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June 2017 | Member Newsletter

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Phil Kozera

Letter from the Executive Director



Phil Kozera  
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## Bio Nebraska Basks in Summer Events

Thank you to Southeast Community College for hosting a Biotechnology Lunch ‘n Learn and to the industry panelists who participated. The platform provided SCC science students an opportunity to network and learn about local biotechnology companies and career opportunities. The event was well attended with approximately 50 students participating in the conversation.

Compliments to everyone who participated in the Bio Nebraska 5th Annual Life Sciences on the Links golf scramble at Iron Horse on June 8th. Our industry was well represented and it was a terrific day to enjoy the camaraderie of other life sciences professionals.

A special thank you to our sponsors PhRMA, Fisher Scientific, Streck, Nengen, GeneSeek and

A special thank you to our sponsors FIRMIC, FISHER SCIENTIFIC, STRECK, ROGER GENESSEE and Novozymes for their support. I'd also like to thank Dr. Kelly Lechtenberg and his team at Midwest Veterinary Services/Central States Research Centre for their sponsorship and support of the beverages.

Bio Nebraska joined the Nebraska delegation representing our state at the BIO International Convention in San Diego. BIO International is the world's largest and most significant biotechnology event, drawing global industry and government leaders. It's important for Nebraska to have a presence during the event and it was gratifying to promote Nebraska's biotech community to the global audience.

On the legislative front this month, Bio Nebraska has engaged on several points on the federal level. We joined advanced biofuel producers and trade associations in a letter to members of the Senate Environment and Public Works Committee, asking them to support the summertime use of E-15.

**“It's important for Nebraska to have a presence during the event and it was gratifying to promote Nebraska's biotech community to the global audience.”**

We also commented on Medicare Part B. We believe that recent recommendations by Medicare Payment Advisory Commission (MedPAC) would further diminish patient access, drive health care consolidation and impede physicians' ability to practice medicine and provide personalized care.

Finally, I hope everyone has a safe, enjoyable, and patriotic 4th of July and ask that you mark your calendar for the *Animal Health in the Heartland: Ensuring Safe Food Supply* symposium scheduled for July 18th and 19th in Ames, Iowa.

Best regards



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## Upcoming Events



### [Process Safety Boot Camp](#)

July 11-14  
Kearney, NE



### [Animal Health Symposium](#)

July 18-19  
Ames, IA



### [BIO World Congress](#)

July 23-26  
Montreal, Canada

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## Bioscience Leader Spotlight



**Water for Food**  
DAUGHERTY GLOBAL INSTITUTE  
*at the University of Nebraska*

## The Daugherty Water For Food Global Institute

*In the spotlight, today is Dr. Peter G. McCornick, executive director of the Daugherty Water for Food Global Institute at NU. The Institute provides water research, policy and education.*

**Q: Dr. McCornick, please tell us a little about yourself.**

A: I grew up in a farm family in South West Scotland. My education was in agricultural engineering with an emphasis in water and agriculture. I came to Colorado for my graduate studies, where I worked with farmers irrigating from the Ogallala aquifer. Since completing my PhD, my career has focused on water, agriculture and environmental challenges, which has taken my family and me to a number countries and a few states in the U.S.

**Q: Have you enjoyed Nebraska so far?**

A: The first ten months in Nebraska have been busy and rewarding. My wife Miriam and I have enjoyed getting to know Lincoln and the state. People have been welcoming, and colleagues, partners and university leadership have been supportive.

**Q: As you consider the mission of the Daugherty Water for Food Global Institute, what is most exciting to you?**

A: It is especially exciting to work with experts at NU and throughout the state. The Institute is fortunate to have such a wealth of experience to work on issues here and in other parts of the world, especially where there is chronic food insecurity.

**Q: Many say that food production must double to feed a growing world. How can that be possible with limitations on freshwater?**

A: We will need to produce a lot more with less. It is possible, if we re-double our efforts. Increasing population; growing economies, which raise demand for water-intensive crops; and rising temperatures due to climate change - these will increase demand for water in agriculture. We are also up against greater variability in water availability plus growing competition for water, degradation of quality and over-use.

**Q: What fields of science are most promising to reduce water use in agriculture?**

A: Increasing production while sustaining resources will include many disciplines working together with farmers, managers and decision-makers. On the technology side, we'll need innovation in irrigation engineering, agronomy, bio-physical sciences, as well as animal, soil and ecosystem science. Social science also can contribute from an economic, business and legal framework. Many tools are needed to balance higher demands for water with dwindling natural resources and increasing climate change.

**Q: Irrigation engineering has made big strides but are we reaching the limits of technology?**

A: Technology has been a major force in changing how we manage water here - from the advent

A: Technology has been a major force in changing how we manage water here - from the advent of the submersible pump and center pivots to evolving control systems. As these are refined, along with remotely sensed information, drones and other innovations, farmers will have more capacity to manage water and productivity.

**Q: Can we breed food crops that use less water but still yield well?**

A: While it is challenging, we can breed crops to produce more with less water. This is a priority for breeders and molecular biologists. Progress has been slow. The genetic and physiological basis for this is not well understood. However, new technology in crop breeding plus high-throughput phenotyping may speed trait improvement in crop-breeding programs.

**Q: What is the current state of the world with respect to water supplies and quality?**

A: At the global level, the glass is half-full. Although, not all of it is good quality water. Many countries have declining resources and their glasses are alarmingly close to empty. The United States is relatively water abundant. But water is not always plentiful where population or agriculture are located, as was recently seen in California's long drought. Consider Jordan - chronic water scarcity makes basic drinking and household water very costly. Their agriculture relies mainly on treated wastewater and Jordan must import most of its food. Many countries, especially in the developing world, are increasingly water scarce. Most do not have Jordan's financial ability to secure water supplies.

**Q: Where water shortages occur, fragile economies suffer more than richer countries. How can we address this challenge?**

A: Yes, developing countries are much less able to prepare for, cope and recover from drought and water shortages. We are working with the National Drought Mitigation Center (NDMC) at the University of Nebraska to help partners in the Middle East and India develop drought-monitoring systems for their countries. The team draws on NU experience to develop techniques and approaches that can be applied where data are lacking and the institutions are different.

**Q: Is desalination feasible?**

A: While the technology has become more efficient, it is, in most cases, more expensive than other sources, if they are available. It is an important technology in providing fresh water to many communities and countries, although it is rarely used in agriculture. Dubai and others in the Gulf rely on desalinated water. It is a viable solution in some settings, but not everywhere. Many people see it as the ultimate answer, but it is only a part of the puzzle. It does need a lot of energy, and a source of brackish or sea water. Also, the saltier the water, the more energy is needed, which makes it costlier. A plant in Tampa Bay takes in water from the bay, which is less salty than sea water and more cost effective. In the Persian Gulf, salinity levels are rising from discharging of brine back into the Gulf. This increases energy use and has some concerned these systems are likely to fail.

**Q: Finally, how can Bio Nebraska members contribute to solutions addressed at the Institute?**

A: There are many ways for members to connect with the Institute and our 100 faculty fellows across the NU system. We just held our flagship water for food conference, which drew participants from around the world. Our next conference is in April 2019. But we do host/co-host a range of events through the year. Please visit our website, join our mailing list, and follow us on social media. If you are interested in a topic, do reach out to me or other Institute staff.

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### Evonik Expands in Blair

Evonik and Royal DSM will build a \$200 million production facility for their omega-3 fatty acids in Blair, Nebraska. The joint venture called Veramaris is expected start up in 2019. ([See video on omega-3 fatty acids](#))

### Green Plains Buys Cargill Feed Yards

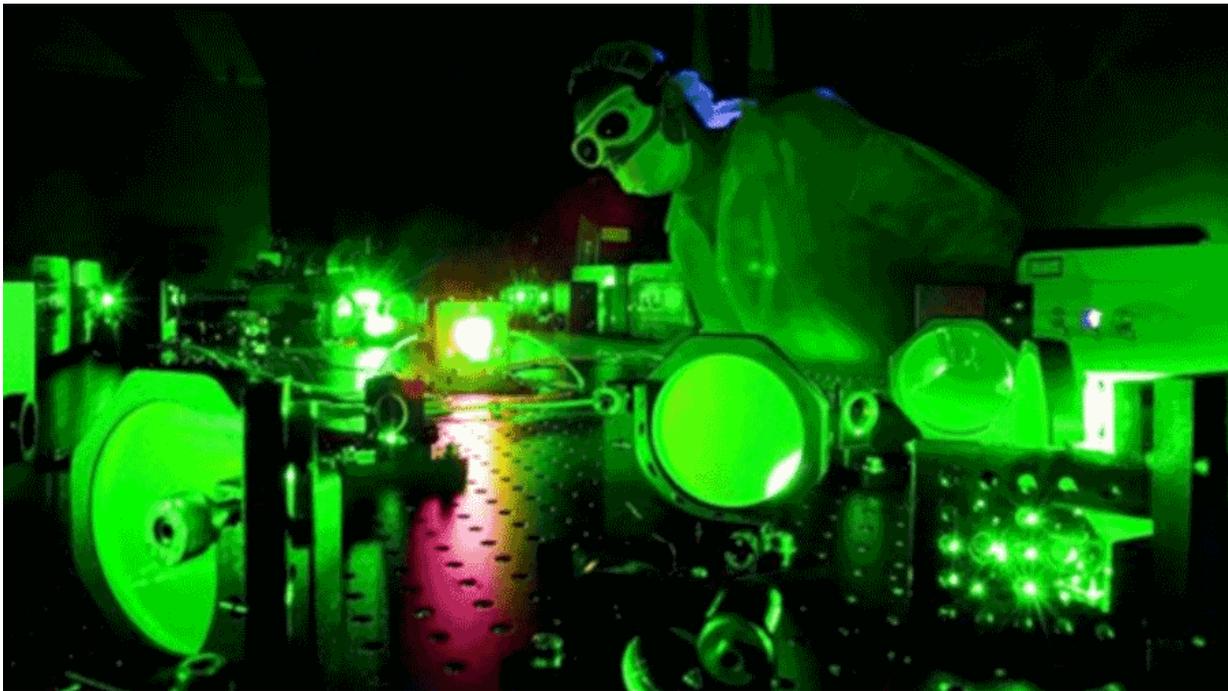
Green Plains' cattle unit bought two feed yards from Cargill for \$36.7 million. Adding the Leoti, Kan., and Yuma, Colo., yards increases capacity by 155,000 head, making Green Plains the fourth-largest U.S. cattle feeder and creating demand for the firm's ethanol co-products.

### NatureWorks Creates Performance Chemicals Division

NatureWorks, an advanced materials company offering renewably sourced polymers and chemicals, has formed a performance chemicals division.

### Nebraska Chamber Federal Summit Aug. 9

Plan to attend the 2017 Federal Legislative Summit on August 9, 8:30 am to 1 pm at the Strategic Air & Space Museum near Ashland. The event is hosted by the Nebraska Chamber, along with the Lincoln and Omaha Chambers.



### Physicists Have Produced the Brightest Light Ever On Earth

Researchers have published results of an experiment creating the brightest light ever produced on Earth - shining as bright as a billion of our suns. These findings have promise for X-rays that produce high-resolution imagery in medicine, engineering, science and security. UNL physicists fired the DIOCLES laser, one of the most powerful lasers in the US, at helium-suspended electrons to create the ultra-bright light. [Read more](#) about Donald Umstadter and colleagues at UNL Extreme Light Laboratory.

### Governor's Economic Development Summit July 13

This event is a forum for business leaders, trade practitioners and public leaders. It will feature sessions on infrastructure, talent development, workforce housing and international trade and be held in Lincoln.

### New members joining Precipio, Transgenomic Scientific Advisory Board

Upon completion of the Precipio-Transgenomic merger, joining the firms' scientific advisory board are: Dr. Jeffrey Sklar, Yale School of Medicine; Dr. Mike Makrisioros, Harvard Medical School and

Dr. Dr. Jeremy Sisk, Yale School of Medicine; Dr. Mike Makrigiorgos, Harvard Medical School and the Dana-Farber Cancer Institute; and Dr. Gil Mor, Yale School of Medicine.

### [UNeMed Hosts Partnering Day for Medical Devices](#)

The Industry Partnering Summit entered its second year as UNeMed hosted a gathering of entrepreneurs, venture capitalists, medical device professionals and inventors to review select medical-device innovations.

### [Neogen Extends Genomics into Food Safety](#)

Neogen launched its NeoSeek next-generation sequencing, enabling food companies to identify all bacteria in a sample using single genomic test. The services are done at Neogen's GeneSeek facilities in Lincoln, with bio informatics supplied by MetaGenome Analytics, which is led by Andrew Benson, UNL professor of biotechnology.

### [Easi-CRISPR May Improve Gene Insertion](#)

A UNMC research team is using a new patent-pending twist on CRISPR called Easi-CRISPR to improve insertion of DNA and design better animal models for research. Dr. Channabasavaiah Gurumurthy and the team edited long sequences of DNA into 13 points on CRISPR-cut mouse genomes with varying degrees of success. ([See UNMC's interesting blog](#))

### [Green, Others from NU, Honored by Animal Science Society](#)

Five Nebraska faculty and administrators have earned national American Society of Animal Science awards - including Chancellor Ronnie Green, who will receive the society's highest honor, the Morrison Award.

### [Blog: Trade Secret Protection, Distilled](#)

What type of information can be a trade secret? The federal Defense of Trade Secrets Act of 2016 defines the information as all forms and types of financial, business, scientific, technical, economic, or engineering information. Read up on this in Advent IP's blog.

### [Doane, UNL Offer Environmental Science Program](#)

Doane University and UNL are offering a cooperative 5-year dual-degree program for a bachelor and master's degree in environmental science.

### [Researcher Examines Enhancing Preschool Science](#)

Soo-Young Hong, associate professor of child, youth and family studies, is exploring how a professional development program could help preschool teachers integrate science into their classroom activities. Hong is doing the study with Brazilian researchers in São Paulo. The team provides training materials to children's development with science teaching goals.

### [Khan Starring in \*Mosquito\* on Discovery Channel](#)

*Mosquito*, a Discovery Channel documentary, focuses on the single greatest agent of death in modern human history: the mosquito. As a former director for the Centers for Disease Control and Prevention (CDC), Dr. Ali S. Khan, dean of the UNMC College of Public Health, speaks candidly about combating mosquito-borne diseases in the show set for July 6.

### [Taking Medical Training on the Road in Nebraska](#)

UNMC launched four Simulation in Motion Nebraska trucks (SIM-NE) to go to Norfolk, Lincoln, Scottsbluff and Kearney. UNMC Chancellor Jeffrey P. Gold said the customized trucks, funded by a \$5.5 million grant, offer free high-tech simulation and real-life training for rural emergency medical services and hospitals.

### [UNO Researcher Featured in Science](#)

Enhancing the body's potential with exoskeletons is becoming more science than science fiction. UNO biomechanics expert Philippe Malcolm is featured in "*Science*" magazine in an article on exoskeleton devices, showing that research has begun to catch up with the goals set by scientists more than a century ago.

### State Farm Economy Sorter

Nebraska's net farm income is projected to decline by nearly 16 percent for 2017, to \$3.7 billion, as federal ag support declines and as yields normalize following a strong 2016 harvest. It would equal about half of the nearly \$7.5 billion Nebraska farmers realized in 2011's record-high year. "Farm incomes have been driven down over the last four years and are expected to bottom out in 2017," said Eric Thompson, director of the Bureau of Business Research.



*Nebraska's leading economic indicator showed a decline in manufacturing hours in May.*

### Economic Indicator Points to Momentum Loss in Late 2017

UNL's six-month leading economic indicator fell by 0.51 percent in May after rising in Q1 2017. The decline, coupled with an April drop, implies that the Nebraska economy will lose momentum in Q4 2017, said UNL economist Eric Thompson. In May, initial claims for unemployment insurance rose. Manufacturing hours, airline passengers and building permits for single-family homes declined. The survey also showed optimism for increased sales and employment.



## National News

### DDGs Make Tough Forage Easier to Digest

Scientists at Texas A&M are testing dried distiller's grains to see how much the feed supplement helps cattle digest poor-quality Bermuda grass. Dried distillers' grains are made of ground corn left over after ethanol production.

### Biotech Crops Slash Greenhouse Emissions, Boost Economy

Biotech crops add tens of billions of dollars to world ag plus reduce greenhouse emissions. "Without biotech crops, billions more kilograms of carbon dioxide would have been emitted in 2015 alone -- the equivalent of adding 11.9 million cars to the roads," said BIO President and CEO Jim Greenwood.

### Novartis Signs Deal with BMS for Cancer Combo Drug Study

Novartis is collaborating with Bristol-Myers Squibb on a Phase I/II study to evaluate Novartis' trametinib, in combination with BMS' nivolumab, and in combination with Opdivo plus Yervoy, or ipilimumab, for metastatic colorectal cancer.

### National Geographic Features Algae's Promise

Touted for fuel, algae also has big potential in fish and other animal feeds, pharmaceuticals, cosmetics, nutrition, bioplastics and fertilizers. The algae market could reach nearly \$45 billion by 2023.

### Pfizer, Lilly's Tanezumab for Chronic Pain Fast-Track

Pfizer and Eli Lilly and Co.'s humanized monoclonal antibody tanezumab has been granted fast-track designation by the FDA as a treatment for chronic back pain and osteoarthritis.

### Bioplastic Packaging Market Growing

Rising consumer demand will take the global bioplastic packaging market to \$34.24 billion by 2024. Europe is the largest market, at 32.7 percent of volume in 2016. North America and Asia-Pacific followed are expected to contribute \$3.26 billion by 2024.

### Sanofi Increases Focus on Biologics

Sanofi said it will invest \$669 million in each of the next two or three years into biologics production.

### Ag Tech Companies Working to Expand

Agriculture data has been a big disappointment for many U.S. farmers. Investment in agtech dropped in 2016, according to AgFunder, as cited by the *Wall Street Journal* "Why Big Data Hasn't Yet Made a Dent on Farms." However, Ag Tech companies remain optimistic about adoption of digital technologies.

### Trump Administration Targeting Drug Costs

The Trump Administration may instruct federal agencies to pursue value-based contracts as well as promote trade regulations that strengthen drug makers' intellectual property rights.

### Industry Weighs in on USDA Plans to Relax GE Regulations

The US agriculture industry had mainly constructive comments on requests for comments about relaxing regulation of genetically engineered (GE) organisms. USDA would exempt biotech products that present no risk to the environment or human health from USDA approval process. According to Politico, a similar attempt in 2008 was scrapped after a negative reaction from industry.

### Monsanto and Atomwise Partner on AI

Monsanto and Atomwise are using AtomNet technology to employ deep-learning algorithms and supercomputers to analyze millions of molecules for potential crop protection products.

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