WELCOME TO THE

9TH ANNUAL UNDERGRADUATE RESEARCH SPRING SYMPOSIUM & AWARDS

WEDNESDAY, APRIL 23, 2014

1:00 PM - 6:00 PM

STUDENT CENTER BALLROOM

UROP
UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM

9TH ANNUAL
UNDERGRADUATE RESEARCH
SPRING SYMPOSIUM

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Oral Presentations	1:00 - 4:30 PM
Poster Session	3:00 - 4:30 PM
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Awards Ceremony	5:15 PM

ORAL PRESENTATIONS

STUDENT CENTER, 3RD FLOOR

Session A: Biomedical Engineering

Student Center Room 319

Moderator: Ms. Caroline Anderson, C2D2

1:00 **TNFα and Shear Stress Regulation of Cathepsin K activity in the context of Sickle Cell Disease**
Suhaas Anbazhakan, BMED
Mentor: Dr. Manu Platt, BMED

1:20 **Antioxidants Attenuate Phosphorylation of Smad2 and Smad3 Transcription Factors Following TGFβ Stimulation**
Christopher Arencibia, BMED
Mentor: Dr. Melissa Kemp, BMED

1:40 **Differences Between Neonatal and Adult Fibrin Clots: Implications on Treatment of Post-Cardiopulmonary Bypass Bleeding**
Riley Hannan, BIO
Mentor: Dr. Thomas Barker, BMED

2:00 **Proteases and feedback mechanisms in breast cancer metastasis**
Charlene Walton, BMED
Mentor: Dr. Manu Platt, BMED

Session B: Electrical and Computer Engineering & Aerospace Engineering

Student Center Room 343

Moderator: Mr. Fred Rascoe, Library

1:00 **Object Discovery Services for Cryptographically Curated File System**
Priya Bajaj, EE
Mentor: Dr. John Copeland, ECE

1:20 **Magnetic Tongue Tracking for Speech Therapy**
Shurjo Banerjee, CMPE
Mentor: Dr. Maysam Ghovanloo, ECE

1:40 **Pilot Responses to Traffic Events During NextGen Operations in High Traffic Density Terminal Areas**
Dhruv Thakkar, AE
Mentor: Dr. Amy Pritchett, AE

Session C: International Affairs, History, Technology, and Society, & Literature, Media, and Communication

Student Center Room 301

Moderator: Mr. Rob Rogers, C2D2

1:00 Iran State Collapse: Military Missions and Policy for Securing Potential Iranian Nuclear Weapon Sites
Shaudie Fassih, IAML
Mentor: Dr. Margaret Kosal, INTA

1:20 Understanding the Distrust of American Medicine among Southern African American Men
Joyce Danielle Sharpe, HTS
Mentor: Dr. Jennifer Singh, HTS

1:40 "The Power to Keep Them Apart": The Reinforcement of Gender Stereotypes in Prescription Direct-To-Consumer Advertising
Elizabeth Warden, HTS
Mentor: Dr. Jennifer Singh, HTS

2:00 Too Big a Storm: The Complicated Atmosphere Around Women's Sexual Problems
April Martin, HTS
Mentor: Dr. Jennifer Singh, HTS

2:20 Young Children's Somatic Engagement with Rhyming Games in Oral, Print, and Digital Media
Griva Patel, CM
Mentor: Dr. Krystina Madej, LMC

Session D: Applied Physiology and Biology

Student Center Room 320

Moderator: Dr. Tris Utschig, CETL

1:00 Neural Activation Patterns Arising from the Identification of Gestures
Sumia Basunia, BIO
Mentor: Dr. Lewis Wheaton, AP

1:20 Sequence variation among members of the miR-200 microRNA family is correlated with variation in the ability to induce hallmarks of mesenchymal-epithelial transition in ovarian cancer cells
Ashley Reavis, BMED
Mentor: Dr. John McDonald, BIO

1:40 Callophycus sp: A Continual Source of Novel Therapeutics
David Brumley, BCHM
Mentor: Dr. Julia Kubanek, BIO

2:00 Aquatic Biomass for Animal Production in Developing Nations
Catherine Kwon, BMED
Alexandra George, CE
Mentor: Dr. Robert Wallace, GTRI

Session E: Earth and Atmospheric Sciences & Chemistry and Biochemistry

Student Center Room 321

Moderator: Dr. Steven Girardot, OUE

1:00 Chemical Composition on Mars' Craters
Jiawei Li, CE
Mentor: Dr. James Wray, EAS

1:20 Sideband Suppression on a Trapped Ion Qubit
Karl Burkhardt, CHEM
Mentor: Dr. Ken Brown, CHEM & BCHM

1:40 Reducing Addressing Errors Through MultipleLooped Sequence
John Addison, PHYS
Mentor: Dr. Kenneth Brown, CHEM & BCHM

2:00 Effect of Particle Affinity on Fibrin Gel Contraction Induced by Platelets-like Particles
Kabir Dhada, CHEM
Mentor: Dr. L. Andrew Lyon, CHEM & BCHM

Session F: Biomedical Engineering

Student Center Room 343

Moderator: Mr. Michael Laughter, Communication Center

2:30 The sickling of sickle red blood cells increases sphingomyelinase activity
Yuying (Silvia) Zhang, BMED
Mentor: Dr. Edward Botchwey, BMED

2:50 Cellular mechanisms of high-frequency nerve conduction block
Rachel Heckman, BIO
Mentor: Dr. Robert Butera, BMED

3:10 Testing DETECT for Commercial Use
Chuyu Deng, BMED
Mentor: Dr. Michelle LaPlaca, BMED

Session G: Mechanical Engineering

Student Center Room 321

Moderator: Ms. Sally Hammock, CAE

2:30 Image Processing for Muscle Inspired Robot
Sean Kilbride, ME
Mentor: Dr. Jun Ueda, ME

2:50 Direct Measurement of Colloidal Stability using Atomic Force Microscopy
Yu Huang, ChBE
Mentor: Dr. Todd Sulchek, ME

3:10 Fluid Penetration Into Porous Media During Slot Die Coating
Joshua Ebin, ME
Mentor: Dr. Tequila Harris, ME

3:30 Hydraulically Powered Start-Stop Systems for Use in Diesel Powered School Buses
Nathan Sacks, ME
Brent Barnes, ME
Mentor: Dr. Michael Leamy, ME

3:50 Advanced Tactile Sensing For Modular Robotic Assembly Bench: Acoustic Sensing
Caleb Amaram, ME
Mentor: Dr. Jun Ueda, ME

Session H: Physics and Psychology

Student Center Room 319

Moderator: Dr. Karen Adams, Fellowships

2:30 Using a Robot to Study the Evolution of Legged Locomotion
Benjamin McInroe, PHYS
Mentor: Dr. Daniel Goldman, PHYS

2:50 Active Engagement of Older Adults' Interaction with Paro
Shawn Kemple, BMED
Mentor: Dr. Wendy Rogers, PSY

3:10 Computational Determination of Small Molecule Permeability
Conner Herndon, PHYS
Mentor: Dr. James Gumbart, PHYS

3:30 Biaxial Probe Rotation in Low-Temperature, High Magnetic Field Applications
Nick Selby, ME
Mentor: Dr. Wei Pan, Sandia National Labs

Session I: Industrial and Systems Engineering & Computing

Student Center Room 320

Moderator: Ms. Kenya Payton, Math

2:30 **Algorithms with Performance Guarantees for Decentralized Agent Coordination**
Zachary Suffern, CS
Mentor: Dr. Craig Tovey, ISyE

2:50 **Equipment Energy and Cost Analysis of GT Library Inactivity Period**
Erin Lightfoot, IE
Mentor: Dr. Valerie Thomas, ISyE

3:10 **Parameter Estimation for a Coronary Heart Disease Simulation**
John Chow, IE
Mentor: Dr. Turgay Ayer, ISyE

3:30 **Learning a Contiguity Based Hierarchical Task Model from Demonstration**
Leo Rossignac-Milon, CS
Mentor: Dr. Andrea Thomaz, CS

3:50 **ASL SmartSign Browser Trigger**
Oliver Goldbart, CS
Ishaan Grover, CS
Mentor: Dr. Harley Hamilton, IC

Session J: Biology

Student Center Room 301

Moderator: Dr. Nirmal Trivedi, CAE

2:50 **Roles of protein sequence and cell environment in cross-species transmission and amyloid interference**
Kudo Jang, BIO
Mentor: Dr. Yury Chernoff, BIO

3:10 **Metatranscriptomic Analysis of Deep-Sea Endosymbionts in Response to Variation in Electron Donor Species**
Abigail Shockey, BIO
Mentor: Dr. Frank Stewart, BIO

3:30 **Studies of Dōng chóng xià cǎo ("winter worm, spring grass") as a possible source of inhibitors of sphingolipid biosynthesis**
Courtney Widjaja, BIO
Mentor: Dr. Al Merrill, BIO

POSTER SESSION

STUDENT CENTER BALLROOM 3:00 - 4:30 PM

1 **Regression Analysis Model for Predicting Construction Cost Index**
SeungHo Shin, IE
Mentor: Dr. Baabak Ashuri, BC

2 **Studying Teachers' Opinions About the Use of Pixel Spreadsheet to Teach Computing Literacy**
Tamara Corbett, CM
Mentor: Dr. Mark Guzdial, CS

3 **SQL Auto-tutor**
William Holton, CS
Mentor: Dr. Mayur Naik, CS

4 **Large Scale Nearest Neighbor Graph for The Purpose of Feature Relationships**
Alexander Neal, CS
Mentor: Dr. Daniel Castro Chin, CS

5 **Smart Mirror**
Sam Skinner, CS
Vikram Jain Jr., CS
Mentor: Dr. Irfan Essa, CS

6 **Silent Speech Recognition: A New Age of No-Voice Commands**
Pavleen Thukral, CS
Mentor: Dr. Thad Starner, CS

7 **Annotated Video Dataset**
Patrick Violette, CS
Mentor: Dr. Daniel Castro, CS

8 **FIDO Project: WAGGIN, an Adaptable Wearable Communication System for Working Dogs**
Jay Zuerndorfer, CS
Lily Burkeen, ME
Mentor: Dr. Melody Jackson, CS

9 **Captioning on Glass**
Jay Zuerndorfer, CS
Mentor: Dr. Thad Starner, CS

10 LatentGesture: Active User Authentication through Background Touch Analysis
Samuel Clarke, CS
Mentor: Dr. Polo Chau, CSE

11 Interactive Multi-resolution Exploration of Million Node Graphs with Memory Mapping
Zhiyuan "Jerry" Lin, CS
Mentor: Dr. Duen Horng (Polo) Chau, CSE

12 EBird Analysis: Exploring hidden communities and key nodes in the EBird network
Premkumar Saravanan, CS
Mentor: Dr. Bistra Dilkina, CSE

13 Immigrant Women's Traditional Practices in Managing Health and Wellness: Opportunities for HCI
Victoria Ayo, CM
Mentor: Dr. Rebecca Grinter, IC

14 Evaluating two approaches to measuring infant smiling behavior
Rachael Ruskin, PSY
Zach Jacokes, PSY
Chelsea Crow, PSY
Mentor: Dr. Agata Rozga, IC

15 Swirl Heat Release Distributions for Liquid Fueled High Shear Swirler Configurations
Katherine Durden, AE
Cole Turner, ME
Mentor: Dr. Tim Lieuwen, AE

16 Boundary Layer Development in Flows with Added Friction and Heat in Expandable Test Sections
Mriganka Ghosh, AE
Mentor: Dr. David Scarborough, AE

17 Flashback Risk Mitigation in a Premixed Gaseous Fuel System
Timothy Heffner, ME
Aaron Blacker, AE
Mentor: Dr. Tim Lieuwen, AE

18 Determination of Slung Load Divergence Speed Using Airload Measurement and Simulation
Brandon Liberi, AE
Mentor: Dr. Narayanan M. Komerath, AE

19 **Optimization of Propeller Efficiency For Minimized Power Consumption in Aircraft Through the Use of Variable Pitch Propellers**
Lloyd Maza, AE
Kevin Reilley, AE
Mentor: Dr. Eric Feron, AE

20 **Parametric Study of Bio-Inspired Passive Separation Control Mechanisms**
Michael Stearns, AE
Mentor: Dr. Marilyn Smith, AE

21 **Guided human microRNA knockdown by engineered endonucleases (EENs)**
Caleb Appleton, BMED
Mentor: Dr. Gang Bao, BMED

22 **Evaluation of the effect of Interleukin-4 on pro-inflammatory macrophages**
Sheridan Carroll, BMED
Inthu Somasuntharam, BMED
Mentor: Dr. Michael Davis, BMED

23 **Optimization of an arrowhead electrode design for epimysial adhesion of a stretchable microneedle electrode array**
Ashton Cheek, BMED
Mentor: Dr. Stephen DeWeerth, BMED

24 **Framework for Optogenetic Control of Neural Activity in a Cortical Network Model**
William Hendry, BMED
Mentor: Dr. Garrett Stanley, BMED

25 **Cytotoxic Evaluation of Triphenylmethanes (TPMs) on Cancer Cells**
Sara Khalek, BMED
Mentor: Dr. Kathleen McNeeley, BMED

26 **Myeloid Cell Activation in Sickle Cell Disease: The Role of Dysregulated Sphingolipid Metabolism in the Disease State**
Alicia Lane, BIO
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Marcel Pena, BMED
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Melissa Puntkattalee, BCHM
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Bahar Rahsepar, BMED
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Dylan Richards, BMED
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Gina Yu, BMED
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Ryan Liu, CE
Rodrigue Guissou, CE
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Quang Minh Kieu, ChBE
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Olivia McGahan, ChBE
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Krishan Patel, ChBE
Niti Khambhati, BCHM
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Andrew Rohskopf, ME
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Samantha Stadmiller, BCHM
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Alexandra Sutlief, ChBE
Mentor: Dr. Paul Kohl, ChBE

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Emily Tucker, ChBE
Mentor: Dr. Michael Filler, ChBE

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Debra Wu, ChBE
Siri Kore, ChBE
Mentor: Dr. Nga Lee Ng, ChBE

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Tian Bo Yang, ChBE
Mentor: Dr. Rachel Chen, ChBE

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Todd Zhen, ChBE
Mentor: Dr. F. Joseph Schork, ChBE

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Paul Bunch, CMPE
Mentor: Dr. Robert Butera, ECE

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Daniel Canales, EE
Alex Cheu, EE
Richard Lee, EE
Mentor: Dr. Gregory Durgin, ECE

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Alan Dong, ECE
Shai Messingher, ECE
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Anna Harrison, BMED
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Samir Jain, BMED
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Matthew O'Shaughnessy, EE
Helen Li, EE
Virginia Dobson, EE
Mentor: Dr. David Anderson, ECE

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Olayemi Olubowale, BIO
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Misha Desai, IE
Abbey Siebart, ChBE
Patrick Kelly, BA
Millie Pryphun, ME
Alex Stelea, CS
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Taylor Powell, ECE
Mentor: Dr. Alenka Zajic, ECE

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Ikenna Uzoije, CMPE
George Udeochu, CMPE
Chris Beaulieu, CMPE
Jingyuan Liang, CMPE
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David Whitney, EE
Xuefeng Jin, EE
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Hongfan Chen, IE
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Anika Dhamodharan, IE
Mentor: Dr. Valerie Thomas, ISyE

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Moorissa Tjokro, IE
Mentor: Dr. Dima Nazzal, ISyE

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Haoxiang Yang, IE
Mentor: Dr. Joel Sokol, ISyE

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Raghuraj Chauhan, ME
Mentor: Dr. David Hu, ME

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Hyun Choe, ME
Jong Ha, ME
Mentor: Dr. David Hu, ME

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Aida Cortés-Peña, ME
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Tanvi Dave, BMED
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Sulisay Phoneko, ME
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Yaqin Song, ME
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Kristen Hansen, ME
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Calvin Miller, MSE
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Vontravis Monts, ME
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Blair Naples, BMED
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Jordan Nguyen, ME
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Pablo Salazar, ME
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Janine Feirer, MSE
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Haley Harris, BMED
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Woo Yaa Lee, BMED
Joy Kim, BMED
Sunju Kang, BMED
Heesu Lee, BMED
Jordan Chestnut, BMED
Mentor: Dr. Seung Soon Jang, MSE

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Xueying Zhao, MSE
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Rose Anthony, EIA
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James Kepner, EIA
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Alexandra George, CE
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Alex Stelea, CS
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Fatiesa Sulejmani, BMED
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Amrita Banerjee, BCHM
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