Collaborating with the Past, Creating the Future

Generativity—the concern for establishing and guiding the next generation—is fundamentally optimistic. It reflects a belief that the hard-won achievements of the past contribute immeasurably to our present challenges, and that solving challenges holds great promise for a brighter future. This has been a remarkable year for the University of Oregon, one in which past success has led to current achievements, and current achievements are laying the foundation for future discoveries.

Our faculty members include emeritus professors who remain active in the laboratory and the classroom and newly minted PhDs who have recently defended dissertations and are embarking on a lifetime of research, teaching, and service to their profession and to the UO. Each of them is engaged in a cycle of generativity, benefitting from the knowledge and experience of their advisors and mentors, and sharing their own research and advice to their students.

In this issue of Oregon Research, you'll learn more about larger-than-life researchers whose influence continues to be felt on campus. You'll find stories about researchers whose current work is making headlines, hear about the innovation ecosystem that's being developed on campus and in the community, and meet talented young graduate students who are laying the groundwork for future discoveries that can only be imagined.

The UO remains a busy hub of research activity in which the creation of new knowledge is happening at a dizzying pace. Despite the enormous challenges facing the research endeavor, there's never been a more exciting time to be involved. New discoveries are happening all around us, new researchers—inspired by the faculty members of the past and present—are emerging every day, and the regenerating cycle of research, education, and innovation continues.
Each human body is a host to complex resident microbial communities. Researchers at the University of Oregon are making impressive advances studying these microscopic communities through the newly funded Microbial Ecology and Theory of Animals Center for Systems Biology. Funded by the National Institute of General Medical Sciences, this National Center for Systems Biology establishes the UO as a nationally recognized leader in systems biology. The center will receive as much as $10.3 million over five years to pioneer a new field: host-microbe systems biology.

The field seeks to better understand the mutually beneficial coexistence of humans and their symbiotic bacteria, which are essential for human health. Ecological or genetic changes that uncouple this mutualism can result in disease. How might common diseases such as inflammatory bowel disease, cancer, and autoimmune disorders be better understood by looking at perturbed microbial interactions between a human host and a microbe? That's one of the questions center director Karen Guillemin, of the Department of Biology and the Institute of Microbiology, hopes to answer.

Guillemin oversees a multidisciplinary team of UO researchers whose areas of expertise include ecology, microbiology, developmental biology, population genetics, evolutionary biology, molecular biology, biophysics, mathematics, and computer science. Together, they are investigating how animal-associated microbial communities influence health and disease. Their research uses two fish systems, zebrafish and stickleback, to model host-microbe interactions in humans.

The center has three major focus areas:

- Host-microbe systems assembly, investigating the factors that shape the composition of host-associated microbial communities. This research assesses the relative contributions of selective filtering by the host environment, interactions between microbes, and stochastic processes in community assembly.
- Host-microbe systems dynamics, using light sheet microscopy to characterize...
Karen Guillemin of the UO Department of Biology and the Institute of Microbiology directs the UO’s new Microbial Ecology and Theory of Animals Center for Systems Biology. Here’s what she had to say about it.

Why is the UO the home of the new center? What unique aspects of our research environment contributed to this recognition?

It’s a big honor to be part of this National Centers for Systems Biology community. We just attended a meeting of all of the centers that also marked the tenth anniversary of this program. Going to the meeting reinforced, for me, that the UO is among an elite group as we join the institutions who have been awarded Center for Systems Biology grants from the National Institutes of Health.

What made it possible for us to be competitive for this honor was the uniquely collaborative environment here at UO. We have a tremendous history of research on the microbe-host system. The META CSB draws on UO’s strength in genomics research and our newer and very exciting strengths in imaging. The fact that we’re smaller than a lot of research institutions means that we have been able to foster more creative cross-disciplinary collaborations. The principal investigators on this grant were from different disciplines. On a campus like the UO, we had lots of opportunities to interact and learn from each other—an attribute of being at a smaller research institution. When I was at Stanford, I would only typically interact with scientists doing the exact same thing that I was doing. I attended only specialized seminars and meetings. Here, people have more breadth and more opportunities to interact and learn about each other’s research interests and projects.

What are some of the major accomplishments of this first year?

This first year we had our first publication, an article from Jessica Green that establishes a theoretical framework for characterizing microbial community diversity. We proposed in the grant application that one of our goals was to develop a theoretical foundation—and that we would apply that theory as we examined zebrafish-associated microbial communities as a function of developmental age. It’s an exciting project and is possible in the zebrafish model because we can generate really large numbers of genetically identical individuals and then follow them through time. In contrast, the descriptive studies that have been done in human populations through the Human Microbiome Project have to confront the confounding factor that individuals are different genetically—they experience different diets, difference environments—and there is tremendous variation across different individuals. Our experimental system can control for these factors.

We’ve also made some significant advances in live imaging of the bacteria in the zebrafish gut through our capabilities in light sheet microscopy. We’re learning a lot of exciting things about how these bacterial communities first get established, what their gross dynamics are and how they colonize a brand-new, bare intestine. We call this the “Garden of Eden” experiment—how does the gut go from empty to hosting forms of life?
M. J. Murdock Grant Furthers META Center for Systems Biology Research

Raghu Parthasarathy will lead the new efforts at the Microbial Ecology and Theory of Animals Center for Systems Biology to use advanced light sheet microscopy to study the dynamics of host-microbe community establishment in fish. Light sheet microscopy allows researchers to actually see the formation of microbial communities residing within the gastrointestinal tracts of living hosts. This type of microscopy is unique in its ability to provide high-resolution 3-D images while limiting the exposure of the sample, in this case a living fish, to the lasers used to generate the image. These lasers can damage the tissues being examined or disrupt the cells involved, thereby altering the establishment of the microbial community.

In addition to light sheet microscopy, fluorescent stereomicroscopy will also play an important role in achieving the goals of the META Center. Much of the work will involve researchers introducing specific genetic changes into fish and then looking at how those changes affect host-microbe interactions. These genetic changes are introduced in fish embryos, but the effects are observed later in development. Fluorescent stereomicroscopy is required to identify and characterize fish that have had their genetic code altered by researchers.

Both the light sheet microscopy and the stereomicroscopy efforts of center scientists are being made possible through a $475,000 grant from the M. J. Murdock Charitable Trust.
Family comes first for Karen Carlson, but the senior biology major from the University of Alaska, Anchorage, was able to take advantage of a rich opportunity without leaving behind her son and mother when she took part in the ten-week Alaska Oregon Research Training Alliance (AORTA) at the University of Oregon. Carlson’s participation in the program was funded by the Office for Research, Innovation, and Graduate Education and the Office of the Vice President for Equity and Inclusion. All told, four Alaska students participated in the inaugural summer outreach and training program, which is part of the UO’s new Microbial Ecology and Theory of Animals (META) Center for Systems Biology and the Summer Programs in Undergraduate Research (SPUR).

Karen Carlson, AORTA Participant

How did you find out about AORTA?
I’m a member of ANSEP (Alaska Native Science and Engineering Program) at UA, and my advisor suggested that I take advantage of this opportunity to gain some real-world research experience here at the University of Oregon as part of this program.

How does this summer research experience support your degree program at the University of Alaska?
I’ll earn my bachelor of science in biology in 2014. I’m enrolled in the honors college at UA, and while I’ve been able to gain some laboratory experience, this was the first time I have been able to develop and conduct my own original research project. I plan to continue my education and pursue a graduate degree, so this kind of experience is really valuable.

What surprised you?
The ten weeks by went really fast! And light sheet microscopy—that was really cool!

What made it possible for your mother and son to accompany you?
Peter O’Day, director of META center diversity activities, really encouraged me to come and he wanted me to be successful. Success, for me, meant that I needed to find a way to focus on my research and not worry about [my son] Gabriel. My mom, Gabriel, and I were able to stay in an apartment in a dorm, so I was able to fully participate in the program, knowing that my mom was looking after Gabriel. Everyone’s really understanding here. They understood that family comes first. I’ve really enjoyed working with them this summer.

What’s next?
We’re heading up to Seattle and then home. Classes start at the University of Alaska late in August, so I’ll be back in the lab again soon!
Where a major earthquake and the Northwest are concerned, the question isn’t “if”—it’s “when.” The region is due for a massive earthquake and tsunami in the Cascadia Subduction Zone, a coastal area stretching from Canada to Northern California where the continental plate is slowly overriding the ocean floor. Scientists at the University of Oregon are leading a national team that is collecting data that will ultimately describe the risk to the Pacific Northwest. Earthquake investigators may be the primary beneficiaries, but the project aims to inspire young scientists and yield readily available data for biologists and other researchers around the world.

Doug Toomey, a UO geophysicist, is leading the Cascadia Initiative Expedition Team, which is funded by the National Science Foundation and $10 million in federal Recovery and Reinvestment Act dollars to study questions ranging from megathrust earthquakes to volcanic arc structure to the formation, deformation, and hydration of the area’s tectonic plates. The damage caused by the 2011 earthquake and tsunami in Japan illustrates that there are still many major unknowns regarding the risk from a catastrophic event.

“The U.S. is, in some ways, in the early stages of evaluating and mitigating risk in the Pacific Northwest,” Toomey said. “This study will lay the groundwork for many current and future efforts.”

Aboard the Atlantis

Between June 25 and July 9 of 2013, UO senior physics instructor Dean Livelybrooks and a team of national scientists on board the research vessel Atlantis retrieved ocean-bottom seismometers that have been collecting data on earthen vibrations for a year. On board the 270-foot-long vessel, the team moved south from Astoria to Cape Mendocino, off California’s north coast, recovering the monitors along the way.

Livelybrooks’ colleague in leading the trip was Anne Trehu, a seismologist at Oregon State University, who said there’s never been an offshore earthquake research project on the scale of the initiative. Over a four-year period, seventy seismometers are in use to measure vibrations in the ocean floor at approximately 140 sites off the coast, from Canadian waters to Northern California.

Earthquake activity can be affected by water that was trapped in the oceanic crust and sediments that are released as the oceanic plate descends beneath the continent, ultimately weakening faults and allowing them to slip. But water affects earthquake activity in ways that aren’t fully understood, and the Cascadia project will shed light on that relationship. A better understanding of plate dynamics will yield better assessments of what might happen in an earthquake off the coast.

“The better we can anticipate, the better we can focus our resources on what’s important,” Trehu said—“things like building codes, public education, evacuation planning.”

The Underwater Hunt Begins

Retrieving the seismometers was challenging work. The team managed rough waters while retrieving instruments that weigh as much as 1,600 pounds each and were deployed at depths of up to 2,500 feet—about a half-mile. Working within a two-week window, the team recovered all thirty of the monitors.

Fortunately, the scientists had a mechanical advantage: They used Jason, a remotely operated vehicle (ROV) owned by Massachusetts-based Woods Hole Oceanographic Institution, to locate the instruments and help bring them on board. About the size of a Mini
Cooper automobile, Jason is a box-like robot equipped with multiple cameras and two ominous-looking manipulator arms that end with claw-like jaws that can lift marine equipment the size of refrigerators. The ROV is tethered to a control room on the ship through a long cable full of communication wires. When the operator in the control room presses a button or moves a joystick, Jason’s thrusters fire up and he starts moving along the ocean floor, at depths of as much as four miles.

The ROV was used to attach floats to the seismometers that would allow a crane on the boat to lift the instruments on board. Livelybrooks was often in the control room during Jason dives to record footage of the marine life seen through Jason’s underwater cameras. Livelybrooks uses the ocean research trips to get college students excited about STEM careers—science, technology, engineering, or mathematics.

**Inspiring the Scientists of Tomorrow**

Each year, about one million U.S. high school freshmen declare interest in a STEM-related field—more than one in four. By the time they graduate, more than half will lose interest in a STEM career. Livelybrooks is part of a national effort to feed the nation’s growing need for scientists and engineers by increasing interest in STEM careers among students in K–12 and community colleges.

The Atlantis trip was the third in which Livelybrooks found space for community college students to participate. The students log earthquake data, work with seismology equipment, and experiment with a variety of telecommunications, all under the eye of experts in those fields.

“There are a lot of people in community college who have never really met a scientist or engineer and don’t know what those jobs are like,” Livelybrooks said. “Out here, they’re witnessing lots of scientists and engineers in action and working as a team. They’ll be able to go back to their institutions and say, ‘This is what we did out on the Atlantis.’”

“My hope,” he added, “is that that will serve to inspire their peers to also consider careers as scientists and engineers.”

**Scientific Data for All the World to See**

Hale Domer, accepted to Portland State University, tracked the ship’s locations and movement and also working with bathymetry, the study of underwater depths of ocean floors.

“The thing that’s been most interesting to me is the rock sample we brought up, and the ocean bottom,” she said. “I think [this experience] will be good for me to figure out what I want to do.”

While the earthquake data will be vitally important, geologists won’t be the only ones who benefit from the initiative. The seismometers are also measuring tidal behavior and picking up signals from sea animals including fin and blue whales. Biologists, for example, will be able to study whale movements during winter periods when observation is difficult.

And in an uncommon arrangement, the data that is collected will quickly be made available on the Internet, rather than just to a select group of researchers involved in the project. That will further understanding of earthquake activity, not just in the Pacific Northwest but also across the globe. Toomey expects researchers from all over the world will access the data that is being collected.
UO Research Innovations Continue to Fuel Oregon Economy

Research at the University of Oregon yields innovations that create jobs and support a higher quality of life for all Oregonians. UO research innovations generated $7.4 million in licensing revenue for the Oregon economy in 2012–13.

Last year, UO’s Innovation Partnership Services recorded twenty-four U.S. patent applications filed, and seven U.S. patents issued. The UO contributed to the innovation ecosystem to the tune of $6.6 million in royalties distributed to UO inventors and authors, academic units, and the state treasury.

“Nearly all of the dollars that come in are reinvested in people and projects in the south Willamette Valley,” said Chuck Williams, the UO’s assistant vice president for innovation. “More than 92 percent of our funds spent are reinvested, so the university’s administrative burden on the innovation ecosystem is currently very low, at about 7.3 percent.”

Here are some other notable figures:

- Industry-Sponsored Research was almost double in dollars from last year.
  The UO plans to continue the trend by adding an industry agreement manager and industry partnership professional.
- In fiscal year 2012, the UO family of entrepreneurial startup companies generated more than 270 jobs and nearly $40 million in company income in Oregon alone—a revenue increase of 8.3 percent from 2011. Revenue in 2012 jumped 11.1 percent from the previous year.

New Wave of Innovation Building on Campus

The Willamette Angel Conference offers regional startups the chance to share their business pitches with potential investors and a shot at a prize pot that totals more than $460,000 in business seed funding. The competitive conference features head-to-head pitches from companies seeking money from a collective of investors.

Hallspot, a startup composed almost entirely of UO undergraduates, won the Concept Stage prize for early stage companies. Founded by twenty-two-year-old UO economics major Sean Thorne, the company is developing a digital platform that it calls “a better network for college students.” Charles Williams, the UO’s assistant vice president for innovation, serves as an informal advisor to the team. Nathan Lillegard, the cofounder of the UO-affiliated spinout Floragenex and the program manager of the UO’s Technology Entrepreneurship Program, has also provided mentorship and serves on the Hallspot Board of Directors.

“Hallspot is part of a new wave of undergraduate startups that are taking good ideas developed on college campuses and bringing them to market,” Williams said. “In addition to a great concept, they have youthful energy and optimism and are already demonstrating they can organize to bring in additional outside investment money if needed.”

Hallspot plans to win over college students who are seeking an alternative from the prying eyes of social media giants like Facebook. As Thorne explains it, college students are looking for a break from the constant advertisements, the nonlocal content, and other annoyances.

For many students, the presence of their parents on Facebook has left them feeling like they need their own digital hangout. Hallspot creates an exclusive network for college students, unique to each school, with a set of features that reflects college students’ desire for new technology.

“Your grandma, your uncle, you employer and your supervisor will not be on Hallspot,” Thorne says. “You will never find an event in a city that you’re not in.”

Hallspot took a $2,500 check home from the Willamette Angel Conference. The team applied $1,000 to a marketing competition and put the rest in the bank. The firm has secured additional investments of around $400,000. Hallspot has seven full-time employees.

The company is launching its product—specifically at the UO—in early fall, followed by a late fall launch at Oregon State University.
Researchers who are looking to take their ideas out of the lab and into the marketplace need to be able to translate their concepts into a language that entrepreneurs can understand. That’s just what a University of Oregon research team led by chemists Darren Johnson and Michael Haley did when they won the top prize at a National Science Foundation–funded program designed to bring scientific innovation into the private sector.

The UO’s SupraSensor team participated in the NSF Innovation-Corps (I-Corps) program held at Stanford University, where they delivered a winning pitch on nitrate sensors for precision agriculture during the final presentation session and graduation ceremony.

Calden Carroll, the team’s entrepreneurial lead, said I-Corps judges credited the UO team for its energy, flexibility, and “intellectual honesty.” Team SupraSensor includes Bruce Branchaud, professor emeritus of chemistry, and August Sick, the “entrepreneur in residence” from the Oregon Nanoscience and Microsystems Institute (ONAMI).

The group has patented its technology and established the company SupraSensor Technologies. The team has been working with the UO’s Innovation Partnership Services office and is applying for additional grants and developing a prototype of the nitrate sensor, which promises to fulfill a need for real-time monitoring of fertilizer application in environmentally sustainable precision agriculture. Suprasensor has three employees and will begin conducting field trials in January 2014. The startup is funded by NSF Small Business Innovation Research Phase I and Ib grants, as well as an ONAMI Gap grant. The firm has raised $550,000 in nondilutive capital for research and development. Carroll emphasizes that SupraSensor aims to remain an Oregon-based company.

“Our mission statement includes fighting the idea that investment in basic science has little application in the real world,” Carroll adds.

Establishing the Next Generation of Innovators

How does the next generation of breakthrough products and brands get established? In part, through the investment and engagement of a former generation of entrepreneurs.

Mobile technology pioneer Ed Colligan ’90 is committed to inspiring today’s Ducks through the establishment of the Colligan User Interface Design Challenge. Launched in fall 2013, the initiative challenges UO students from all programs and classes to create an attractive and dynamic graphical user interface designed for use on a mobile platform. Prize money totaling $15,000 will be handed out to the winner and runner-up teams.

Colligan was at the center of a mobile computing revolution as CEO of Palm, Inc. Colligan left Palm to found Handspring, where he and his partners changed the face of mobile computing again, creating the forebear of all future smartphones: the Handspring Treo. Colligan is now an investor mentoring entrepreneurs with the goal of establishing the next generation of breakthrough products and brands. His son, Will, is currently a student at Oregon.

One of the biggest challenges of Colligan’s work at both Palm and Handspring, he notes, was the difficulty in finding great user interface designers—a skill that, he says, requires a “special combination of both art and science.”

Colligan’s interest in creating more tech businesses in the Eugene area, and his appreciation of the UO’s strengths in the arts, architecture, and graphic design, led to his desire to leverage the broad base of talent at the UO and encourage students from different disciplines to interact.

“To me, the best thing that could happen is more collaboration between the technologists, graphic designers, business people, psychology majors—all those disciplines come into play when you think about great user interface design and great human experience.”

UO students from all programs and classes can compete in the design challenge. The contest offers participants the opportunity to present their concept or product to a panel of prospective investors, industry leaders, and select members of the UO faculty during winter term 2014. Colligan User Interface Design Challenge participants will receive coaching from faculty members in the Product Design Program and the UO’s InfoGraphics Lab.

Colligan’s advice to those contemplating entering the challenge is to simply jump in and participate.
Twenty Years of Nurturing Global Leaders

The Ryoichi Sasakawa Young Leaders Fellowship Fund (SYLFF) provides a fellowship program to support students pursuing graduate studies in the humanities and social sciences disciplines. A collaborative initiative of the Nippon Foundation (the endowment donor) and the Tokyo Foundation (the program administrator), the program aims to identify and nurture global leaders. The OUS-SYLFF Fellowship for International Research has supported 167 graduate students, including 89 UO students, in the amount of $1.5 million since it began its affiliation with the Oregon University System (OUS) twenty years ago. Tokyo Foundation representatives visited the UO campus in March to meet with OUS-SYLFF steering committee members and commemorate the two-decade anniversary of the partnership.

NSF Graduate Research Fellowship Program Supports Outstanding Graduate Students

Human skin supports thousands of interactions with our environment on a daily basis—everything from shaking hands to brushing against a wall to petting a dog. Each of these encounters contributes in different ways to our skin’s microbial communities. There is still much to learn about the mechanisms of microbial transfer and how our environment impacts microbial ecosystems on human skin. Ashley Bateman, biology doctoral student in the Institute of Ecology and Evolution and recipient of a prestigious National Science Foundation (NSF) fellowship, is researching microbial transfer and what constitutes a healthy microbial community on human skin.

“Understanding the environmental factors that shape the variability in microbial communities found on human skin and how these communities impact human health will fundamentally change how we live our lives,” Bateman says.

Because the UO is one of the top public institutions in the nation for host-microbe research, it was a natural fit for Bateman, who is advised by Brendan Bohannan and Jessica Green, leading faculty members in the field.

Bateman is one of fifteen active UO graduate students who have been chosen as NSF graduate fellows, including five new fellows for 2013–14. The NSF Graduate Research Fellowship Program recognizes and supports outstanding graduate students in NSF-supported disciplines—science, technology, engineering and mathematics. Research fellows pursue research-based master’s degrees or doctorates. Since the program’s inception, the NSF has received 500,000 applications and awarded 46,500 fellowships.

Each of the UO’s NSF fellows will receive three years of support over a five-year period, including a $32,000 annual stipend, a waiver of full-time tuition and mandatory fees, a $1,000 travel award, a $1,000 annual supplies award furnished by the Office of Research, Innovation, and Graduate Education, and NSF-sponsored international research and professional development opportunities.
New Graduate Specializations Promote Interdisciplinary Study

When it comes to preparing graduate students for their future careers, being forward-thinking is the name of the game. That’s why the UO Graduate School added four new graduate specializations this past year. The move came after inviting graduate students to identify potential areas of expertise that could be added to their degree programs. Specifically, specializations represent a group of approved courses, totaling at least 16 credits. Completion of a specialization is reflected on the final transcript, demonstrating the interdisciplinary breadth or disciplinary depth of the student’s work in a particular area. Specializations in the following areas are now officially part of the curricula.

**Neuroscience**

The specialization in neuroscience is anchored in the biology and psychology departments. It establishes a common curriculum across the neurosciences in biology and psychology.

**Food Studies**

Food studies is “an interdisciplinary approach to understanding food’s place in our world,” says Associate Professor Stephen Wooten, one of the creators of the food studies initiative along with Adjunct Instructor Jennifer Levin. “Food is at the center of inquiry, and the study looks at how food mediates all the different realms.”

Hosted by the Environmental Studies Program, the specialization was made available to graduate students in any discipline beginning in fall 2013. The specialization is not a degree but a means for graduate students to indicate food studies as an area of expertise. Its creators are hoping to design a minor for undergraduate students in the future and ultimately aim to make food studies its own program at UO.

Food studies is an up-and-coming field across the country, with notable programs at New York, Boston, and Indiana Universities, among others. The UO program will distinguish itself by focusing on food studies in the context of the unique Northwest climate.

“I think they’re the future of education, these cross-discipline projects,” Levin says. “There’s so much promise in terms of interdisciplinary education and connecting students with what they put in their mouths.”

**Prevention Science**

The prevention science specialization is offered to master’s students in counseling, family, and human services. Students take graduate courses alongside doctoral students in counseling psychology and master’s students in couples and family therapy, completing both the MEd and the specialization in prevention science in one academic year.

**Sustainable Business Practices**

A graduate specialization in sustainable business practices in the Lundquist College of Business includes course work in sustainable business development, supply chain operations, principles of industrial ecology, project and operations management, and life-cycle analysis.
Each May, the UO Graduate Student Research Forum puts the intellectual work of graduate students on display in a central location, making for a fascinating visitor experience for the campus community and the general public. In addition to showcasing the contributions of graduate students from across campus, the event provides students with valuable opportunities for interdisciplinary intellectual exchange and networking.

This year’s forum focused on the theme “Research for Tomorrow” and the conference rooms of the Erb Memorial Union overflowed with presentations on everything from the work of Japanese-German writer Yoko Tawada to the environmental benefits of “Jali screens”—perforated architectural facades—as used in Lahore, Pakistan. Presentations were organized into eighteen interdisciplinary panel sessions with distinct themes such as “Recognition, Respect, and Responsibility in German Thought” and “Climate, Water, Fuel: Sustainable Resource Management,” and a midday poster session offered a glimpse at more than thirty research projects. The poster session included a research visualization contest led by the UO Libraries. All posters were judged on the basis of how well the graphics conveyed central research themes, how the use of color and fonts added to research communication, originality, and, most important, the aesthetic and visual impact of the poster to support the overall research presentation.

Meaghan Emery (geological sciences doctoral student) took home first prize, followed by runner-up Christina Bollo (doctoral student in architecture) and third-prize winner Benjamin Mood (doctoral student in computer and information science). Each received a ribbon and Duck Store gift card.

During the same week in May, the Graduate School also presented its inaugural Three-Minute Thesis competition. The exciting event challenges students to explain their research in layman’s language in only three minutes while accompanied by only a single, static PowerPoint slide. Condensing months or years of research into a three-minute presentation forces students to distill their work into the most important elements.

Linda Konnerth (linguistics doctoral student), for her presentation entitled “A Descriptive Grammar of Karbi,” emerged with the $500 first prize, followed by runner-up Matthew Goslin (geography doctoral student), who presented his research on “Torrent Sedge: An Ecosystem Engineer Aiding Restoration.” The audience gave Meaghan Emery (geological sciences doctoral student) the People’s Choice for her presentation entitled “Changing Styles as a Metaphor for Variation in Modern Artiodactyls. Each received a monetary award.

Videos of the winning Three-Minute Thesis presentations are posted on the UO Channel website.

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The Graduate Student Research Forum provides students with valuable opportunities for interdisciplinary intellectual exchange and networking.

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### GRADUATE DEGREES AWARDED

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### FALL 2012 ENROLLMENT

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Kristen Norton thought she needed a PhD to pursue her goal of a career in industry. She dutifully applied for a PhD program, but on the way she found a more direct route through the UO’s Graduate Internship Program. A master’s degree program that offers a 54-credit blend of real-world training and graduate-level instruction, the program fast-tracks students into scientific careers.

“The UO program is a fantastic way to get your feet wet in industry, but it also sets you up for success in your field of interest,” says Norton, who earned a master’s degree in applied physics through the program. “The hardest part of landing a job in industry is getting your foot in the door. The Graduate Internship Program has staff members whose entire job is to help you land an internship.”

Norton is now a laser and optics engineer at Electro Scientific Industries (ESI), where she completed her graduate internship in optical materials and devices through the UO program. Prior to that, Norton graduated from Willamette University in Salem with a major in physics and a minor in mathematics. She was accepted into a PhD program but elected to defer her acceptance so she could pursue the UO master’s program. She began the program immediately after graduation, during summer 2012, and completed her course work in the fall and spring terms of the academic year, while simultaneously interning at ESI.

Norton was hired by ESI before she even completed her internship. The Graduate Internship Program did for her what it has done for hundreds of students since it launched in 1998—helped to bridge the gap between an advanced degree and real-world experience. The program offers students in chemistry and applied physics the opportunity to earn between $2,500 and $5,400 per month while enrolled at Oregon. Four tracks are offered: polymers and coatings, photovoltaic and semiconductor device processing, optical materials and devices, and bioinformatics. Students graduate with their master’s degree in about a year, simultaneously engaging in a targeted training program by serving as interns in companies.

The Graduate Internship Program currently works with more than 100 companies to place graduate students. The program has historically placed about 98 percent of its students in internships and boasts a job offer rate of around 90 percent, significantly higher than the national average of 67.7 percent reported by the National Association of Colleges and Employers.

“A strong part of this master’s program is the focus on soft skills,” Norton says. “It helps you work through your résumé and forces you to practice tough but realistic interview questions. It sets you up for success. I work on cutting-edge research and development every single day, and couldn’t be happier.”
The Bumpy Road to More Efficient Energy Sources

There are lots of reasons why hydrogen is a perfect fuel. More important—and this is where UO materials chemist Shannon Boettcher comes in—there are some major reasons why it’s not.

Confronting the obstacles that stand in the way of more efficient energy is what Boettcher and his research team do, and finding a better way of making hydrogen is just one of the group’s more monumental hurdles.

An Oregon native who grew up in Creswell and attended the UO as an undergraduate, Boettcher returned to Eugene after completing his graduate work at the University of California at Santa Barbara and a postdoctoral fellowship at the California Institute of Technology in Pasadena. He saw great opportunity at the UO—both for his young family and for his career in materials chemistry.

“There's tremendous activity here in materials chemistry and physics,” says Boettcher, who received a prestigious DuPont Young Professor award shortly after joining the UO chemistry department. “We're gaining national recognition and on a path for continued growth.”

Boettcher’s diverse research group includes chemists, physicists and engineers—currently three postdoctoral students, nine PhD students, and a number of undergraduate interns—who share a passion for overcoming the fundamental challenges of solar power, hydrogen, and other alternative energy sources. From Boettcher’s lab on the fourth floor of the new Lewis Integrative Science Building, his group tackles fundamental energy research supported by the Basic Energy Sciences arm of the U.S. Department of Energy; collaborates with members of the UO and OSU faculty in the National Science Foundation–supported Center for Sustainable Materials Chemistry; works with faculty members at UC Santa Barbara and OSU on a project (funded by the Advanced Research Projects Agency—Energy) to develop faster-charging battery alternatives for transportation; and leads an effort with Lawrence Berkeley National Laboratory to develop new deposition technologies for semiconductors used in high-efficiency solar photovoltaic and water-splitting cells funded by the Department of Energy SunShot program.

The difficulty of making hydrogen demonstrates the kinds of research challenges Boettcher and his group face. Conventionally, the fuel is made by reforming coal or natural gas, which, he explains, doesn’t solve any problems. The result is more CO2 than burning coal or natural gas would have produced in the first place.

Boettcher’s lab is seeking a means of creating hydrogen fuel using sunlight and water—a carbon-free, closed-loop cycle in which hydrogen atoms are pulled off of water molecules, then recombined with oxygen after burning to create water as the end result.

“In principle, this could be less expensive and more scalable than solar energy is right now—it would give you a chemical fuel that could be stored and burned just like natural gas,” Boettcher says. “A lot of the projects in our group are focused on the various facets of this problem.”

In one project, Boettcher’s team is examining the use of solar cell–like devices that use ultra-thin nickel and iron oxide films as catalysts in the process of creating hydrogen. In another, the team is seeking a better understanding of the interface charge-transfer processes that are fundamental to devices that split water into hydrogen and oxygen.

To help test all these ideas, the group also develops simple theory and computer models. These simulations help predict effectiveness, but Boettcher remains mindful of the fact that they will have to demonstrate more than just potential before the ideas can emerge from the lab.

“There is a tendency for some researchers to make a lot of claims about how what they’re doing will have a big impact,” Boettcher says. “But if you don’t actually go talk to the people in industry who are building and selling and maintaining the real-world devices, then you don’t really know what the true challenges are.”

An advocate of so-called use-inspired basic research, Boettcher seeks frequent input from private industry.

“The better informed you are about what things have a real impact, the better you can make use of the constrained resource base we have for research,” Boettcher says. “And the better case you can make to the public and to the funding agencies that your research is important.”
RIGE Centers and Institutes Strengthen the UO Research Mission

In addition to contributing to a longstanding tradition of interdisciplinary research, Research, Innovation, and Graduate Education (RIGE) centers and institutes provide opportunities for research and graduate training in a wide variety of disciplines, including the humanities, social sciences, natural sciences, and a variety of technical fields. The dedicated faculty and staff members of RIGE’s research organizations support the active research and graduate training taking place at the UO and strengthen the UO’s research mission. Here are some of the exciting new developments from RIGE centers and institutes:

The Center for Brain Injury Research and Training, formerly affiliated with Western Oregon University, has joined RIGE. The center conducts research that makes a big difference in the lives of children and adults with traumatic brain injuries. The focus is on developing interventions to improve outcomes related to education, employability, and quality of life. The center develops training activities that promote the use of best practices among educators and other professionals who serve individuals with traumatic brain injuries. Principal investigators and project directors include Ann Glang, Bonnie Todis, Laurie Ehlihardt Powell, and Deborah Etter.

The Committee on the Advancement of Women Chemists (COACH), an outstanding research and advocacy organization for women scientists that has an international presence, is now affiliated with RIGE. Founded by Geri Richmond, the UO’s presidential chair in science, COACH has helped transform the careers of more than 6,000 women faculty members, graduate students, and postdoctoral associates in chemistry, physics, mathematics, biology, computer science, geology, medicine, materials science, engineering, and other areas of expertise.

The Prevention Sciences Institute (PSI) is a new RIGE interdisciplinary unit that brings together activities previously conducted in the Child and Family Center with new translational neuroscience and implementation science efforts by faculty members in the psychology, counseling psychology, and special education departments. The Child and Family Center will serve as the brand name for the clinic services only. PSI recently located in the Riverfront Research Park under the leadership of counseling psychology professor Beth Stormshak.

The Center on Teaching and Learning has moved from the College of Education to RIGE, reflecting its broad and deep impact in research and innovation worldwide. The center is codirected by Hank Fien and Professor Edward Kame’enui.

The Environmental Science Institute, directed by Professor Scott Bridgham, debuted under RIGE last fall. The institute aims to promote interdisciplinary research and graduate education in the environmental sciences. Members come primarily from the Departments of Anthropology, Biology, Geological Sciences, and Geography.

The Center for Assessment, Statistics, and Evaluation (CASE), is a new university-wide research core facility to be housed within RIGE. CASE serves as a research support resource for faculty members and graduate students throughout the university and to the research community in Oregon who need assistance with design, analysis, statistics, or methods. CASE will provide technical support for statistical analysis and research design using a variety of models and software; assist in assessment and measurement issues in instrument development, validation, and administration; and serve as a contract unit to provide program evaluation, research design, and analysis support for researchers carrying out grant activities and preparing grant proposals. The center is led by Dave De Garmo and Terri Ward.
The UO’s Center for the Study of Women in Society (CSWS) has reached a landmark fortieth anniversary. Directed by Professor Carol Stabile, the center has been creating, funding, and sharing research that addresses the complicated nature of gender identities and inequalities for four decades. CSWS will mark the milestone celebrating feminist research, activism, and creativity at the University of Oregon held in collaboration with the ASUO Women’s Center and the Department of Women’s and Gender Studies.

The organization was founded in 1973 as the Center for the Sociological Study of Women by a group of visionary scholars—both men and women—who recognized the need to study, spotlight, and confront gender inequality throughout society. Founders included Joan Acker, Miriam Johnson, UO President Robert Clark, and other notable faculty members. The center held a two-week feminist conference, campaigned for an affirmative action office, started a course on women, and began a research center that had as its first project a study of the status of women at Oregon.

In 1983, the center was expanded and renamed with an endowed gift from the estate of New York publisher William in honor of his wife, publisher, activist, and feminist Jane Grant. Pictured from left: Barbara Pope, Mavis Mate, Jean Stockard, Marilyn Farwell, Mary Rothbart, Joan Acker, Miriam Johnson, Jessie Bernard, Donald Van Houton, Carol Silverman, Kay McDade, and Patricia Gwartney-Gibbs.

Celebrating Forty Years of Funding Feminist Scholarship

In 1983, the campus community and noted guests celebrated the opening of the expanded and renamed Center for the Study of Women in Society, endowed by a gift from the estate of New York publisher William in honor of his wife, publisher, activist, and feminist Jane Grant. Pictured from left: Barbara Pope, Mavis Mate, Jean Stockard, Marilyn Farwell, Mary Rothbart, Joan Acker, Miriam Johnson, Jessie Bernard, Donald Van Houton, Carol Silverman, Kay McDade, and Patricia Gwartney-Gibbs.

An unidentified faculty member teaching at the UO in 1968. A report in 1970 found that women constituted only 10.5 percent of the full-time teaching faculty at the University of Oregon.
External Honors

Following is a sampling of external honors bestowed on UO faculty members in fiscal year 2012.

American Academy of Arts and Sciences
Jon Erlandson, archaeology

American Association for the Advancement of Science Fellow
Bruce Bowerman, biology

American Geological Society Fellow
Andrew Marcus, geography

American Mathematical Society Fellows
Charles Curtis, mathematics
Peter Gilkey, mathematics
William Kantor, mathematics
Hua Xin, mathematics
Eugene Luks, computer and information science
Gary Seitz, mathematics
Lewis Ward, mathematics

American Musico logical Society
Noah Greenberg Award
Lori Krucken burg, musicology

American Physiological Society New Investigator Award
Jeff Gilbert, human physiology

Association of American Publishers Professional and Scholarly Excellence Award
Andrew Marcus, geography
James Meacham, geography
Alethea Steingiss er, geography

Association for Psychological Science William James Fellow Award
Helen Neville, psychology

Hallie Ford Fellowship in the Visual Arts
Mike Bray, art

Human Biology Association Michael A. Little Early Career Award
Josh Snodgrass, anthropology

Medical Research Foundation of Oregon Mentor Award
Christopher Minson, human physiology

Mexican Academy of Sciences Visiting Distinguished Professor
Lynn Stephen, anthropology

National Academy of Sciences Fellow
Eric Selker, biology

National Endowment for the Arts
Artworks Grant
Lori Hager, arts and administration

National Endowment for the Humanities Residential Fellowship
Brian Klopotek, ethnic studies

National Science Board
Geraldine Richmond, chemistry

Oregon Arts Commission Fellowship
Molly Barth, music

Oregon Arts Commission Opportunity Grant
Trygve Faste, product design

Rockefeller Foundation Bellagio Center Residency

Searle Scholar
Chris topher Niel l, biology

Society for Prevention Research Science Translational Science Award
Philip Fisher, psychology

Society for Research in Child Development Victoria S. Levin Award for Early Career Success in Young Children’s Mental Health Research
Heidemarie Laurent, psychology

Shoemaker Wins Fellowships at the Institute for Advanced Studies, National Humanities Center

Religious studies professor Stephen Shoemaker was recently awarded a Rockefeller Foundation Fellowship at the National Humanities Center and membership in the School of Historical Studies at the Institute for Advanced Studies, Princeton University. He was also awarded a senior fellowship at the Institute for Advanced Study at the Central European University in Budapest, but has declined that honor in order to spend the fall at the Institute for Advanced Study in Princeton and the spring at the National Humanities Center. He is the first University of Oregon faculty member to hold a fellowship at the National Humanities Center.

Shoemaker teaches courses on the Christian traditions. His primary interests lie in the ancient and early medieval Christian traditions, and more specifically in early Byzantine and Near Eastern Christianity. His research focuses on early devotion to the Virgin Mary, Christian apocryphal literature, and the relations between Near Eastern Christianity and formative Islam.

His fellowships will allow him to take a sabbatical leave for two terms in order to write a book on the origins of Christian devotion to the Virgin Mary, one that he is hoping will reach a broad audience. The book will be the first historical study of devotion to Mary in early Christianity, one that seeks to transcend the fault lines in the historic debates between Protestants and Catholics that earlier studies of her veneration have followed.

“In addition to affording me the time to complete this project, the opportunity to visit these two research centers will allow me to interact with the highly accomplished scholars that these institutions bring together. It’s a wonderful opportunity for exchanging ideas, and for developing new ones. Princeton, Duke, and the University of North Carolina all have significant concentrations of scholars working on early Christianity.”

Shoemaker is the author of The Death of a Prophet: The End of Muhammad’s Life and the Beginnings of Islam, a study of the “historical Muhammad” that focuses on traditions about the end of his life.
Developing New Treatments for STH Infections

Thanks to a Grand Challenges Explorations Grant from the Bill and Melinda Gates Foundation, Janis Weeks, a member of the Department of Biology, the Institute of Neuroscience, and the African Studies Program, will pursue a global health and development research project titled “Neurophysiology-Based Platform for STH Drug Discovery.” Grand Challenges Explorations funds individuals worldwide to explore ideas that develop innovative approaches to persistent global health and development challenges. For more information on this and other awards, go to uoresearch.uoregon.edu.

Jessica Green Awarded Guggenheim Fellowship

University of Oregon biologist Jessica Green was named a 2013 Guggenheim Fellow, selected because of her prior achievement and exceptional promise. Green is codirector of the Biology and the Built Environment Center, a national research center funded by the Alfred P. Sloan Foundation. The Guggenheim Fellowship allows Green to work at the Ecole Polytechnique in France on two closely related efforts: the development of microbial community assembly theory for urban environments and the production of a graphic novel, Cities Unseen, about microbes in the built environment.

National Science Foundation Career Awards

The Career Award is the National Science Foundation’s most prestigious award in support of early-career faculty members. The NSF grants successful applicants a minimum of $400,000 for exemplifying the role of the “teacher-scholar,” demonstrating both outstanding research and innovative approaches to education. This past year, three UO faculty members were recipients of NSF Career Awards. For more information on these and other awards, go to uoresearch.uoregon.edu.
The Incubating Interdisciplinary Initiatives (I3) awards furnish twelve months of funding to support interdisciplinary research projects that are aimed at preliminary stages of large-scale research projects. “The submissions we received for this award program provided significant evidence that interdisciplinary perspectives are integral to the way UO researchers view and address major challenges in all areas of life—from health care to the environment to education,” said Kimberly Andrews Espy, vice president for research and innovation. “It was gratifying to receive so many outstanding proposals. I am particularly pleased that the awards include team members from all academic divisions here at the UO: natural science, social science, education, law, arts, music, and education.” Following are the 2013 awardees:

Chris Bone, Department of Geography, “Drivers of the Beetle Empire: Understanding the Coupling of Climate Change and Forest Management in Bark Beetle Outbreaks,” with team members Patrick Bartlein, geography; Daniel Gavin, geography; Allen Malony, computer and information science; Cassandra Moseley, Institute for a Sustainable Environment. Award amount: $49,969.

Patricia Dewey, Arts and Administration Program, “The Role of Arts Programs in Fostering an Organizational Culture of Patient-Centered Care and an Environment of Healing in Hospitals and Hospices,” with team members Pranjal Mehta, psychology; Josh Snodgrass, anthrop学ology; Kristin Yarris, international studies; Laura Zaerr, School of Music and Dance. Research will take place at PeaceHealth Sacred Heart Medical Center at RiverBend and Samaritan Health Services’ Center for Health Research and Quality. Award amount: $50,000.

Jeffrey Sprague, College of Education and Institute on Violence and Destructive Behavior, “PRIDE: Positive and Restorative Investment in Discipline Reform in Education,” with team members John A. Inghoul, Technical Assistance and Consulting Services; Erik Girvan, School of Law; Claudia G. Vincent, Institute on Violence and Destructive Behavior. Award amount: $48,499.

Richard Taylor, Department of Physics and Material Science Institute, “Fractal Interconnects as a Generic Interface to Neurons,” with team members Darren Johnson, chemistry and Materials Science Institute; Miriam Deutsch, physics and Oregon Center for Optics; Cris Niell, biology and Institute of Neuroscience. Award amount: $50,000.

Phil Fisher, UO psychology professor and Prevention Science Institute member, and Patricia Chamberlain of the Oregon Social Learning Center (OSLC) will lead the newly launched Translational Drug Abuse Prevention Center, made possible by a $9 million grant from the National Institute of Drug Abuse. OSLC is a nonprofit, collaborative, multidisciplinary research center with a long history of collaboration with UO scientists. The grant is one of the largest ever received by the organization. The project includes ten other scientists from OSLC and its partner organizations. Researchers will collaborate to create a national resource for cutting-edge, multidisciplinary research with studies spanning from basic science to implementation research in U.S. child welfare systems.

$9 Million Grant Funds Drug Abuse Prevention Center
UO Research Excellence Abounds

Each year Research Excellence Awards are handed out by the Office of Research, Innovation and Graduate Education to highlight the outstanding research activities taking place at the UO. Award recipients were honored at a spring ceremony. The Outstanding Research Career Award is given annually to two tenured faculty members of associate or full professor rank. Recipients share their outstanding work with campus colleagues by giving the Presidential Research Lecture on campus in the year following the receipt of their award. The Early Research Career Awards are presented to tenure-track faculty members at the assistant professor rank. The Outstanding Accomplishment Award is handed out for a career nontenure track faculty member engaged in independent research activities, as well as for a nontenure-track faculty member engaged in technical activities in support of research.

**MARK CAREY**  
**Early Research Career Award**  
An assistant professor of history, Mark Carey specializes in environmental history and the history of science. His integrative approach to climate-change research incorporates environmental history, Latin American history, social history, and glaciology. His book, In the Shadow of Melting Glaciers: Climate Change and Andean Society, examines the human costs of climate change in Peru and weighs the implications of glacier retreat.  
“T’m not a traditional historian,” Carey jokes. “Most historians spend all their time in the archive reading, but I like to get out and go to the mountains. Analyzing scientists and engineers in the field and talking with the people who actually live near glaciers provides depth and understanding to issues that are happening right now.”

**LESLIE OPP-BECKMAN**  
**Independent Researcher Award**  
Leslie Opp-Beckman is the director of e-learning and a senior instructor at the American English Institute, a program of the Department of Linguistics. She develops innovative e-learning programs that guide more than 5,000 educators teaching English as a foreign language in more than 125 countries. Her interdisciplinary research on e-learning and English language teaching has helped make her a leader in the field of computers and language learning.  
“I really love the educators we work with worldwide,” Opp-Beckman says. “They’re talented people who bring a new perspective to everything we do. We learn something from them constantly, it’s definitely a multidirectional (not one-way) street.”
JEFF DITTO
Outstanding Accomplishment Award
As the manager of the Nanofabrication Facility at the Center for Advanced Materials Characterization in Oregon, Jeff Ditto provides invaluable technical support to users of the research tools inside Oregon’s high tech extension service. Having logged thousands of hours on the facility’s focused ion beam instruments, Ditto is regarded as one of the world’s most skilled operators of the device—a nanofabrication and analysis tool that he describes as the “Swiss army knife of nanotechnology.”
“It’s been really great,” says Ditto, who completed the UO’s Graduate Internship Program before taking on his research support role. “My job provides an opportunity to be involved in research from all areas of the sciences. It’s a pleasure to work in such an outstanding facility and be surrounded by so many great mentors. The university has been very supportive of my ideas and has the infrastructure to pursue innovations.”

CRIS NIELL
Early Research Career Award
An assistant professor of biology, Cris Niell studies the neural circuitry of the visual system to explain the mechanisms behind visual perception. A former physicist, Niell turned to biology because he wanted to learn how the brain functions. He is currently working on a project examining neural pathways and behavioral states in the mouse visual system as well as research studying the development of the visual system to understand how neurons establish appropriate circuits that perform specific computations.
“I’ve been really excited about how quickly our research has gotten going here at UO,” Niell says. “We’re also expanding into a lot of new directions I wouldn’t have expected, including working with groups in psychology to use mouse vision to understand memory and attention, and working with a group in physics to design fractal electrodes that could be used for retinal prostheses.”
GORDON SAYRE
Outstanding Research Career Award
A professor of English, Sayre is a specialist in American literature from the sixteenth through early nineteenth centuries. One of his areas of interest is the intersection of environmental studies and literature, a field for which the University of Oregon has international renown. Sayre is the author, editor, or translator of five books, and is currently beginning work on a project about climate and extinction in early America.

“I enjoy searching in archives and reading the narratives of explorers, sailors, soldiers, and traders in eighteenth-century America,” Sayre says. “To discover a new voice from the past is a special thrill for me.”

JAMES TICE
Outstanding Research Career Award
A professor of architecture specializing in the cartography and urban history of Rome, James Tice shares his passion for one of the world’s great cities through the creation of interactive online maps. Tice is currently working on his third venture in this vein, the GIS Forma Urbis Romae Project: Creating a Layered History of Rome. The previous websites that Tice co-created, the Interactive Nolli Map and Giuseppe Vasi’s Grand Tour of Rome, were conceived as a resource for students and scholars but have mushroomed into an international phenomenon.

“When I first started this work over ten years ago it was a labor of love that I thought twelve people might find interesting,” Tice says. “I had no idea that hundreds of thousands of people from all over the world would find it engaging.”
All told, UO research contributed millions of dollars to the Oregon economy in 2013. Research creates jobs for the people who live in our communities, pay state taxes, and send their children to our schools.

“Through research and discovery, we will continue to power the Oregon economy, creating the companies, jobs, and innovations that fuel our state’s prosperity.”

MICHAEL R. GOTTFREDSON, PRESIDENT, UNIVERSITY OF OREGON

**BREAKOUT OF TOTAL FUNDS AWARDED TO UO IN FISCAL YEAR 2013***

- **FEDERAL**: $85,673,458
- **INDUSTRY**: $1,803,868
- **FOUNDATIONS AND ASSOCIATIONS**: $3,728,513
- **OTHER**: $5,332,061
- **STATES**: $1,086,752

*Includes all external awards for research, instructional, and outreach activities
From the announcement of new programs to the publication of research to the coverage of innovative events on campus, UO research, innovation, and graduate education made headlines in 2012–13. Here are a few of the highlights:

**Scholars Boil Theses Down to Core**—A story by the Register-Guard followed the action at the Graduate School’s Three-Minute Thesis competition, a newly launched event that challenges students to sum up years of research in just three minutes.

**Shhh, the Kids Can Hear You Arguing (Even When They’re Asleep)**—A story by National Public Radio’s social science correspondent Shankar Vedantam focused on an MRI study by UO graduate student Alice Graham and Professor Phil Fisher and Assistant Professor Jennifer Pfeifer showing the effect of parental conflict on infant brains.

**Mimicry: The Art of Deception Among Orchids**—UO biologist Barbara “Bitty” Roy examined an orchid in the cloud forests of northeastern Ecuador that disguises itself as a mushroom to attract a particular fly. The insect spreads the orchid’s pollen to aid in reproduction.

**Confident Patients Save Everyone Money**—A story in the Atlantic health-care blog detailed the findings of a study on patient engagement by UO’s Judith Hibbard. The study was the subject of two papers by Hibbard, which showed that patients who were less involved in their health care had higher health-care costs.

**University of Oregon Hosts Science Outreach Program for Middle School Students**—A story in Chemical and Engineering News highlighted the Furlough Fridays science outreach program started by Michael Pluth and Shannon Boettcher of the UO’s chemistry department. The program, which was spotlighted by Eugene media outlets, provides science activities for middle school students on days that their teachers have been furloughed.
2013 Forecast Calls for RAIN

The coming year promises to be an exciting time for UO research, innovation and graduate education thanks to some new developments on the horizon. One of the biggest stories of the year will be the launch of the Oregon Regional Accelerator and Innovation Network. In July, the Oregon Legislative Assembly voted to allocate $3.75 million to support the project known as Oregon RAIN.

Anchored by the University of Oregon and Oregon State University, Oregon RAIN is a visionary partnership that includes cities, counties, community colleges, chambers of commerce, and economic development agencies. Together, the partners will engage in a strategic effort to create jobs and long-range prosperity for the Willamette Valley by accelerating the growth of new products and technologies that originate from university research, local innovators, and businesses.

Last year, OSU and the UO together brought in nearly $400 million in research dollars that resulted in discoveries, innovations, and economic benefit for Oregon’s citizens. Add millions of dollars in research from the National Energy Technology Laboratory to the list and a south Willamette Valley research triangle begins to take shape. The legislature’s allocation to support Oregon RAIN signals recognition that many of the essential ingredients for converting research into products, new businesses, and employment opportunities are in place.

Oregon RAIN is the product of a regional solutions process initiated by Governor Kitzhaber that brought industry, government, and education leaders together to address the challenges of translating research discoveries and early high tech opportunities into commercial success.

The state has already established resources for the very earliest stages of entrepreneurship through gap funds established by the state’s Signature Research Centers and the University Venture Development Fund. These allow new technologies and concepts to be proven commercially viable. Next, they must be scaled up and introduced to the market, requiring access to capital infrastructure, and business resources. Oregon RAIN will capitalize on the synergies between Oregon’s research universities and state investments, providing technology based startup ventures throughout the south Willamette Valley region with human resources and infrastructure, including access to lab space, technical and business expertise, and specialized equipment.

RAIN repurposes facilities that are in close proximity to existing research facilities to create opportunities for businesses to prove their venture as a model and position their businesses to grow. The Lane County accelerator will occupy a floor of PeaceHealth facilities next to the campus and furnish both business and program space as well as shared IT and access to community-based resources. Capital funds requested as part of the proposal will allow for the acquisition and renovation of this space. As funding permits, lab space for startup companies will become available. The new facilities will be convenient to existing research services centers—such as CAMCOR (Center for Materials Characterization in Oregon), the Microproducts Breakthrough Institute (MBI), ONAMI (Oregon Nanoscience and Microtechnologies Institute), and Oregon BEST (Built Environment and Sustainable Technologies)—providing emerging innovation-based companies access to equipment and facilities.

Along with physical facilities, RAIN will provide startups with knowledgeable and experienced mentors, access to investment capital, student and postdoctoral researchers, legal expertise, and seasoned entrepreneurs who can help develop business plans, vet technologies, and provide expertise and resources in support of new business ventures.

The University of Oregon and Oregon State University have a proven track record of turning university research into companies, which provide more than 600 jobs in Oregon and bring in nearly $70 million in revenue. Oregon RAIN will take us to the next stage of an innovation economy in the south Willamette Valley.

Industry Partnerships

Some of the UO’s brightest minds are gaining real-world experience working on pressing health-care issues thanks to a new partnership between the Office of Research, Innovation, and Graduate Education and Trillium Community Health Plan. The Trillium Health Research Training Fellowship supports graduate-level training for students at the Center for Assessment Statistics and Evaluation (CASE). Fellows conduct research requiring advanced statistics on Trillium projects and are mentored by members of the Trillium staff.

“It’s a partnership that works for students, for our center, and for Trillium,” said Terri Ward, director of CASE. “The program strengthens our ties to the community and furthers the careers of our graduate students.”