



{ INSPIRE }



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February 2016 | Member Newsletter

Phil Kozera

Letter from the Executive Director



Phil Kozera  
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## Bio Nebraska - A productive pursuit of opportunities

Thank you to everyone who participated in our first Bio & Beers of 2016 and for Streck for sponsoring the event. Over 80 people were on hand to hear Suzanne Torroni and Ben Stobbe from the University of Nebraska Medical Center. They highlighted the world of cutting-edge medical training and simulation from UNMC's innovative iEXCEL program.

Nebraska's legislative session continues at a rapid pace. There was a hearing with the executive committee for Senator Morfeld's LB 987, which calls for the development of a Bioscience Steering Committee. This committee, under LB987, would recommend specific plans to help existing companies expand and grow commercial technologies developed at Nebraska universities. The goals are to create new jobs *and* new companies in our state.

Thank you to the following testifiers: Rob Owen, Streck Inc.; Lyle Middendorf, LI-COR; Stewart Bauck, Neogen GeneSeek; Michael Dixon, UNeMed Corporation; and Brad Roth, NUtech Ventures. We'd also like to thank the Lincoln and Omaha chambers for their letters of support.

**"Public policies that help safeguard our member companies' intellectual property are critical for continued growth."**

On the federal front, we are encouraging members to support the Defend Trade Secrets Act, which would provide federal jurisdiction for the theft of trade secrets. Public policies that help safeguard our member companies' intellectual property are critical for continued growth. We also are closely monitoring the national debate on the

cost of healthcare. Biomedical innovation has led to medicines and therapies that have provided significant benefits to society and we believe that it is critical to include the benefits of innovation in a balanced discussion.

I'm pleased to announce that biotechnology will be featured at the Governor's Ag Conference March 2 and 3 in Kearney. I'll be facilitating a roundtable discussion titled *Nebraska's Place in Biotechnology's Next Frontier*. The panel will consist of Dr. Rick Sibbel of Merck Animal Health, Brandon Wardyn of Dupont Pioneer and Nicole Rudningen from Evonik. This venue will highlight Nebraska's significant accomplishments in ag biotechnology. If you are interested in more, take a look at the [agenda](#).

Please mark your calendar for the Bio Nebraska Life Sciences Association annual meeting. It is scheduled for April 28 at TD Ameritrade Park in Omaha from 5 to 7:30 p.m. Our annual meeting always provides an opportunity to network with fellow life science professionals as well as honor the Governor's 2016 Bioscience Award recipient.

Best regards,



Phil Kozera

P.S. Please forward this e-newsletter to others in your organization so they can stay in touch with our association.

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## Upcoming Events

-  [Governor's Ag Conference](#)  
March 2-3, Kearney, NE
-  [Biotech Innovation Showcase](#)  
March 30, Ankeny, IA
-  [World Congress of Industrial Biotechnology](#)  
April 17-20, San Diego, CA
-  [Bio Nebraska Annual Meeting](#)  
April 28, 5 to 7:30 pm, TD Ameritrade Park, Omaha
-  [BIO International](#)  
June 6-9, San Francisco, CA

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## Bioscience Leader Spotlight



Clague Hodgson (left) with Jim Williams (right) and Aaron Carnes

## Clague Hodgson and Nature Technology Team See Their Platform Succeeding

**Q: Clague, the name of your company, Nature Technology, joins the ideas of nature and technology. How do your vaccine production methods combine what is natural with advanced technology? And what do you find most exciting about your field of work?**

"What excites us is developing platform technologies that can be used for treating a diversity of disease targets."

A: NTC makes biologic drugs. They are, by definition, made by living cell factories. In our case that is *E. coli* bacterial cells. We use them to make nucleic acid-based drugs. These are derived from small circles of DNA, called plasmids, which replicate within bacterial cells. In nature, plasmids confer antibiotic resistance on bacteria. This can be a bad thing for humans and animals. But with our technology, we transform them into a good thing. This involves substituting sucrose selection for antibiotic resistance. Then we use the plasmids to grow large quantities of human-designed therapeutic genes that can be used in treating genetic disorders, cancers and immunological targets. What excites us is developing platform technologies that can be used for treating a diversity of disease targets. Our partner organizations are involved in clinical trials around the world, and we are seeing, for the first time, positive results in multiple human trials.

**Q: What news can you share about the development of your technology platforms?**

A: We have several clinical trials going with good promise. All these Phase I trials showed signs of efficacy, and no adverse events were reported. Therapeutic areas involve *Herpes simplex virus II*, *Cytomegalovirus*, which can be a problem for people with suppressed immune systems such as those undergoing cancer treatment, and allergies.

**Q: What are the advantages of your technology platform compared to other methods of vaccine production? Why do your partners turn to your company?**

A: It is easy and economical to make large quantities of highly purified DNA using NTC's HyperGRO™ process. Typical yields are in the range of 1-2.5 g/L of fermentation, and doses range from a few micrograms to a milligram or more. NTC's DNA vectors typically outperform traditional DNA-vaccine vectors by quite a margin, in both duration and expression levels. We think that is why we are seeing efficacy in the clinic, and why companies are increasingly relying on NTC vectors.

**Q: Jim and Aaron are key players at NTC, along with your small staff. How do so few of you do so much?**

A: Jim Williams, NTC's chief scientific officer, an industry veteran and an inventor with a keen scientific intellect. Aaron Carnes is a creative UNL-trained bioprocess engineer who has worked at NTC for over ten years. Both are

inventors of the HyperGRO™ process. Together, we have just seven full-time employees, and have already produced over 200 pre-clinical products for our partners.

**Q: NTC has emerged from the so-called valley of death that start-up biotech firms go through? To what do you attribute your resilience and success?**

A: The field of genetic medicines has taken 30 years to get to where we are today. And we still have a way to go before the first approved products appear on the shelf. So, while it is too early to declare success, there are encouraging signs. For example, an immunological-tolerance program based on NTC vectors was recently sold by Immunomic Therapeutics, Inc., to Astellas Pharma in Japan, for over \$300 million up front, along with double-digit royalties. That is the biggest DNA vaccine deal yet. We consider this to be a validation of NTC's technology, and of its business model, which is based on out-licensing in-house-developed technology.

**Q: Congratulations on your role in that achievement.**

A: Thank you. We are grateful.

**Q: What has it been like to do business in Nebraska, and what do we need to do to be able to offer medical-technology innovation that is competitive with more populous regions?**

A: Nebraska is, of course, a great place to live, and there are an amazing number of educated, talented people here, especially given how sparsely populated we are. As NTC is an international business that ships to partners all over the world, there is little reason to relocate. However, as a state we do need to remain tax competitive (e.g., with border states that have no income tax).

**Q: You have been part of Bio Nebraska since it began. How specifically has the association provided help to you and your company?**

A: Nebraska has a diverse community of people and organizations, both academic and private, that contribute to the overall health, agriculture and energy sectors of the economy. Bringing them all together as a single voice has been the task of Bio Nebraska, and we enjoy contributing to that process.

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## State News



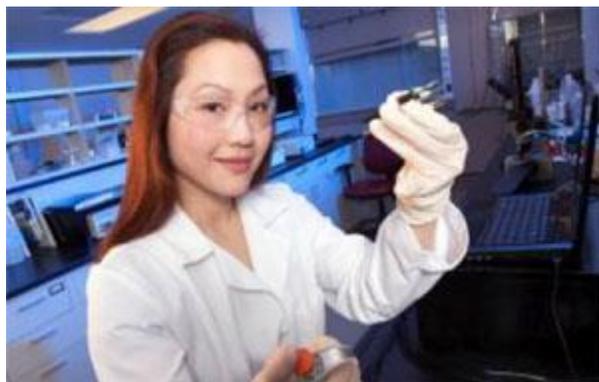
*Dr. Eric Thompson, director of the Bureau of Business Research.*

[Nebraska economy to grow slowly this summer](#)

The Nebraska economy should grow modestly during summer 2016, according to the latest UNL leading-economic-indicator report. The January Survey of Nebraska Business predicted strong growth in sales and employment at their businesses over the next six months. See the [full report](http://www.bbr.unl.edu) at the UNL Bureau of Business Research website, <http://www.bbr.unl.edu>

#### **First-ever Startup Week in Omaha at a price that can't be beat: free**

March 21-26 will mark the first-ever [Omaha Startup Week](#) which will include 60+ events focused on five tracks, according to Silicon Prairie News, in a five-day program to celebrate the Omaha startup community and "build momentum and opportunity around entrepreneurship." [Silicon Prairie](#)



*Rebecca Lai, UNL associate professor of chemistry, developed DNA-based probe as a gold biosensor.*

#### **DNA probes find gold and other metals**

Future prospectors might seek gold with a hand-held biosensor that uses DNA to find traces of the metal in water. The sensor is the latest in a series of metal-detecting biosensors under development by Rebecca Lai, a UNL associate professor of chemistry. The paper-strip-based sensors are intended as low-cost tools to detect metal contaminants in water but also hold promise in gold mining. [UNL News](#)

#### **NSF \$941,174 award to improve STEM teaching**

Marilyne Stains, UNL assistant professor of chemistry, has earned a five-year, \$941,174 National Science Foundation award improve how universities can teach STEM. "There's a growing recognition that we have been developing all of these new instructional strategies that we know are more effective, yet STEM faculty aren't using them," Stains said. "Now there is an interest in training faculty." [UNL News](#)

#### **Online marketplace created by UNL students**

[FarmAfield](#), an online exchange developed by three UNL students, is a finalist in the global Thought for Food Challenge. Brennan Costello, Matt Foley and Andrew Minarick worked with Mitch Minarick, a UNL research assistant professor in Biological Systems Engineering, to match farmers and investors. The team is going to a Switzerland accelerator program to compete for \$10,000 in funding. [IANR News](#)

#### **Esculon awarded \$247,500 in federal and state funding**

Esculon LLC, based in Lincoln, received a \$150,000 SBIR Phase I grant from the National Science Foundation (NSF) plus \$97,500 in matching funding from the Nebraska Department of Economic Development (DED) to develop an innovative product for post-op surgical care. "As a native Nebraskan, I am excited for Esculon to play a part in growing the state's nascent med-tech ecosystem, thanks in part to funding from NSF and DED," said Evan Luxon, President and CEO of Esculon. [DED](#)

#### **Leadership Nebraska Applications due April 15**

Applications are now being accepted for the State Chamber's Leadership Nebraska – the statewide program that prepares Nebraskans who want to play a larger role in helping their community and state thrive. Applications are due by April 15. See more at [Leadership Nebraska](#).

### [Youth Talent Initiative taking applications until April 8](#)

Governor Pete Ricketts announced that the Nebraska Department of Economic Development (DED) is accepting applications for Nebraska Developing Youth Talent Initiative (DYTI) grants, a career program for manufacturing and information technology. "Nebraska must continue to offer our students more opportunities to experience manufacturing and IT and develop a familiarity with the industries," said DED Director Courtney Dentlinger. [DED](#)

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## National News

### [BIO unveils video campaign highlighting drug benefits](#)

BIO has unveiled a campaign entitled [Time Is Precious](#) as part of the national debate on drug prices, emphasizing that breakthrough therapies prolong the lives of patients with terminal conditions. The video will initially be seen in select US markets, according to the BIO Senior Vice President Ken Lisaius. "Our goal is to help educate the public, media and policymakers about the value that our members' products bring the greater healthcare universe," Lisaius said. [Boston Globe](#)

### [Looking for answers to drug-cost challenges](#)

While the rest of the healthcare system is moving toward paying for value, payments for drugs largely remain focused on price, regardless of health outcomes. Health benefits company Anthem and Eli Lilly are teaming up to improve the system. Lack of payment innovation is damaging in an era where new treatments promise great benefit for consumers, but also bring great upfront costs for individuals, employers, and governments at every level, according to industry blog [Health Affairs](#).

### [RFS spurs growth of biofuels, reduces oil imports](#)

The Renewable Fuel Standard is perceived as an "ethanol mandate," but the program provides more benefits, writes Joe Jobe, CEO of the National Biodiesel Board, in a letter to the editor of The New York Times. The RFS facilitated the growth of advanced biofuels, which led to at least a 50% reduction in carbon emissions compared with petroleum fuels, reduced oil imports and helped the biodiesel industry become a 2 billion-gallon-a-year industry, he writes. [The New York Times](#)

### [BIO Applauds Senate GMO Labeling Bill](#)

Proposed food-labeling legislation will give consumers fact-based information without the added costs and confusion of differing state laws, BIO reports. The bill offered by Senate Agriculture Chairman Pat Roberts (R-Kan.), would set a national standard for safety and labeling of foods made with genetically modified ingredients (GMOs) and develop accompanying public education. "We want consumers to know more about food and farming, but that information needs to be truthful and conveyed in a way that doesn't stigmatize beneficial farming methods such as biotechnology," said Brian Baenig, BIO's Executive Vice President of Food & Agriculture. [BIO](#)

### [Why university-industry collaborations in biotechnology matter](#)

The advantages of university-industry collaboration go deeper than monetary benefits. Universities need to attract highly talented faculty, and research dollars from industry can help them to do so. Universities also need to attract the brightest students, so an established pipeline for hiring by partner industries also will make institutions more attractive. These university graduates then add value to the companies as they apply their knowledge to innovate for employers. [Forbes](#)

**Bill aims to speed Zika vaccine**

A bill that would include Zika virus in the FDA's priority review voucher program has been introduced by Reps. G.K. Butterfield, D-N.C., and Susan Brooks, R-Ind. "We urgently need a solution, and the PRV program encourages the rapid development of safe and effective treatments and cures," Butterfield said. The bill is currently before the House Energy and Commerce Committee. [Bloomberg BNA](#)

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