



Minnesota Academy of Science

Promoting Excellence in Science Since 1873

Programs and Youth Issue

ELECTRONIC NEWSLETTER SUMMER 2011 VOL. 3 No. 1

www.mnmas.org www.mnacadsci.org

Back to School: Are You Ready for Great Science and Math Experiences with MAS? We Are Here to Help!

Welcome back to the 2011-12 competition season. Most science, math, and engineering activities come to a furious and frantic end with the end of the academic year. **MSSEF, ISEF, JSHS, Science Bowl** all seemed to be in a supercollider for us at the Minnesota Academy of Science. We want to highlight some of the remarkable activity in which Minnesota kids participated, and perhaps give you some ideas for investigation in 2011-2012. Inside this issue, look for stories of MAS activities that await your participation and creativity. There are insiders' reports of their participation in competitions and mentorships- as well as new possibilities to challenge and excite your probing minds. Gear up for STEM with MAS.

STEM Day at the Minnesota State Fair

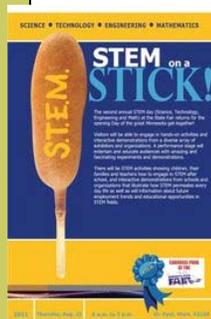
Thursday, August 25 Can School be
Far Behind?

Science, Technology, Engineering and Math Day at the State Fair will be located in Carousel Park, just outside the grandstand, from 8 a.m.-5 p.m., Thursday August 25th. Visitors will be able to engage in hands-on activities and interactive demonstrations from a diverse array of exhibitors and organizations. A performance stage will entertain and educate audiences with amazing and fascinating experiments and demonstrations. This year's roster of STEM Day at the State Fair participants includes: 3M STEM Wizards, The Bakken Museum, Bell Museum of Natural History, FIRST Robotics, Explora-Dome, Future City, KidWind, Microsoft, Minnesota 4-H, the Raptor Center, Science Museum of Minnesota, SciGirls, STARBASE Minnesota, The Works and many more. There will be additional STEM education exhibits at other parts of the fair. For more information, visit STEM Day at the State Fair on Facebook: <http://www.facebook.com/pages/STEM-Day-at-the-Minnesota-State-Fair/213598361997441>

From John Olson, State Science Specialist

Blake Middle School's Hydrogen Car Wins National DOE Science Bowl Competition in Washington

See article page 2



<http://www.facebook.com/home.php#!/pages/Minnesota-Academy-of-Science>

<http://www.mnmas.org/Calendar/Index.asp>



Message from the President

Comments made by Jim Fairman at the 2011 MSSEF:

MAS Lifetime Achievement Award to Wayne C. Wolsey, Ph. D.

On behalf of the members of the Minnesota Academy of Science and its board of directors, it is my privilege this evening to present the **Minnesota Academy of Science Lifetime Achievement Award in Education**. In this the International Year of Chemistry and the 100th anniversary of the first Nobel Prize in Chemistry, it seems fitting that this award goes to a chemist, who has gone above and beyond in his service to the Academy as well as science and chemistry in our society.

Wayne C. Wolsey received his Bachelor of Science in Chemistry “with High Honors” from Michigan State University and his Ph.D. in Inorganic Chemistry from the University of Kansas. After spending three years as an industrial chemist, he joined the Macalester College faculty in 1965 where he advanced to the rank of full Professor in 1980. Dr. Wolsey is an icon of chemical education on the local, national and international levels. Among his many publications is the universal college text “Chemical Principles in the Laboratory” originally published in 1969 and currently in its 9th edition, still in use around the world, over 40 years after its first publication. Today, he continues his work at Macalester as Emeritus Professor of Chemistry.



Dr. Wolsey is a former president of the Minnesota Academy of Science and has served as an Annual Meeting Chair and a Science Fair Judge at Regional, State and ISEF. He remains active in the American Chemical Society having served in a number of roles over the years. Dr. Wolsey is a member of Phi Kappa Phi, Phi Beta Kappa, Sigma Pi Sigma, and Phi Lambda Upsilon honor societies. He has received numerous awards, including the Award for Distinguished Service from the Minnesota Academy of Science, the Minnesota College Science Teacher of the Year award, the Macalester College Thomas Jefferson award, and he has been designated as a MegaMole contributor to Minnesota Chemistry Education. In addition he has been honored with the Robert E. Sloan Award for his support of academic freedom and the Robert Brasted Award for Outstanding Contributions to Undergraduate Teaching. Most recently, the Minnesota Section of the American Chemical Society awarded him with the 2010 Senior Chemists Award for outstanding service to science and society.

Tonight on behalf of the Minnesota Academy of Science I am pleased to present Dr. Wayne C. Wolsey with the Lifetime Achievement Award for Education. Ladies and Gentlemen please join me in congratulating Dr. Wolsey.

Jim Fairman
President, Minnesota Academy of Science



From the Director's Desk

It's important for you as supporters, participants, volunteers and donors to understand where our funding comes from and how we spend it. While some of our program fees have been climbing over the last couple of years, we have tried to keep costs down in other areas such as parking, food and hotel rates for program participants.

The Minnesota Academy of Science couldn't stay in business on "earned" income alone. None of our programs is self-sustaining. Accordingly, all of our programs require charitable support from individuals, memberships, corporations, foundations, colleges, and government grants.

As you will see from our financial report, over the last six years, we have stabilized our funding and have a small reserve available in the event that we were to lose a sponsor, not an uncommon occurrence. Over the last couple of years, we have had to replace close to 10% of our budget dollars when foundations have changed their giving policies and dropped out. The reality is that it is hard to find new support in the very tight economy we are currently experiencing. Our staff and board work very hard to utilize our funds efficiently, spending only 19.5% on fundraising and administration (the Charities Review Council recommends holding this figure to not more than 25%), allowing us to spend over 80% of our revenues on program costs, a significant achievement for a nonprofit organization with a budget under \$500,000.

Our budget for FY2011 was \$302,487. Of that amount, we earned approximately 34% from program fees and merchandise sales. The remaining 66% comes from charitable support, of which 65% is corporate donations, and foundation and government grants. Less than 1% comes from individual donations and membership dues. We are planning a fundraising campaign in the hope that we can increase our individual giving to 3%, an increase from \$2,500 to \$7,500, in order to diversify our revenue base and continue to bring financial stability to the Academy.

Students, we hope that you will consider becoming a member of the Academy. Each membership helps to maintain the quality of our programs and allow us to continue to provide exciting academic enhancing programs such as the Minnesota State Science & Engineering Fair, Science Bowl and Winchell Undergraduate Research Symposium.

On behalf of the Minnesota Academy of Science board and staff, thank you for your support and participation.

Warm wishes for an excellent school year,

Celia Waldock

Executive Director
Minnesota Academy of Science



The MAS Annual Meeting and Winchell Symposium

Message from Megan Buchanan, Program Director



The Minnesota Academy of Science was thrilled to offer the 78th Annual Meeting/ 23rd Winchell Undergraduate Symposium on April 16, 2011. The event was hosted by North Hennepin Community College in Brooklyn Park.

There were exciting changes to the meeting this year, including moving to a one-day format. In addition, we offered two keynote speakers, two professional oral sessions, and judging of the poster presentations. The meeting boasted over 160 participants, with 20 oral presentations and 64 poster presentations. Keynote speakers were:

Dr. Stephen Brimijoin, from the Mayo Clinic & Graduate School, who spoke about his research on enzyme gene therapy and related treatments for cocaine abuse.

Dr. Harvey Thorleifson, from the MN Geological Survey, who spoke about his research studies exploring diamond-rich areas throughout the world, including the search for diamonds in Minnesota.

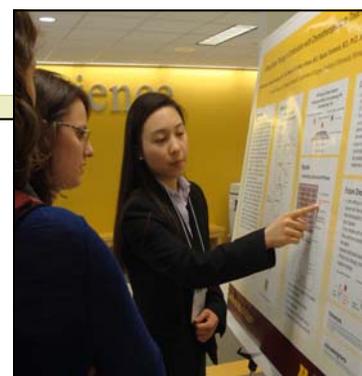
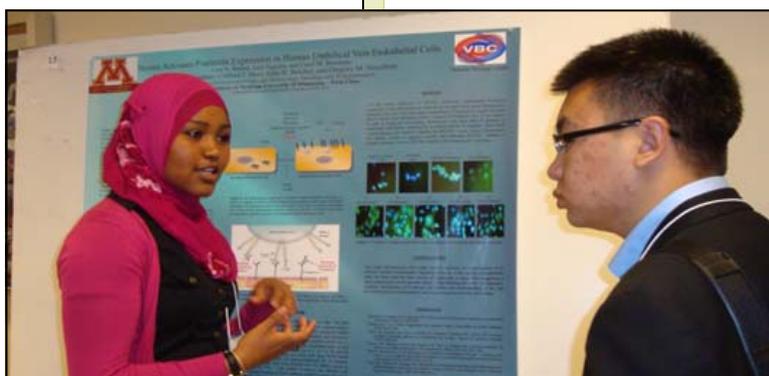
An observation by Vladimir Vinnik, Participant

For an undergraduate chemistry major interested in attending graduate school, conferences such as the Winchell Symposium provide an opportunity to hone presentation skills, network with local scientists, and be inspired by the keynote addresses. As a student at the University of St. Thomas, I have presented my research twice: a poster two years ago when the Winchell Symposium was in the two-day format, and most recently a talk as part of the new and more streamlined one day format held at North Hennepin Community College.

As a chemist, I presented research on the identification of a novel antibacterial resistance gene to a room full of biologists then went to an epigenetics presentation given by a graduate student from the Mayo Graduate School and rounded out the day with several organic synthesis talks. Amid that eclectic assortment of offerings were two phenomenal keynote addresses given by Dr. Stephen Brimijoin, professor of pharmacology at Mayo medical school and Dr. Harvey Thorleifson, director of the Minnesota Geological Survey.

The beauty of an event like the Winchell Symposium is that it is a venue in which undergraduates can come together with renowned scientists in an atmosphere that is both challenging and rewarding and, at the same time, very comfortable. For me, the annual event was primarily an opportunity to practice putting together, delivering, and answering questions about a scientific talk in front of a knowledgeable and critical audience. These events along with the ACS national meetings have been highlights in my undergraduate research career and invaluable for my future experiences in graduate school.

School Representation	Total # of Registrants
Augsburg College	3
Bethel University	9
Century College	2
Gustavus Adolphus College	2
Macalester College	4
Mayo Graduate School	1
MN State University-Mankato	8
MN State University-Moorhead	15
MN State University-Moorhead-	2
North Hennepin Community College	31
St. Cloud State University	7
St. Johns University	1
St. Olaf College	18
University of Minnesota, Minneapolis	33
University of Minnesota, Duluth	3
University of St. Thomas	15
Not Affiliated	11



The Winchell Symposium: A Message to Students



A critical component of a student's training in any laboratory science is active engagement in the discovery of new knowledge. Undergraduate research programs provide opportunities for students to hone their critical thinking and reasoning abilities, learn practical techniques, exercise creative use of knowledge and develop effective communication skills.

Of all of these, it is the prospect of standing before a group of peers and mentors to present research findings that is most daunting to a budding young scientist. In my experience, the **Minnesota Academy of Science Winchell Undergraduate Symposium** is an excellent forum for students to present their research to a much broader audience in a setting designed to foster interaction and celebrate their achievements.

I have been actively involved with the annual MAS Winchell Symposium over the past six years as a faculty mentor, as a frequent session judge and as a Chair of the meeting's organizational committee. Many aspects of my involvement with the MAS Winchell Symposium have been very enjoyable; however, the greatest satisfaction I've received from my participation has been the hum of excited discussions amongst the students and faculty during the poster sessions.

The Winchell Symposium is often the first opportunity many students have had to showcase their research outside of their home institution. This first positive, constructive experience is perhaps the Winchell Symposium's greatest benefit to young scientists and why I keep coming back.

Dr. Thomas Marsh
Department of Chemistry
University of St. Thomas

Thomas Marsh: B. S. Iowa State University, 1988, Ph. D. Iowa State University, 1994 Post Doc University of Minnesota; 2000 Research Biochemistry, Nanoscience, Materials Science. *Synthesis and analysis of self-assembled G4-DNA nanostructures, Biomaterials applications of self-assembled G4-DNA.*

Science & Engineering Fair



Lise Weegman
Program Director

75 years is a long time by anyone's standards. Seventy five years encouraging Science, Technology, Engineering and Math among Minnesota students in grades 7-12 is cause for celebration! Seventy five years of your volunteerism as mentors, judges, general volunteers, financial contributors, and sponsors is cause for celebration!

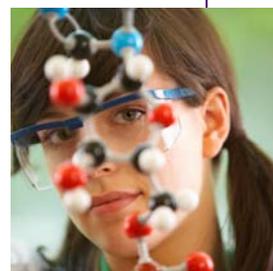
The **Minnesota Academy of Science State Science & Engineering fair will be held**

March 18-20 2012 at the same location as this past March – the hotel name has changed to Doubletree by Hilton (formerly the Sheraton Bloomington). North Central Regional JSHS will be held same location, same weekend, March 17-18.



Stay tuned to the e-newsletters to learn more as the initiatives for our

75th year of State Science & Engineering fair develop.



Students – we are excited to see what new scientific research you come up with this year – If you would like help with topics or other ideas for your scientific research, please go onto the Science Buddies website www.sciencebuddies.com. There is a wealth of information just waiting for you to use.

Teachers and Parents – there are resources for you too – go to www.sciencebuddies.com and click on “teachers” or “parents”.

Travel, travel and more travel for those students advancing to International and National Competitions and Conferences in 2012: **American Junior Academy of Science (AJAS)** will be traveling to Vancouver, British Columbia February 17-20, 2012 to present students' work in conjunction with the annual meeting of American Association of Applied Science (AAAS). **National Junior Science & Humanities Symposium** students will be traveling to Washington, DC April 25-28, 2012, **International Sustainable World Energy, Engineering & Environment Olympiad (I-SWEEEP)** students will be heading to Houston, Texas May 2-7, 2012 and **Intel International Science & Engineering Fair** students will be heading to Pittsburg, PA May 13-18, 2012.



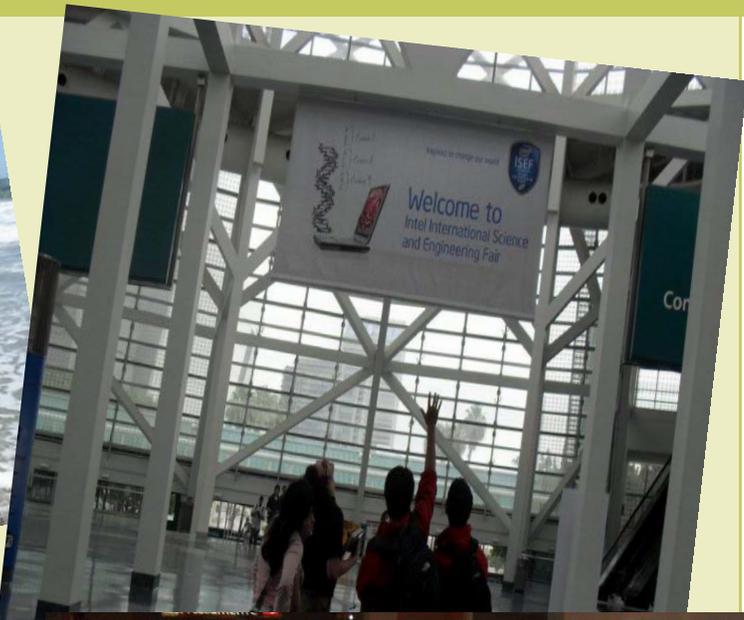
Judges and General Volunteers – Our 75th year will mean additional help from experts to evaluate papers and projects and talented folk to help run the programs. **WE NEED YOUR HELP!** Please consider volunteering, either as a judge or general volunteer. Requests for both needs will again be posted on www.getSTEM-mn.com and Volunteermatch.com. If you know NOW that you would like to volunteer and are able to make the commitment, please email lise@mnmas.org. Thank you!

The committee for planning The 75th year of the MN State Science & Engineering Fair and JSHS will be meeting in September. More brains are better than one brain. If you have creative ideas, and are passionate about student success and planning a great educational (and fun) experience for the students and adults alike, please consider being on the planning committee. Email lise@mnmas.org to get involved.

On behalf of all of us at the Minnesota Academy of Science, thank you so much for your continued support and participation in the MN State Science & Engineering Fair and North Central Regional JSHS!



ISEF 2011: MN Fair



Pictured ISEFers (front) Megan Seeley, (middle) Alec Spencer, Michael Zaiken, Evan Chen, (back) David Campeau, Shua Battacharya and Lisé Weegman.

Pictured L-R: Shua Battachya, Joe Palca (Science Correspondent for National Public Radio), Megan Seeley, Michael Zaiken, Martin Chalfie (who won the Nobel prize in Chemistry in 2008) and Elizabeth Marincola (Society for Science & the Publics *President, and Publisher of Science News.*)

Thoughts from Shua: Attending the Intel ISEF competition was a remarkable experience that I would never trade in. Not only did I meet a number of wonderful students from around the country and around the world, but I shared my exciting results of my science research with experts in the field as well as other elite members of the scientific community. By being sent to ISEF from the Minnesota State Fair, I felt more prepared for judges at the State level were familiar with my project and hence, asked me specific questions that were later asked again by ISEF judges. Overall, I would encourage any high school student to attend ISEF simply because when you place over 1600 students in a convention who are all excited about science, the energy is beyond words!

ISEF: David Campeau's Amazing Journey(s)

My science fair project this year was entitled: "Brain Computer Interface." This was without a doubt the most complicated project I have done, presenting unique challenges (for me) in terms of communicating what I had done to the judges. I have participated in Science Fairs yearly since the seventh grade, including presenting at the State Science Fair every year and at the International Science and Engineering Fair (ISEF) in 2010. I started working on this year's project in the summer of 2010 and it took most of my "spare time" throughout the year!

I qualified for the State Science Fair at the Rochester Regional Science Fair in February of 2011. As part of my entry to the State Science Fair, I also completed the application for the *Minnesota BioGENEius Challenge*. Between the Regional Fair and the State Fair, I made many improvements to my project, specifically focusing on my oral presentation and my display materials, based on what I have learned at the Regional Fair. I even redid my display board.

At the 74th Annual Minnesota State Science and Engineering Fair, March, 2011, I had the opportunity to present my project to a new set of judges, allowing me to "test" my improved presentation in front of a new set of judges, the general public and my peers. I felt that my improvements were important contributors to my success at the state level. I received the \$2,000 "Seagate Rising Star Award." I was an ISEF finalist, including an all expense paid trip to attend ISEF in Los Angeles in May, 2011. I received the BioGENEius Challenge Award, including all expense paid trip for my father and me to 2011 U.S. National BioGENEius Challenge in Washington, D.C. And, I received many other awards, including the College of St. Scholastica Creative Computing Award (a Lego Mindstorm Robot), the Science Museum of Minnesota Best Exhibit Award (including a family membership and \$100 gift card to the museum store), a US Air Force Award, a *Wolfram Research Mathematica Software Award* (Mathematica software), a US Army Best High School Award (silver medallion and a \$100 Savings Bond) and a silver Grand Award.



My experience at the Minnesota State Science and Engineering Fair gave me new insights into how to best present my project. I again revamped my presentation and also redid my board (actually twice more, once for ISEF and another time for the U.S. National BioGENEius Challenge).

My time at ISEF was fabulous. I was chaperoned by the fantastic Lise Weegman who made the trip most enjoyable. I had a great time meeting with fellow presenters from all over the world, talking with the judges and participating in all of the ISEF activities. I truly believe that what I learned at the state level enabled the success I realized at ISEF where I won an Engineering Award of \$1,500 (and even had an asteroid named after me) and an International Council on Systems Engineering Certificate of Honorable Mention. I had also entered the European Organization for Nuclear Research competition (for the second time) and was one of 12 Intel ISEF finalists selected to receive an all expense paid trip to tour to CERN this June, which was a superb experience in science and culture.

I didn't have time to go home between my trip to CERN and my trip to the U.S. National BioGENEius Challenge because they were literally "back-to-back". I arrived in Washington, D.C., on Friday, June 24th and presented to the U.S. National BioGENEius Challenge judges the following day! (Needless-to-say, I was a little tired!) I didn't really know what I was getting into with this competition, but again, my experience at prior science fairs, including the state competition, prepared me well, and I advanced to the International BioGENEius Challenge which took place just a day after the United States competition. Both the United States and International BioGENEius competitions were much smaller than either the state science fair or ISEF, but the competition was of very high level. I was delighted to be awarded third place (\$2,500) in the International BioGENEius Challenge at an awards ceremony where Tony Blair was also present on the stage!

I have learned so much about science and enhanced my presentation skills at the multiple science fairs I have had the opportunity to attend this past year. The State Science Fair was a great forum at which not just to have the possibility to qualify for other fairs, but to enhance my presentation skills. I am grateful to the Minnesota Academy of Science for their support.

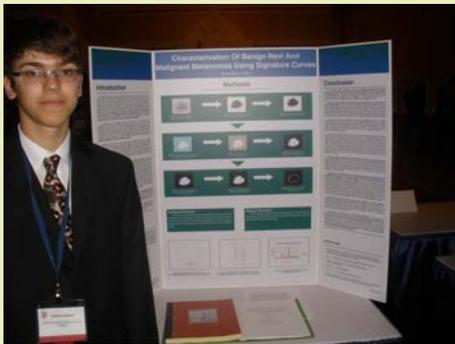
Junior Science & Humanities Symposium



Nationals chaperone Princessa VanBuren-Hansen

About 70 students in grades 9-12 participated in the 43rd annual North Central Regional Junior Science and Humanities Symposium held in Bloomington, MN on March 19 and 20. Five students were named to advance to the National Junior Science and Humanities Symposium competition held in San Diego, CA April 27 to May 1, 2011

Spencer Berglund, Evan Chen, Paimon Pakzad, Naveen Jain and Karin Sather represented the North Central region well. They listened to tremendous speakers from the Office of Naval Research, the Academy of Applied Science, the U.S. Army Research Office, various Universities and academic institutions, and even a former U.S. astronaut! They engaged in career round tables, participated in fascinating local tours, and met dynamic people from around the country. Even now, a few months after returning home, the students continue to engage with their Minnesota friends, and others across the U.S. As they pursue their research interests, undoubtedly they will continue to engage with those they met through this experience.



Paimon Pakzad presenting

JSHS is sponsored by the research arm of the Department of Defense and administered in cooperation with nationwide colleges and universities. JSHS aims to prepare and support students to contribute as future scientists and engineers -- conducting STEM research on behalf of or directly for the Department of Defense, the Federal research laboratories, or for the greater good in advancing the nation's scientific and technological progress.

Related Web sites:

North Central Regional Junior Science & Humanities Symposium: <http://www.jshs.mnmas.org>

National Junior Science and Humanities Symposium: <http://www.jshs.org>



Spencer Berglund, Paimon Pakzad, Naveen Jain, Evan Chen, 2 JSJS friends and Karin Sather



Paimon Pakzad, Karin Sather, Spencer Berglund and Evan Chen



At the At the Twin Cities Regional Science Fair I was granted the opportunity to attend two high-caliber science fairs: the Minnesota State Science and Engineering Fair and Intel's International Science and Engineering Fair (ISEF). I had been to the state science fair before, although I was excited to return, but going to ISEF had been that elusive, primary goal of my science fair career since I first heard about it in seventh grade. As you can imagine, I was ecstatic when I heard my name called as a finalist. The project that earned me these opportunities I called "Power-Up!" because I investigated whether I could design a dual-rotor wind turbine (one with two sets of blades) that would produce more power than the standard single-rotor designs. I was successful in doing so, with my optimized design producing 70% more power with the addition of the second rotor.

When I brought my findings to the state science fair in March, I noticed the quality of projects had jumped quite a bit. Kids my age had built mind-controlled cars and water turbines they designed themselves! I enjoyed talking to these brilliant minds and learning how they researched their ideas. I also enjoyed presenting my project to the judges as they gave me a multitude of experiments to try and areas for improvement; judging was more like a scientific discussion than a prepared monologue. It wasn't all science, though: I had a ton of fun just talking to kids from schools across the state and seeing friends I had met at other aca-

ISEF 2011: Los Angeles

Andy Ylitalo

demic competitions again. The state science fair was once again an amazing experience.

Although, I'm not sure if I can say that because if I call the state science fair amazing, I'd be without a word strong enough to describe the truly once-in-a-lifetime experience of ISEF. Easily does that week in LA make the list of the most memorable of my sixteen years of life, and I can honestly say that experience alone made doing my science project worth the time and effort. When I arrived at the LA Convention Center for project setup, just the sheer grandeur of the whole undertaking was overwhelming. On the first night we had a massive pin exchange among the over 1500 students there from 65 countries. But wait! There's more! Since we were in LA, we went to the beach, spent a day at Disneyland, and even got a nightclub and Universal Studios rented out for us for entire nights!

Don't worry though, there was still some science at ISEF. All finalists endured a full day of judging, and although it was exhausting, I learned something important that day: you don't need to save the world to do good research. You just need to show you truly understand and care about your project through your effort and thoroughness. With this in mind, I can't wait to see where my research this year takes me.

Blake Middle School Hydrogen Car Tops Field at DOE Science

You could feel the energy in the air at today's model car race for middle school students at the National Science Bowl competition. After rounds and rounds of races, members of the final eight teams crouched at the starting line. In past runs, the top four cars all completed the ten-meter stretch in times separated by just a few tenths of a second, so the competitors knew the race would be close one. "You have three minutes to electrolyze!" said the announcer. The students hurried to prepare their fuel. "On your marks.... GO!"



Competing were Solomon Polansky, Eli Bogursky, Jason Shu, Ben Weinschel and Quinlan Ellis. They were coached by Robert Polansky.

Cars of all different shapes and sizes zipped down the track. Students' faces reddened with anticipation. The timer clocked the fastest car at just 3.49 seconds. It belonged to Blake Middle School! Following close behind were cars built by Paducah Middle School and Ingomar Middle School for second and third place.

The Blake students constructed quite an impressive little car. It weighed only 149 grams, which is about the same as a baseball. They made the frame from the bottom of a dishwasher container and found the small plastic wheels in a solar car kit.

Like all of the cars, it was powered by hydrogen. The hydrogen came from regular-old water (H_2O),

which contains molecules with two hydrogen atoms and one oxygen atom. As Jazmin Piñón of Guillen Middle School explained, the students "put water in an electrolyzer to separate the hydrogen from the oxygen, and then used the hydrogen as fuel."

While all of the cars had the same fuel source, there were a wide variety of designs. Some looked like skateboards, others like mini racecars or go-carts. Guillen Middle School's car had a panda bear driver, and Nathaniel Rochester's had CDs for wheels. Design was an important element of the competition, as the team with the best design will be awarded at Monday's ceremony.

But at the end of the day, the model car segment of this competition was not about wins and losses or awards. It was about the student's excitement of building something by hand, watching it in action, and understanding every bit of how it works. It was about hands in the air, glowing faces, high fives and hugs.

Meanwhile, high school students have been competing in the academic rounds of their competition today. Follow us on Facebook for tonight's results, under the name Official National Science Bowl. For more photos and videos from today's events, visit the galleries at www.osti.gov/nsbjournal.

Science Bowl Success

Written by: Lisa Warbritton, Science Bowl Manager

A total of 247 students in grades 6-12 participated in the **MN State Regional Science Bowls** this year. Teams from schools state-wide participated in the competition to crown the Minnesota winners who qualified to participate in the U.S. Department of Energy's National Science Bowl. 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.

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 between students and scientists, promoting ethical standards of conduct and influencing students' decisions to pursue a career in science.

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

Wayzata High School won the MN High School Science Bowl and qualified to participate in the National Science Bowl. There they competed extremely well in the academic event and won a place as one of the top 16 teams to participate in the double elimination tournament. They ended the competition in the top 12 teams in the field of 69 teams from across the nation. They won a trophy and \$1,000 for their school's science department.

Minnesota was well represented at the National Science Bowl by Blake Middle School. After winning the MN Middle School Science Bowl, Blake won the Hydrogen Car Race at the National Science Bowl beating out 41 cars from schools from across the United States. They also participated in the round robin academic event but unfortunately did not qualify as one of the top eight teams to participate in the double elimination tournament. They did, however, win a trophy and \$500 for their school's science department.

My Science Bowl Experience

by Solomon Polansky, Blake Science Bowl Team

*Written by: Solomon Polansky,
Blake Middle School Science Bowl Captain*

Thank you to the Minnesota Academy of Science for sponsoring the Minnesota Regional Science Bowl and supporting my teammates and I at the National Science Bowl. We had a great time meeting and competing with other students from all over the country! The academic competition was really challenging with many tough questions, and motivated us to study. Our team also enjoyed the hydrogen fuel cell car challenge where we had to design, build and race a car powered only by hydrogen. This gave us many interesting engineering and technology challenges. We had to work together as a team and support each other. The races at the National Science Bowl were extremely exciting, and it was fun to see all the other car designs by students from schools across the country. It was also super exciting when we won! Thanks so much for this experience that we will never forget!



The Minnesota Science Bowl Champions from Wayzata High School:

Rohit Agrawal, Larry Lee, Ganesh Ramen and Gaurav Singh; and junior Duligur Ibeling.

What Students are Saying...



Alexander Spencer

Wayzata Senior High School, 11th grade

An Exploration of Magnetism in Thin Film Strained LaCoO₃

The MN State Science & Engineering Fair, from the regional level through international, is the greatest "pipeline" to pursue an interest in Science, technology, engineering, and math. There is nothing a student can do that will explore these areas more than actually going out and doing research, and not just reading about it. The Science Fair competition drives students to delve into science at a depth beyond anything in school, and presents a challenge that is both interesting and fun.

Working in materials science, it was great to talk to all the judges who, unlike the regional fair, actually knew what my project was about. While perovskites are a fairly new, obscure area of materials science, I was able to talk to a half dozen judges from Seagate who work closely in them as a career! I was able to receive feedback and recommendations on things to look into in my research from judges who worked in my subject area. Given that my subject area is largely unheard of, this was a great opportunity!

Everything about the State level is amazing. I honestly can't describe the experience of those short, sweet couple of days. The State science fair is truly necessary as a step to the international level. Looking at the large difference in competitiveness between the international and regional level, I think it is fair to say that were there no state level, competitors advancing from regionals directly to ISEF would be in shock and unprepared. The feedback received from judges at the state level is extremely useful as they are better matched to your subject area than at the regional level. Without feedback from the judges at state, judges at ISEF would overwhelm the finalists with questions of a difficulty they are unaccustomed to.

I am considering publishing my work, but to do so is of a level that is far beyond high school competitions. JSHS and ISEF-affiliated competitions are at an attainable level for high school students, and there is no better avenue for nurturing a passion for science".

