

October 2009 Vol. 114

Science Teachers' Association **Greetings From the President's Desk**

As we are all back in the swing of the new school year, let me encourage each of you to consider making a presentation at our annual conference. Sharing our successes makes is what makes the conference positive professional development for all attendees.

I have been meaning to address the topic of why our conference is held in Huron. We have been fortunate to have Jean Gomer as our conference coordinator for the past several years and she knows all of the ins and outs of our conference. I could not answer this question as well as she has, so I am going to utilize what Jean had written from a previous SDCTM newsletter.

Every year, someone asks the question, "Why is the conference always in Huron?" That someone is obviously not on the Joint Conference Board as all board members know what I am going to respond. There are several reasons which include that Huron is easier, cheaper, and most accommodating.

First of all, for the past 17 years, the Huron Chamber of Commerce, the Crossroads Hotel, and now the Huron Events Center has gone out of their way to accommodate the needs of an ever changing conference. SDCTM had its conference in Huron for a few years before the consolidation with SDSTA for the purpose of putting on a better conference. In those first years, when our attendance went from 200 to over 700 in one year, the HCC/Crossroads found us 14 extra meeting rooms within walking distance of the Crossroads at no extra cost to the

Conference Committee. This included a long standing agreement with the Presbyterian Church that ended only when the new Events Center was completed. They also helped us scale back when the NSF money disappeared and we struggled to make ends meet and still keep a quality conference. Our liaisons with the Crossroads, especially Brenda and Millie, have helped us do what it takes to meet the needs of our organizations.

Another reason we stay in Huron is that it is just plain easier. SDSTA and SDCTM are organizations that are run by volunteers. We all know that doing something the second time is easier than figuring out how to do it the first time. Imagine trying to allocate space for sessions in a strange facility, or coordinating meals with someone you don't know, or straightening out the room situation when you discover that a featured speaker doesn't have a room with the third desk clerk you have talked to in two days. These are all things that the Joint Conference Committee does not have to deal with. One phone call or email usually takes care of any "crisis."

Finally, the bottom line usually ends up being money, and this is not exception. About every three years, Sioux Falls and/or Rapid City contacts us trying to lure us away from Huron. What I do is send them a list of the things that Huron provides and ask them what incentive they can offer to make us consider changing our venue. Sometimes they don't even respond. Most of the time, they send me a polite note, suggesting that I am exaggerating what we get from the Crossroads/Huron Events Center. Trust me, I am not. We pay nothing for meeting rooms, get reasonable rates on our meals,

provide all available sleeping rooms at the Crossroads to our participants at the same rate, and we get complimentary suites to use as office space. Until the last couple of years when we had so many requests for LCD projectors, they also provided all AV equipment free. Even now, thanks to TIE and the HEC we still do not pay for AV equipment. Many national conferences now pass that cost on to presenters at anywhere from \$25-50/hour for the use of an LCD projector. These things add up to big dollars in the overall budget. Since we need this conference to be self-supporting, money has to be a factor in our decision making process. And that is why we stay in Huron.

I realize that this is more information than some of you really need or want, but I think that it is important to address a question that doesn't seem to go away. I think you also need to go out of your way to thank any SDCTM or SDSTA Board member that you see for the time and energy that they put into making this Joint Conference such a great event. We, in South Dakota, are unique in having an annual Joint Conference, especially one that is coordinated by volunteers. What is even more important is the quality of that conference. See you there in February of 2010.

Don't forget the "sharing the treasures" for the conference by bringing equipment and supplies you or some other science or math teacher is no longer using. This was a great success last year and will no doubt be even better this year. Just remember to be sure nothing you bring is school property.

Respectively,
Ramona Lundberg
SDSTA President
Feb. 2008-Feb. 2010

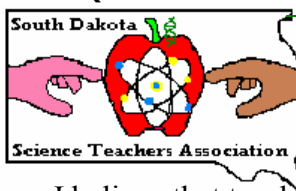
Who Wants to Live a Million Years?

I'm looking forward to seeing everyone and meeting new science teachers at the SDSTA/SDCTM joint conference. I teach Advanced Biology, Environmental Science, and College Prep Chemistry. With students becoming increasingly technology savvy, it seems like we are always trying to find bigger and better ways to teach concepts like survival of the fittest and its link to diversity. I have found a wonderful website and interactive activity called "Who Wants to Live a Million Years?" from the Science Channel network - aka "Darwin's Evolution Game." I've developed a worksheet to go along with the activities I hope you will find useful as well as entertaining (somewhat addictive as I have only survived 2 times thus far but will no doubt be trying again ... and again..).

High School liaison

Julie Olson

(Worksheet is printed at right on page three.)



Science Spot

By Middle School Liaison
Nicole Keegan

<http://sciencespot.net>

I believe that teaching is about finding resources that are useable and that ignite a spark for creating better lessons. Science Spot has been exactly that! This resource has been valuable because of the ease of use for the labs and assignments. All of the labs include those little "pearls" of wisdom that you might need when using new materials for the first time. The activities are appropriate for middle school students, yet could be modified to fit the needs of younger and older students. The diversity of the activities is broad and covers all facets of Science education. There is a section specific to the Science classroom, which I mainly use, yet I have also perused the various other topics (Science Club, Daily Trivia, Science Starters, etc.) for ideas to use in my classroom.

It is off of this website that I found the idea of Science Survivor. I modified this lesson to add more stations and to fit my time frame and we carried it out the last week of school. The students LOVED it! We used various topics we covered over the year and made it a competition between teams of 7th grade students from the entire school. The last week of school is difficult to keep the students engaged and active still in their learning. There was not a single student out of the 250 that participated that was not working to increase their points!

Part I –

1. Every species exhibits _____.
2. List at least two variations between the finches pictured.
3. What causes the finches to have these different traits?

Part II –

1. Many _____ are passed from parents to their _____.
2. Offspring get (all or some) traits from each parent.

Part III –

1. Organisms with the most beneficial traits will prosper. This is known as _____.
2. Organisms that survive will only pass on their beneficial traits if they do what?

Darwin’s Bio:

1. The boat that Darwin sailed on when he visited the Galapagos Islands was called: _____
2. Where was Charles Darwin born? _____
3. What was the name of the book that Charles Darwin wrote? _____

Quiz:

- | | | | | |
|----------|----------|----------|----------|-----------|
| 1. _____ | 2. _____ | 3. _____ | 4. _____ | 5. _____ |
| 6. _____ | 7. _____ | 8. _____ | 9. _____ | 10. _____ |
- Final score _____/10

Now it’s time to **Play the Survival Game:**

It’s important to read the comments and suggestions from “Mr. Darwin”.

The species has a wide variety of traits. Click on the “hint” button on the lower right hand side of the screen to find out about these traits as well as their pro’s and con’s.

Trait	Pro’s	Con’s
Thin		
Bulky		
Furry		
Hairless		
Long neck		
Short legs		
Long legs		
stripes		

Your goal is to try to get your species to survive for 1 million years through environmental pressures such as temperature changes, predators, and diseases. As you play the game, keep track of what traits you started with as well as what “pressures” you encounter. You will have two

To begin, you will choose three organisms. You can access more “mutations” (variations due to chance changes in the genes). What does Charles say about diversity?

You will have two “life preservers”/mutations to introduce new traits into your population. Read carefully and choose wisely. Make note of any “life preservers” used.

If you make it to “1 million” years, what enabled you to accomplish this?

If you didn’t make it, what could you have done differently?

Outstanding Physical Science Teacher

SDSU, SDSTA and 3M announce the 31st presentation of the Outstanding Physical Science Teacher Award in the state of South Dakota. The recipient of this award receives a plaque and a cash award to support the award winner's efforts to teach physical sciences with equipment or perhaps help to attend a conference or workshop.

Roberta (Bobbie) Traxinger of Douglas High School was the recipient of the 2009 South Dakota Outstanding Physical Science Teacher Award. She received the award at the Joint Science and Math Conference that was held in February 2009.

Teachers in the areas of physical science, physics and chemistry, including grades 8-12, are eligible for the award. An application/nomination form along with a statement of educational philosophy and letters of recommendation from their principal or superintendent & others need to be submitted. I hope you will take the opportunity to nominate a teacher who you feel is qualified for this award. It is important that the information on these forms be as detailed as possible to adequately evaluate each application/nomination. The forms should be returned by Friday, January 4, 2010 to:

Dr. Larry Browning
Physics Dept, Box 2219
South Dakota State University
Brookings, SD 57007

We are trying to recognize those teachers who are doing or who have done an outstanding job in their profession. We would appreciate your cooperation in this effort. If you have any questions, please call 688-5428 .

OUTSTANDING BIOLOGY TEACHER AWARD

Pearson Prentice Hall, the OBTA program sponsor, gives each awardee a pair of precision binoculars. The recipients also receive a microscope through the generosity of Leica Microsystems, Inc. Award winners and their schools also receive certificates, as well as public and professional recognition. Recipients receive a year's complimentary membership in NABT and NABT honors Outstanding Biology Teacher Award recipients at a special ceremony in conjunction with its national conference.

Who is Eligible? ... Current biology/life science instructors (grades 7-12) with at least three years public, private, or parochial school teaching experience. A major portion of the nominee's career must have been devoted to the teaching of biology/life science. NABT membership is not a requirement. Unsuccessful candidates may be renominated.

How Do I participate? ... Fill out a nomination form. You may request a form from your OBTA Director (Julie Olson, Mitchell HS, 920 N. Capital St., Mitchell, SD 57301) or the NABT office, 12030 Sunrise Valley Dr., #110, Reston, VA 20191. The general deadline for nominations is February 1, 2010, but this date may vary in some jurisdictions. The earlier the better for the candidates to complete their application.



Outstanding
Biology
Teacher
Award

Daktronics Outstanding Mathematics Teacher Award

Daktronics, in conjunction with the South Dakota Council of Teachers of Mathematics, is pleased to announce the first annual Daktronics Outstanding Mathematics Teacher Award in the state of South Dakota.

The recipient of this award receives a plaque and a \$1000 cash award to support the award winner's efforts to teach mathematics with equipment or perhaps help to attend a conference or workshop. Middle school and high school teachers, who spend at least 50 percent of their schedule teaching mathematics, are eligible for this award. Application information is available at [http:// www.sdctm.org/](http://www.sdctm.org/)

Award submission requirements include a resume, personal essay, and four letters of recommendations (one each from an administrator, parent, colleague, and student or former student)

The completed resume and recommendations need to be included in one file in either a word or PDF file in the order they are outlined above and emailed to Paul Kuhlman at paul.kuhlman@k12.sd.us.

The recipient for the 2010 Daktronics Outstanding Math Teacher Award will be announced at the SD Science Teachers Association/SD Council of Teachers of Mathematics meeting in Huron on February 6, 2010.

<http://www.sdctm.org/documents/awards/2009daktronicsapp.pdf>

Science On the Go with Mr. O

The Mobile Science Lab project has come to an end. Mitchell Technical Institute will utilize the semis for their outreach programs. All of the equipment has been removed from the MSL's. But you may still get DYNAMIC DEMONSTRATIONS AND LAB ACTIVITIES IN SCIENCE to be brought into your classroom or civic organization's building. Contact opbroekja@santel.net

NanoTeach Your Classroom!

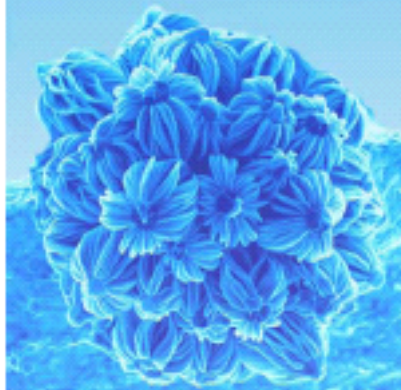
Professional Development in Nanoscience & Technology

Summer
2010

Apply Now!

"Flower Bouquet", a 3-D nanostructure grown by controlled nucleation of silicon carbide nanowires on gallium catalyst particles.

Credit: Chim Wei Ho and Prof. Mark Welland, Nanostructure Center, University of Cambridge. Courtesy: National Science Foundation



NanoTeach is recruiting teachers for a year-long, nationwide pilot program starting in the summer of 2010. Utilizing the *Designing Effective Science Instruction (DESI)* framework, teachers will learn to integrate nanoscience and technology content (NS&T) into their *existing* curricula. Through lessons and experiences that model the *DESI* instructional framework, participants will investigate dynamic NS&T content while delving into strategies that support effective science teaching.

Looking for...

- 30 high school teachers who teach physical science concepts

Energize your teaching with ...

- effective instructional strategies to integrate cutting-edge nanoscience and technology now!
- real-world applications
- professional connections that foster meaningful and dynamic teaching and learning!

Receive...

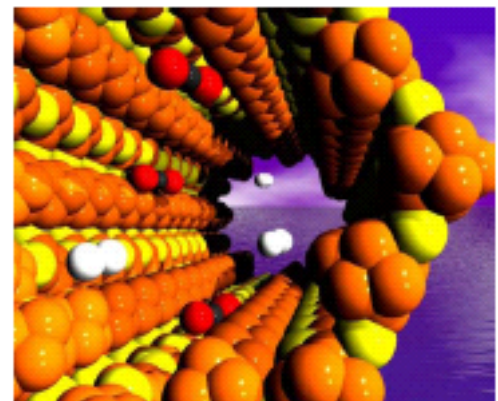
- a \$3,000 stipend
- paid travel and lodging to Denver, Colorado

Interested? Mark your calendar!

- Nov 17, 2009 5 p.m. EST NanoTeach Question-and-Answer Webinar
- Jan 8, 2010 Pilot Test Applications Due
- July 12-23, 2010 NanoTeach commences with two-weeks of professional development in Denver

Learn more or apply...

<http://www.mcrel.org/NanoTeach/Recruiting>



Hydrogen separation: H₂ gas molecules (white) moving through a polarized nanomembrane developed at Northwestern University. Courtesy of the National Science Foundation.

Sign up on
our website!



This work is supported by the [National Science Foundation](#), Division of Research on Learning in Formal and Informal Settings (DRL), #DRL-0822128





Do alien planets around other stars have the right ingredients for a pre-biotic soup?

Cool Chemistry of Alien Life

Alien life on distant worlds. What would it be like? For millennia people could only wonder, but now NASA's Spitzer Space Telescope is producing some hard data. It turns out that life around certain kinds of stars would likely be very different from life as we know it.

Using Spitzer, astronomers have discovered the organic chemical acetylene in the planet-forming discs surrounding 17 M-dwarf stars. It's the first time any chemical has been detected around one of these small, cool stars. However, scientists are more intrigued by what was not there: a chemical called hydrogen cyanide (HCN), an important building block for life as we know it.

"The fact that we do not detect hydrogen cyanide around cool stars suggests that that prebiotic chemistry may unfold differently on planets orbiting cool stars," says Ilaria Pascucci, lead scientist for the Spitzer observations and an astrophysicist at Johns Hopkins University in Baltimore, Maryland.

That's because HCN is the basic component for making adenine, one of the four information-carrying

chemicals in DNA. All known life on Earth is based on DNA, but without adenine available, life in a dwarf-star solar system would have to make do without it. "You cannot make adenine in another way," Pascucci explains. "You need hydrogen cyanide."

M-dwarf and brown dwarf stars emit far less ultraviolet light than larger, hotter stars such as our sun. Pascucci thinks this difference could explain the lack of HCN around dwarf stars. For HCN to form, molecules of nitrogen must first be split into individual nitrogen atoms. But the triple bond holding molecular nitrogen together is very strong. High-energy ultraviolet photons can break this bond, but the lower-energy photons from M-dwarf stars cannot.

"Other nitrogen-bearing molecules are going to be affected by this same chemistry," Pascucci says, possibly including the precursors to amino acids and thus proteins.

To search for HCN, Pascucci's team looked at data from Spitzer, which observes the universe at infrared wavelengths. Planet-forming discs around M-dwarf stars have very faint infrared emissions, but Spitzer is sensitive enough to detect them.

HCN's distinctive 14-micron emission band was absent in the infrared spectra of the M-dwarf stars, but Spitzer did detect HCN in the spectra of 44 hotter, sun-like stars.

Infrared astronomy will be a powerful tool for studying other prebiotic chemicals in planet-forming discs, says Pascucci, and

the Spitzer Space Telescope is at the forefront of the field. Spitzer can't yet draw us a picture of alien life forms, but it's beginning to tell us what they could—and could not—be made of. "That's pretty wonderful, too," says Pascucci.

For news of other discoveries based on Spitzer data, visit www.spitzer.caltech.edu <<http://www.spitzer.caltech.edu/>>. Kids can learn Spitzer astronomy words and concepts by playing the Spitzer "Sign Here!" game at spaceplace.nasa.gov/en/kids/spitzer/signs.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

The above image may be downloaded from http://spaceplace.nasa.gov/news_images/alien_world.jpg

NASA's Space Place now has a Twitter page for the SciJinks web site. Check it out at:

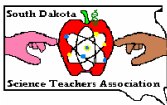
<http://twitter.com/scijinks>

Also check out "NASA's The Space Place", a new page on Facebook, where you will also find exclusive content only for our Facebook fans! Become a fan, and we'll also let you know whenever we add other interesting stuff. It's a great way to explore space!



South Dakota Science Teachers' Association

Pam Zubke and James Stearns
Editors, S D S T A Newsletter



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Groton, SD 57445-2024

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Calendar of Events Calendar of Events

2009 is the 40th Anniversary of the Apollo program—<http://www.nasa.gov>

October Get your Presenter Proposal Form in now if you wish to be a speaker for the Feb. Conference

October 23 Leopold Education Project - Custer http://www.lep.org/wp-content/uploads/2009/08/LEP-Guide_Sample.pdf

Oct. 29 - 31 NSTA Area Conference-Minneapolis, MN <http://www.nsta.org/conferences/2009min/?lid=con>

Nov 7 Leopold Education Project-Vermillion <http://www.lep.org/>

Dec. 3-5 NSTA Area Conference-Phoenix, AZ <http://www.nsta.org/conferences/2009pho/?lid=tnavhp>

February 4—6, 2010 18th Annual Joint Math & Science Conference - Huron, SD

March 18-21 NSTA National Conference in Philadelphia, PA - NSTA.org

October 27-29 NSTA Area Conference—Kansas, MO

Congrats to David Ireland, 2008 PAEMST Elementary award winner in Science.

<http://recognition.paemst.org/> and click on Press Release for more info.

Homepage Located At <http://www.sdsta.org>