

## Global outcomes

Dec. 19, 2014

### Early results from the Academy of Global Engagement: \$2.8 million in grants

After months of enhancing their global networks and international research capabilities, the 2014 fellows of the MSU Academy of Global Engagement presented their collaborative research results during the Global Innovation Forum at MSU's Kellogg Center on Dec. 5.

There are nine 2014 fellows – five from the College of Engineering and four from the College of Agriculture and Natural Resources.

The academy is a three-year pilot program for faculty development designed to create the next generation of international researchers at MSU. The 2014 fellows were the first ones selected for this program. They have engaged in monthly seminars on topics related to enhancing their capabilities and networks and have received support in finding appropriate funding sources as well as help in establishing global networks of collaborators to further their research.

“The Academy for Global Engagement is helping early-career faculty members build on research networks and strengthen their skill sets as they present their science to policy makers,” explained Leo Kempel, dean of the College of Engineering. “It has been an exciting first year, generating interest with our industry partners as well.”

The accomplishments of the five 2014 engineering fellows include the following:

**David Hodge**, assistant professor in the Department of Chemical Engineering and Materials Science (CHEMS) and in the Department of Biosystems and Agriculture Engineering, worked on a collaboration with MSU and the Central Institute of Plastics Engineering and Technology (CIPET) in India for a joint Ph.D. program.

In July Hodge, accompanied by his mentor in the program Ramani Narayan, CHEMS University Distinguished Professor, and Martin Hawley, chair of the CHEMS department, visited faculty at CIPET and toured research, education, and vocational training facilities in Chennai and Bhubaneswar, India. During their visit, they interviewed 19 Ph.D. candidates from CIPET institutes and selected eight candidates who were encouraged to apply to the MSU graduate program.

Hodge also applied for and received funding for numerous projects including research funded by the Northeast SunGrant Institute, the U. S. Department of Energy and the Great Lake Bioenergy Research Center, and the MSU Michigan Translational Research and Commercialization (MTRAC) Program for the Bio-Economy.

“I found the workshop in Washington, D. C., facilitated by the Global Knowledge Initiative (GKI) useful in making my science relative to policy makers and promoting my projects to program managers,” said Hodge, who also initiated a new research collaboration with chemical engineering faculty at the University of Toronto and recruited a postdoc student from Huaiyin Normal University, China.

**Nizar Lajnef**, an assistant professor in the Department of Civil and Environmental Engineering (CEE), focused his work on smart infrastructure systems. His projects related to the Global Academy included:

- Sustainable construction, rehabilitation and maintenance based on Half-Warm Mix Asphalt Recycling, in collaboration with the University of Nottingham (United Kingdom) and Sacyr Construcción in Spain.

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Published on College of Engineering, Michigan State University (<https://www.egr.msu.edu>)

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- Remote Detection and Characterization of Field Aging of Asphalt Pavement with the Michigan Department of Transportation.
- Feasibility of Early Damage Detection Using Surface Mounted Sensors on Existing Pavements with the National Center for Highway Pavement Preservation.
- Mechanically-equivalent Response Amplifiers and Frequency Modulators for Energy-harvesting Devices with funding from the National Science Foundation.
- Self-powered RFID Sensing Technology for Monitoring of Complex Product Supply Chain with Dow Chemical Company and Midland Value Chain Institute.

The total amount of Lajnef's projects funded in 2014 was more than \$2.4 million. He is mentored by CEE professor Karim Chatti.

**Wen Li**, assistant professor in the Department of Electrical and Computer Engineering (ECE), focused her research on "Imagining Brain Stroke," a collaborative project with the Singapore Institute for Neurotechnology (SINAPSE).

"The Academy for Global Engagement program helps me to pitch my research in new and more convincing ways," said Li, who has submitted proposals for research with the National Institutes of Health and at the National Science Foundation. Her program mentor is ECE professor Lalita Udpa.

**Peter Lillehoj**, an assistant professor in the Department of Mechanical Engineering (ME), worked on point-of-care technologies for disease diagnosis in India during his first year as a fellow.

"Being an Academy for Global Engagement fellow has helped me to become more familiar with conducting international research and to network with other junior faculty members at MSU," said Lillehoj. "Specifically, I'm grateful for being provided with travel support, which has enabled me to establish new collaborations in India toward

He has numerous research proposals pending with the National Science Foundation, National Institutes of Health and other organizations. He also has a U.S.-United Kingdom collaborative proposal pending on the development of chicken immune reagents and multiplex cytokine assays through the U.S. Department of Agriculture as well as a mobile phone-based assays for improved healthcare project pending through MSU's Strategic Grants Program.

Lillehoj's mentor is Alejandro Diaz, professor and ME department chair.

**Xiaoming Liu**, an assistant professor in the Department of Computer Science and Engineering (CSE), has focused his Global Academy work on "Multi-Leaf Segmentation, Alignment, and Tracking from Fluorescence Plant Videos."

"The Academy for Global Engagement has greatly expanded my vision on how STEM (science, technology, engineering and mathematics), especially my area of computer vision research, might have a greater impact on areas that I have never thought of," said Liu.

Some of his pending proposals include:

- Sports Video Analysis with Techsmith Inc.
- A smartphone-based infrastructure for embedded sensing and computing research with other MSU College of Engineering collaborators through the National Science Foundation
- Learning to Fuse Information with Missing Modalities through the National Geospatial-Intelligence Agency (NGIA)
- Imaging Technologies for Enhancing Agricultural Productivity, Cercospora Leaf Spot Rating as a Case Study, through MSU's Project GREEN (Generating Research and Extension to meet Economic and Environmental Needs)

Liu also worked with his mentor Anil Jain, CSE University Distinguished Professor, to find persons of interest in visual media through the National Institute of Justice.

the development of point-of-care diagnostics."

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“The Academy for Global Engagement has given our fellows the opportunity to expand on scientific productivity, bringing many new networks into partnerships,” said Mary Anne Walker, co-director of the Academy. “Early returns show \$2.8 million secured in grants.”

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