WELCOME

I am delighted to welcome you to the inaugural University of Illinois Undergraduate Research Symposium. Nearly 40 percent of our undergraduate students participate in research or creative activities outside the classroom during their studies. Students report that these experiences profoundly enrich their education, 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, scholarship, and creative work beyond the classroom allows them to work closely with faculty leaders, and strengthens their sense of self-confidence in their potential for success in graduate studies. Over the next five years, we aim to involve greater numbers of undergraduates in research and creative endeavors under the leadership of faculty mentors. As an institution where research, innovation, and creative activities flourish, we strive to make involvement in such activities a hallmark of the Illinois undergraduate experience.

This symposium creates an opportunity to showcase our finest undergraduate research and creative efforts, and highlights the impressive achievements of our highly capable student population. I extend my sincere appreciation to the students participating in this inaugural symposium and to the faculty mentors who served as guides in carrying out the work that we celebrate today. Special thanks to members of the ad hoc committee that planned this event, especially Professor Wojtek Chodzko-Zajko, who chaired the committee. Your vision and energy made this new event possible. I look forward to this symposium and to the many to follow in the years ahead.

Linda Katehi
Provost

KEYNOTE

“BUILDING LIFE-LONG MENTORSHIP THROUGH UNDERGRADUATE RESEARCH PARTICIPATION”

Professor Dorothy Espelage, Department of Educational Psychology, with Jillian Havard and Sarah Mebane

Dorothy L. Espelage, Ph.D., is a Professor of Child Development and Associate Chair in the Department of Educational Psychology at the University of Illinois at Urbana-Champaign. She was recently named University Scholar and has fellow status in Division 17 (Counseling Psychology) of the American Psychological Association. She earned her Ph.D. in Counseling Psychology from Indiana University in 1997. She has conducted research on bullying for the last 15 years. As a result, she presents regularly at national conferences and is author on over 70 professional publications. She is co-editor of a published book entitled Bullying in American Schools: A Social-Ecological Perspective on Prevention and Intervention published by Lawrence Erlbaum Associates. She is on the editorial board for Journal of Counseling and Development, Journal of Counseling Psychology, Journal of Educational Psychology, and Journal of Youth and Adolescence. She has presented hundreds of workshops and in-service training seminars for teachers, administrators, counselors, and social workers across the U.S. Her research focuses on translating empirical findings into prevention and intervention programming. Dr. Espelage has appeared on many television news and talk shows, including The Today Show, CBS Evening News, and The Oprah Winfrey Show, and CNN, and has been quoted in the national print press, including TIME, USA Today, and People magazine.

Jillian Havard graduated from the University of Illinois at Urbana-Champaign with a B.S. in Psychology and an Ed.M. in Higher Education Administration. She has served as an academic advisor for undergraduate students at both the University of Illinois at Chicago and DePaul University. She also has experience as a college preparation advisor for high school students. Prior to entering into the education field, she worked in the social services arena as a caseworker and mental health professional. Her skills include using developmental advising to assist students with goal setting, academic planning and navigating the path toward success.

Sarah Mebane is an advanced doctoral student in the Counseling Psychology program at the University of Illinois at Urbana-Champaign. She also attended Illinois for her undergraduate education, and began working with Dr. Espelage in 2000. She was awarded the Illinois Distinguished Fellowship for graduate school, has co-authored two book chapters and has presented her research at numerous national conferences. In July, she begins a prestigious predoctoral internship at the University of Maryland.
**EVENT OVERVIEW**

**TUESDAY, APRIL 29, 2008**

**ILLINI UNION**

**9-9:45am**

Opening Keynote Speaker  
(ILLINI UNION 314 A/B)

Dorothy Espelage, Professor, Department of Educational Psychology  
Student Speakers

**10am-12pm**

Morning Poster Session  
(ILLINI UNION Pine Lounge)

Student Presentations  
(ILLINI UNION 314 A/B, 210)

see participants on following pages

**12-1pm**

History Showcase  
(ILLINI UNION 210)

**1-3pm**

Performances  
(Courtyard Café)

Afternoon Poster Session  
(ILLINI UNION Pine Lounge)

Student Presentations  
(ILLINI UNION 314 A/B, 210)

see participants on following pages

**3-3:30pm**

Closing Remarks  
(ILLINI UNION Pine Lounge)

Linda Katehi, Provost and Vice Chancellor for Academic Affairs

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**DETAILED SCHEDULE**

**PRESENTATIONS**

**SESSION A (ILLINI UNION ROOM 314 A/B)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Description</th>
<th>Presenter(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:10:15am</td>
<td>Collective Decision-making in Nest Relocation in Argentine Ants and Odorous House Ants</td>
<td>Daniel Scholes, Sr., Integrative Biology, LAS</td>
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<tr>
<td>10:15-10:30am</td>
<td>Creation and Tomographic Reconstruction of Pseudoradial Polarizaton States</td>
<td>Trent Graham, Jr., Physics, LAS</td>
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</tbody>
</table>
| 10:30-10:45am| Risk and Resiliency Factors Influencing Latino Adolescent Functioning: Insights from Patent and Youth Focus Groups | Bernice Fuentes, Sr., Psychology, LAS  
Fadya Manasra, Sr., Psychology, LAS  
Krystina Briones, Fr., Psychology, LAS  
Brenda Rodrigues, Fr., English, LAS |
| 10:45-11am   | Maximizing the Potential of the Virtual Water Trade                                      | Kimberly Parker, Fr., Earth Systems, Environment and Society, LAS |
| 11-11:15am   | The Role of Collin on Intracellular Trafficking on snRNPs to Cajal Bodies               | Caesar Arturo, Jr., Molecular and Cellular Biology, LAS |
| 11:15-11:30am| Environmental Effects on Pig Growth and Development                                      | Tara Baxter, Jr., Animal Science, ACES            |
| 11:30-11:45am| The Spurlock Museum, Ancient Seal Project                                                | Joshua Nelson, Jr., Mathematics, LAS  
Rebecca Bott, Sr., History, LAS  
Kevin Gartski, Sr., Anthropology and History, LAS  
Matt Tedeschi, Sr., Religious Studies, LAS |
| 11:45-12pm   | Undergraduate Research in the Writers Workshop                                           | Yolanda Green, Soph., English, LAS  
Aneesha Bahl, Soph., Division of General Studies  
Sarah Brook, Sr., Psychology, LAS  
Ed Hahn, Sr., English, LAS |

**SESSION B (ILLINI UNION ROOM 210)**

<table>
<thead>
<tr>
<th>Time</th>
<th>Presentation Description</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>10-10:15am</td>
<td>Building Green: Spatial Distribution of LEED-Certified Buildings</td>
<td>Alex Beata, Soph., Geography, LAS</td>
</tr>
</tbody>
</table>
| 10:15-10:30am| Change and Continuity in 20th Century Papua New Guinea Art                               | Rebecca Chan, Jr. Anthropology, LAS  
Alexa Wirth, Jr. Anthropology, LAS |
| 10:30-10:45am| Diversity Reconsidered: Focusing on the Needs of the "Invisible Minority"               | Patrick Hale, Sr., Sociology and Gender and Women's Studies, LAS |
| 10:45-11am | From Chicana to Chica: The Cultural Politics of Sexuality, Home and Women's Solidarity in Works by Sandra Cisneros and Alisa Calderon-Rodriguez  
Sonia Rodriguez, Jr., English, LAS |
| 11-11:15am | Leisure and Arthritis among Older Adults  
Dina Izenstark, 1st year Masters, Recreation, Sport and Tourism, AHS |
| 11:15-11:30am | La Liaison: Generalizations of Anglophone Learners of French  
Meryl Delshire Garrison, Sr., French Studies, LAS |
| 11:30-11:45am | Media Production in a Digital Age  
Derek Klein, Sr., Media Studies, COM  
Marc Morin Jr., Sr. General Engineering, ENG |
| 11:45-12pm | Hononormativity’s Stake in State Projects of Legibility  
Bess Van Asselt, Sr., Gender and Women Studies, LAS |

**HISTORY SHOWCASE (ILLINI UNION ROOM 210)**

Alexandra Katzman, Sr., History, LAS

“To Spille My Housbands Blood”: Social Order and Gender Relations in Early Modern England-From the Courtyard to the Kitchen  
Megan MacDonald-McGinnis, Sr., History, LAS

Examining Genetics, Scientific Racism and Human Subjects via the Epidemiology of Hepatitis B  
Jennifer Rush, Sr., History, LAS

Bricks, Blockades, and Brutality: Race, Class, and Labor During the 1905 Teamsters Strike of Chicago  
Matthew Filter, Sr., History, LAS

**SESSION C (ILLINI UNION ROOM 314 A/B)**

Predicting the Ductility of Transition Metal B2 Alloys Using Mesoscale Dislocation Theory and First-Principles Calculations  
Ruoshi Sun, Sr., Materials Science and Engineering, ENG

Automatic Acquisition of Pragmatic Knowledge Using Similes  
Nigel Ray, Jr., Computer Science, ENG

Illini Cycler: A Polymerase Chain Reaction  
Kimberly Heinecke, Soph., Agricultural and Biological Engineering, ENG  
Shotaro Yatsu, Soph., Agricultural and Biological Engineering, ENG  
Brad Stoll, Sr., Technical Systems Management, ENG  
Mark Hull, Soph., Agricultural and Biological Engineering, ENG

Black Start Service Marketability  
Tsong-Yu Chan, Jr., Electrical Engineering, ENG

Debris Characterization and Mitigation from an Extreme Ultraviolet Light-producing Z-pinch  
Bob Lofgren, Sr., Nuclear, Plasma, Radiological Engineering

Assessment of Peer-Led Team Learning in an Engineering Course for Freshmen  
Brett Robbins, Sr., Electrical Engineering, ENG

Visualization of the Crack Damage in Self-Healing Composites  
Rajaprakash Ramachandramoorthy, Jr., Aerospace Engineering, ENG

Action Research Seminar: The East St. Louis Project  
Johanna Contreras, Jr., Recreation, Sport and Tourism, AHS  
Ashley Hooks, Sr., Urban and Regional Planning, FAA  
Dee Kaiser, Jr., Recreation, Sport and Tourism, AHS  
Joseph Althuler, Jr. Architecture, FAA  
Mari Gordon, Jr., Geology and Environmental Studies, LAS  
Jessica Howe, Sr., Aerospace Engineering, ENG  
Wendy Kniepp, Jr., Business
Success of Undergraduates with Illinois Business Consulting
Stephanie Jones, Sr., Chemical and Biomolecular Engineering, LAS
Trent Folkens, Sr., Marketing, BUS
Daniel Wenhold, Jr., Finance, BUS
Zach Bielasco, Sr., Accounting, BUS

PERFORMANCES

ILLINI UNION COURTYARD CAFÉ

Harp Performance
Keturah Bixby, Sr. Harp Performance
Major, School of Music, FAA

1:30-2:05pm
Inner Voices Social Theatre
Aisha Boyd, Sr., Speech Communication, LAS
Brittany Baker, Sr., Political Science, LAS
Taylor Moore, Fr., Jazz Studies, FAA

Selections by Marvels and Jolivet
Jamie Murphy, Jr., Instrumental Performance, FAA
Jennifer Garrett, Piano Performance, Graduate School of Music, FAA

A Night in Spain: My Journey into Spanish Song
Sara Lloyd, Soph., Vocal Performance, FAA

POSTERS

MORNING SESSION (PINE LOUNGE) 10am-12pm

1. The Individual Tax Evader: Toward a Psychological Profile
Jenna Meints, Sr., Accountancy, BUS

2. Design of an Amperometric Biosensor
Ridhima Handa, Jr., Actuarial Science, LAS

3. Neuroeconomics and Risk
Laura Zahn, Jr., Actuarial Science, LAS

4. A Break in the Chain: A Look at Communication between Resident Advisors the Resident Life Employees above Them
Rachael Levine, Sr., Anthropology, LAS

5. Functional Analysis of a Lactobacillus gasseri PTS Transporter
Julia Willett, Jr., Biochemistry LAS and Human Nutrition ACES

6. Edyrolhe Lylla – ChBE 431
Stephanie Jones, Sr., Chemical and Biomolecular Engineering, LAS
Julia Gegg, Sr., Chemical and Biomolecular Engineering, LAS
Anu Biswas, Sr., Chemical and Biomolecular Engineering, LAS

7. Temperature-Independent Lead Sensing Based on a Fluorescent DNAzyme
Jenny Wu, Soph., Chemical and Biomolecular Engineering, LAS

Brandon Reizman, Jr., Chemical and Biomolecular Engineering, LAS

9. Kinetic Study of Temperature Programmed Desorption (TPD) of Oxygen from TiO2
Xiaoyu Chen, Sr., Chemical and Biomolecular Engineering, LAS

10. Antimicrobial Silver Nanoparticles HS-Lab
Matt Ragusa, Sr., Chemistry, LAS

11. Sonic Spray Ionization
Josh Lasinski, Sr., Chemistry, LAS

12. Stabilizing Discrete Folded States of RNA Macromolecules Using DNA Constraints
JP Gerdt, Sr., Specialized Chemistry, LAS

13. Working in Dining Services: Just a Paycheck
Sha’Donna Woods, Sr., English, LAS

14. The Sonju Lake Intrusion: Formation and Analysis of a Layered Basalt Body and Overlying Granite
Kayla Ireland, Jr., Geology, LAS

15. Coupling into Single Photon Detectors
Darcy Barron, Sr., Engineering Physics, ENG

16. Laboratory Simulations of the Mount St. Helen’s Lateral Blast
John Kolinski, Sr., Math and Engineering Mechanics, LAS, ENG

17. Antibiotic Resistant Gene Impact on Microbial Communities in Agricultural Soils and Ground Water
Shazan Ahmed, Jr., Molecular and Cellular Biology, LAS

18. The Impact of Medical Ethics Course on the Students’ Perceptions of the Important Health Care Issues
Maulik Sheth, Sr., Molecular and Cellular Biology, LAS

19. Expression of the Anti-apoptotic Peptide Trefoil Factor 3 Distinguishes SW480 Colonic Adenocarcinoma Cells and the Isogenic SW620 Cell Line, Established from a Lymph Node Metastasis of the Primary Tumor
Grace Maloney, Jr., Molecular and Cellular Biology, LAS

20. Mental Health Needs and Perspectives of Foster Children of Methamphetamine Abusers
Kimberly Brown-Riley, Sr., Psychology, LAS

21. The Effects of Newcastle Virus Vaccine on Formation of Stones in the Reproductive Tract of Roosters
Joseph Esch, Sr., Animal Science, ACES

22. Building Bridges through an Action Research Approach: Program Description and Evaluation
Roselia Banuelos, Jr., Psychology, LAS

23. Genome Size in Miscanthus
Joseph Crawford, Sr., Crop Science, ACES

24. Expectations, Needs and Segmentation of Drinkable Yogurt Consumers
Joseph Kreger, Sr., Food Science and Human Nutrition, ACES

25. Maternal Diet Programs Muscle GLUT4 Expression in Rat Offspring
Michelle Unander, Jr., Food Science and Human Nutrition, ACES
26. Reconstituting Bioactive Cellulose and Corn Zein Films from Ionic Liquids
   Daria Zelasko, Jr., Bioengineering, ENG

27. Potential Applications of Choline Chloride-Urea Mixtures in Biosensing
   Wiktor Stopka, Jr., Bioengineering, ENG
   Angela Hsieh, Jr., Bioengineering, ENG

28. Computing Application Performance Enhancement through the Use of Hardware Accelerators
   Yohannes Kifle, So, Electrical and Computer Engineering, ENG

29. Typing from the Top of Your Head
   Serena Liou, Jr., Electrical and Computer Engineering, ENG
   Mukta Vaidya, Sr., Electrical and Computer Engineering, ENG
   Cyrus Oman, Sr., Computer Science, ENG

30. Design of an Amperometric Biosensor
   Tala Haddad, Sr., Electrical and Computer Engineering, ENG

31. Fluorescence Imaging of Self-Healing Composites
   Eleanor Good, So., Engineering Mechanics, ENG

32. Mesh Generation for Modeling of Heterogeneous Microstructures
   Brendan O’Rourke, Sr., Engineering Physics, ENG

33. Assessment of Fracture Properties of Heterogeneous Adhesives using Multiscale Cohesive Analysis
   Anthony Lovero, Sr., General Engineering, ENG

34. Robust Encapsulation using Microfluidics
   Alissa Cote, So., Materials Science and Engineering, ENG

35. Self-Healing of Intra-Composite Interfaces
   Brett Beierman, Sr., Materials Science and Engineering, ENG

36. Nanoparticle Removal from Lithographic Masks by Plasma Assisted Cleaning by Electrostatics
   Colin Das, Jr., Aerospace Engineering, ENG

37. Helping Hands
   Kerra DiVincenzo, Sr., Kinesiology, AHS
   Josh Ellis, Sr., Kinesiology, AHS
   Erin Frommeyer, Sr., Kinesiology, AHS
   Natasha Katakcz, Sr., Kinesiology, AHS
   Dan Stebel, Sr., Kinesiology, AHS
   Jacquelyn Sweedroe, Sr., Kinesiology, AHS

**AFTERNOON SESSION (PINE LOUNGE) 1-3pm**

1. Predator-Prey Models and their Applications to Finance and Economics
   Paul Pelock, Sr., Actuarial Science, LAS

2. Power Laws and the Structure of the Insurance Market
   Cristie Labus, Sr., Actuarial Science, LAS

3. Systems Biology: Metabolic Reconstruction and Analysis to Enhance Butanol Production
   Azeem Zafar, Jr., Biochemistry, LAS

4. Parameter Optimization for Interface-Based Defect Engineering
   Katherine Thurman, Sr., Chemical and Biomolecular Engineering, LAS

5. Structure-Function Relationship of 2’-oxoalkyiresorcylic acid Synthase
   Anuradha Biswas, Sr., Chemical and Biomolecular Engineering, LAS

6. The Copper Binding Properties of Nitrous Oxide Reductase
   Shirley Tan, Soph., Chemical and Biomolecular Engineering, LAS

7. Expression and Purification of a Thermophilic Protein for Studying Macromolecular Crowding
   Tripta Mishra, Soph., Specialized Chemistry, LAS

8. NMR Studies of the cAMP-regulated Phosphoprotein Endosulfine-alpha
   Daniel Lador, Sr., Chemistry, LAS

9. Exploring the Diversity of Microgastrine Parasitoid Wasps (Hymenoptera: Braconidae) from the Area de Conservación Guanacaste, Costa Rica
   Stephanie Laurusonis, Sr., Integrative Biology, LAS

10. High Protein Diet Impacts Fecal Microbial Populations in Growing Kittens
    Beth Dalsing, Jr., Molecular and Cellular Biology, LAS

11. Initial Response to a Psychostimulant Drug as a Predictor of Impulsivity
    Randi Burns, Sr., Molecular and Cellular Biology, LAS

12. Impaired Glucocorticoid Negative Feedback in Fragile X Syndrome
    Staci Vanderjack, Sr., Molecular and Cellular Biology, LAS

13. Social Consequences of Youth Depression
    Lilyana Ortega, Sr., Psychology, LAS

14. Emotions and Psychological Needs
    Steffen Eric Olsen, Sr., Psychology, LAS

15. Microbial Ecology of the Chattooga River: Anthropogenic Impacts and Implications for Human Health
    Zachary Bayne, Sr., Speech Communication, LAS

16. Mentoring Undergraduate Researchers: Turning Curiosity into Scientific Inquiry
    Angela Kent, Professor, Department of NRES, Faculty Mentor

17. Characterization of Endophytic Nitrogen-fixing Bacteria in Biofuel Crops
    Neil Gottel, Jr., Integrative Biology, LAS

18. Efficacy of Glycerol as a Replacement for Lactose in Calf Milk Replacer
    Rebecca Ebert, Jr., Animal Science, ACES

19. Effects of Spaying on Food Intake, Weight Gain, Activity, and Body Composition in Cats Fed a High- Versus Moderate-Protein Diet
    Stacey Sutter, Sr., Animal Science, ACES
20. The Presence and Quality of Children’s Friendships: Associations with Later Behavioral Development
Nicole Lasky, Sr., Human Development and Family Studies, ACES

21. The Effect of Simulated Gastrointestinal Digestion on Proteins and Bioactive Peptides from Soybean Genotypes
Pauline Le, Sr., Food Science and Human Nutrition, ACES

Jose Marques, Sr., Architecture, FAA

23. Anthropometric Human Hand Models for Tracking
Catherine Wah, Sr., Electrical and Computer Engineering, ENG

24. Separation and Purification of Nanopores using Agarose Gel Electrophoresis
Margie Mathewson, Jr., Bioengineering, ENG

25. Fabricating Gold Nanoparticle Constructs Using Microfluidic Channels
Megan Koop, Jr., Engineering Mechanics, ENG

Jillian Franke, Jr., Materials Science and Engineering, ENG

27. Comparison of Coherent Backscatter and Airglow Images from Equatorial Plasma Depletions
Shawn Adderly, Soph., Electrical and Computer Engineering, ENG

28. Cardiac Perfusion Imaging: An Investigation of a Model-Based Approach
Elaine Wah, Sr., Electrical and Computer Engineering, ENG

29. Vector Paint
Brett Jones, Sr., Computer Science, ENG

30. Neuroanatomical Specificity of Conditioned Responses to Cocaine versus Food in Mice
Zach Johnson, Jr., Integrative Biology and Neuroscience, LAS

31. Shoulder Pain in Wheelchair Athletes: The Role of Gender
Jacob Segil, Sr., Mechanical Engineering, ENG

32. Measuring Ion Energy Distributions from an Electron Cyclotron Resonance Source
Frederick Manley, Sr., Nuclear Engineering, ENG

33. Methicillin Resistant Staphylococcus aureus: Media and the Law
Tacarra Moore, Sr., Community Health, AHS

34. GirlPOWERED Research Study
Rachel Hernandez, Sr., Recreation, Sport and Tourism, AHS

35. International Reporting, “Destination: China”
Liz Reising, Jr., Journalism, COM

36. News-Gazette Reporting Partnership
Troy Murray, Sr., Journalism, COM

37. Changes in Hypothalamic alpha-MSH in Rats Fed a High Whole Milk Protein Diet
Kristy Heppner, Sr., Animal Science, ACES

38. Characterizing the Antimicrobial Activity of Water-Soluble Seed Exudates
Peter Conlin, Jr., Molecular and Cellular Biology, LAS

39. An Innovative System for Bioremediation of Agricultural Chemicals for Environmental Sustainability
Curt Zurliene, Jr., Agricultural and Biological Engineering, ENG
Elizabeth Brooks, Jr., Agricultural and Biological Engineering, ENG
Dan Koch, Grad (MS), Agricultural and Biological Engineering, ENG
Stephen Anderson, Grad (MS), Agricultural and Biological Engineering, ENG
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Cheelan Bo-Linn (Center for Teaching Excellence)
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