

YOUR IOWA STATE

STORIES OF TRADITION AND TRANSFORMATION

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Photo: mcclanahanstudio.net



Entrepreneurism: the fuel to create and innovate

When **Shivani Garg** (above) began her graduate program in biochemistry at Iowa State University, she never expected that before adding “Ph.D.” after her name, she’d put another designation there: president of her own company, OmegaChea Biorenewables LLC.

“When I started my research, I didn’t envision founding a company,” Garg said. “I was just hoping to have an application somewhere down the line. It happened that we could get closer to commercialization now.”

Peter Keeling says there is much more to Garg’s success than happenstance. Keeling oversees the BioBased Foundry in the National Science Foundation Engineering Research Center for Biorenewable Chemicals. The BioBased Foundry develops entrepreneurs at Iowa State – particularly graduate students like Garg, who are “technically very deep in insights, but may lack the skill to translate their research insights into innovations that can be commercialized,” he explained.

Today, Garg is as versed in OmegaChea’s business strategy as the research it’s based on. Her work is focused on developing a bio-based raw material that could potentially replace petroleum-based

chemicals in products like household detergents, motor oil and polyesters, making them better performing and more environmentally friendly, to boot.

Garg is among a growing number of undergraduate and graduate student-entrepreneurs who illustrate the effectiveness of this new process for funneling knowledge discovered at Iowa State into the commercial pipeline. The model concentrates on creating an innovative environment in which both students and faculty are actively engaged in determining whether a business use exists for their research and ideas.

There is also a cultural factor involved in getting faculty and students to engage in entrepreneurial innovation, especially for current and upcoming Iowa State students. These students want more from their educational experience; they seek to join with others with diverse backgrounds to explore how best to serve the greater good.

College of Design Dean Luis Rico-Gutierrez terms this social entrepreneurship. “In times of dwindling resources, how can we come together to solve problems?” he said. “This is a characteristic of the new generation of

entrepreneurs – they are driven to solve big societal problems.” And with Iowa State’s environment of cross-disciplinary collaboration, he says, “the sky’s the limit” in what students and faculty can accomplish.

Keeling agreed. “If you can get an entrepreneurial, innovative culture going, students talk about it to others, who then want to know how they can get involved.”



THE OLDEST BUILDING ON CAMPUS is the Farm House, completed in 1861 – the same year the Civil War began. The building is a National Historic Landmark and now serves as a museum of early Iowa State history and culture.



MAKING FARMING SAFER, ONE TRACTOR AT A TIME

The most dangerous occupation in the United States isn't construction worker, pilot or police officer: it's farmer, according to the research uncovered by graduate students working in David Ringholz's industrial design studio.

Ringholz, associate professor and chair of the industrial design program, is leading these students in the development of something that could take farming off that list: an instrument that improves response time after tractor rollover accidents.

Similar to the technology used by trapped avalanche victims, the device monitors a tractor's position and quickly alerts family members and emergency personnel in the event of a rollover.

In addition to designing the device itself, an interdisciplinary team comprised of faculty and students in environmental behavioral psychology, industrial design, and engineering spent an entire semester studying how farmers comply with safety measures in an effort to increase adoption of the rollover technology.

"We started out thinking it was a design problem – issues having to do with the hardware and design of the equipment," said Ringholz. "We quickly realized there was as much to learn about the behavior [leading to tractor rollovers] as the equipment."

The team hopes to field-test the device and get it into the hands of farmers as soon as possible, and ultimately aims to tackle additional agricultural safety concerns, like power takeoff and grain bin accidents.

"Our primary goal is fatality prevention," said Ringholz.



1,819

FALL GRADUATES! A record 1,819 students graduated from Iowa State in December 2013 – more than either the University of Iowa or the University of Northern Iowa's fall graduating classes – and marked the first time the university's fall degree tally has topped 1,800.



1,605

University of Iowa



600

UNI



Photo: mcclanahanstudio.net

Students Venture into Success

One of the main engines for transforming entrepreneurship education and business development at Iowa State has been the John Pappajohn Center for Entrepreneurship, established in 1996 by John and Mary Pappajohn. Since then, thousands of students and faculty have accessed resources through the center that have set them on their entrepreneurial journeys, including current doctoral student in mechanical engineering **William Lohry** (above left, with doctoral student Nik Karpinsky).

As a freshman honors student, Lohry was able to plunge into research the moment he stepped on campus, joining the 3-D lab of Song Zhang, William and Virginia Binger Assistant Professor of

Mechanical Engineering. By Lohry's senior year, the chemical engineering major, along with another engineering student, Sam Robinson, had acquired the depth of knowledge to identify a way to improve the quality and speed of 3-D scanning. But where to go with their idea?

Enter the Pappajohn Center. Staff members Judi Eyles and Mike Upham worked with the students to develop a business plan to submit for the Pappajohn New Venture Business Plan Competition in 2012. The students won the \$5,000 first prize, which they used to found Phasica LLC.

"I don't know that Phasica would be where it is today without the Pappajohn Center," Lohry readily admits.



Success by Design: New Professor has Big Plans for College of Human Sciences

How did you spend your pocket money in elementary school? If you're like many children, you may have chosen to buy candy, dolls or baseball gloves.

What about yarn? This was always the purchase of choice for **Eulanda Sanders** (above), a multi-talented teacher, mentor, artist and innovator who recently joined Iowa State University as the new holder of the Donna R. Danielson Professorship in Textiles and Clothing.

"I knew by age eight or nine I wanted to pursue a future in textiles, drawing and design," she explained. Her work explores a variety of topics, ranging from using metal denim manufacturing remnants in design, to developing Western-style women's clothing made from Ghanaian textile prints.

One of Sanders' most innovative projects focuses on affixing flexible solar panels to ultraviolet-protective clothing, allowing the wearer to charge devices such as cell phones. "We see potential for use among all types of people, from

students on the go to military personnel, first responders and road construction crews," Sanders said. "We want to harness the sun as a resource to make life better for people and the planet."

As a professor in the department of apparel, events, and hospitality management in the College of Human Sciences, Sanders teaches several upper-level undergraduate and graduate courses, and is developing additional courses and partnerships. "I love working with students and partnering to help them reach their goals," she said. "I have had amazing mentors, and I want to give back and help people do what they are passionate about pursuing."

"The reputation of the department has always been outstanding; To work with people here is such an honor," she added. "My goal is to build the best apparel, merchandising and design program in the world, and I want to be known for being approachable, advocating for new ideas, and making a positive difference at Iowa State."



IOWA STATE'S ORIGINAL SCHOOL COLORS were gold, black and silver: Gold for agriculture's golden harvest, silver for engineering, and black for veterinary medicine. Cardinal and gold were adopted in 1899 by the athletic council because it was difficult to use the former colors in the dyeing of a sweater.



Photo: Bob Elbert

A FOUNTAIN FACELIFT

When water last flowed in the courtyard fountain near the Food Sciences Building, Ronald Reagan was president, "The Oprah Winfrey Show" had just premiered, and "Top Gun" was the highest-grossing film of the year.

Now, nearly three decades later, the fountain – part of sculptor Christian Petersen's mural "The History of Dairying" – has been restored to its original glory.

Created in 1934, the terra cotta mural was Petersen's first work on Iowa State's campus, begun after he was hired (by painter Grant Wood, of "American Gothic" fame) under President Franklin D. Roosevelt's Public Works of Art Project.

The six panel bas-relief mural has been well-maintained over the years, but a 1986 addition to the Food Sciences Building enclosed the courtyard and cut the plumbing to the fountain.

The new and improved fountain was formally presented during last year's VEISHEA celebration. You can see it in full operation from spring through fall.

CyRide buses drove **1,189,906** revenue miles in the 2013 fiscal year – that's about the same distance as five trips from Earth to the moon!

Welcome to **YOUR IOWA STATE**,
the newsletter that keeps you connected
with **Iowa State University**. Look inside to
find out what's happening on campus as
well as to relive some of your own Iowa
State memories.

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CYCLONE INNOVATIONS

From Rice Krispies treats to the first digital
computer, many familiar and exciting
inventions have Iowa State roots.



**THE FIRST
ELECTRONIC
DIGITAL
COMPUTER**



**ROUND
HAY BALES**



**RICE KRISPIE
TREATS**



**MAYTAG BLUE
CHEESE**



LIPITOR



**HYBRID
SEED CORN**



**WORLD'S
HARDIEST ROSES**

To see a complete ISU innovation timeline, go to www.youriowastate.com.