



# RESEARCH MENTORSHIP PROGRAM

## 24<sup>TH</sup> RESEARCH SYMPOSIUM PROCEEDINGS

AUGUST 1 – 3, 2018  
1001 ENGINEERING SCIENCES BUILDING

## RMP RESEARCH SYMPOSIUM PROGRAM

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Wednesday, August 1, 2018

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

Lina Kim, Director of Pre-College Programs

**8:48AM** **Anna Kolesov**

Disturbances Affect the Nature and Frequency of Coral-Algal Interactions in Moorea, French Polynesia

**9:00AM** **Eugene Gao**

Micellar Catalyzed Sustainable Reductive Amination Using Borohydride Reductant in Water

**9:12AM** **Henry Jin**

Synthesis of Amines with Palladium Catalyst and Triethylsilane Reductant in Water

**9:24AM** **Rahul Kumar**

Comparing and Analyzing Bacterial Genomes to Predict the Ecology of Uncultivated Organisms

**9:36AM** **Ryan Sequeira**

Predicting Biological and Ecological Characteristics of Prokaryotes by Comparative Genomic Analysis

**9:48AM** **Jake Trimble**

The Characterization of Uncultured Microbes Through the Analysis of Metagenomic Data

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

**10:20AM** **Isabella Hurvitz**

Distorting Length and Proportion of a Virtual Limb to Investigate Avatar Embodiment Through Vibrotactile Feedback

**10:32AM** **Anika Fuloria**

Vibrotactile Rendering of Beat Frequencies Using Wave Voxel Synthesis

**10:44AM** **Adalia Zhou**

Designing a Haptic Wearable for 3D Vibrotactile Aesthetic Experience

**10:56AM** **Anish Natarajan**

Differentiation of Human Induced Pluripotent Stem Cell Derived Inhibitory Neurons

**11:08AM** **Alice Wong**

Deriving Inhibitory Neurons from Human Induced Pluripotent Stem Cells (hiPSCs)

**11:20AM** **Claudia Brewer**

Genetic Roles in Alzheimer's Disease: Using CRISPRi to Characterize the Uptake of Tau in iPSC-derived Neurons

**11:32AM** **Anna Lapteva**

Employing CRISPRi in Stem Cell-Derived Neurons for Characterization of Gene Roles in Tau Pathology

# RMP RESEARCH SYMPOSIUM PROGRAM

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Wednesday, August 1, 2018

- 11:44AM Lunch Break**  
On Your Own
- 1:00PM Salvador Gomez**  
Mexico and Its New Diaspora – Soccer and National Identity
- 1:12PM Sarah Bartos**  
Pastrami and Popular Culture: The Changing Opinion on Jewish Cuisine in New York City (1880-1970)
- 1:24PM Trenton Gin**  
How Online Participation Affects Government Accountability: A Case Study of the North Korean Nuclear Threat in the U.S.
- 1:36PM Ananya Chaudhuri**  
The Rohingya Refugee Crisis: Origins, Implications, and Conflict Resolution
- 1:48PM Sarah Gao**  
The United States' Central American Refugee Crisis : Government Violation of UNHCR Policies
- 2:00PM Mary Qiu**  
Media Preferences and Political Identification: A Social Identity Gratifications Perspective
- 2:12PM Jennifer Quito Alvarez**  
The Narrative of the Opioid Epidemic: Media Framing in News Media
- 2:24PM Lily Melendez**  
An Evaluation of Automation in Transforming the Quality of Work and Worker Mentality
- 2:36PM Catherine Cho**  
Automation and Redefining Work: Sustaining a Future of Leisure and Creative Pursuits
- 2:48PM Refreshment Break**
- 3:08PM Jared Asch**  
Characterizing the Role of Viscosity in the Formation of Polymer Membranes through Nonsolvent Induced Phase Separation
- 3:20PM Catherine Zheng**  
Determining the Location of the Dynamic Symmetry Point of Polymer Membranes Using Computer Simulations
- 3:32PM Jacob Dunefsky**  
Controlling Clustering, Synchronization, and Desynchronization in Biological Oscillators

## RMP RESEARCH SYMPOSIUM PROGRAM

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Wednesday, August 1, 2018

- 3:44PM Daniel Kuelbs**  
Modeling Collective Behaviors in Biological Oscillators
- 3:56PM Rhea Kapur**  
Typological Language Features in Time and Space: Investigating the Dynamics of Stability, Diffusion, and Internal Change Through Computer Simulations
- 4:08PM Heather Kong**  
Cognitive Biases in Language Learning: Using Gender-Number Paradigm and Artificial Language Learning to Examine the Animacy Hierarchy
- 4:20PM Stephanie Nam**  
In Search of Cognitive Biases to Explain Cross-Linguistic Tendencies: Testing the Number Hierarchy with Artificial Language Learning
- 4:32PM Shiva Balachander**  
Analysis of Long Short-Term Memory Neural Network Structures on the Accuracy of Stock Price Predictions
- 4:44PM Varun Saran**  
Using Text Mining Classification Models to Categorize Movie Reviews
- 4:56PM Closing Remarks**  
Lina Kim, Director of Pre-College Programs

# RMP RESEARCH SYMPOSIUM PROGRAM

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Thursday, August 2, 2018

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

Lina Kim, Director of Pre-College Programs

**8:48AM** **Jordan Bollag**

Risk Maps and Other Tools to Bring Safety to Communities Surrounding the Guatemalan Volcán de Fuego

**9:00AM** **Evan Cheng**

Responding to a Rising China: Obama, Trump, and the Need for a Rebalancing Towards America

**9:12AM** **Joyce Wang**

The U.S.-China Trade Conflict: Balancing Protectionism with Cooperation

**9:24AM** **Thomas Song**

The Evolution of Narratives Surrounding Terrorism in Afghanistan: 1980-The Present

**9:36AM** **Andrea Ramirez**

Remnants of Eighteenth-Century Remedies in Twenty-First Century Mexican and Chinese Households

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

**10:08AM** **Patrick Kim**

A Computational Model of Fishers' Adaptations to Climate Change and their Feedback into Chilean Fishery Ecosystems

**10:20AM** **Catherine McQueen**

Utilizing Dermal Denticles to Construct Shark Communities in the Dominican Republic

**10:32AM** **Roxanne Jackson-Gain**

High-Mobility Barium Stannate Oxide Films Grown Epitaxially for Power Electronic Applications

**10:44AM** **Alexander Kwon**

Analyzing the Electrical and Structural Properties of Strontium Titanate for Power Electronic Applications

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

# RMP RESEARCH SYMPOSIUM PROGRAM

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Thursday, August 2, 2018

- 2:00PM Albert Miao**  
Modeling the Coexistence of Yeast Cells Following Competition-Colonization Dynamics
- 2:12PM Owen Shen**  
Analysis of Potential Counterexamples of Seymour's Conjecture
- 2:24PM Vivek Vanga**  
A Computational Analysis of Seymour's Second Neighborhood Conjecture with Respect to Graph Reduction and Elimination
- 2:36PM Jonathan Vu**  
Trans/cis Isomerization of the Uranyl Ion through Coordination to a 14-Membered Macrocyclic Ligand
- 2:48PM Jason Goodman**  
Recreating Bioluminescent Mating Displays to Quantify Mate Preference in Female Ostracods
- 3:00PM Madison Pfau**  
Developing Transgenic DNA in Bacteria to Understand the Evolution of Bioluminescence in Marine Ostracods
- 3:12PM Tobie Jessup**  
Understanding the Genetic Basis of Evolution in Bioluminescent Courtship Displays
- 3:24PM Refreshment Break**
- 3:44PM David Choi**  
Investigating Possible Geometries for an Inflatable Solar Panel Array on 1U CubeSat
- 3:56PM Wesley Wong**  
Design of a Phased Laser Array System for Directed Energy Propulsion of Wafer-Scale Spacecraft
- 4:08PM Kai Nakamura**  
Structural and Optical Analysis of Prototype Phased Laser Array and Blue Laser Propulsion
- 4:20PM Jennifer Gao**  
A Data-Driven Analysis of Redlining in San Francisco
- 4:32PM John Geyer**  
Visualizing and Analyzing Ridehailing Trips with Kepler.gl
- 4:44PM Sahil Gupta**  
Leveraging Machine Learning to Define Silicon Valley Neighborhoods through Geospatial Semantics
- 5:00PM RMP Poster Session**  
Engineering Sciences Building Courtyard



# RMP RESEARCH SYMPOSIUM PROGRAM

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Friday, August 3, 2018

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

Lina Kim, Director of Pre-College Programs

**8:48AM** **Viswesh Krishna**

Utilizing Path Analysis and fMRI Activation Patterns from the Entorhinal Cortex to Effectively Categorize Navigators

**9:00AM** **Michelle Qin**

Formula for Fate: A Computational Simulation of Molecular Factors to Predict Gene Expression Dynamics

**9:12AM** **Christian Figueroa**

Modeling the Network of Molecular Factors Involved in Determining the Fate of Neuronal Progenitor Cells

**9:24AM** **Samuel Berkun**

Computational Analysis of Genes in Biological Literature

**9:36AM** **Harris Shadmany**

Stem Cell Therapies for Neurological Disorders: A Systematic Review and Meta-Analysis

**9:48AM** **Katelin Zhou**

Systematic Analysis and Review of Literature for Various Neural Stem Cell Therapies and Treatments

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

**10:20AM** **Sahil Jain**

A Mathematical Model of Parkinsonian Neurons: Furthering Understanding of Deep Brain Stimulation with Global Isochron Portraits

**10:32AM** **Rishabh Mohanka**

Global Isochron Portraits for Population-Level Models of Parkinsonian Neurons in the Subthalamic Nucleus and the External Globus Pallidus

**10:44AM** **Charley (Dongshen) Cai**

Identifying Effects of Ribosome Biogenesis Related Candidate Genes in *Caenorhabditis elegans* via RNA Interference

**10:56AM** **Hannah Shadmany**

Using RNAi for Identification of the Function of Ribosome Biogenesis Related Genes on Development in *Caenorhabditis elegans*

**11:08AM** **Alex Reulbach**

Local Variation in the Diet of Invasive Lionfish

**11:20AM** **Alisha Naidu**

Ontogenetic Migration and Habitat Selection by Invasive Lionfish

**11:32AM** **Joseph Sausville**

Examining Trade-Offs in Economic Output and Conservation in Fishing Communities

**11:44AM** **Margaret Crow**

New Species of Mid Miocene Proterotheriid Litoptern from Quebrada Honda

## RMP RESEARCH SYMPOSIUM PROGRAM

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Friday, August 3, 2018

- 11:56AM** **Lunch Break**  
On Your Own
- 1:12PM** **Katharine Newman**  
Measuring Gesture Production to Test the Efficacy of Pivotal Response Treatment for Infants with Autism Spectrum Disorder
- 1:24PM** **Jasmin Wang**  
Cultural Adaptations to Optimize ASD Treatment Experiences for Ethnic Minorities: A Filipino Case Study
- 1:36PM** **Celina You**  
Analyzing the Relationships Between Internet Usage, Social Skill, and Anxiety Severity in Adults with Autism
- 1:48PM** **Tramy Nguyen**  
Understanding Stigma Surrounding Autism Spectrum Disorder in the Older Filipino Community: A Case Study
- 2:00PM** **Zoe Ranon**  
An Evaluation of Early Intervention on Interpersonal Communication in Toddlers with ASD
- 2:12PM** **Nikita Salunke**  
Effect of Epitaxial Compression on Structural and Electrical Transport Properties of Three-Dimensional Topological Dirac Semimetal  $\text{Cd}_3\text{As}_2$
- 2:24PM** **Jade Chongsathapornpong**  
Stretching the Limits: Tuning Cadmium Arsenide Thin Films
- 2:36PM** **Sahil Jain**  
Binary Classification for Entity Linking Disambiguation with TFIDF Vectorization and SVM Linear Models
- 2:48PM** **Closing Remarks**  
Lina Kim, Director of Pre-College Programs