



LSAMP **inspire**
PROGRAM

2014-15

ANNUAL CONFERENCE

Driving Discovery & Student Success in STEM

NOVEMBER 2-3, 2014

Des Moines Area Community College
FFA Enrichment Center | Ankeny, Iowa



Welcome to the 2014-15 Annual Conference of the Iowa Illinois Nebraska LSAMP Alliance!

Dear Conference Participant:

Des Moines Area Community College is pleased to host the third annual conference of the IINSPIRE-Louis Stokes Alliance for Minority Participation (LSAMP). This year's theme, "Driving Discovery and Student Success in STEM", offers a rich program for those dedicated to broadening the participation of underrepresented minorities in science, technology, engineering, and mathematics in the Midwest. It is conferences like this one that serve as catalysts to identify future talent we need to bridge our projected workforce needs.

In addition to the talented institutional representatives who will be sharing best practices for recruitment and retention in STEM fields, we are fortunate to have three outstanding keynote speakers whose careers have embodied the spirit of discovery. A special thank you to Dr. Raychelle Burks, Chemistry Post-Doctoral Fellow, from Doane College; Dr. Ruth Jones, Mishap Investigation Specialist, from the NASA/Marshall Space Flight Center; and Dr. Dara Norman, Associate Scientist, at the National Optical Astronomy Observatory, for their willingness to share their personal journeys toward success. I encourage you to take advantage of the opportunity to interact with these experts to learn more about their career paths and the barriers they overcame to become leaders in their fields.

I wish to extend a personal thank you to the conference planning committee comprised of Campus Directors and members of the Alliance Office for organizing this outstanding event. Thank you, also, to the sponsors who made this conference possible including the following institutions – Doane College, Des Moines Area Community College, Iowa State University, Kirkwood Community College, the University of Iowa, University of Northern Iowa, and Upper Iowa University – whose donations helped ensure active student participation and programmatic support. Finally, we appreciate the support from the National Science Foundation-LSAMP program that will allow the Alliance to meet the goal of doubling the number of underrepresented minority STEM graduates within five years.

It is my hope that you will take advantage of the conference to learn more about the Alliance and to network with others dedicated to enhancing student success.

Sincerely,

Robert J. Denson
President and CEO
Des Moines Area Community College

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Keynote & Invited Speakers



Dr. Raychelle Burks, Chemistry Post-Doctoral Fellow

Doane College, Crete, Nebraska

Dr. Raychelle Burks is a Postdoctoral Research Associate at Doane College and the Center for Nanohybrid Functional Materials at the University of Nebraska-Lincoln (UNL). A UNL alumna, she received a Ph.D. in chemistry in 2011. She also holds a Masters in Forensic Science from Nebraska Wesleyan University and a B.S. in chemistry from the University of Northern Iowa. A passionate STEM advocate, she also works as a science writer and for GeekGirlCon as the Manager of the Do-It-Yourself Science Zone.

Dr. Dara Norman, Associate Scientist

National Optical Astronomy Observatory, Tucson, Arizona

Dr. Dara Norman is a scientist at the National Optical Astronomy Observatory. Her research interests focus on the bright central regions of galaxies, known as Active Galactic Nuclei (AGN) - how they are triggered and their influence on galactic evolution. She is also interested in creating and advancing opportunities to bring more under-represented minorities and women into the “astronomy enterprise”, which includes research science, engineering and instrument building. She currently serves on the council for the American Astronomical Society and has been an active member of the society’s Committee on the Status of Minorities in Astronomy. She is also co-chair of the ASTRO section of the National Society of Black Physicists.

Dr. Norman received her Ph.D. in Astronomy from the University of Washington. In 2011, she received a ‘Timeless Award’ from the University of Washington’s College of Arts and Sciences, honouring 150 distinguished living alumni. She also holds a B.S. in Earth, Atmospheric and Planetary Science from the Mass. Inst. of Technology.





Dr. Ruth Jones, Mishap Investigation Specialist

NASA/Marshall Space Flight Center, Huntsville, Alabama

Dr. Ruth D. Jones is Mishap Investigation Specialist at the NASA Safety Center in Huntsville, Alabama. Dr. Jones performs extensive planning and preparatory work to ensure that mishap investigation teams are trained and available to support the rapid deployment of the Mishap Investigation Team and the effective and efficient conduct of Type A/High Visibility Mishap Investigations. Dr. Jones is also an adjunct faculty at Alabama A&M University where she teaches Physics.

Dr. Jones is an alumnus of Alabama A & M University where she received her Doctorate of Philosophy and Masters of Science degrees in Physics/Materials Science in December 2000 and July 1997, respectively. She received her Bachelor of Science degree in Physics from the University of Arkansas in Pine Bluff in May 1994. She was a 1989 honor graduate of Central High School, West Helena, Arkansas.

Dr. Jones is the second African American woman to receive a Ph. D. in Physics in the state of Alabama, and the first woman to receive a Bachelor of Science degree in Physics from the prestigious University of Arkansas at Pine Bluff in 1994.

Dr. Jones, the author of numerous articles on optical physics, is a member of the Society of Women Engineers, System Safety Society, American Physical Society, Optical Society of America, SPIE, National Society of Black Physicists, National Society of Black Engineers and Delta Sigma Theta Sorority, Incorporated.

Dr. Jones considers herself as a role model because she has succeeded in a male dominant field, Physics. Throughout her educational career she has never had a female professor or a black professor; therefore, Dr. Jones feels by teaching she can influence young girls that women can excel in science and math as well as men if not better.

In addition, Dr. Jones is frequently invited to high schools and colleges to deliver commencement speeches as well as workshops, which encourages students to pursue college degrees as well as advanced degrees. One of her goals is to help young people, particularly minorities in small towns, understand the excitement, opportunities and enjoyment in pursuing a technical career.

A native of West Helena, Arkansas, Dr. Ruth Jones is the daughter of William and Essie Jones of West Helena, AR.

CONFERENCE SCHEDULE: Students

Sunday, November 2

Schedule		
5:00 — 6:00pm	Registration Poster Session Set-up BUILDING PROFESSIONAL NETWORKS	Lobby Atrium 106 & 107 Conference
6:00 — 7:00pm	WELCOME & OPENING KEYNOTE: Mixing it Up: Science & Pop Culture <i>Rob Denson, Des Moines Area Community College</i> <i>Dr. Raychelle Burks, Doane College</i>	106 & 107 Conference
7:00 — 8:00pm	ZOMBIE IMPACT! CREATING MEDIA TO COMMUNICATE SCIENCE <i>Dr. Raychelle Burks, Doane College</i>	108 & 109 Classrooms
8:00 — 9:30pm	IINSPIRE-ING STUDENT NETWORKS	106 & 107 Conference

Monday, November 3 — Morning

Schedule		
8:00 — 9:00am	Registration and Breakfast Poster Session Set-up STUDENT OPPORTUNITIES FAIR I	Lobby Atrium 106 & 107 Conference
9:00 — 10:00am	STUDENT POSTER PRESENTATIONS	Atrium
10:00 — 11:00am	STUDENT PROFESSIONAL DEVELOPMENT SEMINARS Seminar A: COMMUNICATING & INTERACTING WITH PROFESSORS <i>Dr. Derrick Rollins, Iowa State University</i> Seminar B: CHOOSING & APPLYING TO GRADUATE SCHOOLS <i>Thelma Harding, Iowa State University</i> Seminar C: EXPLORING CAREER PATHWAYS <i>Dr. Dara Norman, AURA/National Optical Astronomy Observatory</i>	108 & 109 Classrooms 112 & 113 Classrooms 114 & 115 Classrooms
11:00 — 11:10am	Break	Lobby
11:10 — 11:45am	STUDENT PROFESSIONAL DEVELOPMENT SEMINARS Seminar A: LINKING IN TO LINKEDIN <i>Dr. LeAnn Faidley, Wartburg College</i> Seminar B: BECOMING A PEER MENTOR <i>Dr. Douglas Mupasiri, University of Northern Iowa</i> <i>Dr. Adin Mann, Fisher Valves Division</i>	108 & 109 Classrooms 112 & 113 Classrooms

CONFERENCE SCHEDULE: Students

Monday, November 3 — Afternoon

Schedule		
11:45 — 1:00pm	Lunch Buffet KEYNOTE ADDRESS: Discover Your Passion <i>Dr. Ruth Jones, NASA/Marshall Space Flight Center</i>	106 & 107 Conference
1:00 — 1:30pm	AWARDS	106 & 107 Conference
1:30 — 2:15pm	STUDENT OPPORTUNITIES FAIR II	106 & 107 Conference
2:15 — 3:00pm	STUDENT RESEARCH EXPERIENCES PANEL <i>Dr. U. Sunday Tim, Iowa State University</i>	106 & 107 Conference
3:00 — 3:50pm	EXPLORING CAREER PATHWAYS <i>Dr. Ruth Jones, NASA/Marshall Space Flight Center</i>	114 & 115 Classrooms
4:00 — 4:30pm	STUDENT PROFESSIONAL DEVELOPMENT SEMINARS Seminar A: WRITING A SUCCESSFUL RESUME <i>Chris Moon, Des Moines Area Community College</i> Seminar B: REU: APPLYING & GETTING IN <i>Dr. U. Sunday Tim, Iowa State University</i>	108 & 109 Classrooms 112 & 113 Classrooms

CONFERENCE SCHEDULE: Faculty, Staff, and Professionals

Sunday, November 2

Schedule		
5:00 — 6:00pm	Registration Poster Session Set-up BUILDING PROFESSIONAL NETWORKS	Lobby Atrium 106 & 107 Conference
6:00 — 7:00pm	WELCOME & OPENING KEYNOTE: Mixing it Up: Science & Pop Culture <i>Rob Denson, Des Moines Area Community College</i> <i>Dr. Raychelle Burks, Doane College</i>	106 & 107 Conference
7:00 — 8:00pm	STEM FACULTY ROUNDTABLE: Making it REAL <i>Facilitated by: IINSPIRE LSAMP Steering Council Members</i>	108 & 109 Classrooms
8:00 — 9:30pm	Dinner on Own	

CONFERENCE SCHEDULE: Faculty, Staff, and Professionals

Monday, November 3

Schedule		
8:00 — 9:00am	Registration and Breakfast Poster Session Set-up STUDENT OPPORTUNITIES FAIR I	Lobby Atrium 106 & 107 Conference
8:30 — 9:30am	PEDAGOGY WORKSHOP I: AUTHENTIC INQUIRY IN COURSES; RESEARCH-LIKE EXPERIENCES EMBEDDED IN COURSES <i>Dr. Jim Swartz, Grinnell College</i> <i>Ellen Iverson, SERC at Carleton College</i>	106 & 107 Conference
9:00 — 10:00am	STUDENT POSTER PRESENTATIONS	Atrium
10:00 — 11:45am	PEDAGOGY WORKSHOP II: AUTHENTIC INQUIRY IN COURSES; RESEARCH-LIKE EXPERIENCES EMBEDDED IN COURSES <i>Dr. Jim Swartz, Grinnell College</i> <i>Ellen Iverson, SERC at Carleton College</i>	106 & 107 Conference
11:45 — 1:00pm	Lunch Buffet KEYNOTE ADDRESS: Discover Your Passion <i>Dr. Ruth Jones, NASA/Marshall Space Flight Center</i>	106 & 107 Conference
1:00 — 1:30pm	AWARDS	106 & 107 Conference
1:30 — 2:15pm	STUDENT OPPORTUNITIES FAIR II	106 & 107 Conference
2:15 — 3:00pm	STUDENT RESEARCH EXPERIENCES PANEL <i>Dr. U. Sunday Tim, Iowa State University</i>	106 & 107 Conference
3:00 — 4:30pm	DISCOVERING STEM TALENT WORLD CAFE <i>Facilitated by: IINSPIRE LSAMP Steering Council Members</i>	106 & 107 Conference

Presenter Biographies

Rob Denson was appointed the fourth President of Des Moines Area Community College on November 1, 2003.

Rob grew up on a farm near Homestead, Iowa, south of the Amana Colonies, and graduated from high school in Marengo, Iowa. The first native-born Iowan to be President of DMACC, Rob has a B.S. in Political Science and Economics and a M.S. in Higher Education Administration from Iowa State University. He worked for Iowa State as an Assistant Dean for three years before moving to Florida to serve as an Assistant Dean of Students.

Rob graduated from Law School at the University of Florida in 1979 and was an Associate University Attorney for three years before operating his own law practice for 16 years. He is a board-certified civil trial lawyer. In 1996, he became Assistant to the President and Dean for Institutional Advancement at Santa Fe Community College in Gainesville, Florida.

In 1998, Rob returned to Iowa as President of Northeast Iowa Community College in Calmar, Iowa. Rob loves his job at DMACC and is active on a number of community boards, including three years on the United Way of Central Iowa Board. In addition to his DMACC position, he serves on the National Board of Gateway to College, a drop-out recovery program; the Governor's STEM Advisory Council and Executive Committee; the National STEMconnector Innovation Task Force, and the Food and Ag Council; and, the National Leadership Council of Opportunity Nation. He also chairs the National STEMconnector Higher Education Council and serves on the boards of Iowa Student Loan Liquidity, the Iowa Ag. Literacy Foundation, the Technology Association of Iowa, the Iowa Quality Center, the Agri-Business Association of Iowa, the Iowa Direct Caregivers Association, the Iowa Rural Development Council, the Greater Des Moines Partnership, the Iowa Innovation Council, and the Iowa Economic Development Authority.

Dr. LeAnn Faidley is an assistant professor of Engineering Science at Wartburg College where she has worked for 1.5 years. She has a BS in Engineering Science and Physics from Iowa State University a MS in Engineering Mechanics from Iowa State and one in Mechanical Engineering from The Ohio State University and a PhD in Mechanical Engineering from Ohio State. She currently teaches the freshman lab sequence, the engineering mechanics sequence, the design sequence, and engineering materials. Her technical research interests lie in the area of magnetically activated smart materials.

Nathalie Fuentes is originally from Puerto Rico. She is a Senior in Biochemistry with a minor in Linguistics at Iowa State University. Her interest in research started at a very early age. She has conquered several obstacles in life including language barriers. She has made significant discoveries in her lab, leading to a publication in the Journal of Inorganic Biochemistry. She has a total of six research internships in places such as Harvard Medical School, Penn State College of Medicine, Medical Sciences Campus of the University of Puerto Rico, and Iowa State University. She has experience working with leukemia, glaucoma, methanobactin, albinism and drug metabolism at a biochemical and molecular level. Nathalie Fuentes has been recognized for her accomplishments, with awards such as the 2013 and 2014 HENAAC Best Scientific Poster Award, 2014 Outstanding First Year McNair Scholar, 2014 Latinos Unidos Scholarship and is a 2014 Collegian of Innovation and Leadership Finalist. She has leadership roles in the iResearch Club and SHPE Organization. Currently, she is applying to Graduate Programs in Neuroscience to study neuroregeneration, neuroprotection and neurodegenerative diseases.

Norma Granados is from Marshalltown, Iowa. She is pursuing a degree in Mechanical Engineering from Iowa State University and plans to graduate spring 2016. She has conducted research twice at Iowa State University under the Department of Mechanical Engineering, the first year under Dr. Pranav Shrotriya and this past summer under Dr. Nastaran Hashemi.

Thelma Harding

Thelma Harding is the Coordinator of Graduate Recruitment and Retention at Iowa State University. She has more than 25 years of experience in higher education administration, primarily in graduate recruitment and admissions. She is also the director of the Iowa State University McNair program which prepares a select group of undergraduates for entry to graduate school

Ellen Iverson is the Evaluation Director at the Science Education Resource Center (SERC) at Carleton College where she oversees the evaluation of a variety of projects that support improvements in undergraduate education. She is the evaluator for a range of National Science Foundation and other foundation supported projects in the sciences and social sciences including the HHMI supported Carleton Interdisciplinary Science & Math Initiative which includes broadening access cohorts, the On the Cutting Edge Professional Development Program for Geoscience Faculty, and assessment co-leader of InTeGrate, a 5 year, NSF STEP Center grant. The SERC office has special expertise in effective pedagogies, geoscience education, community organization, workshop leadership, digital libraries, website development and program and website evaluation.

Connie Maluwelmeng is originally from Guam. She attended University of Guam for my freshmen year and is now attending Iowa State University. She is currently a double major in electrical engineering and mathematics and plan to graduate in the spring of 2016. Connie's first research experience was in Hawaii in Summer 2012, participating in the Pacific Undergraduate Research Experience in Mathematics (PURE Math). Her project was about determining spaces of almost binary trees (related to Discrete Morse Theory, a branch of topology). This past summer (2014), Connie had a research internship in Aachen, Germany, where she was in charge of creating a basic graphical user interface (GUI) structure for the solar plant optimizing software developed by my research team. Currently, she is conducting research in two areas of electrical engineering at Iowa State: electromagnetics and wind energy generation/transmission co-optimization.

Dr. Adin Mann is currently Principal Engineer in the Fisher Valve Division of Emerson Process Management in Marshalltown, Iowa. He was previously Assistant Dean of the Graduate College and a member of the faculty in the Mechanical Engineering Department at Iowa State University, from 1989 through 2010. He obtained a BS in Engineering Science from ISU and a PhD in Acoustics from Pennsylvania State University. Adin was involved in the Iowa AGEP Alliance as a mentor for summer research interns and the faculty council at ISU. Adin took an active role in the monthly workshops for AGEP scholars in an effort to address common issues for graduate students and preparing the scholars for the work as a faculty member. Adin's research in submerged structures and air moving devices, to correlating the structural integrity of the foam insulating the liquid fuel tanks of the space shuttle to its response to sound. Teaching responsibilities included instrumentation, noise control, dynamic systems and controls, and design. Adin served as the director of graduate education for the Mechanical Engineering Department for four years, learning many of the details of the department, college, and university level graduate processes.

Rodrigue Mbog is from Cameroon and studies neurobiology at the University of Iowa. He is also considering majoring in biophysics because he enjoys physics and biology. Last summer, Rodrigue conducted research on circadian rhythms at the University of Iowa in the Biology department. He identified and characterized genes using the primary RNAi screening technique. He is planning to graduate in December 2015 and plans to apply for graduate school and/or medical school, with the goal of getting an MD/PhD dual degree, or a PhD in biophysics or neurobiology.

Presenter Biographies

Dr. Douglas Mupasiri received a BA in Chemistry in 1980 from Lewis University, Romeoville, IL. He then moved on to Northern Illinois University (NIU) to pursue graduate work in chemistry. He completed the required coursework and was admitted to Ph.D. candidacy in chemistry before switching to mathematics. He went on to receive an M.S. degree in mathematics in 1987 and a Ph.D. in pure mathematics in 1992 at NIU. Although he had a local advisor at NIU, he wrote his Ph.D. dissertation on complex convexity and the geometry of complex linear spaces under the supervision of Prof. Patrick N. Dowling of Miami University, Oxford, OH. Dr. Mupasiri taught mathematics at Miami University, Oxford, OH and at Northern Illinois University, DeKalb, IL before joining the faculty at the University of Northern Iowa where he has been for 20 years. He is a professor of mathematics with research interests in locally convex space theory and topology. Since January 2010, he has served as Interim Head, and then Head of the Department of Mathematics at UNI. He cares deeply about broadening participation in STEM to groups that have traditionally been underrepresented in these disciplines. He has devoted most of his "free" time to working on these issues in the last decade.

Dr. Derrick Keith Rollins, Sr. grew up in inner city Kansas City, Missouri. He received a B.S. degree in chemical engineering from the University of Kansas in 1979. In the fall of 1985 he returned to college and earned the following degrees from The Ohio State University: an M.S. degree in chemical engineering in 1987, an M.S. degree in statistics in 1989, and a Ph.D. in chemical engineering in 1990.

Professor Rollins joined the Iowa State University (ISU) faculty in the fall of 1990 in a unique joint appointment between the Statistics Department and the Chemical Engineering Department. Since coming to Iowa State, Dr. Rollins has received many research grants and awards including the 2012 McDonald Mentoring Award from the Tau Beta Pi National Engineering Honor Society, 2005 Regents Faculty Excellence Award given by the Iowa Board of Regents, the 2000 ISU Presidential Service Award, and in 1994 the National Science Foundation Presidential Faculty Fellows Award, which was considered the highest honor the federal government gives young scientists and engineers. His research areas include glucose monitoring, modeling and control for diabetic people and for improving cancer protocols in Biomedical Engineering; Bio- and Material- Informatics and data mining; and development of processes for non-destructive testing procedures. He is the ISU Director for IINSPIRE LSAMP.

Dr. Jim Swartz is a Professor of Chemistry at Grinnell College. He attended De Anza College and Stanislaus State College in California. He received a PhD in chemistry at the University of California at Santa Cruz. After postdoctoral research at CalTech he joined the faculty at Grinnell College in 1980. Jim coordinated the NSF-funded Project Kaleidoscope Pedagogies of Engagement faculty development project. In July, 2012 he was appointed as Interim Associate Vice President of Analytical Support/Institutional Research (a new office) at Grinnell. He currently is a team chair for the Higher Learning Commission of the North Central Association. He serves on the Advisory Council of the Iowa Energy Center, which he chaired from 2008-11. Dr. Swartz has served as a consultant to approximately 50 colleges and universities in curriculum development and the planning of science facilities.

Dr. U. Sunday Tim is Associate Professor of Agricultural and Biosystems Engineering and IINSPIRE LSAMP faculty Leader at Iowa State University. Dr. Tim earned his Bachelor of Engineering degree in Structural Engineering and PhD degree in Civil and Environmental Engineering from Concordia University, Canada. He has been Program Director and co-PI of several NSF REU Site programs and the USDA-NIFA Minority Scholars Program. His research interests include environmental modeling, environmental forensics, geographic information systems, virtual reality, data analytics, and distributed computing.

Michael Tingle I live in Ankeny IA, and am a junior at ISU majoring in industrial engineering. My summer research project was working on a program to communicate with a field programmable array to create a fast feedback loop to help control drift of an AFM tip.

Session Descriptions:

Zombie Impact! Creating Media to Communicate Science | Rooms 108 & 109

Student Session

7:00—8:00pm

Sunday, November 2

Speaker

Dr. Raychelle Burks, *Doane College*

What are your favorite TV shows, video games, or books? Think of any scientific or technological idea that has been introduced in popular culture. Create a video with a team of students that explains the science using the theme from your favorite story.

STEM Faculty Roundtable: Making it REAL | Rooms 106 & 107

Faculty, Staff, and Professional Session

7:00—8:00pm

Sunday, November 2

Facilitators

IINSPIRE LSAMP Steering Council Members

As a follow-up to Dr. Burk's presentation, faculty will discuss how to connect STEM content to contemporary culture and issues. How can we connect STEM classrooms with pop culture? How can faculty engage students in contemporary issues and problems that make a difference in the world?

Session Descriptions:

Authentic Inquiry in Course; Research-Like Experiences Embedded in Courses | Rooms 106 & 107

Faculty, Staff, and Professional Session

8:30—9:30am

10:00—11:45am

Monday, November 3

Speakers

Dr. Jim Swartz, *Grinnell College*

Ellen Iverson, *SERC at Carleton College*

There is evidence that actively engaging students early in their curriculum in inquiry similar to authentic science leads to both better learning as well as retention of students in STEM. In the first session, we will look at examples of this type of experience where it has become an overall theme of the course and examples where it is a more modest unit of the course. Attendees will be introduced to SERC resources that describe and provide materials in support of both of these models. In the second session, groups of attendees will work together to make plans as well as find and share resources to make changes in a course.

Communicating & Interacting with Professors | Rooms 108 & 109

Student Professional Development Seminar

10:00—11:00am

Monday, November 3

Speaker

Dr. Derrick Rollins, *Iowa State University*

How well do you understand the responsibilities and activities of faculty at Research 1 Universities? Do you even know what is meant by Research1? Do you understand the ranks of professors? What does it mean to be tenured professor? Are instructors tenured? This session will answer these questions and many more. If you are doing or hope to do undergraduate research, it will help you to know more about your boss or future boss. This understanding can help you to develop a better relationship with your faculty mentor.

Choosing & Applying to Graduate Schools | Rooms 112 & 113

Student Professional Development Seminar

10:00—11:00am

Monday, November 3

Speaker

Thelma Harding, *Iowa State University*

Planning for graduate school requires time, commitment, and financial resources. If a graduate degree is in your future, this session will tell you how and when to begin planning including how best to select schools/programs, preparing for the GRE, and how much the process will cost.

Exploring Career Pathways | Rooms 114 & 115

Student Professional Development Seminar

10:00—11:00am

Monday, November 3

Speaker

Dr. Dara Norman, *AURA/National Optical Astronomy Observatory*

Dr. Dara Norman will share her personal journey toward success. Students will have an opportunity to interact and learn more about her career path and the barriers she overcame to become leader in her field. Dr. Norman will also discuss internship opportunities available at the Association of Universities for Research in Astronomy (AURA).

Linking in to LinkedIn | Rooms 108 & 109

Student Professional Development Seminar

11:00—11:45am

Monday, November 3

Speaker

Dr. LeAnn Faidley, *Wartburg College*

In this session, students will set up a LinkedIn profile and learn how to use it to create a mentoring network. Additionally, students will find and explore helpful opportunities in the system.

Becoming a Peer Mentor | Rooms 112 & 113

Student Professional Development Seminar

11:00—11:45am

Monday, November 3

Speakers

Dr. Douglas Mupasiri, *University of Northern Iowa*

Dr. Adin Mann, *Fisher Valves Division*

Learn about what it takes to be a peer mentor, why it's important, and how to seek out mentoring opportunities on your campus. Also learn about the responsibilities of a mentor/mentee relationship and the expectations of each role.

Student Research Experiences Panel | Rooms 106 & 107

2:15—3:00pm

Monday, November 3

Moderator

Dr. U. Sunday Tim, *Iowa State University*

Students who participated in an undergraduate research experience (REU) share details about finding and applying for an REU, as well as the overall research experience. The audience will have an opportunity to ask questions of the student panel.

Session Descriptions:

Exploring Career Pathways | Rooms 114 & 115

Student Professional Development Seminar

3:00—3:50pm

Monday, November 3

Speaker

Dr. Ruth Jones, *NASA/Marshall Space Flight Center*

Dr. Ruth Jones will share her personal journey toward success. Students will have an opportunity to interact and learn more about her career path and the barriers she overcame to become leader in her field. She will also discuss opportunities available through the NASA Pathways Program.

Discovering STEM Talent World Cafe | Rooms 106 & 107

Faculty, Staff, and Professionals Session

3:00—4:30pm

Monday, November 3

Facilitators

IINSPIRE LSAMP Steering Council Members

Join us for coffee and conversation at the Discovering STEM Potential World Café. Participants will engage in rich conversations (over coffee/tea and treats) around high impact STEM recruitment strategies. The session will include time for discussion, sharing, and providing insight around high impact STEM recruitment.

Writing a Successful Resume | Rooms 108 & 109

Student Professional Development Seminar

4:00—4:30pm

Monday, November 3

Speaker

Chris Moon, *Des Moines Area Community College*

Learn the fundamentals of writing a successful resume.

REU: Applying & Getting In | Rooms 112 & 113

Student Professional Development Seminar

4:00—4:30pm

Monday, November 3

Speaker

Dr. U. Sunday Tim, *Iowa State University*

What constitutes an undergraduate research experience? Is an REU for me? If so, how do I prepare and submit a competitive REU application? What is an undergraduate research certificate and why do I need to be certified? What are the requirements for certification and the expected core competencies?

Student Posters

The Effect of Temperature on *Cyanea Lamarckii* (Bluefire Jellyfish) Polyp Strobilation

Brittany Boyd, *Doane College*

The purpose of this project was to research the effect of temperature on polyp strobilation of the *C. lamarckii* and to observe whether colder water increases strobilation. There was one control group staying at a temperature of 56°F, and two experimental groups that were set at 56°F and then changed to a different temperature. Plate #2 went from 56°F to 70°F, and data was collected for five weeks. Then the plate went back to its original temperature and data was collected for another five weeks. The process was similar with plate #3 which went from 56°F to 45°F and was observed for five weeks. The results thus far are showing that the warmer temperatures have a decrease in strobilation rates, and the colder water has strobilation rates that are much greater than the warmer temperature. Plate #1 and 3 had constant strobilation rates throughout the five weeks. So far, the hypothesis is supported by the results. The warmer water had a lower strobilation rate and the colder water had higher strobilation rates.

Evaluating the Role of Two Photosensory Protein in the Virulence and Oxidative Stress Tolerance of *Pseudomonas Syringae*

Mariama Carter, *Iowa State University*

The ability to sense environmental cues is important to bacteria living in the stressful environment of a leaf surface. In *Pseudomonas syringae*, a foliar pathogen, the ability to sense light is facilitated by at least two photosensory proteins: LOV-HK, which is a LOV histidine kinase that senses blue light, and BphP1, which is a red/far-red light sensing bacteriophytochrome. We investigated what phenotypes these photosensory proteins influence in this non-photosynthetic bacterium. Specifically, we looked at pathogenicity in *Pseudomonas syringae* *pv.* *syringae* strain B728a on beans, and tolerance to reactive oxygen species (ROS) in B728a as well as in *P. syringae* *pv.* *tomato* strain DC3000. To evaluate pathogenicity, we conducted an assay in which separate plants were inoculated with the B728a parent strain and B728a deletion mutants lacking LOV-HK or BphP1. Over a 48 hour period we evaluated the bacterial populations at different time points and determined if the loss of the photosensory proteins affected the ability of the strains to colonize the plant's intercellular spaces; we found that the loss of BphP1 did. To test photosensory protein involvement in ROS tolerance, we subjected lawns of parent and mutant cells to oxidative stress by overlaying filter paper discs containing either methyl viologen hydrate (MV) or hydrogen peroxide (PX) onto the lawns. The ROS caused zones of inhibition, indicating cell death, which we then photographed and measured in pixels. Significant differences among the strains in the size of the zones would indicate that LOV-HK or BphP1 influences tolerance to the ROS-induced stress. Our data provided clear evidence that, although ROS is a major stress associated with light, the photosensory proteins in *P. syringae* do not contribute to the ability of this foliar pathogen to tolerate them.

Atrazine Metabolites Deethylatrazine (DEA) and Deisopropylatrazine (DIA) can affect cell cycle distribution of human liver cells

Brittanie Dotson, Kavita Dhanwada, *PhD Department of Biology, University of Northern Iowa*

Atrazine, a triazine class of herbicide, is one of the most commonly used herbicides in the United States. While quite effective, altered health effects have been seen in non-target organisms after exposure with decreases in cell growth and development. The herbicide produces two primary metabolites: Deethylatrazine (DEA) and Deisopropylatrazine (DIA). These metabolites have also been found in high concentrations in groundwater, along with the parent compound, and have been shown to produce altered cell growth and delaying pubertal development. As there is not much current information on cellular effects of DEA and DIA, this study used immortalized HepG2 cells to determine if there were any alterations in cell cycle distribution. Flow cytometry results showed there were fewer cells in the G2/M phase after 72 hours of exposure to 500 and 750 ppb DEA compared to control cells with an increase of cells in the S phase, however this increase was not shown to be significant. Additionally, 500 parts per billion (ppb) DIA had significantly fewer cells in S phase compared to untreated controls. This study demonstrated that exposure to the atrazine metabolites, DIA and DEA, can affect the distribution of cells in the cell cycle and may affect normal progression.

Student Posters

Fatigue Crack Specimens for Physics Based Model of Crack Heating Mechanisms in Vibrothermography

David Enciso, Dr. Stephen Holland, Tyler Lesthaeghe, Jyani Vaddi, *Iowa State University*

The goal is to advance the state of the art in thermographic nondestructive testing through scientific research. Vibrothermography, involves exciting a specimen with vibration and looking for heat generated cracks. A piezoelectric stack generates a high amplitude vibration and the specimen is imaged with an infrared camera to see vibration-induced heating of cracks and flaws in the material. Vibrothermography has proven to be an effective method in the detection of buried defects and delamination, however a lack of understanding behind the physics of heat generation hampers it from becoming an industry inspection method.

Preferences Towards the Use of Patient Education Devices in Dentistry

Callie Espanto, *University of Iowa*

Objectives: Numerous patient educational materials are available for use in the dental clinic setting, which may help improve oral health literacy. The purpose of this study was to determine: 1) preferences regarding various patient education materials, and 2) how participants would like these materials to be used by their dentist.

Methods: Six focus group sessions were conducted using participants recruited from University of Iowa College of Dentistry waiting rooms (N=25). During each session, a dentist described a dental bridge utilizing five patient education materials (i.e. flip-chart, ADA pamphlet, model, 3D4 Medical app narrated by the dentist, Solution 21 app with included narration). Participants' opinions pertaining to each material were assessed using a semi-structured format. A survey was administered prior to the session to assess participants' baseline knowledge of dental bridges. A follow-up survey was conducted at the end of the session to assess changes in knowledge and demographic characteristics. Sessions were recorded, and responses were coded by themes using Dedoose software.

Results: All of the participants said that each item increased their understanding of a dental bridge and could be used individually. However, participants preferred that the dentist use a combination of materials because their understanding improved with repetition and each material presented the concept in a different way. Many participants wanted the dentist to explain a bridge chairside, preferably with an app, but they also desired a pamphlet for reference after the appointment. Some participants appreciated the hands-on aspect of the model. Most participants preferred hearing detailed information about the steps involved with obtaining a bridge rather than learning only basic information.

Conclusion: Participants demonstrated improved understanding of dental bridges with each material. Dentists should ask patients their preferred method for learning and tailor their presentations to the amount of information desired by the patient.

Investigating Gene Expression in Developing Retinal Cells

Stephanie Flores, *Des Moines Area Community College*

An attempt to gain a better understanding of the development of ganglion cells. At several early development stages, isolated retinal cells are extracted from retinal cells. Afterwards, cDNA is hybridized to mouse microarrays. Math5 is expressed during ganglion cells development, it is used to examine individual cells transitioning from cycling progenitors to new nerve cells. Many transcription factors have an involvement in the development of retinal cells, many of which are unknown.

My project is to examine five transcription factors (Klf10, Tmem165, Tcf12, Wdr66, Zc3h12) expression during mouse retinal development. Steps to achieve such include; design and generate RNA probes, and use in situ hybridization to locate the expression of the mRNA. Material and methods include; design primers for each gene. PCR to amplify cDNA. Ligation of cDNA. Extraction of DNA from bacteria. Sequencing of DNA. Generating probes from DNA with T7SP6. Results show mRNA can be identified for Tcf12, Klf10, and Tmem165. These transcription factors are expressed in progenitor cells during embryonic mouse retinal development. Although we hoped to find the genes in ganglion cells alone, it is concluded the transcription factors are involved throughout the whole retinal development. Therapeutic treatment could have been created to help regrow ganglion cells that die in glaucoma patients, in this experiment we have found Tcf12, Klf10, and Tmem165 are no longer candidates for such treatment. Examination of other transcription factors can be beneficial and valuable to this cause.

Microfluidics for Organ-on-Chip Applications

Myra James, *Des Moines Area Community College*, Norma Granados, *Iowa State University*,
Dr. Nastaran Hashemi, *Iowa State University*

The research of biological processes, diseases, transplants, and drug effects have greatly depended on traditional *in vitro* cell culture and *in vivo* animal models. The studies conducted using *in vivo* and conventional *in vitro* models, although very significant, are not the best methods for the development of major advances in microengineering technologies. Traditional cell culture systems are not a realistic representation of key structural, functional, and mechanical properties of a functional organ *in vivo*. Due to the restrictions on animal model use, low efficiency, and the significant number of new drug failures, an interest in nanotechnology and micro technology is rising. Because of this a pursuit for the development of a system that is inexpensive, precise, and efficient as well as a better representation of the body's organs is underway. Organ-on-chips are micro devices that utilize microfluidics. These micro devices consist of various channels, cell culture chambers, and medium reservoirs. The micro pump that allows for fluid flow is connected to the device via micro tubes. Many organs have been modeled by different groups including, heart, brain, placenta and liver, as well as the intestine, kidney, muscles, and blood arteries. Organ-on-Chips can be used for advancements in the medical pharmaceutical fields such as replicating biological processes, understanding and treating diseases, analyzing drug effects as well as toxicity testing. These micro devices are rapidly growing in popularity mainly because they better mimic the responses of organ-like structures in an environment suitable for the survival of living cells.

Student Posters

Targeted Deletion of Zebrafish lncRNAs18 with TALENs

Crystal Jones, *Iowa State University*

Long non-coding RNAs (lncRNAs) are important players in epigenetic regulation of gene expression during development and disease (Niland et al, 2012). A number of mechanisms have been proposed for lncRNA action, however, few functional studies of lncRNAs have been described. We are using Transcription Activator-Like Effector Nuclease (TALEN), engineered site-specific nucleases, to create targeted mutations in a novel zebrafish lncRNA. We previously mapped a highly penetrant retinal tumor model to transgene disruption of the zebrafish lncRNAs18 gene. The objective of this project is to isolate a second zebrafish lncRNAs18 allele that contains a deletion of part of the lncRNAs18 gene. Two TALEN pairs were designed to simultaneously target double-strand breaks to exons 2 and 5 of lncRNAs18. Injection of 25-40pg of the TALENs targeting individual exons into zebrafish embryos resulted in efficient mutagenesis of the target sites. To isolate the lncRNAs18 deletion allele we co-injected embryos with the TALEN pairs targeting both exons 2 and exon 5. We predicted co-injection of TALEN pairs targeting exons 2 and 5 of lncRNAs18 would create a 147kb deletion after loss of the intervening sequence and repair by the non-homologous rejoining pathway. PCR products spanning the fusion of exons 2 to 5 were amplified from somatic tissue in 9 out of 14 co-injected embryos. We verified the deletion allele by sequencing PCR products from 3 embryos. We have found and are continuing screening for germline transmission of the deletion allele to establish a new line. The lncRNAs18 deletion allele will provide a new genetic tool to study the function of lncRNAs18 in zebrafish development and cancer.

Identification and Characterization of Novel Circadian Rhythm Genes Through the Use of Tissue Specific RNA Interference in Drosophila

Rodrigue Mbog, *University of Iowa*

A circadian rhythm is a roughly twenty four hours cycle in the physiological processes living beings, including plants and animals. Circadian rhythms are endogenously generated, even though they can be modulated by external cues such as sunlight and temperature. The first study of circadian rhythm was done in plants more than two hundred years ago and it led to some interesting observations. After that study, many others followed up and more exceptional results came out such as the first discovered genetic component of a circadian clock, also the discovery of the first mammalian clock gene. Circadian rhythm is very important for every living organism because it regulates almost every physiological process of the body. Once the rhythm is disrupted, processes such as eating and sleeping patterns can change. Modification of the rhythm also increases the chance of cardiovascular accident, obesity and neurological issues like depression or bipolar disorder. Circadian rhythms have some properties highly conserved in animals, which are most of the time used in laboratories, and help to get deep knowledge about the rhythm by running some experiments. With all the work already done and discoveries found, just a little is still known about the circadian rhythm, reason why its study is very exceptional. The goal of this project is to identify and characterize the importance of different circadian genes in Drosophila. In order to do so, we use the RNA interference (RNAi) technique which is a powerful tool in genomic analysis and very useful to develop highly specific gene silencing.

The overview method used for this project is the following: two circadian GAL4 strains (tim GAL4 and clock GAL4) combined with UAS-dicer2, are crossed to a series of RNAi strains in order to knock down the expression of specific genes within circadian clock neurons. Progeny are loaded in a behavioral assay for five days of entrainment condition (12hrs light: 12hrs dark) followed by seven days of constant darkness. Circadian rhythmicity is analyzed from the constant conditions. Data is evaluated and lines exhibiting significant alteration in rhythmicity or period are noted for future consideration.

Energy Efficient Dehumidification by Solar Driven Liquid Desiccant Systems for Residential Application

Esdras M Murillo, Ryan Everly, Shan He, and Ulrike Passe, *Iowa State University*

In regions with high humidity levels, liquid desiccant systems have the potential to be extremely effective as renewable dehumidifiers in buildings. With the ability to be powered by solar hot water tanks, these systems are energetically cleaner than the standard air conditioning techniques currently in use. These current systems are equipped with a compressor, cooling coil, and a flowing refrigerant to cool the air. In order to create a comfortable relative humidity level, the temperature of the incoming air must be dropped below its dew point; this is the temperature at which water condenses and can then be eliminated from the system. In the majority of the United States, dew point temperatures are much lower than comfortable temperatures. Therefore, in current standard practice, air is first cooled far below comfortable temperatures to reduce humidity levels, and then heated back up to a more acceptable climate before entering the living space. However, if a system with independent control of humidity was introduced, the need for excess cooling and reheating would be eliminated. Liquid desiccants have the potential to be such a system. The purpose of this study is to design an efficient liquid desiccant system that implements a small air-to-liquid desiccant interaction device with the intention of long term use in a common residential building. The objective efficiency of the system would lower the humidity level to between 40% to 50% relative humidity at temperatures between 720F and 780F. This study aims to determine the optimum variable magnitudes to produce the highest extent of dehumidification while occupying the smallest possible space to fully dehumidify a common residence. These variables include air velocity, desiccant liquid flow rate, desiccant liquid temperature, contact area between desiccant liquid and air, and water temperature. The system is currently being individually tested in a laboratory setting with an aqueous Calcium Chloride solution acting as the liquid desiccant. There are future plans to install the system for further testing in a community lab designed as a solar, net-zero energy building and equipped with a solar powered thermal tank. This paper will provide valuable data pertaining to the effectiveness and efficiency of solar driven liquid desiccant systems in the common residence by discussing the results conducted in a laboratory setting.

Implementation of High-Speed Imaging and Digital In-Line Holography to Study Feedstock Degradation Within a Pyrolysis Reactor

Anthony Niederklopper, *Iowa State University*

The efficient production of bio-derived fuels through the process of pyrolysis is one challenge for large-scale renewable energy adoption. The chemical reactions and physical mechanisms governing the overall pyrolysis process must be understood to promote effective generation of bio-oil. In this study, the degradation of feedstock particles is examined within an optically accessible laboratory-scale pyrolysis cell. In order to determine the physical extent and the phase transitions involved, two optical diagnostics are developed and implemented within this cell. High-speed imaging of the overall feedstock decomposition at various cell conditions is performed. Digital in-line holography is tested under various micro-scale conditions, and is used to examine ejective boiling of guaiacol, a phenolic product of lignin pyrolysis. Finally, holography is used to measure particle location and size throughout the injection event, and this information is used in conjunction with the high-speed images to determine phase and physical extent of biomass during the initial stages of a pyrolysis reaction. Funding provided by research undergraduate experience (REU) IINSPIRE-LSAMP, Epscor, and Mosaic.

Student Opportunities Fair Exhibitors

Association of Universities for Research in Astronomy (AURA)

The IINSPIRE LSAMP Program, in partnership with the Association of Universities for Research in Astronomy (AURA), will offer internships during 2014. This program is intended to provide students with work and research experience in a major astronomical observatory. Although all applicants will be considered, special consideration will be given to engineering and computer science students. In addition, applicants are expected to have course work and experience that will enable them to contribute to the work of the observatory.

Intern positions encompass the entire range of technical and scientific skills involved in operating modern observatories. To accomplish research in astronomy using the most advanced telescopes, the staffs of AURA's observatories include electrical engineers, mechanical engineers, optical engineers, software engineers. These engineers work in partnership with our scientists and participate in the end-to-end development of some of the world's most advanced astronomical instrumentation. The experience gained by students in the learning and research environment we offer would be broadly applicable in a number of industrial settings as well.

The Association of Universities for Research in Astronomy (AURA) is a consortium of 39 US institutions and 7 international affiliates that operates world-class astronomical observatories. AURA's role is to establish, nurture, and promote public observatories and facilities that advance innovative astronomical research. In addition, AURA is deeply committed to public and educational outreach, and to diversity throughout the astronomical and scientific workforce. AURA operates observatories at the following locations:

Center for Biorenewable Chemicals REU Program

The National Science Foundation's (NSF) Engineering Research Center's Center for Biorenewable Chemicals (CBiRC) will host REU students who will work toward achieving CBiRC's core mission of transforming the US chemical industry by integrating biological and chemical catalysis systems to produce biorenewable chemicals. The REU students will work in CBiRC labs conducting fundamental research to address the underlying technical challenges in the development of new integrated catalytic systems for the conversion of bio-based feedstocks to industrial chemicals.

CenUSA Bioenergy Research Internship for Undergraduate Students

The summer 2014 CenUSA Bioenergy Research Internship Experience for Undergraduates will provide rich interdisciplinary training and engagement opportunities for undergraduate students in all areas of the bioenergy value chain to meet the workforce challenges of the emerging bioeconomy.

The research internship program will enroll a class of 12 students, with all students spending the first five days in the program at the Iowa State University host site. While a portion of the students will remain at Iowa State University, several of the students will then travel to one of CenUSA's partner institutions (depending on their research interests) to complete their summer program at a partner lab. All students will maintain contact with the program through distance technologies for weekly meetings, seminars, and final presentations.

For more information or to apply, visit: <http://www.abe.iastate.edu/cenusa/>

Community College Internship (CCI) - U.S. Department of Energy's Ames Laboratory at Iowa State University

The Community College Internship (CCI) program seeks to encourage community college students to enter technical careers relevant to the DOE mission by providing technical training experiences at the DOE laboratories. Selected students participate as interns appointed at participating DOE laboratories, including the Ames Laboratory. They work on technologies or instrumentation projects or major research facilities supporting DOE's mission, under the guidance of laboratory staff scientists or engineers. Applications for the CCI program are solicited annually for the summer term. Internship appointments are 10 weeks in duration.

CCI website: <http://science.energy.gov/wdts/cci/>

Contact: Steve Karsjen, Education Programs Director, karsjen@ameslab.gov

Emerson Process Management, Fisher Controls Division

Nothing comes close to the career opportunities we provide at the Fisher business of Emerson. Whether you are a recent grad looking for a full-time opportunity or a current student looking for an experiential education opportunity, the Fisher business of Emerson offers challenging and rewarding work that will utilize and grow your knowledge, skills, and experience base. The Fisher business of Emerson is the largest control valve manufacturer in the world. Being part of a division that is the world leader in process controls systems and solutions shows our proven past and our promising future. As a global company, the Fisher business of Emerson is committed to continue to lead the industry with time-tested and innovative solutions. If you want to work in an environment where people, teamwork, and quality truly make a difference, Fisher is the place for you.

Interdepartmental Genetics

Graduate program in Genetics (Animal, Plant, Microbial, Genomics, etc.)
Summer Internships at Iowa State University.

Nahant Marsh

Nahant Marsh is a 256 acre treasure nestled in Southwest Davenport. It is part of the 513 acre wetland complex that is bordered by the Mississippi River, Interstate 280, and Highway 22. Nahant Marsh preserve is one of the largest urban wetlands on the Upper Mississippi River. Nahant Marsh was used for skeet and trap shooting from the 1960's to the 1990's. Because of the lead left behind, the marsh was declared an EPA Superfund site and was cleaned up in 1999. After that time, the site was declared a preserve and educational center. The city of Davenport, the Nahant Board, Eastern Iowa Community College District, and River Action are all parts of Nahant Marsh.

Research is an integral part of Nahant Marsh. We are able to expand our knowledge of the ecosystems found here, which allows us to better maintain this amazing natural area. Research projects also allow students to participate in exciting projects and gain hands-on experience in their field of study. We offer research opportunities in the fields of Wildlife Biology, Ecology, Animal Behavior, Botany, Hydrology, Chemistry, Genetics, Geology, Geography, Toxicology, and many more.

National Aeronautics and Space Administration (NASA) Pathways Program

The NASA Pathways Programs provide opportunities for students and recent graduates to be considered for Federal employment. This page provides a listing of current NASA Pathways Intern Employment Program (IEP) and NASA Pathways Recent Graduates Program (RGP) opportunities.

Science Undergraduate Laboratory Internship (SULI) - U.S. Department of Energy's Ames Laboratory at Iowa State University

The Science Undergraduate Laboratory Internship (SULI) program encourages undergraduate students to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories. Selected students participate as interns appointed at participating DOE laboratories, including the Ames Laboratory. They perform research, under the guidance of laboratory staff scientists or engineers, on projects supporting the DOE mission.

Applications for the SULI program are solicited annually for three separate internship terms. Internship appointments are 10 weeks in duration for the summer term (May through August) or 16 weeks in duration for the fall term (August through December) and spring term (January through May) terms.

SULI website: <http://science.energy.gov/wdts/suli/>

Contact: Steve Karsjen, Education Programs Director, karsjen@ameslab.gov

Visiting Faculty Program (VFP) - U.S. Department of Energy's Ames Laboratory at Iowa State University

The Visiting Faculty Program (VFP) seeks to increase the research competitiveness of faculty members and their students at institutions historically underrepresented in the research community in order to expand the workforce vital to the Department of Energy (DOE) mission areas. As part of the program, selected university/college faculty members collaborate with DOE laboratory research staff on a research project of mutual interest. Faculty member participants may invite up to two students (one of which may be a graduate student) to participate in the research project.

Applications for the VFP are solicited annually for appointments to the summer term (May through August), which is 10 weeks in duration. Each of the participating DOE laboratories, including the Ames Laboratory, offer different research opportunities and interested faculty members are encouraged to contact Ames Laboratory scientists in advance to discuss research projects of mutual interest. All VFP faculty applicants must submit at the time of application a research project proposal co-developed with the collaborating research staff located at the host DOE laboratory.

VFP website: <http://science.energy.gov/wdts/vfp/>

Contact: Steve Karsjen, Education Programs Director, karsjen@ameslab.gov

Wind Energy Science, Engineering, and Policy - PhD Program

This program is an Interdisciplinary Graduate Education and Research Traineeship (IGERT), sponsored by the US National Science Foundation, to train PhD students in WESEP at Iowa State University. Expected time to degree is 4 years beyond Bachelors

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