RU College of Science and Technology
Radford University

September 8, 2011

From the Dean's Desk

Call for Summer Bridge 2012 Proposals

The College of Science and Technology will host Summer Bridge Program 2012 from July 8– 13, 2012 for rising sophomore through senior high school girls interested in science, technology and mathematics.

Faculty interested in teaching a class for Summer Bridge 2012 are invited to submit a proposal to Ann Brown (abrown238@radford.edu) by October 10 detailing the course title, course description, budget for supplies, supply list, equipment requirements, classroom requirements, learning outcomes and the course's final academic product.

The faculty stipend for Summer Bridge is $3,500 per class. Faculty instructors are encouraged to choose an undergraduate student as a teaching assistant for his or her class. Teaching assistant stipends are $400 for the week.

Admissions Director James Pennix talked to the girls about the college application process and financial aid.

Summer Bridge 2012 will include eight classes, divided into four tracks of two classes. High school students will choose their desired curriculum track for the week.

Faculty proposals can be for a stand-alone class or for a cross-disciplinary collaboration between faculty members for two classes with a themed track suggestion.

Summer Bridge 2011 offered an environmental science track, a space exploration track and a forensic science track. Summer Bridge 2012 curriculum offerings will depend upon proposals submitted and selected for inclusion in the program.

For more information about proposal submission or the Summer Bridge Program contact Ann Brown at abrown238@radford.edu.

Above: Students learned about mathematics in space exploration.

Below (l-r): Students learned about forensic science in information technology and anthropology and archaeology classes.

Inside this issue:

Upcoming Events:

- CSAT STEM Club Meeting, Sept. 6 at 6 p.m. in Stuart Hall Lounge
- Alumni Panel Presentation, Sept. 30 at 3 p.m. in the Bonnie Auditorium
- CSAT STEM Club offers children's science activites during Highlanders Festival, Oct. 1 on Moffett Quad

CSAT Faculty Participate in Retreats Prior to Semester Start

The School of Environmental and Physical Science and the biology and math and statistics departments held retreats during the last several weeks of the summer.

Biology and math department faculty met at Selu Conservancy's Barn facility on Thursday, August 18 from 9 a.m. to 3:30 p.m.

The focus of the retreat was to improve the mathematical abilities of biology majors and ways of incorporating quantitative skills into the biology curriculum.

Biology chair Joel Hagen invited Andrew Kerkhoff to make a presentation during the morning session. Kerkhoff is an ecologist, who holds joint appointments in the Biology Department and Mathematics Department at Kenyon College. He teaches courses in statistics, mathematics for biologists, and a variety of biology courses.

The School of Environmental and Physical Science (SEPS) met at the Barn on Monday, August 22 from 9 a.m. to 3 p.m. to informally discuss school initiatives, research collaboration, and exchange ideas among disciplines.

SEPS interim director Bernd Kuennecke invited all faculty and staff in the school to participate in the discussions throughout the day which included a discussion about the possible development of a graduate program in environmental science education, modeled after the successful masters of science degree program in mathematics education.

Left: Mathematics and biology faculty meet to discuss ways to improve mathematical abilities of biology majors.

Below: School of Environmental and Physical Science faculty meet to discuss collaboration among its disciplines and future initiatives.

Grant Funds Research to Reduce Cigarette Litter on Campus

The Keep Virginia Beautiful organization awarded geospatial science faculty member Andrew Foy and his undergraduate research assistants a grant for $1,000 to analyze the spatial patterns of cigarette litter and to produce promotional material for a campaign to reduce cigarette litter on campus.

The purpose of this grant is to support sustainable prevention and a measurable reduction of cigarette litter within predetermined geographic boundaries established by Radford University.

Funding will support educational and outreach materials, cigarette litter receptacles, and portable ash trays for smokers.

Geospatial analysis and digital cartography methods will be used to map smoke-free areas, ashtrays and litter. The data and maps will be used to identify optimal locations for ashtrays to reduce litter. The results of the research will be presented on a poster at a public forum and will be included in a brochure.

New Equipment Offers Giant Opportunity in Microscopy

The Joel Neoscop scanning electron microscope (SEM) is the newest addition in the biology departments' research technology "quiver." Biology faculty member Jeremy Wojdak has already put it to work to image parasites that infect wildlife in our area as a part of his College of Science and Technology faculty summer research grant funded work this summer.

This new equipment provides high resolution images of surface features of biological and inorganic materials at very high magnification — which means researchers can now see structures that are 1/1000th of a millimeter. This is up to 20 times more powerful than an ordinary light microscope and provides better three dimensional image qualities.

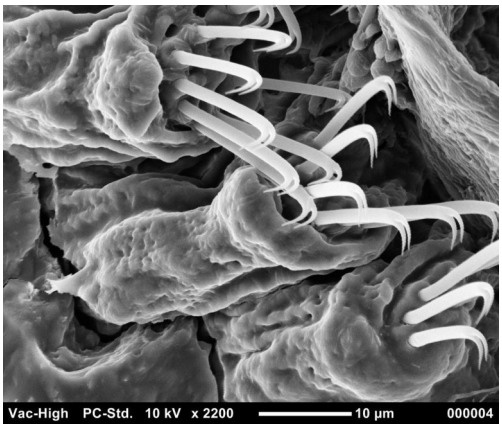
Metagonimoides oregonensis (Mo) cercariae, the free-swimming, infective stage that pursues salamanders as its next host

"We've learned that some of our parasites that look like balloons under a normal light microscope are actually covered with thousands of fine hairs, as if they were covered in shag carpeting," says Wojdak.

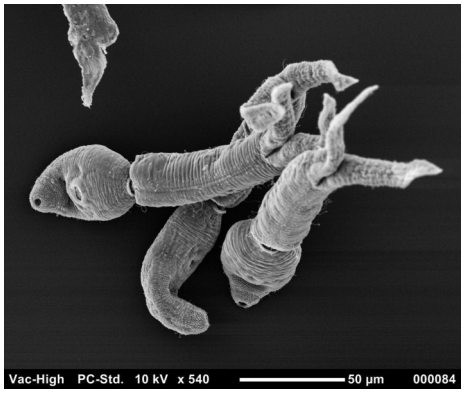
Wojdak says that the ability to see more detail adds an extra layer of excitement to his research.

"They are rather lovable. I've worked with these organisms for almost five years, and it is fascinating to really see them, at their scale of life, for the first time," he says. "SEM images very often dazzle scientists and non-scientists alike — it can reveal a world that is largely hidden from us," says Wojdak.

He plans to use the SEM in his parasitology course this fall. "Students will collect parasites that interest them and we will use the SEM to create detailed, high magnification images. Because preparing samples for SEM is difficult, and because the SEM instrument is very fragile and expensive, we will work in small groups with lots of supervision. However, the particular microscope we purchased is very user friendly once a specimen is in place, and can be operated with a computer mouse," he says.

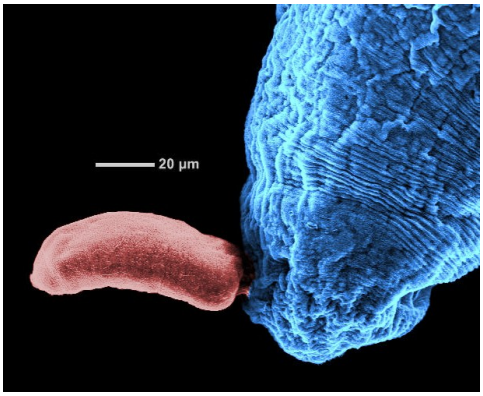


hook-like setae (bristles) from an annelid *Chaetogaster* limnaei, that commonly inhabits the mantle cavity of aquatic snails in our area



several cercariae, likely of an avian schistosome species, ready to find a bird definitive host

Wojdak says that using the SEM in courses is one way to get students excited about biology. "The pictures are just cool. It isn't every day that we can produce something in class that can make anybody on the street say 'Wow!'," adds Wojdak.



colorized image of a cercariae emerging through the birth pore of a redia

Geology Students Become Treasure Hunters

During the weekend of September 24, geology professor Steve Lenhart, geology majors and members of Radford University Geological Society will be traveling to Berea, Ky., to hunt for pieces of Earth's history.

They will traveling for close to five hours to Walnut Meadows Campground to camp and search for geodes and fossils. "In geology, you go where the rocks are," says Lenhart. "Any and all field experience enhances classroom instruction. Geology is not in the classroom, it's outside the classroom," he says.

The bi-annual trip offers students an opportunity to get to know each other and, according to Lenhart, "feel like geologists."

Geology professor Beth McClelland and students Jason Yonts and Marcus Jessee look for geodes and fossils during a previous trip to Kentucky for geology majors and RUGS members.

CSAT STEM Club News

The CSAT STEM Club will have its first meeting on Tuesday, September 6, 2011 at 6 p.m. in the Stuart Hall Lounge. Refreshments of cupcakes and pizza will be provided. We will also have an icebreaker and an overview of all the activities that the club has participated in during the previous years.

The officers met on Wednesday, August 31 in the Stuart Hall Lounge. The CSAT STEM Club will be continuing the point system that was started in spring 2011. The two members with the most points will receive first and second place prizes.

For this year's activities, we are planning visiting the Cascades waterfall in Giles County this fall, a game night, participation in the Highlander's Festival on October 1, and faculty guest speakers. We still have t-shirts available for sale for $13.

Dues for the year will be $10 and are due by Tuesday, September 27. We have decided to hold a variety of competitions and activities this year, such as an Airplane Launching Competition, a Jeopardy game, and possibly some outdoor games, like football, capture the flag, and more. So please come out and join us for a fun filled year!

Jasmine Jackson

Secretary of CSAT STEM Club

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Innovation Inspired

www.radford.edu/csat

Top left: CSAT STEM Club invited UVA information technology professor David Evans to speak to the club.

Top right: Who wants to be a member of the CSAT STEM Club?

Bottom left: Club president Erin Fowler mans the bake sale at the RU Science Exploration Day hosted by the club.

Bottom right: Physics professor Rhett Herman teaches electronics during the club sponsored RU Science Exploration Day.