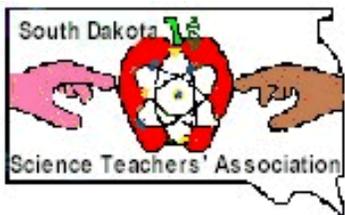


# South Dakota Science Teachers' Association



## Winter 2017

January 2017 Volume 143

President's Letter—Elizabeth Mcmillan



Hope this newsletter finds you well!

I am so looking forward to seeing many of you at the 25<sup>th</sup> Annual Conference in Huron. A huge shout out to those who have been conference organizers and conference goers since 1992! I hope to be around when we celebrate the coming milestones. During the 10 years I've been in SD and attending the conference I've really felt like the team has rallied around me to support my teaching and learning and am so happy to have found so many likeminded educators. I will continue to call out how amazing SD educators are, specifically science teachers (K-12 and college) – the more I get to know educators around the country, the more I realize how special this crowd is.

One of the things our team has discussed in recent years is how to ensure that the elementary audience is engaged at the conference and this year I'm so pleased to have a former NSTA president who specializes in elementary science joining the event. Please share opportunities to register with your elementary colleagues. Additionally, our new NSTA regional rep and a scientist from Sanford will be joining us as featured science speakers.

Math and Science alternate years on the banquet speaker, so next year is on science... if you have any wonderful ideas about whom we should invite that will be inspirational, motivational, and since we're all STEM educators – maybe a bit nerdy – we are open to suggestions! It is hugely important that we get as many voices as possible at our upcoming sharing sessions, business meetings, and conference follow-ups so please consider that into your schedules.

Finally, I hope that your 2017 gets off to an amazing start and please be sure to consider sharing articles, freebie announcements, great SDSS resources, and more through newsletter submission ([newsletter@sdsta.org](mailto:newsletter@sdsta.org)), to the "SDSci" Facebook page, or to the SD Department of Education's "DOEScience" Listserv (email me with any questions about how to register to be on this list).

Happy Holidays & hope you have an excellent 2017 – hope to see you in Huron!

~LIZ

SDSTA President, 2016-2018

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## Web Resources

### HHMI BioInteractive

Lindsay Kortan

HHMI BioInteractive  
<https://www.hhmi.org/biointeractive>  
The Howard Hughes Medical Institute’s BioInteractive website is a great resource for educational materials related to biology topics. The website offers a wide array of resources including virtual labs, videos, and animations. Resources often include instructor resources and answer keys as well as discussion questions or student worksheets. The materials may be searched by keyword or browsed according to resource type, topic, or HHMI topic collections. The videos often have an integrated quiz option that requires students to answer questions at predetermined checkpoints. The video can be assigned to students and quiz results submitted or it can be completed during class time.

I have utilized several of their evolution resources including: “The Making of the Fittest” video collection and the “Lizard Evolution Virtual Lab”. The video series provides examples of evolution in action in short (15 minutes or less) segments. I’ve used components of the “Lizard Evolution Virtual Lab” as student homework.

A group of protesters in front of a physics lab:  
“What do we want?”  
“Time travel”  
“When do we want it?”  
“Irrelevant.”



### NGSS Evidence Statements

Mark Iverson

<http://www.nextgenscience.org/evidence-statements>

NGSS Evidence Statements provide educators with additional detail on what students should know and be able to do. These Evidence Statements describe a detailed look at the NGSS performance expectations.

“Gives me a way to add a “grade” to their investigations.”



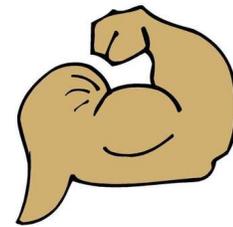
### Muscle Structure and Function Resources

Julie Olson

An interactive website where students can fill in diagrams of muscle micro-structure but it won’t progress them until they are correct. It also covers the contraction sequence. By doing a screen capture, you can make worksheets.

[http://www.brookscole.com/chemistry\\_d/templates/student\\_resources/shared\\_resources/animations/muscles/muscles.html](http://www.brookscole.com/chemistry_d/templates/student_resources/shared_resources/animations/muscles/muscles.html)

Yale Muscle Histology Lab - [http://medcell.med.yale.edu/histology/muscle\\_lab.php](http://medcell.med.yale.edu/histology/muscle_lab.php) Great pictures of the three types of muscle tissue. A good way to start with some histology before students look at real slides on their own.



### The Teaching Channel—NGSS

A collection of videos, deep dives, and blogs that cover topics relevant to both the NGSS and the SDSS such as the Disciplinary Core Ideas, Science and Engineering Practices, Cross-cutting Concepts and evaluation of resources/activities with the EQuIP Rubric. There are example lessons on several of these areas with more being added all of the time.



<https://www.teachingchannel.org/search?utf8=%E2%9C%93&q=NGSS>

# Science Fairs and Research Projects Help Fuel STEM Careers

Educators understand that a science fair research project is a cornerstone activity that helps students understand and apply the scientific method, develop problem-solving skills and serve as a basis for exploring STEM careers. In an effort to encourage STEM academic innovations, SD EPSCoR is working to increase the number of schools and students participating in regional science fairs.

Beginning in 2015, SD EPSCoR in partnership with Fisher Science Education, introduced a school-based, science fair **School Challenge Competition** with three prizes awarded by SD EPSCoR at each regional science fair to schools whose top three scoring student research projects have the highest average score. The prizes are 1st place: \$500, 2nd place: \$250 and 3rd place: \$100. Prize money can be used to purchase STEM equipment, supplies or related investments that will increase student participation in science fairs or STEM research projects. Fisher Science will also contribute gift certificates matching the amounts when supplies are purchased from them. In addition, schools will receive a 25% discount on all orders placed with Fisher.

## Could Your School Use \$5000 to Improve Your Science Lab?

In conjunction with the School Challenge Competitions, SD EPSCoR and Fisher Science Education sponsor the **High School Science Lab Makeover Award**, a \$5,000 award provided by SD EPSCoR given to one school at each regional fair towards the purchase of new equipment, materials and supplies used to support student research. If qualifying supplies are purchased through Fisher Science, a \$1,000 gift certificate is added plus a 25% discount from Fisher Science.

SD EPSCoR and Fisher Science are proud to announce the continuation of both the School Challenge Competition and the High School Lab Makeover Award at the 2017 South Dakota regional science fairs. In addition, schools can take advantage of the 25% Fisher Science discount and FREE shipping on all orders over \$250.



*Timber Lake High School was one of four 2016 High School Science Lab Makeover Award recipients.*

2017 South Dakota Regional Science Fair Dates:

- Eastern SD Science and Engineering Fair at SDSU - March 21, 2017
- South Central SD Science and Engineering Fair at DWU - March 21, 2017
- Northern South Dakota Science and Math Fair at NSU - March 23, 2017
- High Plains Regional Science and Engineering Fair at SDSMT - March 28, 2017

For information about the regional science fairs or the School Challenge Competition and High School Science Lab Makeover Award, visit [www.sdepco.org/science-fairs-2/](http://www.sdepco.org/science-fairs-2/) or contact Phillip Huebner at (605) 688-6475 or [Phillip.Huebner@sdstate.edu](mailto:Phillip.Huebner@sdstate.edu).



For all South Dakota Schools for the purchase of equipment from the “Fisher Science Education 2016 General Catalog”.

All orders over \$250 will also receive **FREE SHIPPING**.

*(Excluding live, hazardous and motor freight items)*

District specific pricing is available for registered users at

[www.fisheredu.com](http://www.fisheredu.com). Please visit Fisher Scientific online or contact Kim Wilk at (630) 259-4756 or [kim.wilk@thermofisher.com](mailto:kim.wilk@thermofisher.com) with questions or details on how to activate your account.

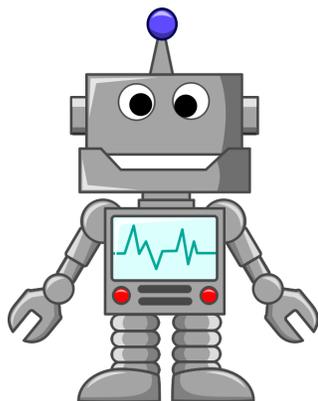
*Discounts apply to current catalog prices only and are not applicable to sale items or special quotations. Discounts exclude products ending in ND, non-catalog items, denoted with an NC prefix and customized items. Pricing is updated every January of the subsequent year.*



**Fisher Science  
Education**

## Kelly Lane Earth & Space Science Grant, and the Dan Swets Robotics Materials Award

Keep an eye out at the following two websites. As soon as we release the 2017 announcements (call-for-applications) later this month, I will post them at these websites .

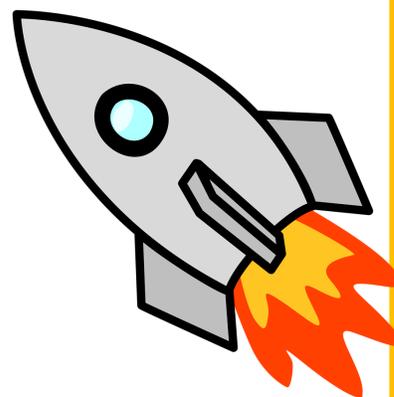


- Kelly Lane Earth & Space Science Grant

<http://sdspacegrant.sdsmt.edu/KellyLaneTeacherGrant.htm>

- Dan Swets Robotics Materials Award

<http://sdspacegrant.sdsmt.edu/DanSwetsRoboticsAward.html>





# SD Space Grant Consortium Research Experience for Teachers

The South Dakota Space Grant Consortium (SDSGC) announces a new program: Research Experience for Teachers (RET). The program enables high school teachers to enrich their knowledge of science and engineering practices by joining a research group at a South Dakota university or laboratory in the summer of 2017 under the mentorship of a university or other professional researcher. Research has shown that teachers who participate in research in science and engineering are able to provide an enriched classroom experience for their students in subsequent years.

We invite current high school teachers in science, technology, engineering or mathematics (STEM) disciplines to apply for one of two to four RET fellowships that are anticipated to be offered this summer. Research projects must align with NASA's mission and those of the SDSGC and its affiliates.

**Individual RET fellowship awards will be \$8,000** (computer purchases are not allowed with these funds.) Participants are expected to:

- work at a SDSGC affiliate research organization\* during the Summer of 2017 full time for at least eight weeks;
- give a poster or oral presentation about your research at

the South Dakota Academy of Science annual conference in the spring of 2018;

Teachers will make their own arrangements for working with a research group. However, if you are interested in a particular area of research and/or location and need help in making contact with a faculty member, please contact Peggy Norris at [pnorris@sanfordlab.org](mailto:pnorris@sanfordlab.org).

### Important Dates

Application Receipt Deadline: **January 20, 2017, 11:59 p.m. MST.**

Award Notification: anticipated to be announced by March 24, 2017.

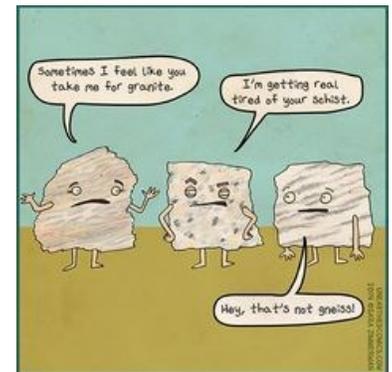
### Application Instructions

Applications are to be submitted as one complete pdf file to [pnorris@sanfordlab.org](mailto:pnorris@sanfordlab.org). **RET Application & Instructions:**

<http://sdSPACEgrant.sdsmt.edu/SDSGC-RET2017-Announcement.pdf>

Note: The single-page "Application Form" is downloadable in Word format at: <http://sdSPACEgrant.sdsmt.edu/SDSGC-RET2017-ApplicationForm-Word.docx>

**In an optimist sees a glass half full. A pessimist sees it half empty. An engineer sees it twice as large as it needs to be.**



## APS Online Teacher Professional Development Program



### Middle and High School Science Teachers

Program Runs March 2017–February 2018  
Application Due: January 31

- ✓ Graduate credit for your work
- ✓ Pays YOU a stipend of \$1,400 for completed PD lessons
- ✓ Focuses on student-centered learning and Next Generation Science Standards (NGSS)
- ✓ Engages you in a national professional learning community during and AFTER the program
- ✓ Invest a few hours a week and get a transformed classroom



[www.the-aps.org/OT](http://www.the-aps.org/OT)



**NOAA Teacher at Sea** is looking for any elementary through college teachers interested in learning more about NOAA's work in fisheries, hydrography, atmospheric, and exploration by embedding teachers for a couple of weeks at a time to work alongside scientists and crew to bring this experience back to the classroom. All expenses are paid for. Teachers can go at nearly any point during the year. Teachers do not have to teach science; they do, however, need to incorporate what they have learned from their cruise into the classroom. Since I teach 7-12 science, I found both cruises to remarkably beneficial to my teaching. The application is here:  
<http://teacheratsea.noaa.gov/#/home/>

In 2014 I spent a little over two weeks onboard the NOAA Ship *Pisces* in the Gulf of Mexico working on a fish population study. The blog for that is here:  
<https://teacheratsea.wordpress.com/category/2014/spencer-cody/>

In 2016 I spent three weeks onboard the NOAA Ship *Fairweather* mapping coastal waters around Prince of Whales Island in Alaska. The blog for that is here:  
<https://teacheratsea.wordpress.com/category/2016/spencer-cody-2016/>

I hope more South Dakota teachers apply for this program. If you have any questions or need help in filling out the application, please email me:  
Spencer Cody— [Spencer.cody@k12.sd.us](mailto:Spencer.cody@k12.sd.us)

### Sanford PROMISE Scholars Program

The Sanford PROMISE Scholars Program is now accepting applications. This program is a unique research summer experience for juniors going into their senior year:

- Dates for this summer are June 5<sup>th</sup> – August 11<sup>th</sup>, 2017
- Students are enrolled in a 3-credit USD elective course and will be awarded a \$2500 scholarship
- Weekly workshops geared towards career preparation and professional development
- Total immersion experience in laboratory research
- Application deadline is January 27<sup>th</sup>, 2017

Link to the program information:

<http://www.sanfordresearch.org/education/k12students/sanfordpromisescholarsprogram/>

Link to the program application:

<https://www.surveymonkey.com/r/2017ScholarsApp>

Students can email me directly or connect with us at [SanfordOutreach@sanfordhealth.org](mailto:SanfordOutreach@sanfordhealth.org) with any questions.

Thank you for sharing this information with your students!

## USA Biology Olympiad— registration now open!

### USA Biology Olympiad (USABO) Registration Opens

As the premiere biology competition for high school students in the United States, the USA Biology Olympiad (USABO) enriches the life science education of nearly 10,000 talented students annually. It provides the motivation, curricular resources, and skills training to take them beyond their classroom experience to the level of international competitiveness. You and your students are invited to participate in the 2017 USA Biology Olympiad (USABO). Registration is open! To register, please visit the USABO website <https://www.usabo-trc.org/>. Registration closes **January 16, 2017**. For more information on how your school can participate, contact Kathy Frame, USABO Director, at [kframe@ccc.org](mailto:kframe@ccc.org).



# 2017 Washington Pavilion Teacher Circle

## Mission

The Teacher Circle supports the Washington Pavilion in its mission to educate, entertain, inspire, and enrich the community by making arts and science a part of our lives.

## Group Overview

The Washington Pavilion Teacher Circle provides a unique professional development opportunity for regional educators in the area of STEAM integration. In addition to presentations and interactive workshops led by experts in the field, teacher participants will be given time to collaborate with other passionate educators from the region to create innovative learning experiences for students. This opportunity exposes educators to the evolving activities and resources available at the Washington Pavilion.

The Teacher Circle will consist of 12 innovative educators (representing grades K-12) who will attend professional development sessions at the Pavilion four different times throughout the school year and for one 2-day session over the summer to participate in interactive workshops and behind-the-scenes tours at the Washington Pavilion. Participants will develop STEAM lesson plans to bridge the connection between the classroom and the museum resources present at the Pavilion. Educators will implement these lesson plans in their classrooms and be given the opportunity to bring their students to the Washington Pavilion for a field trip experience in the fall of 2017.

## Fusing ART + SCIENCE in the Classroom

The 2017 focus of the Teacher Circle will be centered on integrating art and science in the classroom. As the region's premier arts and science center, the Washington Pavilion is excited to share its resources with Teacher Circle members. The professional development meetings will provide dedicated time for collaboration with an emphasis on interdisciplinary learning and incorporation of Pavilion learning opportunities in the classroom.

## Participant Requirements

- Licensed educator currently teaching in a K-12 classroom setting
- Interest in museum education resource utilization in a formal education setting
- Passion for collaborative interactions with fellow education professionals

## Participant Expectations

- Required attendance at professional development sessions at the Pavilion four different times throughout the school year and for one 2-day session over the summer to participate in interactive workshops, behind-the-scenes tours, and collaborative work sessions (*see dates below*)
- Develop and implement lesson plans that connect Washington Pavilion resources to classroom activities
- Bring students on field trip to Washington Pavilion
- Complete pre- and post-evaluation surveys on the Teacher Circle experience
- Present lesson plans to colleagues in another professional development setting

## Participant Incentives

- \$250 stipend for participating teachers
- Free PALS membership to the Washington Pavilion for teacher (\$110 value)
- o Membership benefits include:
  - Free admission to the Kirby Science Discovery Center, Visual Arts Center and CineDome Mission Films for up to 5 people per day
  - Free general admission to over 300 museums worldwide through the Association of Science-Technology Centers passport program
  - 10% discount on youth camps and classes and adult workshops offered through the Community Learning Center
  - Access to exclusive promotions and additional member benefits
- Free field trip admission for a group of your students to visit the Washington Pavilion
- High-quality professional development
- The opportunity to earn Continuing Education Contact Hours

## To Apply

Complete the application by **December 16, 2016**.

Send completed application materials with required attachments to:

[CLC@washingtonpavilion.org](mailto:CLC@washingtonpavilion.org) or

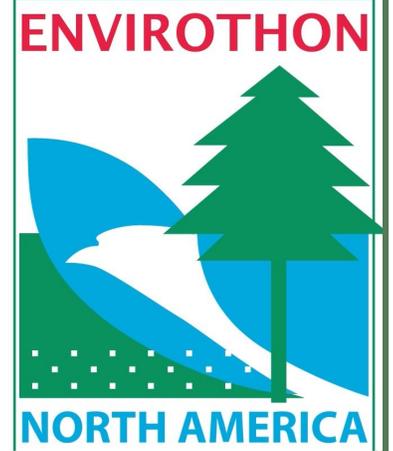
## Questions

Contact Lori at 605-731-2332 or via email at [CLC@washingtonpavilion.org](mailto:CLC@washingtonpavilion.org).



WASHINGTON  
PAVILION

My name is Kim Smeenck, and I reside outside of Newell, with my husband and two children, on a century-old, family farm. I worked in the field of special education for 18 years, and in July, signed on as the state coordinator for the SD Envirothon program....an exciting adventure, thus far! I have visited with a few of you, from across our great state, and there has been a great interest from most of you, in participating in Envirothon in the spring. In order to give you a better idea of what all is involved in Envirothon, I've included links for videos from two different states, North Dakota and Ohio. North Dakota's video is about 15 minutes, and is really good at describing the whole Envirothon process. Ohio's is a bit shorter, around 7 minutes, shares what happens in Envirothon, and I also feel it gets people a bit excited about it--might be the catchy music! Please note that we won't be running our program exactly like either of these two states, but the overall competition will be made up of very similar objectives/trail tests/demonstrations/etc. I've also added a link to a survey about Envirothon...I would love to have responses from each of you, as we are working to get the date for competition set, as well as are trying to determine the best venue for Envirothon. So, please take the survey as we would love to have input from a larger number of people--I promise, it won't take you but a couple of minutes. (I'll add the link here, too...would hate for you to miss it! :) ) *SD Envirothon Survey*: <https://www.surveymonkey.com/r/W3KMRHT>



I am also working on getting our website updated, this month. The new objectives for the 2017 competition will be available, as will be a bank of resources for you to use with your teams. I hope to have this all updated by mid-October...so, please check there for updates. The topic for the "current issue" for this year's competition is "Agricultural Soil and Water Conservation Stewardship"...how fitting for our teams from South Dakota! The NCF Envirothon website is also great, and will give you a look at where the competition will be held, next July, as well as a plethora of other information about the competition, how Envirothon got started, information on past competitions, great photos, and testimonials from students that have participated through the years...and much, much more. We didn't have a team attend the North American Envirothon this summer, and would sure love to have a team there, next year! Links for the SD website and the NCF Envirothon website are also listed below...please let me know if you have any questions. I'll do my best to answer them as quickly as possible. The NCF site does have the objectives listed for 2017, so you could start looking at those and how they may be fitting into your curriculum! I'll work on getting the resources updated, ASAP. We have many organizations that are involved in making this program possible and there are many natural resource professionals that are willing to help with the educational objectives. Some of the organizations involved include SD DENR, SD Dept of Ag, US Fish and Wildlife, NRCS, Conservation Districts, Game, Fish & Parks, and many more...they all have people willing to come in and teach our young people about soil, water, wildlife, forestry, and so much more...so give them a call. SD Envirothon is also on Facebook, so if you are into social media, look us up and like our page! We'd love to see you there!

**Kim Smeenck - [kim.envirothon.sd@gmail.com](mailto:kim.envirothon.sd@gmail.com)**  
**<https://sdenvirothon.org/>**



# SD-AAPT Photo Contest

<http://sdaapt.sdsta.org/>

The contest is open to high school students in grades 9-12. Students must print out, sign, and return the Contest Rules and Entry Agreement, HTML version or WORD version, when submitting their entry. Failure to submit this form will invalidate the contest entry.

Entries are limited to 6 per teacher per school each year. If possible, please place all entries from the school in one package.

The deadline for entry is TODAY. If you have students with entries, you need to get that entry in right away. Send an email with attached photo & description to [James@SDSTA.org](mailto:James@SDSTA.org) (and bring original photo to conference for judging.)

2016 Photo Contest winners featured an eagle landing on a pole and a gravity defying hammer.

## SD-AAPT High School Photo Contest — Rules and Entry Agreement

*(this page must be returned with submission)*

### Rules

- Photos must be unmounted, 8" x 10" or 8.5" x 11", and may be either black-and-white or color. Traditional photos must be submitted on photographic stock. Photos taken with a digital camera must be submitted as a high-quality print on photo stock and be trimmed to 8" x 10" or 8.5" x 11".
- If photos are taken with a digital camera: an unmodified electronic file must accompany the submission. (Small adjustments to brightness, ... is acceptable.)
- Computers shall not be used to modify or enhance photos.
- Only one photo per student. (Multiple small photos on one 8.5" x 11" sheet are not allowed.) Only one student per entry. (Photo cannot be taken by two or more people.)
- The student must take the photo.
- The submission must include the following information both in hard copy and on a computer floppy, or CD(PC format: MS Word):
  - Student's name, complete home mailing address and email address;
  - Student's high school & complete school address;
  - School phone number;
  - Teacher's name and email address;
  - Specify "Natural" or "Contrived" category entry;
  - Essay of 250 words or less describing the physics in the photo. The essay should have a title and must be written by the student. (Hand-written submissions are not acceptable and will be disqualified.)

We cannot mail prizes if we do not have complete mailing addresses. Email and phone numbers may be used to contact you with questions, but will not be sold or otherwise used for marketing purposes.

Entrant grants SD-AAPT permission to post their submission on the SD-AAPT website, or to use it in SD-AAPT publications or marketing materials. Submissions will not be returned. Any submission which does not meet the above criteria will not be considered.

I have read the above rules and agree to all terms and conditions. I understand that if I omit or falsify information, or if I do not sign this form, I will not be eligible for this contest.

Student signature	Date
Home address	Student email address
Student's High School	H. S. Address
School Phone Number	Teacher's name & email

Is your photo (Circle one) "Natural" or "Contrived"

Send entry to: James Steams  
15 North Fifth Street  
Groton, SD 57445-2024



## STUDENT VIDEO COMPETITION:

### WHAT DOES “BIOTECHNOLOGY” MEAN TO YOU?

**WHAT:** SD Biotech Association, Sanford PROMISE and SD EPSCoR are proud to announce the new student video competition: *What Does “Biotechnology” Mean to You?* The competition is a statewide opportunity for high school students, and freshman or sophomore college undergraduates to explore how biotechnology is a part of their community. The winning entries will earn a scholarship that can be applied towards their undergraduate education at any college or university in South Dakota. Students can participate by creating a YouTube video that demonstrates how biotechnology is feeding, fueling or healing their community and helping to make a better world.

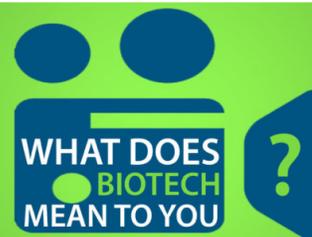
**ELIGIBILITY:** Participants must be a 9-12 grade high school student or freshman or sophomore undergraduate student, a U.S. legal resident, and currently enrolled in a high school or an undergraduate institution in South Dakota.

**DEADLINE:** Videos must be uploaded to YouTube and applications must be submitted no later than 11:59 pm CST on Friday, March 17, 2017.

**MORE:** To register for the competition and learn more about the contest details please visit [www.sdepscor.org/sd-biotech-video-competition](http://www.sdepscor.org/sd-biotech-video-competition)

Winning videos will be announced in April of 2017. All participants must complete and the full application and sign a video/audio release. Videos can be submitted by individuals or by a team (maximum of two individuals). Scholarships will be awarded to the first place (\$750) and honorable mention (\$250) in each category (high school and undergraduate). Teams will split the scholarship award.

For more information on contest rules, guidelines or submission, please contact Tobi Odeleye, program coordinator, at [oluwatobi.odeleye@sanfordhealth.org](mailto:oluwatobi.odeleye@sanfordhealth.org).



Sanford Lab Education and Outreach (E&O) is pleased to offer curriculum units that are aligned with South Dakota's new K-12 Science Standards and feature the science of Sanford Lab. These five to ten-day modules will arrive with facilitators guide and materials. If the unit is shipped to your school, your district will be responsible for return shipping.

Program descriptions can be found at the following link <http://www.sanfordlab.org/education/curriculum-modules>

To request a curriculum unit for your school, complete the online request. The request link can be found at the end of each unit description.

If you have questions, please contact Julie.Dahl@bhsu.edu

Julie Dahl, Science Education Specialist  
Center for the Advancement of Math and Science Education  
Education and Outreach, Sanford Underground Research Facility—Black Hills State University  
1200 University Street Unit 9005  
Spearfish, SD 57799-9005 (605)642-6878

## Science and Technology

### SDPB TV:

#### **American Experience: Rachel Carson (Pesticides and Herbicides)**

Tuesday, January 24, 7:- 9:00pm CT

Her 1963 warnings about the effects of pesticides and herbicides - especially DDT - sparked a revolution in environmental policy and created a new ecological consciousness. ([More](#))



#### **ZULA PATROL (Science Series for Young Children): Evaporation & Condensation**

SDPB TV, Wednesday, January 25, 2:00pm – 2:30pm CT

15 min - 308 WHERE DID ALL THE WATER GO? When Bula reads about a “vanishing lake” in Zula’s tabloid newspaper, Zeeter is skeptical. They go to investigate and find out the lake is hoax perpetrated by the nefarious villain, Dark Truder, whose ultimate goal is to make all the water of Zula disappear by vaporizing it. He traps Multo, Bula and Zeeter, but they manage to escape, thanks to their knowledge of evaporation and vaporization. They’re too late to stop Dark Truder’s wicked plan, but the joke is on Truder - when he learns the hard way that vaporized water turns to rain.

15 min - THE DEW DROPS The Zula Patrol learns all about condensation when they meet the Dew Drops, three drops of water who sing like a 50’s Doo-Wop group. The Dew Drops need the Zula Patrol’s help to enter a Battle of the Bands contest. Our heroes discover that Dark Truder has a condensation-singing group of his own, and will stop at nothing to make the Dew Drops lose! Using what they’ve learned about condensation, Wizzy & Wigg and the Zula Patrol save the Dew Drops and foil Truder’s plans! ([Episodes/ More](#)/ Grade: PreK-Early Elementary)

#### **Related Program: Weather – Fog (cool inexpensive lab)**

([Watch Online](#)-#Gone with the Fog/ [Activity](#)/ [Teacher](#) (Lets Dew It!)/ Grade: Elementary)

#### **Related Activity: Biome in a Baggie**

[Activity](#)/ [Related Craft](#)/ Grade: PreK-Elementary

The distribution of plants and animals around the world corresponds closely to global patterns of temperature and rainfall. This is why two forests half a world away from each other will often have very similar organisms living in them. In this ZOOMSci video segment, a cast member of ZOOM creates a self-contained biome and explores evaporation, condensation and precipitation.

#### **Online Resources:**

##### **Seasonal Science: Thundersnow**

[Video](#)/ Grade: Upper Elementary-HS

Have you experienced a thundersnow storm? The explanation of this rare winter weather includes an engaging way to introduce students to air masses, fronts, storms, and the water cycle.

##### **Health Videos (A.D.A.M.)**

[Great Videos](#)/ Grade: Elementary-HS

These animated videos show the anatomy of body parts and organ systems and how diseases and conditions affect them.



What's new at NOAA/NASA SciJinks

## Make Lightning with ZAP!

Lightning comes from built up charges within a storm cloud and travels from an area of negative charge to an area of positive charge. In this game, you'll use your cursor to juggle snow pellets to make lightning. Click on the image below to play ZAP! and learn more about where lightning comes from!





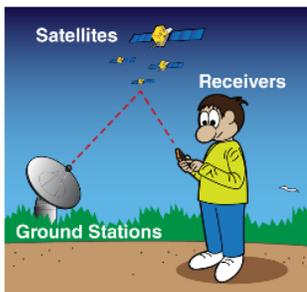
Earth is surrounded by navigation satellites.  
Credit: NOAA

## How Does GPS Work?

Humans have looked to the skies to find their way since ancient times. Ancient sailors used the constellations in the night sky to figure out where they were and where they were going.

Today, all we need is a simple hand-held GPS (short for Global Positioning System) receiver to figure out exactly where we are anywhere in the world. But we still need objects high in the sky to figure out where we are and how we get to other places.

Instead of stars, we use satellites. Over 30 navigation satellites are zipping around high above Earth. These satellites can tell us exactly where we are.



The Global Positioning System (GPS) is made up of satellites, ground stations, and receivers.

## What is GPS?

GPS is a system. It's made up of three parts: satellites, ground stations, and receivers. Satellites act like the stars in constellations—we know where they are supposed to be at any given time. The ground stations use radar to make sure they are actually where we think they are. A receiver, like you might find in your phone or in your parents car, is constantly listening for a signal from these satellites. The receiver figures out how far away they are from some of them.

Once the receiver calculates its distance from four or more satellites, it knows exactly where you are. Presto! From miles up in space your location on the ground can be determined with incredible precision! They can usually determine where you are within a few yards of your actual location. More high-tech receivers, though, can figure out where you are to within a few inches!

The ancient sailors of history would be flabbergasted by the speed and ease of pinpointing your location today.

## GPS in Everyday Life

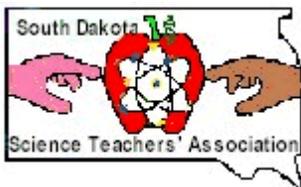
There's a whole lot of important things that GPS is used for. GPS can help provide early warning of tsunamis, it can be used to monitor volcanoes, it can rapidly monitor the aftermath of Earthquakes, and perhaps nothing is more important than finding the quickest slice of pizza!

To learn more, check out "GPS and the Quest for Pizza".

<http://spaceplace.nasa.gov/gps-pizza/en/>

*NASA's Space Place is an NASA educational website about space, technology, and Earth sciences. It targets upper-elementary-aged children.*

<http://spaceplace.nasa.gov/>



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[www.sdstate.edu/ChemEd2017](http://www.sdstate.edu/ChemEd2017)

The SDSTA Newsletter is published four times a year. The January issue (this one) is e-mailed to 130 paid members, and several school science departments. The Membership year in SDSTA starts with the February conference and ends the first of February. Dues are due at each conference for member discount rates. SDSTA members may give a one year free membership to their student teachers by submitting the student teacher's name & address. One paid conference registration may be given to the SDSTA member that has made a submission to the newsletter (or given a presentation at the conference) and has referred at least three new members. Members may also earn a 10% finder's fee for any science related ads placed in the newsletter. Our rates are \$50 per page (or 3 to 4 quarter pages)

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Deadline February 6, 2017

CLICK HERE FOR MORE INFO

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409 S. Kline Street  
Aberdeen, SD 57401



\$ 5 Student
\$ 5 K - 6
\$ 5 Retired
\$ 20 All Others

Name \_\_\_\_\_ Home Phone \_\_\_\_\_

Home Address \_\_\_\_\_ E-mail: \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Your School \_\_\_\_\_ School Phone \_\_\_\_\_

School Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Your area K - 6 7 - 8 9 - 12 College Other \_\_\_\_\_  
( circle one )

Referred by \_\_\_\_\_

## Classroom Resources



### Physical Science

- › Energy
- › Matter and its Interactions
- › Motion and Stability: Force and Interactions
- › Waves and Their Applications for Information Transfer

### Life Science

- › Biological Evolution: Unity and Diversity
- › Ecosystems: Interactions, Energy, and Dynamics
- › From Molecules to Organisms, Structure and Processes
- › Heredity: Inheritance and Variation of Traits

### Earth & Space Science

- › Earth and Human Activity
- › Earth's Place in the Universe
- › Earth's Systems

### Engineering, Technology, & the Application of Science

- › Engineering Design

Classroom resources that are “fully aligned” to the *NGSS* should meet the rigorous criteria of the [EQuIP rubric](#) developed by Achieve and NSTA. Full alignment means that the resources are three-dimensional in nature, have coherence across lessons and units, provide a number of important instructional supports, and provide methods to monitor student progress. Work is currently underway to develop exemplar lessons and resources that meet this vision.

To support teachers now and provide them with guidance on making the shifts called for in the *NGSS*, NSTA has recruited a group of curators to find and vet existing classroom resources that could be modified to be more in line with the vision of the *NGSS*. With modifications recommended by the curators, these resources—including book chapters, videos, lesson plans, simulations, and more—show how teachers can adapt the lessons to better build toward the standards. While not considered to be “fully aligned,” the resources and expert recommendations provide teachers with concrete examples and expert guidance for adapting existing resources based on the EQuIP rubric.

With time, as more educators begin implementing the *NGSS* and as more curriculum developers begin creating new products specifically designed to support three-dimensional instruction, the curators will have to offer fewer adaptations and genuine exemplars will begin to emerge.

# 25<sup>th</sup> Joint Science (SDSTA) and Math (SDCTM) Professional Development Conference

Begins Thursday, February 2nd at 7 PM with two sharing sessions; one with math ideas and one with science labs/demos. Friday morning will start with an 8 AM welcome session and continues at 8:30 with break out sessions.

 **SDEPSCoR**  
RESEARCH. EDUCATION. ECONOMIC DEVELOPMENT.  
**AND**  **Fisher Science  
Education**  
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## SDSTA/SDCTM SOCIAL MIXER EVENT



**FRIDAY, 3<sup>RD</sup>**  
**February 2017**  
**HURON EVENTS CENTER**

**5:00 PM**  
TO  
**6:30 PM**  
**PREFUNCTION AREA**

## 2017 SD Math/Science Conference Banquet



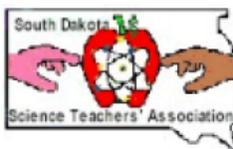
SDCTM and SDSTA Awards  
SD Presidential Awards

Keynote: Brad Fulton

- 2005 CA Educator of the Year
- Author & Motivational speaker
- NCTM national featured presenter

## South Dakota Science Teachers' Association

Julie Olson and James Stearns  
Editors, S D S T A Newsletter  
15 North Fifth Street  
Groton, SD 57445-2024



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# Calendar of Events ~ Calendar of Events

Today - May 1st Nominations are open at PAEMST.org for 7-12 Science & Math  
January 2017 Entries are being accepted for SD-AAPT Photo Contest  
January 16th Deadline to submit for Kelly Lane Earth and Space Science grant  
January 16th Deadline to submit for 6th Annual Daniel Swets Robotics Materials

February 2-3 & 4, 2017 25th Annual Science & Math Professional  
Development Conference in Huron, SD

March 30 - April 2 NSTA National Conference - Los Angeles, CA  
July 23 - 27 ChemEd at SDSU [www.sdstate.edu/ChemEd2017](http://www.sdstate.edu/ChemEd2017)  
November 9 - 11 NSTA Area Conference - Milwaukee, WI

# Calendar of Events ~ Calendar of Events