

# Nebraska Science News



Nebraska Academy of Sciences



Nebraska Association of Teachers of Science

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

Spring, 2015-2016

Volume 19, No. 3

*Published by the Nebraska Academy of Sciences*

## FROM THE NAS PRESIDENTS' DESK

I hope that you, like me, are anxious for the Academy's 126<sup>th</sup> annual meeting on April 22<sup>nd</sup>. Once again Nebraska Wesleyan University is graciously hosting our meeting; Cecelia Dorn and our Section Chairs are working hard to build an interesting and engaging day. In addition to many contributed papers, we will have colleagues and events to celebrate. First, the Nebraska Academy of Sciences congratulates our state's [newest AAAS fellows](#), named late last fall. These individuals join Nebraska's 31 other AAAS fellows:

- David Berkowitz, Dept. of Chemistry, University of Nebraska–Lincoln
- Courtney V. Fletcher, School of Pharmacy, University of Nebraska Medical Center
- Scott Gardner, Dept. of Biological Sciences, University of Nebraska–Lincoln
- Ronnie D. Green, Institute of Agriculture and Natural Resources, University of Nebraska–Lincoln
- Andrzej Rajca, Dept. of Chemistry, University of Nebraska–Lincoln
- Mark Riley, Dept. of Biological Systems Engineering, University of Nebraska–Lincoln
- Daniel Schachtman, University of Nebraska Lincoln Center for Biotechnology
- Janos Zempleni, University of Nebraska–Lincoln Nebraska Center for the Prevention of Obesity Diseases
- Tian Zhang, Dept. of Civil Engineering, University of Nebraska–Lincoln

Scientists across the state continue to engage in noteworthy work: In Lincoln, the home of the Academy, Union College has named Associate Professor of Biology Frankie Rose [Vice President for Academic Affairs](#). Dr. Rose, Union's "Teacher of the Year" in 2013, also leads student teams in original research projects, some of which we hope to see at the

annual meeting. At Nebraska Wesleyan University and in testament to the power of careful observation in science, Biology Professor [Gary Gerald and student Adam Braegelman](#) have reported on the previously unnoticed ability of the salamander *Siren* genus to regenerate limbs. Moving north to Wayne State University, Barbara Hayford, Professor of Life Sciences and chair of the Academy's new Environmental Sciences section, is co-principal investigator of a multi year, National Science Foundation-funded grant to study [river systems found on two continents](#)—North America and Asia. A southwesterly trek finds University of Nebraska at Kearney Geography Professor Jeremy Dillon and student Ashley Larsen working on a United States Geological Survey-funded project which has led to the [discovery of insect and plant fossils](#) allowing them to determine that, 24,000 years ago, Kearney was a wetland and spruce forest.

Institutional events this winter and spring also vie for attention and applause. University of Nebraska at Omaha, recently visited by President Barack Obama, is celebrating a \$200,000 challenge grant to the College of Information Science and Technology [Code Crush program](#), part of its Women in IT initiative. [Omaha Magazine](#) featured the Code Crush program 2014. Midland University will feature Colorado State University Professor and best-selling author Temple Grandin as the keynote speaker for its February 23<sup>rd</sup> [All Minds Matter](#) educational conference. Our state student delegates have just returned from the annual [American Junior Academy of Sciences](#) meeting, held in conjunction with the AAAS annual meeting, held this year in Washington, DC. I hope our membership is proud that our Academy is a strong supporter of our delegates and the meeting, donating far more than other affiliated state academies. This brings us back to our own annual meeting, which will have Creighton University Biochemistry Professor [Julie Soukup](#) present its keynote Maiben Lecture. Dr. Soukup, director of Creighton's Center for Undergraduate Research and Scholarship, is a riboswitch expert as well as prominent advocate for women in science. Please join me as we celebrate Nebraska science in April.

IN THIS ISSUE:

- Scholarships and Fellowships
- 2016 NAS Annual Meeting Info
- NATS Fall Conference Update

## April 21, 2016 The NJAS State Science and Engineering Fair

The Nebraska Junior Academy of Sciences activities will take place on Thursday, April 21, 2016 at the **Strategic Air and Space Museum** located just off Interstate 80 near Ashland, NE. Information materials have been sent to all Regional Directors. Please print each letter for teachers and parents of students who will be competing in the NJAS State Fair.

We have reserved sleeping rooms at Mahoney State Park. Registration for these rooms will be on a first come basis by April 1, 2016. Please state that you are with NJAS to reserve your rooms. NJAS will **not** be responsible for the payment of your room(s). You will need to use a credit card to hold the space for April 20<sup>th</sup> and/or 21st. To obtain more information about rooms at Mahoney State Park, please call **(402) 944-2523 ext. 7327**. Do not call the hotel reservation desk.

All students who compete must attach the necessary forms to their report. **The student name and school will not be allowed on the report or display.** The on-line NJAS Entry Form located at [www.nebraskajunioracademyofsciences.org](http://www.nebraskajunioracademyofsciences.org) (see the Handbook on-line). The entry due date is April 1, 2016. The site will no longer be available following April 3<sup>rd</sup>. We are unable to accept entries via email.

Each region is allowed a maximum of five (5) Senior Division competitors and five (5) Junior Division competitors to represent your region. All participating students must be present to be judged. Again, the competition will convene at the **Strategic Air and Space Museum**.

### Schedule of the day's activities:

8:00 – 8:30 A.M.	Senior Division Registration and Set Up Project Displays
8:00 – 8:30 A. M.	Junior Division Registration and Set Up Project Displays
8:30 –10:30 A.M.	Senior Division Competition (preliminary)
8:30 – 10:30 A.M.	Junior Division Competition
10:30 – 12:30 P.M.	Senior Final Round
12:00 – 1:00 P.M.	Lunch (Students and Judges only)
1:00 – 2:00 P.M.	Science Fest and Museum activities
2:00 – 3:00 P.M.	Awards Reception in Hanger B

As with everything we observe there are changes. NJAS has applied with the IRS to be non-profit in it's own standing. This

will enhance NJAS's relationship to NAS by becoming a formal, and legally recognized, affiliate.

The purpose was to allow more support for students who compete at state and for struggling regions. We also see change in the teachers who are bringing students. Many of the teachers who had top winners from years ago have retired. The recent moves also allows for support for new teachers.

The NJAS board has also partnered with the NAS to review judging and recruitment processes. NJAS, in partnership with NAS, will continue to recruit university professors and their graduate students as judges for the Senior Division. In this move, the NJAS Board "maintains its high standards of excellence in pre-collegiate, student research."

Aurietha Hoelsing, NJAS President



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: Martin Hulce  
NATS President: Lee Brogie  
NJAS President: Aurietha Hoelsing  
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: [nebacad@unl.edu](mailto:nebacad@unl.edu) Telephone: (402) 472-2644  
Website: [www.nebraskaacademyofsciences.wildapricot.org](http://www.nebraskaacademyofsciences.wildapricot.org)  
Donations are tax deductible.

## JULIE SOUKUP, 2016 MAIBEN LECTURER

Dr. Juliane Strauss-Soukup, Ph.D., Professor of Chemistry, and Director of the Center for Undergraduate Research and Scholarship at Creighton University will be the 2016 Maiben lecturer. She started at Creighton in 2000 as the Clare Boothe Luce Faculty Chair for Women in Science. Her lecture is entitled "Riboswitches Turn Students On To Research".

The Soukup laboratory has a general interest in the structure and function of non-coding RNAs, sequences in the genome that until recently were considered "junk". Dr. Soukup is working on a specific group of non-coding RNAs called riboswitches, found in virtually all bacteria. Riboswitches are RNA structural elements that bind cellular metabolites and control expression of essential metabolic genes, providing a unique and distinct set of targets for development of new antibiotics for dangerous bacterial infections. When small molecules (cellular metabolites) bind to riboswitch RNAs,

they induce a structural change that “switches” a gene’s activity up or down. By investigating exactly how bacterial riboswitches act, Soukup can design non-natural metabolites that bind and upset their normal function.

The Soukup laboratory is also interested in discovering new classes of riboswitches, particularly in eukaryotes. Although a few riboswitches have been discovered in plants, none have been identified in animals. The lab is currently characterizing a putative mammalian riboswitch by in-line probing, equilibrium dialysis, and additional biochemical analyses.

Dr. Soukup earned a B.S. in Chemistry from Creighton University in 1993. Subsequently, she went on to earn a Ph.D. in Biochemistry and Molecular Biology in 1997 from the University of Nebraska Medical Center, completing the Cancer Research Training Program at the Eppley Institute for Cancer Research. From 1997 to 2000, Dr. Soukup completed a National Institutes of Health (NIH) Postdoctoral Fellowship in Molecular Biophysics and Biochemistry at Yale University.



Dr. Soukup’s research is focused on the structure and function of riboswitches. Specifically the lab is interested in how bacterial riboswitch RNAs interact with particular cellular metabolites in order to modulate genetic control. The ultimate goal is to understand riboswitch structure and function in order to design non-natural ligands that target natural riboswitches and act as novel antimicrobial agents. Dr. Soukup’s research has received funding from the National Institutes of Health (NIH) INBRE (IDeA Network for Biomedical Research Excellence) program for 13 years and an NIH Academic Research Enhancement Award Program R15 grant for seven years (together totaling over \$2 million). Both granting programs are focused on providing undergraduates with research experiences in the sciences. Dr. Soukup has mentored over 70 undergraduate research students, who have given hundreds of research presentations at local, regional, national and international conferences. Her students have been co-authors on publications that appeared in ACS Chemical Biology, Nature Structural & Molecular Biology and Chemistry & Biology, to name a few. In addition, Dr. Soukup mentors ~14 undergraduate research students each semester in independent research courses. Dr. Soukup’s students have won over 40 national and local research fellowships, highlighted by four of her students

winning Barry Goldwater scholarships, seven of her students receiving Clare Boothe Luce scholarships, and by many of her students winning prestigious fellowships from the NIH INBRE and Ferlic Undergraduate Summer Research programs.

## GREETINGS FROM THE NATS PRESIDENT

I’m curious! How are we (Nebraska science teachers) doing in helping our students become scientifically literate? Does our curriculum help our students develop the characteristics of scientists? Do we transfer our passion for science by keeping our students abreast of the amazing scientific discoveries and phenomena that are happening around us every day? As the 2016 science testing season approaches, I find myself, once again, torn between allowing my students to continue their first-hand experiences at being scientists vs providing them with test-taking tips, practice questions, and review of science standards (3 years of curriculum) in an attempt to have them score well on NeSA Science. Am I alone?

In 1996 (now I’m showing my age) the National Research Council published **The National Science Education Standards** (NSES); guidelines for K-12 science education in the United States. The goal of NSES was to “guide our nation toward a scientifically literate society.” (p. 11) NSES goes on to define scientific literacy as:

...the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity. Scientific literacy means that a person can ask, find, or determine answers to questions derived from curiosity about everyday experiences. It means that a person has the ability to describe, explain, and predict natural phenomena. Scientific literacy entails being able to read with understanding articles about science in the popular press and to engage in social conversation about the validity of the conclusions. Scientific literacy implies that a person can identify scientific issues underlying national and local decisions and express positions that are scientifically and technologically informed. A literate citizen should be able to evaluate the quality of scientific information on the basis of its source and the methods used to generate it. Scientific literacy also implies the capacity to pose and evaluate arguments based on evidence and to apply conclusions from such arguments appropriately. (p. 22)

As you continue to read, NSES acknowledges that there will exist differences in a person’s scientific literacy:

...individuals often will have differences in literacy in different domains, such as more understanding of life-science concepts and

words, and less understanding of physical-science concepts and words. Scientific literacy has different degrees and forms; it expands and deepens over a lifetime, not just during the years in school. But the attitudes and values established toward science in the early years will shape a person's development of scientific literacy as an adult. (p. 22)

How well are we doing in achieving the NSES goal of creating a scientifically literate society? How would you rate yourself, your district, and Nebraska in promoting scientific literacy for all students? If you have not yet read NSES, I highly recommend it. It will revitalize your passion for science teaching, enabling you to argue that our students are so much more than a once-every-three-year test score. (The pdf version is a free download from a variety of sources.)

Practicing being a scientist is an important component of learning science. Science Fusion's *Introduction to Science and Technology* states, "Scientists are curious, creative, and careful observers. They are also logical, skeptical, and objective." (p. 10) While the terminology may differ (ie: objectivity vs open-minded) regardless of the source, these 6 traits appear again and again as characteristics that successful scientists possess. Science Careers Now adds patience and optimism to this list, "... patience to undergo the years of work that might be required to make a discovery in a scientific field. A sense of optimism keeps a scientist performing experiment after experiment, even if most of them fail." Given that most people would add raw intelligence or knowledge to the characteristics of scientists, many scientists disagree. E.O. Wilson in his *Letters to A Young Scientist* (2013) maintains that entrepreneurship is much more important than brilliance. Shortcomings can be overcome by identifying collaborators that possess the knowledge and or skill-set that you lack. He goes on to say that the most important part of the scientific process is to continue to make changes to see if you see something that no one else has observed. Elizabeth Blackburn (2012 interview) agrees with Wilson, "I love being around people who are more intelligent than I could hope to be. I love being in an environment where you are better than you thought you could be because you are being stretched by really good people." In addition, Blackburn adds 'goodwill' to the list of characteristics.

The Nebraska Science Standards do slightly address a number of these characteristics: curious, careful observers, logical, and objective. Creativity and skepticism appear to be missing as are patience, optimism, and goodwill. Unfortunately, "science as a human endeavor" does not recognize the student as a scientist, instead wanting the student to be able to recognize others as scientists. I don't even want to address C4L or the NeSA assessment design, but I will say that nowhere did I encounter "the ability to correctly answer a multiple choice question" as a characteristic of a scientist. Are we being supported in providing opportunities for our students to practice the characteristics of scientists while

learning science? Do we value these traits even though they are not a part of the NeSA assessment?

Science is the past, the present, and the future. I often find myself so focused on the science standards that I forget to pay attention to the natural phenomena and new discoveries that are happening now. Ebola patients coming to UNMC, crane migration every spring, the February 11, 2016 announcement that LIGO detected gravitational waves created by the merging of two black holes more than a billion years ago – 100 years ago Albert Einstein predicted gravitational waves as part of his general theory of relativity, Stephen Hawking names Virgin Galactic's new passenger spaceship "Unity", the bitter patent battle over a technique known as CRISPR-Cas9 – with the enzyme Cas9 scientists can disable, replace or fine-tune genes by recoding parts of DNA sequences (and the larger argument of whether processes that are found in nature should be patented), the health issue of the Zika virus, and the 2017 total eclipse of the sun making a swath across Nebraska on August 21<sup>st</sup>. I remember a time when I didn't feel guilty taking students outside to observe the migration of Monarch butterflies as they flew through our school yard, catching the first snowflakes of the season on black paper to examine under a microscope, or watching TV with my students cheering for teacher Christa McAuliffe as the Challenger lifted-off to disaster, and then sharing in the grief of the Nation. I am optimistic that the next iteration of science benchmarks (©) will provide us with the freedom needed to fully practice, learn, explore and celebrate science with our students.

As we go into the 2016 testing season, stay focused on the students: our next generation scientists and engineers. Remain passionate for the content that you teach, and do not hesitate to take time to ponder with your students about what is happening in nature and in science today. Merriam-Webster defines science as "the state of knowing: knowledge as distinguished from [ignorance](#) or misunderstanding." So, continue to share your joy of learning as you invite and excite your students into the wonderful world of science.

#### Resources

- National Science Education Standards. Washington, DC: National Academy Press. 1996.
- Science Fusion. Introduction to Science and Technology. Houghton, Mifflin, Harcourt. 2012. pp. 10-11.
- Edward O. Wilson, Father of Sociobiology, Myrmecologist. Letters To A Young Scientist. W. W. Norton and Company, 2013.
- Elizabeth Blackburn, Nobel Laureate in Physiology or Medicine 2009. "Characteristics of a Scientist." Insights from Nobel Laureates. Recorded: November 2012, Seoul, South Korea. <http://www.nobelprizeii.org/>
- "Science." Merriam-Webster: Dictionary and Thesaurus. <http://www.merriam-webster.com/>.

# 2016 2<sup>ND</sup> QUARTER PUBLIC INFORMATION AND EDUCATION GRANT REPORT

**NOTICE:** There will be some extra money available during the third and fourth quarter PIE grant funding cycles of 2016. Extra funds are available because a few grant recipients were not able to complete their projects or did not fully use the funding allocated to them. Please consider submitting an application if the timing of either of these quarters is favorable to your project.

Eight grant applications were received for the 2015 fourth quarter from the Rainwater Basin Joint Venture, Rainwater Basin Joint Venture Informational Seminar; Community Crops, Urban Homesteading Series; Jon Mayo/Brownell Talbot School, Student Designed Rain Garden at Brownell Talbot; Jon Mayo/Brownell Talbot School, Geosciences of Nebraska Outreach Program; Pyrtle PTO, Outdoor Enrichment; Geographic Educators of Nebraska, Training the 4<sup>th</sup> Grade Teachers to Use the Student Atlas of Nebraska; First Lego League Team 7359, Plastic Bag Reduction; and Plattsmouth PS, Costa Rica Trip. Total grant dollars requested were \$20,032.00. Grants were awarded to Rainwater Basin Joint Venture, Community Crops, Jon Mayo- Brownell Talbot, and Geographic Educators of Nebraska.

The Academy received 12 grant applications for the first quarter of 2016. The grant applications accepted were Iain Nicolson Audubon Center, Crane Season Educational Video Set; Lyons-Decatur PS, Avian Education, Conservation and Ecology; Ross Theater, Showing the Messenger Documentary Film; Nebraska Game and Parks, Wildlife in Urban Nebraska: Identification and Conservation; Nebraska InterFaith Power and Light, Faith & Farming: Holistic Response to Climate Change; NPPD and NDE-Science, Nebraska Green Schools; Loup Basin RC&D, 2016 Keep Loup Basin Beautiful Recycling Guide; Cedar Bluffs Community, Teaching the Fundamentals in an Environmental Setting; Keep Chadron Beautiful, Vermicomposting-Worms Recycle Too!; Five Rivers RCD, Updated Weed Pocket ID Guide; WasteCap Nebraska, Waste Options Newspaper Articles; and Pyrtle PTO, Outdoor Enrichment.

The four applicants receiving awards were Iain Nicolson Audubon Center, Loup Basin Resource, Conservation and Development Council, Five Rivers RC&D, and WasteCap Nebraska.

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 \$257 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/>

Second quarter 2016 applications are due April 8, 2016; third quarter applications are due July 8, 2016.

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.



## SCHOLARSHIP REMINDERS

The Nebraska Academy of Sciences offers five scholarships for high school seniors in amounts of \$100 to \$1000. There are two scholarships for college sophomores or juniors. The collegiate scholarships are \$3000, paid in two installments, \$1500 at the beginning of the fall semester following the award and \$1500 for the spring semester. The collegiate application deadline was February 1<sup>st</sup>, 2016, 23 applications were received. The high school postmark application deadline is March 1, 2016. Please check the website for application forms and requirements.

## UPCOMING DATES TO REMEMBER

- March 1, 2016 Registration opens for NATS Fall Conference
- April 15, 2016 – [Last day for NAS Annual Meeting on-line general registration](#)
- April 21, 2016- NJAS State Science Competition- Ashland Air and Space Museum
- April 22, 2016 NAS Annual Meeting at Nebraska Wesleyan University
- August 1, 2016 NATS FC Presenter Proposals Due- Form in this newsletter or use the [On Line Proposal Form](#)
- Check [NJAS website](#) for Science Fair Info

## 2016 KICKS Summer Updates

The Nebraska Science Kicks professional development series has been serving K-12 science educators in the state for nearly 12 years. Summer 2016 will be our farewell institutes. So if you have been putting off Kicks it's time to jump in and get signed up! Project goals include:

- Building teacher content knowledge and pedagogical skills
- Integration of inquiry as both an instructional strategy in science as well as one of the 4 major content areas
- Developing a sustainable statewide network of science educators

Teacher benefits include opportunity to think critically about their own instructional practice. Other benefits include a stipend, lodging (for participants traveling over 75 miles one way), graduate credit, attendance at the NATS Fall Conference, and membership in the Science Matters state and national network.

The summer 2016 institutes will include a K-12 Earth/Space Science Institute hosted at Northeast Community College, Norfolk from June 6-9 through June 13-16. The K-12 Physical Science Institute will be hosted at North Platte Senior High, North Platte from June 14-17 through 20-23. Go to the <http://www.kicks3.org/> to apply for an institute.

Science Kicks3 content specific institutes allow for deeper content coverage at all grade levels and, for a more fully developed integration of science (inquiry) and engineering practices. Kicks3 institutes also support extension of teacher content knowledge beyond grade level assignment as well as exploration of how the Nebraska State standards translate into classroom content and practice at the grade band level. Because there is a part to whole and whole to part nature to the structure of the summer workshops and because K-12 teacher participants will be at the same site there will also be opportunity to explore K-12 content progressions in science. Further deepening teacher understanding of science content, particularly as it relates to student readiness, age appropriate content and science curriculum.

## OTHER RESOURCES

Check out the [SciJinks webpage](#), Its All About Weather!

[NASA Nebraska Space Grant](#)

[Nebraska Groundwater, Natural Resources, and Conservation Workshop](#) sponsored by Kregel Windmill Museum. May 25-26, 2016, Kimmel Education Center, Nebraska City, NE.

[NSF 2015 Teaching and Learning Video Showcase](#)



Teacher participants will also attend the NATS Fall Conference as a follow-up to their Science Kicks3 summer experience.

Summer 2016 details are available through your local Educational Service Unit or at the Kicks3 website <http://kicks3.org>. You can also contact Project Director, Deb Paulman directly [dpaulman@esuxsixteen.org](mailto:dpaulman@esuxsixteen.org).

## NSTA ELEMENTARY SCIENCE EXTRAVAGANZA APRIL 1, 2016

The [NSTA National Conference](#) is being held March 31- April 3 in Nashville, TN. There will be an elementary extravaganza offered on April 1 to bring together several national and international organizations to provide elementary teachers with a variety of teaching strategies and resources.

Participants will engage in hands-on activities; gain information about science programs and materials; learn about professional development opportunities; preview the CBC/NSTA elementary science trade books; interact with the leaders of NSTA and other national and international organizations; gather information about award and grant programs for elementary teachers; share insights with colleagues; grab a cup of coffee; have a chance to win door prizes, including an iPad !!; and learn of opportunities to become more involved in professional organizations. In essence, they will walk away with a head full of ideas and arms filled with materials. So, encourage your friends and colleagues to attend as well.

Participating organizations include: • The Association of Presidential Awardees in Science Teaching • The Council for Elementary Science International • The NSTA Committee on Preschool-Elementary Science Teaching • Science and Children Authors and Reviewers • The Society of Elementary Presidential Awardees

# Congratulations to Nebraska's 2016 AJAS Fellows



Twelve Nebraska High School students were inducted as Fellows into the American Junior Academy of Science's Annual Conference in Washington, DC.

**Tyler Djernes**, *Using *Amaranthus retroflexus* L. & *Datura stramonium* to Produce Ethanol*, teacher Chelle Gillan; **Daenen Jones and Anna Kay Sitzman**, *Heating Devices and Temperature-Regulating Sensors Stabilize Temperatures in Flight Pod*, teacher Christina Wildhagen; **Levi Woodward**, *The Power of Hydraulics*, teacher Marc Bathke; **Marcella Jurotich**, *The Effect of a Riparian Buffer on Water Quality in an Agricultural Stream*, teacher Lee Brogie; **Courtney Smith**, *The Effects of Chelation Therapy on Catalase Activity and the Implications in Neurodegeneration*, mentor Jaynie Bird; **Jill Gathje**, *The Effect of 0.05 mg of Vitamin D3 on Inhibition of the T2 Coliphage*, teacher Chelle Gillan; **Jonah Peterson**, *The Survival of *Lactobacillus rhamnosus* GG ATC53103 in a Simulated Teen GI Tract*, teacher Chelle Gillan; **Coleman Kneifl**, *The Effect of Manure Microbes on the Growth of the Goss's Wilt Inoculum*, teacher Marc Bathke; **Hannah Fleischer and Rachel Kort**, *Which Fertilizer Works the Best?*, teacher Jay Cecrle; Brooke Mott, *Oiled Up: An Environmental Study*, teacher Amy Leising.

The American Junior Academy of Science (AJAS) is a National Honor Society for students who have completed exemplar scientific research projects while attending high school. This is the only honor society for pre-college research scientists. Each affiliated (city, state, or regional) Academy of Science nominates their top high school science researchers and these students, along with their teachers, are invited to our conference. AJAS meets annually during the American Association of the Advancement of Sciences' (AAAS) annual

meeting. AAAS is the largest scientific organization in the world and the publisher of the journal *Science*.

This joint meeting of AJAS and AAAS gives students a chance to share their research and discuss science topics with the leading scientists of our time at the AJAS Breakfast with Scientists (hosted by American University); and to present their research at poster and oral presentation sessions. AJAS is not a competition. The AJAS mission is to introduce, encourage and accelerate pre-college students into the social, cultural, intellectual, and professional world of science, technology, engineering, and mathematics. At the AAAS/AJAS Poster Session the AJAS student delegates are honored and inducted as lifetime fellows into the American Junior Academy of Science. This year, 140 students representing 22 Affiliated Academies were inducted into AJAS.

As part of the AJAS mission, field trips are arranged to immerse students in scientific endeavors and to meet real-world scientists. The students are given behind-the-scene tours of labs meeting some of the Nation's top scientists, mathematicians, and engineers. Nebraska students attended tours at the National Museum of Natural History and the United States Botanic Garden, the National Institute of Health, the Beltsville Agriculture Research Center, or NASA's Goddard Space and Flight Center.

Other highlights of the conference included: the opening session held at the Omni Shoreham with Dr. Valda Vinson, Deputy Editor of *Science*; AAAS President's address and Plenary Lectures; evening reception at the U.S. Botanic Garden and tour of DC; and the Honors Banquet held at the National Museum of the American Indian.

This year's 54<sup>th</sup> AJAS conference was held in Washington, DC - February 10-14, 2016.

Submitted by Lee Brogie, AJAS Director

# NAS SPRING GENERAL REGISTRATION FORM

THE NEBRASKA ACADEMY OF SCIENCES, 126th ANNUAL MEETING AND AWARDS RECEPTION, APRIL 22, 2016  
NEBRASKA WESLEYAN UNIVERSITY  
50th AND ST. PAUL, LINCOLN, NE

**PLEASE: REGISTER BEFORE THE MEETING.** WE WOULD LIKE TO SAVE YOU TIME AND  
AVOID CONGESTION AT THE REGISTRATION TABLE.

Name \_\_\_\_\_  
Mailing  
Address \_\_\_\_\_

City/State \_\_\_\_\_ ZIP \_\_\_\_\_  
Area \_\_\_\_\_ Daytime  
Code \_\_\_\_\_ Phone # \_\_\_\_\_

E-mail address: \_\_\_\_\_

**REGISTRATION FEE** \$ \_\_\_\_\_

- \$ 15 Students w/ ID
- \$ 70 Member Registration, includes dues
- \$ 25 Members Reg, 2016 dues previously paid
- \$ 70 Registration, non-members
- \$ 25 Life Members

**DUES**

- \$ 10 Students w/ ID \$ \_\_\_\_\_
- \$ 45 General membership, NOT  
attending the meeting

**CONTRIBUTION\*** \$ \_\_\_\_\_

**LUNCH TICKET** \$ \_\_\_\_\_  
@ \$ 7.95 each

**TOTAL** \$ \_\_\_\_\_

**MAKE CHECKS PAYABLE TO:**

THE NEBRASKA ACADEMY OF SCIENCES or NAS  
302 MORRILL HALL, 14th and U STREETS  
LINCOLN, NE 68588-0339  
*nebacad@unl.edu* (402) 472-2644

\_\_\_\_\_ I plan to attend the **MAIBEN MEMORIAL LECTURE**  
11:00 a.m. Dr. Julie Soukup, Creighton University, "Riboswitches  
Turn Students Onto Research"

\_\_\_\_\_ I plan to attend the **LUNCH** (use the cafeteria line and pay there  
or send in payment and receive a ticket)

**PLEASE INDICATE WHETHER YOU WISH TO EAT  
LUNCH NO LATER THAN APRIL 4TH.**

\*Contributions are tax deductible; dues and registration are not.

To Pay with a Credit Card please complete the following:  
Circle: Visa, MC, Discover

Name on Credit Card \_\_\_\_\_

Credit Card Address if different \_\_\_\_\_

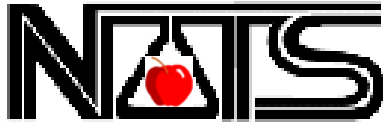
\_\_\_\_\_ cc zip code \_\_\_\_\_

Credit Card Number \_\_\_\_\_

Three digit security code \_\_\_\_\_ Expiration Date \_\_\_\_\_

Fax: (402)472-8899





NATS PROGRAM PROPOSAL

2016 Fall Conference

www.neacadsci.org

FOR OFFICE USE ONLY

Session Type \_\_\_\_\_
Day \_\_\_\_\_
Time \_\_\_\_\_ Length \_\_\_\_\_

NOTE: All Presenters are asked to register for the Conference. Registration fee includes membership.

Please complete a registration form and include with your program proposal. On line proposal link: NATS Fall Conference Proposal

CAMP CALVIN CREST DOES NOT HAVE INTERNET ACCESS. PLEASE PLAN ACCORDINGLY FOR YOUR PRESENTATION

Please Type or Print (legibly in black) Information as You Wish It to Appear in Convention Program

Principal Presenter

Second Presenter

Name \_\_\_\_\_ Dept. \_\_\_\_\_ School/Business \_\_\_\_\_ Preferred Mail Address \_\_\_\_\_ City \_\_\_\_\_ State Zip(+4) \_\_\_\_\_ Phone: Work \_\_\_\_\_ Cell: \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

NOTE: For any additional presenters, please include the information requested above on an additional page.

Session Data

Session Title \_\_\_\_\_
Brief Description (50 words or less) \_\_\_\_\_

State Standard(s) Address in Presentation Please list Standards in the following form: 4.7.4 or 8.2.1 or 12.3.2. It is recommended that in your presentation you include assessment ideas for the standards you address. This is absolutely necessary!

NATS Bookstore Item The NATS bookstore can arrange to sell publications from the NSTA catalog. If appropriate, provide the Title and Author of an NSTA catalog item that closely links to your presentation. Presenters may also sell publications during their presentation time.

I have a publication suggestion for the NATS bookstore that is linked to my presentation.
Title: \_\_\_\_\_ Author(s): \_\_\_\_\_

Description of Session Types (Check One that describes your presentation):

- Demonstration: Presenter demonstrates a series of experiments, scientific phenomenon or an apparatus used in science. Limited audience participation. Theater-style setup.
Hands-On Workshop: Presenter involves audience with materials. Classroom-style setup.
Make It Take It: Hands on activities where participants leave with product to take back to classroom. Classroom-style setup.
Field Trip: Can be at Camp Calvin Crest or transported to another site. (Minimum of 2 hours). Include transportation plans.
Contributed Paper: Presenter shares results of research or shares a creative teaching strategy. Theater-style setup.
Short Course: A 2-3 hour session/workshop that may include in depth information on a topic or hands-on experience that requires more than a single session.

**Length of Session:**

- Three Hour Thursday Afternoon Workshop (1:30 – 4:30)
- One Hour - (the standard length presentation)
- Two Hour –

Please Mark your choice:  
 3 hour Thursday only  
 Friday Only  
 Saturday Only  
 Friday or Saturday

**Science Area: (Check only one for listing in final Program.)**

- |   |   |                                     |   |
|---|---|-------------------------------------|---|
| <input type="checkbox"/> Biology/Life Science | <input type="checkbox"/> Physics/Physical Science | <input type="checkbox"/> Integrated | <input type="checkbox"/> Elementary Science         |
| <input type="checkbox"/> Chemistry            | <input type="checkbox"/> Environmental Science    | <input type="checkbox"/> Inquiry    | <input type="checkbox"/> Technology                 |
| <input type="checkbox"/> Earth/Space Science  | <input type="checkbox"/> General                  | <input type="checkbox"/> Assessment | <input type="checkbox"/> Science/Technology/Society |

**Intended Audience:**

- K-3     4-6     Middle/Junior High     Senior High     Post Secondary     All

**Maximum number of participants for your session? (Room assignments based on space availability)**

- 15 or fewer     16 - 30     31 - 50     No Preference

**AV Equipment: (NOTE: Equipment not listed below is to be provided/arranged by the presenter.)**

- Screen

**Internet Access:**

- Yes, definitely     Would be nice but not necessary     Do not need access

**Fees may be charged for the cost of materials only. Presenter(s) are responsible for collecting fees for the session.**

- The fee for this session is \$\_\_\_\_\_.     There is no session fee.

Fee pays for: \_\_\_\_\_

**Repeat Session:**

Would you be willing to present your session twice?  YES     NO

**Safety Issues**

As a NATS presenter, you must comply with the "Minimum Safety Guidelines to NATS Presenters and Workshop Leaders" and you must agree to comply with the guidelines during your presentation. This compliance form will be sent when we send you the program confirmation letter.

**Special Room Arrangements:** Normal arrangements will include tables and/or chairs unless otherwise requested. Special set ups dependent on availability of resources. List any special needs you will have:  
\_\_\_\_\_  
\_\_\_\_\_

Only the *principal presenter* will be contacted concerning confirmations. All correspondence will be sent to the email address of the principal presenter. The principal presenter must share information with his/her co-presenter(s).

If you or any member of your team would like an administrator, division chief, etc. notified of your participation post-conference, please indicate below. Use additional sheets if necessary. Be certain to designate which presenter's administrator, etc. matches with which presenter if there is more than one presenter in your group.

Name _____	Name _____
School _____	School _____
Position _____	Position _____
Address _____	Address _____
City _____	City _____
State, Zip (+4) _____	State, Zip (+4) _____

**Return one copy of this proposal by August 1:  
(later proposals will be accepted only as space allows)**  
**NATS**  
**302 Morrill Hall, 14<sup>th</sup> and U Streets**  
**Lincoln, NE 68588-0339**  
[nebacad@unl.edu](mailto:nebacad@unl.edu) 402/472-2644 fax 402/472-8899  
[On Line Proposal Link](#)