



MICHIGAN STATE UNIVERSITY PARTNERS

WINTER 2015



Accepting the Challenge MSU's Focus on STEM Education

Leaders throughout American industry agree – it is imperative to increase college graduates in the STEM disciplines. Michigan State University is in the vanguard of efforts to meet this challenge.

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STEM success: helping students achieve their dreams

A Michigan high school student dreams of a future designing the next generation of technology. Another has her heart set on a lifetime of discovery, probing the unsolved mysteries of chemistry. Both are talented; both are ambitious; both score well on their college entrance exams. But, due to the quality of their high school math and science preparation, they struggle in their first year of college to compete in these areas. This struggle to keep pace can cause them to abandon their career goals entirely.



“Employers and educators agree that preparing students to be leaders in science and technology is a priority,” said Mike Whiting, Jr., president of The Herbert H. and Grace A. Dow Foundation. “It’s an economic imperative to strengthen and expand STEM education for students in Michigan.”

To build on its record of support for education in science, technology, engineering and mathematics, the Herbert H. and Grace A. Dow Foundation has made a grant to launch Michigan State University’s STEM Success program to give students in these disciplines the fundamental knowledge they need to earn degrees.

Whiting added, “The foundation was made possible because

of innovations in science and technology. We are proud to help launch a new program that will draw upon Michigan State’s leadership in STEM education and help more students prepare for careers in the essential STEM professions.”

STEM Success offers a fresh beginning to help students surmount shortcomings in their pre-college math and science education. Building on the success of existing MSU programs, eligible students will enroll in a pre-freshman summer math course to prepare for college algebra in the fall. The Math Bridge Program uses a hybrid format with both on- and off-campus classes, phone and video support and online pro-

gramming to reach all eligible students. A summer 2013 pilot program in the Detroit area resulted in a majority of students who completed the course passing college algebra in their first freshman semester.

A new course, Explorations in Chemistry, will be offered to STEM Success Scholars taking college algebra. Students will engage in science practices and gain the foundational conceptual knowledge of value to all STEM majors. They will then be prepared to succeed in the traditional chemistry introductory course and subsequent STEM classes.

MSU’s innovative Neighborhood system provides services convenient to where students

live. STEM Success scholars will be clustered in two of the five campus Neighborhoods to take advantage of concentrated professional support and to foster a peer community. Support from the Dow Foundation will fund Neighborhood professional advisors and peer mentors to work with the 300 STEM Success students enrolled each year.

“We are grateful to the Herbert H. and Grace A. Dow Foundation for its partnership

and its endorsement of the considerable work already done at MSU around expanding opportunities in STEM-related disciplines,” said MSU Provost June Youatt. “We appreciate its investment in our work and our students, and we share optimism about what this can mean for the students, their communities and the state of Michigan.”

MSU’s Midland Research Institute for Value Chain Creation will host STEM Success

scholars and provide speakers on campus. Some scholars will assist with research and shadow medical students at MSU’s medical campuses in Midland and around the state in the summer term.

Half of the \$5M grant will fund the program’s first three years. The rest is endowed to enable future STEM Success scholars to participate in undergraduate research and as peer mentors.

MSU is one of only eight AAU STEM Initiative Project Sites to share in a \$4.7M grant from the Helmsley Charitable Trust.

STEM success begins early

Children want to know! Why is this happening? How is this made? How does this work? What if we try to do this differently? These are questions future scientists, future engineers, future computational experts, and future explorers of the unknown would ask.

Every MSU college reaches out to Michigan’s K-12 students, but in the STEM disciplines our efforts have been particularly aggressive. In STEM alone, there are more than 35 Spartan Youth programs. Whether it’s about robotics, math, environmental science, or unique learning experiences at Abrams Planetarium or the MSU

Cyclotron, each program aims to engage youthful curiosity and encourage young people to have confidence that, if they choose, they can grow up to be engineers, scientists, doctors, college professors – discoverers. Why not?

MSU students in **Science Theatre** visit classrooms around the state. Presentations are interactive and inspire children to see science as exciting and fun through demonstrations with names like Outrageous Ooze, Non-Burning Money, Bed of Nails and Tornado Bottles. The MSU students leave descriptions of age-appropriate experiments for the teacher and class to try during the school year.

Michigan Science Olympiad has been held at MSU for 24 years. Nearly 100 teams of secondary students design and build machines, analyze a ‘crime scene’ or are presented with challenges (e.g., “drop a raw egg from a height without breakage”). MSU faculty and students are among the 300 volunteers each year.

Intro to Robotics Engineering at MSU: High school students spend five days on campus and learn about fields of engineering involving robotics. They work with NXDT and VEX robotics, biomimetic robotic fish, nanorobotics, mechatronics and manufacturing automation. This is a hands-on

program.

MSU Science Festival is a member of a network (including MIT and Cambridge University in the UK) dedicated to the development of top quality science and technology festivals.

The free, multi-day annual event, featuring 150 unique presentations, reaches thousands of learners of all ages.





MSU joins national alliance to increase STEM graduation rates

“There is no question now that educational attainment is key to social mobility in an increasingly knowledge-based economy,” said MSU President Lou Anna K. Simon. To meet this challenge, Michigan State and 10 other research universities have allied to increase the graduation rate for students from low-income and under-represented backgrounds. The University Innovation Alliance effort is receiving \$5.7 million in support from six major funders.

Simon added, “We have the will, the tools and the critical

mass to finally begin to breach a persistent barrier to delivering the promise of opportunity to all our students, no matter what their family or geographic circumstances.”

The alliance will develop and test new initiatives, share data and create a playbook of best practices, aspiring to invigorate efforts in all colleges and universities to produce a better-educated workforce.

MSU will be sharing and scaling its Neighborhood initiative, launched in 2010 to enhance student engagement and success. “Housing more than 14,500

students, Michigan State’s Neighborhoods harness the power of one of the nation’s largest residence hall systems to bring the resources of MSU to first-year students where they live,” said MSU Provost June Youatt. “This new model of integrated academic, residential and student services addresses the goal of giving every student admitted to MSU an equal opportunity of graduating.”

Initial data show that MSU’s Neighborhoods are making a difference. Low-income, first-generation and first-year students who received focused outreach

through the Neighborhoods were 20 percent less likely to be on academic probation after their first semester; those who used Neighborhood services more frequently had better GPAs.

Other universities in the alliance are Arizona State; Georgia State; Iowa State; Oregon State; Purdue; Ohio State; California, Riverside; Central Florida; Kansas; and Texas-Austin.

Support is provided by the Ford Foundation, the Bill & Melinda Gates Foundation, the Kresge Foundation, Lumina Foundation, Markle Foundation and USA Funds.

Students in STEM fields earn Goldwater Scholarships

Two Michigan State University students won major national awards and two received honorable mention. The Barry M. Goldwater Scholarship is the most prestigious undergraduate award in science, math and engineering. Since the first awards were bestowed in 1989, there have been 40 Goldwater Scholars at MSU.

“I’m honored to be recognized as a Goldwater Scholar but I couldn’t have gotten to this point without the mentorship I’ve received,” John Suddard-Bangsund said. Suddard-Bangsund is an Honors College junior majoring in materials science and engineering and interdisciplinary humanities. “I’ve had the opportunity to work with people who are really excited and passionate about their work, and their energy has been contagious. I look forward to continuing my research and seeing where it takes me.”

Suddard-Bangsund is a research assistant in the Molecular Organic Excitonics Lab, developing new electron donor materials for organic photovoltaics. He is an Honors Times Two mentor, fundraising chair for Engineers Without Borders and participant in the Michigan State Solar Car team.

David Zoltowski, an Honors College junior majoring in electrical engineering, is a research assistant, applying advanced signal processing tools to study the functional brain networks. He is captain of the MSU Varsity Swimming and Diving team, a Distinguished Big Ten Scholar and Academic All Big Ten. Zoltowski is a member of the

Student-Athlete Advisory Council, Eta Kappa Nu and an Honors Times Two mentor.

“I am very excited to be a Goldwater Scholar,” Zoltowski said. “It feels great to be recognized for my hard work and I am motivated to live up to the standards of past Goldwater Scholars. The award is a testament to the quality of MSU’s College of Engineering, Honors College and Student-Athlete Support Services.”

Goldwater honorable mentions went to Megan Kechner, an Honors College sophomore majoring in neuroscience and psychology; and Irene Li, an Honors College sophomore majoring in genomics and molecular genetics and interdisciplinary studies in social science-health and society.



Preparation and support for K-12 STEM Teachers

For decades MSU faculty have been leaders on major national and international research teams to improve science and math teaching and learning in our schools. MSU's efforts in the Education Policy Center, the Center for the Study of the Curriculum, and more recently the CREATE for STEM Institute, examine, assess and propose changes to how schools teach math and science. Among MSU's distinguished, much-cited studies and projects are:

- *TIMMS (Third International Mathematics and Science Study)*
- *TEDS-M (Teacher Education Study in Mathematics)*
- *PROM/SE (Promoting Rigorous Outcomes in Mathematics and Science Education)*
- *Common Core Standards and implementation for K-12 Education*
- *Next Generation Science Standards*

MSU's graduate programs in elementary and secondary education have been ranked #1 by US News and World Report for the past 20 years. The colleges of Education and Natural Science collaborate to ensure that future math and science teachers studying at MSU receive quality training in their respective disciplines before receiving a degree and teacher certification.

MSU's research, education and follow-up support programs for K-12 STEM teachers have attracted funding from major funders, including in recent years Boeing, the Eli and Edythe Broad Foundation, the Carnegie Corporation of New York, the Dow Corning Foundation, GE Foundation, the Skillman Foundation, Wipro, Ltd of India, and Woodrow Wilson Teaching Fellowship Foundation (established by the W.K. Kellogg Foundation), among others.

HHMI award bolsters MSU commitment to STEM

"Our nation's research universities are absolutely critical to sustaining our scientific excellence," said President Robert Tjian of the Howard Hughes Medical Institute. "Simply put, we are challenging these universities to focus their attention on improving science education so that a greater number of talented students remain in science."

HHMI has awarded a five-year \$1.5 million grant to improve introductory courses that serve as gateways to continued studies in science, technology, engineering and mathematics, said R. Sekhar Chivukula, associate dean of MSU's College of Natural Science and the grant's coordinator.

"Michigan State University has a strong record of student success in the STEM fields, and we are committed to doing even better," Chivukala said. "The investment by the Howard Hughes Medical Institute allows us to expand our efforts to graduate a larger number of highly trained mathematicians, scientists and engineers for our state and nation."

MSU's approach transforms introductory STEM courses to emphasize core scientific and mathematical ideas and practices that are common across different disciplines.

Specific projects include reform and revision of chemistry and physics laboratory courses, the creation of digital evolution education software modules in biology and the development of a new modeling-based calculus curriculum.

The initiative involves faculty from the colleges of Natural Science, Engineering, Education and Lyman Briggs College, plus faculty with the BEACON Center for the Study of Evolution in Action, the CREATE for STEM Institute and the Center for Engineering Education Research.

"On behalf of the MSU STEM faculty involved in this project, I am grateful to the Howard Hughes Medical Institute for its generous funding of our efforts," Chivukula said.

MSU's honor was part of the 2014 HHMI Research Universities Competition, which resulted in 37 winners and a total of \$60 million in awards. These grants have focused on transforming science education in the United States by encouraging science teaching that is hands-on, research-oriented and interdisciplinary.

MSU is a national leader in STEM education.

BEACON, an NSF Science and Technology Center at MSU, unites biologists who study natural evolutionary processes with computer scientists and engineers to solve real-world problems.



For additional information about STEM scan this QR code.



Growing the MSU-Kellogg Foundation **‘Good Food’ Partnership**

The W.K. Kellogg Foundation has awarded two grants to the Michigan State University Center for Regional Food Systems (CRFS) for research and outreach to advance “good food” – food that is healthy, fair, green and affordable – in Michigan. The support totals approximately \$6 million over four years. The Michigan Good Food Charter and Farm to School grants will fund work on increasing Michiganders’ access to good food through late 2017 and early 2018, respectively.

“The MSU Center for Regional Food Systems is an important partner for the Kellogg Foundation,” said Linda Jo Doctor, program officer for the W.K. Kellogg Foundation. “Our goal is to develop a stronger infrastructure for an equitable food system so Michigan’s vulnerable children, families and communities will

benefit – which could not be accomplished without CRFS’s leadership.”

Farm to Schools

One grant focuses on activities that expand fresh food access, advance local food purchasing and support Michigan farmers.

“This grant provides us the opportunity to expand the role of schools, early childcare and education programs, and other institutions as good food access points,” said Colleen Matts, Farm to Institution specialist at CRFS and lead investigator on the Farm to School grant. “In partnering on Hoophouses for Health, we can help Michigan children, especially the most vulnerable, have better access to good food in their homes, communities and schools.”

Hoophouses for Health is a partnership of CRFS, the Mich-

igan Farmers Market Association and the MSU Department of Horticulture. The program provides vouchers to low-income families with children to purchase locally grown produce at area farmers’ markets. Hoophouses for Health also supports farmers who accept the vouchers by providing them financial and technical assistance to build hoophouses. This extends their growing season and allows them to grow cold-tolerant crops through the winter.

“This is the most exciting thing to happen to us this year,” said Diane Hoyer, co-owner of Ohana Gardens in metro Detroit, and a new Hoophouses for Health participating farmer. “Because of the program, there are so many people stopping by and interested in hoophouses. Hoophouses are needed because of the economic conditions in the community; they are breath-

ing new life into Detroit.”

To integrate Hoophouses for Health and Michigan Farm to School efforts, hoophouse growers are encouraged to provide food directly to schools and early childcare and education programs through this grant.

Michigan Good Food Charter

The second grant builds capacity and catalyzes action to implement the goals of the Michigan Good Food Charter. The charter was created in 2010 with input from hundreds across Michigan. Since then, individuals and organizations have worked to implement the charter’s vision to promote equity, sustainability and thriving economies through good food in Michigan.

“The beauty of the Good Food Charter is that it provides a strategic framework that

helps us align with other efforts going on across Michigan,” said J.R. Reynolds, Good Food Battle Creek coordinator. “We identified six charter priorities to focus on. Most center on access to good food. Collectively, we’re working to promote equity and sustainability within our community’s food system, which in turn can help drive our economy.”

This grant project fosters and expands existing food-related networks across the state, connecting farmers, processors, retail and institutional buyers, food assistance providers, policymakers and others engaged in advancing good food for all in Michigan. The focus on connecting people and activities paves the way for a shared measurement system that accurately represents the impact of the many good food efforts.

“A key goal of the charter is ‘20 percent by 2020,’ meaning that 20 percent of the food consumed in Michigan will come from Michigan producers by 2020,” said Rich Pirog, CRFS senior associate director and lead investigator on the Good Food Charter grant. “This grant will assist us in working with the many organizations and individuals who have signed on to help reach or surpass that 20 percent target, as well as in tracking progress made on the charter goals and better connecting those engaged in good food work across the state.”

The project also builds capacity among new and established food hubs – businesses or organizations that manage the aggregation, distribution and marketing of, typically, local or regional food products – to increase the supply of good

food in low-income communities. Technical assistance is provided to food hubs, and the hubs contribute to progress on charter goals to advance access to local foods, options for local sourcing and sustainable farms in Michigan.

Similarly, the Farm to School grant will contribute to Cultivate Michigan, an initiative that centers on the charter goal that Michigan institutions will source 20 percent of their food locally by 2020. Cultivate Michigan is a statewide effort to increase and track local food purchases by institutions (e.g. schools, hospitals and universities) conducted in partnership with the Ecology Center in Ann Arbor. The project is designed to connect people and organizations and contribute to improved understanding of activities across the state to promote good food for all in Michigan.

The W.K. Kellogg Foundation, founded in 1930 as an independent, private foundation by breakfast cereal pioneer Will Keith Kellogg, is among the largest philanthropic foundations in the United States. Guided by the belief that all children should have an equal opportunity to thrive, the foundation works with communities to create conditions that will allow vulnerable children to realize their full potential in school, work and life.

The Kellogg Foundation is based in Battle Creek, Michigan, and works throughout the United States and internationally. Special emphasis is paid to priority places where there are high concentrations of poverty and where children face significant barriers to success.

WKKF priority places in the United States are in Michigan, Mississippi, New Mexico and

New Orleans; internationally, in Mexico and Haiti. For more information, visit wkkf.org.

At the October 2014 Michigan Good Food Summit, a new public-private partnership loan and grant fund was introduced. The Michigan Good Food Fund will improve the lives of Michigan children and families living in underserved communities throughout the state by expanding access to healthy foods, catalyzing economic development, and creating new permanent jobs. MGFF is a strategic opportunity for philanthropic investors to amplify their investments for greater impact while directly supporting underserved Michigan residents.



edible flint – engaging a community in local, healthy food programs

In partnership with the Ruth Mott Foundation, Michigan State University Extension (MSUE) directly supports the local food systems movement in Flint and Genesee County. Community Food Systems Educator Teresa McLean is MSUE’s point of contact for the *edible flint* network and the broader Genesee Food Systems group. *continued*

edible flint continued

Over the past six years, the Ruth Mott Foundation has made grants totaling more than \$500,000 to support MSUE's urban agriculture/local food systems programs that address the Foundation's priorities which are:

- *healthier and more active lifestyles.*
- *Improved public awareness of the benefits of locally grown fruits and vegetables through urban gardening/farming.*
- *Promoting season extending farming techniques and community supported agriculture programs, supporting a healthy food system.*

"The MSU Extension-Genesee team is extremely competent, passionate and connected to statewide resources, research, policy initiatives and the conventional farming industry," said Handy Lindsey Jr., president of the Ruth Mott Foundation.

"The Ruth Mott Foundation's healthy food system strategy recognizes that education, technical assistance for food producers, information sharing among all players in the local food system, and collaborative partnerships are required to achieve the goal of increasing access to and the consumption of healthy and affordable food for Flint and Genesee County residents. There is no better organization to do this than MSUE."

edible flint is a network of residents, nonprofit organizations, government representatives, health institutions, educators, and advocates for social change who work together in the interest of a common mission: supporting Flint/Genesee residents in growing and accessing healthy food in order to reconnect with the land and each other. With this mission in mind, *edible flint* has divided its efforts among five different work groups (Access & Education, Garden Starters, Food Garden Tour, Grower's Co-operative & Organizational), each self-organized to address the specific issues and opportunities in our local food system. Throughout the year, *edible flint's* work groups envision, plan and implement these efforts

addressing individual and community needs for healthy food access, creative and productive use of vacant land, knowledge and resilience.

The City of Flint and Genesee County are communities in significant need of activity that can support economic opportunities for low-income individuals, access to healthy foods, and innovative models and ideas around land use and community vitality. With high levels of obesity, limited access to healthy food, and 12,000 available vacant lots in Flint, the launching point for all local food efforts is improving access to healthy food, land, knowledge, and resources. Urban agriculture, community gardening and nutrition education as a comprehensive approach to building community, improving public health, maintaining vacant and abandoned land, working with disenfranchised youth and empowering residents to make a difference in their neighborhoods is one of this community's solutions.

Through involvement in statewide initiatives and programs McLean's role has been to link the local food movement to statewide good food (healthy, green, fair, affordable) initiatives, and is strategically positioned to connect statewide resources to local efforts. The MSU Center for Regional Food Systems and its MSU Student Organic Farm provide research and support for urban gardening/farming work in Flint. The Student Organic Farm is a leader in developing season-extension food production techniques (passive solar greenhouses called hoophouses) and has provided local hoophouse growers with regular hands-on technical expertise with support from the Ruth Mott Foundation for several years. McLean's role as community food systems educator is integral, engaging community partners, coordinating communications, delivering educational programming and technical assistance, and supervising two *edible flint* staff dedicated to the *edible flint* mission. This staff is funded primarily through the Ruth Mott Foundation, and the multi-year USDA Food Access in Michigan grant.





A Student's Voice – Things I Learned in China

In the summer of 2014 Malik Hall went to China on a scholarship funded by the Coca-Cola Foundation as part of the U.S. State Department's 100,000 Strong Initiative. Malik's observations follow:

I am a second-year student majoring in Applied Engineering and Sciences, concentrating in Technical Sales, and minoring in International Business. I am from Ann Arbor, Michigan.

My study abroad program was Marketing in China. This three-week trip exposed me to the local culture in five different cities and gave me the chance to learn about different global companies and their operations in China. As I grew up, I enjoyed learning how different China was from other countries. From architectural details to the red dragon they often display, I loved the style

and wanted to see it with my own eyes. Plus, many businesses are trying to enter the market because of opportunities in China. Europe is often the first choice of American students; I wanted to explore somewhere that many students do not go.

Adapting to the culture in China is not difficult when you keep an open mind. I noticed people tended to stand closer to talk face-to-face than people do in America. This was uncomfortable at first because it seemed aggressive, but after a while I realized it showed that the person had their full attention on you.

At dinner, we ordered many different dishes. Sitting at large tables with a spinning top, we could share the food. I enjoyed exploring different tastes without taking ownership of a single

dish like we do in America. This cultural experience was a new way for me to dine with friends and encouraged conversation at the table. There was often laughter when the table spun away just as someone was reaching for a dish.

My experience in China expanded my view and influenced me to study international business. It taught me about the importance of the relationship a business has when dealing with other companies or with the government. This study abroad opened up a passion within me to interact with those from different backgrounds – even people within my own neighborhood.

I started a new campus job this fall with responsibilities for making a healthier, inclusive learning experience in the residential halls and

promoting activities to help students feel more sociable and comfortable around others. We have a strong emphasis on historically underrepresented groups and international students. My study abroad experience makes it easier for me to interact with students from another culture and help them feel comfortable engaging in activities with students on campus.

If I had not received a scholarship from the Coca-Cola Foundation, I would not have been able to experience China. I thank both Coca-Cola and the Office of Study Abroad for allowing me to participate. I spent years selling chocolate in high school and now finally to study abroad is a dream come true. I was fortunate to get a scholarship. I'm truly grateful for the experience.

MSU lands grant to boost yields of critical West-African crop

Cowpeas are a critical, affordable source of protein for countless millions in Sub-Saharan Africa. Yet, pests decimate more than 50 percent of the crop annually.

Michigan State University's Legume Innovation Lab will use a \$1.45 million grant from the Bill & Melinda Gates Foundation to implement sustainable approaches to fend-off pests and potentially double cowpea yields.

The focus of the project will be approximately 10 million smallholder farmers in five West African countries. The three-year initiative will develop integrated pest management solutions, which involve managing

the entire crop production process – from planting and maintenance to harvest to crop storage – to reduce the impact of pests on yields.

To sustainably manage cowpea pests, farmers need to diagnose insect problems early and have access to better pest management options, said Irv Widders, director of the Legume Innovation Lab.

“This project is exciting because of its high potential to benefit smallholder farmers,” he said. “Through biocontrol agents and decision aids, the farmers will be able to utilize for the first time ‘precision IPM’ practices that are safe to humans and the environ-

ment, low-cost and effective, potentially doubling their cowpea yields.”

The initiative will provide:

1. *A smart phone app to diagnose pest problems and determine the best management options.*
2. *Systematic release of biological pest management agents, including scalable tracking and assessment tools.*
3. *An economic assessment of the potential use, benefits and impacts of IPM.*

Many scientists from the University of Illinois at Urbana-Champaign, the International Institute for Tropical Agriculture and MSU will be involved in this project.

Bringing perennial grain crops to Africa is aim of new Gates Foundation-funded project

Drawing from expertise in agronomy, geography, modeling and socioeconomics, a research team will study the potential benefits of introducing a new type of crop to farms across Africa: perennial grain.

Directed by AgBioResearch scientist Sieg Snapp, the research project is funded by a \$1.49-million grant from the Bill & Melinda Gates Foundation.

“The idea is that if we could introduce a type of grain that grew for around 11 months, then regrew after harvest and continued to do that for several years, it would need less labor and allow for more sustainable agriculture in Africa,” said Snapp, a professor in the MSU Department of Plant, Soil and Microbial Sciences.

Most grain crops grow for about five months of the year with harvest at the end of the cycle. They require replanting to yield a crop the following year. Cultivating these crops requires a considerable amount of work and energy, particularly for the small-scale farms that populate most of the agricultural regions in Africa.

Snapp, who has been researching perennial grains in Michigan for six years at the MSU W.K. Kellogg Biological Station, said the new project will assess the risks and benefits of three perennial grains: sorghum, pigeon pea and wheat. It will span five African nations identified by the Gates Foundation and the U.S. Agency for International Development as priority countries: Ghana, Mali, Malawi, Tanzania and Ethiopia. These regions were chosen to test the viability of the crops across varied ecosystems.



The research team will examine perennial grains' ability to reduce soil erosion and farm labor, improve water quality and increase the storage of organic matter in the soil. It will also assess the potential risk of introducing a plant species into a new environment to ensure that the grains do not damage the local ecology.

This two-year study is the first step in what Snapp hopes to be a much longer project.

“This is kind of a pilot project,” she said. “We’re testing to see if these prototype crops are viable.”

For Snapp, the project represents a chance to make good on a lifelong dream.

“This is something I’ve wanted to do all my life—to bring new options to farmers in Africa,” Snapp said. “I was very excited to receive this grant. Bringing this team together to test this concept, it’s what agronomy should be about—testing new options for agriculture.”



Grand Challenges award for TB research

For his work on developing new treatments for tuberculosis, Assistant Professor Robert Abramovitch has earned a Phase II award through Grand Challenges Explorations, an initiative funded by the Bill & Melinda Gates Foundation.

Abramovitch of MSU's Department of Microbiology and Molecular Genetics had won a Phase I award in 2012. In the round of Grand Challenges Explorations awards announced for Fall 2014, Abramovitch was the only winner of a Phase II award in the category of Synthetic Biology and one

of only 15 Phase II winners worldwide in 2014.

"Combating the ongoing tuberculosis epidemic is a major challenge in global health," said Abramovitch. "Currently, patients undergo a multidrug treatment regimen that lasts six months and has fueled the emergence of drug-resistant TB. We need to find new solutions to treat the disease and reduce the period of drug therapy."

In Phase I, Abramovitch's lab team screened more than 270,000 molecular

compounds to find candidates that could hinder the disease's ability to maintain a persistent state and allow drugs to treat the disease more quickly. They identified around 170. In Phase II, the team will carry forward with selected, optimized compounds, testing their ability to block chronic infection and characterizing the compounds that inhibit bacterial growth.

Phase I winners receive a two-year grant of \$100,000. The Phase II Grand Challenges Explorations award received by Abramovitch is a two-year \$820,000 grant.

William T. Grant Foundation funds MSU research

The William T. Grant Foundation was established in 1936 by William Thomas Grant, founder of the national chain of W.T. Grant Stores. Mr. Grant believed human relationships and the environment were powerful forces in shaping our abilities to lead successful lives and that the role of philanthropy should be to understand and prevent social problems. Guided by the vision of its founder, the William T. Grant Foundation invests in research with the potential to advance theory, policy, and practice related to children and youth in the United States.

Friends of the Court



Dr. Patricia Marin, assistant professor of higher education at MSU, and colleagues will use nearly \$400,000 from the William T. Grant foundation to study how amici (friends of the court) use research evidence when developing briefs and filing opinions.

Amici serve as important intermediaries in the court system and frequently use research when developing briefs. Marin, along with Catherine Horn (University of Houston), Liliana Garces (Penn State) and Karen Miksch (University of Minnesota) will examine the various ways in which research is used by amici in the Fisher v. University of Texas affirmative action case. Initially filed in federal court, Fisher was appealed to the Supreme Court and remanded back to the Fifth Circuit. A range of organizations filed briefs – government entities, colleges and universities, businesses and individuals. Marin and colleagues will examine how these parties engaged with research when preparing their briefs. The research team will also analyze, using social network analysis complemented with latent class analysis, how connections between researchers and the organizations influence the acquisition of research as well as how it was interpreted and used. The investigators will review court documents; survey researchers; and conduct interviews with counsels of record and other key decision makers.

Networks for New Math Teachers



Kenneth Frank, professor of measurement and quantitative methods, and a team including MSU colleague Kristen Bieda, associate professor of mathematics education, received a nearly \$600,000 grant to study social networks for novice math teachers. The researchers suggest that new teachers may turn to colleagues to discuss content, interpret expectations about lesson planning, and/or understand how the demands of the evaluation system translate to practice. Thus, knowledge of math and norms regarding instruction in a new teacher's network may impact the quality of the novice's practice.

Also collaborating on the three-year project are Peter Youngs of University of Virginia (a former MSU faculty member) and Serena Salloum of Ball State University.

Private support and impact on the teacher quality debate



Using a \$277,895, two-year grant from the New York-based William T. Grant Foundation, scholars from Michigan State University and the University of Michigan will investigate how privately funded research may shape the debate on teacher quality.

Sarah Reckhow, MSU assistant professor of political science, is principal investigator on the research project. She and Megan Tompkins-Stange, a researcher at U-M, contend that foundation-funded research affects the areas of teacher quality and teacher effectiveness by introducing new concepts into the policy discourse, raising awareness of issues, providing language to frame the policy responses and reducing uncertainty about complex topics.

Study participants will include foundations that conduct research, researchers, policymakers and other stakeholders such as teacher union leaders. The researchers will interview stakeholders and examine research reports, media coverage, congressional hearings and public debate. Then they'll analyze how policy ideas gain ground and travel through social networks.

Reckhow was recently named one of the most influential education scholars in the nation by *Education Week*.

Investigating How Schools Find and Use Research



Parents and policy-makers around the country urge teachers and school administrators to use the latest research and best practices of education researchers. But schools must make informed decisions. With a grant from the William T. Grant Foundation, two MSU social science faculty will study how schools learn about new research findings, from both inside and outside schools, and make decisions about putting new findings to use in classrooms.

Dr. Jennifer Watling Neal of the MSU Department of Psychology and Dr. Zachary P. Neal of the Department of Sociology have received a grant of \$540,000 to embark on a major study of these matters. They will conduct surveys and observations of school administrators and intermediaries between schools and researchers to learn how schools are finding and using education research. The goal is to answer two basic and important questions: (1) how and when do schools find out about new research findings, from both inside and outside the schools, and (2) how do schools try to put new findings to use in classrooms, focusing in particular on the role of intermediaries between schools and researchers.

Eli and Edythe Broad Foundation

General Motors



\$5M Gift Honors Broad Art Museum Director

The Eli and Edythe Broad Art Museum (Broad MSU) received a new \$5 million gift from The Eli and Edythe Broad Foundation to increase the museum's exhibition endowment and help fund exhibitions. The gift was made in honor of the museum's founding director, Michael Rush.

The new gift brings the Broads' total investment in the museum to \$33 million. Their earlier \$28 million lead gift made the Zaha Hadid-designed building possible,

funded acquisitions and established endowments for exhibitions and operations.

"Since its opening in November 2012, the Broad Museum already has had a transformational impact on Michigan State University, the East Lansing community and the region. This new endowment gift will ensure the museum can continue to advance its mission through engaging exhibitions," said Lou Anna K. Simon, president of Michigan State University. "We are grateful to Eli and Edythe Broad for their continued generosity and support of programs throughout our campus, and particularly for Broad MSU."

"Michael Rush is realizing the vision for Broad MSU, bringing contemporary artists from around the globe to East Lansing and drawing audiences from around the state, across the country and from all corners of the world," said Eli

Broad. "The exhibitions presented at the museum provide opportunities for students and the community to experience art that they might otherwise never see, while simultaneously drawing new visitors to East Lansing. Edythe and I are pleased to recognize Michael Rush's leadership in creating this unique institution, and we wanted to ensure that the museum continues to push boundaries in the types of exhibitions it presents."



*Michael Rush
Founding Director*

GM Day at MSU

General Motors representatives were on campus in September to conduct mock interviews and critique resumes for students in MSU's engineering and business programs. At an executive leadership event co-sponsored by MSU's Women in Business and Women in Engineering, GM executives spoke on 'traits for career success.' Following the event, they presented a \$150,000 check from the GM Foundation to support programs in both colleges.

Back: David Wenner, director, Labor Relations, GM; Matt Ply, product development finance manager (SMT CFO), GM; Judy Cordes, coordinator, Women in Engineering; Patti Althoff, MSU Corporate Relations

Front: Jennifer Jennings, MSU Corporate Relations, College of Engineering; Jennifer Jones (ME '15), president, Women in Engineering; Mariam Metti (Accounting '15), president, Women in Business; Dr. Darrell King, Sr., associate director, MSU Multicultural Business Programs.



Training doctors to serve in rural settings

The Rural Community Health Program (R-CHP), led by Dr. Andrea Wendling, is the newest rural training track in MSU's College of Human Medicine (CHM). Together with Program the Rural Physician at the Upper Peninsula Regional Campus, students participating in R-CHP are eligible for the Leadership in Rural Medicine certificate.

The Traverse City R-CHP program includes three rural educational communities — Charlevoix, Petoskey, and Alpena. Pilot students from this campus have completed almost eight months of clinical training shared between Traverse City and their rural educational community. Students report that their clinical experiences have been exceptional and R-CHP students' clerkship performance (including testing and logged experiences) has been at or above the level of peers.

The Midland Regional campus R-CHP pilot program started with two students in January 2014. However, a subsequent grant of \$378,000 from the Herbert H. and Grace A. Dow Foundation has provided funding to support expansion of R-CHP at the Midland Regional campus. "The Dow Foundation grant is a tremendous benefit for our program in Midland," said Wendling. "We'll be able to bring in more students more quickly."

Wendling said there is a pressing need for physicians in rural communities. "Rural America is our largest underserved population. The percentage of US graduates who intend to practice in rural areas has continuously decreased over the past decade," she said.

"As a rural doctor, you are tightly woven into a community,

a situation which always presents its own joys and struggles," Wendling continued. "I like working with students as they build relationships with patients, begin to understand the community, and start to creatively problem solve their way through the challenge each patient presents."

Each year, up to twelve students are selected for the Rural Community Health Program. The goal of R-CHP is to provide students with enriched clinical experiences, rural public health leadership opportunities, and small town lifestyle experiences that will encourage R-CHP alumni to establish rewarding practices in Michigan's rural communities.

R-CHP students receive clinical education from Michigan State University faculty and CHM-selected board-certified volunteer physicians in Northern and mid-Michigan. Rural communities participating in R-CHP have been selected based on exemplary educational and clinical opportunities they offer. Students also have the chance to work with the Family Practice Residents at Munson Medical Center or mid-Michigan Medical Center-Midland.

The R-CHP curriculum emphasizes a caring, compassionate, humane approach to the doctor-patient relationship and includes exposure to Rural Community Health and Rural Leadership training.

Dr. Wendling is a rural family physician in Northern Michigan and an associate professor and director of the Rural Health Curriculum for Michigan State University's College of Human Medicine. She has received many teaching awards including CHM's Outstanding Community Volunteer Faculty award in 2012, the Distinguished Faculty Award in 2004, and the American Academy of Family Physician's Pfizer Teacher Development Award in 2000. Dr. Wendling is on the editorial board for Family Medicine. She is the national chairperson for the Society of Teachers of Family Medicine.

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University Development
Michigan State University
Spartan Way
535 Chestnut Road, Room 300
East Lansing, MI 48824

Lou Anna K. Simon, President
Michigan State University

Robert W. Groves, Vice President
University Advancement

Alisa Healy, Editor
(517) 884-1019

Lucille Fallon, Director
Corporate & Foundation Relations

Tim Wuchter, Associate Director
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