



HONORING **INDIVIDUALS** FOR  
NEW **INVENTIONS, PATENTS,**  
& **LICENSED TECHNOLOGIES**

# INNOVATION 2016 AWARDS



THURSDAY **OCTOBER 6**  
DRC | AUDITORIUM  
**4:00 PM**





On behalf of UNMC leadership and UNeMed staff, we welcome you to the 2016 Research Innovation Awards Ceremony and Reception. As we celebrate UNeMed's silver anniversary this year, we also recognize all those who made our continued existence possible: You, the innovative UNMC and UNO faculty, staff and students who we are all here to honor today.

UNeMed's mission is simple to articulate: *We are here to help improve healthcare by fostering innovation, advancing biomedical research and engaging entrepreneurs and industry to commercialize novel technologies.*

Innovations all have the same humble beginning—an idea or a hypothesis. The path for an idea to become a product that improves the lives of millions is a daunting and perilous journey fraught with many obstacles. That is why UNeMed was created 25 years ago. We are here to help provide the advice, pathways and connections for your idea to grow and make the world a better place.

The Innovation Awards represent the culmination of Innovation Week as we celebrate the creators of novel technology. Today, we will recognize the inventors who have submitted new inventions, received issued U.S. patents, and successfully licensed technology. In addition, we will look to the future by recognizing new technology with strong potential, and honor Dr. Irving Zucker with the 2016 Innovator of the Year award.

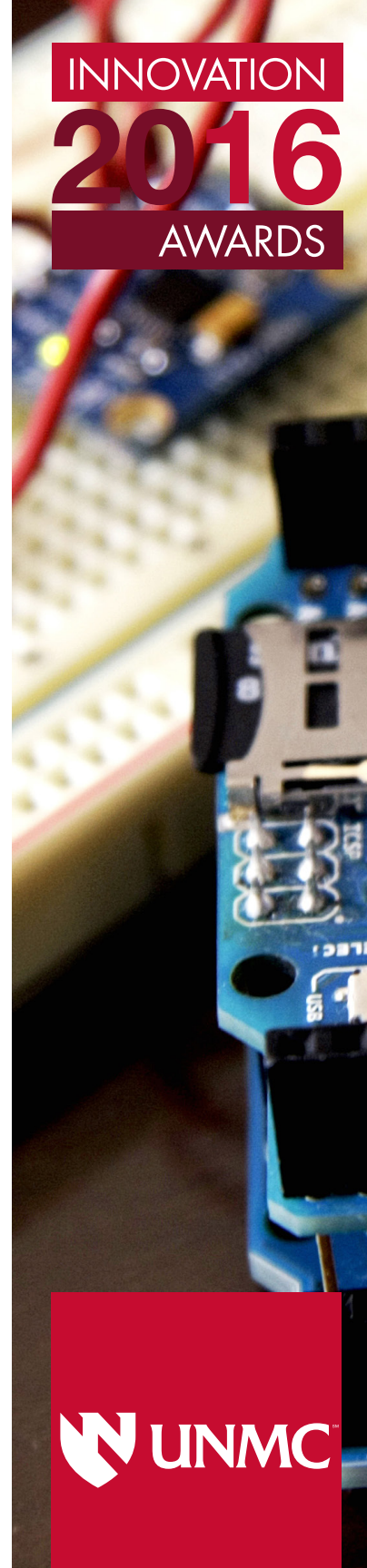
The UNeMed staff is committed to helping you develop your new inventions and make vital connections with industry. Please draw upon our expertise, and visit us at 4460 Farnam Street (Annex 14 on the Campus map). Our goal is to help you create relationships that will enable your work to benefit the lives of people throughout Nebraska and around the world.

Sincerely,

A handwritten signature in blue ink, reading "Michael Dixon".

Michael Dixon, Ph.D.  
President and CEO, UNeMed Corporation

# INNOVATION 2016 AWARDS







## INNOVATION AWARDS **SCHEDULE**

### Welcome

**Michael Dixon, Ph.D.**  
President and CEO, UNeMed

### Opening Remarks

**Jeffrey Gold, M.D.**  
Chancellor, UNMC

### Innovation Rewind: The Year in Review

**Michael Dixon, Ph.D.**  
President and CEO, UNeMed

### Presentation of Awards:

- New Inventions
- Issued Patents
- Licensed Technology

**Steven Schreiner, Ph.D.**  
Vice President & Director of  
Marketing and Licensing, UNeMed

### Special Awards:

- Most Promising New Invention
- Innovator of the Year

**Steven Schreiner, Ph.D.**  
Vice President & Director of  
Marketing and Licensing, UNeMed

### Closing Remarks

### Reception

DRC | Atrium

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## NEW INVENTION NOTIFICATION CONTRIBUTORS

Daniel Anderson  
Rita Antonson  
Janina Baranowska-Kortylewicz  
Surinder Batra  
Bernard Baxter\*  
Kenneth Bayles  
Deep Bhattacharya  
Bradley Britigan  
Tatiana Bronich  
Judy Carroll  
Shixuan Chen  
Seoung-Ryoung Choi  
Tanya Marie Custer  
Darren Dageforde  
Jeffrey Delaney  
William Denton  
Anna Dunaevsky  
Michael Duryee  
Benson Edagwa\*  
Bryant England  
Charles Enke\*  
Ann Fetrick  
Marius Florescu  
Joel Frandsen  
Priti Gandhi  
Apar Ganti  
Howard Gendelman\*  
Deepti Ghate  
Nicolas Griffin  
Chittibabu (Babu) Guda  
Channabasavaiah Gurumurthy  
Robert Tanner Hagelstrom  
Hani Haider  
James Hammel  
Kenneth Hansen  
Gleb Haynatzki  
Rick Helms  
Tanner Hill  
Yunlong Huang  
Km Monirul Islam  
Zhenshan Jia\*  
Jiang Jiang

Jason Johanning  
Gregory Karst  
Sachin Kedar  
Tomomi Kiyota  
Zbigniew Kortylewicz  
Yu Lei\*  
Sicong Li  
You Li  
Rongshi Li\*  
Steven Lisco  
Yan Liu\*  
Xu Luo  
Nicholas Markin  
Kimberly Michael  
Ted Mikuls  
Aaron Mohs\*  
Vincent Morris\*  
R. Lee Mosley  
Prabakaran Narayanasamy\*  
Thang Nguyen\*  
Kelli Novak  
Stephen Obaro  
David Oupicky  
Aru Panwar  
Amol Patil  
Andrew Patterson  
William Payne  
Peter Pellegrino  
Satyanarayana Rachagani  
Stephen Rennard  
Matthew Rizzo  
Debra Romberger  
Eric Rush  
Alicia Schiller  
Aleem Siddique  
Joyce Solheim  
Joshua Soucek  
Seth Stauffer  
Donny Suh  
Anand Suresh  
Denis Svehkarev\*  
Geoffrey Thiele\*

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UNIVERSITY OF INVENTION

 UNMC™

## NEW INVENTION NOTIFICATION CONTRIBUTORS

Myron Toews	Fei Yu
Serguei Vinogradov*	Fang Yuan
Saraswathi Viswanathan	Wesley Zeger
Michael Wadman*	Carli Zegers
Guangshun Wang	Chi Zhang
Jing Wang	Mutian Zhang
Xiaobei Wang	Jialin Zheng
Hanjun Wang*	Dandan Zheng*
Dong Wang*	Sumin Zhou*
Jingwei Xie*	Xiaofeng Zhu*
Wanfen Xiong	Donny Zimmerman
Jennifer Yentes	Irving Zucker*

## INVENTORS WITH ISSUED PATENTS

Janina Baranowska-Kortylewicz	R. Lee Mosley
Surinder Batra	Amarnath Natarajan
Stephen Bonasera	Dmitry Oleynikov
Shane Farritor*	Moorthy Palanimuthu
Howard Gendelman*	Ponnusamy
Matthew Kelso	Nicholas Stergiou
Zbigniew Kortylewicz	Joseph Vetro
Maximillian Kurz	Dong Wang
Amy Lehman*	

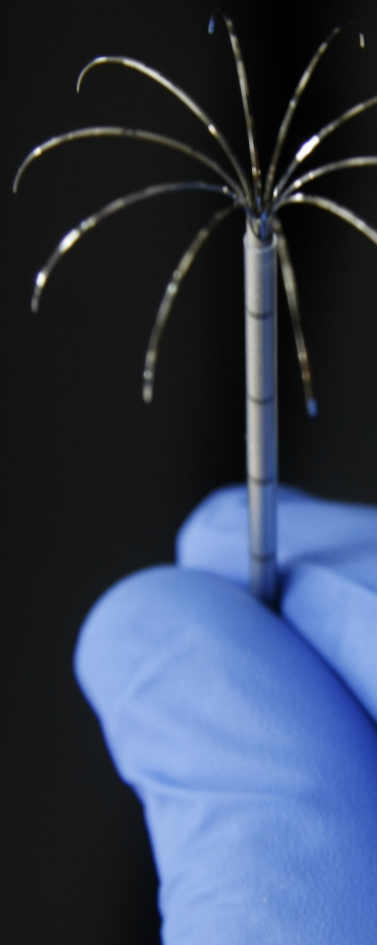
## CREATORS OF LICENSED TECHNOLOGY

Vimla Band	Gregory Karst
Janina Baranowska-Kortylewicz	Tammy Kielian
Surinder Batra	Zbigniew Kortylewicz
Janet Cuddigan	Kimberly Michael
Tanya Marie Custer	Dimitrios Miserlis
Alan Didier	Satyanarayana Rachagani
Robert Tanner Hagelstrom	Sam Sanderson
Hani Haider	Dawn Venema*
Michael (Tony) Hollingsworth*	Joseph Vetro
Javeed Iqbal	Dong Wang
Zhenshan Jia	Xiaobei Wang
Katherine Jones*	Fang Yuan

## TECHNOLOGIES LICENSED

ADA3 Antibody	<ul style="list-style-type: none"> <li>• Vimla Band</li> </ul>
Educational Images	<ul style="list-style-type: none"> <li>• Gregory Karst</li> <li>• Kimberly Michael</li> <li>• Tanya Marie Custer</li> </ul>
Fall Risk Educational Materials	<ul style="list-style-type: none"> <li>• Katherine Jones</li> <li>• Dawn Venema</li> </ul>
Glucocorticoid Prodrug for SLE Treatment	<ul style="list-style-type: none"> <li>• Dong Wang</li> <li>• Xiaobei Wang</li> <li>• Fang Yuan</li> </ul>
Immune Stimulating Peptide	<ul style="list-style-type: none"> <li>• Sam Sanderson</li> <li>• Michael (Tony) Hollingsworth</li> <li>• Tammy Kielian</li> <li>• Joespeh Vetro</li> </ul>
Orthopedic Surgical System	<ul style="list-style-type: none"> <li>• Hani Haider</li> </ul>
Panc02-Muc1 Cells	<ul style="list-style-type: none"> <li>• Michael (Tony) Hollingsworth</li> </ul>
Pleuraleak Air Leak Detection System	<ul style="list-style-type: none"> <li>• Dimitrios Miserlis</li> </ul>
Point-of-Care Genetic Testing Device	<ul style="list-style-type: none"> <li>• Robert Tanner Hagelstrom</li> </ul>
Pressure Ulcer Matrix	<ul style="list-style-type: none"> <li>• Janet Cuddigan</li> <li>• Alan Didier</li> </ul>
PTCL Diagnostic Assay	<ul style="list-style-type: none"> <li>• Javeed Iqbal</li> </ul>
Targeted Radiopharmaceuticals	<ul style="list-style-type: none"> <li>• Janina Baranowska-Kortylewicz</li> <li>• Zbigniew Kortylewicz</li> </ul>
UM-KC 6141 Cells	<ul style="list-style-type: none"> <li>• Satyanarayana Rachagani</li> <li>• Surinder Batra</li> </ul>

# INNOVATION 2016 AWARDS







**Joyce Solheim, Ph.D.**  
*Professor, Eppler Institute*



**Tatiana Bronich, Ph.D.**  
*Parke-Davis Professor of  
Pharmaceutical Sciences  
Director, Nebraska Center for  
Nanomedicine*

## Compositions for Modulated Release of Proteins and Methods of Use Thereof

The most promising new invention of 2016 is a nanoparticle formulation of a protein called CCL21 for the treatment of cancer.

Tatiana Bronich, Ph.D., and Joyce Solheim, Ph.D., have shown that a protein messenger, or chemokine, called CCL21 can be used to treat tumors. CCL21 is capable of attracting immune cells to the tumor site, but CCL21 doesn't last long inside the body, so the effects are relatively short-lived.

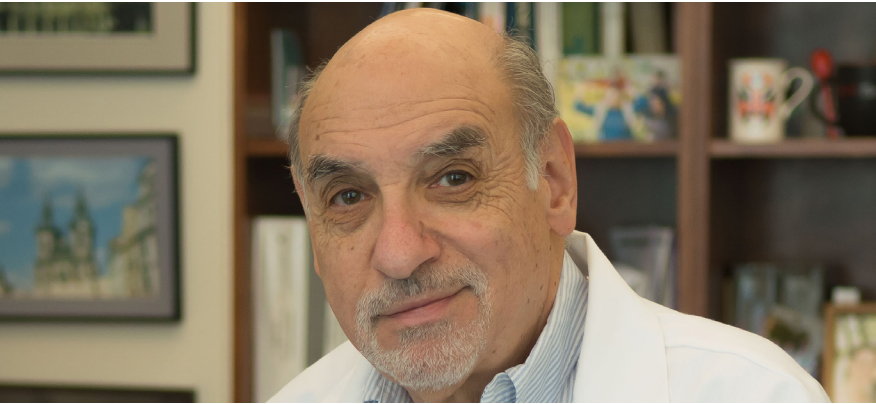
To get around this, Drs. Bronich and Solheim created a new way to deliver CCL21 directly to the tumor site while protecting it from degradation. The nanoformulation allows for extended release of CCL21 within the tumor site, which prolongs its effect and increases the overall therapeutic impact.

A number of companies are currently exploring potential collaborations with Dr. Solheim and Dr. Bronich to look at the co-administration of Nano-CCL21 with additional immunotherapies. One company has already signed an option agreement for this technology and will begin testing it in combination with their proprietary immunotherapy this fall.

Dr. Solheim received her Ph.D. in 1992 from Southern Illinois University and was a Postdoctoral Research Associate at Washington University School of Medicine from 1992-1997. In 1997 Dr. Solheim was an Assistant Professor in the Department of Microbiology at the University of South Dakota School of Medicine. She joined UNMC in 1999.

Dr. Bronich received her Ph.D. in 1986 from Moscow State University. She served as a research fellow from 1985-1989 at the A.N. Nesmeyanov Institute of Elementoorganic Compounds of Russian Academy of Sciences and from 1989-1995 at Moscow State University. She joined UNMC in 1995.





**Irving H. Zucker, Ph.D.**

*Theodore F. Hubbard Professor of Cardiovascular Research and Chair of the Department of Cellular and Integrative Physiology*

Irving H. Zucker, Ph.D., is our 2016 Innovator of the Year in recognition of his achievements in the development of a new strategy for treating cardiovascular disease, and for the discovery of measurable sympathetic vasomotion signatures.

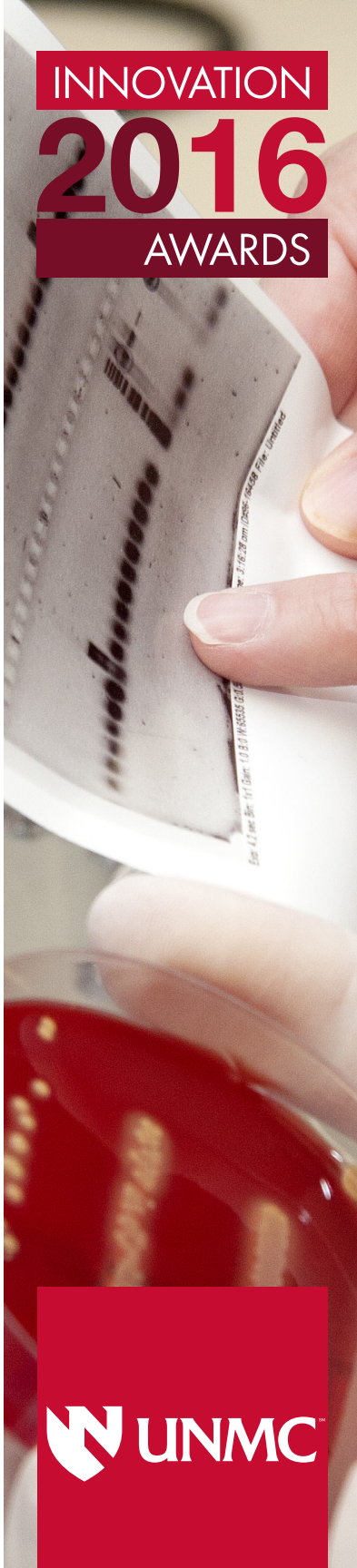
Dr. Zucker's research focuses on the role that central brain mechanisms play in regulating the circulation in experimental chronic heart failure and hypertension. Dr. Zucker's laboratory uses molecular, cellular and whole animal techniques to understand abnormal cardiovascular and neural regulation in these disease states. They have amassed a vast understanding of the cardiovascular reflex control of sympathetic nerve activity, and recently developed innovative treatment strategies for chronic heart failure and hypertension.

Dr. Zucker's laboratory is currently working on strategies to reduce the excessive sympathetic nerve activity found in chronic heart failure and hypertensive patients. They identified a compound that ablates specific nerve endings, which effectively lowers sympathetic nerve activity and improves symptoms associated with chronic heart failure and hypertension. This therapy was recently licensed by a biopharmaceutical company and a collaboration is underway to further develop the technology and file an Investigational New Drug application with the FDA.

Adding to his prolific research repertoire, Dr. Zucker's laboratory has also developed a non-invasive signal processing technique to identify and quantify sympathetic vasomotion. The new method allows for clinical diagnosis of sympathetic failure, assessment of disease severity, tracking disease progression over time, and evaluation or predicting a patient's response to therapy. They are currently completing validation studies in large animal models and assessing intraoperable validation of renal denervation. This work has caught the attention of a global leader in medical devices, creating the potential for a collaboration that could turn into a bigger opportunity in the coming months.

Raised in New York, N.Y., Dr. Zucker received his B.S. in Biology from The City College of New York in 1965, a M.S. in Biology from University of Missouri at Kansas City in 1967, and a Ph.D. in Physiology from New York Medical College in 1972. He continued his post-doctoral training at the University of Nebraska Medical Center where he became a faculty member in 1973. Dr. Zucker has been Chairman of the Department of Cellular and Integrative Physiology since 1989. He's dedicated the last 44 years to the neural regulation of cardiovascular function.

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## PATENTS ISSUED

### 1. "Robotic Surgical Devices, Systems and Related Methods"

*U.S. Patent No. 9,089,353 – issued July 28, 2015*

- Shane Farritor
- Tyler Wortman
- Kyle Strabala
- Ryan McCormick
- Amy Lehman
- Dmitry Oleynikov

### 2. "Small Molecule Rnase Inhibitors and Methods of Use"

*U.S. Patent No. 9,089,545 – issued July 28, 2015*

- Paul M. Dunman
- Patrick D. Olson
- Wayne Childers

### 3. "Lifespace Data Collection from Discrete Areas"

*U.S. Patent No. 9,106,718 – issued August 11, 2015*

- Stephen J. Bonasera
- A. Katrin Schenk
- Evan H. Goulding

### 4. "Sustained-Release Nanoparticle Compositions and Methods Using the Same"

*U.S. Patent No. 9,138,416 – issued September 22, 2015*

- Vinod D. Labhasetwar
- Sanjeeb K. Sahoo
- Maram K. Reddy

### 5. "Compositions and Methods for the Treatment of Traumatic Brain Injury"

*U.S. Patent No. 9,149,537 – issued October 6, 2015*

- Dong Wang
- Matthew Kelso

### 6. "Multifunctional Operational Component for Robotic Devices"

*U.S. Patent No. 9,179,981 – issued November 10, 2015*

- Shane Farritor
- Amy Lehman
- Mark Rentschler

### 7. "Method and System for Assessing Locomotive Biorhythms"

*U.S. Patent No. 9,179,862 – issued November 10, 2015*

- Nicholas Stergiou
- Maximillian Joseph Kurz

### 8. "Water Soluble Fullerene Formulations and Methods of Use Thereof"

*U.S. Patent No. 9,233,164 – issued January 12, 2016*

- Alexander V. Kabanov
- Jing Tong

### 9. "Compositions and Methods for the Treatment of Cancer"

*U.S. Patent No. 9,233,121 – issued January 12, 2016*

- Surinder K. Batra
- Moorthy P. Ponnusamy

## PATENTS ISSUED

Continued from previous page

### 10. "Small Molecule Rnase Inhibitors and Methods of Use"

U.S. Patent No. 9,233,095 – issued January 12, 2016

- Paul M. Dunman
- Patrick D. Olson
- Wayne Childers

### 11. "Methods and Compositions for Inhibiting Diseases of the Central Nervous System"

U.S. Patent No. 9,259,465 – February 16, 2016

- Howard E. Gendelman
- R. Lee Mosley
- Ashley D. Reynolds

### 12. "Radiologic Agents for Monitoring Alzheimer's Disease Progression and Evaluating a Response to Therapy and Processes for the Preparation of Such Agents"

U.S. Patent No. 9,315,534 – issued April 19, 2016

- Zbigniew P. Kortylewicz
- Janina Baranowska-Kortylewicz

### 13. "Polyplexes of Hyrdrophobically Modified siRNA for Delivery of SiRNA"

U.S. Patent No. 9,320,814 – issued April 26, 2016

- Joseph A. Vetro

### 14. "Substituted Quinoxalines as Kinase Inhibitors"

U.S. Patent No. 9,353,094 – issued May 31, 2016

- Amarnath Natarajan
- Vashti C. Bryant
- Qian Yi Chen
- Rajkumar Rajule

### 15. "Compositions and Methods for Drug Delivery"

U.S. Patent No. 9,364,443 – issued June 14, 2016

- Howard Gendelman
- Barrett Rabinow
- Arnaud Beduneau
- Jane Werling

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## AWARD WINNERS

### Most Promising New Invention

- 2016 Joyce Solheim, Ph.D. & Tatiana Bronich, Ph.D. .... *Compositions for Modulated Release of Proteins and Methods of Use Thereof*
- 2015 Michael Wadman, M.D., F.A.S.E.P. & Thang Nguyen, M.S.N., A.P.R.N., F.N.P.-C. ... *Emergency Medicine Care Portfolio: Wound Irrigation System & Oral Airway Management*
- 2014 Jason MacTaggart, M.D. .... *Orthogonal AquaBlade*
- 2013 Keshore Bidasee, Ph.D. .... *Targeted Glyoxalase-1 Gene Transfer to Prevent Cardiovascular and End-Organ Complications in Diabetes*
- 2012 Gregory Oakley, Ph.D. .... *Small Molecule in Vivo Inhibitors of the N-Terminal Protein Interacting Domain of RPA1*
- 2011 Babu Padanilam, Ph.D. .... *Novel Target for the Treatment of Renal Fibrosis*
- 2010 Stephen Bonasera, M.D., Ph.D. .... *Noninvasive Monitoring of Functional Behaviors in Ambulatory Human Populations*
- 2009 Paul Dunman, Ph.D. .... *Novel Antibiotic Compounds*
- 2008\* Guangshun (Gus) Wang, Ph.D. .... *Anti-HIV Peptides and Methods of Use Thereof*
- 2008\* Janina Baranowska-Kortylewicz, Ph.D. .... *Sex Hormone Binding Globulin: New Target for Cancer Therapy*

### Special Awards

- 2016 Irving Zucker, Ph.D. .... Innovator of the Year
- 2015 Tammy Kielian, Ph.D. .... Innovator of the Year
- 2014 Marius Florescu, M.D. .... Emerging Inventor
- 2013 Howard Gendelman, M.D. .... Innovator of the Year
- 2012 Tammy Kielian, Ph.D. .... Emerging Inventor
- 2011 Jonathan Vennerstrom, Ph.D. .... Lifetime Achievement
- 2010 Amarnath Natarajan, Ph.D. .... Emerging Inventor
- 2009 Rodney Markin, M.D., Ph.D. .... Lifetime Achievement
- 2008 Dong Wang, Ph.D. .... Emerging Inventor
- 2007 Robert LeVeen, M.D. .... Lifetime Achievement

## INNOVATION AWARDS HISTORY

Innovation Week dates back to 1998 when UNeMed and the Intellectual Property Office began hosting the Inventor's Recognition Reception, specifically tailored to honor UNMC researchers who had applied for or received patents in the previous year.

In 2007, UNMC restructured its technology transfer efforts into one organization, merging UNeMed with the Intellectual Property Office. UNeMed—under the leadership of then-CEO, James Linder, M.D.—transformed the Recognition Reception into the Research Innovation Awards.

The awards ceremony was the final event in a week of activities that celebrated the research and innovation at UNMC. In addition to recognizing researchers who secured intellectual property rights, UNeMed also added emerging inventor and lifetime achievement awards. In 2008 it also added the “Most Promising New Invention” as an annual award. In 2013, UNeMed presented for the first time ever, an “Innovator of the Year” Award. In previous years UNeMed had presented Emerging Inventor and Lifetime Achievement awards on a biennial schedule.

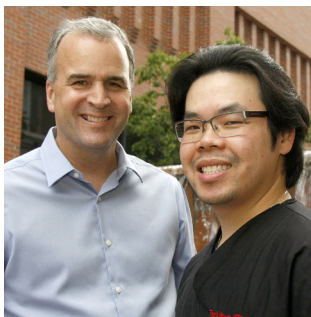
Today, Innovation Week is about far more than recognizing a handful of UNMC scientists who secure patents. It's a celebration that recognizes, rewards and encourages innovative thoughts and ideas, whether they come from the most seasoned and esteemed researcher or the least-known first-year student who might know a better way.

Last year, the collaborative work of Michael Wadman, M.D., and Thang Nguyen, M.S.N., A.P.R.N., was featured as the most promising new invention, and Innovator of the Year honors went to Tammy Kielian, Ph.D.

Dr. Wadman, recently named chair of emergency medicine for UNMC/Nebraska Medicine, and Nguyen, a practicing nurse and the research coordinator for the Emergency Medicine Department, were honored for a portfolio of novel devices they created for better wound management and oral airway stabilization. One invention is a new wound irrigation system that maintains constant and adjustable water pressure, and another invention was designed to help emergency care providers and first-responders stabilize and maintain a patient's airway while freeing their hands to perform other essential tasks.



*Dr. Linder*



*Dr. Wadman (left) and Nguyen*



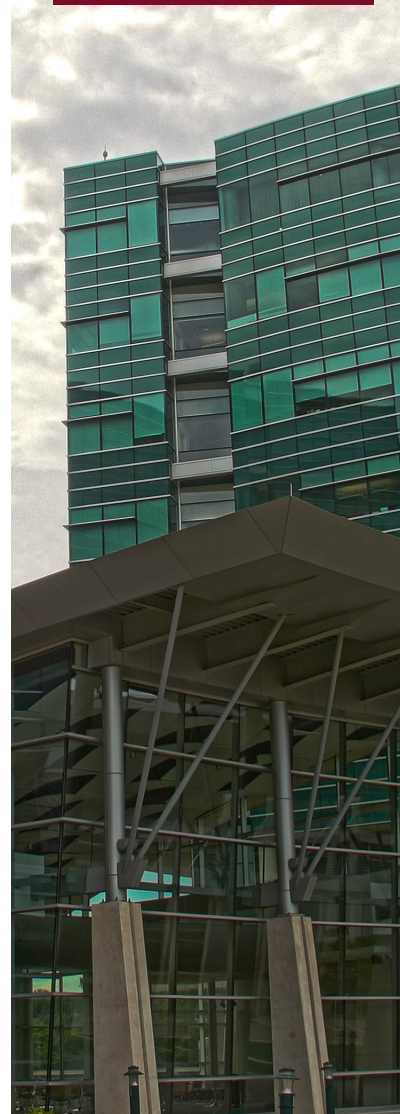
*Dr. Kielian*

Dr. Kielian, a professor in UNMC's Department of Pathology and Microbiology, was named the 2015 Innovator of the Year for her achievements in the development of potential therapies for the treatment of Juvenile Batten Disease and *S. aureus* biofilms.

UNeMed's Emerging Inventor award winner in 2012, Dr. Kielian is working on two separate treatment strategies for the rare but fatal childhood neurodegenerative disorder, Juvenile Batten Disease. The first strategy is to use an existing class of drugs to treat the disease. The second is a novel gene therapy for Jthat has potential as a cure.

Dr. Kielian's laboratory has also developed new strategies for targeting the immune system to help prevent and treat *S. aureus* biofilm infections.

# INNOVATION 2016 AWARDS



## UNEMED STAFF



### Jeff Andersen

*Contracts Specialist*

- J.D., Creighton University School of Law
- Joined UNeMed: 2015



### Matthew Boehm

*Senior Licensing Specialist*

- Ph.D., Cancer Biology, University of Nebraska Medical Center
- Joined UNeMed: 2009



### Michael Dixon

*President & CEO*

- Ph.D., Pathology and Microbiology, University of Nebraska Medical Center
- Joined UNeMed: 2003



### Valerie Gunderson

*Office Manager*

- Joined UNeMed: 2007



### Bo Han

*UHCS Senior Business Development Specialist*

- M.D., Shanghai Jiao Tong University School of Medicine
- M.B.A., Dartmouth University
- Joined UNeMed: 2014



### Cori Harsh

*Finance Manager*

- Joined UNeMed: 2009



### Agnes Lenagh

*Licensing Specialist*

- Ph.D., Pharmacology and Experimental Neuroscience, University of Nebraska Medical Center
- Joined UNeMed: 2012



### Charlie Litton

*Communications Associate*

- M.A., Journalism, University of Nebraska-Lincoln
- Joined UNeMed: 2013

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**Jason T. Nickla**

*Vice President & Director of Intellectual Property*

- J.D., Creighton University School of Law
- LL.M., International Intellectual Property Law, Chicago-Kent College of Law
- Joined UNeMed: 2009



**Anne Rivas**

*Office Associate*

- Joined UNeMed: 2013



**Joe Runge**

*Director of Business Development*

- M.S., Molecular Biology, University of Iowa
- J.D., University of Iowa
- Joined UNeMed: 2005



**Steve Schreiner**

*Vice President & Director of Marketing and Licensing*

- Ph.D., Pathology and Microbiology, University of Nebraska Medical Center
- M.A., Microbiology, University of Nebraska at Omaha
- Joined UNeMed: 2006



**D.J. Thayer**

*Director of International & Domestic Business Affairs*

- M.B.A., Auburn University
- Joined UNeMed: 2014



**Mindy Ware**

*Patent Specialist*

- Joined UNeMed: 2010



**Qian Zhang**

*International Technology Development Specialist*

- Ph.D., Cancer Biology, University of Nebraska Medical Center
- M.B.A., University of Nebraska at Omaha
- Joined UNeMed: 2011

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