



2013-14 ANNUAL CONFERENCE

Building Community for Student Success in STEM

Hawkeye Community College | Tama Hall | November 8, 2013





O F F I C E O F T H E P R E S I D E N T

Welcome to the 2013-2014 Annual Conference of the Iowa Illinois Nebraska LSAMP Alliance!

Dear Conference Participant:

Hawkeye Community College is pleased to host the second conference of this alliance among 15 state and private universities and community colleges. We are excited to have you join us for this special event. The theme of the conference, *“Building Community for Student Success in STEM”*, captures the spirit of the IINSPIRE Alliance to enhance collaboration and communication within and among partner institutions to benefit students in their journey to a STEM degree. The alliance has set an ambitious goal to double the number of underrepresented minority graduates in STEM by 2016. We will meet this goal through our collective efforts, and this Conference represents an important step forward.

The conference program provides opportunities for all participants to learn more about the alliance and to explore practices that will assist faculty and staff to promote student success. Opportunities to network and collaborate with one another will allow colleges to continue to build a healthy academic pipeline for STEM students to follow from freshman through graduate degree. There will also be opportunities for faculty, staff, and students to meet together to exchange best practices in communication, such as social media, that will support student learning and success.

I'd like to thank each of you for attending the conference and making choices that will enhance student success. I'd also like to thank those who have supported the conference. The National Science Foundation Louis Stokes Alliances for Minority Participation Program has provided funding for the conference and the alliance. Hawkeye Community College and Iowa State University have provided funding and services. The conference planning committee, comprised of campus directors and members of the alliance office, deserves recognition and appreciation for organizing this event.

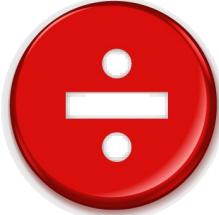
Please enjoy your day!

Linda Allen, Ph.D.
President, Hawkeye Community College

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Featured Keynote

Aurelio Curbelo, Director of Multicultural Programs

College of Agricultural & Life Sciences, Iowa State University

Building Global Academic Opportunities for Multicultural Students in the ASTEM Areas

The purpose of this presentation is to inform the audience about the current demographic changes in the United States, future academic opportunities, and the importance of encouraging future leaders to participate at a global level. The presentation will highlight the academic opportunities available for multicultural students in higher education in the areas of agriculture, science, technology, engineering, and mathematics. Dr. Curbelo will also provide his professional advice on how to prepare multicultural students with scientific, leadership, and global experiences.



Dr. Aurelio Curbelo is the Director of the Multicultural Programs Office in the College of Agriculture & Life Sciences at Iowa State University. For over 10 years. Dr. Curbelo has been promoting diversity, facilitating academic opportunities, and providing research experiences to under-represented students in the areas of agriculture, science, technology, engineering, and mathematics. His education at Iowa State University includes bachelor and master's degrees in Agricultural Education and Studies and a doctoral degree in Educational Leadership and Policy Studies. Dr. Curbelo researched the impact of the secondary agricultural education program on Latino students in Iowa public schools. Furthermore, Dr. Curbelo conducted unique international research for his doctoral degree about the global leadership, programs, and agreements in Central American universities. Dr. Curbelo is also a very knowledgeable individual on the issues of Latinos in higher education and their historical involvement in the agriculture industry of the United States. Nowadays, Dr. Curbelo continues being an example of academic excellence, a great Latin American leader, and a dedicated individual promoting student participation in agriculture, science, technology, engineering, and mathematics. He intends to employ his creativity and professional skills to help maximize the learning experiences of students at a global level with an array of academic knowledge, innovative ideas, and leadership skills in the agricultural sciences.

Conference Schedule

Student Track

Schedule		
8:00 — 9:00am	Registration and Breakfast Poster Session Set-up	Lobby Tama Hall Brock Student Center
9:00 — 10:30am	STUDENT POSTER PRESENTATIONS	Brock Student Center
9:45 — 10:30am	Break	Lobby Tama Hall
10:30 — 11:45am	SESSION: STUDENT CAREER DEVELOPMENT WORKSHOP <i>Adin Mann, Douglas Mupasiri, Kahntinetta Pr'Out</i>	106 Tama Hall
11:45 — 1:00pm	Lunch Buffet KEYNOTE ADDRESS: Aurelio Curbelo <i>Building Academic Opportunities for Multicultural Students in STEM</i>	Tama Hall Lobby 102 & 106 Tama Hall
1:10 — 1:30pm	Awards	105 Tama Hall Auditorium
1:30 — 2:30pm	SESSION: COMMUNITY BUILDING AND RECRUITMENT THROUGH SOCIAL MEDIA <i>Debra Sanborn, Queenster Nartey, Kata McCarville, Mary Pat Moore</i>	105 Tama Hall Auditorium
2:30 — 3:30pm	SESSION: COMMUNITY BUILDING AND RECRUITMENT THROUGH SOCIAL MEDIA BREAKOUT: Students <i>Adin Mann, Douglas Mupasiri, Kahntinetta Pr'Out</i>	106 Tama Hall
3:30 — 5:00pm	RESEARCH/INTERNSHIP OPPORTUNITIES FAIR	Lobby Tama Hall

Conference Schedule

Faculty, Staff, and Professionals Track

Schedule		
8:00 — 9:00am	Registration and Breakfast	Lobby Tama Hall
8:30 — 9:45am	SESSION: PEDAGOGY WORKSHOP ON COMMUNITY BUILDING I <i>Ellen Iverson, Jim Swartz, Aurelio Curbelo, Jermaine Johnson, Douglas Mupasiri, Brian Ritter</i>	102 Tama Hall
9:45 — 10:30am	Break Student Poster Presentations	Lobby Tama Hall Brock Student Center
10:30 — 11:45am	SESSION: PEDAGOGY WORKSHOP ON COMMUNITY BUILDING II <i>Ellen Iverson, Jim Swartz, Aurelio Curbelo, Jermaine Johnson, Brian Ritter</i>	102 Tama Hall
11:45 — 1:00pm	Lunch Buffet KEYNOTE ADDRESS: Aurelio Curbelo <i>Building Academic Opportunities for Multicultural Students in STEM</i>	Tama Hall Lobby 102 & 106 Tama Hall
1:10 — 1:30pm	Awards	105 Tama Hall Auditorium
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2:30 — 3:30pm	SESSION: COMMUNITY BUILDING AND RECRUITMENT THROUGH SOCIAL MEDIA BREAKOUT: Faculty, Staff, and Professionals <i>Debra Sanborn, Queenster Nartey, Kata McCarville, Mary Pat Moore</i>	102 Tama Hall
3:30 — 5:00pm	RESEARCH/INTERNSHIP OPPORTUNITIES FAIR	Lobby Tama Hall

Presenter Biographies

Linda Allen has been president of Hawkeye Community College, Waterloo, for nearly three years. Dr. Allen came to Hawkeye as Vice President of Academic Affairs in January, 2006. Prior to coming to Hawkeye, she served as Executive Dean of Arts and Humanities at Kirkwood Community College in Cedar Rapids. Dr. Allen earned her M.A. and Ph.D. in Medical Anthropology from the University of Iowa. Her scholarly research and publications are in the areas of medical anthropology, transcultural psychology, Asia-Pacific Rim relations, and gender studies.

Her community service includes serving on the Allen College Board of Trustees; the Greater Cedar Valley Alliance Board of Directors; the Regional Workforce Investment Board of Directors; The Cedar Valley United Way Women's Philanthropy Connection Board of Directors; Junior Achievement of East Central Iowa Regional Executive Board of Directors; the National Alliance of Concurrent Enrollment Partnerships Board of Directors; and as a member of the Waterloo Rotary and the Waverly Education Roundtable.

David Holger, Associate Provost for Academic Programs and Dean of the Graduate College at Iowa State University, received his B.S., M.S., and Ph.D. degrees in Aerospace Engineering from the University of Minnesota in 1970, 1971, and 1974, respectively. He was a Churchill Scholar at Cambridge University during the 1971-1972 academic year and received a Certificate for Post-Graduate Research in Engineering from Cambridge in 1972. He joined the Department of Engineering Science and Mechanics at ISU in 1974 and was promoted to professor in 1984. In 1990, Holger was appointed chairman of the new Department of Aerospace Engineering and Engineering Mechanics that was formed by the merger of the Department of Aerospace Engineering with the Department of Engineering Science and Mechanics. He was appointed Associate Dean for Academic Programs and Budget of the College of Engineering in 1995. In 2004 he was named Associate Provost for Academic Programs and Dean of the Graduate College.

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.

Jermaine Johnson is a doctoral student in the School of Education at Iowa State University. He focuses his studies and research primarily on issues of access and diversity as well as legal issues affecting higher education. In addition to his studies, Jermaine coordinates the HHMI Summer Scholars Program at ISU (the "Summer Scholars Program"), a summer research opportunity for underrepresented ethnic-minorities interested in STEM fields. Among his many duties in working with the Summer Scholars Program, Jermaine serves as a mentor for program participants, hires and supervises student mentors, plans learning and professional development activities, and analyzes data from program assessments and uses this data in developing and implementing program improvements. Jermaine also teaches an upper level undergraduate course in communications law. Jermaine has juris doctorate from the University of South Carolina and a bachelor's degree in chemistry from Clemson University. Prior to his doctoral work, Jermaine practiced law in Greenville, South Carolina. He has also worked as an investigator for the Iowa Civil Rights Commission and as a chemist at the Savannah River National Laboratory.

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.

Kata McCarville teaches geology, soils, hydrogeology (and more!) as associate professor of geosciences at Upper Iowa University in Fayette, Iowa. Trained as a geologist, she spent 18 years in information technology, computing and networking, mostly at the Colorado School of Mines and the South Dakota School of Mines. She has had an email address since 1980, and is an “old school” techie. In addition to teaching, Kata does a bit of research on fossil birds. She holds a private pilot’s license and enjoys cross-country air racing.

Mary Pat Moore is an experienced marketing and communications professional with more than 20 years of experience. She is the Director of Public Relations and Marketing at Hawkeye Community College and leads the college’s strategic marketing and communications efforts. Her responsibilities include managing publications, media relations, website and digital communications, and social media. She led the web team that created a nationally award winning website and was one of the first colleges in Iowa to develop a fully mobile website. Additionally, she co-led the implementation of texting for college emergency and crisis communications. She has won several National Council of Marketing and Public Relations Medallion and Paragon awards. Through her career, Mary Pat has built a solid track record of achieving results in both her agency work managing client relationships and in her role of new business development in the communications industry, where she was a top producer. She holds a bachelor’s degree in Marketing from the University of Northern Iowa.

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.

Queenster Nartey is a second year student at Grinnell College majoring in biological chemistry with a neuroscience concentration. She plans to study abroad in Denmark during the fall 2014 semester. This past summer she received funding support through the IINSPIRE LSAMP Program to conduct research at Iowa State University. She also works in the Office of Admissions as a Multicultural Intern and a tour guide and as a research assistant in a biology lab. She plans to attend medical school or pursue an MD/PhD degree.

Kahntinetta Pr’Out graduated from Savannah State University with a B.S. in Mathematics. She was a member of the Peach State Louis Stokes Alliance for Minority Participation from 2008 – 2012. Currently, she is pursuing a Ph.D. in Applied Mathematics at Iowa State University.

Brian Ritter is the Facilitator of Nahant Marsh and the Program Director for Conservation Technology through the Eastern Iowa Community Colleges (EICC) and the Advanced Technology Environmental and Energy Center (ATEEC). He teaches EICC courses on site and uses Nahant preserve as an outdoor classroom. Brian has been Facilitator since 2007 and has began and sustained many environmental education programs, biological research projects, and natural resource management practices.

Debra Sanborn is a program director in student affairs and lecturer in the School of Education at Iowa State University. She is director of the Hixson Awards Program and National Student Exchange and has also served as interim director of the Academic Success Center and acting director of New Student Programs. Debra was a director of admissions for private colleges in Iowa and California prior to joining Iowa State. She has taught first-year seminar for 17 years in addition to leadership development and multicultural identity courses. Debra is a founding member of the online weekly discussion Student Affairs Chat (#SAchat) on Twitter and past editor of the Student Affairs Collaborative Blog.

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.

Session Descriptions

Pedagogy Workshops on Community Building | Room 102

Faculty, Staff, and Professionals Session

8:30—9:45am

10:30—11:45am

Speakers

Ellen Iverson, *SERC at Carleton College*

Jim Swartz, *Grinnell College*

Aurelio Curbelo, *Iowa State University*

Jermaine Johnson, *Iowa State University*

Douglas Mupasiri, *University of Northern Iowa*

Brian Ritter, *Eastern Iowa Community College District*

Creating a supportive community is critically important for the success of all students. Having sense of belonging and identifying as part of the science community contributes to persistence. Members of groups traditionally under-represented in STEM are likely to be more sensitive to this the presence or lack of such community as they typically lack other role models and experience discouragement more frequently than other students. This workshop will explore some models of enhancing such community and engage participants in discussions of ways in which they might explicitly and implicitly improve the sense of community on their campuses (and beyond).

Career Development Workshop | Room 106

Student Session

10:30—11:45am

Speakers

Adin Mann, *Emerson—Fisher Controls Division*

Douglas Mupasiri, *University of Northern Iowa*

Kahntinetta Pr'Out, *Iowa State University*

During this session students explore strategies and actions to build social capital for their career development. Students will examine peer to peer and student to professional social capital. There will also be a fun activity to sharpen our networking skills and dull our networking anxieties.

Community Building and Recruitment through Social Media | Room 105 Auditorium

Joint Session for Faculty, Staff, Professionals, and Students

1:30—2:30pm

Speakers

Debra Sanborn, *Iowa State University*

Queenster Nartey, *Grinnell College*

Kata McCarville, *Upper Iowa University*

Mary Pat Moore, *Hawkeye Community College*

This session will present literature that is driving the use of social media in higher education and research based practices which create a college community and effective recruitment through social media. Faculty, staff, and students will discuss and plan social media strategies that build community for student success in STEM.

**Community Building and Recruitment through Social Media Breakout:
Faculty, Staff, and Professionals** | Room 102

2:30—3:30pm

Speakers

Debra Sanborn, *Iowa State University*

Queenster Nartey, *Grinnell College*

Kata McCarville, *Upper Iowa University*

Mary Pat Moore, *Hawkeye Community College*

This session will present literature that is driving the use of social media in higher education and research based practices which create a college community and effective recruitment through social media. Faculty, staff, and students will discuss and plan social media strategies that build community for student success in STEM.

Community Building and Recruitment through Social Media Breakout: Students | Room 106

2:30—3:30pm

Speakers

Adin Mann, *Emerson—Fisher Controls Division*

Douglas Mupasiri, *University of Northern Iowa*

Kahntinetta Pr'Out, *Iowa State University*

Students will develop ideas and plans to use social media to develop the social capital that they identify in the morning workshop. Differences between access to social media as a student and in a professional workplace will be discussed.

Student Posters

Rural Community Health Needs Assessment

Marlu Abarca, Grinnell College

The Community Needs Health Assessment (CNHA) is an assessment conducted by the Grinnell Regional Medical Center as required by the new federal Patient Protection and Affordable Care Act. Under this act, all nonprofit hospitals are mandated to conduct a CHNA survey at least once every three years and create an action plan to address community needs and concerns. The Grinnell Regional Medical Center, the town of Grinnell, IA, Poweshiek County and surrounding counties are working in collaboration with Grinnell College and its students to create action plans to address the community's top ten concerns: 1) Obesity, 2) Mental Health, 3) Preventative care, 4) Wellness education, 5) Nutrition, 6) Access to care, 7) Urgent care, 8) Insurance, 9) Quality of care and 10) Transportation.

Spatial Variability in Wetland Denitrification Rates

Fidencio Balderas, Marshalltown Community College

Mentors: Ian Ellickson and Dr. W.G. Crumpton

Nonpoint source loads of nitrate-nitrogen in agricultural drainage to surface waters in the U.S. corn belt are among the highest in the country (Iowa Department of Agriculture and Land Stewardship, 2013). These nitrogen loads can negatively affect human health where such water is used for drinking water supplies and are suspected to contribute to hypoxia in the Gulf of Mexico (Iowa Department of Agriculture and Land Stewardship, 2013). Strategically located and designed wetlands constructed through the Iowa CREP (Conservation Reserve Enhancement Program) are one of the most promising off-site strategies for reducing surface water contamination. Research conducted at Iowa State University has demonstrated that targeted wetlands have the potential to remove 40-90% of the nitrate in tile drainage from upper-lying croplands (Iowa Department of Agriculture and Land Stewardship, 2013). The effect of wetlands on large scale nitrate reduction is largely determined by the fraction of the total nitrate load that the wetlands intercept and the ability to remove nitrate which is determined by overall rate of denitrification. The objective of this study is to determine spatial variability in denitrification potential under ideal conditions and identify aspects associated with that variability. Observations from this study indicate cores containing live vegetation or with a substrata consisting primarily of sand within the top two inches of the soil core had the lowest rates of denitrification. Cores containing fine sediment within the top two inches of the soil core or containing large quantities of detritus had the highest rates of denitrification. Doing the experiment twice allowed for improvements in sampling technique which in the second experiment yielded less variation and overall spread in rates of denitrification. In the second experiment samples were collected from a wider variety of areas in the Schwartz wetland to enhance the scope of spatial analysis. Due to high variability within replicates taken in the same location, in comparison to variation between spatially distant samples, it was observed that individual core attributes affect rates of denitrification more than spatial location within the wetland.

How do Scallops Swim?

Stanley Barbel, Iowa State University

Mentors: Dr. Jeanne Serb and Dr. Dean Adams

In my research I studied and implemented Computational-Fluid Dynamics (CFD) on the movement of scallops under different conditions using Reynolds Number, Bernoulli Principle and angles of attack. The Computational-Fluid Dynamics models would be developed in MATLAB following the same condition as Itaru Hayami (1991) experiment, which was a flow tank experiment to understand scallop swimming in term of hydrodynamics mechanism. He found that the scallop shell functions in a different way depending on the circumstances placed on it (much like an airfoil). My abstract idea was to recreate the experiment only using MATLAB by treating the scallop shell like an airfoil, and identify the mean cumber line of a tracing of the shell profile from this, I would find the lift and drag coefficients and estimate my results. The idea of my project was to approximate coefficients of lift and drag for scallop swimming using a MATLAB simulation. Once a suitable code was put together I would then try different kinds of scallops to examine which is the most efficient swimmer and why. With my results I can predict and closely examine pitch, roll, and yaw paying partially close attention to the tailing edge. After all data is collected I would apply my findings to engineering, from ailerons to rotors and even marine craft.

Reactive Arrays of Colorimetric Sensors for Metabolite and Steroid Identification

Gary Bates, *Doane College*

Mentors: *Talia Jones, Hannah Johnke, Dr. Mark Wilson, Dr. Andrea E. Holmes, and Dr. Sharmin Sikich*

The work described herein examines a rapid mix-and-measure method called DETECHIP suitable for screening of steroids and metabolites. The addition of steroids and metabolites to reactive arrays of colorimetric sensors generated characteristic color “fingerprints” that were used to identify the analyte. A color analysis tool was used to identify the analyte pool that includes biologically relevant analytes. The mix-and-measure arrays allowed the detection of disease metabolites, such as orotic acid and argininosuccinic acid; and steroids, such as androsterone and estrone. The steroid 1, 4-androstadiene was also detected by this method while dissolved in synthetic urine. Some of the analytes, such as an-drostadiene, stanzolol, and androsterone were co-dissolved with (2-hydroxypropyl)- β -cyclodextrin in order to increase solubility in aqueous buffered solutions. The colorimetric arrays do not intend to eliminate ELISA or mass spectroscopy based screening, but to possibly provide an alternative analytical detection method for steroids and metabolites.

Tracking Stress & Fatigue in Composite Structures

Jordan Becquer, *Iowa State University*

Mentor: *Daniel J. Barnard*

There has been a huge increase in the use of composites in military and commercial applications. Composites offer increased weather resistance, high strength-to-weight ratio, and stiffness. Following the rise in composite usage, the operator needs to determine the best way to way to increase their ability to detect and track fatigue.

Invisible, low energy damage (micro-cracks) can initiate de-laminations in composite laminates with subsequent fatigue. The ability to track the growth of damage can help prevent catastrophic failure in the field.

Synthesis and Reactivity of Oxenium Ions

Lamin A. Ceesay, *Mashalltown Community College*

Mentor: *Patrick Hanway*

Chemical reactions frequently occur within our bodies, in very quick chemical processes, as well as in commercial productions like the creation of polymers or plastics in the megaton scale. Many times these reactions go through intermediates that are extremely unstable and difficult to isolate. To understand these reactions and to better predict them, one must understand the intermediates. With a better understanding of these reactants, one can better predict biological reactions, and also increase production of polymers or plastics that would result in more profit. A reactive intermediate is an extremely short-lived species that lives in solution for only a fraction of a second (a billionth or a trillionth of a second). This is the reason why such a species can be extremely difficult to observe. However, one can infer their presence based on the products formed after the reactions occur. Some of these intermediates are called oxenium ions. A precursor compound refers to a compound that leads to the desired product. In order to gain a more comprehensive understanding of oxenium ions, we synthesized precursors to oxenium ions that can be generated using light or heat, which then can be detected using laser spectroscopy. Due to time factor, I was not lucky enough to actually do the laser studies as the nanosecond laser we have had some issues, and the femtosecond laser is only available at the University of Tokyo. The cool thing however is, we can actually predict these reactions ahead of time with the computational modeling without even going into the lab; and this software solves really complex equations that you do not have to do yourself. My mentor would continue more studies on these intermediates.

Experiencing LabVIEW

Edgardo Diaz, *Iowa State University*

Mentors: *Dr. Richard Wlezien and Hephzibah Clemons*

Laboratory Virtual Instrumentation Engineering Workbench (LabVIEW) is a program used mainly for data acquisition (DA), instrument control and industrial automation. During the summer, this program was used to control linear rails and pressure sensors that would allow the graduate students to obtain the data needed to prove the low turbulence in the wind tunnel. The turbulence was measured using hotwires and linear rails. My main goal during the summer was to complete three programs: 1) translating a MatLab code to a LabVIEW code that would graph the pressure distribution on an airfoil, 2) programming the movement of three different linear rails that would represent the x, y, and z axis inside the wind tunnel, and 3) collecting data from pressure ports and storing them in a spreadsheet. Completing these tasks on time was challenging since it was my first time working with LabVIEW and every instrument used in the lab and had no prior experience with the different communication protocols. Despite the challenges faced in an effort to completing the assigned tasks, I was able to successfully finish the first two programs during the summer and completed the third one during the

Student Posters

Experiencing LabVIEW (cont.)

fall. Most importantly and additional to the results obtained for the programs at the lab, I had personal achievements regarding my professional career. Among other things, I had the opportunity to expand professional network and to have hands-on experience in an Aerospace Engineering lab. With this summer program, I also had the opportunity to participate in the LabVIEW Bootcamp and earn a globally recognized entry-level certification, the Certified LabVIEW Associate Developer (CLAD).

With its advanced graphical programming, LabVIEW facilitates the design and creation of a program that allows programmers to control their DA instruments and give users accurate and reliable results. With LabVIEW can communicate with thousands of instruments through different communication protocols, such as Universal Serial Bus (USB), Ethernet, which were used to communicate with the lab instruments. In addition to this, information in LabVIEW can also be sent to other programs, such as an Excel Spreadsheet.

Making Images by Hand and By Code Motivating Students with Multi-Language Interactive Media Application Scripting

Martin Estrada, *Grinnell College*

Mentors: Chukwunweike T. Abuah, Rogelio Calderon, Zarni Htet (Cornell) Adriana M. Hurley, Katherine Ingersoll, Hart Russell, Sydney Ryan, Kimberly Spasaro , Prashanna Tiwaree and Dr. Samuel A. Rebelsky

Computer science has different focus areas. An area that draws people's interests in computer science is programming, drawing, and testing in code. We used interactively scripting applications to encourage non-programmers to learn programming concepts. We choose interactive scripting, because it is more efficient, precise, and let students explore alternatives. This research was performed using the following programs: Inkscape, D-bus, and Wingware Python IDE. Our goal was to get the Inkscape program, a drawing program, to communicate with Wingware program, a programming program, through the D-bus, a programming program. In Inkscape the SVG file formatting has the potential to support some kind of scripting such as sending SVG to script and having the script return modified SVG. Inkscape recently gained a D-bus extension. A downfall to the Inkscape D-bus interface was that not all important features were supported such as textures. Also some methods names conflicted with reserved word already in the program. The Inkscape D-bus procedures have intuitive names and limited number of parameters that will be easy on the non-programmers students. We concluded that designing a D-bus interface for an application can be difficult, because one must reveal a wide variety of functions. Also to support beginning programmers, one must provide appropriate simple versions of functions, easier way to select a service. Some scaffolding can be language-independent while other scaffolding might require new implementation for each language. In the future, we expect to rewrite the Inkscape D-bus interface to take advantage of new glib/gio libraries and to support additional operations.

Tumor Suppression in Leukemia- Identifying Target Genes of Tumor Suppressor Ikaros in Leukemia Cells

Nathalie Fuentes, *Iowa State University*

Mentors: Chunhua Song, Ph.D. (Penn State University) and Sinisa Dovat, MD/Ph.D. (Penn State University)

Leukemia is a type of bone marrow cancer characterized by an abnormal increase of white blood cells. Studies indicate that mutations and genetic inactivation in the Ikaros gene play an important role in triggering acute lymphoblastic leukemia. The Ikaros family of zinc finger transcription factors is important regulators of immune system development. Loss or mutation of Ikaros results in dramatic decreases in T cells, B cells, NK, and lymphoid-derived dendritic cells. Our research is focused on the tumor suppression genes such as Ikaros that acts as a transcription factor, binding DNA to regulate gene expression.

We hypothesized that the tumor suppressor such as Ikaros exerts its inhibitory function on tumor by suppressing its target gene expression. To validate our hypothesis, we used Chromatin Immunoprecipitation (ChIP) assay combined with real-time PCR (qPCR), called qChIP, to identify the genes whose expression is directly regulated by Ikaros. Using this technique we calculate the difference in Ikaros binding to the promoter region of the target genes versus nonspecific binding (control). In addition, we cloned the promoter region of these genes into luciferase report vectors for in vitro luciferase transcription assays. HEK293T cells were transiently transfected with the indicated promoter reporter constructs and pcDNA3.1-Ikaros or pcDNA3.1 vector. Luciferase activities were expressed as -fold change relative to values obtained from pGL4.74[hRluc/TK] vector only control cells.

The results showed that the increased binding of Ikaros to MYC, and two other novel target genes are 4.4, 3.9 and 8.5, respectively as compared to control. These results indicate that Ikaros binds to the promoter regions of these genes.

Our data indicated that Ikaros binds to the promoter region of MYC, and two other novel target genes by ChIP-qPCR assay. Also, Ikaros suppresses the promoter activity of MYC and other two novel genes by luciferase report assay. C-MYC and other two novel genes are Ikaros target genes and it may exert its tumor suppression function by inhibition of their expression. Therefore, Ikaros dramatically inhibits the luciferase activity when it is co-expressed with the above constructs in HEK293 cells. Taken together, our results suggested that one of the mechanisms by which Ikaros exerts its tumor suppression function is by inhibition of expression of its target genes.

Electrical to Mechanical-Actuation of a Cantilever by Electric Field

Norma Granados, *Marshalltown Community College*

Mentor: Manan Sevak (Oakland University)

The ability to convert biochemical reactions to mechanical work has been an ongoing research topic on the minds of researchers over many years. Many researchers have conducted different projects to try and convert chemical reactions to mechanical work, to use as means of motion for work in mechanical fields. The ability to convert the biochemical reactions into mechanical work, to incorporate artificial parts into biological structures successfully, can open many possibilities for the future. As the years pass, new nano-structures are being developed that can imitate biomolecules and structures. Two studies that have spoken about these possibilities is of Wenmiao Shu and his group and Ian Y. Wong and his group of researchers. The research project and Dr. Shrotriya et al are working on is a combination of what Shu et al and Wong, et al did in their project and extending it slightly further. Their study is very important as it would agree that we can use an electrical field to change the conformation of molecules that is associated with surface stress and deflection. What is being proven is that the electrical field will be the only factor that will change the conformation of a molecule and nothing else. They have already proven that the conformation change will affect the binding. It is an important step because if we know that the electrical field will change the conformation of a molecule, then we can use this change to control the cantilever and its bending and use it for future projects.

Center for Nondestructive Evaluation

Courtnee Jackson, *Iowa State University*

Mentor: Dr. Joseph Gray

Over the summer I had the Pleasure of working at the Center for Nondestructive Evaluation doing NDE (Nondestructive Evaluation) work. NDE is referred to as the different methods of analyzing the properties of a component or system and identifying any deformities or cracks in its infrastructure that may cause it to destruct.

If you think about it, NDE work is very important. There are many things that are at our disposal for our convenience such as cars and airplanes or even our copy machines at work. What NDE does is insure our safe and reliable use of those things.

The method of NDE that I used this summer was radiography. I would take CT scans(a method using x-rays)of an object of interest. The images produced from taking the scans could then be manipulated into a 3-D representation of the object. The last step would be going through the images viewing and focusing in on any deformities or cracks in the object that may cause it to destruct.

Targeted Deletion of Zebrafish IncRNAis18 with TALENs

Crystal Jones, *Iowa State University*

Mentors: Staci L. Solin, Dr. Jeffery J. Essner and Dr. Maura McGrail

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 Nucleases (TALENs), 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 lncRNAis18 gene. The objective of this project is to isolate a second zebrafish lncRNAis18 allele that contains a deletion of part of the lncRNAis18 gene. Two TALEN pairs were designed to simultaneously target double-strand breaks to exons 2 and 5 of lncRNAis18. Injection of 25-40pg of the TALENs targeting individual exons into zebrafish embryos resulted in efficient mutagenesis of the target sites. To isolate the lncRNAis18 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 lncRNAis18 would create a 147kb deletion after loss of the intervening sequence and repair by the non-homologous endjoining 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 identified one founder that transmits the deletion allele to the F1 generation. F1 embryos are being raised to establish a new lncRNAis18del line. The lncRNAis18 deletion allele will provide a new genetic tool to study the function of lncRNAis18 in zebrafish development and cancer.

Student Posters

The Effect of a Change in pH Levels on the Surface Tension of Water in Vegetable Oil

Hyaquino Hyacinthe, *Iowa State University*

Mentor: Dr. Thomas Ward

The purpose of this project is to try to stabilize a water-in-vegetable oil emulsion for use as a biofuel. Adding water to the fuel mixture has been shown to significantly reduce NOx and smoke emissions, however the shelf-life of these emulsions is limited by how long it takes for the drops to settle out. Adding surfactants can significantly slow the sedimentation rate by inducing Marangoni stresses. In the case of a vegetable oil-based fuel adding sodium hydroxide to the water can create surfactants through saponification. Aqueous sodium hydroxide drops with pH between 11 and 13 are allowed to settle in several oils such as corn, canola, soybean and olive. Each oil has a different composition of fatty acids and different sedimentation rates. The decreased, and in some cases increased, settling time of the drops compared to a clean water drop is observed.

L.A.S.E.R. (Light Aircraft Solar Extended Range)

Jan Michael Lopez, *Iowa State University*

Mentors: Matthew Nelson and Rohan Sharma

The Light Aircraft Solar Extended Range (LASER) team is building an aircraft capable of flying on alternative energy. The team has been able to successfully integrate flexible solar cells into the aircraft wings and is currently exploring Hydrogen fuel cells usage. My contribution Summer 2013 with team members included but is not limited to the design and manufacturing of the wings and fuselage of the LASER prototype. We have flown the prototype with different propeller sizes and a battery operated motor. Unfortunately, the motor used was not strong enough to sustain flight. Based on results, it is our hope to utilize a new motor that has durability and power to launch and stabilize while in flight.

Annual Energy Consumption in a Community Lab and Analysis of the Electricity Energy Flow

Esdras Murillo, *Des Moines Area Community College/Iowa State University*

Mentors: Shan He and Ulrike Passe

In order to achieve net-zero energy buildings, the electricity energy flow throughout a whole year needs to be analyzed because net-zero energy buildings requires the utility meter gain a zero balance throughout an entire year. This can be achieved with improving energy consumption efficiency and renewable energy production. A community lab designed to be a net-zero building was set up to study the balance between the electrical energy consumption and solar electrical energy production; it was set up with an advanced data acquisition system collecting the electrical energy consumption every minute. An advanced data acquisition system monitors the energy flow among all the appliances and mechanical systems in this house. With real time and history data, the energy consumption proportion of different terminals is analyzed. By analyzing the different percentages of energy consuming terminals and the energy production all year round, it is revealed that the system design and operation of the solar house has great potential to achieve net-zero. The air conditioner and the hot water heater are the biggest energy consumers in the house. Suggestions are made to improve the energy efficiency. With this study house users will be able to understand and better manage the energy flow for a net-zero energy building, and researchers can design the structures and mechanical systems of buildings with higher energy efficiency.

Length of Crop Rotation Influences Dynamics of Microbial Biomass and Inorganic Nitrogen in Soil

Queenster Nartey, *Grinnell College*

Mentors: Alison King (*Iowa State University*), Ryan Williams (*Iowa State University*) and Kirsten Hofmockel (*Iowa State University*)

As demand for crops increases, farmers are faced with the challenge of yielding more crops while being mindful of environmental factors. Using synthetic nitrogen fertilizers is one way some farmers meet the high demand. After rain, however, some nitrogen may leach into waterways, promoting eutrophication. Diversified crop rotation is an alternative cropping system that previous studies have shown decreases the need for synthetic fertilizers and increases yield. Although declining with agricultural intensification, soil microbial biomass is vital for nutrient cycling, decomposition, soil aggregation and soil organic matter. In general, longer crop rotations have higher carbon inputs, which increases the soils microbial biomass carbon. The overall goal of this study is to test if longer crop rotations will minimize the risk of synthetic fertilizers leaching into waterways and increase the microbial biomass in soil. We observed that nitrogen levels significantly decreased in the 3 and 4 year rotations compared to the 2 year rotation. Microbial biomass carbon increased significantly in the 3 and 4 year rotations compared to the 2 year rotation, however, increased levels of microbial biomass nitrogen in longer rotations were not significant. Most of our hypotheses were supported by our data, which shows the positive influence longer crop rotations have on microbial biomass and inorganic nitrogen in soil. Future work will include measuring rates of protein breakdown in soil and integrating more sampling times.

Impact of University Of Iowa STEM Seminars 2013 on Enriching Upward Bound's Science Curriculum

Mary Nyaema, University of Iowa

Mentors: Brent Studer, Deandrea Watkins, Alexander Lodge, Elizabeth Smith and Tonya Peeples

To enrich the program's science and math portion of the program, Iowa NSF EPSCoR funded 32 under-represented and minority university graduate students and young professionals to share their science, technology, engineering, and mathematics (STEM) expertise and personal backgrounds with the high school students. Throughout the summer, instructors led STEM seminars that encouraged in-depth investigation and hands-on experiences. With the instructors, students were able to experience lab research at the Genomics Laboratory at the University of Iowa, and make visits to science-related sites around Iowa including the Neal Smith National Wildlife Refuge in Polk City and the Iowa Energy Center's Biomass Energy Conversion Facility in Nevada.

At the beginning of the seminars most of the students lacked interest in STEM Careers was low, as indicated in the pre-test. Most students had no ideas if what the acronym meant. The field trips and tours expanded the horizon of the number of career opportunities that they could engage in. Positive role models gave them an opportunity at hands on learning in an interactive way. It helped them look at science in a different way removed from the rigor of everyday school work. By the overwhelming improvement in their post test scores, more opportunity should be given to such students to help them become more actively engaged in STEM fields and look at Science from a different perspective. From the feedback given from the students, it was recommended to involve the students in more hands on activities and also work on building their critical thinking skills in STEM fields. This would have a huge impact on their likelihood of entering into a STEM based career.

Goat grazing and invasive species re-growth

Brad Ryan, Eastern Iowa Community Colleges

Mentors: Victoria Green (Eastern Iowa Community College and Western Illinois University), Brian Ritter, Jacob Veal and Jaelin Smith (Eastern Iowa Community College and Western Illinois University)

Invasive plants are defined as a non-native species whose presence does or is likely to cause harm to human, animal, plant, and environmental health. Land managers of natural areas have long struggled to control the impact of such species through several techniques. Mimicking the natural cycles of disturbance in this environment is one to limit the propagation of invasive species. For thousands of years, there have been natural disruptions throughout the Midwest prairies such as floods, wildfires, and animal grazing. Some of the native plant species depend on this natural disturbance to survive. Land managers have sought to re-create this environment in modern times. At Nahant Marsh in Davenport, IA, goat grazing was used to clear invasive brush on a selected area. Pre- and post- grazing surveys were conducted to determine the effectiveness of controlling invasive species. Further research is needed to determine the long-term impacts.

Trail camera data and analysis

Jaelin Smith, Eastern Iowa Community Colleges

Mentors: Brad Ryan, Jacob Veal, Victoria Green (Eastern Iowa Community Colleges and Western Illinois University) and Brian Ritter

Scientists and researchers often times use trail cameras to survey the populations of animals in certain area. Trail cameras are generally strapped to trees or some other stationary object and left for a few days. The motion activated camera will then take photographs of any item that crosses the path of the lens. Trail Cameras are used to get up close and personal with animals that would usually be more apprehensive around humans. For this reason, cameras can be very useful to researchers in taking inventory of the animal populations of a certain area. Trail cameras were used at Nahant Marsh in Davenport, IA in order to gain a better understanding of the animals that inhabit this property. Further surveys are recommended.

A Journey of Exploration: Seeking a future in the intriguing and interesting field of Genetics

Hayley Vaughn, Upper Iowa University

In pursuing my undergraduate education, I have always been interested in the field of Biology, but I was not sure which direction that would take me in my graduate studies. I took a Genetics class and found out that I am highly fascinated by this unique field. I am interested in finding a future career in this field, and hope to continue my study of human genetics at the graduate level close to home. By carefully planning my education and seeking internship and research experiences, I hope to make a decision in the back and forth battle between continuing my education in Genetic Counseling or Genetics.

Turtle monitoring program

Jacob Veal, *Eastern Iowa Community Colleges*

Mentors: Jaelin Smith (*Eastern Iowa Community Colleges and Western Illinois University*), Brad Ryan, Jacob Veal, Victoria Green (*Eastern Iowa Community Colleges and Western Illinois University*) and Brian Ritter

Turtle populations in the Midwest vary in levels of threat of extinction. The Blanding's turtle (*Emydoidea blandingii*) was placed on the IUCN's red list in August 2010 and is considered endangered in Illinois and Indiana. Major threats to turtles are road mortality and predation of adults and their offspring. These risks are increased when food resources or ideal habitat are located close to human settlements and transportation routes. Studying their habitat preferences and population structure is important to conservationists in understanding why the Blanding's turtle is at risk and how to effectively manage these populations.

Researchers at the Nahant Marsh in Davenport, Iowa utilized mark and recapture methods to monitor turtle populations. During capture events, carapace and plastron length (as well as width in Blanding's turtles) were also recorded. These dimensions have been compared to data that was recorded over the last three years to determine growth and reproduction rates of turtle populations at Nahant Marsh. If the growth rates are positive and number of caught unmarked turtles increased, this is indicative that Nahant Marsh is a suitable environment for turtles, resulting in increased growth, reproduction, and immigration to the site. This was the fourth year of surveying turtle populations at Nahant Marsh. Results are presented here.

Research/Internship Opportunities Fair Exhibitors

Ames Laboratory—U.S. Department of Energy

The Ames Laboratory offers several internship opportunities for students and faculty members.

The Community College Internship (CCI) is a 10-week summer internship program that puts students side by side with engineers, technicians and other experts at our research laboratory. Students will receive valuable, hands-on technical training in areas such as mechanical engineering, electronics and other areas.

The Visiting Faculty Program is a 10-week summer paid internship program that puts faculty members and students side by side with world-class researchers at their research laboratory. Faculty members and their students will receive valuable hands-on experience in breakthrough basic or applied research in chemistry, engineering, mathematics, computer science, metallurgy or physics. Faculty members are invited to bring two students with them when entering the program.

The Ames Laboratory Science Undergraduate Laboratory Internship (SULI) is a 10-week internship program that puts you side by side with world class researchers at their research laboratory. Students will receive hands-on experience in breakthrough basic or applied research in chemistry, engineering, mathematics, computer science, metallurgy, or physics.

Building a Successful REU Application

Get advice about how to build a successful REU application. Learn about resources, strategies, and tips on creating a winning application.

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 feed stocks to industrial chemicals.

Community College Transfer

Get advice for how you might navigate the two to four year transfer process. Learn about steps you should take, timelines, and planning strategies for making your transfer smooth and seamless.

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/cenusia/>

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. Co-Op opportunities in several areas are available. Co-Op opportunities are for one semester and a summer. Currently we are recruiting for January - August and June - December co-op positions.

Getting Involved with IINSPIRE LSAMP

Learn how you can get involved with IINSPIRE LSAMP on your campus. Also learn about how you can become an IINSPIRE LSAMP Research Intern, find research opportunities within the alliance, and apply for IINSPIRE LSAMP funding for undergraduate research.

HHMI Summer Scholars Program

The HHMI Summer Scholars Program seeks to increase minority participation in science by providing a summer research experience for minority community college students interesting in transferring to a four-year university.

Interdepartmental Genetics

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

Iowa NSF EPSCoR

Iowa EPSCoR is a statewide renewable energy/energy efficiency grant that involves faculty and staff from ISU, UI and UNI. There are 4 research platforms: Bioenergy, Wind Energy, Energy Efficiency and Energy Policy.

Iowa State University Graduate College

Iowa State's vision is to be the best at advancing the land-grant ideals and putting science and technology to work. Our commitment in the Graduate College is to help you become a broadly educated, global citizen who is culturally informed, technologically adept, ready to lead, and prepared for your career. You will develop collaborative relationships with faculty who are national and international leaders in their fields of study.

Find your program of interest on the Graduate College website <http://www.grad-college.iastate.edu/> and take a look at the faculty research interests as well as on-going work at our various federal facilities. Contact the professors directly about opportunities. www.grad-college.iastate.edu has detailed information about admissions requirements. The rate of admission varies for different programs, but approximately 50% of US applicants are accepted.

Approximately 90% of PhD students and 30% of masters students are offered assistantships with a monthly stipend averaging approximately \$2,000. Most students holding assistantships also receive tuition support.

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.

NSF Nano REU Program

The National Science Foundation Research Experience for Undergraduates (NSF-REU) in Nanoscience and Nanotechnology at The University of Iowa will provide undergraduate students with research experience in cutting edge topics related to environmental and health aspects of nanoscience and nanotechnology. REU participants will have the opportunity to work with faculty mentors from the departments of Chemical and Biochemical Engineering, Civil and Environmental Engineering, Chemistry, Pharmacy, and Occupational and Environmental Health.

Sustainable Biomass Production and Processing Systems REU Program

The National Science Foundation (NSF) has provided funds to Iowa State University's Agricultural and Biosystems Engineering Department for a Research Experience for Undergraduates (REU) program that helps address sustainability of biomass production and processing. Student participants will select project areas that match their academic background and interests, and spend ten

Sustainable Biomass Production and Processing Systems REU Program (cont.)

summer weeks on campus working on hypothesis-driven research projects. Project topics are contributed by faculty researchers, while faculty and graduate students mentor each student's research. The REU students become a part of a team involved in areas that address critical, long-term national needs in sustainable biomass production.

The Sustainable Production and Processing Systems for Biomass-Derived Fuels of the Future (SBPP) REU program selected participants will explore the scientific and engineering frontiers of sustainable biofuel production and processing and generate new knowledge that advances our understanding of methods, processes and conservation practices that can enable us to produce biomass-derived renewable energy while minimizing impact on the environment.

Wind Energy Science, Engineering, and Policy

REU: Iowa State University offers an intensive 10-week on-campus research program in Wind Energy Science, Engineering, and Policy (WESEP) for undergraduate students. Ten fellowships are sponsored each year by the National Science Foundation's (NSF) Research Experiences for Undergraduates (REU) program.

PhD: 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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Annual Conference Planning Committee (*alphabetical order*)

Cynthia Bottrell <i>Hawkeye Community College</i>	Adin Mann <i>Emerson—Fisher Controls Division</i>	Diane Rover <i>Iowa State University</i>
Brad Chamberlain <i>Luther College</i>	Kata McCarville <i>Upper Iowa University</i>	Jim Swartz <i>Grinnell College</i>
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Videography and Photography

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Catering and Venue

Juliana Johnson <i>Events Coordinator</i> <i>Hawkeye Community College</i>	Julie Miller <i>Catering Manager</i> <i>Hawkeye Community College Canteen</i>
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