

From the Dean's Desk



Gathering to share ideas and information about science is a time honored tradition that we explore throughout this edition of our newsletter. It is through these interactions that new passion blossoms and helps create the thinkers of tomorrow.

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College of Science and Technology Students Present Work at First-ever Summer Research Celebration

Radford University undergraduates who conducted research during the summer present their work at the first-ever Summer Research Celebration on Thursday, Oct. 24, from noon to 5 p.m. in the Hurlburt Student Center Auditorium.

The symposium featured work done during Summer 2013 class of Undergraduate Research Scholars in biology, chemistry, geology, mathematics, archaeology, business and education. The RU undergraduate researchers made nine symposium presentations and six poster presentations. The celebration was a showcase of the breadth of research possibilities available to RU undergraduates on and off campus, according to Joe Wirgau, associate professor of chemistry and director of the Office of Undergraduate Research and Scholarship.

"The research process and the projects can transform the students, and their research, in time, can transform our communities locally and society itself," said Wirgau. The symposium featured projects done on the local, national and international levels into a variety of topics like medical research, theoretical mathematics, Civil War archaeology and investment risk and protection among others.

The program included the following presentations:

"Mutagenic analysis of the active site of bacterial beta-glucuronidase" - Skye Hickling

*"Impacts of daily corticosterone administration on nestling eastern bluebirds (*Sialia sialis*) fledging and parental behavior and corticosterone"* - Fiona Surette

"Geophysical and archaeological investigations of Civil War sites near Radford" - Sarah Montgomery

"Examining the reproductive and immunological underpinnings of invasive species expansion in the Kenyan house sparrow" - Laken Cooper

"An expository proof of Bezout's Theorem" - James Grenier

"Investigating an ancient volcanic terrain through field mapping and geochemistry of conglomerate clasts" - Melissa Brett

"A tree-ring analysis of Eastern Hemlock in New England" - Will Dowd

"Semi-variance decomposition, downside systematic risk, investor protection, and the global financial crisis" - Trang Nguyen

*"In vitro cultivation of the parasitic flatworm *Echinostoma trivolvis*"* - Daniel Metz

A poster session allowing for more interaction between the researchers and their fellow students included:

"Examining the reproductive and immunological underpinnings of invasive species expansion in the Kenyan house sparrow" - Laken Cooper

"Developing curriculum materials for Vocabulary intervention" -Jarrod Hobson

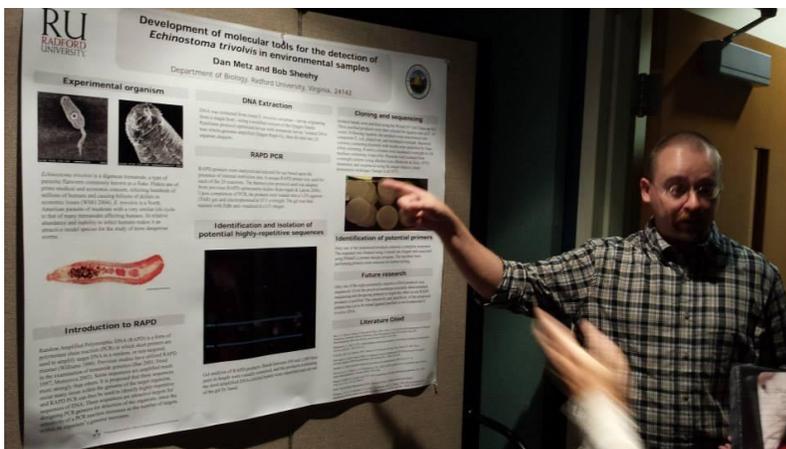
"The utility of pokeweed antiviral protein against mosquito-borne viruses" - Jessica Irvin

"Design, synthesis and screening of cyclic sulfonimidamides for the potential use as antiepileptic drugs" - Brandon Johnson

"Development of molecular tools for the detection of *Echinostoma trivolvis* in environmental samples" - Daniel Metz

"Effects of royal jelly-derived hormones on growth and development of a Holometabolous insect, *Manduca sexta*" - Stephanie Nicholas

"Impacts of daily corticosterone administration on nestling Eastern Bluebirds (*Sialia sialis*) fledging and parental behavior and corticosterone" - Fionna Surette



Dan Metz passionately explaining his work with Drs. Sheehy and Wojdak on detecting *Echinostoma trivolvis*

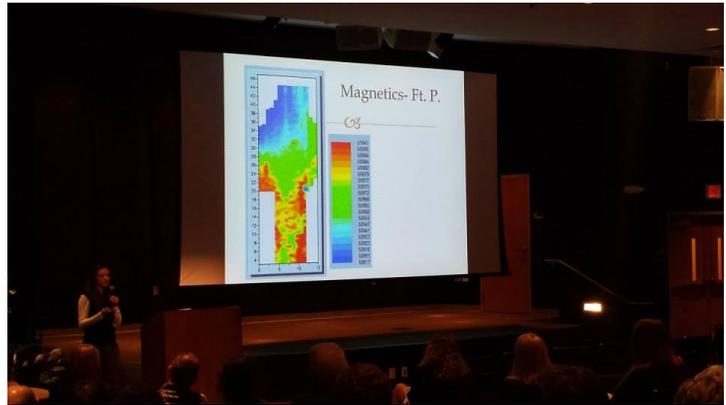
Laken Cooper talking about the house sparrow expansion into Kenya as part of her work with Dr. O'Brien



Students continued the conversation following presentations as is evidenced by the crowd listening to Laken Cooper's share her international experiences.

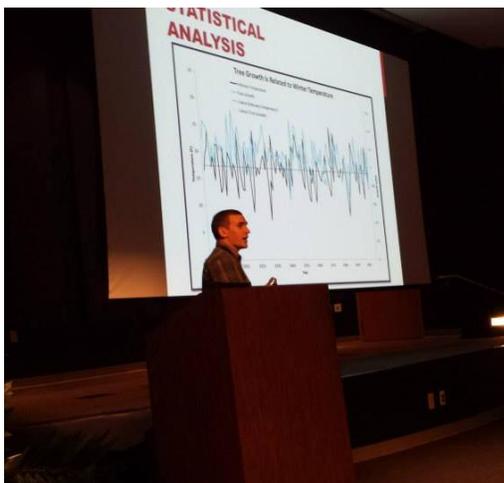
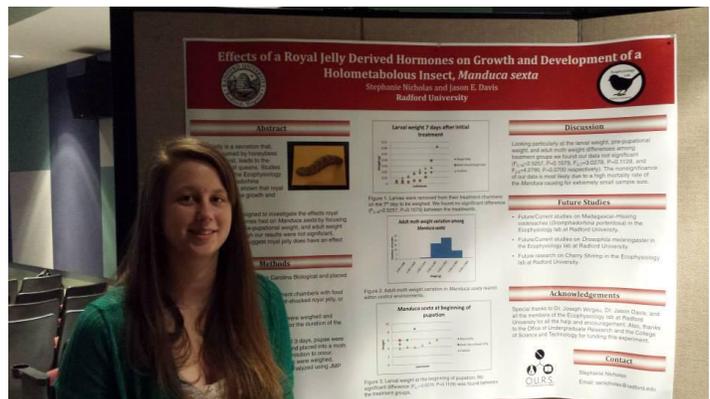


Sarah Montgomery showing magnetic readings from buried local civil war forts as part of a project with Drs. Herman, Whisonant, Boyd and Paki Stephenson



Skye Hickling discussing her work with Dr. Lane on modifying the active site of beta-glucuronidase

Stephanie Nicholas in front of her poster with Dr. Davis on what happens when you feed royal jelly to *Manduca sexta*



Will Dowd presenting his work with Dr. Maxwell correlating hemlock tree ring size with weather patterns in New England.

The symposium series I speakers, Laken Cooper, Skye Hickling, James Grenier, Sarah Montgomery, and Fionna Surette



Sarah Montgomery and Dr. Rhett Herman in Physics start excavating a local Civil War fort as part of a collaborative project with Dr. Boyd and Dr. Whisonant in Anthropological Sciences and Geology, respectfully!

Pictures and information regarding the Summer Research Celebration courtesy of the RU Office of Undergraduate Research.

Radford University serves as a Mid-Atlantic Regional Site for the ACM Programming competition

On Saturday, November 2, students from across the Commonwealth and neighboring states met in Radford to test their problem-solving and computer programming skills during the 2013 ACM Programming Competition. One hundred participants on thirty-three teams from more than a dozen institutions spent six hours analyzing the issues with which they were presented and coming up with solutions. As a problem was solved, the team would receive a balloon indicating their progress. Competition was fierce during the event and a trip to the World-Finals competition in Yekaterinburg, Russia was on the line. Teams from RU did well, solving several of the problems but fell just a little short as the eventual winners were “Team Foo” from the University of Virginia solving six problems during the afternoon.

Radford University Department of Information technology faculty were instrumental to the success of the event. Dr. Maung Htay served as Regional Contest Director with support from Regional Site Director Dr. Hwajung Lee, Dr. Hui Wang as the Associate Site Director and Dr. Andrew Ray as the Regional System Administrator. Due to the efforts of these faculty members, RU has served as a site host for several years and has been able to bring the outstanding programming experience to RU students as early as their freshman year. Several student participants commented that the event helped them to have a greater appreciation for the challenge of programming to solve problems and inspired them to further pursue their field through future competitions.

Eric Woods, a member of IBM’s Team Watson Big Data Project, was on hand to help inspire the participants as to the importance of their work and to let them know that he is always looking for potential new team members. “90% of the world’s data has been created in the last two years and 80% of that is unstructured” stated Eric. He emphasized that part of his role is to use problems similar to the ones that were being explored during the competition as a basis for creating programs to help process this data and make it useful.

Dt. Htay fired up the crowd prior to the beginning of the competition by stressing the global importance of their efforts and the desire for programmers in America to recapture the title of “the best in the world.”



Balloons indicate progress with problems and solutions.

Team effort was essential to come up with an effective program.



While competition was close, “Team Foo” from the University of Virginia was victorious and will be representing the region in Russia at the world finals next spring.

Second place team – “Team \b” from Virginia Tech.

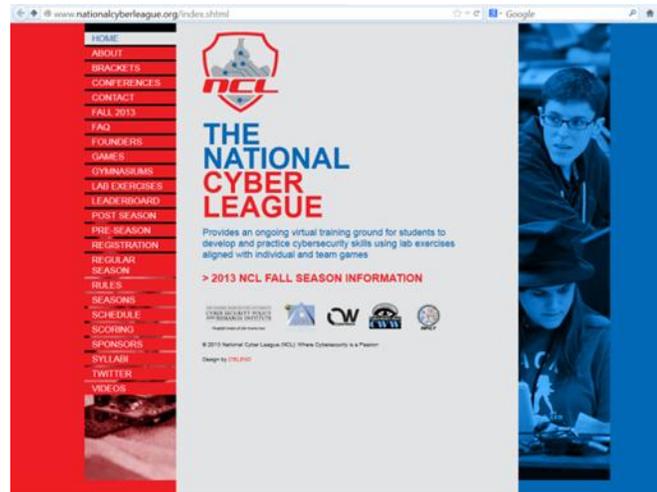


Radford University students receive impressive ranking from the National Cyber League fall competition

Two Radford University students recently placed nationally in the National Cyber League Competition. Eric Bartocci placed 52nd nationally and 17th in the eastern conference. Lloyd Jones placed 22nd Nationally and 21st in the eastern conference. Out of hundreds of students nationwide, this is a great accomplishment!

National Cyber League (NCL)

The National Cyber League (NCL) was founded in May 2011 to provide an ongoing virtual training ground for collegiate students to develop, practice, and validate their cybersecurity skills. Using lab exercises designed around industry-recognized performance-based exam objectives and aligned with individual and team games, the NCL is a first-of-its-kind ongoing experiment in learning and gaming using next-generation high-fidelity simulation environments.



Learn more about the NCL at www.nationacyberleague.org. If interested in validating information in this report, explore the Fall 2013 Season at www.nationalcyberleague.org/seasons.shtml or inquire at info@nationacyberleague.org.

NCL Fall 2013 Season

The NCL Fall season was designed to develop and validate player knowledge and skills in preparation for further learning, career readiness, industry certifications, and other cybersecurity competitions. Hosted lab exercises in the NCL Cyber Gymnasiums were made available to all players and coaches and aligned to the Regular season games. Both were designed around performance-based exam objectives of the CompTIA Security+ and EC-Council Certified Ethical Hacker (CEH) certifications.

The Fall 2013 Season included a week-long, pre-season, pre-competition practice game to assess and place players in one of three competition brackets: gold (advanced with challenges beyond Security+ and CEH), silver (advanced Security+ and CEH) or bronze (strictly related to content in Security+ and CEH practice labs). That made the regular season more fun and engaging by grouping players with similar knowledge and skill levels and providing them with appropriate challenges. At the beginning of the season, 945 students with 172 faculty coaches from 120 two- and four-year colleges and universities in 30 U.S. states registered to play. Competitions were further divided into three conferences: Western (366 players), Midwestern (160) and Eastern (419 players).

Interactive documentary screened on campus

The challenges of small-town America were epitomized by the story of McDowell County West Virginia in the interactive documentary “Hollow” which was screened for the RU Community on Friday, November 1 in the Bonnie Hurlburt Hall Auditorium. The program, co-hosted by the Scholar-Citizen Initiative and Dr. Stockton Maxwell from the Department of Geospatial Sciences, was an opportunity to hear about the film and the process behind its creation from “Hollow” director, Elaine McMillion and Associate Producer Tricia Fulks and to engage in a discussion of how the media has portrayed this region.

“Much of what we see in popular media stereotypes and marginalizes Appalachia as the “other” part of the United States” stated Dr. Maxwell. “A place that we can’t identify with but rely upon for its wealth of natural resources. By not identifying with the people of Appalachia, it makes it easier for the rest of the United States to subjugate the population into poverty and poor living condition for the benefit of cheap fossil fuels.”



From the screening of the interactive documentary "Hollow". Associate Producer Tricia Fulks, RU Assistant Professor of Geospatial Science Dr. Stockton Maxwell, and Director/Producer Elaine McMillion

Ms. McMillion stated “It was important to let the residents tell the stories that they believed represented them. Some of the people we approached were a little hesitant due to their poor past treatment by media, but once they saw what we were doing, they warmed to the idea and embraced it as a way to preserve their story.”

Many elements of the community were explored through the stories of the residents, both living and deceased. To add to the unique experience, the production team created some unlockable components that would become available to audiences once they had viewed a particular story. “The ‘gameification’ of the documentary really lets you into their world through pictures, music, videos and more” stated Ms. McMillion. “We felt this was an important element to engage audiences, particularly people of college age and younger as the story is important to share with their generation.”

Dr. Maxwell added “It was important to bring Hollow to Radford to help students, faculty, and community members better understand life in Appalachia through the voices and images of the people that call the “holler” home. Yes, Appalachia is poor, unhealthy, and suffering by many other statistics. But there is hope for change in Appalachia and some people that take pride in calling the “holler” home. The change might not come easily but we can’t continue to ignore such a culturally rich part of the US.”

While a unique viewing experience in its own right, “Hollow” as an experiment has great value to geospatial sciences. “The documentary is of particular interest to the study of geospatial science and geography” states Dr. Maxwell. “As a geospatial scientist, I study environmental change on larger spatial scales. But all environmental changes have a local effect. This effect is not just on the vegetation, water, and animals, but also on the people that depend on the natural environment for the services it provides. In Hollow, the people were largely dependent on coal mining. In recent decades, mining has shifted to the technique of mountain top removal creating a host of environmental problems throughout Appalachia. As a geospatial scientist, I could study the relation humans have with their environment to better understand where, why, and how these changes are occurring, and how we might move forward as a society to manage the Appalachian environment. Of course, environmental planning must benefit people and the places we seek to protect. By understanding how the people of Appalachia view their home, we can develop solutions to change Appalachia for the better.”

One of the goals of the program was summed up by Associate Producer Tricia Fulks when she mentioned that she hopes audiences will ask themselves “What is home to me?” “This story doesn’t have an end” says Ms. Fulks “and its evolving user interaction gets people involved as active participants who can effect change.”

While the stories of thirty residents were recorded as a part of the film-making process, thousands have continued to embrace the project and have found their hometown problems represented in scenes of McDowell County. One of the subjects who shared his story, Josh, a budding filmmaker, summed up his thoughts by saying “you can talk about (our issues) and it will never solve them. We have the people here to solve these problems.” He is presently attending West Virginia University studying creative arts and plans to return to McDowell County to help in any way he can.

You can experience the documentary at www.hollowdocumentary.com



Magic of Chemistry Halloween Show



While Radford University offers many outstanding outreach programs over the course of the year, Halloween week brought a little something extra to the mix. On all Hallows Eve – Eve – October 30, Dr. Francis Webster presented a special edition of the Magic of Chemistry show in McGuffey Auditorium. The Magic of Chemistry "road show" started in 2003 and almost has been presented nearly 250 times for thousands of delighted guests at Radford and in many other venues throughout the region.

Dr. Webster told the audience that “the Halloween show would have just a little more drama and mystery about it, but that it was a grand tradition within the world of chemistry for people to come together to do interesting chemistry.”

From dancing flames to exploding “cannons” the show had a lot of impressive displays that were followed by Dr. Webster explaining the science behind each experiment. RU students served as assistants, or “minions,” throughout the program helping Dr. Webster delight the crowd of over 150 students, faculty, staff and community members.



Halloween Edition of Science Days

“Magic” continued on Thursday as a Halloween edition of the Science Days program helped engage a group of students from Dublin, VA. The Science days program has served the region as an important part of STEM education for schools for many years and is the work of a number of dedicated faculty. On this particular “science day,” Dr. Kim Lane from the RU Department of Chemistry had a special story



prepared that helped to add an appropriate holiday theme to the experiments presented. As she shared her chemistry presentation, the story of a visit to a haunted house with a witch at the door unfolded with several “ghastly” displays. The program concluded with a flaming Jack O’ Lantern carved with features that resembled a chemist’s equipment. His blue flame hair and green inner light were provided by a mixture of chemical compounds that provided just the right atmosphere.



RU Faculty bring STEM programming to girls in Southwest Virginia and Northeast Tennessee

A group of RU CSAT faculty participated in a STEM conference for 6th grade girls at the Abingdon Higher Education Center on Friday, November 1. Anthony Dove, Brenda Hastings, Ian Barland, Jean Mistele Donna and Charles Boyd, and Neil Sigmon helped to engage the budding scientists to be in many different STEM activities. The event, which has been supported by RU faculty for several years, was well covered in the local Tri-Cities media.

To learn more, please visit: <http://www.wcyb.com/news/future-female-scientists-attend-conference/-/14590844/22770082/-/1kk4kg/-/index.html>



New members of Iota Sigma Pi



As a part of the National Chemistry Week celebration at RU, Dr. Chris Hermann and Dr. Kim Lane welcomed three RU Students as new members to Iota Sigma Pi, the National Honor Society for Women in Chemistry. Pictured are: Dr. Hermann, Sheryl Manning, Amanda Pendergrass, Stephanie Stanley and Dr. Lane. Congratulations ladies!

Campus Visits

On Monday, November 4, Dave Zook, Founder and CEO for Horizontech, Inc spoke with IT and College of Business and Economics students about what he looks for in new employees within the technology industry. "The 'soft skills' are almost as important as your 'hard skills' for a small company like ours" stated Mr. Zook. He was referring to the "soft skills" of client management and customer relations being on a level of significance to the "hard skills" of coding and troubleshooting. "We have to do a little of everything, but I think it can actually help you to become a better programmer because of the experience."

Jared Johnson, a spring 2013 RU graduate, was also on hand to speak as a new employee of Horizontech, having been on the job since commencement. "I do a lot of things I never thought I would

have a chance to do so quickly” he states. “Learning how to teach yourself new things is essential once you enter the working world” Jared added “and my Radford University experiences helped me prepare to do just that.”

On Wednesday, November 6, Brian Lanham from Lotic Factor also visited the ITEC professionalism class to talk about ethics and effective communication for small businesses. During his presentation, Mr. Lanham emphasized the importance of admitting mistakes and discussed the appropriate way to go about it, pushing back by managing clients expectations and the team relationship and even “Firing the Client.”



Upcoming events:

Friday, November 8 – Special presentation by Toni Sauncy, the national director for SPS (Society of Physics Students) & Sigma Pi Sigma (the Physics Honor Society)
5:00 PM – Reed Hall room 201

TITLE: Building Communities and Shaping Culture: the impact of SPS on the two big R’s.

There are two “Big R’s” that capture the attention of leadership in nearly any physics department: Recruitment and Retention. In many departments, thriving Society of Physics Students chapters take ownership of a slew of activities, programs and events that have big impact on both attracting students to study physics and keeping students in the program through graduation. Because SPS is a national organization, students in local chapters are in a network of thousands of other students around the globe, yet each successful chapter is uniquely tuned to the needs of the campus. Based on studies that clearly indicate the influence of community building on those “two Big R’s”, there are many examples of how national initiatives have been transformed into local action that benefit students and programs. An overview of the wide variety of SPS programs aimed at support of the full undergraduate physics experience, from research to finding a career, along with ideas, challenges and inspiration will be presented.

Presented by the Society of Physics Students and Sigma Pi Sigma

<http://www.spsnational.org/about/office>

Tuesday, November 12 - Public Lecture – 7:00 p.m. Hurlburt Hall Auditorium - Dr. Chuck Bailey from the College of William and Mary will discuss “**Earthquakes in Virginia.**” Presented by the Museum of the Earth Sciences.