

Oral Session 1

Architecture

1. Ghada shahine

The Effect of the Design Factors in creating a Family-Centered Atmosphere in Pediatric Centers: A Case Study

The purpose of this study is to examine how the design of the physical environment of a pediatric center can influence the overall experience of the end-users.

Studies show that several design factors could be implemented in a pediatric to enhance the overall experience of the end-users. Examples of those factors are art/environmental aesthetics, considerations of socialization patterns, access to nature, play/interactive technologies, nature-view windows, and finally sound/lighting interventions.

An interview study was conducted among 6 mothers from different backgrounds who visit different pediatric facilities, and a pediatrician in practice. Each interview was for not more than 30 minutes covering 13 semi-structured questions. The mothers' and pediatrician's ratings were interpreted along with their thoughts to validate their responses.

The interview results provide an understanding of the importance of incorporation of some elements into the physical environment of a pediatric facility. Some of those elements are access to amenities, elements for privacy and comfort improvement, factors that increase family engagement in patient care, and finally those that reduce patient stress and anxiety.

The results of this study provide advantages of several design strategies and unveil gaps of design features of a pediatric facility that can be beneficial for future studies.

2. Sahar Ahmadpour Amirkiasar

Staff's perceptions of design layout and efficiency in emergency departments Purpose

This study aimed to identify design strategies that increase efficiency in emergency departments (EDs) based on staff's perceptions.

Background

Overcrowding is one of the main concerns in EDs that leads to inefficiencies and low quality in healthcare delivery. An efficient work environment decreases staff walking steps, patients' length of stay, and increases staff and patients' satisfaction. Few studies explored efficiency in EDs' design based on staff perceptions.

Method

An online questionnaire included nine open and closed-ended questions distributed among EDs' staff from different facilities. Staff explained their opinions about design features that impact efficiency in EDs. The survey also collected data about the best location for retrieving patient data, soiled rooms, medication rooms, trauma rooms, radiology units, and preferred nursing station configurations throughout the department.

Results

Staff's answers were analyzed based on their work environments' size. In small and mid-size EDs, staff suggested central nursing station increase efficiency. In large-size EDs, central and hybrid nursing

stations were equally preferred by staff. Decentralizing disposal rooms in small-size EDs and decentralizing medication rooms in large-size EDs were other suggestions that impact efficiency.

Conclusion

The finding of this study provides valuable insight into the impact of ED layout designs on efficiency.

3. Parsa Aghaei

An Evaluation of US Urgent Care Centers' Design Regarding COVID-19

Background:

The COVID-19 pandemic urged healthcare facilities to make changes to the physical environment to make them safer for patients, staff, and visitors.

Objective:

This study aims to determine the preparedness of current urgent care centers (UCCs) in the US in response to COVID-19 from an architectural standpoint.

Methods:

A series of in-depth post-occupancy evaluation interviews were conducted with three architects from the states of Ohio and Oregon. The interviews consisted of 20 questions about infection control, triage, and waiting experience, plus two open-ended questions regarding infection control and COVID-19.

Results:

On a scale of one to five (five representing the best), the building received a mean score of 3.8 for infection control, 4.2 for triage, and 3.8 for waiting experience. Interviewees explained fixed, monolithic furniture forms that cannot be repositioned are an issue regarding COVID-19 safety protocols.

Conclusion:

Interventions, such as generous space between seats, protective shields or partitions between patients, and a controlled number of occupants in waiting rooms, help reduce infection in UCCs. The ability to implement a double-triage system is necessary in UCCs to avoid unnecessary in-person visits inside the facility in times of the outbreak of highly contagious diseases like COVID-19.

4. Meghan Blackson

Designing Roofs to Support Native Plants in the Great Lakes Region

Roofs are being designed with native plants to make cities more ecologically productive and biologically diverse. Most architects know little about native planted roofs, particularly how roofs can be designed to be support local biodiversity. From selecting plant species, to substrate composition, to navigating the construction process, designers are often left without clear guidelines. Without this information, the resulting green roofs are often lacking in biodiversity, as well as ecosystem health. To solve these problems, the study first compiled regional published species into a sortable database of green roof plants. This database enables sorting and selection of a variety of specific design attributes for professional and research use. Secondly, a multifactorial field trial comparison using thirty-six 1m² green roof plots showed that the type of growing substrate, rather than native species, may have most influence effecting yearly weed maintenance and ecosystem health. Thirdly, the study provides a case study on a green roof installation on the Cleveland lakefront incorporating native plants and soils for biodiversity. Offered here are lessons learned for the design and construction fields. The results of this study lead to better understanding of how to design for greater ecological productivity, native plants, and biodiversity in roof systems.

5. Sara Sahebghalam

Model Calibration for Circadian Daylighting in ALFA: Developing Empirical Circadian Predictions in a Physical Scaled Model

Daylight as an important element of sustainability, has a strong impact on human health and well-being. Many studies showed that with access to natural light in the space, the occupants' mood and performance are improved. This is related to human responses to multi-spectral characteristics of daylight and referred as non-visual effects. These effects play an important role in adjustment of the circadian system, sleep quality and alertness levels. This study utilizes a computational tool called Adaptive Lighting for Alertness (ALFA) to calculate both visual and non-visual effects within a 3D model and to predict circadian potential of daylight. To reduce prediction errors, a physical scaled model was built and tested under overcast sky to calibrate simulation model for real conditions. Daylight Factor (DF) results of the physical model dataset for a point-in-time measurement are presented in depth and compared with results of simulation model. The conclusions substantially indicate that ALFA simulation software predicts the levels of daylight in line with outcome of on-site measurement in physical model with 98.89 percent correlation. The prediction result of the software is slightly marginal under-predicts the levels of daylight with 1.0536 calibration coefficient due to some material mismatch in real-world on-site simulation conditions and software simulation settings. Additionally, this paper examines if physical models can be used for daylight circadian potential predictions while in design stage. For this purpose, the concept of linear regression was adopted to predict the non-visual to visual effects ratio by using the basic information of field measurement such as daylight factor. The simulation results verified that the average absolute relative error is less than 3%, which is acceptable in real-world application. In future studies, validation on other parameters can be performed, such as other sky conditions, various window configuration and orientation, to add this consideration in daylighting pre-design evaluation.

6. Mona Hashemi

Human-Robot Collaborative Design (HRCoD): Realtime collaborative cyberphysical HMI platform for robotic design and assembly through augmented reality

Using industrial robots in creative/design-oriented applications rather than mass production has attracted wide range of attentions among architects and designers. As a result of this expansion in possible users of robotics, users' technical knowledge and skills may vary more than ever. Currently available software toolboxes are not sufficient mediums between architects and robots, which prevents designers and researchers with limited technical skills from further development. This research (HRCoD) aims to bridge this gap by developing a Human-Machine Interface (HMI) for designing a modular installation through a hybridized use of robotics and Augmented Reality (AR) for design and making. The novelty of this platform lies in the real-time collaboration between human and robot, and the utilization of AR as a visualization tool that constantly updates the design process and its outcome. Using combinatorial logic, HRCoD seeks to integrate the design and assembly agendas into one coherent framework and enable users with limited design and software background to engage in the design process with the robot. The final platform, evaluated through multiple iterations, represents a computational workflow toward a real-time human-robot collaborative design and assembly. The validity of this platform is tested through designing a modular installation with the highest shading rate.

Oral Session 2

Ecology and Evolutionary Biology

7. Andrew Eagar

Branching out: Forest fungi dictate where, and with whom, trees grow.

Forest trees interact with many different types of fungi over their lifespan. While some of these fungi are antagonistic, causing disease and killing trees, others are mutualistic and provide important benefits for tree health and survival. The interplay between these broad groups of antagonistic and mutualistic fungi ultimately determines how different tree species grow and interact with one another in a forest, but the specifics of these relationships are not well understood. In this study, we used a combination of DNA sequencing and spatial point pattern techniques to identify the various groups of soil fungi that interact with trees and how these interactions ultimately dictate where, and with whom, trees grow. Our research presents an innovative framework for studying temperate hardwood forest dynamics from the perspective of soil fungi, branching out from aboveground observations to include the unseen world below.

8. Sohini Bhattacharyya

Role of macroinvertebrates in dissemination of antibiotic resistance genes in Northeast Ohio streams with varying land uses

Increasing prevalence of antibiotics in our waterways is a matter of global public health concern as it can result in triggering antibiotic resistance via genetic modifications in bacteria. Antibiotic pollution in streams is directly linked to proximity of wastewater treatment plants, agricultural fields, hospitals, and live-stock farms. Here we considered 7 streams in Northeast Ohio with three types of land use patterns (forested, agricultural, and developed) to examine how macroinvertebrates, sediment and water in those sites harbor three most common ARGs (antibiotic resistance genes: *sull*, *sullI*, *tetW*). Gene abundances were assessed via quantitative PCR and bacterial community via 16S gene sequencing using the DNA extracted from the samples. The data so far analyzed reveals that both, land use patterns and type of sample (macroinvertebrates/abiotic) differ significantly in respect to the ARGs of interest. Agricultural and developed sites have higher gene abundances than forested sites implying the adverse effects of anthropogenic activities. We are also examining to see if macroinvertebrates of specific functional feeding groups are related to higher ARG abundance. Currently, we are evaluating the bacterial community data to examine which taxa associated with antibacterial resistance genes of interest are predominant in different samples at various sites.

9. Sayoni Dutta

Identification of PPCP degrading bacteria and their subsequent role in PPCP degradation in lab simulated filtration columns using backwash waters from drinking water treatment plants.

PPCPs are discharged from wastewater effluents, agricultural runoff, domestic sewage into the environment. Many pharmaceuticals and personal care products can get biotransformed in the water

treatment systems, particularly by the bacteria growing in the filters. However, obtaining bacterial biomass directly from these plant filters is usually not possible due to the increased risk of drinking water contamination, which is why the next best alternative is to get backwash samples that contain most of these bacteria and isolate them to degrade PPCPs. In this study, water plant filter, simulated columns were used to study the degradation of three most frequently detected compounds in Akon DWTP, estradiol, carbamazepine, and cotinine. The specific objectives of my study were to, 1. investigate if biologically active filters had a role in PPCP degradation and 2. analyze the community structure of these biofilters. Bacteria were grown in mixed PPCP plates with either nitrate minimal media, R2A, or BG11 media using backwash water collected from the plant. Initial analysis indicated a higher bacterial colony in R2A media than the other two, mainly due to the excess carbon. Individual PPCP plating was also performed, and the PPCP spiked backwash water samples were analyzed using HPLC-MS to measure their degradation rates.

10. Jordyn Stoll

Are micronutrients gatekeepers to organic nutrient recycling in stream biofilms?

Macronutrients (nitrogen (NO₃, NH₄) and phosphorus (PO₄)) are necessary for all stream biofilm processes, and the availability of macronutrients can limit biofilm growth or alter community processes. When the preferred inorganic forms of these nutrients are at low concentrations, biofilms may become dependent on organic pools of macronutrients. To access organic nutrients, specialized acquisition enzymes are required to decompose organic molecules and release the macronutrients within, and these enzymes (urease for NH₄; alkaline phosphatase for PO₄) require micronutrient cofactors (nickel and zinc, respectively). To assess the importance of these micronutrient cofactors, we conducted a series of in situ nutrient enrichment experiments using nutrient diffusing substrate. We measured chlorophyll-a and ash free dry mass to assess growth, urease and alkaline phosphatase activity, biofilm nickel and zinc concentrations, and community composition using a BenthosTorch and microscopy. Preliminary results indicate that NH₄ are limiting to growth in our study system, therefore urea is likely an important source of nutrients to biofilms. As nutrient cycling and export from streams becomes increasingly important for the integrity of downstream water bodies, it is essential to understand how micro and macronutrient availability influences these processes.

11. John Miller

The role of climate and soil in the geographic structuring of population sex ratios

One major goal of ecology and evolutionary biology is to understand how and why populations of a single species become different from each other. When trait variation within species is geographically structured, it may be because different environments favor individuals with particular traits. One common way that plant populations vary is by sex ratios. *Lobelia siphilitica*, a native wildflower, consists of two sex phenotypes. Hermaphrodites reproduce through seed and pollen production, but females reproduce only through seeds. Populations of *L. siphilitica* range from 0-100% female, and high-female populations appear to be clustered toward the south-central part of the species range in eastern North America. This clustering may correlate with environmental conditions (such as temperature or soil types) that favor female plants. In this presentation, we model the local climate and soil conditions of 160 populations of *L. siphilitica* for which the ratios of females to hermaphrodites are known. We then determine whether variation in female frequency can be accurately predicted from environmental variables. We find that climate, but not soil characteristics, predict female frequencies across *L. siphilitica* populations, lending

support to the hypothesis that environmental variation across the species range contributes to the geographic structuring of population sex ratios.

Oral Session 3

Cell Biology

12. Amber R Titus

Physical chemistry versus cell biology: Perilipin 3 as a model lipid droplet binding protein

Lipid droplets (LDs) are ubiquitously expressed organelles; the only intracellular organelles that contain a lipid monolayer rather than a bilayer. Proteins localize and bind to this monolayer as they do to intracellular lipid bilayers. However, the mechanism by which cytosolic LD binding proteins recognize, and bind, to this lipid interface remains poorly understood. Amphipathic α -helix bundles are a common motif that is shared between cytosolic LD binding proteins (e.g., perilipins 2, 3, and 5) and apolipoproteins, such as apoE and apoLp-III, found on lipoprotein particles. Here, we study the lipid binding specificity of the C-terminal α -helix bundle of perilipin 3 and compare it to the full-length protein. We use pendant drop tensiometry to measure the recruitment and insertion of both perilipin 3 constructs at mixed lipid monolayers at an aqueous-phospholipid-oil interface. We also use live-cell fluorescence microscopy to determine the difference in LD localization of full-length perilipin 3 versus the C-terminal α -helix bundle truncation in murine adipocytes. Our results strongly support a model whereby both the N-terminal 11-mer repeat region and C-terminal amphipathic α -helix bundle domains of perilipin 3 have distinct lipid binding, and potentially biological roles.

13. Manasi Agrawal

DSCAM overexpression replicates neuronal morphology alterations observed in human Down syndrome iPSC-derived neurons during development.

Down syndrome results from the triplication of human chromosome 21 (HSA21). It affects 1 in 700 live births within the United States and is the most common genetic cause of intellectual disability. Multiple genes, including Down Syndrome Cell Adhesion Molecule (DSCAM), are implicated in the intellectual disability phenotype underlying Down syndrome. DSCAM, located on HSA21, regulates the formation of neuronal connectivity in the developing brain. We previously showed that DSCAM overexpression impairs appropriate growth of developing neurons. Here, we extend this study using two models: 1) Dscam gain-of-function mice, which mimic the DSCAM overexpression occurring in Down syndrome, and 2) human induced pluripotent stem cell (hiPSC)-derived neurons from apparently healthy individuals and individuals with Down syndrome. We observed a significant reduction in axon growth, axon branching, soma area, and total neurite length in both DSCAM-overexpressing neurons and hiPSC-derived Down syndrome neurons. In the Dunn chamber axon guidance assay, DSCAM-overexpressing neurons did not show axon turning in response to netrin-1, as compared to wild-type neurons. Such changes in neuronal morphology can lead to altered neuronal connectivity. Taken together, these results suggest that DSCAM overexpression is a potential contributor to the connectivity deficits occurring in Down syndrome.

14. Noel-marie Plonski

Mapping RNA editing patterns during coronavirus infection using Guttman scaling

SARS-CoV-1 and -2 are coronaviruses that cause severe acute respiratory syndrome, with SARS-CoV-2 causing COVID-19 associated with more severe acute symptoms and increased risk of developing chronic

symptoms. Cytokines are activated as part of the immune system against SARS-CoVs, in turn activating p150 isoform of adenosine deaminase acting on RNA (ADAR), ADAR1p150. Notably, in addition to helping fight viral infection by editing viral RNA ADAR1p150 is also responsible for editing of the host transcripts. Here we explore the “unintended” consequences of increased expression of ADAR1p150 during SARS-CoV1 and 2 infections. Using Guttman scaling and random forest modeling, we create profiles that can be used for finding biomarkers. There is significantly higher expression of ADAR1p150 in lung epithelial cell line in SARS-CoV-2 infection, and the expression is moderately correlated with global ADAR editing levels. Additionally, ADAR1p150 is highly correlated with ADAR editing sites that impact protein function in SARS-CoV-1 infections in lung epithelium with SARS-CoV-2 showing a moderate correlation. Guttman scaling scores are significantly higher in SARS-CoV-2 indicating increased levels of editing. The ADAR editing sites we identify as biomarkers can help shed light on the pathogenesis of COVID-19 and may provide novel investigative avenues for therapeutic options.

Oral Session 4

Biomedical Sciences

15. Rachel Corrigan

Novel Mechanisms of Peripheral Metabolic Hormones Regulation of Classical Alzheimer's Disease Pathology in APP/PS1 Mice

Amylin, a pancreatic hormone, acts as a satiety signal in conjunction with leptin within the hypothalamus. Interestingly, amylin is also an amyloid protein like amyloid-beta ($A\beta$); and has been shown to be toxic when aggregated. Furthermore, amylin has also been shown by us and others to be neuroprotective in a non-aggregated state in Alzheimer’s disease (AD)-modeled mice. The amylin receptor (AMYR) is expressed throughout the brain, including areas important in both cognition and AD pathology, like the hippocampus. We have previously shown that an analogue of amylin, Pramlintide (PRAM), reduces $A\beta$ plaque burden and rescues hippocampal-dependent cognitive decline in AD-mouse models. Here we begin to address whether PRAM neuroprotection is the result of hypothalamus regulation of PRAM modulating peripheral metabolism or if downstream signaling to regions like the hippocampus are more likely. To address this question, male and female APP/PS1 mice were treated chronically with PRAM or saline peripherally in the presence or absence of AC187, an AMYR antagonist, delivered centrally. Our data thus far suggests differential effects of peripheral amylin and even AMYR activation or antagonism on cognitive behavior, APP processing enzymes, and soluble amyloid-beta levels when in the presence or absence of receptor antagonism.

16. Sohini Dutta

Dissociable roles of the nucleus accumbens core and shell sub regions in the expression and extinction of conditioned fear

The nucleus accumbens (NAc), consisting of core (NAcC) and shell (NAcS) sub-regions, has primarily been studied as a locus mediating the effects of drug reward and addiction. However, there is ample evidence that this region is also involved in regulating aversive responses, but the exact role of the NAc and its subregions in regulating associative fear processing remains unclear. Here, we investigated the specific contribution of the NAcC and NAcS in regulating both fear expression and fear extinction. Using Arc expression as an indicator of neuronal activity and then lidocaine, to pharmacologically inactivate the two subregions, demonstrated that the NAcC is necessary for fear expression, but not for extinction learning or consolidation/ retention of extinction memory. In contrast, we demonstrate that the NAcS is necessary for extinction memory, but not fear expression or extinction learning. Further, inactivation of mGluR1 or

ERK signaling specifically in the NAcS disrupted extinction memory but had no effect on fear expression or extinction learning itself. These findings suggest that the NAc subregions play dissociable roles in regulating fear recall and the consolidation of fear extinction memory, and potentially implicate them as critical regions within the canonical fear circuit.

17. Fathima Nafrisha Cassim Bawa

Retinoic acid receptor alpha (Rar α) in adipocytes plays a significant role in protecting against diet induced Non-alcoholic fatty liver disease (NAFLD) and Obesity.

Adipocytes are the major sites of lipid storage and important for regulating lipid metabolism. Under diet induced conditions impaired lipid metabolism in adipocytes can lead to ectopic lipid accumulation and insulin resistance. Previous studies show that activation of Retinoic acid receptors is required to regulate adipocyte metabolism. We hypothesized, that adipocyte specific Retinoic acid receptor alpha (Rar α) may play a role in protecting against obesity. To test this hypothesis, we conducted in-vivo studies using adipocyte specific Rar α knockout mice. Rar α floxed mice were crossed with adiponectin cre transgenic mice to generate adipocyte specific knockout mice (adipo-Rar α -/-). Rar α fl/fl (control) and adipo-Rar α -/- were given High Fat diet for 20 weeks. During the study, the body weight of adipo-Rar α -/- significantly increased compared to control. The body composition analysis has confirmed that loss of Rar α in adipocytes can increase body fat content and indirect calorimetry has shown reduced energy expenditure. Hepatic lipid analysis shows increased hepatic lipid accumulation, and plasma lipid analysis shows significant increase in plasma free fatty acids in adipo-Rar α -/- compared to control. Thus, our study has shown that modulating Rar α in adipocytes can protect from hepatosteatosis and obesity.

18. Rose Leach

Examining Long Bone Phenotypic Plasticity: A Case Study of Skeletal Differences between Northern and Southern Japanese Macaques

Neanderthals exhibit a robust somatotype, thick cortical diaphyseal bone, shorter limb, and larger thoraxes, relative to modern humans. While phenotypic differences could be a result of a distinct genome, they may also reflect somatic plasticity in response to colder climates. Geographical rules developed by Bergmann and Allen state that mammals in warmer temperatures have a reduced thorax and longer limbs to aid in heat dissipation, whereas the robust thorax and shorter limbs in cold climates serve to conserve heat. Japanese macaques have a longer period of developmental exposure to their immediate environment and reside in areas of Japan ranging from the colder regions of northern Honshu to the hot climates in southern regions like Yakushima Island, providing an opportunity to examine these theories. Climate may affect Japanese macaque skeletal ontogeny, implying some level of plasticity and/or cold climate adaptation. Therefore, we expect northern Japanese macaques will exhibit significant differences in osteological architecture from southern Japanese macaques. Preliminary plots show minimal variation in limb length between groups and no clear cline with increasing temperature. The results suggest that the cline does not exist due to the limited range in climate used in the study, amongst other potential issues.

19. Fanan Aboalrob

Tempol Administration During Acquisition of Conditioned Place Preference Abolishes Expression of Fentanyl-Seeking Behavior

Introduction: Accounting for 46,802 deaths in 2018, the opioid epidemic has reached exponential proportions with the primary cause being opioid-induced respiratory depression (OIRD). Tempol is a potent antioxidant that has been shown to prevent OIRD and abolish the expression of cocaine-induced conditioned place preference (CPP).

Objective: To examine the effect of Tempol administration on CPP acquisition of fentanyl-seeking behavior.

Methods: Rats underwent place conditioning in a three-chamber apparatus under 1) saline and saline, 2) tempol and saline, 3) saline and fentanyl, or 4) tempol and fentanyl in the paired chamber or saline and saline in the unpaired chamber. 15-minute extinction tests started 48-hours after conditioning and ran for 90-days.

Results: In males, Tempol pre-treatment prevented the acquisition of fentanyl-seeking behavior and facilitated a fentanyl-induced conditioned place aversion (CPA) relative to the saline/fentanyl controls. Importantly, this effect was not observed in tempol controls indicating that tempol administration alone had no rewarding or aversive effects. Females failed to show a significant CPP under any treatment condition.

Conclusion: Tempol pre-administration facilitated fentanyl-induced CPA indicating a conditional reaction between fentanyl and tempol. These findings agree with tempol-induced disruption of cocaine CPP acquisition suggesting that tempol may have therapeutic potential to reduce addiction vulnerability across drug classes.

Oral Session 5

Chemistry and Biochemistry I

20. Keshav G C

Methyltransferase enzyme RsmC acts as an RNA chaperone during bacterial ribosome biogenesis

A ribosome is the ribonucleoprotein molecular machine that biosynthesizes proteins in all living cells. The biogenesis of ribosomes is crucial for the survival of all living organisms. The presence of various trans-acting factors including modification enzymes is important to synchronize various processes that happen during ribosome biogenesis. We have identified the ability of modification enzyme RsmC to function as an RNA chaperone protein during ribosome assembly in addition to its methyltransferase activity. The rate of helix 34 (h34) strand annealing is increased by 25-fold in the presence of RsmC. Furthermore, RsmC denatures non-native secondary structures observed in the RsmC substrate strand and the protein also destabilizes the secondary structure of the substrate strand. Furthermore, smFRET experiments confirmed the annealing and chaperone activity of protein RsmC. Various mutant rRNAs were also used in this study to investigate the nature of various intermediates observed during RsmC-dependent h34 strand annealing. These observed chaperone activity of RsmC will facilitate the fast formation of the 30S head domain during ribosome biogenesis.

21. Kumudie Jayalath

Investigation of structural and thermodynamic effects of pseudouridine in E.coli 16S rRNA

The ribosome is responsible for protein biosynthesis in all living organisms. Bacterial ribosome biogenesis is a complex process that requires synchronization of various cellular events including ribosomal RNA (rRNA) transcription, ribosome assembly, RNA processing, and post-transcriptional modifications of rRNA. Ribosomal RNA nucleotide modifications can modulate rRNA folding and ribosome assembly. The only pseudouridine modification found in E. coli 16S ribosomal RNA is located at position 516 of the 16S helix 18 which forms the central pseudoknot of the 30S ribosomal subunit. Our circular dichroism spectroscopic data suggest that the helix 18 model RNAs undergo Mg²⁺-dependent structural changes only in the presence of the pseudouridine modification at position 516. Besides, RNA footprinting experiments illustrate that $\hat{\imath}$ at position 516 results in a more compact h18 structure. Also, increased solvent exposure close to position 516 in unmodified h18 RNA suggests the ability of $\hat{\imath}$ 516 to change the local rRNA structures. The observed changes may influence h18 pseudoknot formation, 16S rRNA folding and, bacterial 30S subunit biogenesis.

22. Mary Brintha croos Anburaj

Micro-RNA mediated N-Acetyl transferase 8 like (NAT8L) regulation in neurodegenerative diseases and cancers

N-Acetyl transferase 8 like (NAT8L) protein is a mitochondrial membrane bound enzyme that catalyzes the synthesis of N-Acetyl aspartate (NAA) from Acetyl CoA and L-Aspartate. N-Acetyl aspartate is one of the most abundant metabolites in the central nervous system. The lack of NAA plays a critical role in several neurodegenerative diseases. In addition to many other proposed functions, NAA is essential in the production of the myelin sheath, the covering on neurons that protects the axon and helps transmit signals throughout the central nervous system. On the other hand, the overexpression of NAT8L and NAA have been identified as early biomarkers of various cancers. Bioinformatic analysis was used to identify that NAT8L mRNA could potentially be regulated by its cognate micro-RNA in neurons and in several cancers. Specific Micro-RNA can bind to the 3' UTR of NAT8L mRNA thereby reducing its expression. Altered level of micro-RNA in neurodegenerative diseases and cancer cells will potentially delineate how micro-RNA can be utilized or targeted to restore NAT8L levels as a novel therapeutic approach.

23. Mohammed Enamul Hoque

CRISPR/dCas9 platforms: A new approach of gene regulation beyond genome editing

The discovery of clustered regularly interspaced short palindromic repeat (CRISPR)/Cas9 protein and CRISPR/dCas9 system provided a powerful genetic modification tool that can guide biological studies based on the ability to make targeted changes that are essential for phenotypic modification. There is a wide range of applications in this editing method, including basic biological science, the advancement of biotechnology products, and disease treatment. In recognition of these broad applications, the CRISPR-Cas9 genome editing technique was a significant contributor to the 2020 Nobel Prize in Chemistry and was awarded to Dr. Emmanuelle Charpentier and Dr. Jennifer Doudna. However, the success of these applications is highly dependent on the selection of the appropriate transcriptional regulators, target

genes and specific target sites, and the delivery of the constructs of CRISPR/dCas9 and sgRNA. The goal of this project is to modulate the human tyrosine hydroxylase (TH) expression level by utilizing a catalytically inactive or 'dead' Cas9 protein in the CRISPR/Cas9 platforms via the targeting of different locations within the TH promoter.

Oral Session 6

Chemistry and Biochemistry II

24. Amarasooriya M. D. S. Jayawardhana

Fatty acid-like Pt(IV) prodrugs overcome cisplatin resistance in ovarian cancer by harnessing CD36

This is the first study of engineering mitochondria-damaging fatty acid-like Pt(IV) prodrugs (FALPs) to harness CD36, a fatty acid translocase, to treat drug resistant ovarian cancer. Mitochondria-damaging therapeutics have been proven effective against drug resistant ovarian cancer cells, but their systematic toxicity is higher. To lower the toxicity and increase the therapeutic window, there is a need to generate mitochondria-damaging therapeutics with high specificity against ovarian cancer cells. CD36 is a transmembrane protein responsible for facilitating uptake of free fatty acids, and it is upregulated in ovarian tumors. We hereby employed Pt(IV) prodrugs that mimic the fatty acid structure and act as "Trojan horse" to exploit CD36 for ovarian cancer treatment. In particular, we found that FALPs are being activated and release cisplatin in mitochondria upon reduction by cytochrome c, and therefore, FALPs induce mitochondrial damage and eliminate chemo resistant ovarian cancer cells. Mitochondrial accumulation and activation of FALPs were attested using HPLC studies, fluorescein imaging, and GFAAS analysis. Corresponding mitochondrial damages were validated by MitoSOX and Mitostatus flow cytometric analysis. Overall, this work demonstrates an innovative design that allows for selective activation of mitochondria-damaging Pt therapeutics at chemo resistant ovarian cancer cells.

25. Deepak Karna

Chemo-mechanical modulation of cell motions using DNA nanosprings

Cell motions such as migration and change in cellular morphology are vital processes for multicellular organisms. These activities are a result of coordinated clustering/declustering of integrin molecules prevalent on cell membrane. To modulate the cell motions, we prepared DNA origami nanosprings that target clustering of such integrin molecules. Each nanospring was modified with arginyl-glycyl-aspartic acid (RGD) domains with a spacing such that when the nanospring formed coils, the RGD ligands triggered the clustering of integrin molecules, which in turn, changed cell motions. To add onto that, the coiling or uncoiling of the nanospring is controlled, based on the formation or dissolution of an i-motif structure placed in the DNA origami nanodevice. At slightly acidic pH (<6.5), the folding of the i-motif leads to the coiling of the nanospring, which impedes the motion of HeLa cells. At neutrality (pH 7.4), the unfolding of the i-motif makes the nanospring uncoiled, thereby allowing cells to resume mechanical movement. Such pH-responsive DNA nanoassembly is valuable to inhibit the migration of metastatic cancer cells which have acidic extracellular environment. Such a chemo-mechanical modulation provides a new mechanism for cells to mechanically respond to endogenous chemical cues.

26. shankar pandey

Chaperone-Assisted Host-Guest Interactions Revealed by Single-Molecule Force Spectroscopy

Compared to biomolecular binding interactions, binding between synthetic host-guest pairs is much simpler, facilitating the assembly of affordable supramolecular materials. However, mechanical stabilities of the host-guest system have not been revealed from a single-molecular mechanochemical perspective due to the lack of a molecular platform that can follow the same host-guest complex during repetitive mechanical measurements. Here, we assembled a DNA template in which a flexible DNA linker was exploited to keep the host (Cucurbit[7]uril, CB7) and guest (adamantane) in close proximity. This platform increased the efficiency of the single-molecule characterization in optical tweezers and clearly revealed mechanical features of the same host-guest complex. We found that positively charged adamantane guest demonstrated higher mechanical stability (49 pN) than neutral adamantane (44 pN). Surprisingly, we found that a hexyl group adjacent to the adamantane served as a chaperone to assist the formation of the adamantane-CB7 complexes. The discovery of unprecedented chaperone assisted interaction mechanism provides new approaches to efficiently assemble host-guest based supramolecules with increased mechanical stabilities, which can be exploited in various biomedical, biosensing, and materials fields.

27. Thiloka Dassanayake

An aluminum lining to the dark cloud of silver resistance: broad spectrum of antimicrobial activity of gamma-alumina nanoparticles

With the emergence of antimicrobial resistance, antibiotics would become useless against evolving pathogens in the near future according to recent studies. As a result of the increasing resistance of pathogens toward antibiotics and the emergence of drug-resistant bacterial strains, the world is heading toward a post-antibiotic era where treatable minor injuries would cause lethal effects. This has demanded modern nanotechnology to develop novel antibacterial drugs with high efficacy. As a result, scientists are more interested in the metals that were used in the pre-antibiotic era with novel modifications. Among many antimicrobial drugs studied, metal-based nanoparticles and their derivatives have been found to show promising potential in inhibiting a broad range of bacterial strains. Among the metals, silver nanoparticles have gained much attraction so far where they have been used clinically in most areas such as antibacterial drugs. Even though Silver is so attractive and treats bacterial infections it has several drawbacks such as environmental hazards, high toxicity to healthy cells as well as some bacterial strains such as Silver-resistant *Pseudomonas* sp. As a plausible solution, we studied the antibacterial efficacy of Alumina nanoparticles (Al-NPs) synthesized adapting to a facile top-down approach. Our Al-NPs based drug exhibited unprecedented high antimicrobial efficacy as well as could overcome drug resistance developed from silver. Furthermore, Al-NPs showed lower toxicity toward healthy cells as compared to that of silver nanoparticles. Interestingly, these Al-NPs drug inhibited a broad spectrum of bacteria such as both gram-positive and gram-negative bacteria as well as drug-resistant bacterial strains.

28. Pawan Nepal

Bioreachable chiral twist agents for tunable cholesteric reflection devices

Optical sensors (including the eye) often require protection from intense and/or high energy radiation. Protection at fixed wavelengths may not be sufficient and in some cases dynamic protection is required to respond to variable wavelength threats. Cholesteric filters are attractive devices for sensor protection in that they operate by reflection instead of absorption. Cholesteric liquid crystals have an intrinsic helical structure that can reflect incident radiation at wavelengths related to the helical pitch. In addition, the helical pitch in cholesteric liquid crystals can be tuned by application of an external electric field and thus light of different wavelengths can be reflected from a single device in a responsive mode. Chiral twist agents are materials doped into a nematic host to produce cholesteric liquid crystals. These twist agents can be obtained easily from biological sources in high optical purity. However, their applications may be limited by issues including solubility in the host, low helical twisting power (HTP), temperature dependence, chemical and photochemical stability, etc. The work described here involves bioreachable new chiral twisting agents which are of plant origin (and, in addition, can be prepared by a high-yield microbial fermentation process) and have been implemented in cholesteric agile optical filter devices.

Oral Session 7

Geography

29. Anna Solberg

Landscape of change: An assessment of community perceptions in Queen Elizabeth National Park, Uganda

Queen Elizabeth National Park (QENP) is Uganda's premier protected area, with a varying landscape and serving as a major tourist destination within the country. QENP has been facing substantial changes with regard to vegetation and an increase of development in and around its borders. QENP has particularly been encroached by invasive woody plants over the last few decades. This habitat change is impacting the spatial distribution of grazing mammals, which are leaving the park for cleared private lands. I have investigated the community perceptions of habitat change and sustainable development in Uganda in and around QENP. This project relates to a larger ecological study by researchers at Kent State University with local support from the Uganda Wildlife Research and Training Institute.

30. Benjamin Agbemor

Risk Factors and mitigation measures in Water Sector Public-Private Partnership Projects: Lessons from the Asutifi North District, Ghana

Public-Private Partnerships (PPPs) are being promoted as a practical option for developing countries to meet their water sector infrastructure gaps. In spite of their appeal, PPP projects in general have been described as complex and challenging, and the water sector PPPs are particularly associated with high failure rates. Even though risk analysis and evaluations have been identified as being critical to the success of PPPs, most of these studies have focused on developed countries, and largely on sectors other than

water. In this paper, we examine an on-going PPP arrangement for piped water supply in the Asutifi North District of Ghana under a Build, Operate and Transfer arrangement. We reviewed key project documents to ascertain the measures that would minimize the likelihood of the occurrence of common project risks. We identified gaps in existing risk mitigation strategies and offer some recommendations for improvement.

31. Michaela Gawrys

Implications of changing border structure: A case study in Kosovo

Currently we witness and endure brutal identity-based conflict all over the world that is directly connected to political borders. With the rise in Nations wishing to break off from modern States, it may be time to question where the standards for modern borders will get us and whether they are here to last. This research attempts to understand how these identity-based border conflicts develop both before and after their resolution. The goal is to identify a pattern in the escalation of the identity-based border conflict between Kosovo and Serbia, as well as recognize possible steps in the reconciliation and development processes Kosovo took once the conflict was over. The development of Kosovo as a Nation-State and the impact its recognized border has had on identification and feelings toward "others" can provide vital information about the future formation of Nation-States as a solution to border conflict. Therefore, this essay reviews the cooperation between Kosovo and Serbia from the end of the war in 1999 to the present day and uses information from interviews to ponder the implications of future "bordering" on the relationships between Nations/ethnic groups.

Oral Session 8 Applied Sciences

32. Rony Saha

The interplay between spatial and heliconical bond order in twist-bend nematic materials

The nanostructure of two novel sulfur containing dimer materials have been investigated experimentally by hard and by resonant tender X-ray scattering techniques. We find that below the nematic (N) to NTB transition the positional correlations drop significantly, while the bond-order correlations increase from zero to about 60 nm. The temperature dependences of the heliconical pitch show stronger variation neat the N-NTB transition that the CBnCB-type dimers. The heliconical pitch is observable even in the upper 3-4°C range of the underlying smectic phase. The coexistence of the smectic order and the heliconical order indicates a SmCTB -type phase where the rigid units of the dimers are tilted with respect to the layer normal to allow for the bending of the dimers, but the tilt direction rotates following the heliconical order.

33. Angelo Visco

Surface Excess Analysis and Schlieren Imaging of Binary Mixtures of Pentane and 2-Methylpentane for Use in Wickless Heat Pipes

Binary mixtures have been shown to improve the function of wickless heat pipes, which offer greater longevity over conventional heat pipes [1]. Fabrication of such wickless heat pipes rely on surface tension

effects, such as Marangoni forces, making it essential to understand the interface properties of the liquid and its vapor. Recent improvements in Surface Light Scattering Spectroscopy instrumentation and its software, have not only improved its ease of use but have made possible a substantial improvement in the accuracy of surface tension measurements. With these improvements, we present surface tension and viscosity measurements of a binary mixture system of pentane and 2-methylpentane. The data are fit to an extended Langmuir isotherm model, giving insight into the relative concentration of the various components near the interface, quantified by the surface excess. We also present schlieren images analyzed by particle image velocimetry which may help to define the mixing process.

34. Senay Ustunel

Biocompatible and mechanically tunable 3D cell scaffolds for in vitro cell studies

Tissue scaffolds require different properties to mimic real living tissues. It is necessary to provide an environment to grow, proliferate, continue their metabolic activities, and create their extracellular matrix (ECM) for tissue cell lines. I will present elastomers and liquid crystal elastomers (LCEs) that are mechanically tunable, biocompatible, and biodegradable with different porous structures. Biocompatible additive, cellulose nanocrystal (CNC), is used to tune the mechanical properties and porous structure is engineered by using salt leaching method. It has been shown that our LCE is a suitable environment to support different type of cells (myoblasts, neuroblastomas, and fibroblasts) for long term (up to three months) cell growth and to understand spatial tissue interactions. I will present how to create scaffolds with diverse elasticity and how cell growth and proliferation can be affected by different mechanical properties of scaffolds by presenting two mechanically distinct cell types.

35. Pavan Poudel

Processing distributed transactions in a predefined order

Consider distributed transactional memory systems where transactions residing at nodes of a communication graph operate on shared, mobile objects. A transaction requests the objects it needs, executes once those objects have been assembled, and then forwards those objects to other waiting transactions. We study the predefined order scheduling problem of committing transactions according to their priorities. This problem naturally arises in areas, such as loop parallelization and state-machine-based computing, where producing executions equivalent to a priority order is needed to satisfy certain properties. Specifically, we study predefined order scheduling considering two performance metrics fundamental to any distributed system: (i) execution time- total time to commit all the transactions and (ii) communication cost- the total distance messages travel. We design scheduling algorithms that are simultaneously efficient for both the metrics and rigorously evaluate them through several benchmarks on random and grid graphs, validating their efficiency. To the best of our knowledge, this is the first study of predefined order scheduling in distributed systems.

36. Emily Hoopes-Boyd

Writing nilpotent matrices as commutators

We will show that every nilpotent element N in the ring of square matrices over a division ring, denoted $M_n(D)$, can be presented as a single commutator; that is, $N=AB-BA$ for some matrices A and B over the

division ring. We will also construct an example illustrating that there exists a prime ring with unity over which some nilpotent matrices cannot be presented as commutators.

Oral Session 9

Public Health

37. MD FOURKAN

Behavioral and socio-economic factors of diabetes : An exploratory analysis on community health status indicators (CHSI) in U.S counties

Although diabetes studies are abundant in current literature in the U.S. but very few of them have studied it from behavioral and socio-economic perspective, significant determinants of diabetes epidemic. Most of them looked at diabetes epidemic either from biomedical, or racial disparities perspectives. Although some studies prevail in literature in terms of exploring diabetes spread in USA from socio-economic status, however, most of them are from population which do not represent all U.S. counties. With a view to scrutinizing diabetes epidemic from behavioral and socio-economic factors we analyzed data from Community Health Status Indicators (CHSI) 2000. In this paper we studied the diabetes and its significant behavioral and socio-economic determinants to contribute to the effort to control this epidemic in U.S. counties. Our results reveal that behavioral and socio-economic factors are significant determinants of diabetes epidemic in U.S. counties whereas we controlled all important demographic and racial groups in our model specification. But we find neither age groups nor racial groups are in disadvantage of diabetes which corresponds that racial disparities of being affected in diabetes is not found.

38. Ana Cody

Human Trafficking among Runaway and Homeless Youth- Developing an Effective Strategy to Build Capacity among Service Providers.

Human trafficking is a criminal and public health issue. Youth from all ages and background are at risk of becoming a trafficking victim; however, youth who run away or experience homelessness are at the higher of being recruited into sex and labor trafficking.

In 2019, over 300 runaway and homeless youth providers participated in an online assessment and a selected number joined listening sessions to share their experiences and challenges as well as strategies to prevent trafficking among runaway and homeless youth. The survey reveals that runaway and homeless youth have experiences multiple levels of trafficking, such as trading sex and trafficking through families. Positive relationships and harm reductions seems an effective prevention interventions to identify and prevent trafficking among these youth. Lastly, the survey participants highlighted the importance of addressing social determinants of health and socio-economic barriers as a strategy to reduce human trafficking. This workshop will present the survey key findings and the strategies developed to respond to the needs of runaway and homeless youth providers. It also will discuss the realities of human trafficking and how policies should be addressing this population to avoid the criminalization of youth homelessness and the survival experiences of vulnerable young people.

39. Tam Nguyen

“It’s been a blessing and a curse”: Exploring International Graduate Students’ Challenges, Coping Strategies, and Resilience at A Large Midwestern University in the United States

This interpretive qualitative study explored mental health challenges among international graduate students at a large midwestern university, through a lens of resilience. Nine semi-structured interviews were conducted, transcribed and analyzed using a thematic analysis approach. The common challenges experienced by international graduate students at a large midwestern university, fell under one of three general themes: discrimination, support systems, or poor integration. The findings showed that though there are services provided within at the university, the perception from international students was that there was little focus on supporting international graduates. They often experience poor social integration with domestic students and local Americans. These graduate international students have very limited support systems to solve challenges such as big gaps in resources, lack of acceptance by domestic students and the locals, and other issues within the U.S. culture.

Oral Session 10

Health Sciences

40. Matthew Kampert

A Clinical Exercise Physiological Study of the Effects of Wearing a N95 Respirator or Cloth Mask at Peak Exercise

In this randomized controlled cross-over study, we aimed to assess incremental exercise stress testing (EST) with no mask (NM) compared while wearing either a cloth mask (cm) or a respirator mask (n95)..Twenty volunteers completed three treadmill based EST, each performed to volitional fatigue while wearing either NM, N95, or CM. Participants were monitored continu by pulse oximeter and 12-lead electrocardiogram. Subjective perception wearing a facial covering was evaluated both at rest and during the post-exercise recovery period using a subjective perceptions instrument questionnaire. Mixed effects model ANOVA tests were performed to evaluate the overall effect of mask condition and post-hoc testing to evaluate pairwise differences between conditions.: We found that while wearing either a N95 or CM all participants were able to exercise at > 90% of their eVO₂peak obtained during NM EST. With a mean eVO₂peak of 44.9±10.4, 43.9±10.1, 43.8±10.2 and a mean score for perceived discomfort of breathing resistance of 3.3±2.5, 4.5±2.2, 5.0±1.8 for NM, N95 and CM, respectively. Our findings underscore that exercise participation in any public setting should not at this time be excluded from current universal recommendations that strongly encourage the public display of nose and mouth facial coverings to help curb the transmission of COVID-19.

41. Emily Erb

The effects of Fortnite on measures of cognition

Little research examines the impact of competitive video games (esports) on cognition. PURPOSE: Examine the influence of Fortnite on measures of cognition in participants. METHODS: Participants included 14 college-aged men who self-identified as a gamer (regularly played esports, n=7) or non-gamers (didn't regularly play esports, n=7). On two separate laboratory visits, participants played one hour of Fortnite under two conditions: competitive (against humans); non-competitive (against computer avatars). Before (Rest) and after (Recovery) each session, time to completion for The Trail Making Test

Part B and Stroop Test, and number of pegs successfully placed during the Purdue Pegboard Test, assessed cognition. Group (gamers, non-gamers) by condition (competitive, non-competitive) by time (Rest, Recovery) ANOVAs analyzed each dependent variable. RESULTS: There were no significant three-way interactions ($p=0.55$) for any variable. There was a significant ($F=9.950$; $p=0.009$) main effect of time for the Trail Making Test Part B (Rest: 38.65 ± 13.45 ; Recovery: 33.13 ± 11.18). Time to completion significantly decreased during Recovery compared to Rest for groups and conditions. There were no significant main effects ($F=2.282$; $p=0.157$) for the Stroop Test (Rest: 11.24 ± 2.78 ; Recovery: 10.72 ± 1.68), or the Purdue Pegboard Test (Rest: 55.32 ± 6.09 ; Recovery: 56.07 ± 6.34 ; $F=1.689$; $p=0.218$). CONCLUSIONS: Playing Fortnite for one hour doesn't inhibit measures of cognition.

42. Chelsey Kirkland

Perceptions of resettled refugee Congolese women: Maintaining cultural traditions during resettlement in Ohio

Globally, conflict displaced refugees have increased significantly. The Democratic Republic of Congo is the leading country with refugees in the United States (US) where many resettle in Ohio. Women refugees are highly vulnerable, yet little literature has focused on them. Furthermore, maintaining cultural traditions can provide comfort during the tumultuous resettlement process. Therefore, this study used qualitative methods to understand the perceptions of refugee Congolese women maintaining cultural traditions during resettlement in Ohio. Translator-assisted, face-to-face interviews were conducted among resettled Congolese refugee women ($n=20$) that were 18 and older, arrived to the US from 2011-2018, and were currently receiving Ohio resettlement agency assistance. Researchers applied descriptive coding and thematic analysis to identify themes and subthemes. The three themes comprised of: 1) Clothing and dressing, 2) Food, and 3) Parenting. Sub-themes were identified within each above theme. Our work examined resettled refugee Congolese women's perceptions of maintaining their culture after resettling in Ohio. These study findings could assist community engagers with insights and practical recommendations on supportive services for resettled Congolese women and a deeper understanding into complex situations facing them after resettlement.

Oral Session 11

Music, Theatre and Dance

43. Bethany Caputo

Devising a solo performance: A hybrid psychophysical approach to telling your story!

Combing the tools and principles from Michael Chekhov's method of acting and the staging and structural practices from Tectonic Theatre Project's Moment Work, I am developing a new curriculum for devising solo theatre performances. The Michael Chekhov approach to acting relies on the psychophysical truth that our body is a reflection of our feeling and thinking lives, and that the reverse is also true. It further depends on the scope of the actor's imagination so that the trained Chekhov actor develops a well of resources minded from and found within themselves. Chekhov's tools of atmosphere, gesture, imaginary center, imaginary body, tempo and rhythm, image work, and spatial awareness all combine to tease out narrative and character. Tectonic's Moment Work gathers together the elements of staging the encourages the artist to think

outside the box to use lighting, sound, and set to help tell the story. Tectonic's™ imaginative use of staging provides the actor the necessary structure to hold their story. It is my theory that these two pedagogical streams combine to create a bold, imaginative, creative, and physical way into storytelling that emboldens and empowers the acting artist to tell their story in an innovative, healthy, and creative way.

44. Anuthep Meelertsom

Music for "Great Teachers": A new context of the piphat-mon at the medical funeral ceremony of Srinakharinwirot University in Bangkok, Thailand

This paper focuses on the performance and functions of piphat mon music at the medical funeral ceremony of Srinakharinwirot University (SWU) in Bangkok, Thailand. Modern Thai society has influenced many aspects of traditional culture, including funeral rites. The medical funeral is a modern ritual conducted for "great teachers," the remains of those who have donated their bodies for medical education and research. Both the traditional and medical funeral events include music for accompanying the ritual. Today, the most widely known genre of music that predominantly associates with Thai Buddhist funerals is the piphat-mon (à, >à, µà¹^à, žà, ?à, —à, çà'CEà, jà, à, j,) ensemble. This paper investigates how the variations of the medical funeral ceremony shape the performance of the music and what the new functions of the music are in this new ritual setting. Due to the COVID-19 Pandemic, the primary methodology utilized in this paper will base on literature reviews and online fieldwork. The researcher obliges to conduct the fieldwork remotely in the United States via online platforms. This work aims to broaden and fulfill the information found about understanding the piphat-mon ensemble in the medical funeral ceremony and benefit those inquiring about body donation and funeral rites for "great teachers" in contemporary Thailand.

45. Alexis Hill

African Americans and the Māori in 2020: Music, Might, and Social Change

The colonization of the Māori of New Zealand and the enslavement of Africans in the USA has created the need for advocacy of human rights to the present day. This paper aims to show the ways in which both groups have used music to promote and endorse a change in their societies. To show that there are similarities in the use and functions of each type of music, the author conducted a comparative study of news coverage and social media posts of demonstrations for BLM (Black Lives Matter) in the USA with the support and demonstrations in New Zealand for BLM as issues pertaining to minorities such as police reform and indigenous rights. The uses of chants, whether it is shouting "no justice no peace" or performing a haka or action song, show that both the Māori and African Americans have used their respective arts and voices to be a vehicle for change. The focal point is to show the connectivity of African Americans and the Māori and how they are influenced by each other to strive towards the ultimate goal of equality using art forms prized in their respective cultures.

Oral Session 12

Art and Fashion

46. Tara Segars

8-Bit Hunger

"8-bit Hunger" is an art exhibition that focuses on the shifting mental landscape of the classic arcade from the height of its popularity in the 1980s to the contemporary resurgence in the form of bar arcades. It addresses the imaginary glamour created by those who are nostalgic for an environment that was before their time. This work is about the experience of kids who grew up with home consoles and are only just now beginning to experience the communal spirit of the classic arcade through cheap imitations at bar arcades.

47. Susanna Harris

The Nature of Loss

As ocean waters warm in temperature coral reefs bleach creating a chain reaction of damage for ecosystems. This phenomenon is both beautiful and haunting. I use the materiality of paper altered through handcutting, deeply embossing, and inking to create organic yet abstracted forms. As I consider my person experiences with loss, disease, and grief I create large installations using fine art print media to connect ecological destruction and human fragility.

48. Nia A

The Curated Estate: A Practice-Based Pop-Up Store Solution for Luxury Fashion Retail Industry's Issues with Racial Discrimination

Shopping luxury fashion should be a positive life-changing experience for everyone. The high-end luxury fashion industry has faced severe backlash and criticisms, specifically over the last ten years as a result of issues rooted in discrimination and blatant racism. Issues of racism have plagued designers like Gucci, which included insensitive designs and featured a blackface with big red lips on its clothing which was featured often in Jim Crow Cartoons dating back to 1830. Gucci, not realizing the ramifications and reactions of this insensitive design, the high-end designer received dismal backlash. Unfortunately, Gucci is not the only designer included in discriminatory practices. Prada has also been accused of using derogatory blackface and recently lost a lawsuit due to its racially charged window displays. Luxury retailers are also a part of the problem regarding discrimination while shopping. Retailers such as Barneys and Saks Fifth Avenue have made African American millennial women shoppers feel uncomfortable while shopping. Store associates followed Black consumers around, refused to service them and called the police while they tried to purchase items from the stores. Because these issues exist in the fashion industry, this research project intends to offer an inclusive and accessible solution for Black shoppers.

49. Yee Lin Elaine Yuen

Exploring the Essence of Headwear in the 21st Century Fashion Outfit: Inspiration from East to West

This study will employ a mixed-method occurring sequentially through a practice-based autoethnography and qualitative interview design approach to inform development of a communication tool promoting hat-making and hat-wearing in Western fashion. The researcher will combine the skills and techniques learned from the apprenticeship along with insights from autoethnography analysis, Japanese hat

instruction books, and trend analysis from the literature review to create six fabric hats containing multi-functional features and future upgrading values. This creative scholarship will be documented and developed into an instruction booklet to accompany the hats, a communication tool that can further the millinery segment of the U.S. fashion industry. Through this experience of creative scholarship, the researcher intends to transform the user-friendly concept of hat-making and hat-wearing from Japanese culture to enhance and promote headwear's essentials in completing a fashion outfit. In the final analysis of the study, the researcher will indicate the making processes and steps of each fabric hat, including the report of comments and advice from different professional milliners. The journal-like report will be presented as an instruction book with guidelines for women in the United States to construct their appearance with a hat as an essential part of the daily fashion outfit, leading to growth of the millinery segment of the fashion industry.

Oral Session 13

Education, Health, & Human Services I

50. Grace Murray

Knowledge in Context Promotes Endorsement of Protective COVID-19 Health Behaviors

How do we resolve conflicting ideas about how to protect our health during a pandemic? Prior knowledge influences our decisions, often implicitly, creating cognitive conflict with new, correct information. COVID-19 provides a natural context for investigating how an individual's health-specific knowledge (e.g., understanding mask usage) and their personal context (e.g., proximity to COVID outbreaks) influences their protective health behavior endorsement, as information about the virus, its spread, and lethality has changed over time. We investigated the role cognitive conflict has in health decision making using a computer mouse-tracking paradigm alongside geographical information systems (GIS) as a proxy for context. Findings support a contextualized-deficit model in which relevant knowledge and contextual factors help individuals override cognitive conflict to make preventative health decisions, providing evidence for a more effective way for experts to combat non-adherence due to conflicting health information.

51. Sebiha Balci

Effects of gamified grading system on academic performance and motivation of online students

Gamification, a recent method of implementing game design elements into learning contexts, is used to enhance student performance, engagement, and motivation. In this study, two gamification design elements, badges (digital credentials) and leaderboards (digital rankings), were implemented in the grading system of an online undergraduate physics course. Badges and leaderboards are the most commonly implemented gamification elements; however, the findings on their effectiveness are mixed. The purpose of this study was to compare the effectiveness of badges and leaderboards on student motivation and academic performance. Eighty-eight participants were randomly assigned into one of the following groups: badges-only group, leaderboards-only group, badges with leaderboards group, and a control (no badges or leaderboards) group. The scores that students earned throughout the semester were used as a measure for academic performance and a self-report motivation survey was used as a measure for motivation. The results showed neither badges nor leaderboards had any significant effect on improving the academic performance of students compared to the control group. However, the motivation survey revealed that most students approached positively to both badges and leaderboards.

52. Shabnam Moini Chaghervand

Investigating the Use of Picture Books as Tools to Support Student Inquiry in an 8th Grade English Language Arts Classroom

The purpose of this dissertation study is to explore the use of picture books as tools to support inquiry in an 8th grade English Language Arts classroom. This study is a basic interpretive qualitative design that invites middle-grade students to read and respond to high-quality picture books and use them as tools to support their own inquiry on a particular topic. The aim of this study is to provide new insights on the power and potential of using picture books as tools for inquiry in the middle grades.

Oral Session 14

Education, Health, & Human Services II

53. Paul Geis

Studying vs. learning: Exploring the education abroad literature through a philosophical lens

Philosophers of education in recent years point to an overemphasis on learning in educational discourse. This trend, sometimes referred to as "learnification" (a term coined by Gert Biesta) or the "learning regime", is inadequate, if not problematic. An alternative conception of studying has been taken up in more recent literature as an opposition or balance to learning. This project engages these philosophical concepts as theoretical lenses for an analysis of published articles in a leading education abroad journal. This project asks how do published research articles reflect the discourse of learning, and whether and how discourses of studying are present.

54. Noor Agustina

English Language Learners and Culturally Responsive Pedagogy

America is an immigrant country where it attracts many people from different part of the world as a kind of melting pot that should embrace the diversity and give social justice regardless of race and skin color. Consequently, many English language learners demand attention. After all, they are highly likely to get into the category of students underachievement because they have difficulty getting along with the dominant culture and the language used for instruction and daily activities. The treatment to them now will influence the nation's future whether they will be problems if they mistreated or become good potential if they get proper treatment. Culturally responsive pedagogy is one way to serve the minority student of immigrants categorized as English language learners. The implementation of this approach needs collaboration from every school member that it demands culturally responsive leadership to make

it happen. The school's partnership with parents, other family members, and society will create a safe environment for them to learn.

55. Danielle Weiser-Cline

Theatre as a public thing: What is public, what is a thing, and how does theatre qualify as either?

I will argue that theatre is a public thing according to the framework for public things developed by Bonnie Honig. Honig provides the following parameters for considering whether a thing is public or not. First, public things require coming together for a shared purpose. Second, public things require specific capacities that promote positive engagement in the shared governance of democracy. This presentation will breakdown the terms public and things primarily through the lenses of Kathleen Knight Abowitz and Hannah Arendt. I will engage in a conversation with the works of Honig, Abowitz, and Arendt as I argue for considering theatre as a public thing worthy of public support.

56. Yu Li

The English language learning for Migrant girls of Technical and Vocational Education in Western Metropolitan China

My study explored the inequality in English language instruction experienced by rural migrant girls, inquiring into policies and structural opportunities of English instruction for migrant female youth in post-secondary early childhood education (ECE) TVET in West China, one of a small number of TVET majors and work opportunities for rural girls. Based in secondary source data for policy, 16 interviews of TVET female graduates and field observations drawn from two "poverty" counties in Shaanxi and Chongqing in western China, the findings show English instruction presents a hurdle to further education and creates a consistent educational attainment gap and also functions to delimit employment for migrant females.

57. Adam Whiteside

"It's just a guy thing:" A qualitative investigation of sex, communication, and hooking up among young men

Over the past 20 years, scholars and popular media sources have taken a particular interest in "hooking up" (i.e. uncommitted sexual encounter typically between strangers or acquaintances) as a significant part of youth culture. Although many report positive feelings after hookups, young women consistently suffer psychological, physical, and social consequence from hooking up far more frequently than their male counterparts given unequal power dynamics within hookup culture. Despite this, much is still unknown about young men's experiences with sexual relationships and the gendered constructs that impact their sexual encounters. Therefore, this study contributes to the growing body of research on hooking up by focusing on how young heterosexual men discursively construct masculinity within hookup culture and the implications of these constructions. Semi-structured interviews with 15 young men (18-26) were conducted and findings from my analysis illuminated the tensions and contradictions that arise as young men navigate evolving constructions of masculinity and sex within hookup culture. These findings not only extend literature on constructions of masculinity within hookup culture, but also can be used in designing future school programming tailored toward young men.

Oral Session 15

Psychological Sciences

58. Nicolle Simonovic

Psychological impact of ambiguous health messages about COVID-19

Perceiving ambiguity in health information—that is, uncertainty elicited from believing information lacks credibility, reliability, or adequacy—is typically associated with pessimistic appraisals (e.g., high perceived disease risk) and behavioral avoidance. We examined the effect of ambiguous health information about COVID-19 on health cognitions and vaccination intentions, and tested a “normalized-uncertainty” intervention. Two studies with identical methodology (online adult sample: $n=299$, undergraduate sample: $n=150$) were conducted in March–April 2020. Participants were randomly assigned to read one of three health messages about COVID-19 that emphasized what was currently unknown (ambiguity condition), what was currently unknown but that scientific uncertainty is expected (intervention condition), or what was currently known (control condition). The ambiguity condition led to greater perceived ambiguity than the control condition; contrary to predictions, perceived ambiguity in the intervention condition was comparable to the ambiguity condition, indicating that the intervention was unsuccessful. There were few differences in health cognitions, and no differences in vaccination intentions, across conditions. Correlational analyses collapsing across condition indicated evidence of pessimistic appraisals but not behavioral avoidance among individuals who perceived greater ambiguity. Future research may benefit from more in-depth investigations of affective responses to ambiguous health information and should test longer, more detailed normalized-uncertainty interventions.

59. Erin Graham

Can non-declarative learning techniques help students learn to factor polynomials?

Although declarative instruction doubtlessly plays an important role in mathematics education, it also places a heavy burden on students’ working memory. This means that students with limited working memory resources are at a disadvantage when learning foundational math skills in a traditional educational context. However, recent research suggests that non-declarative learning techniques, which place fewer demands on working memory, can be successfully applied to mathematics education. Specifically, prior work found that a mathematics intervention based on error-less learning and cue-fading techniques was more beneficial than an intervention based on declarative instruction for helping older students learn to factor polynomials. The present study sought to replicate and extend this work by comparing the relative efficacy of non-declarative and declarative factoring interventions for college students. Our findings replicated the prior work, suggesting that non-declarative learning techniques can be successfully applied to mathematics education.

60. Jeremy Foust

Dispositional optimism and spontaneous self-affirmation as predictors of information avoidance and agreement with prediabetes risk information

People often avoid and/or disagree with potentially negative health information because it feels threatening. In two studies, we tested the hypothesis that people higher in personal threat management

resources of optimism—holding positive expectations about the future—and spontaneous self-affirmation (SSA)—reflecting on one’s strengths and values when feeling threatened—would be less likely to avoid and reject health information. Participants were adults recruited online through MTurk (Study 1; N=814, 59% male, 78% white, Mage=36) and college students (Study 2; N=215, 78.1% female, 83.7% white, Mage=19.74). Participants reported optimism and SSA, had the opportunity to learn their prediabetes risk, reported whether they thought their risk was lower than the estimate provided versus the same or higher, and rated agreement with their estimate on a scale from 1 (strongly disagree) to 5 (strongly agree). In both studies, regression analyses controlling for sociodemographics indicated that SSA and optimism were associated with some but not all of the indicators assessing avoidance and rejection/acceptance of prediabetes risk information. These results suggest that individual differences may be important in determining how people engage with health information. Understanding who is likely to avoid and downplay health information can guide interventions to encourage more adaptive information engagement.

61. Dan Scheibe

When it’s healthy to be confident: What factors predict adults’ confidence judgments on COVID-related math problems before and after their engagement with an educational intervention.

How do people retrospectively judge confidence in their decisions on health-related math tasks? Which individual differences predict initial confidence judgments? How does a brief, 5-minute intervention targeting math skills—which increases problem-solving accuracy—affect people’s confidence? We investigated these questions in a large, national study (N = 1,297). Gender (males reported higher confidence than females) and math anxiety (low-math-anxious people reported higher confidence than high-math-anxious people) were both predictors of initial confidence. Further, math anxiety mediated the relation between gender and pretest confidence. The intervention was effective at increasing participant problem-solving accuracy and also increased participant confidence, suggesting participants had some level of metacognitive awareness about their performance. Consistent with prior research, math anxiety explained additional variance in our models beyond trait anxiety alone. Our data suggests that gender differences and affective factors (math anxiety and math attitudes) are important to consider when predicting people’s confidence in health-related math problems. This study provides insights about the interplay of math anxiety, gender differences in confidence judgments and health decision-making.

62. Tam Nguyen

The roles of Protective Childhood Experiences, Adverse Childhood Experiences, and Social Support in the long-term psychological adjustment of adults following trauma exposure

Prior research has suggested that protective childhood experiences (PCEs) can protect against adverse childhood experiences (ACEs) in childhood adjustment. This study examined the relationship between PCEs, ACEs, current social support, and psychological symptoms in adults in the months following traumatic experiences. Participants included n = 128 adult patients admitted to the Trauma service at Level 1 Trauma Centers in Akron, Ohio, following violence, motor vehicle crashes, and other traumatic events. At baseline, participants completed questionnaires to measure depression and PTSD symptoms (CESD and PCL5), social support, and family history. They also completed the CESD, PCL5, and Social Support questionnaires again at 4, and 9 months post-injury. Latent growth curve analysis was used to estimate psychological symptoms over time under the influence of PCEs and ACEs, with potential mediation by current social support. The results showed that PCEs did not have significant direct effects

on psychological symptoms or any significant mediation paths through social support, or any significant interaction effects with ACEs. Psychological symptoms were increased by ACEs(0.33, $p<.001$) and decreased by social support(-0.39, $p<.001$) at baseline. ACEs also increased psychological symptoms from 4 to 9 months (0.27, $p<.05$). These findings suggest that the ACEs and social support might have more effects on psychological symptoms of adult trauma survivors regardless of the PCEs.

63. Keaton Somerville

Hair cortisol concentration and perceived chronic stress in low-income urban pregnant and postpartum Black women

Black women are more likely to experience short- or long-term health consequences from their labor and delivery and die from pregnancy-related causes than White women. Similarly, infants born to Black women also have heightened health risks. Developing research suggests that a contributing factor to Black health disparities may be maternal chronic stress. A widely used biomarker for chronic stress is hair cortisol concentration (HCC). Few prior studies have explored the HCC of pregnant Black women or comprehensively examined perceived chronic stress in this population. Using a mixed-methods focus group framework, we assessed HCC and perceived chronic stress among low-income pregnant and postpartum Black women. Four focus groups were conducted ($N = 24$). The mean HCC for our pregnant Black participants was greater than pregnant White women in reviewed published studies. The high levels of stress evidenced at all pregnancy stages indicate that many of these women are experiencing chronic stress, which can contribute to higher Black maternal morbidity and mortality rates, and possibly infant mortality rates. From the open coding of the focus group transcripts, 4 themes emerged: chronic stress, experiences of racism, experiences of trauma, and negative thinking. Selective coding based on these themes revealed cumulative experiences of chronic stress, various traumatic experiences, and frequent encounters with racism. Negative thinking styles were observed across the 4 focus groups. More studies of HCC and perceived stress among pregnant Black women are encouraged. Findings suggest the need for tailored multi-level interventions given the layers of stressors present in this population.

Oral Session 16

English and Information Sciences

64. MaryAnn Harris

Indexing Inaugural Poems Read by Poets: Robert Frost and Maya Angelou

The importance of indexing inauguration poems indicates the need to understand the culture gap in writing poetry.

65. Nisreen Yamany

Countering prejudice toward Muslim women through literature.

This research focuses on the stereotypes surrounding Muslim women. Many of these stereotypes are triggered by hijab or veil. A hijabi Muslim woman is instantly categorized as the "other" and the hijab often becomes a saturated symbol through which a Muslim woman is often reduced into few reductive images which include images of otherness, oppression and even of danger.

In order to redress these stereotypes about Muslim women, cognitive techniques are used to design various pedagogical practices that can be applied in and outside the classroom by using specific literary works. Some of the cognitive techniques that have been used in this research include the provision of counter-stereotypical exemplars, empathy evoking approaches, and various indirect contact techniques. The aim of this study is to make students question and redress existing stereotypes about Muslim women and replace them with more accurate representations, which would make Muslim women be seen, not as "the other" or "different from" but as essentially similar to any other women in the world, and eventually any other human being.

66. Muhammad Farooq

Baldwin's *Go Tell It on the Mountain*: Intergenerational Transmission of Trauma

The experience of slavery and racism leave long lasting traumatic impacts on the multiple generations of the victims. These traumatic experiences do not only pass on as the unwanted legacy in the family, but they build up and worsen as a result of structural violence, absence of opportunities, and omnipresent racism in society that cripple upward mobility. In *Go Tell It on the Mountain*, James Baldwin depicts this cumulative effect of the intergenerational transmission of trauma in the lives of the three generations of African Americans. Employing Vomik D. Volkan's notion of the Intergenerational Transmission of Trauma and Joy DeGruy Leary's concept of Post Traumatic Slave Syndrome (PTSS), this paper explores the three major patterns of behavior: vacant self-esteem, ever-present anger, and racist socialization in the lives of the characters in Baldwin's novel. This paper focuses on Gabriel's racist socialization and its impact on parenting; Gabriel's ever-present anger and its multiple manifestations within the family and across generations; and John's vacant self-esteem and how society, community, and family transmit it and, in the process, contribute to it. This paper concludes that despite the novel's ending on a sanguine note, Baldwin does not show the elimination of trauma in the successive generations, but rather divulges further aggravation and accumulation of traumatic experiences in the wake of pervasive racism.

Oral Session 17

Social Sciences

67. Sarah Harvey

Faking Empathy: First-year medical students' experiences with clinical empathy and standardized patient training

In 2016, Underman and Hirshfield note that consideration of emotions in medicine has "largely disappeared" in sociology, and encourage medical sociologists to return to the topic of medical student emotional socialization. This study aims to contribute to the discussion of medical student emotional socialization and its implications for providers and students. In the second phase of a five-year longitudinal study following pre-medical students through medical school, we conducted in-depth interviews with 14 first-year medical students at Northern Medical College. Students were asked to discuss their own perceptions of emotions, specifically empathy, and their experiences with patient care in the formal and informal curriculum. One notable curricular requirement is to conduct patient interviews with trained lay persons who portray the role of the patient (known as simulated or standardized patient training). Students report that the standardized patient experience takes a back seat to the more "science" focused curriculum; that it is not as effective at teaching clinical empathy as encounters with real patients; and that it encourages them to perform but not necessarily feel emotion. Drawing from the data, we

discuss how the real-time experiences of medical students, engaged in patient care practices, can and should inform developing patient care curriculum.

68. Katie McGuire

Building the historical narrative: A controversial endeavor

In the summer of 2014 the College Board released an updated A.P. US History curriculum framework to an outburst of controversy, for truly no school subject prompts a public uproar quite like history. Our interpretation of the past helps to define our present, and with that comes contention. Although journal articles cover this contention, few researchers conduct an in-depth analysis of the creation of controversial curriculums. This presentation will analyze the construction of historical narratives taught in classrooms. Specifically, it explores the 2014-2015 A.P. US History Curriculum by looking at more than the curriculum itself, but the development of the curriculum including the creators and their backgrounds.

The recently released 1776 report shows the necessity of finding answers about the construction of historical narratives. Debates about these narratives are often inspired by differences in ideology regarding the purpose of history education. Some believe the reason for history education centers around patriotism and unity, while others see history as a vehicle for allowing students to explore ethnic diversity, multiculturalism and identity. Ideological differences about the purpose of history education lead to arguments over published curriculum. Historians and educators must concern themselves with untangling the complicated process of narrative-construction.

69. Leslie Wood

“You Have to Have a Hustle”: Harnessing Recovery Capital for White Individuals with Opiate Addiction

Neuroscience and addiction medicine place a strong emphasis on medication assisted treatment as the standard of care for opiate addiction, but individuals who seek recovery from addiction also struggle with numerous social issues. In this qualitative study, I aim to gain a better understanding of how people with opiate addiction seek out, navigate and sustain recovery. I used convenience and snowball sampling resulting in an all-White sample of individuals with aged 22-66 years and time in recovery ranging from 8 months to 26 years. Eighteen in-depth interviews were conducted. Analysis of data suggests that individuals with opiate addiction utilize a wide range of resources to access treatment and engage in recovery. Specifically, individuals who suffer from addiction mobilize various forms of recovery capital (e.g. Cloud and Granfield 2008). In this paper, I discuss recovery capital in terms of social, economic and community capital as well as subcultural health capital, an adaptation of Shim's (2010) cultural health capital. Recognizing that Whiteness itself is recovery capital in a treatment system that has essentially been built to serve White males, I couch this discussion in the broader sociological literature regarding class and racial/ethnic disparities in the public health and criminal justice systems.

70. Muhammad Hassan Bin Afzal

The Impact of the Global Health Crises on Immigration Policies: Policy Entrepreneurship, Agenda Setting, and the Politics of Exclusion

Scholars have demonstrated that policy entrepreneurs can shape the policy agenda formation process by tying major focusing events to a policy issue, even when the event itself has little relation to the issue they seek to advance (Birkland 97; Mintrom 1997). Here we use the policy entrepreneur framework to examine

the relationship between global health crises and exclusionary immigration policies. Policy entrepreneurs could be state or non-state actors who influence policy decision-making, particularly at the agenda-setting stage. We examine the effect of two 21st century global health crises on the national U.S. immigration policy agenda: Ebola (2014-16) and Zika (2015-16). We use a mixed-methods approach, including content analysis and discourse analysis on the congressional hearings on the lower house of the U.S. Congress. We determine whether policy entrepreneurs successfully advanced exclusionary policies against immigrants by invoking these public health crises. Precisely, we determine whether exclusionary immigration policies were more likely to receive congressional hearings and votes in the wake of these public health crises in other parts of the world. We consider the continent and ethnicity of potential immigrants in which the epidemic is unfolding. Our findings are essential to immigration policy and public health scholars, particularly to those interested in the effects of global health crises on marginalized populations.

71. Md Harun-Or Rashid

Pandemics, contamination rumors, and communal violence: Covid-19 and Hindu Muslim Conflicts in India

During the Covid-19 pandemics, there has been a growing number of violence against India's Muslim community, targeted by rumors that they are spreading the virus. There is a mounting question in such a context, whether there is a relationship between pandemics and communal violence? This paper combines contamination psychology theory and Rumor theory, which links disease contamination and cultural contamination with communal violence. This paper argues that if we need to understand how rumors spark the tinder of inter-group differences, we need to know more about the psychological and social conditions under which negative perceptions of outgroups violating norms become accepted during a pandemic. This paper finds that in the Indian Covid-19 disease spreading rumor case, the rumor spreaders use the Hindu community's long-term prejudices against Muslims. Additionally, there is also underlying political interest behind the rumors that must consider when analyzing the relationship between pandemics and communal violence. Based on newspaper mapping, the article's main argument is that communal violence during an epidemic does not happen only because of the fear of disease contamination. Instead, accusing any outgroup of disease contamination is grounded on the combination of long-term prejudice and power politics.

