Learn as you lunch

Biology professor Steven Clark

Clark College is inviting the public to come back to school for a series of free seminars that explore the lighter side of Science, Technology, Engineering and Math (STEM). New this academic year, the Clark College STEM Seminar Series launches on Friday, October 16, at noon in Anna Pechanec Hall room 201 with “Rockin’ Out with Rock Rabbits.”

This seminar covers research done by biology professor Steven Clark on pika, tiny rabbit-like creatures who normally live in high elevations. Prof. Clark will discuss what he’s discovered about an unusual population of these creatures living in the Columbia River Gorge whose survival may hold keys to understanding how our environment can adapt to global climate change. Expect Prof. Clark, who recently received an Exceptional Faculty Award, to share photos and insights in an exciting, high-energy presentation geared toward anyone with an interest in science—no Ph.D. required!

Other fall quarter events in this series include:

- **The Science Behind Sci-Fi** with Prof. Joe Pitkin, Oct. 30
- **Handicapping Horse Races** with instructor Robert Weston, Nov. 13
- **Breaking the Cycle of Abuse** with Prof. Mika Maruyama,

Dec. 4

All events are held on Fridays from noon to 1 p.m. in APH room 201. All are free and open to the public. Light snacks will be available and guests are welcome to bring their own lunches with them.

“Clark College has long been a center for STEM learning in this region,” said Clark College STEM Coordinator Erin Harwood, who helped organize the seminar series. “We already do lots of outreach to encourage interest in STEM among our community’s young people through our annual Science Olympiad and other events. This is a way to show adults as well that learning about STEM can be lots of fun. We’re hoping people start looking forward to these seminars as a great way to spend their Friday lunch break learning something new.”

Clark College is located at 1933 Fort Vancouver Way, Vancouver. Driving directions and parking maps are available at www.clark.edu/maps. Anyone needing accommodation due to a disability in order to fully participate in this event should contact Clark College’s Disability Support Services Office at (360) 992-2314 or (360) 991-0901 (VP), or visit Penguin Union Building room 013, as soon as possible.

Exceptional Faculty Award spotlight: The naturalist

Biology professor Steven Clark in his office.

Steven Clark's office is full of animals. There's the "Cats Against the Bomb" calendar; the poster of the grizzly bear; the woodblock print of a turtle; the vintage Audubon Society birdwatching chart; photos of bees, rodents, spiders, his dogs. The effect is something like walking into a natural history museum that's been shoved into a filing cabinet.

"This room is reflective of my interests," says Clark, glancing over at an illustration of wildflowers above his desk. And, indeed, a conversation with Clark is likely to take you through the intricacies of parasitic wasps, the difficulties involved in attaching radio monitors to pond turtles, and a startlingly accurate imitation of a pika—a small, rabbit-like creature whose populations in the Columbia Gorge Clark has been helping to monitor for years.

It's hard not to look around this room and assume that Clark was destined to be a biology professor. But Clark, who received his Master of Special Education for the Hearing

Impaired from Lewis & Clark College in 1986, began his career teaching almost everything *but* biology at the Washington School for the Deaf.

“I was attracted to the idea of teaching an underserved population,” he says. Eventually, however, Clark found himself drawn to the sciences, and in 2000 he left the School for the Deaf to pursue a master’s degree in Environmental Sciences and Resources at Portland State University. For four years, he worked as a field biologist for the Washington Department of Fish and Wildlife while also teaching mathematics and biology at Clark as an adjunct instructor.

For Clark, teaching at a community college still fulfills that urge to help underserved populations. “There are great teachers at all colleges, I know that, but I think the mission of the community college—to teach the rank and file of our community—I like that,” he says. “My mother never got to go to college. But I used to think that if my mom *had* gone to college, she would have gone to a community college.”

Professor Clark at a STEM demonstration in 2015.

Clark, who received tenure in 2014, currently teaches the biology sequence for life sciences majors, a three-quarter series that has earned a reputation as a daunting academic challenge.

“It’s funny, because I think of myself as a warm person, but I

know my class is often perceived as … rigorous," Clark says, smiling and pausing as he searches for the right word. "I think some students get nervous at first when I explain the work load. But the reason I talk about it from the very beginning is that I want them to understand what they're getting into. I invite students from the past year to talk about what worked in getting them to be successful. I'll tell students to show me their notes so I can see where they're missing something. And you know, I think by the middle of winter quarter, their [study] habits have gotten better and they're starting to have fun."

Clark's theory is backed up by the many students who nominated him for a 2014-2015 Exceptional Faculty Award. "Biology may very well be the study of life, but without an enthusiastic instructor it can seem completely lifeless," reads one nomination. "Steven Clark has somehow managed to maintain a strict and efficient authority over his classroom, while also making it incredibly fun and intriguing. I can honestly say that I have never seen those two concepts, authority and fun, incorporated into a class so well together. … He truly cares for his students, that is abundantly apparent."

For Clark, his classes' rigor is one of the ways he shows that he cares. "I like my students to know that they did all their hard stuff at community college, where the focus is on teaching and the tuition is lower and there's more room to recover from mistakes," he says. "The best thing for me is when former students email me and say, 'I'm at Washington State University right now, and me and the other Clark students are in the top tier.'"

Learn about other recipients of the 2014-2015 Exceptional Faculty Awards.

Photos: Clark College/Jenny Shadley

Small World Could Bring Big Rewards

When antibiotics were first introduced in the 1930s, they seemed almost magical in their ability to save people from previously fatal infections. But recently, the medical community has warned that bacteria are evolving to resist the current drugs available, creating an urgent need for new antibiotics. Now Clark College has joined with Yale University to become part of a program searching for new antibiotics—and getting students interested in science, technology, engineering and mathematics (STEM) at the same time.

Called the Small World Initiative, the project is funded and organized by the Yale Center for Scientific Teaching. Clark is

offering the Small World Antibiotics Research classes (BIO 105 & BIO 106) in the winter quarter of 2019, and another session of BIO 105 in the spring quarter.

“Clark College was one of only four community colleges in the country to be picked to start this pilot program,” says Dr. Ryan Kustusch, a Clark biology instructor who teaches the Small World class. “That makes Clark not just different from other community colleges, but different from other four-year colleges, other universities. This is a very different learning experience that a lot of students in this country just don’t get.”

Biology instructor Dr. Ryan Kustusch, *standing*, helps students in the Small World Initiative class.

In Small World, students learn microbiology by doing hands-on research—in this case, collecting soil samples to test them for potential new antibiotics. Approximately 75 percent of the antibiotics currently in use are derived from microorganisms living in the soil. After students gather their soil samples, they bring them back to the classroom, where they learn to grow the organisms living within those samples in various media in petri dishes until they have enough to test. Students

then purify those organisms in order to test them against four sample bacteria that are commonly used to test antibiotic-effectiveness by pharmaceutical companies, in the hopes of finding organisms that can kill them.

“It’s really student-driven,” Kustusch explains. “I give them supplies; I tell them what may work, what might not work; and then they experiment. It really is a truly hands-on, authentic research experience.”

Any promising microorganisms are sent to Yale for DNA testing to see if they already are known to medical science; if they aren’t, these microorganisms could become the source of medicine’s next broad-spectrum antibiotic. During the class’s inaugural run at Clark during the 2014 spring quarter, two students found an organism that killed all four pathogens, and while it turned out that the microorganism had already been discovered and studied by other scientists, the possibility of discovering something that could one day save people’s lives helps keep students motivated and enthusiastic.

“I told everyone I could about that class,” says pre-nursing student Dawn Smith, who enrolled in Small World after seeing a poster advertising it near Registration. “It would be so awesome to be involved in something like finding a new antibiotic. Just the idea of that is incredible.”

It’s also crucial, given that more and more infections have grown resistant to currently used antibiotics. According to the Centers for Disease Control, each year at least 2 million people in the U.S. become infected with antibiotic-resistant bacteria; at least 23,000 of them die due to those infections. Yet pharmaceutical companies have been reluctant to research and develop new antibiotics because the drugs are rarely profitable—patients only take them in emergencies, and only for a week or two at a time.

“We simply do not have enough drugs to treat our current infections,” says Kustusch. “We’re going back to the 1800s, when you treated infection by amputation—which is a terrible vision for our future. Someone has to do the initial legwork to find these drugs. We’ll never be the people doing the clinical testing and human trials and all that, but no one else is doing this basic legwork.”

“In this class, money was stripped out of the equation,” says Smith. “All we had was the big question mark hanging over our heads—our curiosity. We didn’t have to worry about profit.”

Kustusch says that combination of hands-on learning and potential real-life rewards makes Small World the perfect way to get more students interested in science. BIO 105 has no prerequisites, meaning non-science majors can take it to complete their science requirements for their degree. If a student is interested in the second Small World course, BIO 106, but has not completed the prerequisite of BIO 105, they

may contact microbiology professor Dr. Roberto Anitori for a waiver (ranitori@clark.edu).

“I had a couple students who had taken a couple classes in biology, and they said this solidified that they really want to go down this path,” says Kustusch. “But the majority of the students in this class weren’t interested in science—or thought they weren’t. Now I have two students talking to me about, ‘How do I pursue a B.S. in biology?’ I think that was the goal of this class: For the people who really like science, let’s keep them interested. And for the people who never thought of this as a potential option, they’re now excited and thinking, ‘Maybe I can do something in a STEM field.’ And that’s fantastic.”

Photos: Clark College/Jenny Shadley

Rockets, Eggs, and Safety Goggles

Students compete in the Rocket Boat Rally during the 2014 Elementary Science Olympiad.

Normally, you wouldn't encourage kids to drop eggs on your floor. But this Saturday, all the rules got bent (or possibly refracted) at Clark College's seventh annual Elementary Science Olympiad, where third-through-fifth graders tested the limits of physics with egg drops and challenged their engineering skills with rockets powered by vinegar and baking soda.


Students from Eisenhower

Elementary celebrate an unbroken egg after dropping it from the balcony of PUB 161.

Twenty-four teams from 22 different schools in 10 different districts (including one team each from Cowlitz and Pacific counties) participated in this year's olympiad, making for a total of 328 elementary students participating—Clark's largest-ever attendance for the event.

"Interest level this year was amazing and meant we had to work just to squeeze all the teams in," says Clark STEM Coordinator and biology instructor Erin Harwood, who coordinates the event. "We couldn't say no when there was so much enthusiasm!"

The event's size meant the need for even more support from the college community—which, as in years past, stepped in to volunteer. In all, 67 members of the Clark community—including students, faculty, staff, and even a dean—spent their Saturday morning helping young scientists compete in five different event categories. "Four out of five events were new this year, making for an exciting and challenging year," says Harwood.

Engineering instructor Carol Hsu gets participants excited at the 2014 Elementary Science Olympiad.

This year, Chief Umtuch Middle School (Battle Ground) and CAM Academy (Battle Ground) vied for top honors in each competition (see PDF for full list). But as pictures from the fun-filled event show, when young people gather to celebrate science, everyone's a winner.

Pictures: Clark College/Jenny Shadley. See more pictures in Clark's Flickr album.

STEM groundbreaking draws a happy crowd

Clark student Audreyana Foster; Dena Horton, representing U.S. Sen. Maria Cantwell; Vancouver Mayor Tim Leavitt; Clark County Commissioner Edward Barnes; Lisa Gibert, president/CEO of Clark College Foundation; and Clark President Bob Knight shovel the ceremonial dirt at the STEM building groundbreaking.

A burst of rain accompanied Clark's Pep Band as they played Pharrell Williams' "Happy" before a crowd of about 60 people on Tuesday afternoon during Clark College's official groundbreaking of its science, technology, engineering and mathematics (STEM) building.

In speaking about why STEM education is critical to the region, Clark College President Bob Knight was joined by Vancouver Mayor Tim Leavitt; Dena Horton, representing U.S. Sen. Maria Cantwell; and Clark student Audreyana Foster.

"When completed, this project will continue to help us do what we have done for over 80 years: train and educate those who

will lead Vancouver and the region forward," said Knight during the September 30 event. "At more than 70,000 square feet, the facility will be the largest single classroom building on campus. The final investment in Clark will exceed $41 million, between state funds and those provided by Clark College Foundation for equipment."

Leavitt spoke about the economic advantages of having citizens trained for highly skilled and family-wage jobs such as in the STEM field. Cantwell's message outlined the state's commitment to education and jobs growth and her excitement about watching the building evolve over the next 20 months of construction.

Foster, a mechanical engineering student who began her studies at Clark when she was a teenager through Clark's Running Start program, said the college's faculty have opened up a new world for her.

Clark College's pep band played through the rain during the STEM Building groundbreaking.

"I have learned how things function in the world outside of the classroom," she said. "And though not all of the lessons have been enjoyable, Clark College's STEM program has provided me a safe learning environment that has helped me to learn in spite of my mistakes."

Knight, Leavitt, Horton, and Foster were then joined by Clark College Foundation President/CEO Lisa Gibert and Clark County Commissioner Edward Barnes to shovel the ceremonial dirt of the groundbreaking. The sun shone through the cloud breaks, and cheers erupted from the crowd. Knight thanked the guests for their continued belief in Clark College and for all that they do to enrich the Southwest Washington community.

Construction is underway at the Fort Vancouver Way site and is expected to be completed in February 2016. Currently, the building is slated to open by the summer of 2016, according to college officials.

A version of this article originally appeared on the Clark College Foundation website.

Icy Adventures in Microbiology

Photo courtesy of Dr. Roberto Anitori

From one-celled organisms to imaginary elephants, we have much to learn from the non-human life forms around us. That is the theme of this year's season of Clark College's Faculty Speaker Series, "Microbes, Pets, and Puppets: What Animals Can Teach Us."

The series begins on October 30 at 4 p.m., when biology professor Dr. Roberto Anitori presents "Microbial Heroics in Antarctica" in the Ellis Dunn Community Room (Gaiser Hall room 213) on Clark College's main campus.

This presentation is a fascinating exploration of some rarely seen "extremophiles," microbes that have adapted to survive in places where most living things could not—in this case, the remote and lightless ice caves in an Antarctic volcano. Part travelogue, part scientific presentation, Dr. Anitori invites guests to voyage with him on his 2010 research expedition to

Mt. Erebus, the second-highest volcano in Antarctica. Through photos and stories, he will share his experiences training to survive in sub-zero temperatures, as well as his initial findings about the microbes living inside Mt. Erebus's caves—which could have implications for life in even more difficult-to-research regions, like the deep sea, areas far below the earth's crust, or even other planets.

"We think these ice caves are models for environments without light," says Dr. Anitori. "Most life on earth depends on sunlight."

Instead, these microbes survive on nutrients within the very rock itself—for example, digesting manganese and iron the way other organisms digest biological material. This discovery could, in turn, provide valuable insights into a little-understood aspect of Earth's ecology.

"Most people, when they think about microbes, they think about things that make you sick—or make yogurt or beer," says Dr. Anitori. "But 95 percent of the microbes on this planet don't have anything to do with those things."

This presentation is free and open to the public. Individuals who need accommodation due to a disability in order to fully participate in this event may contact Clark's Disability Support Services Office at 360-992-2314 or 360-991-0901 (video phone) or email dss@clark.edu within one week of the event.

Future Faculty Speaker Series presentations include "Why Do We Need a Pet? Effects of animals on children's socio-emotional development" and "Bilingual Puppetry: a Project-Based Learning Exploration."

About Dr. Roberto Anitori

Dr. Roberto Anitori

Dr. Roberto Anitori has spent many years studying extremophiles and other microbes. After earning both his bachelor’s and doctoral degrees in Molecular Biology and Microbiology from the University of New South Wales in Sydney, Australia, he worked in research labs at Macquarie University in Sydney and at Oregon Health and Science University. In addition to his work in Antarctica, he has researched extremophiles in other volcanoes, deep-sea vents, underground water tables, deserts, and radioactive hot springs; he wrote the first published description of microbial life in the radioactive Paralana hot spring of Australia. He has been invited to lecture by organizations including the Australian Society for Microbiology, the Geological Society of Australia, and NASA. In 2011, he received the Antarctica Service Medal from the National Science Foundation. Dr. Anitori began teaching microbiology at Clark in 2008 and received a tenure-track faculty appointment in 2013. He is the editor of the book Extremophiles: Microbiology and Biotechnology (2012, Horizon Press).

Clark College to expand in the Gorge

Bingen, Wash., is the site of a new Clark College facility offering educational opportunity to the residents of the Columbia River Gorge.

Less than a year after establishing a location in the Columbia River Gorge, Clark College is expanding its academic and technical offerings and moving into a new, larger facility.

The new location in Bingen, Wash., which is still being negotiated, would house both new classes designed for the needs of local employers as well as existing classes currently run out of Clark's facility at the Wind River Education Center in nearby Carson. That facility was opened in fall 2013 in response to widespread interest from Columbia Gorge residents and school districts in having access to affordable, college-level classes; it will close when the Bingen facility opens in order to house all Clark programs in one convenient location.

The expansion is made possible in part by a $315,000 grant received by the college from the State of Washington to increase enrollment in aerospace education, approximately half of which is going to provide STEM (Science, Technology, Engineering and Math) education at the Bingen facility. The grant is part of an $8 million, statewide program to help two-

year and technical colleges prepare future employees in the aerospace field.

The new Bingen location will include a computer lab and classroom space for classes in Computer Aided Design and Drafting (CADD), a skill that many regional employers cited as in high demand. The college will also be hiring a full-time employee in the Columbia River Gorge. The college is on an aggressive timeline, and will be ready to offer classes in the fall of 2014.

The college is also moving its Transitional Studies (basic education, GED preparation, and ESL) programs and other academic offerings previously provided at Wind River to the new Bingen facility. These other offerings include classes taken by area high school students through Washington State's Running Start program, which allows students to take college-level classes while still enrolled in high school for little or no tuition—potentially earning their associate degree while still in high school.

Additionally, Clark College Corporate and Continuing Education (CCE) will use the new facility to continue and expand its specialized training for local employers. Beginning in fall 2014, CCE will also begin providing professional-development courses to the public, including LEAN, blueprint reading, Excel, Word, Outlook, Business Writing, email etiquette and communication, and essentials of supervision.

A full list of courses and activities in the Columbia River Gorge will be available on the Clark College website later this summer.

Photos: Clark College/Jenny Shadley

Launching a New Appreciation for STEM

Pam Peiper, a member of U.S. Rep. Jaime Herrera Beutler's staff, gets some hands-on practice with DNA testing.

Flanked by a pair of three-story-high yachts, more than 150 people gathered inside the Christensen Shipyards warehouse in Vancouver to have their DNA tested and taste hot ice cream during an interactive event that demonstrated how Clark College is preparing students for jobs in science, technology, engineering, and mathematics (STEM).

Clark College Foundation, in partnership with Christensen Shipyards, held the special event on the evening of March 15. The gathering showed local businesspeople how Clark matches the community's workforce needs with training, education and internships in STEM.

Biology instructor Ryan Kustusch describes Clark's participation in Yale University's Small World Initiative, in which students do research that could help discover new antibiotics.

Jim and Kelly Maul, from the Vancouver environmental engineering firm Maul, Foster & Alongi Inc., stood transfixed as Clark engineering student Jesse Bosdell described how a water clock worked and that the clocks were part of a campus-wide competition.

"You've got to put the fun into science and engineering first, and then the passion will come later," said Jim Maul. His wife, Kelly, said she was "fired up to go back to school" after seeing the student demonstrations.

The couple has two daughters whom they hope to steer toward a STEM education. Clark is on their list of higher education options.

Guest Tim Kraft, a civil engineer and principal at the water resources company Otak Inc., said Clark College offers critical programs that aren't available at other community colleges. "I see what Clark does, and it's impressive," said Kraft, who mentors youth with interests in science and engineering in the Southwest Washington area.

Clark College President Robert K. Knight addressed the guests by acknowledging the regional businesses present and how in partnership, they drive the region's economic prosperity. "It's vitally important that the community and Clark College work together to provide an educated workforce to meet the 17,000 jobs that regional economists predict will require education in STEM by 2015," he said.

The event was part of the Ensuring a Bright Future: Campaign for Clark College. Funds raised during the campaign are aimed at enhancing scholarships, faculty professional development, technology infrastructure, STEM, and dental hygiene education.

Lisa Gibert, president and CEO of Clark College Foundation, said it was exciting to see guests clearly fascinated with the student achievements. "This evening brings me so much pride to showcase the great work Clark is doing and how that education translates to jobs in our region and beyond," she said.

Engineering professor Carol Hsu and Clark student Jessica Molner explain to guests how water clocks work. Molner is a member of Clark's NERD (Not Even Remotely Dorky) Girls, a student club devoted to promoting STEM among women and girls.

Guests had the opportunity to learn about water clocks built with coconuts and bamboo; a rocket that is part of a national NASA competition; software for mass-identifying license plates; the weight distribution of a package of Chips-Ahoy! chocolate chip cookies; DNA sampling; and more.

Some of the business community members represented included Portland Plastics, Corwin Beverage, Wells Fargo Advisors, Columbia Credit Union, Legacy Salmon Creek Hospital, Sterling Bank, Mekos Corporation, Silicon Forest Electronics, and SEH America Inc.

See more photos on Flickr

Photos: Clark College/Jenny Shadley

This article originally appeared in a slightly different form on the Clark College Foundation news site.

Choppers, Gunk, Bugs and Barges

On Saturday, November 2, Clark College's main campus was fizzing like a lab beaker as hundreds of students participated in the Southwest Washington Elementary Science Olympiad. Almost 300 third-through-fifth grade students from 19 local elementary schools participated in the half-day event, which included five competitions: Green Eggs Go Bam!, Chopper Challenge, Tug-o-War Gunk, Benthic Bugs, and Buoyant Barges. (See complete results from the contest.) In addition to hosting the event, Clark provided more than 60 volunteers, most of them students. This was Clark's sixth year of hosting the event, which helps promote STEM (science, technology, engineering, and math) among young learners.
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Photos: Clark College/Jenny Shadley

View photos from this event on Flickr.