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

"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**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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</table>
| 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 |

## DETAILED SCHEDULE

### PRESENTATIONS

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
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</table>
| 10-10:15am | Collective Decision-making in Nest Relocation in Argentine Ants and Odorous House Ants  
Daniel Scholes, Sr., Integrative Biology, LAS |
| 10:15-10:30am | Creation and Tomographic Reconstruction of Pseudoradial Polarizaton States  
Trent Graham, Jr., Physics, LAS |
| 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 Intranuclear 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>
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</table>
| 10-10:15am | Building Green: Spatial Distribution of LEED-Certified Buildings  
Alex Beata, Soph., Geography, LAS |
| 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 Calderos-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  Homonormativities’ Stake in State Projects of Legibility  Bess Van Asselt, Sr., Gender and Women Studies, LAS

HISTORY SHOWCASE (ILLINI UNION ROOM 210)

Post-Soviet Russian Diplomacy in the First Bosnian war of 1992-1995  Alexandra Katzman, Sr., History, LAS

“To Spill My Husbands Blood”: Social Order and Gender Relations in Early Modern England-From the Courtroom 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

12-1pm  Debris Characterization and Mitigation from an Extreme Ultraviolet Light-producing Z-pinch  Bob Lofgren, Sr., Nuclear, Plasma, Radiological Engineering

1:15-2:30pm  Assessment of Peer-Led Team Learning in an Engineering Course for Freshmen  Brett Robbins, Sr., Electrical Engineering, ENG

2:45-3pm  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 Altschuler, Jr. Architecture, FAA Mari Gordon, Jr., Geology and Environmental Studies, LAS Jessica Howe, Sr., Aerospace Engineering, ENG Wendy Kniepp, Jr., Business
2:45-3pm
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

1:1-2:05pm
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

2:15-2:35pm
Selections by Marvels and Jolivet
Jamie Murphy, Jr., Instrumental Performance, FAA
Jennifer Garrett, Piano Performance, Graduate School of Music, FAA

2:40-3pm
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 43l
Stephanie Jones, Sr., Chemical and Biomolecular Engineering, LAS
Julia Gregg, 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
<table>
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<tr>
<th>Number</th>
<th>Title</th>
<th>Authors</th>
<th>Department</th>
<th>Year</th>
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<tr>
<td>26.</td>
<td>Reconstituting Bioactive Cellulose and Corn Zein Films from Ionic Liquids</td>
<td>Daria Zelasko, Jr., Bioengineering, ENG</td>
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<td>27.</td>
<td>Potential Applications of Choline Chloride-Urea Mixtures in Biosensing</td>
<td>Wiktor Stopka, Jr., Bioengineering, ENG</td>
<td>Angela Hsieh, Jr., Bioengineering, ENG</td>
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<td>28.</td>
<td>Computing Application Performance Enhancement through the Use of Hardware Accelerators</td>
<td>Yohannes Kiffe, So, Electrical and Computer Engineering, ENG</td>
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<tr>
<td>29.</td>
<td>Typing from the Top of Your Head</td>
<td>Serena Liu, Jr., Electrical and Computer Engineering, ENG</td>
<td>Mukta Vaidya, Sr., Electrical and Computer Engineering, ENG</td>
<td>Cyrus Oman, Sr., Computer Science, ENG</td>
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<tr>
<td>30.</td>
<td>Design of an Amperometric Biosensor</td>
<td>Tala Haddad, Sr., Electrical and Computer Engineering, ENG</td>
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<td>31.</td>
<td>Fluorescence Imaging of Self-Healing Composites</td>
<td>Eleanor Good, So, Engineering Mechanics, ENG</td>
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<tr>
<td>32.</td>
<td>Mesh Generation for Modeling of Heterogeneous Microstructures</td>
<td>Brendan O’Rourke, Sr., Engineering Physics, ENG</td>
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<td>33.</td>
<td>Assessment of Fracture Properties of Heterogeneous Adhesives using Multiscale Cohesive Analysis</td>
<td>Anthony Lovero, Sr., General Engineering, ENG</td>
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<tr>
<td>34.</td>
<td>Robust Encapsulation using Microfluidics</td>
<td>Alissa Cote, So, Materials Science and Engineering, ENG</td>
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<td>35.</td>
<td>Self-Healing of Intra-Composite Interfaces</td>
<td>Brett Beierman, Sr., Materials Science and Engineering, ENG</td>
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<td>36.</td>
<td>Nanoparticle Removal from Lithographic Masks by Plasma Assisted Cleaning by Electrostatics</td>
<td>Colin Das, Jr., Aerospace Engineering, ENG</td>
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<tr>
<td>37.</td>
<td>Helping Hands</td>
<td>Kerra DiVincenzo, Sr., Kinesiology, AHS</td>
<td>Josh Ellis, Sr., Kinesiology, AHS</td>
<td>Erin Frommeyer, Sr., Kinesiology, AHS</td>
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**AFTERNOON SESSION (PINE LOUNGE) 1-3pm**

1. Predator-Prey Models and their Applications to Finance and Economics | Paul Pelock, 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’-oxoalkyloresorcylic 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 Ladror, 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 aureau: 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 Zurlene, 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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Wojtek Chodzko-Zajko, Chair (Kinesiology and Community Health)
Cheelan Bo-Linn (Center for Teaching Excellence)
Dorothy Espelage (Educational Psychology)
Howard Guenther (Office of the Vice Chancellor for Research)
Lisa Hinchliffe (Undergraduate Library)
Emily Holtan (Provost’s Office Intern)
Walter Hurley (Animal Sciences)
Peter Mortensen (Associate Provost Fellow)
Mary Macmanus Ramsbottom (College of Liberal Arts and Sciences)
Nancy Sottos (Mechanical Science and Engineering)