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Eastern Section

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Eastern Section News

Fall 2014

News from the Chair…….

Katy Perry
Eastern Section Chairperson
perry.kate23@gmail.com

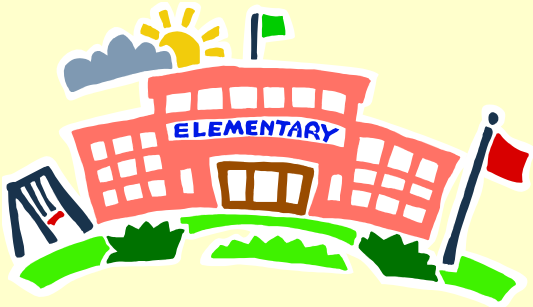
Welcome back! It never ceases to be a whirlwind of activity at the beginning of the school year; whether you are a veteran teacher or new to the classroom, starting off on the right foot makes all the difference. STANYS is here to help.

Let me take a moment to introduce myself, your recently elected Eastern Section Chairperson. I have been involved with STANYS for 12 years, actively presenting workshops at conferences and organizing events. Many of you recognize me as the Eastern Section Elementary SAR, a position that I have been in for several years and continue to hold. I currently teach kindergarten through 8th grade science at the Robert C. Parker School, a private independent Progressive school in North Greenbush. Last year I took on the role of vice-chair, which led to me tossing my hat in the ring to replace Paul Nooney, our out-going Chairperson. Paul will be missed; his energy, organization, and ideas helped bring our section to new levels. Paul is currently working at RPI in their Student Services Department and is applying for further administrative employment with RPI. Thank you Paul, for all of your hard work!

I have learned a few lessons from my involvement with STANYS. First and foremost, the power of sharing ideas with fellow science teachers invigorates me and inspires me to be a better teacher. STANYS' networks also keep me informed about standards, new resources, and state wide issues pertinent to science education. Attending conferences, local and state, kindles the unity of those who want to inspire curiosity in their students. Our local Siena Conference, on October 17th, promises provides enriching workshops, curriculum ideas, and speakers. The Pub Science Series, our almost monthly opportunity to network, learn, enjoy, and earn PD credit, continues this year in September and December; stay tuned for more information. The state STANYS conference in Rochester, November 1st -4th, offers something for everyone and more. You should come! The multitude of great ideas teachers have and share for research, projects, curriculum and lessons create rewarding networking experiences.

As we move forward into the 2014-2015 school year, bringing STEM, STEAM, CC, NGSS and Engage NY into our curriculum, and anticipating changes to state science standards, we all work towards the same goal of inspiring and empowering another generation of science students. STANYS provides resources to help you succeed. Your motivation keeps us all going strong. We are always looking for assistance with workshops, conferences, and STANYS board committees. Send us an email and get involved!

Most importantly, have a great fall! Keep encouraging the wonder, curiosity, and questions.



Elementary News

Katy Perry
Elementary SAR
perry.kate23@gmail.com

Sitting outside with my laptop as I prepare this article (and swatting mosquitos) I am reflecting on the last few months and planning for what lies ahead. Two questions keep surfacing; "What did I do this summer that was *science*?" and "How do I know I am doing science?" We are all scientists! But what does that mean? I'll start class discussions with these dilemmas to pull out student ideas for how they are scientists. Fundamentally, it comes down to connecting everyday activities and actions to scientific habits. Working with elementary students to not only identify Scientific Habits of Mind, but also clearly develop them, is one of my classroom goals for the fall. What are Scientific Habits of Mind? And how can I do reinforce them while keeping the learning real?

All these questions and the mosquitos have no answer. Luckily there are some resources that I can tap into. A short list of scientific habits of mind, according to Harvard's Project Zero, are

- openness and appreciation for new ideas.
- skepticism and appreciation for evidence and logic.
- consideration of alternatives.
- creative use of imagination.
- curiosity, integrity, diligence and fairness.

The 16 Habits of Mind, identified by Costa and Kallick, reach across disciplines. Looking at the list below, I think "Of course! This is a basic part of doing science." Developing these habits with my students, so they recognize them and apply them, might not be so obvious.

http://www.habitsofmind.org/sites/default/files/HoM%20Summary%20Outline.pdf
A more thorough description, provided in the researchers book, http://www.ascd.org/publications/books/108008/chapters/Describing-the-Habits-of-Mind.aspx helps me plan how to infuse these skills into my classes. These resources provide ideas for teachers and schools, from task cards to reminders of how to use humor each day. http://margdteachingposters.weebly.com/habits-of-the-mind.html and http://www.chsvt.org/wdp/Habits_of_Mind_Curriculum_VT_WDP.pdf
Modeling the Habits of Mind helps my students see how to adopt and apply them. Purposefully talking about mistakes I've made, finding the intrigue in the world, and taking risks not only reinforces the habits, but makes me more "real" to them. Since STEM activities utilize most of the habits, I'll have my students, after their first project, connect the

continued on page 3

Continued from page 2

characteristics to the activities and discuss how they used them and why they are important. Continuing to refer to the 16 Habits of Mind throughout the year will make all the connections stronger. Researching scientists' work and lives and using examples from their biographies to connect to my students' personal actions will help them see how they are scientists too.

Great opportunities for teachers and students to do science abound. You can learn about many resources at our Siena Conference, Oct. 17, and at the STANYS State Conference in Rochester Nov. 1-4. I'm presenting a Bubble Fun, an Elementary Physical Science Unit at Siena and Force and Motion Unit, called Rolling Around in Rochester; I'd love to see you at both!

STANYS will keep you informed about state standard changes and offer further support with connecting curriculum, lessons, and standards to your teaching. As always, if you have any questions, or ideas to share, send me an email. Have a great fall!

Stay Informed!

Join the Environmental Science Network (ENVNET)

By Arden R. Rauch

Add your name to the EnvNet and receive short, succinct, pertinent information about local opportunities. Free, and I'll promptly remove your name when requested. You do not have to be an Environmental Science teacher. All are welcome: any grade or subject or not even a science teacher for that matter.

If you are one of the 127 already on EnvNet, you don't have to do anything. Although there is some overlap between the EnvNet and EsNet (Earth Science), you will receive *very* few duplicate messages.

To join Envnet, send email to raucha@union.edu Home or school email address OK.

Living Environment

Kelly Ryan- SAR Eastern Section

kellyryan@ncolonie.org

The summer is flying by so quickly! I wish it would slow down because I'll be bringing my youngest off to college in a few short weeks and I am not ready for that! I know she will do great, I'm just not so sure about me…

Even though I have been busy preparing for her to go, I have managed to think a bit about Biology, too. I recently read Dr. Sharon Moalem's newest

book, Inheritance: How our genes change our lives and our lives change our genes. It is another great read by the author of Survival of the Sickest. Moalem illustrates just how blurry the lines are between nature and nurture as he explores the inheritance and expression of our genome and epigenome. In the chapter entitled, *Feed your Genes,* he explores lactose intolerance, hereditary fructose intolerance and other conditions to show us that we need to get our dietary guidance from our recent ancestors rather than from a generalized food pyramid. This will ensure our diet matches our inheritance and will be less likely to cause us harm. Other chapters include: *We're all X-Men, Mail-order Child and Hacking your Genome.* This book won't disappoint!

A few great resources that I think complement this book nicely are found at HHMI's BioInteractive site. The first is the short film, *Making of the Fittest,* which has a 15-minute segment, *Got Lactase?* There is also a "click and learn" entitled *Recent Adaptations in Humans*. Both of these resources explore the fascinating story of the evolution and inheritance of lactose intolerance and lactase persistence.

The first week after school let out I attended a four-day Biomimicry Workshop at the Omega Center for Sustainability in Rhinebeck, New York. In recent years I have been educating myself in this fascinating field and I see Biomimicry as a great vehicle for incorporating engineering and technology into the Living Environment curriculum. I will be presenting a workshop *Exploring Biomimicry* at our Fall Siena conference. Join me to learn how

Continued on page 4

Continued from page 3

we can emulate life's genius to improve the quality of the human condition and increase sustainability.

After all, life has had 3.8 billion years of R& D to evolve strategies that work! From self-cleaning fabrics and paints that mimic the nanostructure of lotus leaves to self-cooling buildings that mimic airflow in termite mounds, the applications are endless. This introduction to Biomimicry will reawaken your wonder in nature!

Keep STANYS Strong!

by Becky Remis, Membership Chair
RRemis@aol.com

Some of the many benefits of membership in STANYS including keeping current with NYSED updates to curriculum and assessment, information about and access to high quality professional development, networking with colleagues, and most importantly keeping yourself energized and engaged in the rewarding career of science teaching. If you are not already a STANYS member, go to www.stanys.org to complete a membership form as a new or returning member. Thank you to those who continue to support the work of STANYS through your membership and participation in events at the Section and State levels. With your help we remain "STANYS Strong"!

Stay Informed

Be the BaP person for your School

By Arden R. Rauch

raucha@union.edu

The goal of BaP, renamed Science Matters, is to send **pertinent** science information directly to **one** person in each school in the 13 counties which comprise Eastern-STANYS. The email would then be forwarded it to appropriate staff in your building. The commitment is just a few minutes per week and will enable you and your colleagues to find out about local events and opportunities.

Join the Earth Science Network (ESNET)

No, you are not seeing double. There are two networks and this one is for Earth Science. Often different information than the EnvNet but the same purpose: to let you know about regional science related opportunities. You **won't** be swamped with emails. Add your name to the EsNet and receive short, succinct, pertinent information about local events and opportunities. Free, and I'll promptly remove your name when requested. You do not have to be an Earth Science teacher. All are welcome: any grade or subject or not even a science teacher for that matter.

If you are one of the 127 already on EsNet, you don't have to do anything.

To join Esnet, send email to raucha@union.edu either home or school email address OK.

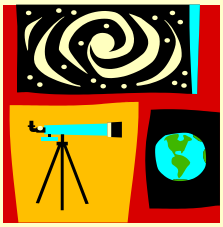
For more information about BaP:
www.http://bap.nsta.org/. On the left, click on becoming a PoC.

Feel free to contact me with any questions or concerns.

Earth Science

Earth Science SAR

Laura Van Glad –lauravanglad@gmail.com



Welcome back to a new school year! I am Laura Van Glad, your new Earth Science SAR for the Eastern section. I was asked to tell you a little something about myself. I teach Physical Setting: Earth Science, Physical Science 8, and Life Science 7 at Jefferson Central School, a small rural school in Schoharie County. I am also the 5-12 science dept. coordinator. I have certifications in Earth Science, General Science 7-12 and Living Environment (Biology). In the past I have taught many various science subjects and classes in other subject areas such as social studies, math, and health. I even taught a year as a special needs teacher with a self-contained class. Having taught in one of the smallest districts in NYS with approximately 200 students K-12 as well as one of the largest districts with over 12,000 students, I have experience in both small and large districts. Having such a varied background has helped me throughout the years. I hope my experience will enable me to help you as well.

I first joined STANYS when I went to a State Conference. I learned a lot at the conferences and brought back many ideas that I continue to use today. Due to time and budget constraints, it became difficult to attend the conferences and I stopped going. Last year one of my colleagues went to the STANYS Rochester conference and came back with lots of new ideas. It reminded me about how important the conferences are. I realized I needed to look into joining STANYS again.

When the Pub Science Series was announced, I decided to sign up for the first one. I found it very informative. In addition, I found the comradery of the other science teachers to be fun and electrifying. Next thing I knew I was signing up for another Pub Science Series and Lab Day. I was enjoying myself. I joined STANYS again. That electric spark seemed to be what I needed. I continued to go to additional Pub Science Series for the professional development and networking. I was told that Fran Lohnes was stepping down from the Earth Science SAR position and asked if I might be interested in filling in. I thought about it for a while and said yes! Fran has been instrumental in providing many professional development opportunities and her contribution to STANYS has been extremely valuable. Fran will continue to be involved in STANYS and I appreciate her help as I transition into the position. I follow the footsteps of some pretty involved Earth Science SARS. I hope I will make them proud.

If you are not a member of STANYS please consider joining and attending events. STANYS has a lot to offer both at the local and state levels. If you are not sure, you can attend our events as a nonmember first and decide about joining later. If you are already a member, come join us at one of our events and consider bringing another member or nonmember along. I look forward to meeting you. Maybe it will be at the Clearwater event, a Pub Science Series event or at our annual Siena Conference in October where I will be presenting.

I will be leading a Demo Derby on various methods used in the classroom. We all have some quick tips and clever ideas on methods to manage our classrooms. I will be sharing some of my ideas to help with problems such as:

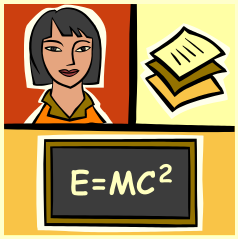
- How do you help students who were absent get up to date efficiently?
- How do you start your class so that everyone knows what do when they walk into your room?
- I am asking that participants bring in a sample of a method(s) that they use or provide a picture via flash drive, email, iCloud etc. and tell us about one (or a few) of the methods that have been useful to them.
- If you can't make the conference and you have an idea you would like to share please feel free to contact me and I will add it to the list of methods being shared. (I'll give you the credit of course).

If you have any questions, comments or ideas of things you would like me to look into and write about for the next newsletter please email me at lauravanglad@gmail.com

Hope you had an enjoyable summer. Enjoy the beginning of the school year. I hope to see you at an event.

A Note from the Physics DAL

Paul Federoff pafedoroff@bhbl.org



HI folks, I hope everything has started off just right for you this year.

I just want to remind you that there is a "T"in STANYS. Please remember that we are not all scientists but we are all science teachers. I ask you to keep this in mind the next time you are at a science conference, especially. Many times, physics workshop numbers are limited, but don't be so quick to forget about elementary and intermediate level. Most of you do not need to brush up on your physics content but probably could use a new way to teach a certain topic that we know kids have trouble with. Your elementary and intermediate level teachers might have the answers. Many times at the high school level we get caught up with content delivery and forget about good pedagogy and the art and craft of teaching. Attending an elementary or intermediate workshop just might be what some of us need for some fresh approaches and ideas.

I hope you think that STANYS has something to offer for you, no matter what period of your career you are currently in. For those teachers that are brand new to teaching or brand new to teaching physics, I personally feel that there is no better way to get better than to attend conferences and workshops. Hours of scrolling through websites will always be trumped by minutes of collaboration with other science teachers.

I hope to see you at our next Eastern Section Conference and/or at our State Conference this fall.

Greater Capital Region Science and Engineering Fair

www.gcrsef.org, jsw2012@aol.com

The Greater Capital Region Science and Engineering Fair will take place on March 21, 2015 at the Walker Labs, RPI, Troy, NY.

This is a regional science fair for the prestigious Intel International Science and Engineering Fair and the STANYS State Science Congress.

The fair has a junior and senior division. The junior division is for grades 6-8, while the senior division is for grades 9-12.

Rensselaer Polytechnic Institute offers one $40,000 scholarship to a grand prize winner while Albany College of Pharmacy and Health Sciences offers up to three $20,000 scholarships. There are many, many special awards offered from both professional organizations and local businesses.

Please take time to visit our website to learn more about the fair and to download the fair brochure.

Teachers needed!

I work for the Endometriosis Foundation of America, a health non-profit based in Manhattan. We will have a booth at the annual STANYS conference in November, but we would like to distribute information about our programming, The ENPOWR Project.

We have funding from the NYS Senate as part of their teen health awareness initiative to give presentations to high school aged adolescents about endometriosis. Endometriosis is a debilitating health condition that affects 1 in 10 adolescent girls and women in the United States. The disease derails lives and causes many to miss days of school and recreational activities every month around the time of their periods. The ENPOWR Project, a school and community-based program, comes to NYS schools and provides a 30-minute interactive discussion. The presentation, aligning with NYS curriculum, educates teens about endometriosis prevalence, symptoms and treatment.

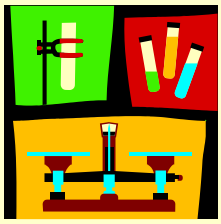
We would like to reach as many science teachers we can to spread the word about the ENPOWR Project and to bring awareness to teens across NYS. Please contact Jennifer Hancher for more information or visit the web page by clicking on the icon of the foundation.

***Jennifer Hancher at** jennifer@endofound.org.*

endofound.org ENDOMETRIOSIS FOUNDATION OF AMERICA

Chemistry

Maria Russo- Chemistry SAR
chemlady302@yahoo.com



As the school year begins, I thought I would write about some of the common misconceptions that I encountered year after year with some of my students.

Here are some examples of misconceptions:

• The anode is always on the left. (Authors of textbooks and many regents' questions tend to do put the anode on the left side of their diagrams)
• Electron shells contain electrons and protect the nucleus.
• Molecules of solids are large and molecules of gases are small.
• Heated copper is heavier than room temperature copper.
• Room temperature copper had no heat.
• When a phase change occurs there is also a change in mass.
• Freezing and boiling are chemical reactions.
• Melting and dissolving are the same.
• The bubbles from boiling water are filled with air.

Then there are the misconceptions developed in the classroom:

• In our nuclear unit, students will confuse nuclear stability with atomic structure stability and noble gas stability.

• When we say "neutralization is a reaction between an acid and a base to produce salt and water" many students think the production of a salt is the neutralization". They completely miss the hydronium ion and hydroxide ion combining.

• I caught myself during a review class saying "the atomic number is the same as the number of protons and electrons". I was simplifying the more correct "The atomic number tells us the number of protons in the nucleus and if we know the number of protons in an atom we also know Etc..." While doing practice questions, someone told me to add the protons to the electrons to get the atomic number.
Yikes!! Teacher induced misconception.

So what can we do to "fix" the problem? Anticipate the misconceptions. Change the lesson. Alex Johnstone's research tells us that we have three levels of thought when learning chemistry:

The macro and tangible, the sub-atomic atomic and molecular, and the representational use of symbols and mathematics. He goes on to state that teachers tend to ask their students to make the connections between one level and another and most high school Chemistry students just can't do this on their own. He further states that the introduction to new concepts occurs Predominately on the abstract level, the symbolic level, thus increasing the number of school-made misconceptions occurring.
He suggests when doing a lab activity teachers should specifically teach all three levels and make the connections for their students.
The labactivity is the macro level, writing down observations is the sub-atomic level, and using symbols, formulas, equations, graphs, and tables is the representational level. My suggestion is take an extra lab period or two to help your kids make these connections. In the long run, it will pay off.

Clearwater

We have been able to reschedule the cancelled trip! Come sail with us on September 12 from 5:00-7:00 PM. Go to stanysclearwater914.evenbright.com for more information and registration

NYSED Ready to Move Science Education Reform Forward

Ken Wagner, NYSED Deputy Commissioner for Curriculum, Assessment, and Educational Technology recently told members of the NYS Science Education Consortium, "I agree with you. I think we can make this happen." Wagner, along with his colleagues Mary Cahill and Zachary Warner, had just listened to a PowerPoint presentation developed by the Consortium at the Thirteenth State Science Education Summit, held at Union Graduate College on July 23-24, 2014. This presentation reviewed the need for PK-16 science education reform, referred to the Consortium's 2013 Position Paper on the Next Generation Science Standards (NGSS), and recommended several steps to move the reform process forward.

The Consortium, along with other science education stakeholders, has been working with NYSED Science Associates Ann Crotty and Will Jaacks for two years on the development of a Statewide Strategic Plan for Science Education. The plan provides objectives and activities for reform in state standards, curriculum, assessment, professional development, materials support, and administrative and community support. Informed by the work of the National Science Resources Center, the plan asserts that attention must be paid to all six domains in order for science education reform to be effective and lasting. The plan is also flexible enough to accommodate a decision of the NYS Board of Regents to adopt NGSS, adapt NGSS, or revise the state's current science standards. The Consortium, through its Position Paper, has recommended that the Regents adopt a New York State version of NGSS.

At Summit XIII, the Consortium recommended that in early 2015 the Regents adopt the Strategic Plan and authorize the development of a New York State Version of the NGSS which could be considered for adoption by the Regents in early 2016. Such a timeline would enable NYSED, the science education community, and other stakeholders to begin the activities contained within the Strategic Plan, including the development of the state version of NGSS.

In his response to the presentation, Ken Wagner agreed with the proposed actions and timeline, noting that, although wholesale adoption of the NGSS may not be possible, a state version of NGSS, modified to meet the needs of all of our students, seems viable. He added that the Regents should be presented with the Strategic Plan this fall and asked to release the plan for public review and response. This action could set the stage for the plan's adoption in early 2015 and the authorization of the development of the state version of NGSS at the same time.

Wagner's affirmation and support were not without cautions. As in the recent adoption of the state's social studies standards, the Board of Regents will need widespread support and testimonials from the field and involving many stakeholders before it considers adoption of the Strategic Plan and authorization of the development of a NYS version of NGSS. Wagner noted that NYSED will proceed forward "with sincerity and integrity" but resources are limited and diminishing and the Regents will want assurances from science educator professional associations, science teachers and supervisors, science teacher educators, scientists, parents, and other stakeholders that adopting the Strategic Plan and developing new state science education standards are both necessary and broadly supported.

For the members of the Consortium (STANYS, NYSSELA, SCONYC, LISELA, CASSA, and the Biology-Chemistry Professional Development Network), the challenge is clear. Leaders of these organizations will help build awareness of the Strategic Plan and what a NYS version of NGSS might look like with their members this fall and ascertain levels of consensus that can be shared with the Regents in early 2015, if not sooner. The Consortium will continue to help coordinate such efforts and advise state policy makers and other stakeholders on the need for science education reform, presenting a viable roadmap to achieve that reform.

It has been said many times that patience is a virtue. Science educators in our state have been patient as NYSED, BOCES, and schools have funded and implemented the Common Core Standards in English Language Arts and Mathematics and now the revised Social Studies Standards. We have seen the time for and approach to elementary science education erode owing to other curricular needs considered more pressing. We have watched the participation rates in high school science stall with less than half of our students successfully completing Regents Chemistry and less than one-quarter doing the same in Regents Physics. While we produce many well-prepared and talented science students, as large a number are not fully engaged in learning science or prepared for college or careers in a society so dependent on advances in science and technology. New York State can and must do better by our students. The task will not be easy but the science educators in this state have always met the challenge when their talent, creativity, and experience were valued and utilized. To quote Ken Wagner, "We will need help." Let's provide it!

Keynote Speaker at the 33rd Annual Siena Conference

Dr. Karyn Rogers

The 33rd Annual Siena Conference will take place on Friday, October 17th. Our keynote speaker is Dr. Karyn Rogers from RPI who will be discussing the search for life under the extreme conditions found on other planets. In addition, we have over 30 workshops for you to choose from with a balance between all the disciplines. Some of the workshop topics include an update on NYS and the NGSS, using data from the Large Hadron Collider, chemical demonstrations, simulation games in biology, and a number of elementary workshops. Attached is the program and registration form. Please "go green" (chemistry workshop!) and use the electronic registration at EventBrite. See you there!

Board of Directors

If you have any questions or concerns regarding your particular branch/level of science please feel free to contact your STANYS Eastern Section Subject Area Representatives:

Chemistry - Maria Russo - chemlady302@yahoo.com
College/Pre-service - Pat Price - pricep@mail.strose.edu
Chair - – Kate Perry: perry.kate23@gmail.com
Vice Chair – William Brown wbrown@queensburyschool.org
Elementary SAR – Kate Perry: perry.kate23@gmail.com
BaP - Arden Rauch - raucha@union.edu
Intermediate – Jennifer Gecewicz - jen.gecewicz@gmail.com
Earth Science- Laura Van Glad lauravanglad@gmail.com
Newsletter /Webmaster/Secretary – Elisabeth Milot – easternstanys@gmail.com
Living Environment – Kelly Ryan - kellyryan@ncolonie.org
Physics – Tony Malikowski- malikowskia@hoosickfallscsd.org
Retirees - Christine Stankavich- cegnaczyk@aol.com
Lab Day – Christine Stankavich - cegnaczyk@aol.com
Membership - Becky Remis – rremis@aol.com
Siena Conference – Tom Shiland -t_shiland@saratogaschools.org
Science/Engineering Fair - Joan Wagner - jsw2012@aol.com

Science Teachers' Association of NYS
Eastern Section

FRIDAY

Sept. 12

CLEARWATER SAIL

5:00P - 7:00P (BOARD @ 4:30P)

Join Eastern STANYS as we take a special educational sail on board America's Environmental Flagship: **The Hudson River Sloop Clearwater** Cost: $30 STANYS Members, $35 STANYS Non-Members Sailing from Riverfront Park in Rensselaer, New York

For more information or to purchase tickets, go to

STANYSClearwater914.eventbrite.com

33rd Annual
Eastern Section STANYS
Fall Conference
At Siena College

STANYS
SCIENCE TEACHERS ASSOCIATION OF NEW YORK STATE

Friday, October 17, 2014

Go Green! Register on the Eventbrite Site at:
http://sienaconference2014.eventbrite.com

Agenda

3:00-4:10 pm Exhibitors, refreshments, registration (Sarazen Campus Center)

4:10-4:25 pm Welcome, presentation of Service Award (Sarazen Campus Center)

4:30-5:20 pm Session I

5:40-6:30 pm Session II

6:45-7:45 pm Dinner (Serra Hall)

7:55-9:00 pm Door Prizes and Keynote Speaker (Sarazen Campus Center)

Session I: 4:30- 5:20 PM

A. STEM Kits for Elementary Teachers. *Crystal Perno, NYS Master Teacher, Saratoga Springs High School. Charlotte Naples, NBCT, NYS Master Teacher, Mars Maven Ambassador, Saratoga Springs High School* STEM kits for Grades 1, 3 and 5 will be presented. Elementary. **Siena 105**

B. Engineering Design Meets Nursery Rhymes. *Fred Pidgeon, Past President, STANYS.* Participants will design STEM related projects that their students will then design to bring fairy tales and nursery rhymes to life. Elementary. **Siena 106**

C. Learn About Wee Beasties. *Dr. Dorothy Matthews, The Sage Colleges.* See how you can help students learn about tiny life forms: the wee beasties! Come away with new teaching ideas about earth's oldest critters. Elementary. **Siena 117**

D. Strategies that Promote Student Engagement. *Becky Remis, STANYS DAL Earth Science. Schalmont High School: Kate Perry, Chair-Eastern Section, Elementary SAR; Jennifer Gecewicz, Intermediate SAR; Maria Russo, Director-Eastern Section.* How do you keep students behaviorally and cognitively engaged in your science class? Successful instructional strategies and teacher attitudes that answer this question will be shared. This session will be especially useful for new teachers as well as anyone looking for a fresh perspective! General. **Siena 119**

E. Flipping for Science. *Paul D. Levin, Galway High School.* Interested in flipping your classroom? Come hear how you can! Hear how I got started, mistakes to avoid and how you can start too. General. **Siena 121**

F. Professional Development Remix. *Jody Suprenant, Fort Edward UFSD, NYS Master Teacher.* We'll learn how to improve STEM literacy and communication, organize and share media resources, and amp up your Domain 4 by creating your own PD home brew using social media. **Siena 123**

G. Field Camp at Mammoth Cave. *Fran Lohnes, NBCT, Saratoga Springs High School and Sherry Riese, Saratoga Springs High School.* Join us to hear about how we spend a week last summer participating in research and exploring parts of Mammoth Cave that the public never gets to see. Learn about what field experiences are available for teachers next summer with GSA Geoventures (Earth Science, Biology, Environmental, and K-12) **Siena 122**

H. Classroom Methods Demo Derby. *Laura Van Glad, Jefferson Central School, Eastern STANYS SAR Earth Science.* Everyone has quick tips and clever ideas to manage their classroom. Come learn about mine and tell about yours. Bring a sample/picture (flash drive/e-mail attachment). General. **Siena 120**

I. Regarding Insects. *Gerald Dievendorf, President, Field Research and Scientific Studies.* General information regarding entomology. Why do an entomology project? How to incorporate live specimens in the classroom. Ideas for projects. **RB 250**

J. Status of Science Education Reform in New York State. *Bruce Tulloch, Participating Professor, Union Graduate College.* This session will review the results of the Thirteenth State Science Education Summit held in July, 2014 and indicate the efforts being made to advance science education reform in the current school year. General. **RB 202**

K. Motivating our students to learn chemistry. *Bill Brown, Eastern STANYS Vice-Chairperson, Chemistry teacher, Queensbury High School.* How can we get our chemistry students intrinsically motivated to learn chemistry? A discussion on the carrot/stick approach and what might be better. Chemistry. **RB 302**

L. Essentials of Chemistry in the Sciences. *William Roome, STANYS Chemistry DAL, Madrid-Waddington Central School District.* This workshop is designed to enhance K-12 science education by introducing and embellishing the central role of chemistry in all the sciences and in our everyday lives. Teachers will participate in many demos. Chemistry. **RB 328**

M. 5-Minute Physics Lessons. *Paul Federoff, STANYS DAL Physics, Burnt-Hills-Ballston Lake High School.* 5-minute physics lessons that you might not traditionally do, but every student should be exposed to that comes through your class. Physics. **RB 412**

N. Holy Flying Gourds! How to Organize and Run a Pumpkin Chunkin Event
Tony Malikowski, Eastern STANYS Physics SAR. Learn the logistics for organizing a safe and entertaining target shooting competition for siege engines. Machine design, community involvement, and curricular integration will be discussed. Physics. **RB 428**

O. Teach Like a Scientist. *Mrs. Jane King, Questar III: Summer Research Institute; Nichole Mantas, Lansingburgh High School.* Come learn about the Questar III Summer Research Institute. Fellows in the program work alongside local scientists for two summers to develop skills and content knowledge to use with your students for a more rigorous, inquiry-based classroom. Applications will be available for Summer 2015.
General **RB 208**

P. Activities for the Water Planet. *Joan Wagner, Eastern STANYS SAR for Informal Learning, Focus on Learning.* Water's properties, watersheds, wetlands and more. This workshop is filled with many hands-on activities for MS and HS. After the presentation, all supplies and equipment will be given away. To ensure there is enough time to do all activities, this is a double session. Water is articulated strongly to all standards. **RB 238**

Q. Eco-Choices: An Environmental Game about decision-making and tradeoffs. *Sandra Fischer, Chatham High School.* Developed by the Cary Institute, this game involves challenges for students to balance both the environmental and economics in their decision-making. **Siena 125**

R. Starlab Inflatable Planetarium with Astronomy Educator. *Elissa Kane, The Dudley Observatory*. It's best to learn astronomy in a 3-d based format. In this interactive/planetarium program, students explore orbital motions that cause predictable patterns in the phases of the moon, seasons and changing constellations in the night sky. ***Sarazen Center***

Session II 5:40-6:30 pm

S. A Bubble? An Elementary Inquiry Based and STEM Unit. *Katy Perry, Chair- Eastern Section, Eastern STANYS Elementary SAR.* Explore bubble physics and fun! Students delve into bubble properties, examine forces that hold them and engineer the best bubbles. Aligned to CC and NGSS. Elementary. **RB 238**

T. Recycling and Beyond. *Debbie Jackson, Environmental Program Specialist 2, New York State Department of Environmental Conservation.* How to develop and expand a school recycling program. I will also provide classroom activities you can do with your students. Grades K-8. **Siena 121**

U. Fun with Forces and Motion; an Inquiry Based Approach for Middle Schoolers. *Roy Moffitt, Antioch University New England.* Samples from a NextGen science standards curriculum. How many forces did it really take to have an apple fall on Sir Isaac Newton's head? **Siena 123**

V. Game-based Learning as a Way to Teach Climate Literacy. *Laura Tedesco, NBCT, Troy High School and Megan Fung, PhD candidate, RPI.* Learn how earth science students created interactive board games in order to explore how humans impact our environment and address future implications of climate change. Earth Science. **Siena 125**

W. How to Put NASA's Challenger Learning Center in Your Classroom. *Charlie Kuenzel, Challenger Learning Center Board Member, Challenger Learning Center of Tech Valley.* Learn how classroom teachers can use the Challenger Learning Center to bring programs that are space themed, that support problem-solving and teamwork into their classes. Earth Science. **Siena 122**

X. Krazy Traits. *Fred Pidgeon, Past President STANYS.* The participants will build an animal from a kit that brings Punnett squares and genetics to life. Biology. **Siena 106**

Y. Fruit Flies, Oil Spills, and More: Creative Activities in Biology. *Nichole Mantas, Lansingburgh High School.* Explore several hands-on, inquiry based lab experiments for all levels of biology. Investigate DNA, RNA, and proteins by building mutant fruit flies; investigate the best way to clean up an oil spill, and more. Biology. **RB 208**

Z. Global Harmonization for Chemical Hazard Communications. *Ann Klotz, Siena College.* Global Harmonization System, GHS, is a new structure for communicating chemical hazards. Many chemical labels are already displaying the new hazard symbols. The format of material safety data sheets is also changing. The presentation will include an overview GHS and how to find information important to you on labels and safety data sheets. Chemistry **RB 302**

AA. Chemistry using the Project Based Learning (PBL) Model. *Diana Weldon, Tech Valley High School.* Have you ever been asked, "Why do I have to learn this?" In PBL, that question is already answered. Participants will review a chemistry project. Resources and activities will be provided. Chemistry **RB 328**

BB. Mozart, Metallica and a Tree Falling in the Forest: Physics of Music and Sound. *Paul Federoff, STANYS DAL Physics, Burnt-Hills-Ballston Lake High School.*
Physics demos, discussion, and show-and-tell all about music and sound. Participants are asked to bring their favorite portable instrument or noise maker for sound analysis, not mandatory. Physics. **RB 412**

CC. Particle physics outreach efforts from the Large Hadron Collider. *Matt Bellis, Assistant Professor, Siena College.* The CMS experiment at the LHC has released a significant amount of data for outreach efforts. This talk will describe how these data are being formatted for use by motivated college and high school students. Physics. **RB 428**

DD. Exploring Biomimicry. *Kelly Ryan, Eastern STANYS Living Environment SAR, NYS Master Teacher, Shaker High School.* Life has had 3.8 billion years of research and development to evaluate strategies that work! Learn how we can emulate life's genius to improve the quality of the human condition and increase sustainability. From self-cleaning fabrics and paints that mimic the nanostructure of lotus leaves to self-cooling buildings that mimic air flow in termite mounds, the applications are endless. This introduction to bio mimicry will reawaken your wonder in nature. **RB 250**

EE. Eco psychology-Learning by Accident, the Outdoor Classroom. *Paul C.Doyle Jr., Bethlehem Children's School, Mohawk Hudson Land Conservancy, Pine Hollow Arboretum.* Growing research demonstrates that analytical learning is most conducive to the natural environment. What should we all be learning about science and our planet? Elementary. **Siena 119**

FF. Maven-Bringing Mars Down to Earth, *Charlotte Naples, NBCT, NYS Master teacher, Mars Maven Ambassador, Saratoga Springs High School, Jody Suprenant, NYS Master teacher, Mars Maven Ambassador, Fort Edward High School.* Came see what the Mars Maven Mission is and how you can bring hands on activities into your classroom. Get hand outs and information to keep you informed as to what Maven discovers about Mars. Grades K-12. **Siena 105**

GG. Starlab Inflatable Planetarium with Astronomy Educator. *Elissa Kane, The Dudley Observatory*. It's best to learn astronomy in a 3-d based format. In this interactive/planetarium program, students explore orbital motions that cause predictable patterns in the phases of the moon, seasons and changing constellations in the night sky. ***Sarazen Center***

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Looking for Life: A Hitchhiker's Guide to Extreme Environments

Professor Karyn Rogers
Earth & Environmental Sciences
New York Center for Astrobiology
Rensselaer Polytechnic Institute

"How and where on Earth did life begin?" "Has there ever been life anywhere else in the solar system?" These questions have driven human exploration – philosophical, scientific and artistic – for centuries. Only recently have scientists been able to use modern technologies to peer into Earth's past and begin to understand how life likely began on our own planet. These breakthroughs have changed our way of understanding habitability on other planets and have shaped the most recent missions to Mars. Our understanding of Earth's early life is derived from studies of modern organisms together with evidence in the geologic record of Earth's past environments. These data suggest that life's first organisms evolved in hydrothermal systems where oxygen was absent, pH was likely low, and volcanic gases provided metabolic energy - an environment considered harsh by human standards. Professor Rogers will describe modern hydrothermal environments that are analogs for early Earth and early Mars systems where life might have taken hold. The environmental parameters that could limit life are explored using extant microbial communities in modern deep-sea and terrestrial hydrothermal systems.

Professor Rogers received her PhD from Washington University in 2006 and held positions at Woods Hole Oceanographic Institution, the University of Missouri, and the Carnegie Institute for Science before arriving at RPI in August 2013. Dr. Rogers' research explores habitability in extreme environments, focusing on the temperature, pressure and energy availability limits of life and how these inform our understanding of the origin of life on Earth and our search for life elsewhere in the solar system.

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