



Minnesota Academy of Science

Promoting Excellence in Science Since 1873

Programs and Youth Back to School Issue

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952-545-6789 952-545-6336 fax

First Lady Michelle Obama Participates at National Science Bowl

Lisa Warbitton

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"Getting to go to Washington, D.C. and participate in the National Science Bowl was a great experience," said Jonathan Meyer, an eighth grader at Minnetonka Middle School West. "We got to see so many interesting things and compete against other top teams from around the country. Team member Tommy Slattery commented, "Listening to the First Lady and having her participate as a moderator was really motivating.

She said some neat things about the importance of scientists and mathematicians and how we will be the ones to help our country in the future."

The winning teams from the Minnesota Academy of Science's Minnesota State Regional Science Bowls received an all-expense paid trip to Washington, D.C. to participate in the National Science Bowl. She motivated the crowd of 550 middle and high school students from around the country in her key note address when she said, "We want young people energized in the way that you all are, because we know that American brainpower in science and math has always driven this country's prosperity, helping us make the discoveries and to build the industries that have transformed the way we live and work. That's why my husband and his administration want to ensure that every single child in this country gets a good education, particularly in math and science."

Mrs. Obama encouraged the students to continue to ask questions, play and experiment. She said, "In the coming decades, our future scientists, engineers, and leaders are going to help tackle some of our most challenging problems. We are going to need you. Whether it's improving our health, har-



nessing clean energy, protecting our security, succeeding in the global economy, we're going to need you. Our future depends on a new generation of young Americans who can help reaffirm our role as the world's engine of scientific discovery and innovation." Continued on page 2

Minnetonka Middle School West participated in the round robin academic event with a total of 37 schools but did not qualify to progress to the double elimination tournament. They also participated in the solar cell car race. The winning team was from Albuquerque Academy in Albuquerque, NM.

Chaska High School participated in the round robin tournament with a total of 68 teams and qualified to participate in the double elimination tournament. They finished as one of the top 12 schools of the tournament and won a trophy and \$1,000 for their school's science department. The winning team was from North Carolina School of Science and Mathematics in Durham, NC.

Continued from page 1

The Minnesota Academy of Science's K-12 education programs strive to uphold these same goals and share Mrs. Obama's view on the importance of science education. According to Celia Waldock, Executive Director of the Minnesota Academy of Science, "We have a strong commitment to science education in our schools and from the business community. Our organization is proud to provide exciting competitive events to highlight the achievements of the students in our state."

The MN State Regional Science Bowl is sponsored by generous contributions from Ecolab, General Mills, Great River Energy, Macalester College and the University of St. Thomas.

A complete transcript of Mrs. Obama's remarks and a video of the event can be found at bowl.mnmas.org

Come on board with the Junior Science & Humanities Symposium (JSHS) and MN State Science & Engineering Fair for 2010/2011 school year.

Lise Weegman

New this year: New venue for JSHS and State Science & Engineering Fair: *Sheraton South Bloomington, 494/100*
<http://www.starwoodhotels.com/sheraton/property/features/index.html?propertyID=1493>

JSHS- Sat/Sun March 19/20 and State Science & Engineering Fair Sun-Tues March 20-22. The parking lot holds up to 1500 vehicles and it is free! In addition to the parking lot, there is off-street parking (come one, come all so we can surpass the 1500 number) ☺

Students, teachers and parents – if you have yet to find resources and/or choose a topic for this year's scientific research, allow Science Buddies to help you. www.sciencebuddies.com. There are resources for students, teachers and parents and guides to help you through the process.

Scientific Research presented in PAPER Form for JSHS: there are two different paths in which you are able to submit your research paper to compete in JSHS: Submit your paper through OPEN competition which is an online process (Read rules on how to submit through Open competition on the MAS website, JSHS Page <http://www.jshs.mnmas.org/jshsHome.asp> OR submit through your nearest regional science fair: A student is not allowed to enter through both paths.

<u>Region</u>	<u>Date(s)</u>	<u>Location</u>
Northeast Regional Science Fair	2/5/2011	U of MN, Duluth, Kirby Student , Duluth.
Rochester Regional Science Fair - Projects	2/17/2011 - 2/19/2011	On website - (from "Academics" pull-down menu select "Rochester Regional Science Fair). University Center Rochester in the Regional Sports Center.
Northern Regional Science Fair	2/19/2011	Memorial Hall, Bemidji State U, Bemidji, 56601
South Central/Southwest RS&EF	2/19/2011	Centennial Student Union, Minnesota State University, Mankato
Twin Cities Regional Science Fair	2/25/2011 - 2/26/2011	U of MN - Field House, 1800 University Ave, Minneapolis
Southeast Regional Science Fair	2/25/2011	Winona State University, Kryzko Commons, Winona 55987
Central Region Science Fair	2/26/2011	Atwood Memorial Union at SCSU, St Cloud.
Western Regional Science Fair	2/26/2011	Minnesota State University Moorhead, Comstock Memorial Union

Scientific Research presented as a PROJECT for State Science & Engineering Fair: to compete for advancement to the State Science and Engineering Fair, you must first go through one of the 8 regional science & engineering fairs throughout the state of Minnesota.

To learn more about each regional science fair, or to obtain contact information for the director a specific regional science fair, please visit the MAS FAIR website webpage: <http://www.fair.mnmas.org/Regions/sfRegional.asp>

Parents and siblings of student presenters, as well as those of you out in the community, we need you too! ☺ Mark the dates of the programs on your calendar! We sure could use parents and siblings for general volunteers to help run both JSHS and State Science & Engineering Fair as well as community experts for judging projects or papers. We are in need of a minimum of 250 project judges and minimum of 40 paper judges and 70 general volunteers throughout the four days.

Please email lise@mnmas.org with any questions regarding volunteering to be a judge or a general volunteer to help run the programs during the events. It truly takes a village to run JSHS and State Science Fair, and we could use more village people, so join in on the fun!!

The BioGENEius Challenge award is coming to the MN State Science & Engineering Fair!

The BioGENEius recipient will now be selected at the MN State Science & Engineering Fair for 2011 due to the cancellation of the Biotechnology Institute's regional competition. The Biotechnology Institute will have their own judges' judge the BioGENEius award and will also be presenting the award at the Tuesday morning Grand Awards ceremony. The winner will advance to the Biotechnology conference in Washington, D.C. in June and also compete in the National BioGENEius competition. Registration for this award will be located on the MAS FAIR webpage. Only those interested in being judged for the award should register on the MAS FAIR webpage. To learn more about the Institute and their programs and project guidelines, visit: http://www.biotechinstitute.org/programs/biogeneius_challenge.html and <http://biotechinstitute.org/programs/documents/2011BioGENEiusStudentEligibilityandProjectGuidelines.pdf>

Thank you all for your on-going support in encouraging student success. Please come and join in on the fun. Present or volunteer. Either way you will have an enjoyable experience! Continue reading and listen to students from 2010 who advanced to National JSHS and International Science & Engineering Fair – It was truly an amazing experience for all!

Enjoy the school year everyone and we'll see you in March, 2011.

Lise' Weegman

Director/ Junior Science & Humanities Symposium and MN State Science & Engineering Fair

Email: lise@mnmas.org Cell Phone: 701-351-5865 MN Academy of Science Website: www.mnmas.org

Kate Gerschwind / Rochester Mayo High School

"I had the opportunity as a freshman to attend the 2010 ISEF in San Jose. My chaperones, Roger and Judy Larsen, have been to ISEF before and made the traveling easy. They also knew what to expect at ISEF, which really helped me to not be so nervous. While waiting for judging day, we took a couple site seeing trips, including Monterey Bay and San Francisco. At ISEF events, I met people from around the world that I am keeping in touch with via email. On the day of judging I felt I was prepared. I found the judges to be very encouraging, making me feel no matter how my project did overall I had done a good job. Several of the judges took time to provide feedback and thoughts on my project for the future. During the special awards ceremony, I was shocked to learn I had won 5 awards. In fact, everyone in our group from Rochester left with an award. It was an amazing experience and had me excited to get home and get to work!"

Awards won this spring by Ms. Gerschwind:

- American Mathematical Society - 3rd Place (\$250)
- American Statistical Association - Honorable Mention
- IIT Scholarship (\$15,000/year for 4 years)
- Excellence in Mathematical Sciences 2nd Place (\$1000)

David Campeau/Rochester Mayo High School

"Participating in the International Science and Engineering Fair in San Jose, California was a wonderful experience. I met students from all over the world and saw many great projects. Spencer Berglund (my team member) and I spent the first day setting up our project and tweaking our robotic Rubik's cube solver. Then we had two days to participate in tours and events. My favorite event was the pin exchange. 1500 kids from around the world gathered in a room and traded pins from their home countries/states. Some of the neatest pins I have include those from Egypt, Japan, and China.

The Silicon Valley tours were also a blast. I got to tour the "Google-Plex," the central location of Google servers, where their g-programmers develop software. It is rated as one of the best workplaces in the US, and I could see why. Free food was everywhere, work was relaxed, and the complex just looked cool— it was colorful and there were many contemporary sculptures and statues.

On the day we presented our project to the judges, we left our hotel for the presentation hall at 5:30 am and returned at 6:30 pm. It was a long day, but it was fun, as the judges were interested in our project. The following day, we showed our robot to the public. We had a continuous crowd, and ran our robot almost 100 times.

The awards ceremony was the biggest ceremony I've ever attended. Colored spotlights shone, and cameras were everywhere. After the first place winners had been announced, confetti rained down on them. They stood in front of the roaring crowd, and were jumping for joy like they had just won the Olympics. I got to be part of the excitement when Spencer and I won the IEEE Computer Science first place team award."

Computer Society - 1st Place Team (\$500 each) - **Spencer Berglund / David Campeau**

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CHAD and I Hit the Road to Washington D.C. and San Jose for MSSEF and JSHS

Gavin Ovsak

My first year in the Science Fair will be a hard one to beat. My name is Gavin Ovsak and I am one of two students from Eden Prairie High School who competed at the Minnesota State Science Fair in March 2010. I first heard about the fair from a friend of a friend who told me what a great opportunity it was. Afterwards, the idea of coming up with a science project and participating in the fair stuck in the back of my head for a while. I did some research on the science fair process and decided that this would be my year to give it a try.

I contacted Ms. Princesa Van Buren, an advisor and teacher with the SciMent program offered online through the Intermediate School District 287's Honors Mentor Connection. This was the first year an online science research class like this had been available and since my high school's science fair was not connected with the Twin Cities Regional Science fair, it was a rare opportunity that allowed me to possibly qualify for the MN State Science Fair organized by the Minnesota Academy of Science.

As part of that online course, I toured and conducted interviews at local businesses related to the area of research I was interested in possibly doing a project on, such as the MN Veteran's Medical Research Center and the Mayo Clinic in Rochester, MN. The idea for my project came spontaneously after going over my interview notes. After discussing my project idea with my advisor and parents, I was very excited to start working on it. I decided to create a wearable device to help persons with a lack of arm muscle control to access computers with head movements instead of a normal handheld mouse. I spent much of last December communicating with electronics hobbyists on Internet forums and making trips to Radio Shack for various electronics as I prepped my prototype model. Many times, I worried if I was in over my head. Especially, during the suspenseful moment when I first plugged the USB cord connected to my invention into the computer and the computer did absolutely nothing! Yet, as you might have guessed, I eventually got it working after successive cycles of trial and error. I evolved my test breadboard into a thinner soldered board and made the device, which I named the "CHAD--Circuit Head Accessibility Device" Ever since then the CHAD has traveled around the country with me.



In early July, Gavin received written confirmation that he has been selected as a 2010 Davidson Fellow for the positive impact on society that his science fair project could have. Along with this prestigious recognition he has been awarded a \$10,000 scholarship towards the college of his choice and will be attending a special awards ceremony in Washington, D.C. at the end of September at the Smithsonian Museum of the American Indian.

Hardware-wise, CHAD is a simple Air Force hat with a microchip sewn to the top along with a sensor to measure tilting of the hat. There is a long USB cable coming from the top of the

hat and a shorter cable on the other side with a place to bite on the end of it (used to click a mouse). I then designed a software test that could determine the efficiency of a mouse peripheral.

Afterwards, I compared and analyzed data collected from a test group's ability and efficiency with a traditional computer mouse as compared to the CHAD. The CHAD has gone through three major modification and improvement phases. In my latest version of CHAD, I have achieved one-third the efficiency of a standard mouse just with head movements! This has been tested to be the relatively the same with able-bodied test groups as well as disabled test-groups. There are many more improvements that I am looking forward to having time to make this summer on the device once school is out. My hope is to have it production ready by the end of summer.

*"CHAD (Circuit Head Accessibility Device) is a simple Air Force hat with a microchip sewn to the top along with a sensor to measure tilting of the hat. There is a long USB cable coming from the top of the hat and a shorter cable on the other side with a place to bite on the end of it (used to click a mouse).
- Gavin Ovsak*

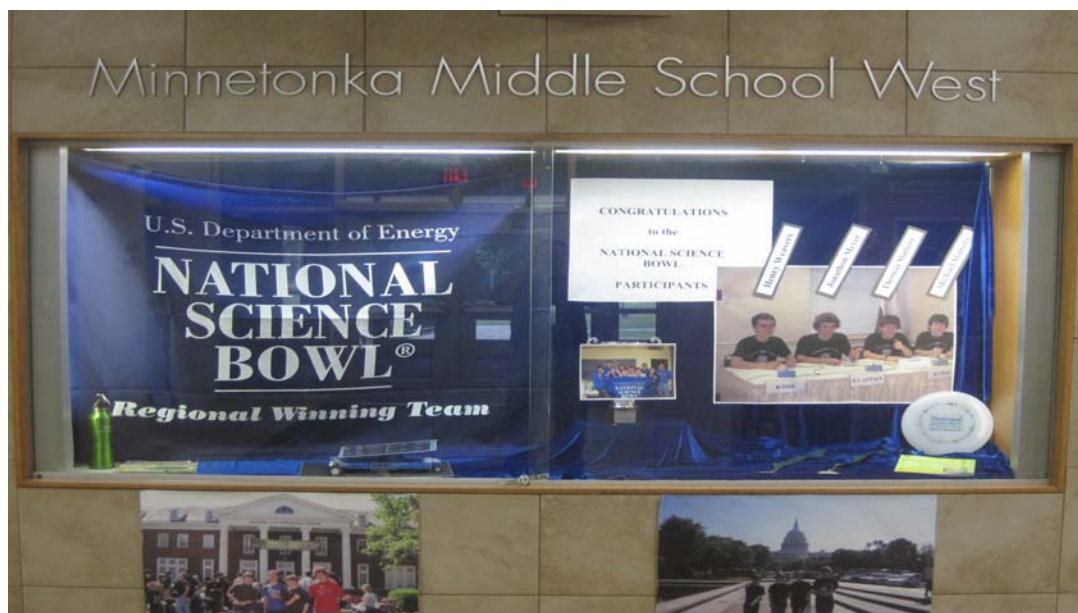
After doing very well at the Twin Cities Regional Science Fair in February and qualifying for both the MN State Science Fair and the Tri-State JSJS Presentation competition, I made some changes to my presentation. I improved things like font size and my board layout, as well as, updating my report to match the improved results I had achieved since the regional competition. I had a great time at the state science fair in March with my fellow SciMent student Hari Ganti, from Wayzata High School, who was also being advised by Ms. VanBuren. We were both very impressed with the quality of the boards there and spent quite a bit of time chatting with students from other schools. We both supported each other through the judging process, call backs, and we both had a great time at the dance on the last day, which we probably stayed too late at.

Probably my most memorable part of the MN State Science Fair occurred during the awards ceremony for JSJS when we caught some priceless video footage of me getting called up for 5th place, starting to walk back to my seat after putting the trophy back, and then a close up on my expression as I was immediately called back up to receive the first place trophy instead there had been a mix up in my favor! I was very impressed by the variety of awards given to student presenters at the state science fair and had a great time meeting my fellow ISEF'ers from around the state, whom I got to know even better later in California! Going to the JSJS National Symposium in Maryland was unforgettable and ISEF in San Jose, CA was similarly unbelievable. I look forward to competing again next year and I am spreading the word to all my friends to compete with me!



2010 Minnesota State Regional Science Bowls

Lisa Warbritton



Interest in the MN State Regional Science Bowls increased dramatically in 2010 and the Minnesota Academy of Science expanded its tournaments to accommodate as many teams of students as possible. The Science Bowl for High School Students maxed out at its limit of 36 teams this year and the Science Bowl for Middle School Students grew to a 19-team tournament. In total, 266 students competed in the two Science Bowls this year which was an increase of 40% over last year. In order to support this extraordinary number of students, 118 volunteer positions were filled by scientists from local educational institutions and scientific companies.

Middle School Teams

Blake, Field Community School (3 teams), Gibbon-Fairfax-Winthrop, Lake Harriet Community School (3 teams), Hopkins North (2 teams), Maternity of Mary- St. Andrew (2 teams), Minnetonka West (2 teams), St. Paul Murray, St. Thomas More (3 teams) and Springfield.

The Science Bowl for High School Students took place at Macalester College on January 21 and the Science Bowl for Middle School Students was held at the University of St. Thomas on February 13. The science bowls test teams of students utilizing a fast-paced question-and-answer format similar to the TV game show, "Jeopardy." The students were quizzed on science disciplines including biology, chemistry, earth science, physics and astronomy, as well as math. Most questions were so challenging even educated scientists would have trouble finding the answer.

Teamwork, camaraderie and educational excellence in the sciences are only some of the by-products of the Science Bowl program of the Minnesota Academy of Science. Other goals include enhancing the students' interest in science, developing leadership skills, providing opportunities for interaction among students and scientists, promoting ethical standards of conduct and influencing students' decisions to pursue careers in science.

The winning teams were from **Chaska High School** and **Minnetonka Middle School West**. Each team received a team trophy, individual medals, an all-expense-paid trip to Washington, D.C. to compete against the other regional winners in the U.S. Department of Energy National Science Bowl.

The Minnesota State Regional Science Bowls were sponsored by contributions from Ecolab, General Mills, Great River Energy, Macalester College and the University of St. Thomas School of Engineering.

High School Teams

Benson (2 teams), Blake Upper, Burnsville (3 teams), Cathedral of New Ulm (2 teams), St. Paul Central (2 teams), Chanhassen, Chaska (2 teams), Columbia Heights (2 teams), Harding, Mankato West (2 teams), Minnetonka (3 teams), Oak Land of Stillwater (2 teams), Springfield, St. Anthony Village (3 teams), St. John's Prep (2 teams), St. Paul Academy (3 teams), Wayzata (2 teams), Woodbury (2 teams).



The Intel International Science and Engineering Fair (Intel ISEF), the world's largest international pre-college science competition, provides an annual forum for more than 1,600 high school students from over 50 countries, regions, and territories to showcase their independent research. The Intel ISEF is the premier global science competition for students in grades 9–12.

ISEF Grand Awards

Engineering: Electrical and Mechanical - 4th Grand (\$500) **Gavin Ovsak**, Eden Prairie HS, Eden Prairie
Energy and Transportation - 4th Grand (\$500) - **Max Keller**, Alden-Conger HS
Mathematical Sciences - 1st Grand (\$3,000) - **Martin Camacho**, Central HS, Saint Paul
Mathematical Sciences - 4th Grand (\$500) - **Cathryn Manduca**, Century HS, Rochester
Medicine and Health Sciences - 4th Grand (\$500) - **Prithwis Mukhopadhyay**, Woodbury HS, Woodbury

Special Awards:

Google's Future of Energy Award (\$1,000) - **Max Keller**, Alden-Conger HS
Air Force Research Laboratory on behalf of the United States Air Force - 2nd Place (\$1,500) - **Christina Serena**,
John F. Kennedy HS, Babbitt,
American Chemical Society - 1st Place (\$4,000) - **Dan Mokhtari**, Breck School, Minneapolis
American Chemical Society - Honorable Mention - **Daniel Kassen**, Mayer Lutheran High School
American Mathematical Society - 3rd Place (\$250) - **Kate Geschwind**, Mayo High School, Rochester
American Physiological Society - 3rd Place (\$500) - **Charles Morris**, Breck School, Minneapolis
American Statistical Association - Honorable Mention - **Kate Geschwind**, Mayo HS, Rochester
IEEE Computer Society - 1st Place Team (\$500 each) - **Spencer Berglund / David Campeau**,
Mayo HS, Rochester
Illinois Institute of Technology (IIT) Scholarship (\$15,000/year for 4 years) - **Isaiah Butler / Megan Gilliland /
Boston Portner**, Saint Mary's HS, Sleepy Eye
IIT Scholarship (\$15,000/year for 4 years) - **Kate Geschwind**, Mayo HS, Rochester
Excellence in Mathematical Sciences 2nd Place (\$1000) – **Kate Geschwind**, Mayo HS, Rochester
International Council on Systems Engineering (INCOSE) - 1st Place (\$1,500) - **Gavin Ovsak**, Eden Prairie HS
Mu Alpha Theta - 1st Place (\$1,000) - **Kate Geschwind**, Mayo HS, Rochester
National Collegiate Inventors and Innovators Alliance/The Lemelson Foundation (\$1,000) - **Tiffanie Stone**,
Academy for Science and Agriculture, Vadnais Heights
Synaptics, Inc. - 3rd Place (\$250) - **Gavin Ovsak**, Eden Prairie HS

Minnesota STEM Network: an Emerging Opportunity

For about a year several people involved in math, technology, engineering and mathematics (STEM) education have been discussing ways to promote and improve STEM learning in Minnesota. They include people from higher education, museums, industry, schools, government and other entities. They held two stakeholder meetings in September and April, which involved over a hundred people. These events explored the possibilities for collaborative efforts and started to develop ways such an effort could operate.

Although the effort is still being organized, several directions have emerged:

- Collecting and sharing innovations and best practices in STEM education
- Promoting the value of STEM to students, parents and community
- Developing an inventory of STEM learning opportunities
- Promoting connections between schools, businesses, industry, higher education and informal education to improve STEM education
- Facilitating collaborations in geographic regions throughout Minnesota.
- Communicating with STEM networks in other states

In the next few months the leadership of this network will define the mission, choose a name, develop an organizational structure, and prepare plans for future work. The network is likely to closely align with SciMathMN, an education and business coalition that advocates for STEM education and has been in existence since 1993.

For more information about the activities of the network including the network event in April, go to: <http://scimathmn.org/>

What does STEM Look Like?

The 2009 class of [Davidson Fellows](#) have designed space missions, analyzed how epidemics spread and invented a Chemistry-themed card game. **Prithwis Mukhopadhyay** was recognized for his work during the past three summers with researchers at the University of Illinois.

The 16-year old from Woodbury studied the relationship between a widely-used food additive and the growth of breast cancer cells.



Prithwis Mukhopadhyay

Mukhopadhyay said he plans to use the \$10,000 he also won on tuition at either Harvard, MIT or Stanford. But for now, he's getting ready for his junior year at Woodbury High, where he plans to take 10 advanced placement classes this year.

"He's very disciplined, which is what I need. He's a young man of 15 or 16 kids who knows what he should do or what he should not do," said Dr. Sumit Bhattacharyya, a UIC researcher and Mukhopadhyay's mentor. "He goes through the proper training precautions and everything, which is very essential."

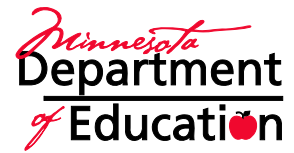
One part of Mukhopadhyay's breast cancer research focused on how the molecular structure of a food additive called carrageenan might induce mammary cells to transform into a pre-malignant state. Carrageenan is found in dairy products, processed meats, dog food, infant formula, pharmaceuticals and cosmetics.

-MPR News Q archive

August Science Update from Minnesota Dept. of Education

Contacts:

John Olson, Science Instruction Specialist, john.c.olson@state.mn.us
Dawn Cameron, Science Assessment Specialist, dawn.cameron@state.mn.us
Jim Wood, Science Assessment Specialist, jim.wood@state.mn.us
Doug Paulson, STEM Integration Specialist, doug.paulson@state.mn.us



MDE Science Page: http://education.state.mn.us/MDE/Academic_Excellence/Academic_Standards/Science/index.html

New STEM Specialist at MDE

Doug Paulson has joined the MDE staff as an instructional specialist for STEM (Science, Technology, Engineering and Mathematics). Doug was previously the curriculum integration specialist at Monroe Elementary School, a STEM magnet school in the Anoka-Hennepin District. He will coordinate the Math and Science Teacher Partnership professional development program and provide leadership and support around integrating the STEM disciplines in curriculum and instruction. Welcome Doug!

Science Standards Workshop – MDE September 21st

Plans are being developed for a day-long science standards workshop at the Minn. Dept. of Education in Roseville on Tuesday Sep. 21st. We plan to have two strands: an introduction to the standards strand and a strand on the nature of science and engineering for those who have attended an introductory workshop. We will send out a more detailed description and registration details soon.

Professional Learning Communities for Science Teaching Institute – Oct 7-9

The National Science Teachers Assn. is presenting this institute Oct. 7-9 in Bloomington, MN. The authors of the recently published NSTA book with that title will lead this in-depth look at strategies to focus PLCs on science content and learning. Science teacher leaders, department chairs, administer and teacher teams should plan to participate in this special opportunity in Minnesota. Details at www.nsta.org, click conferences/PLC institute.

Science Strand at the Education Minnesota Conference – October 21st

The Minn. Science Teachers Assn. will coordinate a day of science sessions at the Education Minn. Conference on Thursday October 21st in St. Paul. The schedule includes presentations on

- The New Science Standards – John Olson
- Amazing Science Demonstrations – Jerry Wenzel
- Using Science Notebooks across Grade Levels – Nancy Geving and Nancy Johnson
- Science Notebooks in a real-world Earth Science Investigation – Lee Schmitt

The normal MnSTA fall conference and most discipline conferences will not be offered this year. An expanded Science Education Conference will be held in Mankato, March 31- April 2.

Elementary Engineering Conference – Nov. 16th

The Excellence in Elementary Engineering Education (E4) Conference will be held at the University of Minnesota St. Paul Campus on November 16th. This will be the third of the highly popular conferences that have attracted over 250 teachers each year. Information and registration is at www.theworks.org under the Teachers tab.

Presidential Awards

The Minnesota science awardee for 2009 and the state finalists for the 2010 Presidential Awards for Excellence in Mathematics and Science Teaching have been announced by the White House.

The 2010 Award for secondary teachers: **Stephen Kaback**, Awardee, The Blake School in St. Louis Park, **Callie Bush Miller**, Finalist, Fridley High School, **Claire Hypolite**, Finalist, Edison High School, Minneapolis

The 2010 Award for secondary teachers: **Nick Faber**, Finalist, science specialist teacher at John A. Johnson Elementary School in the St. Paul school district, **Paulette Saatzer**, Finalist, kindergarten teacher at Garlough Environmental Magnet School in West St. Paul.

Their application documents will be evaluated by a national panel and one awardee will be selected for each state. Awardees spend a week in Washington D.C., including a presidential reception at the White House, and receive \$10,000. The 2011 award will be for secondary teachers. The window for applications will open in October. For details, go to www.paemst.org.

Scholars of Distinction



The Minnesota Department of Education's Scholars of Distinction program nurtures and recognizes distinguished achievement by highly motivated students. Students must complete required work in Minnesota's Academic Standards, demonstrate mastery of complex subject matter and apply their knowledge and skills on challenging projects. Students may pursue one or more area of focus throughout all or part of their K-12 education. Scholars of Distinction awards may be earned in the following areas: Applied Geography, Leadership, **Mathe-**

Minnesota Scholars of Distinction in Science

Rupa Erie, Cloquet High School, Cloquet District #94 *Effect the Presence of Zebra Mussel has on Zooplankton Diversity and Density in Pike Lake*

Courtney Jackson, Cloquet High School, Cloquet District #94 *Coronae Paradox: The Use of Magellan Radar Data to Determine the Overall Geologic History of Circular Lows on Venus, in Order to Determine the Process(es) of Coronae Formation – Phase III*

Naeh Klages-Mundt, Winona High School, Winona District #861

Eutectic Ice Formation and Vitrification of Cryoprotectant-Based Physiological System: Calorimetric Analysis for Cryobiological Applications

Hannah Kumar, Breck School *Effects of Chilling Stress on Glutathione Cycle in Spinach (Spinacia Oleracea)*

Riya Madan, Century High School, Rochester District #535 *Sensory Interference II: Effect of Positive Overload of One Sense on the Performance of the Other*

Ava Mokhtari, (co-author) Breck School *Expanding a Gene Expression Profile for Theiler's Virus as a Diagnostic Tool for Multiple Sclerosis*

Daniel Mokhtari, Breck School *Medicinal Applications of Bis(trimethylsilyl)acetylene in Copper(I)-Catalyzed Azide-Alkyne "Click" Chemistry*

Charles Morris, Breck School *Role of PKC α/β in Carrageenan-Induced Inflammatory Pain Response*

Prithwis Mukhopadhyay, Woodbury High School, South Washington County District #833

Food Additive or Carcinogen? Carrageenan Inhibits ASB Activity and Induces Cell Invasion Involving RhoA Activation and MMP-9 Secretion

Brandon Onopa, Breck School *Engineering J-Aggregate Thin-Films for Implementation in Organic Photovoltaic Devices*

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