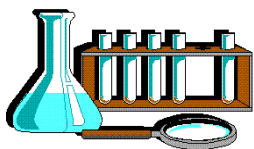


**MSTA****Newsletter**

Mississippi Science Teachers Association

January 28, 2014

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State practice tests found at  
[www.pearsonaccess.com/ms](http://www.pearsonaccess.com/ms)  
 choose the support tab and  
 click ePACs

**QR Code for MSTA's Website.**  
 Stay in the know visit often:



<http://www.ms-scienceteachers.org/>

Use this QR Code to go to the  
 Mississippi Science Teacher's  
 Facebook Page. So you can join  
 the conversation.



**Want to get your  
 MSTA News faster?**

Join the [MSTA Listserv](#) and the  
[Mississippi Science Teachers](#) Facebook  
 page. All of the information in the  
 Internet Resource section of this  
 newsletter was gleaned from these two  
 sources. Go to the instructions on  
 joining the listserv by clicking on the  
 links above.

## Presidential Post:

### Go Beyond the State Organization

Did you know that the Mississippi Science Teachers Association (MSTA) is a chapter of the National Science Teachers Association (NSTA)? Of course you do. The big question....Do you attend any of the regional or national NSTA conferences? This is a little more difficult to do. We all have limitations as to the money to attend, but NSTA offers so much with its membership. As with our organization, you do not have to attend a conference in order to be a member. With my membership I receive: 1) a grade level appropriate magazine full of helpful articles and ideas for the science classroom, 2) NSTA

Reports, a newsletter from NSTA with “freebies” and grant opportunities, 3) on-line professional development, and 4) e-newsletters. I always pay close attention to summer programs for teachers. There are many I would like to attend, such as the McDonald Observatory Summer Teacher Workshops and the Siemens Teachers as Researchers programs. As a member of NSTA you have input into the organization. There are elections in NSTA. If you are a current member, you should have received a link with the ballot. I encourage all NSTA members to review the biographies of each candidate carefully and choose the person you believe would best fulfill the job. You can join NSTA for \$75/year. Just go to the website [www.nsta.org](http://www.nsta.org) and complete the membership form.

If you are attending the NSTA conference in Boston, MS, April 3-6, 2014, MSTa does have some help for you. The Otis Allen Scholarship for professional growth and development is to be awarded annually. The award was established in memory of the late Otis Allen who is considered the organizational founder of the Delta Science Teachers Association which in turn led to the organization known today as the Mississippi Science Teachers Association. The scholarship consists of two \$500.00 awards to be used to offset the cost of attending the NSTA National convention and two \$300.00 awards to be used to offset the cost of attending the NSTA Regional convention. These are reimbursement scholarships, so be sure to keep your receipts! The form for the scholarships is located on our website: [www.ms-scienceteachers.org](http://www.ms-scienceteachers.org)

Thank you for all you do in the classroom. As a member of MSTa you are already making an impact! If you have a student teacher/intern teacher in your classroom, why not consider gifting a MSTa membership? Let's get the new science teachers off on a great start!

Sincerely, *Betsy Sullivan, President*

**Presenters at the MSTa Conference: Don't forget to send your handouts, presentations and any other documents used in your session to Brandi Herrington ([bdjh99@gmail.com](mailto:bdjh99@gmail.com)) or Deborah Duncan ([deb50duncan@gmail.com](mailto:deb50duncan@gmail.com)). These will be put on the MSTa Wikispace (see the link below) and the MSTa website after the conference. Brandi will also send the link out through the listserv when it's completed.**

**To find the files that have been shared go to <http://msta.wikispaces.com/2013+MSTA+Conference+-+Shared+Files+by+Presenters>**

Please consider using your personal email address to receive your MSTa Newsletter. You never know when your school will block our email. Use the QR code to the right to change your email address.



## President Elect Post:

As I worked on lesson plans today, I was reminded how important planning is. I have learned to be flexible in my planning and to over plan!

One New York science teacher started the semester quite differently than planned when a flame test demonstration went awry. I have seen several articles about the incident and have been reminded how quickly a lab accident can occur. (<http://nstacommunities.org/blog/2014/01/06/lab-incident-at-a-manhattan-high-school-another-hard-safety-lesson-to-learn/>)

Please take time to check your lab for safety violations. Be diligent with your students, making sure that they are both following safety rules in the lab and learning about lab safety. Flinn Scientific offers safety resources for science teachers at the right price—free! (<http://www.flinnsci.com/teacher-resources/safety/general-laboratory-safety.aspx>)

According to the “Right to Know” laws, Mississippi follows federal OSHA standards. Each of us should have a Chemical Hygiene Plan. According to Flinn Scientific’s “Right to Know” handout, *A Chemical*

*Hygiene Plan*, the CHP, is a manual that describes your laboratory regulations, proper lab procedures, and how to respond to emergency situations. The listing of rules and procedures are your Standard Operating Procedures. These rules and procedures must be well thought out with the principal goal of always minimizing the exposure of employees and students to hazardous chemicals.

Labs engage our students and provide personal learning experiences. Let’s plan carefully and thoroughly to avoid accidents.

Sincerely, *Ann Huber President Elect*



From Left to Right: Dr. Johnny Mattox, Distinguished Science Teacher; Kimberly Thomas, Elementary Outstanding Science Teacher; Vivian Smith, Fred W. Brown Outstanding High School Science Teacher; Betty Owen, Outstanding College Science Teacher; Megan Fedrick, Outstanding Informal Science Teacher; Joseph Creel, Herb Handley Outstanding New Science Teacher; Crystal Bigham, Outstanding Middle School Science Teacher

## MSTA Award Winners

**Distinguished Science Teacher, Dr. Johnny Mattox:** Dr. Mattox is currently teaches biology at Blue Mountain College, Blue Mountain, Mississippi. In addition to his teaching responsibilities at Blue Mountain, Dr. Mattox teaches as an adjunct for the University of Tennessee at Martin. His most recent published article is “The Use of Historical Events in the Biological Sciences to Enhance Student Interests”, *Journal of the Mississippi Academy of Sciences*, volume 58, Number 1, 2013. As a teaching goal, Dr. Mattox stated, “I want to tap into their inquisitive nature and promote in each of them the desire to “find out” the how and why of natural phenomena, to develop critical thinking skills, possess a passion for teaching science and I want to convey to my students an excitement for learning.”

**Outstanding Informal Science Teacher, Megan Fedrick:** Megan Fedrick works with Mississippi Museum of Natural Science, Jackson, Mississippi, as Education Coordinator. Megan oversees and coordinates the education activities of the MMNS. There are nine different teacher workshops in addition to free outreach services throughout the state. Megan looks forward to expanding the Jr. Naturalist Camp Program, and providing events and programs to promote a love of nature and to expose more people to the natural world. Visit the Mississippi Museum of Natural Science website, <http://www.mdwfp.com/museum.aspx> to learn more about Megan's work and the opportunities offered by the museum.

**Outstanding College Science Teacher, Betty Owen:** Betty teaches at Northeast Mississippi Community College, Booneville, Mississippi. Betty has taught Astronomy, Physical Science Survey I and II, Principles of Chemistry and General Chemistry I. Betty strives to encourage her students to be life-long learners. To Betty, seeing her students succeed in their own careers and knowing that she influenced those students is most satisfying. To be an effective teacher, Betty continues to learn new concepts, new methods of instruction and new technology. Just as she demonstrates, life-long learning, Betty plans to be a life-long teacher.

**Fred W. Brown Outstanding High School Science Teacher Vivian L. Smith:** Vivian teaches at the Mississippi School for the Deaf, Jackson, Mississippi. Vivian always desired to be a teacher, a wonderful mix of policeman, mama, judge, doctor, disciplinarian, counselor and friend. Vivian describes the roles like a rainbow, distinctive layers with a blended interface. Skill and experience determine both the "hat" she needs to wear and when she needs to wear it. Seeing her students accomplish and compete with their hearing peers. Vivian loves to share ideas and enthusiasm with colleagues and students.

**Outstanding Middle School Science Teacher Crystal Bigham:** Crystal teaches middle school at Pontotoc High School, Pontotoc, Mississippi. Crystal defines the role of teacher as someone who motivates and inspires young minds to think creatively and to develop a love for learning, both inside and outside the classroom. Crystal serves as a positive role model for her students, demonstrating someone they can trust, believe, and as a guide to success. With her enthusiasm, persistence, and determination, Crystal models endless possibilities for her students.

**Elementary Outstanding Science Teacher Kimberly Thomas:** Kimberly teaches at Myrtle Attendance Center, Myrtle, Mississippi. Kimberly "started" her teaching career when she was in third grade with a classroom of stuffed animals. Even as a child, she saw the commitment and compassion that teaching requires. Today, she realizes that each day teachers impact students' lives with both words and actions. Kimberly desires to learn more so that she has more that she can contribute to the education of her students.

**Herb Handley Outstanding New Teacher Joseph Creel:** Joseph teaches at Sumner Hill Junior High School, Clinton, Mississippi. Joseph strives to create a learning environment that caters to the students' myriad of learning styles and makes students feel safe and secure enough to ask questions. His enthusiasm for science encourages his students to be enthusiastic. His goal is to have a classroom that is exciting, engaging and entertaining—a classroom that overwhelms students with excitement. Teaching allows Joseph to be an effective role model and an opportunity to influence his students.



## Scholarship and Grant Opportunity

### Otis Allen Criteria

1. Request a scholarship application (national or regional) from the scholarship chairperson).
2. Requests must be received two months prior to the national convention or regional meeting to be attended.

3. A person may receive a scholarship once in three to five years.
4. Earliest application received will receive first consideration.
5. Each recipient will receive scholarship monies as partial expense reimbursement after submitting a copy of their registration and a letter signed by his/her principal stating that the recipient attended the meeting.

To request a scholarship application, contact the chairman of the scholarship committee. Send the request to the following: Minnie C. Parham, Chairman, Otis Allen Scholarship Committee 402 Bell Avenue, Greenwood, MS 38930, Email: [minnieparham@bellsouth.net](mailto:minnieparham@bellsouth.net)

## R. C. Roberts Grant Form

The R. C. Roberts Fund was initiated to honor Mr. Roberts, a long-time science supervisor in the Mississippi Department of Education and assist teachers in developing outdoor classrooms, nature centers, or nature trails at their respective schools. Maximum funding that can be obtained by one teacher from one school at a particular time is \$100. Applications for funding must show that additional funds from sources other than R. C. Roberts have been obtained to support the proposed project. This may be “in kind” support as well as monetary. Individuals who receive support from the R. C. Roberts Funds may apply for additional funding provided a period of three years has elapsed since the original funding was granted.

## Guidelines for the R. C. Roberts Fund

Individuals interested in applying for funding should get an application form the Newsletter or request an application form from the Executive Officer or President of the Mississippi Science Teachers' Association. The completed application must be attached to the proposal and returned to the Executive Officer. The Executive Officer will assemble a committee of at least three individuals involved in science education who will examine the proposal and recommend funding status. The decision of the review committee to fund or reject the proposal is final.

### R. C. Roberts Grant Form

Name: \_\_\_\_\_

School: \_\_\_\_\_

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

Phone: \_\_\_\_\_

Principal: \_\_\_\_\_

1. How long have you been at the school? \_\_\_\_\_

2. What do you plan to do with the money? \_\_\_\_\_

3. List the materials and cost of supplies for this project. \_\_\_\_\_

4. Where is this project located in relationship to the school? \_\_\_\_\_

5. Do you have the support of the principal? \_\_\_\_\_ other teachers? \_\_\_\_\_

If so, name/s. \_\_\_\_\_

6. What kind of monetary or “in kind” support do you have? List. If “in kind” support is provided, estimate its monetary value. \_\_\_\_\_

Complete the grant form and attach the proposal and return to: Bess Moffatt, MSTA Executive Officer, 1510 Oldfield Road, Gautier, MS 39553

## Aleta's Report

Mississippi had MANY teachers attend the NABT and participate in, as well as present, sessions. Again, there were far too many great ones (the ones you wish you had clones to attend) and settling on just a few was HARD.. Deal Neil Lamb and his team rocked the house AGAIN, even though he was not feeling well. Thank you, Hudson-Alpha! I attended a great series of evolution workshops sponsored by HHMI, and have already used on good activity gained from those - the mollusk cladogram activity. I got two more I plan to use with my General Biology 2 field class before we begin our field trip season.

**Speaking of field trips** - Abigail Warden (MSABE President) and I are putting together a field trip for March 11 to Hudson-Alpha Institute in Huntsville, AL. We will travel via van to Huntsville Monday, March 10. I am working on the cost of the trip and the maximum numbers I can bring. Those teachers living in Northeast Mississippi may just want to drive over and meet us the morning of March 11, at no cost.

### **NOW - the BOOK REPORT!**

Survival of the Sickest: The Surprising Connections Between Disease and Longevity (P.S.)

by Sharon Moalem and Johnathan Prince

One of the Hudson-Alpha team mentioned this book in a session. While we were in the session, I downloaded the audiobook. Shani Bourn, Abigail Warden and I listened to the book on our trip back home (except for the last 15 minutes!). This a such a good book! The authors theorize as to the IMPORTANCE of disease on Human Survival, and how our bodies adapted for these and against these. The man from Water mammals is an interesting viewpoint! Here's the summary from Amazon:

### **Amazon.com Review**

#### **Dan Ariely on *Survival of the Sickest***

MIT professor Dan Ariely has become one of the leaders in the growing field of behavioral economics, and his bestselling book debut, [\*Predictably Irrational\*](#), has brought his ideas--and his ingenious experiments and charming sense of humor--to a much wider audience. With the simplest of tests (often an auction or a quiz given under a few conditions) he shows again and again not only that we are wired to make irrational decisions in many situations, but that we do so in remarkably predictable ways.



*I have always been puzzled by the way in which genetic diseases have managed to survive throughout the ages. How could it be that these diseases were able to withstand the evolutionary process, where only the most fit survive, and continue to be transferred from one generation to the next? Survival of the Sickest provides a thought provoking yet entertaining explanation to this puzzle.*

*In this insightful book Dr. Sharon Moalem demonstrates how conditions that are considered unhealthy (such as hemochromatosis, diabetes, and high cholesterol), or even deadly in extreme cases, might actually put their carriers at an advantage in combating other life-threatening illnesses. For example, he*

*explains that hemochromatosis, a disease that, if left untreated, will kill you, may have actually been a defense against the deadliest pandemic in history--the bubonic plague during the 14th century. It turns out that this genetic mutation, which continues to be passed down through generations, actually helped spare many lives at one point.*

*Throughout the book, Dr. Moalem draws many connections between seemingly disparate subjects, such as the accidental invention of ice wine and cold diuresis, in order to illustrate the basic mechanisms of genetics and medicine in charming and intuitive ways. He skillfully interweaves his knowledge of history, genetics, and medicine not only as they relate to specific medical conditions but also in a way that addresses important challenges of modern society and our future evolution.*

*In the most general terms, Dr. Moalem's description of the human body and its complexity left me in awe of how far we have come in our understanding of biology and medicine, while also being reminded that the road to understanding ourselves is still wide open with much more to learn in the decades, and even centuries, to come. It is a fantastic journey on which he leads us and Dr. Moalem is a kind, knowledgeable, humorous, and helpful guide.*

## 2014 Mississippi Outstanding Biology Teaching Award goes to...

Well, nobody yet! Please nominate a friend or yourself for the 2014 OBTA-MS award. Use the link below or the QR code to nominate online. <http://goo.gl/0rmOVj>



All persons teaching LIFE SCIENCE grades 7-12 are eligible for the award. The recipient will be recognized both at the MSTA Conference in October 2014 and at the 2014 NABT Convention - **2014 Professional Development Conference**

November 12-15, 2014  
Cleveland Convention Center  
Cleveland, OH

**Mississippi's Outstanding Biology Teacher is Recognized at NABT**



## Presidential Award for Excellence in Mathematics and Science Teaching

The Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) is the highest recognition that a kindergarten through 12th grade mathematics or science teacher may receive for outstanding teaching in the United States. During the 2013-2014 school year, administrators, fellow teachers, and parents can nominate an elementary (Grades K-6) teacher for the award. Teachers may also self-nominate to apply. Online nomination forms and eligibility requirements are available at [www.paemst.org](http://www.paemst.org). Secondary school

teachers (Grades 7-12) will be eligible to apply during the 2015-2016 school year.

The deadline for nominations is April 1, 2014. All applications must be completed by May 1, 2014. For more information, please contact Lakechia Grant at [\(601\) 359-2586](tel:6013592586) or [lgrant@mde.k12.ms.us](mailto:lgrant@mde.k12.ms.us).

## Sherry Herron Announces-Darwin Day Activities:

I am so excited to invite you to attend or let others know about the Darwin Day activities at USM on February 14 (see poster attached). You can come to one event or all of them. NO CHARGE!

Dr. Massimo Pigliucci from CUNY-Lehman College will give the keynote address at 1:00in the Thad Cochran Ballroom.

A teaching session will be held at 4:00 in the large auditorium in Walker Science Building. Check out the entire program in the attached poster.

Please pass this email on to others who may be interested.

Sincerely,

Sherry

Sherry S. Herron, Ph.D.

Associate Professor, Department of Biological Sciences

Director, Center for Science and Mathematics Education

118 College Dr., Box 5087

Hattiesburg, MS 39406

[601.266.4739](tel:6012664739)

[Sherry.herron@usm.edu](mailto:Sherry.herron@usm.edu)

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## New Funding Opportunities And Classroom Resources

Please feel free to pass these along to your colleagues who may not get my emails. A couple are repeats because I think they are good ones that are worthy of another look. And the deadlines are fast approaching. Please let me know if there is anything I can do to help support you, your colleagues and your students!

Thanks, Ned

### 1. Vernier Technology Awards

Do you have an innovative use of data collection technology using a computer, **graphing calculator**, or other handheld in the science classroom? A total of 7 awards are presented: 1 award at the elementary level (grades K–5); 2 awards at the middle level (grades 6–8); 3 awards at the high school level (grades 9–12); and 1 award at the college level. Each award will consist of \$1,500 towards expenses to attend the NSTA National Conference in Boston, \$1,000 in cash for the teacher, and \$3,000 in Vernier products. Think of all the equipment you can get! Please visit <http://www.vernier.com/grants/nsta> for all details and how to apply by November 30, 2013.

### 2. Annie's Grants for School Gardens

Annie's, makers of that delicious macaroni and cheese, is offering \$500 or \$1,500 grants to K-12 school gardens that connect children directly to real food. These funds can be used to buy gardening tools, seeds or other needed supplies. Please visit <http://www.annies.com/giving-back/school-gardens/grants-for-gardens/> for your application and get it in by December 2, 2013.

### 3. Toshiba/NSTA ExploraVision

This is a big one! ExploraVision is a competition that encourages K-12 students of all interest, skill and ability levels to create and explore a vision of a future technology by combining their imaginations with the tools of science. Teams of two to four students research scientific principles and current technologies as the basis for designing innovative technologies that could exist in 20 years. Students compete for up to \$240,000 in savings bonds (maturity value) for college and cool gifts from Toshiba. First- and second-place teams also receive an expenses-paid trip with their families, mentor and coach to Washington, D.C. for a gala awards weekend in June 2014. Applications are now being accepted and the deadline for applications is January 30, 2014. For more information about the program or to learn how to apply, please visit the competition website at <http://www.exploravision.org/>.

#### 4. Shell Science Lab Challenge

The Shell Science Lab Challenge, sponsored by Shell Oil Company and administered by NSTA, encourages teachers (grades 6-12) in the U.S. and Canada, who have found innovative ways to deliver quality lab experiences with limited school and laboratory resources, to share their approaches for a chance to win up to \$93,000 in prizes, including a grand prize school science lab makeover support package valued at \$20,000. The deadline for submissions is December 20, 2013. For more information about the Challenge or to download an application, please visit <http://www.nsta.org/shellsciencelab>.

#### 5. Scientific Awards for Excellence

The Delta Education/CPO/Frey Scientific Awards for Excellence in Inquiry-based Science Teaching will recognize and honor three (3) full-time PreK–12 teachers of science who successfully use inquiry-based science to enhance teaching and learning in their classroom. This is for PreK–12 teachers and the award is \$1,500 towards expenses to attend the NSTA National Conference in Boston, and \$1,500 for the awardee. Please visit <http://www.nsta.org/pdfs/awards/Delta.pdf> for all details and how to apply.

#### 6. The DuPont Challenge Science Essay Competition

This one is a student competition that invites students in grades 7-12 to write a 700 to 1,000-word science essay in one of the four categories:

- Together, we can feed the world.
- Together, we can build a secure energy future.
- Together, we can protect people and the environment.
- Together, we can be innovative anywhere.

Developed in collaboration with The Walt Disney World Resort, NASA and NSTA, the competition offers young students the opportunity to explore science, develop new skills and gain confidence in communicating scientific ideas. Created to honor the Challenger astronauts, students can win savings bonds up to \$5,000, and a trip to Walt Disney World and to the Kennedy Space Center. Teachers win too! Along with the trips with their students, teachers can also win \$500 grants. To learn more about the competition, check out <http://thechallenge.dupont.com>.

#### 7. Texas Instruments STEM Activities

If you haven't visited this site yet now is a good time. The new TI STEM Behind Hollywood is an exciting new program created by TI with the assistance of the Science & Entertainment Exchange, a program of the National Academy of Sciences, to get students excited about STEM education and careers. From zombies and superheroes to crime drama and space, Hollywood's blockbuster genres rely on real-world science, technology, engineering and mathematics (STEM) to bring the magic to life on the big screen. Check it out at <http://education.ti.com/en/us/stem-hollywood>.

**Resources and Opportunities From Mary Wroten**  
**Earn CEUs, OSLs, and SEMIs completely online.**

Mississippi University for Women is offering affordable and convenient non-credit courses completely online to to earn CEUs, OSLs, and SEMIs. Each course lasts for six weeks and earns 2.0 CEUs, 1 OSL, or 15 SEMIs. The registration fee is \$49.00 which includes the CEU, OSL, or SEMI certificate. Basic computer skills and high speed internet are required. For a complete listing of courses and to apply, visit the online Professional Learning Academy at [www.muw.edu/outreach](http://www.muw.edu/outreach) or email [pl@ccl.muw.edu](mailto:pl@ccl.muw.edu).

### **Delta Math Science Partnership Initiative**

Delta State University (DSU) presents Delta Math Science Partnership Initiative. DSU provides M3 (Math, Middle School, MS Common Core) Summer Math Institutes for middle grades mathematics educators in the Delta region. Participation in the program will allow middle school math teacher to enhance their math content and pedagogy knowledge, develop strategies to implement Common Core Math Standards, and provide teachers the opportunity to add a 901 Supplemental Endorsement in Mathematics. Participating teachers will receive stipends, graduate credit hours, and continued support throughout the school year. **Applications will be available in January 2014.** Contact Ann Huber, [ahuber@deltastate.edu](mailto:ahuber@deltastate.edu), (662)341-0858, or visit <http://www.deltastate.edu/college-of-education/delta-math-science-partnership-initiative/> for more information.

### **The TI Robotics Scholarship**

Now announcing: The TI Robotics Scholarship, in partnership with the REC Foundation!

For more information please visit [www.ti.com/robotics](http://www.ti.com/robotics). The Texas Instruments scholarship is offering two (2) \$5,000 non-renewable scholarships to two (2) high school seniors intent on pursuing a degree related to science, technology, engineering or mathematics in college. The award will be presented at the VEX Robotics Competition World Championship in April 2014, however the student does not need to be present to win. 76 additional opportunities available worth a combined total of \$1,523,000 may be found at [www.roboticseducation.org/for-participants/scholarships/](http://www.roboticseducation.org/for-participants/scholarships/).

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## **NASA's Youth Rover Challenge**

The **Youth Rover Challenge** is a multi-tier robotics education development program that is hosted, sponsored and operated by The Mars Society. The program commences on August 6th, 2013 to commemorate the one year anniversary of the landing of NASA's Curiosity Rover.

YRC is a STEM related educational effort that is designed for schools and organizations with students or members in grades 5-12 to have the chance to build and compete at a global level with a LEGO Mindstorms NXT 2.0 based robotic rover and competition arena intended to simulate the surface of Mars. The sandbox where the robotic rover operates is intended to be replicated so participants can operate the competition locally at your school, home or club. Winners of the best place times will be invited to one of 4 events held in each region. [Details of those regions can be found here.](#)

The Rover built for the competition is pre-designed accomplish specific experiments (tasks) similar to what Mars Rovers accomplish today on the surface of Mars and other harsh environments on remote places on Earth. The competition is operated on-site at your self-built sandbox and the final operation of the field tasks are then videotaped and sent to YRC for submission. Teams that have submitted videos that show the final operation of the rover completing the tasks under a time limit are then ranked against other teams.

The challenge and its operation is designed to prepare students for the The Mars Society University Rover Challenge that has operated successfully for the last 7 years directed by The Mars Society.

The program is lead and operated by its Program Director, Chuck McMurray, who is also the Deputy Director of Education.

Sincerely,  
**Nicole Willett**

Science Department, Benedictine Military School

Education Director, The Mars Society

@MarsEduNicole (Twitter)

Nicole Astro Willett (Facebook)

[Mars Society Education Forum | Inspiration through education](#)

## Chemistry Immersion Program (CHIP)

Dear Chemistry and Biology Teachers,

There is an exciting opportunity for chemistry and biology teachers at the University of Missouri this summer! The Chemistry Immersion Program (CHIP) will take place from July 13 through July 25, 2014. CHIP for teachers is a two-week program during which teacher participants will have valuable opportunities to refresh their knowledge of key concepts in chemistry and biochemistry as well as gain valuable experience with laboratory technology while staying in MU campus housing with all housing and dining expenses covered. There will also be an opportunity to earn one-hour of graduate credit in chemistry, biochemistry or science education.

During the first week, CHIP teachers will complete labs in chemistry and biochemistry and gain valuable experience with laboratory technology. There will also be time to collaborate with colleagues on instructional strategies to incorporate laboratory technology and investigations into instruction.

During the second week, teachers will apply knowledge gained from their CHIP experience and engage high school juniors and seniors with laboratory investigations in chemistry or biochemistry. This is an excellent opportunity for teachers to reinforce their own knowledge and assess student learning. The expectation is that CHIP teachers will take what they learn and implement the science and technology into their own classrooms and ultimately share their knowledge with professional colleagues at teacher conferences during the school year.

CHIP flyers inviting science teachers and students are attached to this email. Please go to the CHIP website for additional information: [CHIP.MISSOURI.EDU](http://CHIP.MISSOURI.EDU) or email us at [CHIP@missouri.edu](mailto:CHIP@missouri.edu).

Emily Harbert ([harberttea@gmail.com](mailto:harberttea@gmail.com))

[EAHarbert@mail.missouri.edu](mailto:EAHarbert@mail.missouri.edu)

Doctoral Candidate, Chemistry Education

University of Missouri – Columbia

## FRONTIERS IN PHYSIOLOGY SUMMER RESEARCH TEACHER FELLOWSHIP

**Eligibility:** Middle and high school science teachers in U.S. schools

**Dates:** Fellowship year: April 2013 - April 2014

Online application due no later than: **January 21, 2014**

Notifications: March 2014

### Fellowship payments:

- \$5,700 for research work and assignments
- \$300 for a classroom materials grant
- Travel expenses to Experimental Biology, Boston, MA, March 2015

**Research Teacher Fellows Program:** [www.frontiersinphys.org](http://www.frontiersinphys.org)

In this year-long professional development fellowship, teachers nationwide

- 1) immerse themselves in cutting-edge biomedical research for 7-8 weeks;

- 2) enhance their teaching skills in Six Star Science principles (student-centered instruction, diversity/equity, technology, assessment, current scientific content, and reflecting on teaching and learning); and
- 3) build networks with scientists locally and nationally by attending a scientific conference.

**EXPLORE Effective Teaching Strategies.** *The APS Six Star Science framework for supporting excellence in science education:*

- student-centered instruction
- valuing diversity among students
- integrating technology
- developing authentic assessments
- utilizing accurate and current content
- reflecting on teaching and learning

**EXPERIENCE the Research Process.** *Learn about:*

- the scientific method
- generating valid hypotheses
- connecting basic to clinical research
- using animals and humans in research
- research careers in physiology

**ENHANCE Your Classroom Materials.** *Use toolkits of strategies and Six Star Science to:*

- transform cookbook labs into engaging student-centered, inquiry-based lessons
- align lessons to your state and national science education standards

**PROGRAM INFORMATION AND APPLICATION:** [www.frontiersinphys.org](http://www.frontiersinphys.org). Look for the “**HOW TO APPLY**” **GUIDE** document at the Research Teacher Fellows program website. **DEADLINE: January 21, 2014.**

**TESTIMONIALS** from past Teacher Fellows about the Frontiers in Physiology program:

**On the fellowship experience:** “Enjoy every minute of the fellowship experience because it goes by so fast. You are so absorbed in the material and assignments that it will take you a year just to compress and reflect on it all. So soak it up, relax, and enjoy the incredible journey that the APS will take you on!”

**On the skills on transforming cookbook labs:** “I have learned a lot through these transformations. Where I once thought my labs were student centered and inquiry based, I am beginning to see just how teacher directed they were. I think I will have a great deal of transforming to do this year.”

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**Questions?** Contact the Program Manager, K-12 Education Programs: **Margaret Shain:** [mshain@the-aps.org](mailto:mshain@the-aps.org)

## ERC WORKSHOPS AT STENNIS SPACE CENTER

The NASA Educator Resource Center (ERC) at Stennis Space Center announces professional development workshops for teachers for Spring 2014. K-12 teachers can receive CEUs for these free workshops. Home school and pre-service educators are welcome, too! Topics include physical science, life science, biology, mathematics, technology and much more. Workshops are available for all grade levels and are held on-site at Stennis Space Center.

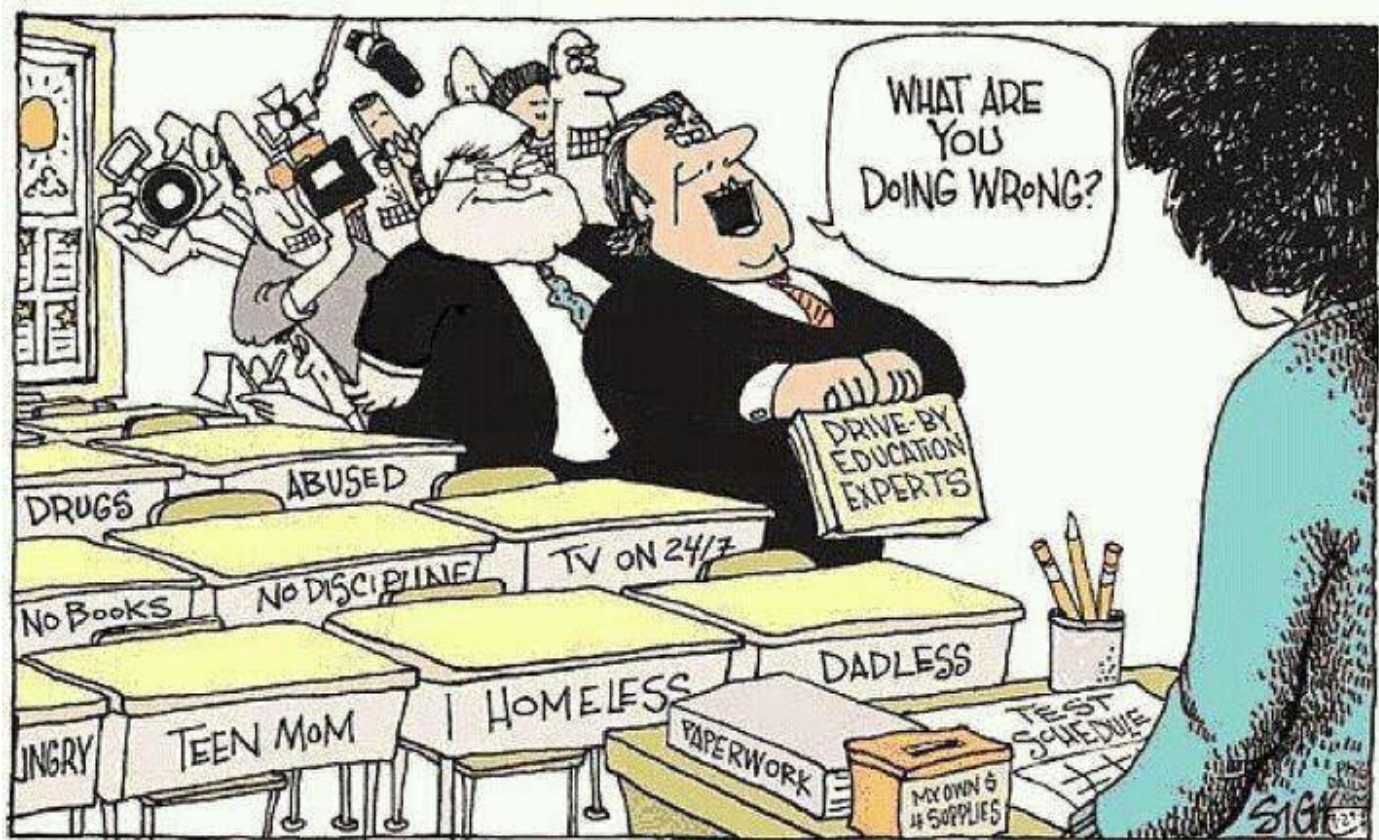
For more information about workshops, visit the Stennis Education Web site at <http://education.ssc.nasa.gov/workshops.asp> or contact the NASA ERC by phone at (800) 237-1821 (option 2) or (228) 688-3338 or by email to [ssc-nasaerc@mail.nasa.gov](mailto:ssc-nasaerc@mail.nasa.gov).

ASTRO CAMP SATURDAY REGISTRATION NOW OPEN FOR SPRING 2014

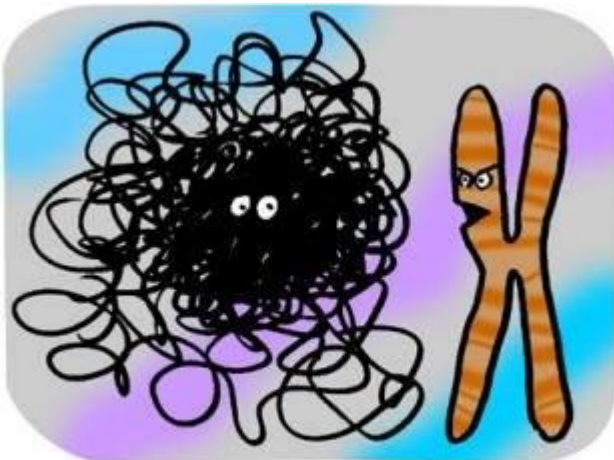
Registration is now open for Astro Camp Saturday for Spring 2014. For dates, themes and registration information, please see <http://education.ssc.nasa.gov/astrocampschedule.asp>.

**Joke Corner:**

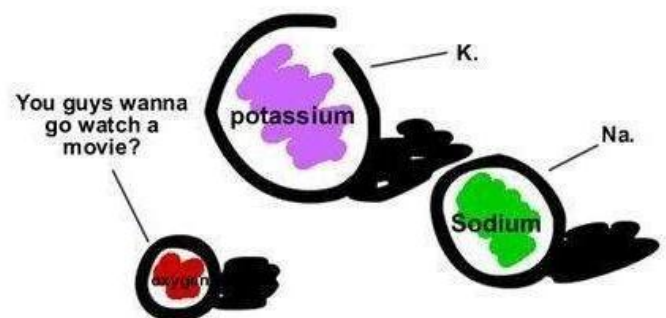
Not funny but true:

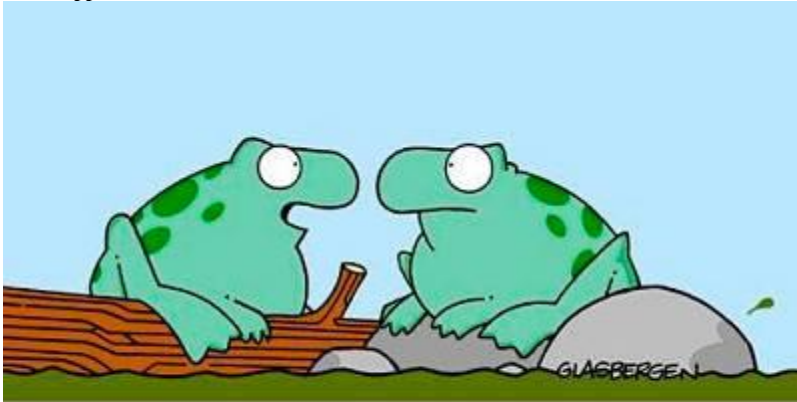


Sodium is always so antisocial.



Dude, mitosis starts in five minutes...  
I can't believe you're not condensed yet.



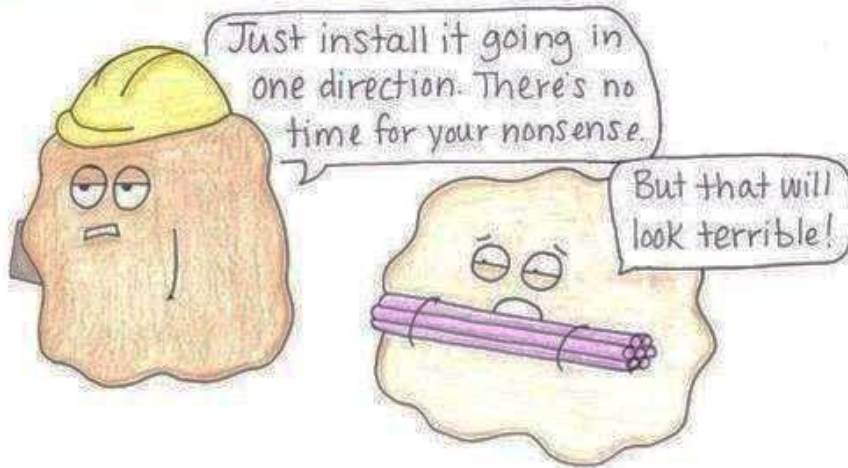
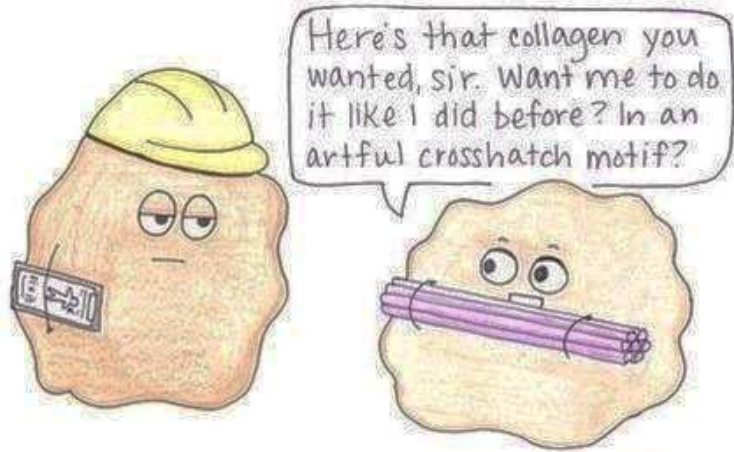


**"Looks aren't everything. It's what's inside you that really matters. A biology teacher told me that."**

## SUNNY STREET



**CELL PHONE**



How scar tissue is made.

## [Nursery Rhyme Science: Row, Row, Row your boat](#)

Posted: 05 Nov 2013 12:01 AM PST

*Row, row, row your boat*

*Gently down the stream.*

*Merrily, merrily, merrily, merrily,*

*Life is but a dream.*

### **Activity 1: Soap Boats**

Show your students two bars of soap - one bar of Ivory soap and a bar of any other brand of soap. Ask them which bar they think would make the better boat and why.



Put the bars of soap in a pan of water (a clear tub is good, so everyone can see easily) and observe.

After seeing what happened (Ivory soap floats, all other brands sink), which soap do they think would make the better boat now?



Ivory whips more air into their soap than other brands, so it is less dense than water and will float.

You can even make a little mast and sail with a coffee stirrer and piece of fun foam :)

(My boys came home from preschool with an Ivory soap boat each Columbus Day!)

**Activity 2: Boat Races**

Cut out a boat shape from an index card or piece of thin cardboard.

Cut a small notch out of the back of the boat.

Float the boat in a tub of water. What happens? Not much!

Now, place a small sliver of soap in the notch and watch. What happens? The boat moves across the tub!

**Why?**

Without soap, the water pulls on the boat from all directions, resulting in little to no movement. When the soap is added, it reduces the pull of the water at the back of the boat. The pull at the front of the boat remains strong and you see movement.

Students can experiment with boat shape to find the fastest (and straightest) racer!

Because the soap reduces the water's surface tension, the water in the tub will need to be dumped out and replaced often.

Contributed by Missy McDaniels and Shelia Smith

# Monstrous Mutations



## Introduction:

Mutations are caused by changes in DNA. Knowing a few basic types of mutations can help you understand why some mutations have major effects and some may have no effect at all. The following are some of the types of mutations that can occur.

## Substitution

A **substitution** is a **mutation** that exchanges one **base** for another (i.e., a change in a single "chemical letter" such as switching an A to a G). Such a substitution could:

1. Change a codon to one that encodes a different amino acid and cause a small change in the protein produced. For example, **sickle cell anemia** is caused by a substitution in the beta-hemoglobin **gene**, which alters a single **amino acid** in the protein produced.
2. Change a codon to one that encodes the same amino acid and causes no change in the protein produced. These are called **silent mutations**.
3. Change an amino-acid-coding codon to a single "stop" codon and cause an incomplete protein. This can have serious effects since the incomplete **protein** probably won't function.

CTGGAG  
CTGGGG

## Insertion

**Insertions** are mutations in which extra base pairs are inserted into a new place in the DNA.

which extra base pairs are inserted into a

CTGGAG  
CTGGTGGAG

## Deletion

**Deletions** are mutations in which a section of DNA is lost, or deleted.

CTGGAG  
CTAG

## **Frameshift**

Since protein-coding DNA is divided into codons three bases long, insertions and deletions can alter a gene so that its message is no longer correctly parsed. These changes are called **frameshifts**.

For example, consider the sentence, "The fat cat sat." Each word represents a codon. If we delete the first letter and parse the sentence in the same way, it doesn't make sense. In frameshifts, a similar error occurs at the DNA level, causing the codons to be parsed incorrectly. This usually generates proteins that are as useless as "hef atc ats at" is uninformative.

~~T~~he fat cat sat  
hef atc ats at

### **Objective(s):**

- To understand and observe mutations.
- To recognize and adapt to mutations
- To observe how mutations effect survival skills

### **Materials Needed:**

Nine dry peanuts in shell (per group of three students)

Blanket for the peanuts

Table or desk

One cup (per group of three students)

15 plastic knives

Six pairs of goggles

Cotton

Stop watch

Large roll of masking tape

String

Paper bag containing the letters A through H on slips of paper

### **Procedure:**

1. Students should form groups of threes. Each student will simulate an animal that can only digest peanuts as its food source.
2. Unfortunately, random mutations have produced some unusual characteristics in recent offspring. Each group will find out what mutation they represent by selecting a letter from the paper bag the teacher has provided. *Characteristics B, C, and F are deletion mutations. D, E, and G are substitutions. A is a frameshift mutation and H is an insertion mutation.*

3. The letter drawn will correspond to the characteristics listed in Chart 1. Each group will be given a number to represent the group's home location and storage cup.

**Chart 1**

<b>Letter drawn by groups</b>	<b>Characteristic produced by mutation</b>
A	Long fingernails (produced by plastic knives taped to fingers with tape)
B	No fingers (produced by taping each hand closed)
C	Lack of peripheral vision (produced by putting on goggles and stuffing cotton in the sides to prevent viewing from the side)
D	Hands fused together in front of body (produced by placing hands together in front of body and taping them together)
E	Feet and ankles fused together (produced by taping the ankles tightly together with tape)
F	No arms (produced by taping the arms down to the side of the body with tape)
G	Arms fused together behind the back at the wrists (produced by placing arms behind the back and taping tightly at the wrists)
H	Blind (produced by using goggles taped over securely with tape)

Each group should attain the proper materials and prepare itself to represent the characteristic produced by the letter of the mutation selected from the paper bag.

5. Each group should begin the activity at the specified location given by the teacher. The goals of each group are to:

- A. Gather the food (nine peanuts per group, 3 per group member)
- B. Store the food for later use (place the nine peanuts in your number-designated container).
- C. Retrieve the food at a later time (remove the nine peanuts from the container and return with the peanuts to the home location).

D. Process and consume the food (remove the peanuts from the nine shells and consume these peanuts).

6. To begin the activity, each group should position itself at its specified home location. The teacher will start the stopwatch and each group will begin with food gathering. Group members should proceed to the area containing the peanuts and gather nine peanuts per group. These nine peanuts should then be transported to a container. The three group members should return to their home location. At this point, the group will proceed back to the plastic container to retrieve its food. Once the group has removed all nine peanuts, it will return to the home location. The group will open the peanut shells and remove the contents. Each group member will consume the contents of three of the peanut shells at the completion of this process, the amount of time required to achieve this will be recorded.

7. Each group will continue until the peanuts have been consumed and time has been recorded for each group member.

8. The teacher will write the times required for each group to complete the process on the board (a bar graph can be made).

9. Students should also create a second graph representing the times required for each group member to complete the process (process may have to be done again to obtain each member's individual time).

### **Questions:**

1. What mutations did each group member display, including your own?
2. How did these mutations inhibit their ability to gather and consume food?
3. How long did it take for each group member to gather the food?
4. How long did it take for each group member to open the peanut shells and remove the contents?
5. In what ways could these animals learn to adapt to their mutations in order to survive?
6. What types of mutations did each group member display? (deletion, insertion, etc.)
7. How did these mutations affect them physically? Mentally?
8. What similarities did you find in the groups' mutations and times to complete the task? Were there any that seemed to be linked?
9. Were there any mutations that seemed to inhibit the process of gathering food more than others? Explain.
10. Were there any mutations that seemed to be more adaptable to than others? How does this relate to natural selection and survival of the fittest?

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Deborah Duncan, 1402 Golf Course Rd., Philadelphia, MS 39350 or email me at [deb50duncan@gmail.com](mailto:deb50duncan@gmail.com)

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