



undergraduate
research '09
symposium

Symposium for Undergraduate
Research, Scholarly, and Creative Activity

Tuesday, April 7, 2009





Welcome

I am delighted to welcome you to the second annual University of Illinois Undergraduate Research Symposium. This symposium gives over a hundred undergraduates the opportunity to demonstrate the fruits of the research and creative activities they have accomplished with the mentoring of faculty across the disciplines.

Students tell us that undergraduate research experiences profoundly enrich their education here by allowing them to deepen knowledge within a field of study and sharpen skills in areas such as critical thinking and writing. Students also tell us that planning and conducting research and creative work beyond the classroom allows them to make intellectual connections with faculty members, thereby strengthening their confidence that they will succeed if they choose to pursue graduate studies.

In the years to come, we aim to involve greater numbers of undergraduates in research and creative endeavors under the leadership of faculty mentors. As an institution where discovery and innovation flourishes, we strive to make involvement in such activities a hallmark of the Illinois undergraduate experience.

Many thanks to all participants in this year's symposium—and thanks, as well, to the faculty members, postdoctoral fellows, doctoral students, and others who stand behind these participants.

Linda Katehi

Provost and Vice Chancellor for Academic Affairs

Opening Remarks

Professor Wen-mei W. Hwu

Wen-mei W. Hwu is the Sanders-AMD Endowed Chair Professor in the Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign. His research interests are in the area of architecture, implementation, and programming tools for parallel computer systems. In particular, his research activities are focused around novel computer architectures and the compiler techniques required by these architectures.

He is the hardware lead of the \$208-million National Science Foundation Petascale Computer Project (Blue Waters) awarded to the University of Illinois and IBM in 2007. For his contributions in research and teaching, he has received the Eta Kappa Nu Holmes MacDonalD Outstanding Teaching Award, the ACM SigArch Maurice Wilkes Award, the ACM Grace Murray Hopper Award, the Tau Beta Pi Daniel C. Drucker Eminent Faculty Award, and the ACM/IEEE ISCA Most Influential Paper Award. He is a fellow of both IEEE and ACM.



Event Overview

Tuesday, April 7, 2009
Illini Union

9:00-9:20 a.m.	Opening Remarks from Wen-mei W. Hwu, Sanders-AMD Endowed Chair Professor, Department of Electrical and Computer Engineering (Illini Room B)
9:30-10:30 a.m.	A Sessions: Oral Presentations (Illini Rooms A, B, C, and General Lounge, Room 210)
10:00 a.m.-Noon	PA Session: Morning Poster Presentations (Pine Lounge)
10:30-11:00 a.m.	Break (Refreshments in Illini Room B)
11:00 a.m.-Noon	B Sessions: Oral Presentations (Illini Rooms A, B, and C)
Noon-1:00 p.m.	Lunch for Participants (Illini Room B)
1:00-1:20 p.m.	Remarks from Provost Linda Katehi (Illini Room B)
1:30-2:30 p.m.	C Sessions: Oral Presentations (Illini Rooms A, B, and C)
1:30-3:30 p.m.	PB Session: Afternoon Poster Presentations (Pine Lounge)
2:30-3:00 p.m.	Break (Refreshments in Illini Room B)
3:00-4:00 p.m.	D Sessions: Oral Presentations (Illini Rooms A, B, and C)

Oral Presentations

A SESSIONS, 9:30-10:30 A.M.

Session A.1: Health, Science and Technology I (Illini Room A)

9:30-9:45 a.m. *The Effect of High Alcohol Consumption on Endogenous GDNF Expression and Emotional Behaviors in Rats*

Ryoji Amamoto, Junior, Individual Plan of Study, LAS

Development and Evaluation of DNA Sensor Kits for Lead Detection in Dust and Paint

Julia L. E. Willett, Senior, Biochemistry, LAS, and Human Nutrition, ACES

9:45-10:00 a.m. Jenny Wu, Junior, Chemical Engineering, LAS

Yongsoo Park, Freshman, Biochemistry, LAS

Juanzuo Zhou, Professional Scientist, Lu Research Group

Debapriya Mazumdar, Ph.D. Candidate, Lu Research Group

10:00-10:15 a.m. *Inhibition of Fatty Acid Synthase Activity by Peptides from Hydrolysates of β -conglycinin Enriched Soybean*

Maxine J. Roman, Junior, Food Science, ACES

10:15-10:30 a.m. *Ramifications of Health Care Reforms in the Field of Physical Therapy*

Darshil S. Patel, Senior, Community Health, AHS

Session A.2: Visualization Technology (Illini Room B)

The Spurlock Museum Ancient Seal Project: Polynomial Texture Mapping and Its Uses for Documenting Seals

9:30-9:45 a.m. Alexa C. Wirth, Senior, Anthropology, LAS

Andrew Truty, Senior, Classics, LAS

William Ridgeway, Senior, Classics, LAS

9:45-10:00 a.m. *Three-Dimensional Visualization of Phosphatidylinositides in Vacuole Membrane Fusion*

Anna Kelner, Senior, Biochemistry, LAS

10:00-10:15 a.m. *Force Spectroscopy without Macromolecules for the Validation of Reaction Dynamics*

Nicholas C. Rubin, Sophomore, Chemistry, LAS

10:15-10:30 a.m. *Characterization of Palladium Films in the Presence of Hydrogen*

Aaron J. King, Junior, Electrical Engineering, ENG

Session A.3: Current Political Issues I (Illini Room C)

- 9:30-9:45 a.m. *Understanding Homelessness, Felony Status, and Mental Illness through Narrative: An Ethnographic Approach*
Valerie R. Anderson, Senior, Psychology, LAS
-
- 9:45-10:00 a.m. *Implementation of Affirmative Action Policies in Ethnically Diverse Democracies*
Patricia Mathy, Senior, Political Science, LAS
-
- 10:00-10:15 a.m. *The United Nations Commission on Human Rights: An Instrument of Change or an Instrument to be Changed?*
Jennifer A. Hanley, Senior, Political Science, LAS

Session A.4: History (General Lounge, Room 210)

- 9:30-9:45 a.m. *From King to Country: The Evolution of England's Monarchical Image, 1500-1700*
Sara E. Campbell, Senior, History, LAS
-
- 9:45-10:00 a.m. *The Collegiate History Experience: Learning, Interpreting, and Using History*
Anne C. Shivers, Senior, History, LAS
-
- 10:00-10:15 a.m. *Indelible Impact: The Appropriation of 1857*
Rama K. Vallury, Senior, History, LAS
-
- 10:15-10:30 a.m. *From Gum San to Ping Dai: The Chinese Experience in the Midwest, 1882-1943*
Rachel L. Keung, Senior, History, LAS

B SESSIONS, 11:00 A.M.-NOON

Session B.1: Water and Waves (Illini Room A)

- 11:00-11:15 a.m. *The Effects of Stochastic Temperature Change on the Hatching Success and Larvae Survival of Largemouth Bass and Smallmouth Bass*
Sean J. Landsman, Senior, Integrative Biology, LAS
-
- 11:15-11:30 a.m. *An Investigation of Egg Cannibalism in the Bluefin Killifish (Lucania goodei)*
Benjamin A. Sandkam, Senior, Integrative Biology, LAS
-
- 11:30-11:45 a.m. *Measurements of Waveguide Loss*
Michael Guh, Senior, Electrical Engineering, ENG
-
- 11:45 a.m.-Noon *The Temperature Modulation Technique Applied to InGaAs Lasers*
Akash Garg, Senior, Electrical and Computer Engineering, ENG

Session B.2: Communication and the Arts I (Illini Room B)

- 11:00-11:15 a.m. *"Man, I Feel Like a Woman": Defining Female Sexuality in the Contemporary American Horror Film*
Alex N. Landers, Senior, Cinema Studies, LAS
-
- 11:15-11:30 a.m. *Cyber-Church: Building Virtual Community to Span the Digital Divide*
Akua A. Agyeman, Senior, Psychology and African American Studies, LAS
Rhonda Averhart, Senior, Sociology, LAS
-
- 11:30-11:45 a.m. *Virtual Environments and Video Games for Lab Safety and Campus Security at a Procedural Memory Level*
Jose R. Rico, Sophomore, Nuclear, Plasma, and Radiological Engineering, ENG
-
- 11:45 a.m.-Noon *Privacy and Ethical Issues in Location-Based Tracking Systems*
Jessa Liying Wang, Junior, Computer Engineering, ENG

Session B.3: Current Political Issues II (Illini Room C)

- 11:00-11:15 a.m. *Nukes in the News: How News Media Have Set the Agenda for Congressional and Presidential Arms Control Efforts*
Abby G. Doll, Senior, Political Science, LAS
-
- 11:15-11:30 a.m. *A Post-Cold War Fork in the Road: Social Constructivism's Challenge to the Neorealism Road of Nuclear Issue Examination*
Lauren E. Twenhafel, Senior, International Studies, LAS

C SESSIONS, 1:30-2:30 P.M.

Session C.1: Health, Science and Technology II (Illini Room A)

- 1:30-1:45 p.m. *Patient-Centered Care: A Complex(ity) Model*
W. Richard J. Goddard, Senior, Community Health, AHS
-
- 1:45-2:00 p.m. *Potential Complications from Trans-generational of Parasitism from Metschnikowia bicuspidate on Daphnia dentifera*
Nora H. Prior, Senior, Integrative Biology, LAS
-
- 2:00-2:15 p.m. *Manufacture of Paracetamol Crystals Using a Dual Impinging-jet Mixer*
Albertus A. Tanoto, Senior, Chemical Engineering, LAS
-
- 2:15-2:30 p.m. *Brain-Computer Interlacing*
Martin S. McCormick, Junior, Electrical Engineering, ENG

Session C.2: Communication and the Arts II (Illini Room B)

U.S. Women Writers

- 1:30-1:50 p.m. **Elle Destree**, Senior, Journalism, LAS
Ellen Hornor, Junior, English, LAS
Kathleen Harsh, Junior, Food Science and Human Nutrition, ACES
Alex Pleasant, Sophomore, Economics, LAS
Mason Walgrave, Sophomore, Materials Science and Engineering, ENG
Alanna Hickey, Senior, English, LAS
Rosie Yang, Junior, Pre-med, LAS
Anna Gormley, Junior, Molecular and Cellular Biology, LAS
Madeline Kelsey, Sophomore, English, LAS

Putting Our Work under the Microscope: Vital Research in the Writing Center (Video Presentation)

- 1:50-2:10 p.m. **Beverly Tsai**, Senior, English, LAS
Stacy Haynes, Sophomore, English, LAS
Mandy Hayes, Sophomore, Sociology, LAS
Monica Hofmann, Junior, Anthropology, LAS

Performing Arts Sustainability: A Fundamental History Lesson for the Next Generation

- 2:10-2:30 p.m. **Matthew D. Van Dyke**, Senior, Music, FAA

Session C.3: Current Political Issues III (Illini Room C)

dot.org: HRC and the Internet

- 1:30-1:45 p.m. **Stephanie U. Murphy**, Senior, International Studies and Gender Studies, LAS

How Race and Ethnicity Condition Partisanship's Effect on Policy Preferences

- 1:45-2:00 p.m. **Lhea L. Randle**, Senior, Political Science and Communication, LAS

From Regional Economic Institutions to Regional Security Institutions: What Accounts for Variation in Security Institutionalization?

- 2:00-2:15 p.m. **Modica Alisa**, Senior, Political Science, LAS

40 Years Later: Comparing Black Life of the Past and Present

- 2:15-2:30 p.m. **Simone N. Williams**, Junior, Psychology, LAS

D SESSIONS, 3:00-4:00 P.M.

Session D.1: Health, Science and Technology III (Illini Room A)

Characteristics of Clients Using a Free Health Center

- 3:00-3:15 p.m. **Stephanie Shaw**, Junior, Community Health, AHS
Kathryn Spencer, Junior, Community Health, AHS
Sam Lites, Senior, Community Health, AHS

Illini Prosthetics Team First Year Report of Progress in Developing a Prosthetic Arm for People in Underdeveloped Countries

- 3:15-3:30 p.m. **Jonathan J. Naber**, Sophomore, Materials Science and Engineering, ENG
Richard Kesler, Sophomore, Bioengineering, ENG
Luke Jungles, Sophomore, Mechanical Engineering, ENG
Adam Booher, Sophomore, Engineering Mechanics, ENG
Natalie Swider, Sophomore, Materials Science and Engineering, ENG

The Incorporation of 3-Fluoro-Tyrosine in DsbA

- 3:30-3:45 p.m. **Elliott J. Brea**, Junior, Biochemistry, LAS

Session D.2: Communication and the Arts III (Illini Room B)

Recovering Lucy Larcom's An Idyl of Work

- 3:00-3:15 p.m. **Alanna Hickey**, Senior, English, LAS

The Perverse Comedy: Masochist Play in Gibson's The Passion of the Christ

- 3:15-3:30 p.m. **Ashley A. Albrecht**, Senior, English and Psychology, LAS

El Cid Revived Through the Voice of W. S. Merwin

- 3:30-3:45 p.m. **Lauren E. Naylor**, Junior, English, LAS

Session D.3: Theoretical and Technological Advances (Illini Room C)

Aerosol Deposition of Nanoparticles and Optical Assisted Scanning Tunneling Microscopy of Aerosol Deposited Carbon Nanotubes on Thin Gold Films

- 3:00-3:15 p.m. **Stevia Angesty**, Junior, Chemistry, LAS

Electrical Characterization of Semiconductor Nanostructures

- 3:15-3:30 p.m. **Serena D. Liou**, Senior, Electrical Engineering, ENG

Object Search: Searching the Web the Object-oriented Way

- 3:30-3:45 p.m. **Abhishek G. Pradhan**, Sophomore, Computer Science, ENG
Penn Su, Sophomore, Computer Science, ENG

On the Use of Annihilation Operators in Solving 1-D Viscoelastic Wave Problems with Absorbing Boundaries

- 3:45-4:00 p.m. **Sarah E. Fullmer**, Senior, Aerospace Engineering, ENG

Poster Presentations

PA SESSION: MORNING POSTER PRESENTATIONS,

10:00 A.M.-NOON (PINE LOUNGE)

- PA.01 *Accessibility of Attachment Orientation and the Affective Consequences*
William J. Chopik, Senior, Psychology and Sociology, LAS
- PA.02 *Personnel Selection, Facebook, and the Dilution Effect: Is More Information Really Better?*
Paige J. Deckert, Senior, Psychology, LAS
- PA.03 *Encumbrance Impairs Slope Perception*
Alex C. Essenmacher, Senior, Psychology, LAS
- PA.04 *The Long Term Effects of Childhood Trauma on Anxiety and Depression*
Jessica L. George, Senior, Psychology, LAS
- PA.05 *Predators May Be Inviting Parasites to the Party*
Christine J. Knight, Senior, Integrative Biology, LAS
- PA.06 *Identification and Characterization of *H. pylori* Acidocalcisome-like Granules*
Eun Ik Koh, Junior, Molecular and Cellular Biology, LAS
- PA.07 *Functional Analysis of Neurovascular Adaptations to Exercise*
David A. Krone, Junior, Molecular and Cellular Biology, LAS
- PA.08 *Program Development of Empowerment Methods for Homeless Veterans in the East St. Louis Community*
Casey Loving, Junior, Urban and Regional Planning, FAA
Jakendra Williams, Senior, Urban and Regional Planning, FAA
Maria Kaidas, Sophomore, Psychology, LAS
Julia Crowley, Senior, Urban and Regional Planning, FAA
- PA.09 *The Impact of Ethnic Fragmentation on Democratization*
Nadia L. Nammari, Senior, Political Science and Communication, LAS
- PA.10 *Termite Warfare and Dear Enemies: Territoriality in *Nasutitermes corniger**
Timothy K. O'Connor, Senior, Integrative Biology, LAS
- PA.11 *Civil Unrest and Large-Scale Natural Disasters: A Case Study*
Jennifer Osiol, Senior, Political Science, LAS
- PA.12 *Towards Improving Bioenergy Crops: A Comparison of Photosynthetic Rates and Cold Tolerance in *Miscanthus**
Adrienne T. Perkins, Junior, Integrative Biology, LAS
Ashley Spence, Graduate Student, Botany, LAS
- PA.13 *Assessing Agricultural Disaster Experience and Preparedness in Southern Illinois*
Lisa Pickert, Senior, Natural Resources and Environmental Sciences, ACES

- PA.14 *Winery Consulting: How to Develop on the International Market and Emerge into Touristic Destination*
Boris L. Pilev, Senior, International Studies, LAS
- PA.15 *Distinct Phosphorylation and Desensitization of β -2 Adrenergic Receptors in Cardiac Myocytes*
Biswarathan Ramani, Senior, Biochemistry, LAS
- PA.16 *Effects of Early Postnatal Genistein Exposure on Sexually Dimorphic Behavior in Mice: Aggression, Anxiety, and Taste Preference for a Salt Solution*
Jessica L. Shaw, Senior, Psychology, LAS
- PA.17 *Henrik Ibsen's Poetics*
Garrett N. Traylor, Sophomore, Creative Writing and Scandinavian Studies, LAS
- PA.18 *Assessment of Peer-Led Team Learning in an Engineering Course for Freshman*
Niranjan Venkatesan, Sophomore, Electrical Engineering, ENG
- PA.19 *Group Analysis of White Matter and Internal Brain Connectivity by Fractional Anisotropy*
Gene J. Yu, Sophomore, Bioengineering, ENG

PB SESSION: AFTERNOON POSTER PRESENTATIONS,

1:30-3:30 P.M. (PINE LOUNGE)

- PB.01 *Mothers' Attitudes about the Innateness of Ability Effects Emotional Experience During Challenge*
Elizabeth A. Babcock, Psychology, LAS
- PB.02 *Adolescent Development of the Basolateral Amygdala in Long Evans Rats*
Chesea E. Belden, Senior, Psychology, LAS
- PB.03 *Impact of Various Forms of Ionizing Radiation on *E. coli* Biofilms*
Richard A. Boettcher, Senior, Nuclear, Plasma, and Radiological Engineering, ENG
Neal Balaoing, Senior, Nuclear, Plasma, and Radiological Engineering, ENG
Val Myers, Senior, Nuclear, Plasma, and Radiological Engineering, ENG
- PB.04 *Overcoming Identity in Counterinsurgency*
Christopher W. Boyer, Senior, Political Science and Speech Communication, LAS
- PB.05 *Drivers' Risk Assessment and Awareness of Distraction, Mental State, and Roadway Danger*
Sara d'Ann Butler, Senior, Industrial Engineering, ENG
- PB.06 *Inverse Problems with Boundary Measurements*
Woon Lyn Esther Chiew, Senior, Math, LAS
- PB.07 *Effects of Ice Accretion on Propeller Blade Performance*
Austin B. Ellis, Senior, Aerospace Engineering, ENG

PB.08	<i>The Effect of Enriched Environment on a Rat Model of Parkinson's Disease</i> Sara Daleiden , Molecular and Cellular Biology, LAS	PB.22	<i>Potential Use of Choline Chloride-Urea Mixtures in Metals and Protein Extraction</i> Wiktor G. Stopka , Senior, Bioengineering, ENG
PB.09	<i>Structural Analysis of an Engineered Heme-Copper Center in Myoglobin (swMb L29H, F43H, V68T) that Mimics Cytochrome c Oxidase</i> Junhong Gao , Senior, Molecular and Cell Biology, LAS	PB.23	<i>One-Year Predictors of Triadic Family Interaction Patterns at Three Years</i> Kirsten M. Thomas , Senior, Psychology, LAS
PB.10	<i>Effects of Action Video Game Playing on Driving Performance under Single and Dual Task Conditions</i> John G. Gaspar , Senior, Psychology, LAS	PB.24	<i>Data Mining Driven Parallel Product Design Optimization</i> Aukrit Unahalekhaka , Junior, Computer Science, ENG Michael Hernandez , Sophomore, Electrical Engineering, ENG
PB.11	<i>Public Pension Plan Finance</i> Kathy Y. Gu , Senior, Actuarial Science, LAS	PB.25	<i>Detection and Enumeration of Algal Cells via Laser Scanning Cytometry</i> Derek R. Vardon , Junior, Civil and Environmental Engineering, ENG
PB.12	<i>Investigating Possible Conformational Changes in Horseradish Peroxidase Due to Choline Chloride-Urea</i> Angela K. Hsieh , Senior, Bioengineering, ENG Wiktor Stopka , Senior, Bioengineering, ENG	PB.26	<i>Temperature Independent Lead Sensing Based on a Fluorescent DNAzyme</i> Jenny Wu , Junior, Chemical Engineering, LAS
PB.13	<i>Gene Expression Profiling and Characterizing the Photosynthetic Health of a Soybean Mutant</i> Tristesse Catessa Jasmine Jones , Junior, Crop Sciences, ACES		
PB.14	<i>Plasticity in the Auditory Thalamus Following Exposure to Complex Acoustic Sequences</i> Kathleen M. Mettel , Senior, Speech and Hearing Science, AHS		
PB.15	<i>Fabric as Fine Art</i> Christina D. Michelin , Art History and Sculpture, FAA		
PB.16	<i>Neuroanatomical Specificity of Brain Activity Elicited by Contextual Cues Paired with Cocaine vs. Lithium Chloride in Male Outbred Hsd:ICR Mice</i> Daniel S. Miller , Sophomore, Molecular and Cellular Biology and Psychology, LAS		
PB.17	<i>Role of FimW, FimY, and FimZ in Regulating the Expression of Type I Fimbriae in Salmonella enterica Serovar Typhimurium</i> Jeffrey A. Pearl , Senior, Bioengineering, ENG Supreet Saini , Graduate Student, Chemical Engineering, ENG		
PB.18	<i>Variations in Incompatible Volatile Element Concentration in the Sonju Lake Intrusion, Minnesota</i> Ryan J. Quinn , Senior, Geology, LAS		
PB.19	<i>Analysis of Metamorphism Found in the Alta Contact Aureole</i> Justin A. Rosenblume , Senior, Geology, Economics, LAS		
PB.20	<i>Dendrimer Encapsulation and Release of Nile Red Dye, A Model for Doxorubicin</i> Alexandra L. Rutz , Sophomore, Chemistry and Molecular and Cellular Biology, LAS		
PB.21	<i>Creating Clinical Partners in Discourse Elicitation Tasks</i> Fatima Salem , Senior, Speech and Hearing Science, AHS		



ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Sponsored by the Office of the Provost

Organized by the Provost's Working Group on Undergraduate Research
provost.illinois.edu/committees/ugresearch.html

Jennifer Bernhard, Co-chair (Electrical and Computer Engineering)

Wayne Pitard, Co-chair (Religious Studies and Spurlock Museum)

Cheelan Bo-Linn (Center for Teaching Excellence)

Julie Hengst (Speech and Hearing Science)

Lisa Hinchliffe (Undergraduate Library)

Ronald L. Jackson II (College of Media)

Darrel Kesler (Animal Sciences)

Susan Larson (College of Engineering)

Yi Lu (Chemistry)

Deana McDonagh (Art and Design)

Victor Mullins (College of Business)

Michaelene Ostrosky (Special Education)

Umesh Thakkar (National Center for Supercomputing Applications)

Peter Mortensen, Staff (Office of the Provost)

Julie Bai, Intern (Office of the Provost)