims to extend the realm of technical applications by using the drag force for propulsion. In order to evaluate this idea, a test bench was designed and constructed. A chain of permanent magnets was built and mounted on two rotating gears above a conducting plate. While the chain was being driven by a motor, the aforementioned forces were recorded by sensors. After a proof of concept was reached, the project further aimed to provide a quantitative assessment of how different parameters influence the forces as a function of relative speed. In particular, thickness, width, and material of the conductor samples, as well as distance between magnets and conductor, were examined. In brief summary, the force magnitude was large for highly conductive samples, thick samples, samples of medium width, and if the separation distance was small. The measurement data were mostly consistent with theoretical predictions. The results could be useful not only for this particular concept but also for related applications such as linear induction motors, eddy current brakes or passive magnetic levitation systems.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Sally O'Connor

Novel Polymer-Derived Ceramic Matrix Composite Fabrication Using Additive Manufacturing for High Temperature Aerospace Applications

Spencer Dansereau | David Marshall | Rishi Raj | Paolo Colombo
→ **Materials Engineering**
Montana State University Bozeman, Montana, USA

As economic and environmental demands of aerospace propulsion systems increase, requirements for the fabrication of novel high-temperature materials via efficient and environmentally friendly methods also becomes increasingly critical. In this work, the unification of two developing methods of producing ceramic residues from silicon-based pre-ceramic polymers (PDCs) were used to fabricate novel ceramic matrix composites (CMCs). As the base preform of the composite, fibrous polymer lattices were '3D-Printed' using the Direct Ink Writing (DIW) process. This DIW process uses a three-axis robotic syringe stage, and modulated pressure to extrude an alcohol-polymer ink into a three-dimensional lattice from a virtual design. The dissolved polysilizane ink compositions were optimized for uniformity, rheology and cross-linking. During an optimized heat treatment of the printed polymer preform, the lattices were reduced to a SiCN ceramic. Subsequent treatment of the ceramic lattices saw the surrounding matrixes being built up, layer by layer, via automated flash pyrolysis and micro-powder infiltrations. Flash pyrolysis is an additive manufacturing method in which a microscopic layer of diluted polymer is deposited, and then flash heated to produce a uniform ceramic coating, or layer. The flash pyrolysis process was improved to allow the entire lattice to be submerged into the diluted polymer, allowing adequate dispersion of the precursor throughout the structure with each cycle. Mechanical tensile strength testing, modulus of rupture and multiple characterization techniques will be conducted to verify the mechanical behavior at various stages of the fabrication, surface and bulk elemental composition, and micro/macro-structure of the produced composites. These composites have potential uses as structural materials in hot-section turbine components, scramjet engines, hypersonic airframes, and spacecraft.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Sally O'Connor

Re-Design and Integration of Modern Technology into the Traditional Charcoal Cooler

Dennis Chang'ach | Edgar Kitui | Denis Mwai
→ **Electrical Engineering and Information Technology, Agricultural Science**
Jomo Kenyatta University of Agriculture and Technology, Kenya

In most developing economies, the horticulture industry is plagued by post-harvest losses which can be as high as 50% with one of the main causes being a lack of affordable cold-storage solutions. Without such solutions, smallholder farmers are exploited by unscrupulous middlemen who take advantage of the farmers' need to sell their produce fast (to avoid loss) thus buying their produce at throw-away prices. Therefore, the goal of this research was to develop a suitable and affordable way of lowering the temperatures where perishable produce is stored after harvest. This would reduce the metabolic activity and microbial growth in the harvest, thus extending the shelf life by weeks or even months. A study on the current methods being used by farmers revealed that the cold-storage chain was virtually non-existent due to the high cost of equipment and unreliable or total lack of electricity in rural areas. Most farmers resorted to using evaporative cooling such as the traditional charcoal cooler. However, this method is usually ineffective as it requires a lot of human capital to ensure optimum cooling performance. Moreover, it results in wastage of water since overflow water used in cooling goes to waste. The developed solution is an automated solar powered evaporative cooler that offers a convenient and efficient way of extending the shelf-life of perishable farm produce at an affordable price. It is a modification and enhancement of the traditional charcoal cooler that involves replacement of the charcoal padding with an eco-friendly material and integration of sensors to enable control of the cooler's operation. The automation enables the cooler to maintain consistent temperatures which are low enough to extend the shelf life of the farm produce, such as leafy green vegetables and fruits, but high enough to avoid injury from chilling.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Sally O'Connor

Medication Assisted Treatment (MAT) for Opioid Use Disorder (OUD) in Pregnancy: Program and Psychiatric Implications in Delivery and Neonatal Outcomes of Success

Avery Meyer | Meghan Sharp, MA | Mona Rani Prasad, DO, MPH | William Thomas Whitlow Courtney Lynch, PhD, MPH | Kristen Carpenter, Ph.D.
→ Psychology, Public Health
The Ohio State University, Ohio, USA

Women make up 38% of people with an illicit drug use disorder in the United States, but only 10.6% of these women receive treatment. Compared with men, women are more likely to identify childhood trauma as the reason for drug use and have a psychiatric comorbidity. Over 4% of US women use illicit drugs during pregnancy. A 2016 US survey identified opioids as the fourth most-used illicit substance in pregnancy. Approximately 25-33% of pregnant women with opioid use disorder (OUD) have a comorbid psychiatric disorder. STEPP (Substance Abuse Treatment, Education and Prevention Program) is a multifaceted clinic treating pregnant women with OUD at The Ohio State University in Columbus, Ohio USA. Patients are stabilized with medication assisted treatment (MAT). Medication is monitored at weekly visits that include urine toxicology, prenatal care, and psychosocial support. Retrospective medical chart review was conducted for STEPP patients (N = 460; Mage = 28 years), with a focus on maternal and neonatal outcomes, program compliance, and psychiatric comorbidities. The majority were non-Hispanic, Caucasian, unmarried, receiving public insurance, and treated with buprenorphine/naloxone at the time of delivery. Program compliance was defined as testing positive for MAT and negative for illicit drugs at delivery. Compliant patients (n = 318, 72%) were started on MAT earlier ($p = .003$), more likely to breastfeed ($p = .017$), and delivered at a later gestational age ($p = .030$) with higher birth weight ($p < .001$). 50% of the patients had at least one psychiatric diagnosis noted during pregnancy. These patients were more likely to test positive for an illicit substance during pregnancy, but this difference dissipated at delivery. Infants with benzodiazepine exposure required a higher morphine dose than infants without benzodiazepine exposure ($p = .007$) which is consistent with the literature. Results indicate that STEPP enhances delivery outcomes and mitigates illicit drug use associated with psychiatric comorbidities and prenatal MAT programs like it may be similarly effective.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Jing Tan

Improving Genetic Diagnosis for Developmental Delay and Its Cost Effectiveness in South Africa

Julia Ran | Lydia Wu | Emma Wiener
→ **Public Health, Human Genetics**
University of Chicago, Illinois, USA

Developmental delay (DD) refers to a failure in attaining age-appropriate motor, behavioral, and other developmental milestones. DD often has genetic cause. While accurate molecular diagnosis is crucial for providing timely and appropriate care for patients with DD, it is often unavailable in developing countries without access to novel genetic technologies such as exome sequencing. In South Africa, while traditional genetic testing services such as QFPCR, karyotype, and MLPA® are available, the efficacy of these techniques in molecularly diagnosing patients with DD has never been studied. Additionally, although traditional wisdom assumes exome-sequencing to be financially unviable for South Africa's public healthcare system, there has been no statistical evidence to validate such claim. In a retrospective chart review, we examined 213 patients seen at Chris Hani Baragwanath Hospital Genetic Clinic – the nation's largest genetic clinic – between June and December 2017. The cumulative cost of genetic investigation for each patient is calculated using cost estimates from the National Health Laboratory Services. We compared the diagnostic outcome and cost among three mutually exclusive groups of patients: those with DD as a primary symptom, with a known chromosomal disorder, and without DD. In our sample, 37% of patients have DD as a primary symptom and only nine are molecularly diagnosed. On average, diagnosing each DD patient costed R8770 on average (USD114, range: R4,375 – R12,583), which is significantly greater than for other groups of patients. For currently undiagnosed DD patients with more than 3 genetic investigations, the current repertoire of tests is more expensive than the projected cost of performing exome sequencing. The present study is the first attempt to evaluate the use and cost of genetic investigations for DD diagnosis in South Africa, demonstrating the potential financial merits of "leapfrogging" in developing countries.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Jing Tan

Investigating a New Target for Treating the Global Diabetes Epidemic

Colleen Newey | Jenny Pape
→ Microbiology, Virology and Immunology
Brigham Young University, Utah, USA

Diabetes is currently the 6th leading cause of death worldwide. According to the Global Burden of Disease Study, in April of 2016 approximately 422 million people lived with diabetes and the global monetary cost of diabetes was 825 billion dollars per year and is growing. Better treatments are clearly needed. Diabetes is a disease with symptoms of high blood glucose and high triglyceride levels, caused by poor regulation of insulin. PAS (Per-Arnt-Sim) kinase is a protein kinase known to regulate glucose, insulin, and triglyceride levels in mice placed on a high fat diet, suggesting it as a new therapeutic target for diabetes (Hao et al, 2007; Borter et al., 2007; Semplici et al., 2016). Our goal is to more fully understand the phenotypes associated with PAS kinase. We have studied the PAS kinase related phenotypes in mice placed on a high fat high sugar diet, which more closely approaches the Western diet. We have observed significant differences in the triglyceride as was seen on the high fat diet and have identified specific triglycerides regulated by PAS kinase. These include primarily saturated triglycerides. In addition, we have quantified the metabolic rate of various cells from the PAS kinase and wild type mice. Muscle and liver cells isolated from the PAS kinase-deficient mice display increased respiration. We have also observed this increased respiration in yeast cells, suggesting conserved function. Taken together, our results suggest that PAS kinase controls glucose at a key point in glucose partitioning, the junction of triglyceride biosynthesis versus respiration. Our results suggest PAS kinase as a therapeutic target for the treatment of high triglycerides and metabolic diseases. Combined with previous results that implicate PAS kinase in the direct regulation of insulin, PAS kinase appears to be an attractive therapeutic target for diabetes.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Dorothea Kaufmann

Diabetes Risk Score: A Simple Screening Tool for Type 2 Diabetes Mellitus in Qatar

Khaled Wagdi Sadek | Ibrahim Abdelhafez | Israa Al-Hashimi | Wadha Al- Shafi Fatihah Tarmizi | Hissa Al- Marri | Nada Salem | Mohammad Abdullah Balideh
→ **Medicine**
Qatar University, Qatar

Type 2 diabetes mellitus (T2DM) is one of the most prevalent disease worldwide, especially in Qatar. Several risk scores have been developed for screening diabetes. However, there is no risk score tailored for predicting the risk of developing T2DM in the Qatari population. The aim of this study was to establish a reliable risk score for identifying individuals at high risk of developing T2DM in Qatar based on simple variables. A sample of 2,000 individuals, provided by Qatar Biobank (QBB), aged 18 years and above and without a history of type 1 diabetes mellitus or gestational diabetes were cross-sectionally evaluated. A logistic regression model was used to determine the best predictive variables for T2DM. Variables including age, gender, hours of sleep, smoking status, waist/hip ratio, BMI, hypercholesterolemia status, hypertension status, physical activity, and vegetable and fruit consumption were implemented in the statistical analysis. Age, gender, BMI, hypercholesterolemia (HCL) status, and hypertension (HTN) status predictors were found to be statistically significant in predicting T2DM and constituted the risk score. The model showed a moderately high performance with an area under the receiver operator characteristics curve (AUROC) of 0.77. Based on the developed risk score, the percentage of participants at low, moderate, or high risk of developing T2DM was 34.7%, 36.5%, 23.1%, respectively. Our study developed a risk score tool designed for Qatari population to assess the risk of developing T2DM based on demographic and anthropometric factors. It provides a simple, cost-effective and convenient tool for screening to identify individuals at high risk of T2DM. At risk individuals identified by this tool (high scores) should undergo further blood testing and early lifestyle modifications for primary prevention.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Dorothea Kaufmann

Glucose-Dependent Insulinotropic Polypeptide Transcriptional Control in a Neuroendocrine Cell Line

Ivan Beltran | Monica Losada | Jose Iglesias
→ Nutritional Sciences, Cell and Molecular Biology
Universidad Antonio Nariño, Colombia

Incretins are hormones secreted in the intestine after food intake, which increase plasma insulin levels. They have been used in nutritional dysfunction prevention and metabolic disease treatment. These dysfunctions represent the main risk factor for the development of metabolic syndrome, obesity, type 2 diabetes, and cardiovascular disease, which have a great impact on public health. Our research aims to elucidate the molecular mechanism that regulates the production of Glucose-dependent insulinotropic peptide (GIP) through the modulation of the transcription factor PPARβ/δ. GIP is an incretin released by the digestive tract, which induces insulin secretion and promotes the growth and proliferation of pancreatic beta-cells. Furthermore, large-scale tissue effects are also described, such as fat decomposition and storage, and regulation of bone metabolism, among others. Several proteins, stimulated by the absorption rate of different nutrients, regulate GIP production at the molecular level. The PPAR family is a group of nuclear receptors and transcription factors, which are important in energy homeostasis at different tissues. Despite the overlap of expression and cellular functionality of PPARs subtypes, PPARβ/δ has been associated with the regulation of GIP production. Our group reduced PPARβ/δ expression by gene silencing through siRNA transcript interference in a neuroendocrine cell line, and this process was validated by qPCR and western blot. We found a decrease in GIP expression in the PPARβ/δ interfered cell line. Various reports show that subtypes of PPARs are regulated by different micro-RNAs. In particular, micro-RNA29a negatively regulates PPARβ/δ in beta cells. We will evaluate microRNA29a gene expression using qPCR, in order to estimate their role in GIP production. Our research will contribute to elucidating the molecular mechanism that modulates GIP production and therefore the incretin effect driven by GIP. We expect that our work will contribute to the development of new therapeutic strategies in metabolic diseases and obesity treatment.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Dorothea Kaufmann

Online Classroom Platform Based on Augmented Reality Technology

Wannachat Surasiang
→ **Educational Research**
King Mongkut's University of Technology Thonburi, Thailand

Augmented reality (AR) technology is a very useful and interesting technology when it is applied for educational purposes. The important thing is that the learner must enjoy it in order for the learning process to take place efficiently as seen in elementary students. Therefore, AR technology is an important part to make the learning process feel tangible, enjoyable, and fun. To learn something new, one should not be confined to a classroom. With a phone, a cardboard box, and a tag id, learning could take place anywhere from a platform which provides the students with an online classroom via an application with content made up by experienced personnel in that topic. The effectiveness of the learning process could be varied between class to class depending on the teaching style of the teacher. The content will be designed in a way that the students could explore the possibilities. For example, to learn about Ohm's Law Theory, the student can explore the circuit with different values and parameters in the virtual environment whilst the teacher is teaching. A junior student of robotics and automation engineering will evaluate the proposed system in three categories. First, the effectiveness and the stability of the system will be tested to ensure the smoothness of the learning process. Next, the ability of real-time connection between the teacher and the student through an online classroom via AR technology will be evaluated. Finally, values for learning purposes of this AR-based learning system will be investigated.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Victoria Marín

Towards Student-Designed Digital Infrastructures at Universities

Alexa Böckel | Elisa Schopf
→ **Information Technology, Educational Research**
Leuphana University of Lüneburg, Germany

Digitization is on the forefront in societies - but what does the current situation at universities look like? Digital tools are one driver for innovation, and they offer the potential to facilitate communication and information exchange between individuals and groups at higher education institutions (OECD 2016). While there are several tools used for learning, teaching, and administration, and students generally appear to be satisfied with their IT infrastructure (Persike & Friedrich 2016), there is a lack of more detailed knowledge and acknowledgement of students' needs, their expectations, and possibilities for participation in terms of digitization. As part of a student initiative of the German Forum for Higher Education in the Digital Age (Hochschulforum Digitalisierung), this study aims to develop recommendations of how the design of a student-driven university-wide communication infrastructure is supposed to look like and to what extent and with which formats students can be involved in the decision processes. We applied a mixed-method design including a qualitative pre-study with a focus group of students from eleven German universities. Based on that, we are going to carry out a quantitative survey with additional open question items among students at higher education institutions across Germany. The survey inquires students' needs regarding different characteristics and functionalities of a digital platform including communication, digital learning, administration, and project management. On top of that, we will integrate questions about student participation in order to find out how and to what extent students are already consulted in the strategic development processes regarding digitization and how they want to be involved. At the World CUR we will not only present our empirically based results, but we will also use the opportunity to discuss and validate whether our findings and recommendations regarding digital university infrastructures are also relevant for the global global higher education landscape.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Victoria Marín

Surrogate Robot for Telepresence

Suktipol Kiatthaveephong | Kaewkirati Boukaew
→ Robotic and Automation Engineering
King Mongkut's University of Technology Thonburi, Thailand

A team of senior students of robotics and automation engineering at King Mongkut's University of Technology Thonburi has proposed a solution for distance education, which increases the possibility of learning in remote locations via telepresence technology. Telepresence is a technology that brings users to the remote location in form of a robot with a camera. Users can see the environment of the remote location via display screen. The problem is the limitation of the display screen that does not give a realistic experience because it is only a 2D screen. Thus, a solution is the combination of virtual reality technology (VR) and a telepresence robot to increase the three-dimensional realism of telepresence technology. The system overview of this project includes a surrogate robot with a stereo camera that lets the user view the remote environment realistically in first-person view (FPV) via VR head-mounted display. The user can control the movement of the surrogate robot to get more views of the remote location. The user does not only control the surrogate robot but also obtains more knowledge via augmented reality (AR) in the form of 3D models that are shown when the user looks at the AR markers. Despite the fact that the surrogate robot has no hands, it can interact with interactive IoT devices in the remote location. The project experiments include system performance, usability, and values for specific task. System performance represents the efficiency of the operation of the surrogate robot, such as video latency, video resolution, robot control precision, etc. Usability is evaluated from questionnaires and observations to ensure that all users can understand how to use this system. Values for specific tasks represent how the surrogate robot and system can perform specific works. The main purpose of this surrogate robot is to increase the opportunities of users who want to learn from the remote location, such as museums, exhibitions, etc.

Seminarraum 031 / A 14 – 0 – 031
Discussant: Victoria Marín

Dating Soyboys: Women's View of Veg* Men in Romantic Relationships

Aidan Jones
→ **Social Sciences**
Chapman University, California, USA

As more men attempt vegan or vegetarian (collectively referred to as veg*) lifestyles, the historic link between meat and masculinity has become more pronounced. Women tend to gravitate toward several traits associated with veg* diets (e.g., compassion and health). However, the emasculation associated with these diets may also repel them. This project employed a mixed-methods analysis. It utilized data from a self-administered survey and in-depth, one-on-one interviews with ten women who dated veg* men. I recruited subjects via convenience sampling from personal social networks and veg* conferences. The present study explores how heterosexual and bisexual women come to terms with the positive qualities and emasculation that both accompany men who follow veg* lifestyles. Findings suggest that most women tended to view veg* diets as a masculine strength as well as an indicator of kindness. These desires form the concept I call "strong-kindness." This strong-kindness ideal alters traditional forms of masculinity. It upholds the strength valued in masculinity but adds the expectation to be kind. Incorporating aspects of veg* lifestyles might improve the health of all as well as the environment. Therefore, removing the stigma associated with these lifestyles may help improve the lives of all individuals regardless of gender identity.

Seminarraum 112 / A 14 –1–112
Discussant: Julye Bidmead

The Dialectic of Dissimilarity and Relation – The Position of Man and Woman as Seen by Karl Barth

Rebekka Scheler
→ **Theology**
Ruhr University Bochum, Germany

In light of the position of man and woman towards each other, their right to equality and the issue of whether that equality exists in practice between the genders, this bachelor thesis addresses the status of woman and man towards each other from a theological perspective. From the textual basis of Karl Barth's Church Dogmatics, his Christological anthropology is explained and then contrasted with his conservative view of the relation between man and woman. However, his view of gender relations can be used to develop a more modern and secular way of analyzing power relations between male and female. To that end, the work of Magdalene Frettlöh, a contemporary theologian, is used extensively in the thesis. Furthermore, newer theories on gender will be used to underline the importance of updating the old dichotomy of man and woman. It can be said that Barth remains behind his emancipative principles which he lays down in his anthropology. Using that anthropology, a new way of looking at humans as genuinely human can be approached, rather than binding their humanity to their relation to other human beings. The step from relational anthropology to a Christological or individual anthropology is the logical consequence.

Seminarraum 112 / A 14 –1–112
Discussant: Julye Bidmead

The United States Adversarial Court System: Addressing Sexual Assault with Restorative Justice

Leah Sparkman
→ **Political Science, Criminology**
University of Arkansas at Monticello, Arkansas, USA

Sexual assault is a pressing problem whatever the country. The U.S. Rape, Abuse & Incest National Network (2018) reports that a person is sexually assaulted every 98 seconds in America alone, leaving these lives changed and impacted traumatically. Sexual assault cases in the U.S. have a prosecutor and a defense, similar to every other crime addressed in the American justice system. While this has merit, there are other possible solutions for non-violent offenders of sexual assault. In juxtaposition to the current adversarial-only system is the alternative of rehabilitation through restorative justice. Restorative justice is unique because it addresses the actions taken (retribution style) by the perpetrator, as well as the emotional, physical, and traumatic harm imposed upon the victim-survivor. It thus focuses on individuals, targets the issues that brought them to this place in their lives, and helps fix the problem while ensuring both can properly and healthily transition back into everyday life. Essentially, it allows for the (non-repeating) perpetrator to get the help they need while it also affords the victim-survivor agency and choice in the restorative process. Introducing this idea into U.S. would mean creating a hybrid adversarial-restorative system similar to that in the United Kingdom (also successfully implemented in Norway, Belgium, and Ireland). Hence, this paper explores the potential impact of a hybrid system including a trial to establish appropriate measures of action, as well as the establishment of measures of justice in the form of punishment or restoration, depending on the specifics of the crime. It subsequently argues that this approach would balance out the adversarial nature of the current system, while confronting other significant harms to the victim-survivor such as re-victimization. This internationally comparative research is pivotal to inspire the use of restorative justice in the United States, thereby benefiting the community, victim-survivor, and the perpetrator.

Seminarraum 112 / A 14 –1–112
Discussant: Julye Bidmead

The Representation of Islamic Architecture in Sharjah, United Arab Emirates

Sundos Alsheebani
→ **Architecture, Social and Cultural Anthropology**
Zayed University, United Arab Emirates

Architecture is a focus of archaeological study not only because it represents the material aspects of culture, but it can also trace historically how cultures evolve through exchanges with each other. For example, the substantial cultural values of Islamic societies, and the fact that Islam, as a religion, encourages interacting with other societies, led to a unique style in architecture (Ozkan, 2004). The birth of urban and architectural development in Sharjah started by the seaside, which is now considered the center of the city. Covering a rich history of modern architecture since the late twentieth century, Sharjah developed a pattern of Islamic architecture that represents uniquely its cultural and Islamic identity which the city is regionally known for. This research is going to explore the Islamic architectural elements in three main building is Sharjah: The Blue Souk, the Museum of Islamic Civilization, and King Faisal Mosque; and answers the question of what the Islamic architectural elements in the three buildings are, how are they incorporated, and why Sharjah adopted the Islamic architectural style in its buildings. The importance of this study is to highlight the emergence of a specific architectural style in such a cultural and modern city. The research was conducted by following an observational description, and comparative literature review to analyze the built environment through their architectural elements. The research used photography and note-taking methods, as well as interviews with key informants from Sharjah's architecture community. The study concluded that the three analyzed buildings share a combination of elements from Islamic and Modern architecture. The focus on Islamic architecture in the city came as a result of the current ruler, Sheikh Sultan bin Muhammad Al Qasimi, who has an extreme interest in cultural and Islamic heritage.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Harald Mieg

Remembering the Future City: Collective Memory in Debates on Urban Design

Kaspar Metzkow
→ **Social Sciences**
Humboldt-Universität zu Berlin, Germany

Building cities is all about tomorrow. Our future needs are to be met, our future selves to be housed. Recent building-projects in major German cities, however, point in a different direction: it is the past that is rebuilt and talked about. This research focuses on past-narratives and their power, and tries to answer how future building-projects are legitimated through references to the past. Geographer D. Massey suggests that place identity is the key. People derive it from a place's past and infer from it the 'proper' uses and designs of the same. But the past is gone and retrievable only as reconstruction, inevitably fitted to our current needs and knowledge. By analyzing forty-nine newspaper articles and eight semi-structured interviews, such constructions are examined in a debate around urban renewal in Potsdam, Germany. At stake is the replacement of a 1970s university building by a replica of the historical quarter that preceded it. Borrowing from grounded theory methodology, a theory-building, qualitative social research method, the narratives of two citizen initiatives are analyzed – one in favor and one against the renewal. The group in favor of replacement defines the place through the picture of an ever-rightful, desirable past. Furthermore, in portraying the historical city's destruction as illicit, it sees the removal of more recent architecture as an act of justice. Massey's presumption is thus confirmed and complemented. The told past provides not just a place's essence, but also adds a moral justification to restore it. The other group describes the past as a learning process, with different architectures bearing witness to different epochs. Masseys single-past-single-identity model is contrasted here with a multi-layered past allowing various architectures in the same place. The results point to the complexity and flexibility of past-constructions, which are often overlooked in political and academic debates on the rising importance of nostalgia and heritage.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Harald Mieg

Promoting Active and Social Life for Emirati Women Through Proposed Indoor-Outdoor Spaces

Sara Alnahdi
→ **Interior Design**
Zayed University, United Arab Emirates

My research looks at methodologies to design active spaces that promote wellbeing and social cohesion. I believe in its benefits, where everyone works towards a better future. As a BFA interior design student in the United Arab Emirates, I am working on designing a space that promotes active, healthy, and social living. My site is located at the communal area of the Cleveland Clinic building, at Marayah Island, Abu Dhabi. I envision the space to be used by women and to provide a variety of group exercising options. Nowadays, people are not active, which affects their physical health, and decreases their wellbeing. Within a standard gym, each person focuses on their own physical activity without being aware of the people around them. This leads to many members becoming discouraged halfway through. My design aims to focus on the idea of collectiveness. It will play an important role in motivating women to pursue an active life and thereby increase the social cohesion which has a positive effect on psychological performance and well-being. In addition, because of the extreme climate conditions during the summer months, many people tend to spend the majority of their time indoors. My design proposes to bring the outdoor indoors and reinstate the past link people had with their surrounding environments. Several researches have proved that a connection to the outdoors has positive impacts on the levels of phycological recovery, well-being, and energy. My design methodology stems from appropriating existing site attributes and the surrounding natural environment. Surveys were conducted amongst the female audience to understand their perception of group exercise. The outcome is a space design proposal that promotes active life, increases the level of wellbeing, and improves social cohesion among its members; a model that can be implemented in other areas within the Gulf region.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Harald Mieg

OS 7

Oral Session 7

Environment A
3.45 pm — 5.15 pm
Hörsaal 2
A 14 – 1 – 102

Environment B
3.45 pm — 5.15 pm
Seminarraum 112
A 14 – 1 – 112

Health A
3.45 pm — 5.15 pm
Hörsaal 1
A 14 – 1 – 101

Health B
3.45 pm — 5.15 pm
Seminarraum 113
A 14 – 1 – 113

Communication
3.45 pm — 5.15 pm
Seminarraum 031
A 14 – 0 – 031

Create
3.45 pm — 5.15 pm
Seminarraum 030
A 14 – 0 – 030

Bacterial Community Structure and Physicochemical Properties of Saline Sandy Soil in Response to Long-Term Application of Compost and Biochar

Ayesha Albalooshi | **Shagufta Gill**
→ **Environmental Science**
Zayed University, United Arab Emirates

Arid and semi-arid regions, like the UAE, face various obstacles in boosting agricultural production and food security. One of the major hindrances to a healthy growth of crops in these regions is the salinity of the nutrient-poor soil. As part of mitigation strategies, organic amendments such as biochar can be added to sandy soil to improve soil nutrients and fertility. Biochar is a charcoal produced by pyrolysis of agricultural mass. Biochar can augment soil properties for agricultural use by improving its physical and chemical properties to retain more water and nutrients. Our study compared the effect of long-term application of biochar and compost in improving physiochemical properties and bacterial community structure. The samples were collected from a plot of quinoa designated for field experiments. The sample group comprised of a control sample, compost-amended soil for one year (C1), compost-amended soil for three years (C3), biochar-amended soil for one year (BC1), and biochar-amended soil for three years (BC3). For evaluating the long-term application of biochar on soil, water retention, pH, and electrical conductivity (EC) were analyzed and compared with samples treated with the long-term compost application. Fluorescent in situ hybridization (FISH) technique was used to investigate the effect of biochar on soil bacterial community structure in terms of relative abundance and diversity. Fluorescence in situ hybridization (FISH) with rRNA-targeted oligonucleotide probes is a well-established technique for the in situ identification of microbial cells in the environmental samples. The results indicated that the long-term application of biochar has positive impact on the soil fertility and plant growth. Plants grown in long-term biochar enhanced soil samples accumulated more nutrients than the short-term amended soil samples. Furthermore, bacterial groups were found to be more diverse and abundant in long-term biochar treated soil samples. In conclusion, long-term application of biochar significantly improved sandy soil physiochemical and microbial characteristics.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Haider M. Hamzah

Role of Termites in Nutrient Recycling and Productivity of Beans: A Case Study of Muni Village, Oluko Subcounty, Arua District, Uganda

Morine Wamboi
→ **Ecology**
Muni University, Uganda

Termites are eusocial insects that belong to the family termitoidae and order Blattodea. They are major detritivores, particularly in the tropics and subtropical regions, and play a vital role in decomposition of organic matter, soil fertilization, soil formation, and bioturbation. Termites thus improve the fertility of soil and increase plant productivity. Africa has abundant termite species which build a wide variety of mounds. Most plant species need well drained, moderately fine to medium textured soils, having optimum physical and chemical properties. Beans grow in all soil types provided they are rich in organic matter, well drained, and fertile. Soil moisture levels should be maintained near field capacity as too much water promotes root rot, diseases, and slow plant growth. Despite numerous studies on termites, an inventory of the various termite species and the mounds they build, the role of termites in soil nutrient cycling and productivity of beans have not been clearly established especially in Muni village, Oluko Sub county, Arua district. The purpose of this ecological survey and experimentation research is aimed at examining the role of termites in nutrient recycling and the productivity of beans in Muni village, Oluko Sub county, Arua district. The objectives of the study are: to identify the species of termites in the mounds in Muni village; determine the physical and chemical properties of soil in the termite mounds constructed by the various termite species; and measure the productivity of beans grown in soils around the termite mounds constructed by the various termite species. It is hypothesized that soils around the termite mounds will be more fertile since termites break down organic materials into the component nutrients that increase the fertility of the soil. Bean plants grown near the mounds are therefore expected to have a better yield as a result of accumulated soil nutrients by the termites.

Hörsaal 2 / A 14–1–102
Discussant: Haider M. Hamzah

Water, Soil and Bio-Fuel Land Management Stewardship in the Great Plains, USA

Rainee DeRoin
Adrian Saenz | Whitney Lisenbee | Elaine Stebler | Chris Zou | Rodney Will
→ Water Research
Oklahoma State University, Oklahoma, USA

Eastern redcedar represents a modern-day challenge to Oklahoma as it has encroached over eight million acres of land since 2002. This conversion is detrimental to the ecological and economic value of the land, reducing ecosystem water provisioning in particular. Eastern redcedar trees consume more water, so much so that less is available for municipal and agricultural uses as well as ecological stream flows. Currently, efforts to reduce eastern redcedar encroachment have been unsuccessful; however, studies have shown eastern redcedar biomass to be a potential ethanol feedstock for the state. The purpose of this study is to compare eastern redcedar removal and replacement with native prairie or planted switchgrass on surface runoff, sediment yield, and biomass production. Four eastern redcedar and three grassland micro-catchments (three to five ha in area) in rangeland near Stillwater, Oklahoma, USA were gaged with H flumes since 2011. ISCO automatic water samples were instrumented in 2014. One eastern redcedar micro-catchment was restored to native prairie in 2016. A grassland micro-catchment and another eastern redcedar micro-catchment was converted to switchgrass biofuel production in 2017. Preliminary analysis shows that removal of eastern redcedar increased water yield by four to five fold. Growing switchgrass produced more biomass than restoration to native prairie, but water yield did not differ between the two. Sediment concentrations from encroached eastern redcedar watersheds were higher compared to native prairie watersheds. After harvest, previously encroached watersheds initially experienced an increase in sediment yield due to soil disturbance. After switchgrass and native vegetation were re-established, sediment yields declined. These results indicate that water yield and biomass production can be increased by converting eastern redcedar woodlands to switchgrass for use as dedicated biofuel feedstock.

Hörsaal 2 / A 14 – 1 – 102
Discussant: Haider M. Hamzah

Synthesis and Properties of Complex Mn0.5(1+x)Al(x)Ti(2-x)(PO4)3 in Ethanol Conversion

M. Y. Kharlamova | S. M. Abrosimova | L. S. Akhmedova
→ **Heterogenous Catalysts**
RUDN University, Russia

The main goal of green chemistry is the search for environmentally friendly, renewable energy sources. Bioethanol is a product of biomass processing and also one of the main biofuels currently used as a petroleum-substitute in transport applications. Moreover, it is the source for industrially important compounds, such as hydrocarbons, ethers, aldehydes, ketones, hydrogen. For this reason, it is crucial to find suitable catalysts capable of effectively converting bioalcohols into these products. Nowadays, one of the best catalysts for those reactions are complex phosphates with NASICON structure. The ionic conductivity of NASICONs has already been studied and they are used as a framework in batteries, but when it was found that NASICONs also have catalytic performance for obtaining valuable products, they attracted worldwide attention. Due to the wide isomorphism in all crystallographic positions of NZP-phosphates, the properties of the final product can be varied, which makes it possible to synthesize the catalyst for a specific chemical process. For this reason, the goal of this project is to carry out an experiment, in which the stability of Mn0.5(1+x)Al(x)Ti(2-x)(PO4)3 systems was studied during time. Each experiment was conducted in two days for catalysts in order to check their stability and catalytic activity. The samples gave three ways of reaction for ethanol conversion: dehydration, and also dehydrogenation, which gave such products as ethylene, diethyl ether and acetaldehyde. The results also showed that with an aluminum doping our systems show good stability. In addition, it was found that systems Mn0.5(1+x)Al(x)Ti(2-x)(PO4)3 do not lose their stability in the following days of the experiment and can be used by industries in order to get important products.

Seminarraum 112 / A 14 –1–112
Discussant: Sally O'Connor

Halide-Oleate Ligand Equilibria of Solution-Phase PbS Quantum Dots Monitored by NMR Spectroscopy

Perry T. Wasdin
→ **Nanotechnology**
University of West Georgia, Georgia, USA

This presentation will describe a series of experiments that investigate the surface binding that occurs between quantum dots (QDs) and ions or molecular ligands. This report focuses on work with PbS QDs and a series of halide salts, which were chosen because of their relevance to QD-sensitized solar cell technology. PbS QDs have proven to be especially useful in solar cells due to their electronic properties. Recent reports have shown PbS QD-sensitized solar cells can achieve external quantum efficiency greater than 10%. A series of halide salts was used to replace the native oleate ligands to minimize any surface traps and enhance QD-electrode coupling. The goal of these modifications is to boost the efficiency of solar cells by reducing charge trapping and exciton recombination. Our experiments observed the exchange process that occurs between these oleates and various halide salts. Nuclear magnetic resonance (NMR) spectroscopy was used to detect the native oleate and distinguish between oleate molecules that were bound to the QD surface and those had been replaced and were freely floating in solution. We quantified the changes in the ratio of free to bound oleates in the presence of halides and monitored the equilibrium constant of the halides as a function of halide concentration in order to understand the energetics of the surface ligand exchange. The concentration, temperature, counter-ion, and halide species were varied in order to determine their respective impacts on the equilibrium and provide insight into the energetics of the reaction. These experiments allow us to manipulate the rate and yield of the ligand exchange process. This will, in turn, impact the future development of QD solar cells, as these fundamental techniques play a key role in the energy transfer process that currently limits solar cell efficiency.

Seminarraum 112 / A 14 –1–112
Discussant: Sally O'Connor

The Use of Finite Element Modeling to Increase the Efficiency of Low Environmental Impact Hydropower

Janelle Gherasim
→ **Water Research, Heat Energy Technology, Thermal Machines, Fluid Mechanics**
Utah Valley University, Utah, USA

Only one in eight residents in Haiti have access to reliable electricity. Student researchers at Utah Valley University have shown that wind, solar, and fluvial energy can be used to compress air to generate electricity for only $20/megawatt-hour, in contrast to the conventional World Bank practice of funding photovoltaic cells for $156/megawatt-hour. Hydropower is an attractive option due to many high-gradient rivers in Haiti. In low-environmental impact hydropower, fluvial energy is converted into rotational energy of a turbine by placing the turbine directly into a river without the creation of a dam. The central problem of low-impact hydropower is its low efficiency, meaning only a small fraction of fluvial energy is converted into rotational energy. Most approaches to improving efficiency have involved reducing frictional losses and forcing more water to come into contact with the turbine. However, the major source of inefficiency follows from conservation of mass. As the turbine extracts energy from water, it reduces stream velocity. Therefore, water downstream from the turbine must become deeper, which causes water to flow back upstream toward the turbine. The objective of this study is to use finite element modeling to determine the improvements in efficiency that would result from the following innovative features for preventing backflow: 1) The water exiting the turbine will be forced to rise up a step, which will drive the flow into the supercritical state in which pressure energy will be converted into kinetic energy that will accelerate the water away from the turbine. 2) Some of the turbine energy or other source of energy will be used to drive the low-energy water downstream and away from the turbine. 3) The turbine will be enclosed and the low-energy water will be forced to exit through a vertical tube. Results will be reported at the meeting.

Seminarraum 112 / A 14 – 1 – 112
Discussant: Sally O'Connor

Chemical and Biological Investigation of Traditional Aboriginal Bush Medicine Gumby Gumby

Eden Little
→ **Natural Product Chemistry, Medicine**
Griffith University, Australia

Gumby Gumby (Pittosporum angustifolium), is derived from an endemic Australian plant, and has been utilized as an Aboriginal bush medicine for thousands of years. Traditional knowledge suggests that plant extracts are either ingested or applied topically as an ailment for multiple health conditions, including cancers, skin disorders (e.g., psoriasis, eczema), viral infections, and internal pains. Despite the abundance of anecdotal evidence suggesting its use and medicinal potential, this plant has not been extensively researched within the natural products field. A review of the literature found that less than ten compounds, with unreported biological activity or application, had been identified from this plant. However, a review of a similar species of the Pittosporum genus, reported promising biological activity in response to cytotoxic, anti-tumor, anti-HIV, antioxidant, antibacterial, and antifungal activities. Therefore, this study aimed to explore Gumby Gumby as a natural and alternative source of medicine, as well as a strategy for finding potential chemical leads for investigating disease specific drug discovery. Additionally, this study aimed to fill the gap within the literature by investigating the traditional application and phytochemistry of Gumby Gumby. The natural products of this plant were investigated using modern medicinal chemistry techniques and spectroscopic technology at the Griffith Institute for Drug Discovery (Brisbane, Australia). The chemical composition of the Queensland species of Gumby Gumby was evaluated using high-performance liquid chromatography (HPLC), liquid chromatography-mass spectrometry (LC-MS), and nuclear magnetic resonance spectroscopy (NMR). Further purification of the extract of the mixture will be conducted and the biological activity of the mixture and pure compounds will be evaluated. Future research also includes using traditional knowledge to locate and study potential chemovariance of geographically different Gumby Gumby within Australia.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Alex Müntz

Antimicrobial Mode of Action of Grapefruit Seed Extract on Virulence Plasmids Found in Local Isolates of Klebsiella Pneumoniae

Aram Mohammed | Rawezh Hamasalih | Barham Abdurrahman
Salar Abdulaziz | Soma Barawi
→ Basic Biological and Medical Research
University of Sulaimani, Iraq

Infections caused by Gram-negative encapsulated bacterial pathogens, such as Klebsiella pneumoniae dangerously limit antimicrobial therapy options and significantly increase chances of morbidity and mortality. Acquisition of plasmids harboring antibiotic-resistant genes in K. pneumoniae plays a pivotal role in the regional dissemination of antibiotic resistance in developing countries. Grapefruit seed extract (GSE) is a commercial natural product used as a food supplement. Previous reports demonstrate that GSE inhibits microbes remarkably but have yet to reveal its mode of action. This study aims to investigate the effect of shear-induced degradation of virulence plasmids in K. pneumoniae by GSE. In this study, K. pneumoniae isolates (n = 11) obtained from local hospitals in the Kurdistan Region of Iraq were multidrug resistant. The main objective was evaluating the role of GSE in fragmenting plasmids-harboring antibiotic resistance genes of K. pneumoniae. Well diffusion, antigrowth, antibiofilm, minimum inhibitory concentration (MIC), antibiotic sensitivity, and total genomic DNA and RNA profile analysis were also studied in the presence of different GSE concentrations to ensure GSEs' antimicrobial effect. Two small plasmids were detected with sizes, 0.8 and 1.3 kb; both degraded and sheared enormously by the action of 10 % of GSE. GSE was also able to inhibit growth and decrease biofilm formation of K. pneumoniae significantly; the MIC was 15 % (v/v). Chromosomal DNA and RNA seem to be reduced in the case of treated cells. Resistance to 15 different antibiotics was recorded. This study has revealed, for the first time, the GSE mode of action against K. pneumoniae. Degradation of plasmids harboring antibiotic-resistance genes was observed and recorded. Additionally, our promising results conclusively demonstrate the dual effects of GSE as antigrowth and antibiofilm activities against K. pneumoniae.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Alex Müntz

Estimating Organ Dose for a Standard Chest X-Ray at the Georgetown Public Hospital Corporation

Jason Jaikissoon | Petal Surujpaul
→ Media Physics
University of Guyana, Guyana

As the medical use of ionizing radiation has been on the increase, with newer and upgraded x-ray units, radiation-related risk has been a subject of interest. Nonetheless, it is important to quantify the risk associated with any examination and establishing limits which may cause a biological effect. The aim of this study was to determine measured and estimated organ doses of the thoracic cavity after simulated exposure-outcome with pig organs, thereby quantifying the doses received by members of the public: young adults of reproductive age. The study was performed using a RaySafe detector with a Siemens Fluoroscopy unit at the Georgetown Public Hospital Corporation. Organs of pigs, which are anatomically positioned and physiologically similar to humans, were used in simulated exposures. Measurements were done in two media: in air and water. The doses generated were tabulated and calculated using the International Commission on Radiological Protection, Publication 103 standard and the tissue weighting factor. A partial irradiated dose was obtained, Air-7.915 µGy and water-bath-6.62 µGy. Organ doses measured and estimated are well below the 2mSv established by the ICRP. Even though a partial irradiated dose was obtained from this study, almost 253 more exposures can be made to the organs in air and 302 to the organs in the water bath without exceeding the 2mSv, thus reducing the risk of stochastic effects and preventing deterministic effects. When compared to establish diagnostic reference levels for a standard chest x-ray by Sonawane et.al (2010) of 0.96 mSv, all doses were approximately 47% below our measured and estimated effective dose.

Hörsaal 1 / A 14 – 1 – 101
Discussant: Alex Müntz

The Dignity of a Relational Death: Redefining What It Means to Die a Good Death

Rachel Cicoria | Mohamed Al-Hakim
→ **Philosophy, Bioehtics**
Florida Gulf Coast University, Florida, USA

What does it mean to die a good death? Today, based on the modern conception of human nature which posits the self to be both individual and autonomous, a good death is thought to be a dignified death. Exemplified by current 'Death with Dignity' (DWD) legislation, a dignified death is rendered so by virtue of the dying agent's capacity for self-direction and their exercise thereof. Thus, to die a good death in the modern age is to die with dignity as an individual autonomous agent. However, given its reliance on a theory of human nature that depends upon the abstract notions of autonomy and individuality, might it be the case that the contemporary model of a DWD promotes a death that is neither good nor dignified? In this paper, I seek to ascertain the nature of a good death. To this end, I utilize the work of Judith Butler to examine the model of a good death put forth by the DWD model. I argue that such a death depends upon a conception of human nature that cannot account for the interdependence and relational autonomy that characterize human existence. Hence, I maintain that the death it promotes cannot be called good, nor do I think it can be understood as a death that is dignified. As an alternative, I claim instead that a good and dignified death is a death founded upon Judith Butler's theory of relationality, which I call a relational death. I also argue that contemporary end-of-life ethics, insofar as they too rely upon an incomplete notion of human nature, cannot support such a relational death and must be revised.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Khau Mathabo

"Three Parents for a Healthy Child": An Investigation of the Reporting on the Genetic Modification of Human Gametes

Eileen Jahn
→ **Social Sciences**
University of Bremen, Germany

Medical and technological techniques of gene modification in assisted reproduction have long evoked questions about their ethical, social, legal, political, and economic implications as well as their regulation. My undergraduate thesis examines parts of the German media coverage surrounding the decision for a method used in assisted reproduction, called pronuclear transfer method, by the British Parliament in 2015. The specific procedure – using preimplantation genetic diagnosis and in-vitro-fertilization – is designed to prevent women diagnosed with mitochondrial DNA anomalies from passing on genetically derived diseases to their offspring. The exclusion of embryos due to genetic dispositions for undesirable characteristics makes pronuclear transfer a medical-technological method of selection, supervised and legally legitimized by the British state. Using a critical discourse analytical approach based on Siegfried Jäger and Michel Foucault, I analyze linguistic and rhetorical elements in media representation to uncover the strategies of argumentation and legitimization for the modification of human oocytes. In total ten articles are examined which were published online from February 3rd to 6th 2015 by several newspapers and one broadcasting station. In conclusion, the narrative of 'bio-genetic motherhood' based on the concept of genetic determinism, occupies the key position and is constructed as the ultimate source of kinship. Additionally, every woman's right to a genetically related and healthy child gets discursively formulated, whereas potentially ill children are marked as a risk. Britain's decision for the pronuclear transfer method is borne by the collective of the whole society while the responsibility for potential effects of novel medical-technological methods are transferred to individual women. Oppositional voices are depicted as stark counterpart to a secularized and enlightened society that is for medical-technological progress, and thereby delegitimized.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Khau Mathabo

Archival and Historical Perspectives on the Mental Health of Displaced Children

Elizaveta M. Khenner
→ **Refugee Health, History**
University of Kentucky, Kentucky, USA

The two most significant periods of mass displacement in modern history have been the period following World War II and today's refugee crisis, which encompasses 68.5 million people worldwide. Of these, approximately 12.7 million are child refugees under the age of 18. Comparison of these two mass displacements can allow us to see what was learned from 1945–1955 and evaluate whether these lessons have influenced what is currently being done to assist refugee children affected by this new crisis. Specifically, this research focuses on mental health care of displaced and refugee children living in Germany in the post-WWII period and today. This research will examine the intersection between the mental health issues refugee children experience and their integration into their new communities, including the role of factors such as living conditions in displaced person camps and education in a school environment. This research will use archival collections at the United Nations Relief and Rehabilitation Administration (UNRRA), International Relief Organization (IRO), United Nations High Commissioner for Refugees (UNHCR), and the University of Kentucky for the historical research. Current data will be sourced from government agencies, news sources, scientific literature, and humanitarian aid and health agencies such as the World Health Organization, the United Nations International Children's Emergency Fund (UNICEF) and Doctors Without Borders. Findings will evaluate whether significant improvements in care for traumatized displaced children have been made in the last 70 years and provide insight into ways to better help millions of children facing displacement and trauma.

Seminarraum 113 / A 14 – 1 – 113
Discussant: Khau Mathabo

Factors Influencing Consumers' Digital Payment Adaptation: A Comparison of Technology Acceptance Model (TAM) and Brand Knowledge

Phuong Sokheng
→ **Social Sciences**
Royal University of Phnom Penh, Cambodia

Practice of digital payment services has boomed in numbers in Cambodia causing more opportunities for foreign investments. Now the space is quite crowded and competitive with domestic and international companies. Although the usage of internet access and mobile phone is wide, this cashless payment method is still new for cambodian consumers to adapt to. Consequently, while some companies succeeded, some failed due to some reasons such as trust issues and adaptability of the customer, etc. This research aims to investigate factors that influence consumer digital payment adaptation. The research also develops and tests a conceptual model of digital payment adaptation by integrating technology acceptance model (TAM) and brand knowledge which were supported by theory of reasoned action (TRA). A structural equation model tests data collected from consumers (n = 301) who have experience in using any digital payment services in Phnom Penh. The empirical results indicated a success for the proposed model and supported the effect of the implemented concepts TAM, including perceived ease of use and perceived of usefulness, and brand knowledge, including brand awareness and brand image. These concepts have an effect on the attitude toward technology acceptance, which leads to the influence for the intention to use digital payment. Furthermore, based on the finding of this study and the comparison of the current study with the previous empirical research findings, it may be concluded that TAM model is the influential theoretical model that can be used to study user digital payment adaptation and that the brand knowledge concept is also partly an important driver for payment acceptance by user. However, it might not be able to develop the model of digital payment adaptation if these two main drivers were not integrated together. Significantly, our study also provides key implications and strategy for investors and managers to improve consumer's adaptation in using digital payment services to operate successfully in Cambodia.

Seminarraum 031 / A 14 – 0 – 031
Discussant: John Chang'ach

Consumer Adoption of E-Wallets: A Study of Millennials at the Institute of Foreign Languages

Thai Sivmey
→ **Social Sciences**
Royal University of Phnom Penh, Cambodia

While the use of smartphones with the availability of the internet access is exponentially increasing among Cambodian people, the popularity of the electronic payment method is the focus of this study. The facts are that the Cambodian millennials are very keen to absorb information technology and also willing to take some risks when using the mobile applications. Therefore, the purpose of this study is to explore the consumer adoption of the electronic wallet (e-wallet) among Cambodian millennials who are undergraduate students at the Institute of Foreign Languages. We focus on (1) the adoption status of e-wallets, (2) the acceptance of e-wallets, (3) the preference for e-wallets, and (4) the challenges in using e-wallets. To reach above-mentioned objectives, a quantitative approach was applied in this descriptive research by using a cluster sampling to select 370 respondents. The theory of diffusion of innovation was employed to find out the adopter categories. Plus, unified theory of acceptance and use of technology, and innovation resistance theory were applied in order to discover the acceptance and resistance of e-wallets. The overall result of our study shows that regarding the prior experiences with e-wallets, millennial consumers fell into three discrete groups namely 'The Unknown,' 'The Aware,' and 'The Experienced' which was the highest proportion of those who had adopted e-wallets. Functional barriers brought about resistance in using e-wallets while performance expectancy, effort expectancy, facilitating condition, and security were factors in e-wallet acceptance.

Seminarraum 031 / A 14 – 0 – 031
Discussant: John Chang'ach

Are Personality Characteristics of Students Related to the Study Subject?

Wiete Fehner | **Defne Aksit**
→ **Psychology**
University of Bremen, Germany

Apart from personal interests, the personality of students plays an important role in their choice of study subject. We chose to investigate the personality characteristics of students enrolled in two study programs (psychology and law), which prepare students for work with people in different contexts. Our aim was to investigate the hypothesis that the main personality characteristics (Big Five: agreeableness, conscientiousness, openness to experience, extraversion, and neuroticism) differ between psychology and law students. The participants were undergraduate students from law (n = 50, 40 female) and psychology (n = 50, 40 female) faculties at the University of Bremen, Germany. The Big Five personality characteristics of students were assessed using a written questionnaire with 60 questions. An independent-samples t-test was used for data analysis. According to our results, the psychology students had statistically significantly higher levels of agreeableness ($p < .01$) and openness to experience ($p < .01$) compared to the law students. The law students scored significantly higher in neuroticism ($p < .05$) compared to psychology students. The groups did not differ on the other personality characteristics. Our results show that personality characteristics differ between law and psychology students, perhaps due to the context of the future occupational fields. The qualities associated with high scores on openness to experience and agreeableness, such as benevolence, compassion, and helpfulness may be essential for psychologists. By contrast, lawyers may benefit from skepticism and assertiveness – qualities associated with a low-level of agreeableness. It is unclear why law students scored higher on neuroticism. This could be related to a more competitive study environment. These results should be confirmed in larger and more representative samples of students. If the personality characteristics and the choice of study subject are related, then this could be used for counseling students and optimizing the choice of future study subjects.

Seminarraum 031 / A 14 – 0 – 031
Discussant: John Chang'ach

How Can Elementary School Classrooms Induce Student Creativity Through Spatial Experiences?

Sarah Amr Abouelkhair
→ **Architecture**
The American University in Cairo, Egypt

This research scrutinizes the existing classroom models in elementary schools. It investigates whether they fulfill one of the most essential qualities any traditional school should encompass and try to promote: creativity. The main investigative lens in which the research is conducted is architectural, as the spatial qualities of the class is explored in terms of classroom arrangements, quality of space, lighting, and classroom furniture. These are factored in order to examine the effectiveness of these tools to induce creativity. The purpose of this research is to meticulously examine the existing model in order to optimize it and introduce new or enhanced guidelines in classroom design to promote student creativity. Through a pragmatic approach, the research is conducted in two phases. The first phase consists of qualitative research thorough in-depth interviews with professional educators, elementary school teachers, and specialized architects for deeper insight on the design process and students' creative needs. The second phase involves hands-on experimental research where creativity tests are given to students in grades 1 to 5 with set variables of spatial qualities to measure the effectiveness of the quality of space in their scores on the creativity test. By analyzing the results of both the qualitative and experimental methods, along with the in-depth literature review, a set of guidelines are produced to optimize the creative experience for students. The guidelines regulate the lighting, spatial components, furniture, and spatial arrangement in classes and encourage future designers to take these qualities into consideration.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Victoria Marín

Kinematic Algorithm of Anthropomorphic Robotic Hand for Communication in Thai Sign Language (KART)

Sivanon Visutarporn
→ **Robotics Engineering**
King Mongkut's University of Technology Thonburi, Thailand

Most human-robot interface technologies have been specifically designed for communication between robots and people without disabilities via oral speech and sequences of texts. However, these communication methods are ineffective for the deaf, who use sign language to communicate. For a robot to accurately perform sign language, an anthropomorphic robotic hand must be utilized. Due to various robotic hand designs and lack of general kinematic computation techniques, it is time-consuming to develop an accurate posture control algorithm for each design. This research presents a novel kinematic algorithm of anthropomorphic robotic hands for sign language communication with a focus on finger spelling of Thai alphabets. The algorithm is able to simulate the postures of five different designs of robotic hands and a human hand model. The five robotic hands were chosen based on the number of degrees of freedom, range of motions, sizes, actuators, and types of transmission system. The Denavit–Hartenberg convention is used to parameterize the hand models, to define their kinematic frames, and to manipulate them into several postures. Using nonlinear optimization, a new performance index is constructed and implemented to determine the most appropriate joint configuration for different hand postures. The proposed algorithm can be generally applied to social robots with different robotic hands to enhances communication level for the deaf. In addition, this algorithm is a stepping-stone towards a new measurement standard of dexterity of anthropomorphic robotic hands for illustration of sign language.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Victoria Marín

Developing a Mobile Application to Investigate the Perception of a Dyslexia

Noelle Rousselle
→ **Computer Science, Cognitive Science**
University of Oldenburg, Germany

Dyslexia is defined as a specific learning disorder and is estimated to affect around 5% to 15% of the world population (American Psychiatric Association, 2013). In most cases, dyslexia is diagnosed during the acquisition of reading and writing, because at this point the symptoms become noticeable, e.g., failing school. It is important to detect and support children with dyslexia in order to compensate their reading and writing deficits and prevent further consequences. Studies show that there is a causal correlation between visual perception and the development of dyslexia (Franceschini et al., 2012). Visual perception disorders can already be diagnosed at pre-school age and thus offer an approach to the early detection of dyslexia. Current diagnostic tools often take a very long time, which means that the children become unmotivated and the results are biased (Boets et al., 2006). Therefore, for the future we proposed a mobile application in the form of a jigsaw puzzle for Android smartphones to measure the game interactions of young players. We chose a jigsaw puzzle, as it is a well-known children's game and can be easily adapted for our purposes to measure the differences between a child with and without dyslexia. As part of the pilot study, the user interface of the app was evaluated with children and their parents. The number of test participants is based on the five-user-test (Nielsen, 2012) for each user group. In our five-user-test, we observed participants and took the game measurements. Additionally, we asked the parents to share their thoughts while using the device thinking aloud method (Nielsen, 2012). The usability test showed that the children had fun playing with the app. In addition, the children's difficulties in using the app were identified and discussed. On the other hand, the stability of measurements and storage of game data was evaluated.

Seminarraum 030 / A 14 – 0 – 030
Discussant: Victoria Marín

PS Faculty & Coordinators

The Faculty-Student Research Banking System: A Course Load Model to Incentivize Faculty Participation in Undergraduate and Graduate Research

Julye Bidmead Professor, Director of the Center for Undergraduate Excellence
Lisa Kendrick Operations Manager, Center for Undergraduate Excellence
Chapman University, California, USA

The Center for Undergraduate Excellence, an academic unit at Chapman University located in Southern California, has developed the Faculty Student Research Banking (FSRB) program that supports undergraduate independent research for course credit that concurrently compensates faculty mentors with teaching credits for course release. With the support of the Chancellor, the FSRB program was developed in response to time constraints echoed by faculty to mentor independent undergraduate research. In an effort to encourage mentorship, faculty participating in FSRB designated Faculty/Student Independent Research and Creative Activity courses, bank a set number of credits (24) in exchange for one (1) course release in a future academic term. Effectively, compensating the faculty with time. Implemented in 2013, FSRB has improved over the years with electronic banked credit reporting and applications, along with implementing banking limits to maintain the integrity of the program. Program guidelines, participation rates, adjustments, financial implications, and data/assessment will be provided in an effort to inform institutions interested in exploring a similar program to encourage faculty participation in independent undergraduate research and creative activity.

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Undergraduate Research at The Ohio State University

Lorraine S. Wallace Ph.D. Director, Office of Undergraduate Research & Creative Inquiry
Kayla Daniel Program Assistant, Office of Undergraduate Research & Creative Inquiry
Amanda Jovanovich Program Coordinator, Office of Undergraduate Research & Creative Inquiry
The Ohio State University, Ohio, USA

The Office of Undergraduate Research & Creative Inquiry (OUR&CI) at The Ohio State University (OSU) was established in 2006. The overarching mission of the OUR&CI is to strive to nurture and support mentored research pursuits of all undergraduate students to proactively transform and enrich their academic experience by providing inclusive and innovative research engagement opportunities and fostering collaborative partnerships in the world beyond the classroom. The OUR&CI team will provide an overview of our efforts to (1) develop and foster undergraduate research opportunities within the OSU curriculum (e.g., first-year undergraduate research seminars, undergraduate research intensive educational abroad programs, international undergraduate research exchanges), (2) plan, promote and execute undergraduate research events throughout the academic year (e.g., large-scale multidisciplinary symposiums, Three-Minute Thesis Competitions, Undergraduate Research-on-the-Road series) and (3) develop a cadre of awards to recognize outstanding contributions to undergraduate research across our campus (e.g., faculty research mentor awards, graduate/professional student research mentor awards, outstanding undergraduate researcher awards, departmental "champion" awards).

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Challenges and Breakthroughs in Undergraduate Research: The Case of the American University in Cairo

Amani Elshimi Director of Undergraduate Research
American University in Cairo, Egypt

Serving a student body of 5000+, the Undergraduate Research Program at the American University in Cairo started in 2012, offering support grants for travel to research conferences, internships, competitions and exhibitions, housing an already vibrant annual in-house conference for Excellence in Undergraduate Research, Entrepreneurship and Creative Achievement (EURECA), and managing the online multimodal Undergraduate Research Journal (URJe). Now the program has also developed First Year Research Experience (FYRE) activities; a Student Scholars reflective forum; as well as a number of paid undergraduate research assistantship programs. Yet, the percentage of engaged students remains low, and participation is skewed towards students from the sciences and engineering majors. This presentation showcases the strategic efforts exerted at both the programmatic and institutional levels to diversify and enhance student numbers, and to raise the quality of the student experience.

Bibliothekssaal

Students Perceptions Regarding Undergraduate Research

Lynnette Engeswick Professor, Chair of Dental Hygiene, Chair of Human Performance
Minnesota State University, Mankato, Minnesota, USA

The undergraduate research projects are supported by Minnesota State University's Vision: Participating in research transforms the college experience into a richer, more involved academic process for both students and faculty. It sparks creativity, opens doors to new ideas, and helps forge mentorship relationships that nurture a lifelong love of learning. For the 2019–2020 academic year the following colleges have developed interdisciplinary partnerships with unique research themes and student cohorts.

1. Tori Smith and Sean O'Rourke Elementary and Literacy Education, College of Education, Preparing Culturally Competent Elementary School Teachers. Mentor: Elizabeth Sandell.
2. Jonathon Arndt (Communication Studies, College of Arts and Humanities) and Olivia Thomas (Elementary and Literacy Education, College of Education), Inter-cultural Competencies among Undergraduates in the College of A&H at MSU, Mankato, Mentors: Elizabeth Sandell, Chris Brown.
3. Zachary Koestler (Elementary and Literacy Education, College of Education) and Harrison Wong, (Biology, College of Science, Engineering, and Technology), Preparing Scientists with Global Cultural Competency. Mentors: Elizabeth Sandell, Bethann Lavoie.
4. Lydia Jagodzinski and Rebecca Peterson, Dental Hygiene, College of Allied Health and Nursing, Inter-cultural Competence among Undergraduate Students in the College of A&N. Mentors: Elizabeth Sandell, Lynnette Engeswick.
5. Andrea Faye Aguila and Nicole Stalcar, Social Work, College of Social and Behavioral Sciences, The Impact of 'Introduction of Social Work' on the Inter-cultural Competency of Undergraduate Students. Mentors: Elizabeth Sandell, Debra Gohagan.
6. Sarah Hagar and Linnea Carlyle, Social Work, College of Social and Behavioral Sciences, Inter-cultural Competency of Undergraduate Students in the College of SBS. Mentors: Elizabeth Sandell, Debra Gohagan.

Research data is analyzed using SPSS, and compared to archived data from about 800 MSU students. Interpretation of the data will be used to hypothesize that intensive, intentional, and reflective cross-cultural education experiences will have a positive impact on the inter-cultural competency of undergraduate students. MSU annually hosts an all-day event by the Undergraduate Research Center. Students from many different disciplines present and share their scholarship with other students and faculty across campus. The day ends with an art exhibition reception on the lower level of the CSU and a celebration banquet dinner in the CSU Ballroom.

Bibliothekssaal

Providing Biology Undergraduates with Compelling Research Opportunities to Heighten Their Performance at the University of Sulaimani, Kurdistan, Iraq

Haider M. Hamzah Assistant Professor
University of Sulaimani, Iraq

Undoubtedly, instability and lack of vision for the future of higher education have lowered the normal academic activity in Iraqi universities and undermined the educational opportunities of Iraqi students. Furthermore, an irresponsible and hopeless generation of undergraduates have become dominant in the universities communities. The broader objectives of my undergraduate training and research program are to develop skills in critical thinking and communicating scientific information as well as to provide tips and practical strategies that can help students use scientific notions and reasonable sources more responsibly. This training has started in 2016 to assist students in understanding the basics of general microbiology, along with developing and practicing the skills necessary to work in the lab. Moreover, it aims to allow students to gain an eye-opening experience and introduction to how scientific research is done, which can also be a helpful guide for our biology senior's research project. I believe the expected results of this undergraduate training program are eminently worthwhile. Teaching, training, and mentoring college students are more than a one-way channel; teachers might learn from their questions and could develop new teaching skills and come up with interesting proposals. On the other hand, mentors should help them strike a balance between using scientific thinking and contributing to solve community problems. Briefly, our program was the first in all of Iraq's universities to offer great opportunities for creative and curious students, who are simply interested in gaining basic knowledge about working with microorganisms in the lab, safety rules, and laboratory practices. The joining members will observe, learn, gain experience and most of all, have a great time! The proposed training and research will also provide students with a chance to apply some of the basic skills they learn (during undergraduate research program) in a graduate program.

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Increasing Student Persistence with Discovery-Based Research Experiences in the First Two Years of Undergraduate Education

J. Robert Hatherill Professor
Del Mar College, Texas, USA

Del Mar College (DMC) is a two-year Hispanic- and minority-serving institution that is revising science education with authentic course-based undergraduate research experiences (CUREs). CURE has created a new program for South Texas and incorporated innovative pedagogical approaches, developed educational materials, provided students with real-world research experiences, and provided professional development of educators. The project addresses the pedagogical challenges in STEM education and provides assessment data for discovery-based undergraduate research. The pedagogical issues that fit in a larger national context call for striking improvements in STEM education. There is an expanding body of literature demonstrating that STEM majors are lost not because of talent but due to the way they are taught. The growing understanding of evidence-based learning points to new ways in which pedagogies can be changed to improve student achievement and retention. Topics also address the challenges and resolutions of implementing discovery-based undergraduate research. The goals are to recruit and retain more STEM students especially those from underrepresented groups. This work also addresses the outcomes of these assessment efforts and the implications for future STEM research and practice. For example, STEM curricular changes that increase persistence in undergraduate students are linked with specific psychometric parameters such as project ownership. Another benefit of authentic research is that it integrates a competency-based testing of laboratory techniques. For instance, students that do not use proper aseptic technique will experience contamination and will have to repeat their experiments. Therefore, assessment data will be presented that specifically measures persistence in the sciences. The evidenced-based learning and discovery-based-research programs are providing student outcomes that simply cannot result from traditionally taught science classes.

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STAR Scholars Program: Early Undergraduate Research as a Catalyst for Individual and Institutional Transformation

Emily Kashka Program Manager, Office of Undergraduate Research
Drexel University, Pennsylvania, USA

Drexel University's STAR Scholars Program, begun in 2002 with 30 students, has evolved into a competitive, prestigious program where 175 of Drexel's brightest first-year students representing all colleges and disciplines participate in faculty-mentored research, scholarly, and creative projects over a ten-week summer term, culminating in a faculty-evaluated poster presentation. Over its 16-year history, STAR has proven to be an effective tool of transformation for the students, faculty, and for the university itself. Published program evaluations have shown that STAR participation benefits STEM and non-STEM students alike. In addition, longitudinal assessment of STAR shows increased freshman applications, higher retention to graduation, increased graduate school attendance and fellowships, and a growing reputation of the University as a research institution. STAR Scholars, as active members of the Drexel research community, are a catalyst for the creation of new course offerings, regional and international research internships, conference presentations, institutional and faculty research partnerships and alumni involvement, and the Office of Undergraduate Research itself. With intentional integration of research into the undergraduate experience and the commitment of Drexel faculty to experience-based learning, the STAR Scholars Program exemplifies the Boyer Report's recommendations to construct and build upon an inquiry-based freshman experience as the foundation of institutional renewal.

Bibliothekssaal

NC State University … Where Students Think and Do the Extraordinary

Heather King University Program Coordinator
NC State University, North Carolina, USA

NC State University is a land-grant, Research 1 (R1) institution based in Raleigh, North Carolina, USA. In the United States, institutions are based on the Carnegie Classification of Institutions of Higher Education; an R1 institution is one that confers Doctoral Degrees with a "Very High Research Activity." There are 130 R1 institutions in the country. Undergraduate research has always been going on at NC State but it was never fully organized under an organized office and website specifically designed to serve students and mentors until 2003. The Office of Undergraduate Research at NC State University services are available to the entire undergraduate population of campus, which currently is approximately 23,000 students. We work to support and promote discovery-, inquiry-, scholarship- and creativity-based opportunities through mentored research experiences. The office provides funding to students to conduct research with faculty mentors, funding to present at research at conferences like NCUR and WCUR as well as other disciplinary conferences and opportunities to present on campus and to publish their work in a statewide research journal. We have students conducting research in a vast range of disciplines from industrial engineering, crop and soil science, design, textiles, biomedical engineering, digital humanities and much more. NC State University is where students come to Think and Do the Extraordinary.

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Collaborative Research at a US Women's College: A Holistic Approach to Student and Faculty Development

Cynthia Norton, Dr. Professor of Biology and Women's Studies,
Director of Collaborative Undergraduate Research
Colleen Carpenter, Ph.D. Associate Professor and Theology Department Chair
Saint Catherine University, Minnesota, USA

Collaborative Research is a high impact practice known to help students develop important critical, creative and analytical skills, complete degrees, and prepare for graduate and professional work. Less appreciated is the positive impact collaborative work with students can have on faculty scholarship, particularly at primarily teaching institutions. The Summer Scholars Program at St. Catherine University provides opportunities for undergraduate women to engage in meaningful partnerships with faculty from the arts, humanities, sciences and professional programs. We focus on both student and faculty development through a holistic paradigm that seeks to integrate both students and faculty into a community of scholarship. Students make significant contributions to scholarship and participate in workshops that focus on communication skills, professional development, and community building. As their skills improve and they share their work with peers, they develop confidence in their abilities and begin to see themselves as scholars. As a result, some enter career paths they would not have imagined before this experience. For faculty, our program provides summer stipends to increase the interest, visibility, and support for faculty research. The experience of doing research in an intentionally interdisciplinary community helps faculty support one another in their scholarly endeavors and become more deeply connected with resources for maintaining active scholarship. These connections benefit junior faculty in their development as mentors and scholars and have helped senior faculty revitalize and engage in scholarship. Since its inception in 2010, more than 100 Summer Scholars teams have presented their work regionally, nationally, and internationally, and many have published manuscripts and books, often with faculty and students as co-authors. Our focus on development, dissemination, and community offers a holistic paradigm for collaborative research, ensuring that students and faculty are not only active, productive scholars and artists, but that they become part of a community of scholars.

Bibliothekssaal

Undergraduate Participation in the US National REU Program: Characteristics and Trends

Sally O'Connor, Ph.D. Program Director
National Science Foundation, USA

The Research Experience for Undergraduates (REU) program is a primary and important means by which US undergrads get engaged in research. For many students, the program is their first exposure to research and most continue to pursue a career in science, technology, engineering and mathematics (STEM). REU is funded by the US National Science Foundation through a competitive proposal process. REU Program Directors implement the program with specific goals such as tracking students into graduate STEM programs and broadening the participation of underrepresented students. This paper will present the results of self-reported outcomes of the program. Program Directors report that on average less than 4% of received applications are accepted, which leaves many deserving students unable to participate. Data over a 10-year span will be presented, and trends in the characteristics of student participants will be discussed. Although REU programs exist for all STEM disciplines, this paper focuses on REU programs in the broad area of biosciences only.

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Implementing an Undergraduate Research Office: Insights from Undergraduates

Pamela Rose
Troy Thomas
Lenandlar Singh
University of Guyana, Guyana

The Council for Undergraduate Research has recently accepted the University of Guyana in South America as a member of its association. Consistent with being a member of this association, the University has established an Office for Undergraduate Research to increase opportunities for undergraduate research and scholarship across disciplines. Undergraduate research is a key feature of almost every undergraduate research program in this university, and the Office for Undergraduate Research has implemented several initiatives as part of its mission to promote research excellence. However, while the Office for Undergraduate Research has implemented these initiatives, little attention has been given to undergraduates' perspectives on the activities of this Office. Knowledge of undergraduates' perspectives on the initiatives is important for developing more effective undergraduate research practices, especially since divergence between the goals of the Office for Undergraduate Research and undergraduates' expectations can impede successful outcomes from this office. The main goal of this study is to gain insights into the initiatives implemented by the Office for Undergraduate Research through the lens of undergraduate researchers: what kinds of experiences undergraduates believe they are receiving, what kinds of experiences do they want, and what roles do they want the Office for Undergraduate Research to play in advancing undergraduate research. The study will employ quantitative and qualitative data collection methods. It creates opportunity to gain insights into the initiatives of the Office for Undergraduate Research and undergraduates' belief about institutional support.

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Elements of a High-Impact Undergraduate Research Program

Elizabeth Sandell Professor
Minnesota State University, Mankato, Minnesota, USA

At Minnesota State University, Mankato, the undergraduate research center (URC) helps students set themselves apart from their peers, improve their resumes and gain real-world experience. Opportunities, internships, mentor opportunities, and more. Students from all colleges at MSU, Mankato participate in these opportunities. The URC supports student work by awarding thousands of dollars in grants to fund research supplies, travel, and student stipends. Each year, dozens of MSU students make presentations at the MSU Undergraduate Research Symposium, the Minnesota Undergraduate Scholars Conference, the National Conference on Undergraduate Research, and Posters on the Hill. The Journal of Undergraduate Research (JUR) at Minnesota State University, Mankato is an interdisciplinary peer-reviewed online journal published annually. The JUR accepts submissions from Minnesota State-Mankato students which meet the standard of excellence for students in diverse fields of study. Faculty benefit from the URC services as well. By volunteering to be a research mentor, faculty work with a student to pursue research interests while demonstrating commitment to the pursuit of scholarly achievement.

Bibliothekssaal

Humboldt Reloaded – Undergraduate Research Integrated into Bachelor Curriculum at Hohenheim University

Vanessa-Emily Schoch
Julia Gerstenberg
University of Hohenheim, Germany

The University of Hohenheim in Stuttgart offers participation in research projects to all bachelor students during their second year. Projects are offered and supervised by Ph.D. students or postdocs from a wide range of departments. The possibility to try something, to gain insight into research, to train scientific methods or to explore which direction for the future study would be interesting, has been very successfully developed since 2011. About 600 students (roughly 50%) of the second year choose to participate in one of over 150 projects offered each year. To broaden undergraduate research learning and to integrate it into the bachelor curriculum, more forms have been created, whereby voluntariness was an important element. Three forms of implementation shall be presented: 1) The component "portfolio module" was added to the structure of all bachelor programs. Students can choose it from few modules or take it on the top of their study components to create their individual portfolio as part their studies. It contains 180 hours, where undergraduate research projects, conference reports and language courses can be taken for credit without being graded. 2) As the very first performance for bachelor students, Hohenheim University offers one week to dive into their study discipline. They get an overview on running research projects and work in small groups on connected topics. In this way, students get in contact with peers, increase their motivation for research and get to know the campus. 3) A lot of students concentrate on finishing studies in time and get stressed. To offer more time for studying, deep learning, and courses of other topics which are not in the curriculum of their own study program, one to two additionally terms can be chosen.

Bibliothekssaal

Constructing Undergraduate Research in the Humanities

John Scott Professor of History
Mercer University, Georgia, USA

Successful undergraduate research programs combine curriculum and pedagogy designed to reinforce each other and reinforce the student project. Both elements contain the idea of scaffolding or stair-stepping. In curriculum, the scaffolding or stair-stepping usually involves one to three courses specifically designed to advance students through the research process in any particular field. The introductory level may take place at the General Education level or as a gateway course to a discipline; the culminating course normally takes place in a student's final year and there may be intermediate courses in between. Curriculum, though, needs to be reinforced by continual pedagogical and assessment methods that give the students practice and increasing expertise in one or more areas of the research process – project design, literature reviews, appropriate documentation, for instance. Failure to do so segregates the research experience from the broader educational experience and can communicate to the student a mixed message about the importance and centrality of undergraduate research in the major or field of study. Pedagogy and assessment that support undergraduate research, however, does not need to address every area of the research process in a holistic way but can address elements of the research process in a targeted way. Two images illustrate these concepts. The reinforcement concept can be illustrated by the construction device of rebar or reinforced concrete, whereby concrete is the curriculum that gets strengthened by the embedding of steel bars or cables (pedagogy). The targeted pedagogy can be compared to refurbishing a particular area of a house – the windows or floors or bathrooms – rather than building an entire house. One learns valuable skills in these targeted experiences that can later be transferred to building an entire house. This poster will illustrate and provide examples of these models that can be transferred to a variety of undergraduate experiences.

Bibliothekssaal

Encouraging Research Across Disciplines at Mercer University, Georgia USA

John Stanga Assistant Professor of Biology
Mercer University, Georgia, USA

Mercer University is a comprehensive university located in Macon, Georgia, United States, and serves approximately 4800 undergraduate students. Mercer University supports undergraduate research across disciplines in various contexts through several mechanisms, including mentored course-credit based research, summer research experiences, and course-based research experiences. Traditionally, most undergraduate research experiences at Mercer occur under the guidance of an individual faculty mentor who directs and facilitates research in a laboratory, library, or archives. Students earn one course hour of course credit for three weekly hours spent researching. A faculty member typically mentors a small group of students. For example, in my current group of three students, two are working toward advancing my biological research agenda on plant hormone signaling (one of whom, Jack Xhemali, is presenting a poster), while the third student is developing a teaching module for high school biology classrooms. Such in-semester research experiences offer opportunities to participate in research, but classroom demands constrain student participation to three to six hours per week. For a more immersive experience, Mercer supports full-time student research during the summer. One university initiative, Research that Reaches Out, seeks to engage more students in meaningful research, with an emphasis on using research methods and service learning to address issues facing local, national, and global communities. The Research that Reaches Out initiative provides financial support to student projects that meet the dual goals of service and research and encourages faculty to consider broader impacts of their research projects. Course-based undergraduate research experiences (CUREs) are another mechanism to increase student involvement in research and can reach a larger proportion of the student body. CUREs can be integrated into the curriculum in any discipline and for any level student. For example, in an upper-level molecular biology course, I introduced a plant genetics experiment to complement my mentored research.

Bibliothekssaal

Special Collections as Undergraduate Research Incubator

Carol Street Undergraduate Research Archivist
University of Kentucky, Kentucky, USA

The Learning Lab at the University of Kentucky Special Collections Research Center promotes undergraduate research, scholarship, and creativity by more fully integrating Special Collections into the teaching and research mission of the university; however the end result is much more than that. Students are selected from any discipline on campus, with particular attention paid to the students from disciplines that are less likely to utilize the archives, such as STEAM-related majors. Paid undergraduate interns in the Learning Lab learn the basics of archival principles, such as archival theory, arrangement and description, provenance, security, handling, and privacy to prepare them for their intensive research project. Each student processes an unprocessed or under-processed collection and conducts a student-driven research inquiry based on the collection. Students must disseminate their research in an academic format; for some students that will be poster or oral presentations at conferences, and for others that will be a journal article or even a creative format. Analysis of student assessments administered at the beginning, mid-year, and end of the internship indicate student derive much more than research skills from their participation in the program. For many students, their internship was the highlight of their entire undergraduate education. They were committed to the research, felt it had real world consequences, and developed skills from disseminating their findings. This poster will discuss how an archival internship can simultaneously build undergraduate interest in archives while affecting an undergraduate's education in powerful and unlikely ways.

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Challenges and Opportunities for Mentoring Undergraduate Research: A Faculty Perspective

Carol Strong Associate Professor
University of Arkansas at Monticello, Arkansas, USA

Since joining the faculty at the University of Arkansas-Monticello in 2008, Dr. Carol Strong has taken 102 students to 36 state/national/international conferences (including San Juan Puerto, Rico; Berlin, Germany, and Doha, Qatar), supervised 9 papers that were finalists/winners in state/national competitions, supervised or co-supervised 3 projects receiving statewide grants from the Arkansas Department of Higher Education, prepared teams for group simulation competitions and facilitated 6 field study programs to major U.S. cities. This is in addition to the research projects she includes in her teaching curriculum beginning in the first year of classes and continuing until that student graduates. She has also been a Councilor for the Social Sciences Division of the Council on Undergraduate Research since 2011 and has served on the CUR Advocacy Committee, in which role she has promoted the benefits of undergraduate research at the local, state and national levels. This poster draws on these experiences and outlines three different aspects of mentoring successful undergraduate research initiatives using qualitative methods. Firstly, it highlights the benefits and challenges of mentoring undergraduate research and targets best practices and lessons learned from mentoring undergraduate research projects in the social sciences, both in the classroom and at conference. Secondly, it articulates the ways in which undergraduate research benefits the students researchers engaged in it and how it better prepares these students for graduate school and the workforce. Finally, it identifies available resources, such as the Council on Undergraduate Research, open to faculty mentors ranging from novices to veterans.

Bibliothekssaal

The Impact of Non-Competitive Semester Grants for Undergraduate Research: Inclusion and Pathway to Student Success

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Bridgewater State University, Massachusetts, USA

Bridgewater State University offers Student Semester Grants, which provide any amount up to $300 for students working individually, or up to $175 each for students working in a small group, to offset the costs of doing a scholarly project for course credit. Students use the grant for research or art supplies, texts, field-work travel, and other expenses of conducting research or making art. This non-competitive grant has demonstrated its success to provide students of all majors to engage undergraduate research in their course work, to increase students' research interests and confidence, to cultivate strong mentorship, and to encourage future research endeavor.

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What Do Students Learn in Research-Based Learning Settings? A Panel Study at the University of Oldenburg

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Susanne Haberstroh, Dr.
Richard Preetz
University of Oldenburg, Germany

At the University of Oldenburg, research-based learning is to be developed as part of the teaching approach. It serves to promote analytical, methodological and reflexive skills and thus contributes to students' academic and professional competence development. However, there are few empirical findings on how research-based learning affects the competence development of students in the course of their studies. To close this gap, we started a panel study on research-based learning at the University of Oldenburg (April 2018), in which students have been and will be surveyed several times on research activities during their studies. The aim is (1) to gain insights into when students come into contact with research activities and (2) how they assess the development of their own research competence over time. The survey design is based on a theoretical model of competence acquisition through research-based learning, in which not only different cognitive dimensions of research competence, but also affective-motivational facets are taken into account. In addition, we will examine how the curriculum is reflected in actual study behavior. The panel design allows quasi-experimental comparisons to be carried out on the basis of intra-individual changes, thus reducing the uncertainty with which causal statements can be made. The survey will be conducted among bachelor's and master's students of the same year from their first semester until the end of their standard period of study – at the beginning of each semester, looking back on the previous semester. The panel study allows for the first time insights into research-based learning over the entire student life cycle on an intra-individual level. This poster presents the evaluation design, the first results from waves 1 (N = 813) and 2 (N = 626) and the challenges of the panel survey.

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The Undergraduate Scholars Program at Montana State University

Gregory Young Professor
Montana State University, Montana, USA

The Undergraduate Scholars Program (USP) was started in 1994 by Professor Gregory Young. It facilitates, supports, and promotes undergraduate research and scholarship by providing funding and logistical support directly to students. USP offers research grant funding through a competitive proposal process for undergraduates engaging in research, original creative works, and scholarly projects. It also provides travel grants for students accepted to present research and creative projects at regional, national, and international conferences. USP promotes opportunities for students to present their projects to the MSU and Bozeman communities by coordinating the annual Student Research Celebration and Student Research Month events. USP promotes opportunities for students to present their projects to a national audience by providing funding and travel coordination for the National Conference on Undergraduate Research (NCUR) and WorldCUR. USP provides training and support for students interested in getting started with undergraduate research. Undergraduate Research enhances learning by providing hands-on opportunities to apply skills and knowledge learned in the classroom, and engages students in creative thinking and problem solving. Through this "learning-by-doing" model, undergraduate research provides excellent experience for students, whether they are preparing for graduate school or seeking employment in a professional field.

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