



# RESEARCH MENTORSHIP PROGRAM

## 22<sup>ND</sup> ANNUAL RESEARCH SYMPOSIUM PROCEEDINGS

AUGUST 2 – 4, 2017  
1001 ENGINEERING SCIENCES BUILDING

# RMP RESEARCH SYMPOSIUM PROGRAM

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Wednesday, August 2, 2017

**8:45AM** **Opening Remarks**

Lina Kim, Director of the Research Mentorship Program

**8:48AM** **Jagruti Kolla**

The Effects of Small Molecule Y-27632 on RPE Differentiation Efficiency

**9:00AM** **Amy Yan**

Enhancing Clinical Translation of Retinal Pigmented Epithelium Differentiation

**9:12AM** **Shrivats Kannan**

Assessing the Yield of Retinal Pigment Epithelium Cells from Induced Pluripotent Stem Cells Differentiated in Varying Growth Environments

**9:24AM** **Joshua Ni**

Quantifying Premelanosome-17 Protein Expression of Induced Pluripotent Stem Cell Derived Retinal Pigment Epithelium Cells

**9:36AM** **Anjali Sadarangani**

Investigating Retinitis Pigmentosa: Gene Expression of iPSCs Derived from Retinal Pigment Epithelial Cells

**9:48AM** **Hwikeun Kim**

Genetic Mutation and its Impact on Development of Retinal Pigment Epithelial Cells

**10:00AM** **Refreshment Break**

**10:20AM** **Claire Grover**

Using Zooarchaeology to Understand the Ancient Society in the Fortress of Askut

**10:32AM** **Emma Rich**

An Analysis of Herbal Cancer Treatments in Eighteenth and Nineteenth Century Britain: Did They Work, and Why Have They Persisted?

**10:44AM** **Amber Tharakan**

Association Between Family Demographics and Efficacy of an Online Pivotal Response Treatment Intervention for Young Children with Autism Spectrum Disorder

**10:56AM** **Anisha Baktha**

Association Between Toddler Autism Symptom Severity and Efficacy of an Online Pivotal Response Treatment (PRT) Intervention

**11:08AM** **Emmanuel Flores-Canchola**

Hot Spot analysis of Malaria Incidence in Kenya using Spatial Statistics

**11:20AM** **Cathy Zhang**

Hot Spot Analysis of Child Undernutrition in Kenya Using Spatial Statistics

**11:32AM** **Megan Xu**

Taphonomy of Neoproterozoic Organic-Walled Microfossils: The Relationship Between Total Organic Carbon Levels and Preservation Quality

# RMP RESEARCH SYMPOSIUM PROGRAM

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Wednesday, August 2, 2017

- 11:44AM** **Lunch Break**  
On Your Own
- 1:00PM** **Kadin Donohoe**  
Optimizing Discrete Representations of Area Preserving Dynamical Systems
- 1:12PM** **Joshua Doolan**  
Structural Modifications of Deep Convolutional Neural Networks for Image Super-Resolution
- 1:24PM** **Sohini Kar**  
Exploring the Effect of Data Augmentation on Deep Learning-Based Object Detection
- 1:36PM** **Jungwoo Park**  
Deep Learning-Based Object Detection Using a Dataset for Self-Driving Cars with Emphasis on Effects of Data Augmentation
- 1:48PM** **James Wang**  
Understanding the Effect of Architectural Changes on Image Denoising Using Deep Convolutional Neural Networks
- 2:00PM** **Leo Glikbarg**  
Predicting Terrorist Attacks in Afghanistan Using Generalized Multivariate Regression and Time Series Analysis
- 2:12PM** **Casey Blout**  
Capturing Trends in Stock Prices Using ARIMA Models
- 2:24PM** **Aayush Patel**  
Data Mining Analysis of Crime in the United States Using Conditional Forests and Artificial Neural Networks
- 2:36PM** **Refreshment Break**
- 3:08PM** **Srihari Narayanan**  
Building a Python Data Analysis Tool for HSPICE Simulations of Integrated Circuits
- 3:20PM** **Angelreana Choi**  
More Than Meets the Eye: Opsin Diversity and Expression in *Aplysia*
- 3:32PM** **Roshni Varma**  
The Evolution of the Eye: How Sea Slugs See

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Wednesday, August 2, 2017

- 3:44PM Kayetan Chorazewicz**  
Developing a Mussel-Inspired Tough Elastomer
- 3:56PM Sameer Sundrani**  
Optimizing Osseointegration in Biomedical Implants with Mussel-Inspired Coating
- 4:08PM Ryan Hou**  
Exploration of Cation- $\pi$  Interactions in Creating a New Mussel-Inspired Adhesive
- 4:20PM Max Kolevski**  
The Cation- $\pi$  Bond: A Vital Interaction for Biomimetic Wet Adhesives
- 4:32PM Jason Dong**  
Downregulating the Pathogenic Uptake of Tau Through the Knockdown of LRP1
- 4:44PM Helen Zhang**  
Using CRISPRi to Analyze the Role of PTRF in Tau Uptake of Central Nervous System Culture
- 4:56PM Closing Remarks**  
Lina Kim, Director of the Research Mentorship Program

# RMP RESEARCH SYMPOSIUM PROGRAM

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Thursday, August 3, 2017

**8:45AM** **Opening Remarks**

Lina Kim, Director of the Research Mentorship Program

**8:48AM** **Junna Faessel**

Reconstructing Historical Shark Communities: The Growing Importance of Conservation Paleoecology

**9:00AM** **Emma Mackey**

Investigating the Role of Opsins in the Innate Immune System of *Drosophila melanogaster*

**9:12AM** **Jennifer Soh**

The Role of Opsins in Bitter Taste: a Novel Gustatory Receptor in *Drosophila melanogaster*

**9:24AM** **Hagop Chinchinian**

Synthesis and Characterization of Vanadium Terminal Nitride Phthalocyanine Complexes

**9:36AM** **Evan Leung**

Synthesizing an Iron Terminal Nitride Phthalocyanine Complex as a Catalyst for CO<sub>2</sub> Reduction

**9:48AM** **Refreshment Break**

**10:08AM** **Aliyah Behimino**

Exploring the Impact of Savage Inequity on Diabetes Susceptibility in Utila, Honduras

**10:20AM** **Suahn Hur**

Perception Variability: Exploring Predictors of Subjective Socioeconomic Status on the Island of Utila, Honduras

**10:32AM** **Rachel Seong**

Metabolic Disease on the Island of Utila, Honduras: Impact of Early Exposure to Food Insecurity on Metabolic Disease Risk

**10:44AM** **Mohit Singhal**

Stress and Metabolic Disease on the Island of Utila, Honduras: Evaluating the Links Between Monthly Income and Perceived Health

**11:00AM** **Morning Session Break**

# RMP RESEARCH SYMPOSIUM PROGRAM

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Thursday, August 3, 2017

- 2:00PM Tiffany Huang**  
Math to Medicine: Developing Algorithms for the Automatic Detection of Defining Features within ECGs
- 2:12PM Michael Zhang**  
Quantifying ECG Segmentation
- 2:24PM Parthav Shergill**  
The Market Forces of Anger and Joy: Sentiment Analysis to Predict Stock Price Trends
- 2:36PM Scott Taber**  
Learning from the Past: Using Recurrent Neural Networks for Stock Price Prediction
- 2:48PM Anusha Sarathy**  
Out of Necessity, They Move: International Law, Integration, and a Comparative Analysis of Yugoslavian and Syrian Refugees
- 3:00PM Shaghayegh Lashgari**  
The United States of America & Muslim Refugees: History, Identity & Integration in the Age of Trump
- 3:12PM Gerardo Segura**  
Racial Socialization as Perceived by Latina College Students
- 3:24PM Refreshment Break**
- 3:44PM Yohaán Dalal**  
The Multi-Trillion Dollar Mission: China's Pursuit of its Economic Dream Through the Belt and Road Initiative
- 3:56PM Christopher Wong**  
Deceit of Special Advertising Sections: Privatized Country Branding or Corporate Neo-Imperialism?
- 4:08PM Chloe Rome**  
Neosexism: Triggering the Consciousness of Millennials on the Global Feminist Social Movement
- 4:20PM Grace Li**  
The Linkage Between Politics and Laws, Migration, and Economic Development: the Cases of the Philippines and Cambodia
- 4:32PM Anjali Thakrar**  
Using Vibrotactile Stimulation to Create Somatosensorial Illusions
- 4:44PM Trisha Karani**  
Conflicts, Contradictions, and Alliances: Mapping Birth Control Distribution in the Philippines
- 5:00PM RMP Poster Session**  
Engineering Sciences Building Courtyard

# RMP RESEARCH SYMPOSIUM PROGRAM

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Friday, August 4, 2017

**8:45AM** **Opening Remarks**

Lina Kim, Director of the Research Mentorship Program

**8:48AM** **Emily Martinez**

The Science of Sound: The Study of How Music Affects Physiology and Increases Productivity

**9:00AM** **Felisha Li**

The Effects of Energy Stress on Aquatic Sedimentary Microbial Communities

**9:12AM** **Max Shiau**

Targeted Cultivation and Identification of Recalcitrant Carbon-Degrading Microorganisms from the Salton Sea

**9:24AM** **Natalie Moreno**

Comparative Analysis of 16S rRNA Profiling Methods Using Next Generation Sequencing Data

**9:36AM** **YouJia (Rose) Xi**

Comparative Genomics of a Widely-Distributed Clade of Heterotrophic Marine Archaea

**9:48AM** **Daniel Yang**

Bioinformatic Analysis of Novel Sedimentary Microbes in Hypersaline Conditions

**10:00AM** **Refreshment Break**

**10:20AM** **Vedika Kanchan**

Law and Gender: The Weaponization of Rape and Post-Conflict Disenfranchisement of Bosnian Women

**10:32AM** **Angela Ziyue Qian**

Politics, Religion, and Internal Conflicts in Myanmar: Understanding the Longest Running Civil War in History

**10:44AM** **Leo Rassieur**

The New Cold War: The United States' Political, Economic, and Strategic Options for Containing Russian Military Aggression in Eastern Europe

**10:56AM** **Doris Zichun Wang**

The Paris Climate Accord Conflict: Leadership, Responsibility and Actions

**11:08AM** **Jason Li**

Effectiveness of the Strategy "Going public" for Presidents in New Media Environment

**11:20AM** **Min Seo (Michelle) Choi**

The Effects of Parents and New Polarized Media on the Political Socialization of Adolescents

**11:32AM** **Olivia Almon**

Males, Intimacy, and Avoidance: A Quantitative Analysis of Male Relationship Status and Level of Avoidance

**11:44AM** **Fara Chang**

Representations of Asian and Latino Americans in Mainstream Entertainment Media: A Qualitative Analysis of Fresh Off the Boat and Jane the Virgin

## RMP RESEARCH SYMPOSIUM PROGRAM

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Friday, August 4, 2017

- 11:56AM** **Lunch Break**  
On Your Own
- 1:12PM** **Jake Kim**  
Analyzing Neuronal Cell Treatment Methods to Optimize Safety and Efficiency for Clinical Patients
- 1:24PM** **Sahil Jain**  
Stem Cell Engineering and Immunofluorescence Quantification of GABAergic and Glutamatergic Neurons
- 1:36PM** **Ashrita Nagpal**  
Immunofluorescence and Quantitative Analysis of Neurons to Determine Cell Subtype – Possible Use in Cell Therapy
- 1:48PM** **Sean Lin**  
A Computational Model Investigating Dynamic Microenvironments Directing Stem Cell Lineage
- 2:00PM** **Jeremy Tien**  
Computational Collection and Analysis of Physical Cues on Neurite Outgrowth Using Natural Language Processing and Statistical Modeling
- 2:12PM** **Robert Huang**  
Firing Rate Curve Analysis and Control Design for STN of Parkinsonian Neurons
- 2:24PM** **Andrew Yates**  
Modeling Parkinsonian STN Neurons with Energy-Efficient Deep Brain Stimulation Control
- 2:36PM** **Andy Jin**  
An Evaluation of Neural Network Models in Machine Learning to Detect Fake News
- 2:48PM** **Closing Remarks**  
Lina Kim, Director of the Research Mentorship Program