

# Nebraska Science News



Nebraska Academy of Sciences



Nebraska Association of Teachers of Science

***Serving Scientists and Science Educators Across the State of Nebraska***

Winter, 2016-2017

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## **FROM THE NAS PRESIDENTS' DESK**

Superflexible, 3-D Printed "Bones" Trigger New Growth!

"Hyperelastic bones" could give surgeons a quick, inexpensive way to repair bone breaks. Created by Ramille Shah, a materials science engineer at Northwestern University in Chicago, and colleagues, the new superflexible material can be 3-D printed into femurs, skullcaps and other bone shapes. The durable material is a mix of an elastic polymer plus hydroxyapatite, a calcium mineral found in human bones and teeth. Once implanted, the material's mineral makeup encourages real bone to start growing within a month to replace the scaffold.

So far, the "bones" have been tested only in animals. In rats, spinal implants stimulated tissue and bone growth just as well as natural grafts, with no signs of rejection. In a macaque with skull damage, an implant almost seamlessly integrated with the monkey's natural skull tissue within a month. Because the material is malleable, surgeons can fix it in place without glue or sutures. A future of easily replacing missing, damaged or deformed bones may no longer be such a stretch. Not only are "hyperelastic bones" super flexible, they are also sturdy, porous and can support loads of up to 150 pounds. By Cassie Martin.

Randall Lienemann, NAS President

## **GREETINGS FROM THE NATS PRESIDENT**

"A classroom is not a place, it is a state of mind," said Jeff Goldstein. This is where the reflection from the 2016 Fall NATS Conference began for me. I took a step back and asked myself what it was like to be a student in my classroom? Are my students allowed to use their innate

curiosity to "poke" at the world around them? Jeff Goldstein inspired me to take a look at the way my students are asked to learn and the way that they naturally learn. Students need to learn through inquiry evidence-based learning. As teachers, we need to allow our students the opportunity to feel the concept; otherwise no learning is taking place. Dr. Goldstein also mentioned that it is important to do something with the student's knowledge. This is more than a multiple choice assessment.

Generation Z is ready to do things with the knowledge that they are gaining. They want opportunities to broadcast, to be creative, and to be entrepreneurial. Our students no longer need us to feed them knowledge. As teachers, we need to teach them to ask questions. Give students an opportunity to test those questions and then we help them interpret the knowledge that they have gained. They need us to equip them with the right tools. Students need their teachers to be role models and mentors in their learning. Students no longer need power-points and notes but rather they need investigations, interpretation, designing a presentation of knowledge, and communicating what they have learned.

What are presentations of knowledge? I ask this question frequently when planning my lessons. What is it that my students need to learn and how can they demonstrate to me that they have learned it? Some students will want to use their artistic skills and create an image or cartoon, other students will want to use their musical talents and create a song, yet I have another group of students that are movers and shakers and will design a series of movements or dances that correspond to the concepts they have learned. You all have them and each has a unique passion or style that they can use to demonstrate that knowledge. Many times the students and I have to learn new tools and often they find the tool and then teach the teacher how to use it. I know you have all been there, our students are techies

they can run three different devices at once. Are we letting our students' use their unique skill sets to enhance their learning?

How does the teacher become the mentor through all of this? I wasn't taught all of these skills in my methods class a few years ago, lol. Ok, maybe it was more than a few years ago and those of you who are cringing with my intended slang text, it is mild compared to what our students are using. By developing an understanding we as teachers can model the importance of when it is appropriate and when it is not. Back to the topic at hand, science education is changing! Am I as a teacher going to be able to swim with the current or am I going to drown? Where do I find the skills, resources, and help that I need? I know I am not the only one out there taking a deep breath. So where do we go?

David Crowther, NSTA President-elect, mentioned to me that the number one spot being searched on the internet to find science investigations is Pinterest. I am a pinner and I have a weakness for sifting through pins for longer than I should. However, this put a little fear into me. I have checked out some of the science material on Pinterest and every now and then I can find an idea that I can use with modification and a little stepping it up. But how many of these lessons are being used without any modification or the consideration of the correctness of the concepts?

David Crowther mentioned during his keynote that NSTA has numerous resources in and out of the learning center. Todd Hutner told us about the value of Argument Driven Inquiry. Jeff Goldstein shared his Tweetisms with us. There are places that are reliable with vetted resources available. In our day of technology, these resources and help are at the tips of your fingers. It is time to build your professional learning network. Where do you go to find resources and help when you need it. Sometimes, I get the honor of walking across the hall and asking my colleague but other times I need to ask for help beyond the walls of my school. That is when I turn to Sara Cooper's Smore quarterly updates from the Nebraska Department of Education, the NSTA email list serves that I am a member of, science education Facebook pages that I follow, Twitter, etc.

With this in mind, it is one of my goals as the NATS president along with the board to help establish a professional learning network for the members of NATS. The board also wants to help improve the resources available on our website. We are currently working on a folder that will contain the resources from this year's fall conference. Please take time, to follow the NATS Facebook and Twitter pages and start using the organization as one of your resources. Post questions and share great resources that you have found to our social media pages to benefit all of our members. Share with us your passions and let us help you through your frustration. As Jeff Goldstein said, "The

power of one is amazing. Every person can contribute to the legacy that will be important to the next generation." Share your contributions with not only your students but with your colleagues as well.

Shauna Roberson, NATS President

## 2016 NATS FALL CONFERENCE HIGHLIGHTS-ECLIPSING SCIENCE IN NEBRASKA

- Todd Hutner-Asst Director for Teacher Education in the Center for STEM Education
- Jeff Goldstein – National Center for Earth and Space Science Education, Center Director
- Todd Young – Physics and Astronomy, Wayne State College
- David Crowther, NSTA President-Elect
- Ron Lamb – Pattonville HS, Colorado, incorporating Infographics into your classroom
- Michael Sibbernsen – STAR party
- Daniel Glomski, Mad Scientist, Edgerton Explorit Center

The NATS Fall Conference program contains biographical information about the keynote and special speakers. Presentations are described. If you want more details about one of the presentations let us know and we can connect you with the presenter.



### NEW NJAS AWARDS

The Nebraska Academy of Sciences (NAS) is offering two new \$500 awards to be offered at the state meeting of the Nebraska Junior Academy Society (NJAS) in April 2017 **thanks to a \$2500 sponsorship by Nucor Steel of Norfolk, NE.** The sponsorship also includes meeting expenses and support of the Maiben Lecture Series. Terry Rasmussen, chief metallurgist said "it is important for Nucor Steel to stay active in our support of young people and their interest and enthusiasm in science. With this collaboration with NAS we hope to further encourage that enthusiasm". Further information can be found at <http://nebraskaacademyofsciences.wildapricot.org/>

## NJAS News

I attended the NATS conference last month and many educators were doing science experiments with cockroaches in their classrooms. You could even buy them at the NATS “silent auction”. I read this article about cockroaches being a new super food. Scientists have found that the “milk” from a Pacific beetle cockroach is three times more nutritious than cow’s milk.

Many people don’t consider their breakfast complete without a glass of milk. Right now, cows, buffalo, goats and sheep provide most of the world’s milk. But soon, people could be sipping milk from cockroaches. That’s not as crazy as it might sound. What’s more, some scientists have already begun referring to many insects as mini-livestock.

Subramanian Ramaswamy started studying crystals that are found inside the guts of cockroach embryos. The crystals came from the Pacific beetle cockroach. This is the only cockroach species that’s viviparous. The cockroach mothers feed the babies growing inside them with a milk-like liquid. That milk contains the crystals, which are made of protein. To learn more about these milk crystals, the scientists needed to study them up close. “To see an object, you will throw light on it,” Ramaswamy says. “To look at atoms or molecules, you’d want to use wavelengths of [light] that are smaller than the distances between atoms and molecules.” X-rays are a form of light, he explains. And their wavelengths are the right size to see atoms in a crystal of some protein.

The atoms in the crystal will cause any x-rays beamed at it to scatter somewhat. And the scatter pattern that emerges helps scientists map the placement of those atoms making up the crystal’s structure.

The scanning data basically revealed the chemical recipe of the cockroach crystal. They showed that cockroach milk is a “complete food.” It contains sugar with a fatty acid stuck to it. The protein in the milk is also full of essential amino acids. Since our bodies can’t manufacture the “essential” ones, we need to get them from our food. And so do baby cockroaches.

Barbara Stay also worked on the new study. She’s a biologist at the University of Iowa. She says the new data show that the roach milk is “three times more nutritious than cow’s milk and four times more nutritious than buffalo’s milk.” That would make it a very rich source of bodybuilding ingredients.

Ramaswamy would like to see cockroach milk turned into a protein supplement to feed hungry people. But not everyone is confident it can be done.

Marcel Dicke studies insects as a potential source of human food at the Wageningen University in the Netherlands. Dicke says this is a “sound study.” But he believes it would be difficult to extract milk from cockroaches on a large scale, like we do with cattle. In his opinion, “it can only likely be done in a destructive way with only minute quantities.” That means you would have to raise — and kill — a lot of bugs to get even tiny quantities of the milk. Another possibility would be to make this milk on a large scale in vats using yeast. Biotechnologists use yeast to make a number of products, including medicines. They do this by adding new genes to yeast microbes. In this case, they would add the genes that the cockroach uses to make its milk protein.

Yet for now, even Ramaswamy admits that industrial production of this milk “is wishful thinking.” That is, if what you’re wishing for is a cold glass of cockroach milk. by Dinsa Sachan

Randall Lienemann, Acting NJAS President/State Coordinator

## ACADEMY WEB SITE UPDATES

The NAS/NATS/NJAS web site is adding new content all the time.

Our newsletter is available to members and can be downloaded saving money and resources. The Transactions and the Program and Proceedings has been converted to on-line digital copy available through UNL Digital Commons as well as EBSCO Publishing. Publishing digitally allows us to upload research articles as they are submitted resulting in more timely distribution of research information. For information about accessing or submitting Transactions articles go to our website: [www.neacadsci.org](http://www.neacadsci.org). Click on NEWS; then click on Publications (found on the left side bar). Proceedings articles will continue to be submitted through section chairs. Don’t forget to “friend” the NATS Facebook as well.

The Nebraska Science News is a publication of the Nebraska Academy of Sciences, a private foundation associated with the American Association for the Advancement of Science.  
NAS President: Randall Lienemann  
NATS President: Shauna Roberson  
NJAS Acting President: Randall Lienemann  
NAS Executive Secretary: Cecelia Dorn  
Nebr. Sci. News Editor: Cecelia Dorn  
Membership information can be obtained by writing to P.O. Box 880339, Lincoln, NE 68588-0339  
E-mail: [neacad@unl.edu](mailto:neacad@unl.edu) Telephone: (402) 472-2644

## PIE GRANTS UPDATE

NAS received eleven applications for the third quarter of 2016. Applications were received from Central Platte NRD, Husker Harvest Days Native Grassland Awareness Project; Lower Platte South NRD, Lower Platte River Summit; WasteCap Nebraska, 2016 Mission to Zero: Annual Recognition and Zero Waste Training; Saving Grace Perishable Food Rescue, INC., Perishable Food Pipeline; NE Section-Society for Range Management, Capitalizing on Range Mgt Opportunities Workshop and Tour; Nebraska Statewide Arboretum, Young Lecture: Between Earth and Sky; Omaha-Council Bluffs Metro Area Planning, Little Steps Big Impact School Ozone Monitoring Project; Platte River Whooping Crane Maintenance, Crane Trust Prairie Greenhouse Build; Wachiska Audubon Society-Ed Comm, Prairie Discovery Day Project; Prescribed Burn Task Force, Nebraska Prescribed Burn Safety Education and Outreach; and Keep Omaha Beautiful, Promoting and Diversifying World O! Water. A total of \$13,120 was awarded to the Central Platte NRD, WasteCap Nebraska, NE Section-Society for Range Management, Omaha Council Bluffs Metro Area Planning, and Keep Omaha Beautiful.

Six fourth quarter PIE grant applications were received and processed in early October. Recipients will be notified in early December. Applicants include NE Midwest Fish and Wildlife Conference Foundation, 77<sup>th</sup> Midwest Fish and Wildlife Conference "Private Lands, Public Responsibilities"; Board of Regents-UNL, Stormwater Slueth Demonstrates Rain to Drain; UNL Faculty/Dept of Computer Engineering, Auto Component-based Dynamic Plant Phenotyping Analysis; Community Crops, Urban Homestead Series, Board of Regents-UNL, Pilot Watershed Mgt Curriculum for Water Resources Managers; NE Assistive Technology Partnership, Managing Waste Through Reuse of Durable Medical Equipment.

The Nebraska Environmental Public Information and Education MiniGrant Program awards MiniGrants of up to \$3,000 each, to support the presentation and dissemination of information and perspectives that will stimulate enhanced environmental stewardship in any category eligible for Nebraska Environmental Trust (NET) funding. These categories are habitat, surface and ground water, waste management, air quality, and soil management. The grant expands dialogue on important current conservation topics and provides information on emerging or highly useful conservation methods. All Nebraska individuals, private organizations, and public entities are eligible to apply for these funds.

The Nebraska Legislature created the Nebraska Environmental Trust in 1992. Using revenue from the Nebraska Lottery, the Trust has provided over \$250 million

in grants to over 1,700 projects across the state. Anyone – citizens, organizations, communities, farmers and businesses – can apply for funding to protect habitat, improve water quality and establish recycling programs in Nebraska. The Nebraska Environmental Trust works to preserve, protect and restore our natural resources for future generations. <http://www.environmentaltrust.org/>

First quarter 2017 applications are due January 6, 2017.

Grant forms and information can be found on our website, [www.neacadsci.org](http://www.neacadsci.org). Click on NAS and then click on Grants and Scholarships.



## HIGH SCHOOL AND COLLEGIATE SCHOLARSHIP NOTIFICATION

It's time again to think about scholarships for the coming year. The Nebraska Academy of Sciences offers six scholarships for high school seniors varying from \$100 to \$1000. Two scholarships are also available to college juniors or seniors majoring in a natural science. The collegiate scholarship is \$3000, ½ paid at the beginning of each semester. High school scholarship application deadline is March 1; the collegiate deadline is February 1.

Please consider applying for a scholarship. Information is available on the Academy website: <http://www.neacadsci.org>.

Click on NAS and then click on the Grants and Scholarships link on the left side of the screen. You can also contact the Academy office for information at 402/472-2644 or email: [nebacad@unl.edu](mailto:nebacad@unl.edu).

## CHOOSING A SECTION FOR YOUR ANNUAL MEETING ABSTRACT

Each year at the annual meeting of the Nebraska Academy of Sciences concurrent sessions are held in the biosciences. They are:

- Collegiate Academy (CA) Biology and
- Senior Academy (SA) Biological and Medical Sciences sections.

Similarly, concurrent sessions are held in chemistry and physics. They are

- Collegiate Academy Chemistry/Physics,
- Senior Academy General Chemistry, and
- Senior Academy General Physics sections.

Generally, CA sections are intended to showcase presentations by undergraduate students for undergraduate students. SA sections, on the other hand, are intended for presentations by graduate students, professional scientists in industry, government, and academe, and our membership's serious citizen scientists and hobbyists to their peers. Well-prepared undergraduates who value the discussion and feedback that a presentation to a SA section provides are encouraged participate in SA sections.

To help undergraduate students uncertain as to which section will better showcase their work, the Executive Committee of the Nebraska Academy of Sciences provides a checklist, see page 7. A majority of responses offering guidance "CA" and "CA / SA" suggest the presentation will be better received in a CA section; likewise, a majority of responses with the guidance "SA" and "CA / SA" may be better received in a SA section.

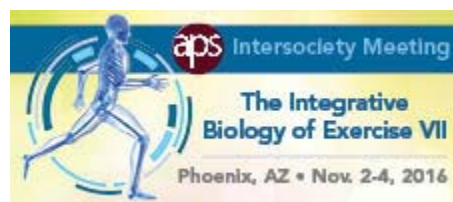
## SIX STAR SCIENCE ONLINE TEACHER (OT) PROFESSIONAL DEVELOPMENT PROGRAM

The Six Star Science OT is a 10-month online professional development program that focuses on the three Dimensions in the Next Generation Science Standards and expanding teacher skills in three major areas: 1) Updating Teacher Content and Pedagogy Knowledge; 2) Understanding the Research Process; and 3) Applying Six Star Science in the Classroom.

**Online Teacher (OT) Fellows** participate in a dynamic and interactive virtual learning community that focuses on exploring effective teaching strategies, understanding the research process, and enhancing classroom materials. Fellows **receive a stipend** for completion of their online work and **graduate credit is available**.

**Application deadline: January 31, 2017**

More info on this program can be found at: [www.frontiersinphys.org](http://www.frontiersinphys.org)



## CATALYST RECIPIENT AT THE 2016 NATS FALL CONFERENCE – DEB PAULMAN

Greetings all,

I am humbled beyond words to receive the 2016 Catalyst Award from the Nebraska Association of Teachers of Science. I have been blessed these past many years to work with so many outstanding educators. I think what has always impressed me is the level of commitment that Nebraska teachers have to their children; their passion for their work; and their fascination with and investment in their content. All of this is exemplified in the work of NATS! My life's ambition is to make a difference in this world and so this Catalyst Award is particularly meaningful to me. Please extend my sincere and heartfelt thank you to the NATS Board for the partnership over the years and for this amazing honor.



Blessings,  
Deb Paulman  
Educational Service  
Unit 16  
Staff Development  
Director  
Assistant  
Administrator

MSP Nebraska  
Science Kicks/LINKS  
Project Director

## DATES TO REMEMBER:

PIE Grant 1<sup>st</sup> Quar App Deadline – January 6, 2017  
 Collegiate Scholarship Deadline – February 1, 2017  
 NAS Abstract Submission Deadline – February 6, 2017  
 Registration forms, abstracts, section details due to  
 Academy – February 27, 2017  
 High School Scholarship Deadline – March 1, 2017  
 PIE Grant 2<sup>nd</sup> Quar App Deadline – April 14, 2017  
 Last Day for on-line general registration – April 14, 2017  
 NJAS State Competition – April 20, 2017  
 NAS Annual Meeting – April 21, 2017  
 State Science Olympiad – April 22, 2017

## NJAS REGIONAL SCIENCE COMPETITIONS

### 2016 NJAS Regional Science Fairs

Division	Date	Location
Eastern	March 19, 2016	Omaha Henry Doorly Zoo and Aquarium, Omaha, NE  Contact: <a href="#">Chris Schaben</a>
Northeast	April 1, 2016	Wayne State College, Wayne, NE  Contact: <a href="#">Adam Davis</a>
Southeast	March 11, 2016	Nebraska Wesleyan University  Contact:
Central	March 8, 2016	Hastings College, Hastings, NE  Contact: <a href="#">Neil Heckman</a>
Western	March 10, 2016	North Platte Community College, North Platte, NE  Contact: <a href="#">Sally Thalken</a>
Panhandle	March 2, 2016	ESU 13, 4214 Ave I, Scottsbluff, NE  Contact: <a href="#">Lisa Myles</a>

## OTHER NEWS AND EVENTS

What's new at NASA Space Place – Check out the following link - <http://spaceplace.nasa.gov/educator-newsletter/en/>



What's new at NOAA/NASA SciJinks

### GOES-R: Launching Soon!

The GOES-R weather satellite launch is coming up! From up there, GOES-R will do a lot to help us down here. It can see amazing detail of weather on Earth and can help with hurricane, tornado, and flood warnings. Check out our GOES-R videos, posters, and comics to learn more about what this weather satellite will do.

## Collegiate and Senior Sections: Choosing a venue for your contribution to the Annual Meeting of the Nebraska Academy of Sciences

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Is the work	Yes	Guidance
Original?		CA / SA
A review?		CA
A group presentation?		CA
Significant and timely?		CA / SA
Of broad appeal?		CA
Of narrow appeal?		SA
Publishable or leading to publication?		CA / SA
Novel or noteworthy?		CA / SA
A capstone experience associated with the presenter's major?		CA
Is the presenter		
Comfortable discussing the work with others?		SA
Comfortable thinking on her/his feet?		SA
Experienced in oral presentation of her/his work to other scientists?		SA
Able to field questions without deferring to her/his advisor?		SA
A novice researcher?		CA
Continuously and actively engaged in the work to be presented?		SA
Will the presentation		
Target other undergraduates?		CA
Target other active disciplinary investigators?		SA





**THE NEBRASKA ACADEMY OF SCIENCES, INC.**  
**(Founded January 30, 1880)**  
**127th ANNUAL MEETING TO BE HELD**  
**at**  
**NEBRASKA WESLEYAN UNIVERSITY**  
**50TH and ST. PAUL, LINCOLN, NEBRASKA**

**FRIDAY, APRIL 21st, 2017**

# **"Call for Papers"**

**ABSTRACTS, FORM, AND FEES ARE DUE TO SECTION CHAIRPERSONS**  
**FEBRUARY 6, 2017**

Individuals are invited to submit an abstract of original research or synthesis of primary research/literature for consideration by one of the sections for inclusion in the Program of the Annual Meeting of the Nebraska Academy of Sciences. You may also complete your presenter registration on line using the Events tab on the NAS website. Be advised if your abstract contains any special characters or formulas you may be requested to submit a hard copy as well.

Annual Meeting Presenters may also want to consider submitting their complete research articles for review and possible publication in the Transactions of the Nebraska Academy of Sciences. Papers from all sections are eligible. Contact the Academy office for publication information.

**SECTION CHAIRPERSONS WILL FORWARD ALL DOCUMENTS TO THE ACADEMY, [nebacad@unl.edu](mailto:nebacad@unl.edu)**  
**BY FEBRUARY 27th. A HARD COPY OF THE ABSTRACT MUST BE INCLUDED WITH THE**  
**REGISTRATION FORM. FORMATTING INSTRUCTIONS ARE AVAILABLE ONLINE AT**

**<http://www.neacadsci.org>,**

Click on NAS, then Information

or contact

**THE NEBRASKA ACADEMY OF SCIENCES**  
**302 MORRILL HALL, 14TH AND 'U' STREETS,**  
**LINCOLN, NE 68588-0339**  
**TELEPHONE (402) 472-2644**

**1. EACH ABSTRACT MUST BE ACCOMPANIED BY A \$70.00 REGISTRATION FEE (\$15.00 FOR STUDENTS—COPY OF VALID STUDENT ID MUST BE ENCLOSED) FOR THE PERSON PRESENTING THE PAPER. PLEASE COMPLETE CONTACT INFORMATION ON THE REGISTRATION FORM ACCURATELY AND LEGIBLY. FORM IS AVAILABLE ON OUR WEBSITE: <http://www.neacadsci.org>**  
Click on NAS, then Click on Information

**2. MAKE CHECKS PAYABLE TO THE NEBRASKA ACADEMY OF SCIENCES.**

**3. AUTHORS SUBMITTING MORE THAN ONE ABSTRACT SHOULD PAY ONLY ONCE.**



## 2016-2017 NEBRASKA ACADEMY OF SCIENCES PROGRAM COMMITTEE

Area code 402

<b>Section</b>	<b>Chairperson</b>	<b>Address</b>	<b>unless listed</b>
Program Chairman & Proceedings Editor	Jim Carr	NAS, 302 Morrill Hall, Lincoln, NE 68588-0339 <a href="mailto:nebacad@unl.edu">nebacad@unl.edu</a>	472-2644 O
Aeronautics & Space	Scott Tarry Michaela Lucas	NASA NE Space Grant, 6001 Dodge St, CB 041, Omaha 68182-0589 <a href="mailto:mlucas@unomaha.edu">mlucas@unomaha.edu</a>	554-3772 O
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Applied Sci & Technol	Mary Ettel	Wayne State College, 1111 Main St, Wayne, 68787 <a href="mailto:maettel@wsc.edu">maettel@wsc.edu</a>	375-7342 O
Biological & Medical Sciences	Annemarie Shibata	Creighton Univ, Dept of Biology, Omaha 68178-0103 <a href="mailto:annemarieshibata@creighton.edu">annemarieshibata@creighton.edu</a>	280-3588 O
General Chemistry	Joshua Darr	UNO, Durham Sci 331, Omaha 68182 <a href="mailto:jdarr@unomaha.edu">jdarr@unomaha.edu</a>	554-2653 O
General Physics	Adam Davis	Wayne State College, 1111 Main St, Wayne, 68787 <a href="mailto:addavis1@wsc.edu">addavis1@wsc.edu</a>	375-7339 O
Earth Sciences	Jennifer Balmat	556 Ridgeview Rd, Chadron 69337 <a href="mailto:jbalmat@csc.edu">jbalmat@csc.edu</a>	308-432-6483 O
Environmental Sciences	Barbara Hayford	Wayne State College, 1111 Main St, Wayne, 68787 <a href="mailto:Bahayfo1@wsc.edu">Bahayfo1@wsc.edu</a>	374-7338 O
History & Philosophy of Science	Richard Webb	Union College, Division of Sci & Math, Lincoln 68506 <a href="mailto:riwebb@ucollege.edu">riwebb@ucollege.edu</a>	486-2515 O
Teaching of Science & Mathematics	Josef Kren	Bryan LGH Health Sciences, 5035 Everett, Lincoln 68506 <a href="mailto:josef.kren@bryanlgh.org">josef.kren@bryanlgh.org</a>	481-4968 O
Junior Academy	Randall Lienemann	1522 24 Rd Hildreth, NE 68947	308-775-3320
Collegiate Academy	Adrienne Prokupek-Pickett	NE Wesleyan Univ., 5000 St Paul, Lincoln 68504 <a href="mailto:aprokupe@nebrwesleyan.edu">aprokupe@nebrwesleyan.edu</a>	465-2466 O
(Chemistry/Physics)	David Treichel	NE Wesleyan Univ., 5000 St Paul, Lincoln 68504 <a href="mailto:dat@nebrwesleyan.edu">dat@nebrwesleyan.edu</a>	465-2260 O
	Nathaniel Fackler	<a href="mailto:nfackler@nebrwesleyan.edu">nfackler@nebrwesleyan.edu</a>	465-2260 O
Local Arrangements Chair	Bob Fairchild	NE Wesleyan Univ., Physics Dept, Lincoln 68504 <a href="mailto:rwf@nebrwesleyan.edu">rwf@nebrwesleyan.edu</a>	465-2253 O
Academy Exec Secretary	Cecelia Dorn	302 Morrill Hall, 14th & U St, Lincoln 68588-0339 <a href="mailto:nebacad@unl.edu">nebacad@unl.edu</a>	472-2644 O

**NAS ANNUAL MEETING, APRIL 21, 2017**  
**NEBRASKA ACADEMY OF SCIENCES ABSTRACT INSTRUCTIONS ABSTRACTS**  
**DUE FEBRUARY 6, 2017 TO YOUR SECTION CHAIR**

**Email or MAIL TO YOUR SECTION CHAIRPERSON or Complete the on-line presenter registration form**

1. *YOUR ABSTRACT, INCLUDE 1 HARD COPY OR WORD AND PDF ELECTRONIC FILES (so editor can proof scientific notation)*
2. *COMPLETED PRESENTERS REGISTRATION FORM & FEE*

**GENERAL INSTRUCTIONS**

**DEADLINES:** ABSTRACTS, REGISTRATION FORM AND FEES must be received by the Section Chairperson(s) on or before **FEBRUARY 6, 2017**. Late submissions may not appear in the printed program.

**PREPARING THE ABSTRACT:** Abstracts should be informative condensations of the essential parts of the paper; not merely recitation of the subjects to be covered in the presentation. Since *the abstracts receive international distribution by our utilization of abstracting services and a journal exchange program, please proofread your work carefully.*

Please use Times New Roman, 12 pt. Type single-spaced. Margins should be Top 0.5", Bottom 0.5", Left 1.0", and Right 0.5".

Type the TITLE in CAPITAL LETTERS. Type Name, Department, Institution, City and Address on the line immediately below the Title, indenting 5 spaces (one tab). Leave exactly one line between this material and the BODY of the Abstract. (See sample below.)

CHARACTERIZATION OF THE SITE OF NORA VIRUS REPLICATION IN *DROSOPHILA MELANOGASTER*  
Justin Buchanan, Brad Ericson, Darby Carlson, and Kimberly Carlson, Department of Biology,  
University of Nebraska at Kearney, NE 68849

Nora virus is a picorna-like virus that infects *Drosophila melanogaster*, but displays no apparent  
pathogenicity. The mode of .....

Please save your abstract in Microsoft Word and submit it (by email, CD or jump drive), together, with one hard copy of the abstract (or a PDF file), registration form and fee **TO YOUR SECTION CHAIRPERSON.**

**PLEASE PROOFREAD YOUR WORK!!**

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