

Research, Discovery and Innovation (ReDI) Annual Symposium

Monday, May 13, 2019 — Research and Discovery

8:30 am - 8:45 am: ReDI Opening Remarks, President Leshin and Provost Soboyejo

8:45 am - 9:10 am: Kris Boudreau, 2018 Trustees' Award for Outstanding Research & Creative Scholarship Awardee

9:15 am - 10:20 am: Lightning Talks

Andrea Arnold, Mathematical Sciences, *Sequential Monte Carlo Methods for Inverse Problems*

Eric Young, Chemical Engineering, *Synthetic Biology for Cell Factories*

Craig Shue, Computer Science, *Network Security: At Work and at Home*

Natalie Farny, Biology and Biotechnology, *Synthetic Biology Meets Cell Biology: Science at the Interface of Cells and the Environment*

Paul Mathisen, Civil and Environmental Engineering, *Sustainable Water Management: Some Modeling Approaches for Characterizing Water Quantity and Quality*

Anita Mattson, Chemistry and Biochemistry, *Nature-Inspired Cancer Therapies*

Lyubov Titova, Physics, *What Happens When a Photon is Absorbed in a Nanostructure? Probing of Photo-initiated Processes Over Ultra-short Time Scales and Distances*

Robert Walls, Computer Science / Cybersecurity, *Securing Embedded Systems*

Jeannine Coburn, Biomedical Engineering, *Functional Biomaterials for Biomedical Application*

10:20 am - 10:30 am: Break

10:30 am - 11:15 am: Lightning Talks

Albert Simeoni, Fire Protection Engineering, *Wildfires*

Catherine Whittington, Biomedical Engineering, *In Vitro Models of Tissue Morphogenesis and Disease for Regenerative Medicine, Discovery, and Treatment Applications*

Adam Powell, Mechanical Engineering, *Metal Production for a Sustainable Future*

Kyumin Lee, Computer Science / Data Science, *Mitigating Impact of Fake News and Manipulation*

Jagan Srinivasan, Biology and Biotechnology, *Smell and Neurodegenerative Diseases: A pathological substrate or a novel biomarker?*

Aaron Sakulich, Civil and Environmental Engineering, *Self-healing Coatings for Structural Concrete*

Rodica Neamtu, Computer Science, *Exploratory and Predictive Tools for Data Series in Healthcare, Neuroscience and Finance*

11:15 am - 12:15 pm: Research Presentations

Pratap Rao, Mechanical Engineering, *Materials for Solar Energy and Flexible Electronics*

Soussan Djamasbi, Foisie Business School, *Innovation with User Experience (IUX)*

Xinming Huang, Electrical and Computer Engineering, *From Autonomous Vehicle to Future of Autonomy*

12:15 pm - 1:00 pm: Luncheon

1:00 pm - 2:45 pm: Research Presentations

Kris Billiar, Biomedical Engineering, *Heart Valve Mechanobiology: Implications for HV Disease and Treatment*

Jennifer Rudolph, Humanities and Arts, *Pirated Identities in the Taiwan Strait*

Emmanuel Agu, Computer Science, *Smartphone Sensing and Imaging for Pervasive Healthcare*

Joe Sarkis, Foisie Business School, *Technological Transformations, the Circular Economy, and the Green Supply Chain*

2:45 pm - 3:00 pm: Break**3:00 pm - 4:30 pm: Research Presentations**

Neil Heffernan, Computer Science, *Using Online Education Platforms to Run Randomized Controlled Experiments to Learn What Causes Student Learning*

Danielle Cote, Mechanical Engineering, *Model-Guided Powder Design for Metallic Additive Manufacturing Applications*

Greg Fischer, Mechanical Engineering / Robotics Engineering, *Robotic Technologies for Image-Guided Interventions*

4:30 pm - 6:00 pm: Poster Presentations and Reception

RNA Metabolism Affects Antibiotic Sensitivity in Mycobacterium Tuberculosis, M. Carla Martini; Nathan Hicks; Yanlin Zhao; Jiang Yang; Sarah M. Fortune; Scarlet S. Shell

The Smart World Classroom: The ASSiStments set of Projects, Neil Heffernan; Anthony Botelho; Korinn Ostrow
Application of Computational Thermodynamics in Solid Oxide Fuel Cell, Shadi Darvish, Mohammad Asadikiya, Yu Zhong

Bringing Dead Brands Back from the Grave: The Power of Social Media, Eleanor Loiacono, Purvi Shah, Fadi Almazyad

Computational Characterization of Electromagnetic and Thermal Phenomena in a New Millimeter-Wave Heat Exchanger, Petra Kumi, Stephanie A. Martin, Vadim V. Yakovlev

Tailoring the Structure, Defects of Bi₂S₃, and Growth of BiI₃ as Non-toxic Bismuth Based Materials for Photovoltaics, Maryam Masroor, James McRae, Emily Molstad, Risbel Rivas, Emma Ruano, Pratap M.Rao

Bioinspired Design of Structural and Thermal Materials, Nima Rahbar

Applied Systems and Synthetic Biology for Novel Cell Catalysts, Eric Young; Joseph Collins, Kevin Keating, Trent Jones, Shelby Morrison, Celeste Marsan, Alexandra Connor

Optimization of Close Space Sublimation of Vertical SnS₂ Nanoflakes, Binod Giri; Pratap Rao

Atomic and Electronic Structure of the Edges of Bulk and Monolayer Tin Disulfide, Tao Yan; Pratap Rao

Flexible and Stable Lead Perovskite Solar Cells, Nicholas Pratt; Pratap Rao

Living Legos: A Modular Approach to Building Engineered Tissues, Rolle Lab

Collagen-tethered Antimicrobial Peptides for Treatment of Chronic Infected Wounds, Marsha Rolle, Joni Grosha, Lindsay Lozeau, Dalia Shendi, Terri Camesano

Studies of Human Amyloid Precursors Interaction with Neuronal Cell Membrane to Decipher the Link Between Alzheimer and Type II Diabetic Disease, Izabela Stroe, Najma Bibi, Margaret Pruitt, Amity Manning

Investigating the Effects of Navigation Design on the Utilization of a Web-based Clinical Decision Tool, Soussan Djamasbi, Bengisu Tulu, Javad Norouzi Nia, Andrew Aberdale; Christopher Lee; Susanne Muehlschlegel

Poster Titles Continued...

Innovation Through Knowledge and Experience (IKE): A Platform for Innovation with User Experience (IUX), Ryan Lamarche, Christopher Chagnon, Soussan Djamasbi

Proto-Research Persona Development: A User Experience Design Approach, Adarsha Bajracharya, Annalise McDonald, Cynthia Girardi, Gloria Ahumada-Zonin, Soussan Djamasbi, Daniel Amante

Wireless Connectivity for Smart World, Kyle W McClintick, Alexander M Wyglinski

Policy Content Modeling and Analysis, Shamsnaz Virani Bhada

Tuesday, May 14, 2019 — Innovation / Commercialization and Cross-Cutting Communities

8:30 am - 9:00 am: Coffee and Pastry

9:00 am - 9:15 am: Introductions and Overview of the IP Process

9:15 am - 9:45 am: I-Corps Customer Discovery Program Presentations

Leef Jerky - Growing Beef Using Plant Vasculature, Glenn Gaudette

Integrated Photonics Sensors, Doug Petkie

IKE - A Platform for User Experience Studies and Collaborations, Soussan Djamasbi

9:45 am - 10:15 am: Innovation Presentations

A 24/7 3D Printing Farm, Andrew Nagal

Flexible Articulating Surgical Laser Probe for Laryngeal Afflictions, Loris Fichera

Stimuli Delivery System for Awake Model MR Imaging Regimes, John Sullivan

A Novel New CPR Device, John Sullivan

10:15 am - 10:45 am: Start-Up Showcase

FUSE - A Guitar Innovation Company, V.J. Manzo

In Virtu - Meshing Mixed Reality with Machine Learning, Dmitry Korkin

AiM Medical Robotics - Improving Outcome with MRI Compatible Advanced Robotics, Gregory Fischer

10:45 am - 11:00 am: Break

11:00 am - 11:30 am: Seed Grant Announcements

11:30 am - 12:30 pm: ReDI Closing Keynote Presented by Jeremy Hitchcock, CEO of Minim

12:30 pm - 2:00 pm: Luncheon

2:00 pm - 2:30 pm: Cross-Cutting Communities Opening Remarks

2:30 pm - 4:00 pm: Bio-X

4:00 pm - 5:30 pm: Reception

Wednesday, May 15, 2019 — Cross-Cutting Communities

8:15 am - 8:30 am: Welcome Remarks

8:30 am - 10:00 am: Materials and Manufacturing

10:00 am - 10:15 am: Break

10:15 am - 11:45 am: Smart World

11:45 am - 12:45 pm: Luncheon

12:45 pm - 2:15 pm: Global Initiatives

2:15 pm - 2:30 pm: Break

2:30 pm - 4:00 pm: Institutional Core Values

4:00 pm - 5:00 pm: Circular Economy Panel

5:00 pm - 5:15 pm: Concluding Remarks

5:15 pm - 6:00 pm: Reception
