

Partnership

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Letter from the Co-Chairs

- Debbie Scanlon and Suzanne Avtges, WHSTEP Co-Chairs

In Memoriam: Beth Schwarzman

We were saddened by the news of Beth Schwarzman's unexpected death in late August. Beth was one of the founders of WHSTEP and chair of the Partnership from 1996-97 and 1998-2002. An advocate and teacher of science education, she was also an author, naturalist and leader of many outings for The 300 Committee (Falmouth's Land Trust). In recent years Beth provided support and advice for WHSTEP, speaking at the 2009 general meeting about the geology of the Upper Cape, and leading a 2010 WHSTEP Science Safari in East Falmouth about exploring conservation lands near schools.

Pat Perry, WHSTEP board member and retired East Falmouth School teacher, remembers: "I started working with Beth early on when WHSTEP was first organized. Until I retired, she was a regular visitor to my fourth grade classroom, bringing her fascinating presentations on many subjects such as volcanoes, rocks, tectonic plates, and especially glaciers. She wanted to convey fairly complex scientific concepts to my students, stretching their minds as far as possible. With her clear and detailed explanations and wonderful imagery she helped them understand these ideas. I particularly remember two such explanations. To explain the growing and spreading of glacial ice, she compared it to piles of Jello and how they would begin to "smush" (her word!) and ooze out as they were weighted down. To explain the formation of kettle holes, she talked about how chocolate chips were held in a chocolate chip cookie, and if you took away the chips there would be a hole left.

Another longtime board member, Patti Parker, sums up Beth's contributions to WHSTEP: "Beth was with WHSTEP from the very beginning and was always an inspiration and a guiding light with her enthusiasm and wisdom."



Kama Thieler

Beth Schwarzman leads a walk through the Whelden conservation parcel in East Falmouth during a WHSTEP Science Safari in 2010.

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Beth was a friend and mentor to educators in Falmouth, Mashpee and Bourne. She was a fierce advocate for making science accessible in all our schools. She will be greatly missed.

A memorial service will be held on Sunday, October 7, 3pm at Falmouth Academy.

WHSTEP General Meeting:
MBL Bell Center for Regenerative Biology
- Debbie Scanlon

Students, teachers and scientists attended WHSTEP's general meeting on January 26 to hear Joel Smith of the MBL's Bell Center for Regenerative Biology. The Bell Center draws upon the special advantages of marine invertebrates and other organisms to define and understand the natural processes by which damaged or aging tissues and organs can regenerate or be repaired, and to apply that knowledge to the development of medical therapies.



Debbie Scanlon
Joel Smith (right) describes the research in the Bell Center as teacher Suzanne Avtges (2nd from right) and Mashpee High School AP Biology students look on.

Dr. Smith showed the group sea anemones, sea stars and other marine invertebrates that his lab uses in their research. The sea anemone, *Nematostella vectensis*, is a particularly suitable experimental animal and is easy to collect from the wild and keep in culture in the laboratory.

"The latest sequencing technologies, in combination with specific perturbations of gene function, allow us to build a preliminary gene regulatory network for the early development of the sea anemone. Eventually, scientists will be able to conclude which connections in the network changed in evolution. In this way, they will illuminate processes that



Debbie Scanlon
Brittle stars and other organisms were displayed during the meeting as examples of organisms with regenerative capabilities.



Courtesy Joel Smith
Sea anemone, *Nematostella vectensis*

happened more than half a billion years ago," Dr. Smith said.

WHSTEP would like to thank Dr. Smith and post-docs Antje Fischer and Sarah Tulin for welcoming our group and leading a tour of the lab's high-powered microscopes, cameras and cultures. For more information on the Bell Center's research: <http://www.mbl.edu/bell/>

Science Community Lends Support to Local Science Fairs

- Kama Thieler

Science Fair season is a busy time of year for teachers, students, and the local science community. Many local institutions contribute mentors, judges, prize donations, and exhibits to science fair efforts.

For 14 years, WHSTEP has organized a science project mentoring program at the Lawrence Junior High School in Falmouth. Members of the WHSTEP scientific community volunteer their time to meet with 7th and 8th grade students and help them design and refine their science projects. This year, mentoring took place in late January - early February.

WHSTEP thanks the following volunteers for taking their time to help the students at the Lawrence School: **J.C. Weber, Sam Kelsey, Lindsay Scott, Michele Bahr, Anne Thessen, Suzanne Thomas, Mary Anne Alliegro, Grant Harris and David Graham** (MBL); **Bill Waite, Kate Ackerman, Soupy Dalyander and Brian Buczkowski** (USGS), **Vicke Starczak and Porter Hoagland** (WHOI); **Nikohl Graham** (NOAA); **Dana Gerlach, Jim Newman and Alan Alai** (Falmouth VIPS); **Jeff Schell** (SEA); **Kama Thieler, Deb Coulombe and Lynn Parks** (WHSTEP).



Debbie Scanlon

Kathy Scanlon, USGS, talks with a student about her project at the Falmouth District Science Fair.

WHSTEP arranged for institution exhibits at the Falmouth District Science Fair on March 3. Woods Hole Oceanographic Institution; Sea Education Association presented materials about their high

school and undergraduate sailing research programs; Marine Biological Laboratory brought horseshoe crabs, sea urchins and other organisms from the Marine Resources Center; Waquoit Bay National Estuarine Research Reserve brought a hands-on exhibit of their research and education programs, USGS Coastal and Marine Science Center exhibited maps and 3D images. WHOI post-docs displayed the C-MORE science kits.



Debbie Scanlon

Bill Grossman and David Gallagher, MBL, show some of the organisms from the Marine Resources Center that were on display at the Falmouth Science Fair.

The Bourne Science Fair, sponsored by the PTA, was held on March 30 at Bourne Middle School. USGS, MBL, C-MORE and Project Micro exhibited at the Fair.



Debbie Scanlon

WHOI post-doc Monica Ruoco-Molina demonstrates hands-on microbial ecology activities with families at the Falmouth Science Fair.

WHSTEP Annual Meeting

-Debbie Scanlon

WHSTEP's annual meeting on May 24 at the Waquoit Bay Reserve boathouse featured Catherine Cramer, a science communicator who develops and disseminates online and media resources. Her talk, "Digging for Gold: Finding High-Quality Science Media Resources for the Classroom," was directed at teachers to help them find high quality science media resources.

From TED Talks to videos of science expeditions, Ms. Cramer introduced a collection of resources that educators can use with confidence. "They have the seal of approval by scientists, as far as these resources can be peer-reviewed," she said.



Debbie Scanlon

Catherine Cramer presents during the WHSTEP Annual Meeting at the Waquoit Bay Reserve.

Ms. Cramer is currently working with the Centers for Ocean Sciences Education Excellence (COSEE) and the New York Hall of Science, and is the co-organizer and host of TEDxWoodsHole. She lives in Woods Hole and New York City.

WHSTEP mini-grant recipient, Syrel Dawson a teacher at Mullen-Hall School, reported on her project "Monitoring and Recording Life on Shiverick's Pond." The fourth graders learned to "look carefully, be patient, question why and report accurately, all with a great sense of wonder." WHSTEP's mini-grant paid for the journals and field guides that the students used for the project.

"The students would thumb through the field guides, by choice," Ms. Dawson reported. She thanked WHSTEP, saying, "They have become lifelong learners."



Debbie Scanlon

LeeAnne Campbell and Syrel Dawson look at student field notebooks from the fourth grade pond study project at Mullen Hall School.

High-Quality Resources for the Classroom

COSEE (Centers for Ocean Science Education Excellence) <http://www.cosee.net/>

Scientists Making an Impact
http://www.cosee.net/engaging_scientists/

TED-Ed
<http://ed.ted.com/>

Ocean Literacy
<http://oceanliteracy.wp2.coexploration.org/>

Blue World TV
<http://www.blueworldtv.com/for-educators>

Khan Academy
<http://www.khanacademy.org/>

Ari Daniel Shapiro
<http://aridanielshapiro.wordpress.com/multimedia/>

Dragonfly TV Real Scientists
<http://pbskids.org/dragonflytv/scientists/scientist56.html>

WHSTEP Family Science Outing: Inside the *Alvin* Submersible

- Debbie Scanlon

Redfield Auditorium in Woods Hole was nearly filled for WHSTEP's Family Science Outing, "Inside the *Alvin* Submersible," on April 17. The vacation-week event featured talks by Bruce Strickrott, *Alvin* Expedition Leader and Chief Pilot, and Lara Gulmann, scientist with the WHOI biology department.

Alvin, first put into service in 1964, was named after WHOI scientist Allyn Vine. The sub is currently undergoing a major upgrade that will improve visibility for the pilot and researchers and will allow the sub to dive deeper. Among the *Alvin*'s many successful ventures was the exploration of the wreck of the *RMS Titanic* in 1986. April 15 marked the 100th anniversary of the sinking of the *Titanic*.

Mr. Strickrott has worked as a member of the *Alvin* Group since 1996 and has made 310 dives. He showed video he had taken in the sub traveling along the mid-ocean ridge axis in the Mid-Pacific rise near active hydrothermal vents that heat the water to temperatures of 350 degrees Celsius. By comparison, the average ocean water temperature there is 2 to 4 degrees C. Mr. Strickrott also told of diving in *Alvin* to collect data in the Gulf of Mexico after the BP oil spill, and of diving off the coast of San Diego to search for a World War II bomber plane.

"It's a blast," he said of his job. "It's never too late to have a happy childhood."

Lara Gulmann, scientist with the WHOI biology department, then told of her research on the biology of hydrothermal vents. Dr. Gulmann received her PhD

from the WHOI/MIT Joint Program and went on her first *Alvin* cruise in 1999. "I went on the *Alvin* as a grad student and was blown away," she said. She and her colleagues use *Alvin* to conduct experiments on microbial succession at depths of more than 1.5 miles below the surface in the Pacific Ocean at the East Pacific Rise. They study which microbes colonize newly exposed rock surfaces after vent eruptions, and how these populations change over time.



Tom Kleindinst, WHOI
Lara Gulmann, assisted by her son Ben, shows a model of a tube worm during her presentation at the *Alvin*-themed family science outing.

After the talks, students and their families visited the WHOI Exhibit Center where they sat in the life-size mock up of the *Alvin* personnel sphere, viewed the exhibits and operated radio-controlled submarines in an outside tank.



Tom Kleindinst, WHOI

WHSTEP Mini-Grant Program

-Kama Thieler

The mini-grant program provides small (up to \$500) grants to teachers in the member schools and their partners to develop projects that will improve or enhance science, technology, engineering and math education for their students. They are intended to create opportunities not ordinarily funded by the schools. During our recent funding round, the Mullen Hall Parent Partners Enrichment Team was awarded funds for a “Bird and Butterfly Garden” at the school.

Our next proposal deadline will be November 16. Visit the WHSTEP website for more information, and a copy of the grant application:

<http://www.whoi.edu/whstep/minigrants.html>

In the spring, WHSTEP received three contributions from local businesses in support of the mini-grant program for teachers. We are grateful to WAMIT, Integrated Statistics and Woods Hole Marine Systems for their support. If you are interested in becoming a “corporate sponsor” of the program, contact us at whstep-info@whoi.edu.



Kama Thieler

Children pilot a remote-controlled submarine outside of the WHOI Ocean Science Exhibit Center during the WHSTEP Family Science Outing in April.

Visit the WHSTEP website at:

<http://www.whoi.edu/whstep/>

For announcements about events related to science and math, subscribe to the WHSTEP listserver at:

<http://lists.mbl.edu/mailman/listinfo/whstep>

For all WHSTEP questions, send an e-mail to:

whstep-info@whoi.edu

The WOODS HOLE SCIENCE AND TECHNOLOGY EDUCATION PARTNERSHIP (WHSTEP), established in 1989, is a partnership of schools, scientific institutions, businesses, and community resources. Its purpose is to support, promote, and expand science, math, and technology education and science literacy in the participating communities.

How to get involved:

- ✓ Attend a Partnership meeting in January or May, or a Science and Math Safari
- ✓ Contact an Executive Committee member or a liaison with program ideas or feedback
- ✓ Host a teacher tour or class field trip in your lab
- ✓ Volunteer to present your research at a WHSTEP event
- ✓ Serve as a mentor for a student science fair project
- ✓ Make a financial contribution to support WHSTEP programs and grants for teachers

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