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Portland State University. Research & Strategic Partnerships

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Bridges to Research, Innovation, Knowledge, and Education

Bridges are the connective tissue of Portland, spanning our rivers, streams, and valleys. Similarly, Portland State University’s many partnerships link our institution with those organizations that provide the economic and cultural lifeblood of our region. The Office of Research and Strategic Partnerships (RSP) oversees the largest of these, with the Oregon Health and Science University, Intel, the City of Portland, Portland General Electric, Portland Public Schools, and the Technology Association of Oregon, among many others.

In this, RSP’s first quarterly newsletter, we provide a snapshot of how PSU’s faculty and students are working with these partners to make and apply new discoveries about the natural world and our urbanizing society. Each issue will include representative stories about our researchers, our partnerships, links to lists of our latest publications and grants, and graphs showing our progress in growing our funded research enterprise.

Nothing epitomizes our strongest partnership better than the new OHSU-PSU-OSU Collaborative Life Sciences Building, nearing completion in South Waterfront, soon to be a five minute light rail ride from PSU’s Urban Plaza. And stretching east across the Willamette from the CLSB is Portland’s youngest and most graceful span, which we have informally dubbed the Bridge to Innovation, Knowledge, and Education (BIKE), providing non-automotive access to OMSI, Portland Community College, and the fertile incubation environment of Portland’s Central Eastside industrial district.

In years to come, people will look back at these new structures as milestones of the catalyzing role an urban-serving university can play in growing opportunity for the citizens of its region. We hope you will join us as we chronicle this exciting ride.

Jonathan Fink
Vice President for Research & Strategic Partnerships

Portland’s entrepreneurial ecosystem has taken off in the past decade and now it’s soaring at 30,000 feet. “Growing the Future,” an article in the October 2013 issue of Alaska Airlines Magazine, touts Portland’s startup community and highlights PSU spin-off DesignMedix as well as the Portland State University Business Accelerator. READ MORE
Educating the Next Generation of Power Engineers

What will happen to the power grid as more electric vehicles hit the road and more solar panels dot our rooftops? How will new transmission and sensor technologies change the way the grid operates? Where will utilities turn for the well-trained workforce needed to address these questions?

In order to educate tomorrow’s power engineers, PSU and Portland General Electric (PGE) are weaving together a program of research, community projects, and professional training. In the PGE Foundation Power Engineering Education Laboratory, Dr. Robert Bass of the Department of Electrical and Computer Engineering has partnered with PGE to give his students hands-on experience in real-world engineering projects.

“My focus is on making sure students at PSU have an excellent engineering education and that they’re sought after by the industry,” Dr. Bass said.

In his lab, Dr. Bass and his students are working on a number of research projects for PGE and regional research consortia such as Oregon BEST, OTREC, and Drive Oregon. This work includes a study of how electric vehicle charging influences the power distribution systems at the “Electric Avenue” demonstration site on campus. As Bass explains, the distribution grid was designed to power household appliances, not complex systems like electric vehicles.

Dr. Bass and students in his lab are figuring out how electric vehicle charging stations might influence the power distribution network. Governors from Oregon and seven other states are cooperating on a proposal to increase the number of zero emission vehicles on American roads to 3.3 million by 2025. Studies such as those conducted in the lab could provide engineers with the tools they’ll need to keep up with the demand for electricity.

Undergraduate and graduate students in the lab design practical applications of power engineering for organizations like PGE, Bonneville Power Authority, the Oregon Energy System and Technology Research Administration, and others. According to Dr. Bass, these projects let students be creative, work on open-ended questions, and solve problems whose answers cannot be found in the back of a book.

“I like to see students walk out of this program understanding long-term thinking—ways to solve large-scale system problems. Being able to work together in groups and find their own solutions. I want to see them exposed to the kinds of real-world projects they’ll face when they work for industry,” Dr. Bass said.

Read Other Profiles of PSU Research

Read About Other PSU PGE Partnerships

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Water Sustainability

As we race toward a world of over 9 billion people by 2050, the landscapes we inhabit and cultivate are being heavily altered. The climate is warming, scientists agree, due to anthropogenic impacts. The resources we rely on, such as usable, accessible water, are in increasingly short supply.

The likelihood of future water scarcity and other disruptions of ecosystem function in the Pacific Northwest present an unprecedented challenge: how to avoid shortages for society while also sustaining healthy ecosystems?

Dr. Heejun Chang, a water expert and Professor of Geography in PSU’s School of the Environment uses an integrated regional approach to explain major changes in water quantity and quality. He and his collaborators examine the complex interactions of climate change, land use change, and water management.

As a member of UNESCO’s Hydrology, Environment, Life and Policy (HELP) Program, Dr. Chang partners with scientists, government agencies and policy makers across the states and around the globe to improve the links between hydrology and the needs of society.

In the Northwest, Dr. Chang leads several inter-disciplinary studies that inform agencies such as the Portland Water Bureau, Metro regional government, Oregon Department of Environmental Quality, and the U.S. EPA of the changing state of our hydrologic systems.

“...the focus of all this research,” said Dr. Chang from his PSU office “is on how water resources are impacted by supply, quality, and demand. There has been a lot of attention recently paid to climate change, but other factors are also involved. The landscape is changing through land conversion, urban development, and population growth. There are also important sociological influences, like demography and behavioral attitudes. Water systems are coupled to natural and human systems in complicated ways that we need to carefully understand.”

Dr. Chang believes that to preserve adequate water supplies for the world, stakeholders will need to be engaged from the beginning in a process of integrated water resources management. This approach requires the coming together of experts from a broad range of fields from the physical to the social sciences, economics to education, civic leaders, resource managers, non-profit organizations, researchers, students and the general public. Dr. Chang and his School of the Environment colleagues are at the forefront of building such a network of stakeholders. Their goal is to map out options that simultaneously protect the needs of the people and the environment of the Northwest, not just for today, but for future generations.

Read More About Dr. Chang’s Research
Powering the Region’s Tech Economy

Becoming a premiere national university in technology, business and research is no easy task and takes years of sustained effort by industry, state policy makers and university faculty and administrators, a Georgia Institute of Technology leader told Portland State University gathering Friday, October 25th.

Stephen Fleming, vice president of Georgia’s Tech’s Enterprise Innovation Institute, told nearly 100 PSU faculty, tech company executives and economic development officials that it took years for his school to emerge as one of the nation’s top public engineering universities, attracting $700 million per year in research dollars, spinning off successful startups and drawing dozens of companies such as GE and Panasonic to co-develop new technology.

“They come for the student talent; they stay for the innovative environment,” said Fleming, who made clear that Georgia Tech and Atlanta could be a model for PSU and Portland because they share vibrant urban locations, similar size and a growing tech economy.

Fleming was the keynote speaker at a “Powering Portland’s Tech Economy” summit hosted by PSU and the Technology Association of Oregon. One of the series of “Portland State of Mind” events, the meeting let PSU leaders inform tech executives from Intel to startups about expertise and talent at PSU, while tech participants told PSU faculty and administrators how the university can help their workforce and their research.

“The depth of interactions (at PSU) is remarkable,” said Intel’s Carl Rimby, who said Intel hires 300 interns for PSU every year and has more than 450 engineers who are PSU graduates working at its Hillsboro chip facility.

Angela Jackson, Director of the Portland State University Business Accelerator, told the tech executives that the Accelerator helps startups get off the ground while PSU’s new Center for Entrepreneurship works to spur innovation and provide support across the university beyond technology, from architecture to science. Echoing Fleming, she said: “It’s not about the patents, it’s about the students.”

Erin Flynn, PSU’s Associate Vice President for Strategic Partnerships, who organized the event with the Technology Association of Oregon, said the lessons from Georgia Tech show that PSU and the tech sector can come together to develop business growth and breakthroughs that will accelerate Oregon’s economy.

“We can do this,” Flynn said. “Let’s build this ecosystem together.”

Research Snapshot

First Quarter, Fiscal Year 2014

Awards Received Q1, 2014

New Awards: $15,022,449  
Continuing: $7,351,950

New funding authorized in form of new awards or amendments to existing awards.

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www.pdx.edu/research
Dill, Jennifer, OTREC, NITC National UTC, US Department of Transportation, $2,828,200

Green, Beth, CCF, Testing the Efficacy of Early Head Start in Preventing Child Maltreatment: A Fifteen Year Longitudinal Study, Centers for Disease Control and Prevention, $350,000

Walker, Janet, RRI, EASA (Early Assessment and Support Alliance), Center of Excellence Oregon Health Authority/US Department of Education, $835,780

Pankow, James, CE, Support of Stream Sampling for Dissolved Pesticides in 2013 Using the Autonomous Portland State University (PSU) Stream Sampler, US Geological Survey, $185,000

Strongin, Robert, CHEM, Yan, Mingdi, CHEM, Development of an Assay for the Early Detection of Ovarian Cancer, Women & Infants Hospital/National Institutes of Health, $999,291

Kagan, James, INR, Programming Polasky’s Biological Model and Wildlife Analysis, US Fish & Wildlife Service, $18,318

Szymoniak, Tom, CE, Collaborative Research: Training Next Generation Faculty and Students to Address the Infrastructure Crisis, National Science Foundation, $32,616

Cahn, Katharine, CCF, Family Connection Grants: Family-Finding/Family Group Decision Making, Oregon Department of Human Services/Department of Health and Human Services, $473,350


Conrad, Susan, LING, Developing Student Writing Skills for Civil Engineering Practice, National Science Foundation, $588,267

Hammer, Leslie, PSY, Graduate Training in Occupational Health Psychology (cont.), Centers for Disease Control and Prevention, $427,116

Ervin, David, ESR/Econ, Granek, Elise, ESR, IGERT: Sustaining Ecosystem Services to Support Rapidly Urbanizing Areas, National Science Foundation, $2,494,114

Liu, Linda, EEPS, TRiO - Student Support Services, US Department of Education, $1,426,903

Reysenbach, Anna-Louise, BIO, Collaborative Research: Enhancing expertise in archaeal taxonomy: Classical and molecular-based monographic research of the Nanoarchaeota, National Science Foundation, $603,990

Fullerton, Ann, SPED, Merging Transition, Special, and Secondary Education Project (MTSS), US Department of Education, $731,616

Butler, Virginia, ANTH, Collaborative Research: Impacts of Abrupt Environmental Change on North Pacific Human Ecosystem Dynamics using High Resolution Zooarchaeological Records from Coastal Washington, National Science Foundation, $242,511

Jetter, Antonie, ETM, McNames, James, ECE, Launch in 9, National Collegiate Inventors and Innovators Alliance, $21,500

Fountain, Andrew, GEOL, Collaborative Research: The McMurdo Dry Valleys: A Landscape on the Threshold of Change, National Science Foundation, $1,067,911
Research Snapshot

First Quarter, Fiscal Year 2014

Proposals Submitted Q1, 2014

102 Proposals Submitted

- CLAS 69
- MCECS 20
- CUPA 11
- SSW 7
- Other 7
- COTA 3
- GSE 5

Selected Proposals

See the Full List

Jay, David, CE, Talke, Stefan, CE, Nonlinear and Non-Stationary Tides in Tidal-Rivers ad River Estuaries, National Science Foundation

Parra, Jeremy, CHEM, Atkinson, Dean, ESR, REU Site: Atmospheric Science Experiences for Rural and Tribal Oregonians, National Science Foundation

Deardorff, Pam, OCCD, Professional Development Systems, Standards, Support, Oregon Department of Education/Department of Health and Human Services

Trinidad, Alma, RRI, Cellarius, Karch, Dimensions: Development of of an Innovative High School Curriculum of Social Justice, Youth Empowerment, and Leadership for Student Success, US Department of Education

Miller, Thaddeus, USP, Imaginaries of Sustainability: The Technopolitics of Smart Cities & the Shaping of Our Urban Future, National Science Foundation

Griffin, Corey, ARCH, Sailor, David, MB, Interdisciplinary, Research-based Engineering and Design (IRED) Green Building Scholars Program, National Science Foundation

Brown, Kim, BIO, Improving Genomic Resources for Zebrafish Researchers, National Institutes of Health

Daim, Tugrul, ETM, Assessment of U.S. Energy Policies on Renewable Energy Adoption in the Power Generational Section: A Case of the Pacific Northwest, National Science Foundation

Jiao, Jun, ME, Graphene-TiO2-Based Multicomponent Photocatalysts and Their Synergetic Effects on Visible-Light Absorption, National Science Foundation

Harris, Kathryn, LING, Arnold, Nike, LING, Using Classroom Video to Develop Professional Vision in Pre-Service Teacher Evaluation, Spencer Foundation
Selected Proposals

Fountain, Andrew, GEOL, Glacier Change in the Rocky Mountain West, US Geological Survey

Wilkinson, Lindsey, SOC, Documenting the STEM Pipeline for LGB Adolescents and Young Adults: A Longitudinal Look at STEM Persistence and Dropout, Loyola Marymount University/National Science Foundation

Allen, Jennifer, ISS, Schrock, Greg, USP, Portland State University Sustainable Economic Development (SED) Toolkit, Urban Sustainability Directors Network

Gelmon, Sherril, PA, Sandberg, Billie, PA, Patient-Centered Primary Care Home Evaluation, Oregon Health Policy and Research, $180,000

Oschwald, Mary, RRI, Powers, Laurie, RRI, Pregnancy Decision-Making/Supports for Women with Developmental Disabilities, National Institutes of Health

Roeser, Robert, PSY, Mashburn, Andrew, PSY, Testing the Efficacy of Mindfulness Training for Teachers on Improving Classroom Settings for Early Adolescents, Spencer Foundation

Chang, Heejun, GEOG, Herzfeld, Zack, GEOG, GIS-based Classification, Valuation, and Mapping of the Ecosystem Services in the Upper Rio Laja Watershed, Mexico, Ecosystem Services Foundation

Dusicka, Peter, CE, Substation Seismic Performance, Bonneville Power Administration

Castek, Jill, LING, Reder, Stephen, LING, Training Researchers to Use PIAAC to Further Multidisciplinary Research, US Department of Education

Courcelle, Justin, BIO, Wendel, Brian, BIO, Completion of DNA Replication, National Institutes of Health

Deur, Douglas, ANTH, Ethnographic Overview and Assessment for Devil's Postpile National Monument and Sequoia-Kings Canyon and Yosemite National Parks, National Park Service

Research Snapshot

First Quarter, Fiscal Year 2014

Research Expenditures Q1, 2014

- CLAS $5,790,120
- MCECS $2,530,682
- CUPA $1,654,373
- SSW $2,729,958
- OTHER $1,795,589
- COTA $21,317
- COTA $529,051
- GSE $68,290

$15,119,380 Total Expenditures
Q1 Faculty Publications

See the Full List


Morrow, D., “Producing for TV and New Media.” Producing for TV and New Media. February 2013. Theatre and Film


Bolton, B., “Bank executive compensation and capital requirements reform.” Yale Journal on Regulation. Accepted June 2013. Finance


