# Inquiry

Information from the frontiers of knowledge.



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**Office of Research and Graduate Studies**

**Rich Linton**, Vice President Research and Graduate Studies-Dean of the Graduate School 1281 University of Oregon, Eugene, OR 97403-1281

**Susan Brown**, Executive Assistant

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Fax: 541-346-2023

**Technology Transfer**

**Graduate School**

## Research Quality and Capacity on the Rise

Already among the top-tier research institutions in the U.S. and Canada as one of only sixty-two members in the elite Association of American Universities, the University of Oregon is increasing its research quality and capacity through gifts and grants that are endowing new faculty positions, expanding research facilities, and providing innovative, highly sophisticated equipment. A portion of a $15 million anonymous gift announced in January will be used to hire what UO president Dave Frohnmayer calls "franchise players on the academic side." **read more >>**

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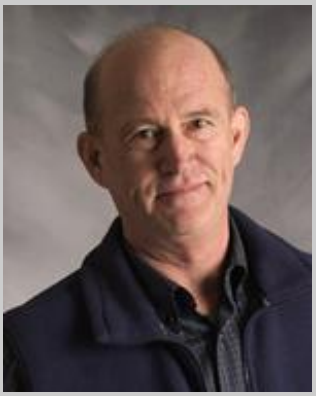

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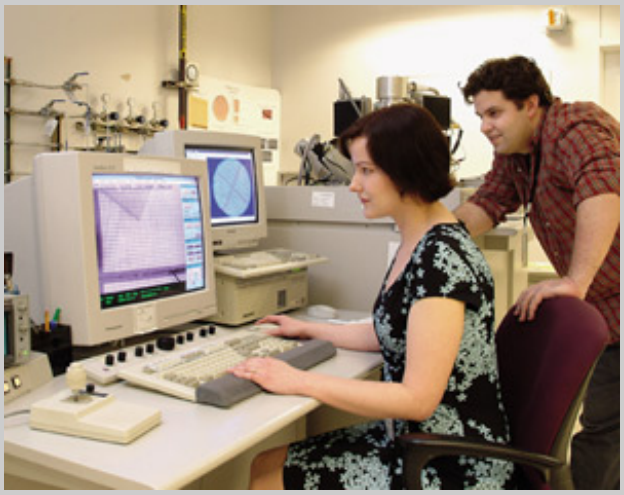

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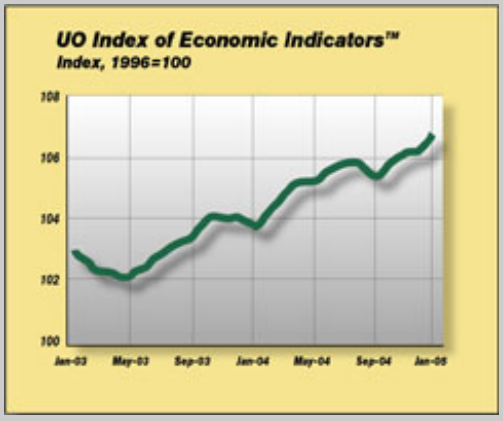


Inaugurated in December 2004, the monthly University of Oregon Index of Economic Indicators provides a clear picture of the state's recent economic direction--up. **read more >>**

## ONAMI on Track to Double Grants

The Oregon Nanoscience and Microtechnologies Institute (ONAMI) is projected to win more than $20 million in research awards in fiscal year 2005, about double the $11 million it earned in fiscal year 2004. **read more >>**


## Points of Pride

Accessing scholarly work. The UO Libraries' new "open access" scholars bank makes technical reports, working papers, student terminal projects, data sets, and other intellectual output of the UO faculty, staff, and students available to the public. Read more: **https://scholarsbank.uoregon.edu/dspace/**. **read more >>**

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The university's first two presidential chairs created through the gift are funded at $2.5 million each, twice as much as other endowed chairs. They will be assigned to the president's office instead of a particular school or program, giving the university flexibility to hire faculty members where needed to strengthen strategically important programs.

Other new faculty positions will be funded with gifts from Julie and Rocky Dixon for an endowed chair in history, from Rosaria Haugland for an endowed chair and graduate fellowship in chemistry, and from Penny and Michael Wilkes for an endowed professorship in architecture.

A $2.5 million gift from Dave and Nancy Petrone provides help in a number of areas on campus, including new classrooms and laboratories in Condon Hall for the geography and anthropology departments. Both departments have experienced at least a 20 percent increase in enrollment over the past five years.

Priscilla Southwell, associate dean of social sciences, says the addition of technology-equipped, state-of-the-art facilities will enable more interaction between the two departments, which already excel in faculty-student collaborative research.

The Petrone gift also funds an endowed faculty position for the map and aerial photographic library and creates a permanent endowment for the highly regarded Warsaw Sports Marketing Center in the UO Lundquist College of Business.

A new "environmental chamber" will allow integrative cardiovascular physiologists in the UO's Department of Human Physiology to study human subjects under almost limitless environmental conditions, varying temperature, humidity, and oxygen levels. This work will further understanding of the causes of high blood pressure and the implications

of hypoxia caused by sleep apnea.

The chamber was financed with a $250,000 U.S. Department of Defense grant and the Petrone gift, which also purchased equipment for a new Center for Biomedical Research and Health Assessment for the department.

UO nanotechnology researchers can analyze materials at higher resolution with a major analytical instrument donated by Hewlett-Packard. The scanning Auger microscope will play a pivotal role in the university's research of thermoelectric and semiconducting materials, cornerstone projects of the Oregon Nanoscience and Microtechnologies Institute.

The Auger microscope will be part of the university's Center for Advanced Materials Characterization in Oregon (CAMCOR), a major research facility accessible to both academic and industry researchers.

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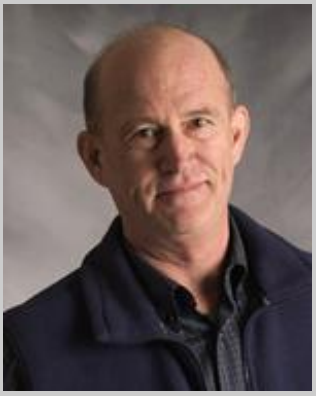
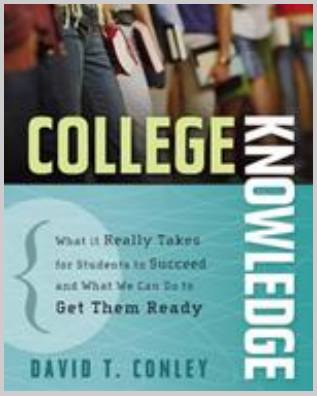


Thousands of students in the U.S. will likely realize more success in college because of the work of David Conley, a UO associate professor of education. He involved more than 400 faculty members at twenty research universities to answer one question: what do students need to know to succeed in entry-level college courses?

Conley's project, Standards for Success, was underwritten by the Association of American Universities and the Pew Charitable Trust, resulting in the most comprehensive set of standards for college success ever developed.

The results were published as a booklet and CD titled "Understanding University Success," which was sent to every public high school in the nation and resulted in policy and curriculum changes at many schools.




Now Conley has produced a book, College Knowledge, which is a resource for parents and students as well as teachers. Conley says it is not a test-preparation book. "It's a holistic guide that explains what really goes on in college, and describes how to get a student college-ready and the knowledge and skills they need, subject-by-subject, to succeed."

The College Board, the organization that develops the SAT, PSAT, and Advanced Placement tests, licenses Conley's Standards for Success through the Center for Educational Policy Research. In this fashion, the standards have a broad effect on education nationwide.

The center also plays a central role in the development of research to support the Chalkboard Project, a collaboration of five Oregon foundations seeking to improve and strengthen education in Oregon, and is conducting studies for the State of Washington on alternatives to the state high school exit exam. Conley's research center and book were made possible by the UO's membership in the Association of American Universities (AAU). As a member of the organization's executive board, UO president Dave Frohnmayer recommended Conley for the AAU committee that ultimately led to Standards for Success. The AAU first awarded Conley the contract to conduct the research in 1999.

Read more: **http://www.s4s.org/index.php**

STANDARDS *for* SUCCESS

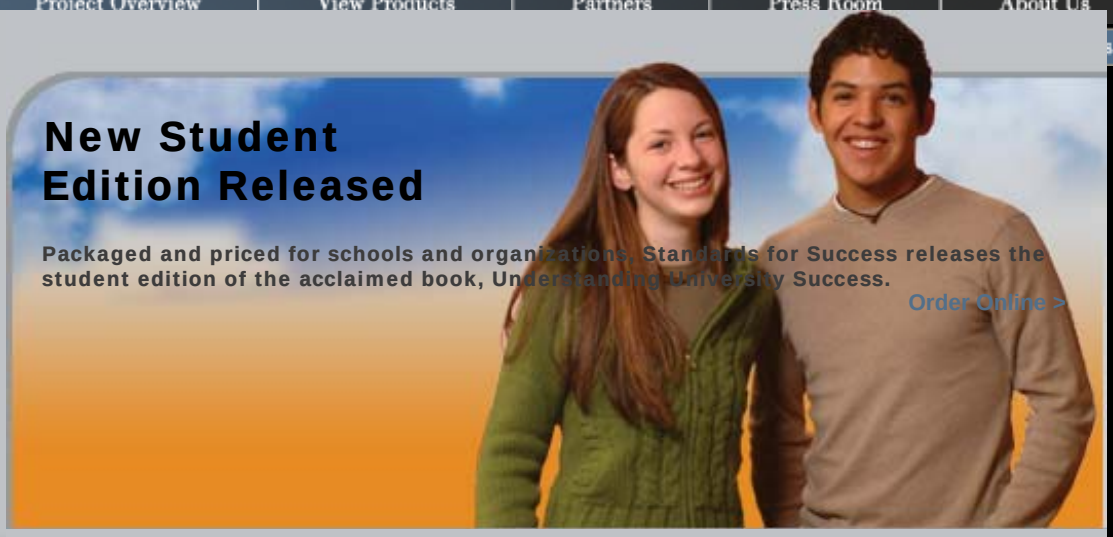


## Project Overview

Standards for Success is a three-year project of the Association of American Universities in partnership with The Pew Charitable Trusts. It has two goals:

Goal 1: Identify what students need to know and be able to do in order to succeed in entry-level university courses. Knowledge and Skills for University Success is a comprehensive and thoroughly grounded set of standards for college success.

Goal 2: Produce a database of information on state high school assessments to improve the connection between the content of high school tests and the standards for university success.

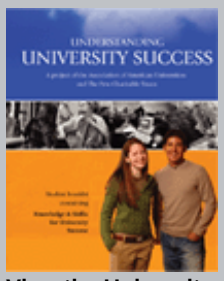


## New Student Edition Released

**Packaged and priced for schools and organizations, Standards for Success releases the student edition of the acclaimed book, Understanding University Success.**

Order Online >

**Mixed Messages Report *New!***
View the Mixed Messages report on the alignment between University Success Standards and 66 state tests.
More >

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# Faculty Excellence Reaps Reward

Six recent national awards presented to UO faculty members cut across rank, gender, and discipline to confirm their excellence in teaching, research, and leadership.


Richmond

Chemistry Professor **Geraldine Richmond** won the American Chemical Society's Award for Encouraging Women into Careers in the Chemical Sciences for 2005, sponsored by The Camille and Henry Dreyfus Foundation.

Richmond was recognized for her life-changing work as the founder and chair of COACh (the Committee on the Advancement of Women Chemists), a national organization she started in 1998 to address the disparity in hiring and promotion of women in academic chemistry departments.

The Oregon Academy of Science (OAS) named UO Professor Emeritus of Geological Sciences **Ewart M. Baldwin** the Outstanding Scientist for 2005.

Baldwin, author of the state's definitive geological handbook, Geology of Oregon (Kendall/Hunt Publishing Co., fourth edition, 1992) is the foremost authority on the historical geology of Oregon. Now in his fifty-eighth year at the UO, Baldwin has mapped more than 4,000 square miles of Oregon, studying the geological record stretching from 65 million to 2.3 million years ago.

The OAS named UO physicist **Richard M. Taylor** the Outstanding Teacher in Higher Education for 2005. In presenting the award, OAS President Dan Arp described Taylor as "an inspirational, engaging and effective teacher." Students have described Taylor's course, "Physics of Light and Color," as the best course they have ever taken.


Taylor


Ettinger

R1edu, a national partnership of top research universities involved in online education, honored UO professors Linda F. Ettinger and Jane Maitland-Gholson for outstanding work in online educational programs.

Ettinger and Maitland-Gholson received R1edu's award for meeting or exceeding standards set by the Association of American Universities in developing the UO's online **Applied Information Management** (AIM) master's degree program.

Ettinger has been AIM's academic director since 1986 and Maitland-Gholson is a faculty member, teaching research methods. AIM offers the only fully online (web-based) graduate degree at the UO.


Minson

Associate Professor of Physiology **Chris Minson** won the Outstanding Young Investigator award from the American Physical Society, Environmental and Exercise Physiology Section, which called his work "an outstanding example of experimental research."


Mattiland-Gholson

Minson competed with the most promising young scientists in the nation to win his award, which recognizes his investigation into how heat, cold, and oxygen levels affect human performance. His research has implications for a wide range of health issues, from occupations performed in extreme environmental conditions to the underlying causes of high blood pressure.

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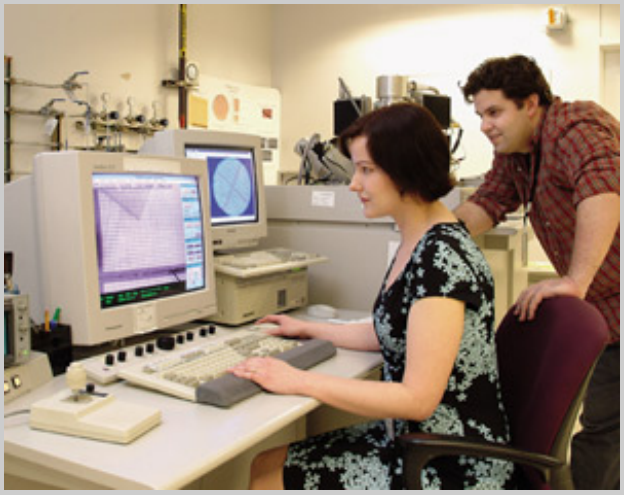

Investments in the University of Oregon by the Engineering and Technology Industry Council (ETIC) are working as intended, providing technology jobs to Oregonians, drawing high-quality faculty members here, and helping university researchers attract competitive grants. Formed by the Oregon Legislature in 1997, the council is charged with making engineering and technology education a strategic resource in Oregon.

ETIC provided start-up money for three capital-intensive programs operated by the UO's Materials Science Institute. These programs prepare students to excel in computers and electronics, wood products and polymers, and the emerging biotechnology field. Nearly all of the interns get jobs in these fields and remain in Oregon.

Eugene resident Andrea Jones fulfilled her career goal when Intel Corporation offered her a full-time job after a nine-month internship. Springfield, Oregon, native Chris Larsen's polymer internship led to a job at Willamette Valley Company. "It's a pretty rare thing to be able to find work in your field in your home town," he said.

ETIC funds were also used to assist with new-faculty start-up packages of laboratory space and associated renovations, equipment, and research support, attracting stellar young researchers. Assistant Professor Reza Rejaie, a leading expert in technologies for communicating continuous media (such as sound and video) over data networks, came from AT&T labs in California. Assistant Professor Jun Li heads research on defending against network worms. Assistant Professor Dejing Dou researches and teaches in the area of the "semantic web," a mesh of data organized in a framework that allows ease of processing, sharing, and reuse across application, enterprise, and community boundaries on a global scale.

Other faculty members recruited with ETIC funds are 2003 National Science Foundation award-winner Heiner Linke, an assistant professor of condensed matter physics and biophysics; Marina Guenza, assistant professor of theoretical physical chemistry; and Richard Taylor, associate professor of physics, whose specialty is fractal expressionism.

ETIC also has provided crucial matching funds for numerous National Science Foundation grants for research and equipment, underwritten development programs to recruit minorities into Materials Science Institute programs and supported high school summer science camps offered by the institute to demonstrate the excitement of chemistry and the value of a chemistry degree.

Read more: **http://www.oregonetic.org/**

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# *Engineering and Technology Industry Council*

Home
ETIC Mission
ETIC Roster
ETIC Meetings
Investment Indicators
05-07 Biennium
03-05 Biennium
01-03 Biennium

**2005-2007 Recommended Allocation**
The OUS Phase I testimony to the Ways & Means Education Subcommittee began on March 8th. UO President Dave Frohnmayer gave the portion of the presentation on ONAMI and ETIC (see slides beginning on page 24).

The Governor's Recommended Budget invests $21.7 million in ETIC for the 2005-2007 biennium. Details, including summary, allocation and proposals are posted at 2005-2007 Biennium.

**In the News**...
Micro Nano Breakthrough Conference coming July 25-28, 2005

2004 RESEARCH OREGON - a special report by Oregon Business Magazine on college and university research programs

Raising the Grade on Educating Engineers
*Portland Business Journal, 05.17.04*

**Recent Presentations**

- Michelle Girts' Innotech Panel Presentation; Salem 3/09/05
- ETIC proposal for 2005-2007 -- Policy/Strategy/Budget presentation; 9/24 ETIC meeting
- Pre-Engineering Pipeline; community college presentation by PCC, CCC and ODE; 4/23 ETIC meeting
- ETIC Strategic Mission and Vision; strategic planning results presented at 3/19 ETIC meeting (suggestions incorporated)
- ETIC's Highlights; 12/1/03 Leadership Summit presentation by Wally Rhines
- Proven ETIC Model; 12/1/03 post-secondary education session of Leadership Summit

ETIC

**Meeting Information**

**Next Meeting: May 9th**

2005 ETIC Meeting Schedule
Meeting Minutes
New 2004 ETIC Members

**Subcommittees:**
Govt/Communication Task Force
Communication Strategy Outline
ETIC 2004 VIP Tours (summary)

**Resources**
ETIC Success Stories
OUS 2005 Legislative Notebook
OUS 2004 Factbook
OCKED 2003-2005 Plan
OregonEngineer.org
OSBHE Meeting Schedule
more..

**ETIC Documents**
Bylaws (revised 4/23/04)
Private Support Reporting Policy
03-05 Executive Summary (2/19/03)

**Website contact Michele Vitali at Oregon University System. Last updated April 04, 2005**

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# FEMA Honors Natural Hazards Program


The Federal Emergency Management Agency (FEMA) recognized the Oregon Natural Hazards Workgroup at the UO in February for pioneering disaster mitigation planning throughout the state.

The Oregon Natural Hazards Workgroup (OHNW) has worked with virtually all of Oregon's thirty-six counties and the State of Oregon to identify and reduce risks from natural disasters. A guide on disaster-mitigation planning and technical resource CDs for Oregon communities have also been developed under its auspices.

At the briefing, John Pennington, FEMA Region 10 director, announced that the agency has awarded the work group a $100,000 grant to develop a "disaster-resistant university" mitigation plan for the UO that will identify potential natural disasters and their impact--such as damage caused from a windstorm--and develop short- and long-term actions that could reduce risk of that damage.

André LeDuc, ONHW director, called the grant "an opportunity to bring our work home, where the planning model was first developed."

Unlike emergency response plans, risk-mitigation plans are implemented beforehand. The model developed by ONHW relies heavily on fostering partnerships among communities, agencies, community organizations, and stakeholders to determine needs and identify issues and resources to reduce hazard risks.

ONHW is one of the three core programs of the UO Community Service Center that report to the Office of the Vice President for Research. The center is an affiliate of the UO Department of Planning, Public Policy and Management in the School of Architecture and Allied Arts. Read more: **http://darkwing.uoregon.edu/~onhw/**

# Oregon Natural Hazards Workgroup

Flash Site

Text Site

ONHW

Partners for Disaster Resistance & Resilience

Disaster Resistant by Design

www.OregonShowcase.org

This site utilizes some **Flash** components. If you do not have the Flash plug-in, or can not view Flash items, you may either download the plug-in for free from the *Macromedia Website* by clicking here, or access a complete **all text** version by clicking here.

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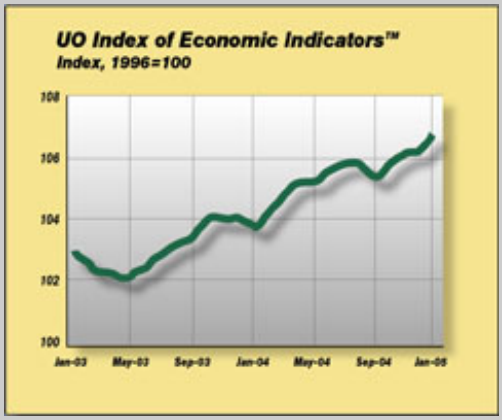
# UO Index Gauges Economy




Inaugurated in December 2004, the monthly University of Oregon Index of Economic Indicators provides a clear picture of the state's recent economic direction--up.

"The UO index showed steadily increasing economic activity in Oregon beginning in May 2003," said Timothy Duy, a UO economist and author of the report.

The index summarizes eight monthly measures of the Oregon economy--including the labor market, construction industry, and shipping activity as well as national consumer confidence, manufacturing orders, and financial market conditions--that are otherwise available only as disparate, and sometimes contradictory, information.

Duy created the index using the same widely accepted and proven methodology used by the Conference Board to compute the U.S. Leading Index and tested the index's indicators by comparing results to historical economic performance dating back to 1995. The UO index uses 1996 as the base year.

"The report is intended to open a dialogue with community leaders on issues important to the state's prosperity," said Joe Stone, dean of the UO College of Arts and Sciences. The index is part of the Oregon Economic Forum, a series of initiatives by the college to showcase research by its Department of Economics faculty.

Planning is underway for the 2005 Oregon Economic Forum, which will be held October 18 at the World Forestry Center in Portland. The event will feature UO economics faculty presentations on economic issues of interest to Oregon and the Northwest.

If you would like to receive a copy of the monthly UO Index of Economic Indicators, send your e-mail address to **kmadison@uoregon.edu**.
Read more: **http://econforum.uoregon.edu/econindex.html**.




oregon economic forum

**March 2005 UO Index of Economic Indicators**

**February 2005 UO Index of Economic Indicators**

**January 2005 UO Index of Economic Indicators**

**December 2004 UO Index of Economic Indicators**

**November 2004 UO Index of Economic Indicators**

**October 2004 UO Index of Economic Indicators**

**September 2004 UO Index of Economic Indicators**

**Index Frequently Asked Questions**





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# ONAMI on Track to Double Grants

The Oregon Nanoscience and Microtechnologies Institute (ONAMI) is projected to win more than $20 million in research awards in fiscal year 2005, about double the $11 million it earned in fiscal year 2004.

In addition, public and private funds and donations have given ONAMI momentum toward its goal of developing research and commercialization to accelerate the creation of high-wage jobs in Oregon. The institute is a collaboration between the University of Oregon, Portland State University, Oregon State University, the Pacific Northwest National Laboratory, the State of Oregon, and private industry.

The State of Oregon's initial investment in ONAMI has been highly successful in attracting additional nonstate sources of support. Only $1 million of the 2003 investment of $21 million has been used; the remainder will be available through bonds issued for capital projects.

Participating universities have invested more than $5 million in nonstate funds, both in cash and in-kind services, that will be leveraged by the growing federal and industry-sponsored research and technology transfer revenues that ONAMI will generate.

Industry and other private research funding, service revenue (e.g., for materials analysis), graduate student internships, and philanthropy (e. g., donations of cash, equipment, and buildings) account for an additional $9 million.

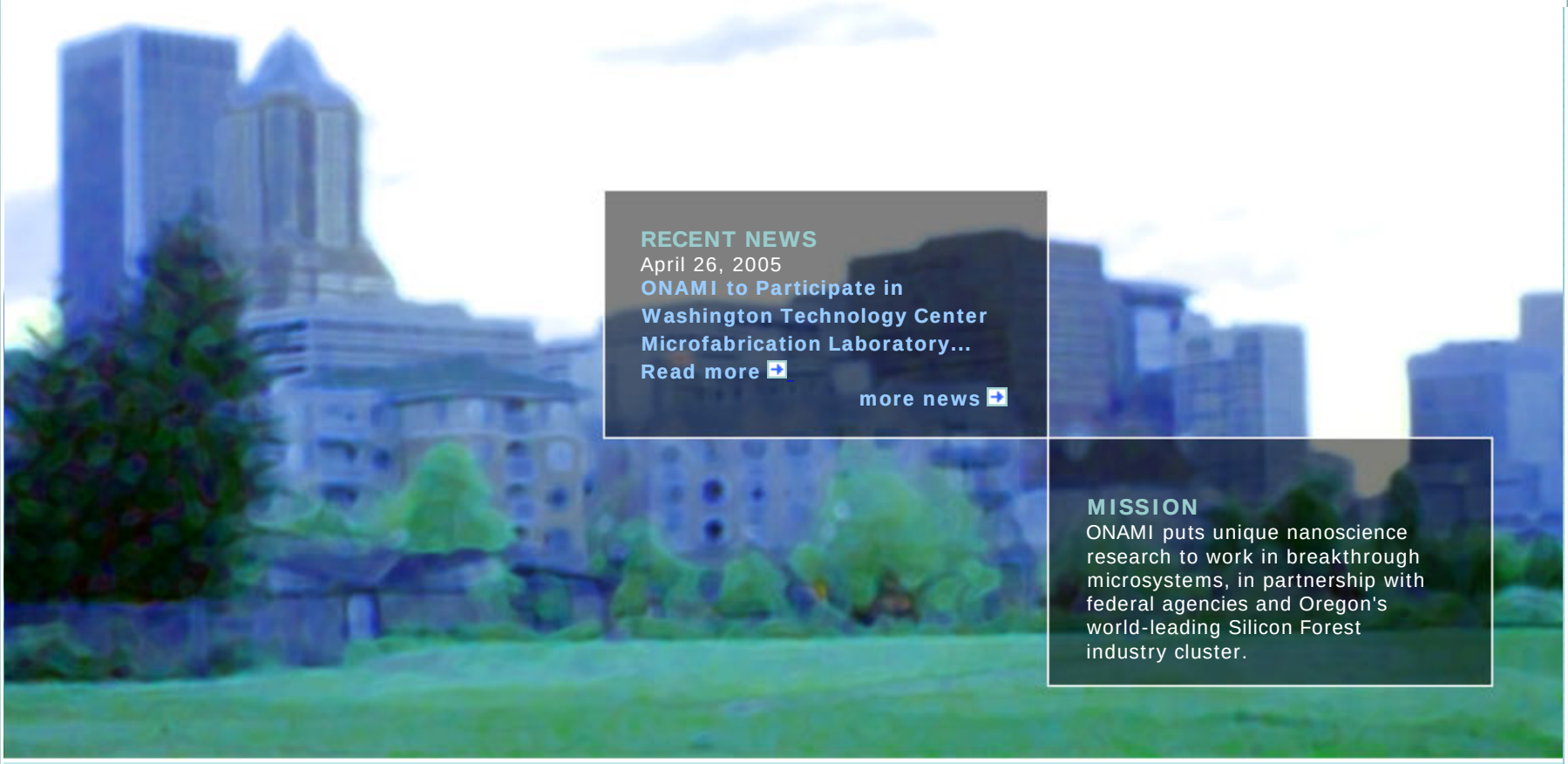
This year, the institute became a nonprofit private entity with an independent governing board. The new organization is modeled after the North Carolina Biotechnology Center, credited for propelling the state of North Carolina to its current place among the top five biotechnology research states in the country. Rich Linton, UO vice president for research, is a founding member of the ONAMI board.

Read more: **http://www.onami.us/**.

# ONAMI

OREGON NANOSCIENCE AND MICROTECHNOLOGIES INSTITUTE





**RECENT NEWS**
April 26, 2005
**ONAMI to Participate in Washington Technology Center Microfabrication Laboratory...**
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**more news**

**MISSION**
ONAMI puts unique nanoscience research to work in breakthrough microsystems, in partnership with federal agencies and Oregon's world-leading Silicon Forest industry cluster.

ONAMI logo by Sanda Communications | site by www.gladysdiaz.com | last updated 05/10/05

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# Points of Pride

Accessing scholarly work. The UO Libraries' new "open access" scholars bank makes technical reports, working papers, student terminal projects, data sets, and other intellectual output of the UO faculty, staff, and students available to the public. Read more: **https://scholarsbank.uoregon.edu/dspace/**.

Discovering new worlds. Biologist Michelle Wood's research team discovered an algae that uses near-infrared light for photosynthesis, opening a new range of possible habitats for organisms beyond the visible spectrum. Read more: **http://evolution.uoregon.edu/mwood.htm**.

Improving connections. The National Science Foundation awarded sociologist Ron Mitchell and a fellow researcher from Whitman College $750,000 to dismantle the modern-day Tower of Babel of academic cultures and languages to facilitate collaboration among the next generation of researchers. Read more:**http://www.whitman.edu/content/news/750000Grant**.

Enhancing education. A three-year project by faculty members from the College of Arts and Sciences and the College of Education will enrich lesson plans and sharpen effective teaching practices in Coos, Curry, Douglas, and Lane counties without additional cost to schools. Read more: **http://education.uoregon.edu/feature.htm?id=817**.

Ultrasmall Transistor. Jim Hutchison, associate professor of chemistry, has patented a technique for creating a single-electron transistor, the tiniest that can be made, opening the door to a new class of electronics and optics assembled from nanoparticles. Read more: **http://www.uoregon.edu/newscenter/31.3.05-HutchPatent.html**.

Ground-breaking policies. University of Oregon psychology professor Jennifer Freyd is the lead author of the first major policy recommendation on child sexual abuse published by the journal Science. Read more: **http://waddle.uoregon.edu/?id=280**.

Greenest building. The UO's Lillis Business Complex is the "greenest" business college building in the nation, according to the Leadership in Energy and Environmental Design program. Read more: **http://lcb.uoregon.edu/**.

Long-range Forecast. UO geologist Greg Retallack's study of ancient soils, published in the April issue of the journal Geology, indicates that a "troubled greenhouse" is brewing and is more likely to produce monsoons, not a deep freeze, as the result of climate warming. Read more: **http://darkwing.uoregon.edu/~gregr/** .

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15 April 2005: Public Library of Science Position on NIH Policy

28 March 2005: Policy on Enhancing Public Access to Archived Publications Resulting from NIH-Funded Research to be implemented May 2005

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Last update: 2 February 2005 by Corey A Harper
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credits

# Anne Michelle Wood

Biological Oceanography
Microbial Ecology and Evolution

Associate Professor of Biology
Past President (2002), Phycological Society of America

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Michelle received her Ph.D. with L. R. Pomeroy at the University of Georgia in1980. She did postdoctoral work in the Committee on Genetics (with R. H. Haselkorn and R. S. Alberte) and the Committee on Evolutionary Biology (with J. A. Teeri) at the University of Chicago from 1980-84. She was then a Research Associate with R. S. Lande in the Department of Ecology and Evolution at the University of Chicago until she joined the faculty of the University of Oregon in 1990. She has been an adjunct scientist at Bigelow Laboratory for Ocean Sciences since 1984 and at Harbor Branch Oceanographic Institution since 2001. In 2004, Michelle became a fellow of the Cooperative Institute for Oceanographic Satellite Studies (CIOSS) at Oregon State University.

|Phytoplankton Gallery|

|Current Research Projects|

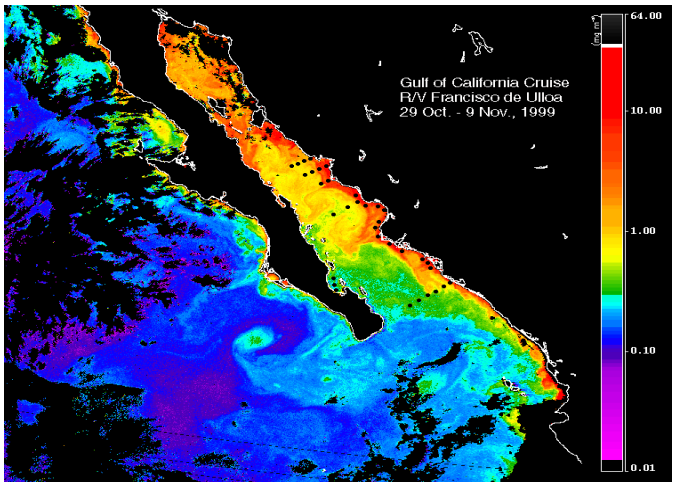
**Research Summary**

The oceans remain one of the least explored frontiers of our region of the solar system; more is known about the surface of the moon and of Mars than is known about the watery landscape that covers 71% of our planet. My research uses tools from genetics, cell biology, oceanography, and remote sensing to explore connections between microorganisms in the sea and the physical processes that determine their abundance, distribution and productivity. Unlike many ecologists, who tend to view the properties of the organisms they study as relatively static, my research is guided by an evolutionary perspective within which we recognize that both evolutionary history and evolutionary potential lead to dynamic ecological patterns.

Most people in my lab study marine phytoplankton. These unicellular organisms are responsible for approximately 50% of global primary productivity. They play a key role in the global carbon cycle and the planetary heat budget. (They are also very beautiful.) Marine phytoplankton represent a phylogenetically diverse group of organisms with representatives from at least

three phyla of protists and many cyanobacterial lineages. In nature, they attain large population sizes and can have rapid growth rates (Lande et al. 1989, Sherry and Wood, 2001) which means that microevolutionary responses can be an important aspect of their adaptive strategy (Wood et al. 1998; Lynch et al., 1991). Because we work with unicellular organisms, where the connections between gene, phenotype, and fitness are relatively direct, it is possible to apply the intellectually satisfying power of modern molecular biology and biochemistry to the study of adaptation and phenotypic evolution in ecologically important organisms, often in the natural environment. Further, since the food web in which these organisms are embedded also includes rapidly growing heterotrophic and mixotrophic microorganisms with large population sizes, we are in a unique position to explore the effects of evolutionary adaptation by one member of an ecosystem on the evolution and fitness of other members of the ecosystem. We are particularly fortunate in our focus on the evolutionary ecology of two important cyanobacterial taxa (*Synechooccous* and *Prochlorococcus*) because the genome of several different marine strains has been completely sequenced. I am looking forward to utilizing the power of bioinformatics and genomics to address fundamental questions about the evolutionary ecology of these groups.

In addition to research on the mechanisms and processes of evolution in marine phytoplankton, I am particularly interested in the development of the new field of **optical biogeography**. This concept, which we introduced in 1998 (Wood et al.,1998) suggests that differences in the optical properties of different water masses represent important differences in the selection regime that affects the success of different phytoplankton taxa. In my ongoing fieldwork ,we are using a combination of remote sensing and ship-based ground truth measurements to determine the extent to which water masses represent distinct marine habitats,each with characteristic properties of ecological structure and function. In the Arabian Sea, we found that a particular spectral form of marine *Synechococcus* previously thought to be rare in the sea,was actually the dominant form in upwelling-influenced water (Wood et al., 1999). In subsequent work in the Gulf of California, we have confirmed that this pigment represents an optical marker for upwelling-enriched oceanic water masses that are dominated by this particular group of picophytoplankton. Ongoing work continues to focus on the optical biogeography of marine picophytoplankton, particularly in coastal waters.




**SeaWIFS image of chlorophyll distribution In the Gulf of California, Nov, 1999. Dots indicate station locatons. Image courtesy Scott Pegau & Ron Zaneveld, OSU Marine Optics.**

|Prochlorococcus genome projects| |Synechococcus genome project|
|Explore ocean color and remote sensing at the SeaWIFS home page|
|return to top| |return to Ecology and Evolution|

**Representative Publications**

Miller, S. R., S. Augustine, T. L. Olson, R. E. Blankenship, J. Selker, A. M. Wood, 2005, Discovery of a free-living chlorophyll *d*-producing cyanobacterium with a hybrid proteobacterial/cyanobacterial small-subunit rRNA gene. PNAS 102 (3): 850-855.

Arnone, R. A., A. M. Wood, R. W. Gould, Jr., 2004, The Evolution of Optical Water Mass Classification. Oceanography 17 (2): 14-15.

Coble, P., C. Hu, R. W. Gould, Jr., G. Chang, A. M. Wood, 2004, Colored Dissolved Organic Matter in the Coastal Ocean: an optical tool for coastal zone environmental assessment and management. Oceanography 17 (2): 50-59.

Wingard, L, S. R. Miller, J. M. L. Sellker, E. Stenn, M. M. Allen, A. M. Wood, 2002, Cyanophycin-Production in a Phycoerythrin-containing Marine *Synechococcus.* Applied and Environmental Microbiology, 68(4). Additional Phylogenetic Information for *Synechococcus* Strain G2.1

Sherry, N. D. and A. M. Wood. 2001. Phycoerythrin-containing picocyanobacteria in the Arabian Sea in February, 1995: diel patterns, spatial variability, and growth rates. Deep-Sea Res. 48:1263-1284.

Wood, A. M., M. Lipsen, and P. Coble. 1999. Fluorescence-based characterization of phycoerythrin-containing cyanobacterial communities in the Arabian Sea during the Northeast and early Southwest Monsoon (1994-95). Deep-Sea Res. 46:1769-1790.

Wood, A.M., D.A. Phinney, and C.S. Yentsch 1998. Water column transparency and the distribution of spectrally distinct forms of phycoerythrin-containing organisms. Marine Ecology Progress Series, 162:25-31.

Wood, A.M., and T. Leatham. 1992. The Species Concept in Phytoplankton Ecology. J. Phycol. 28:723-729.

Lynch, M.; W. Gabriel; and A.M. Wood. 1991. Adaptive and Demographic Responses of Plankton Populations to Environmental Change. Limnol. Oceanogr. 36(7):1301-1312.

Lande, R. S., W. K. W. Li, E. P. Horne, and A. M. Wood. 1989. Phytoplankton growth rates estimated from depth profiles of cell concentration and turbulent diffusion. Deep-Sea Res. 36:1141-1159.

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- Whitman Cycling Team Takes First, Third in Time Trials, Wins Division II National Championship
- Abbott Wins Road Race as Whitman Cycling Team Sets Sights on Division II National Championship
- Whitman Holds Ground-Breaking Ceremonies for $10 Million Baker Ferguson Fitness Center
- Dark Horse No More: Top-Seeded Johnson, Abbott to Pace Whitman Cycling Team at Nationals
- Whitman Students Win Prestigious Awards from Fulbright, Udall and Goldwater Foundations
- Whitman Expecting 250 Alumni, Guests to Visit Campus for Spring Reunion Weekend
- Coffeehouse Reunion: Music Program Founders Returning for 30th Anniversary Show
- Whitman College Celebrates Commencement Sunday, May 22
- 9/11 Tragedy Due To Failure of Imagination Says Former U.S. Senator Slade Gorton
- Homeless Rights Activist to Speak at Whitman College Monday, May 2

**More Whitman News...**

**News Release Date:**
**Thursday, Mar 17, 2005**

# Northwest Researchers Awarded $750,000 NSF Grant to Foster Communication, Help Solve Global Environmental Problems

WALLA WALLA, Wash.-The National Science Foundation has awarded two Pacific Northwest researchers $750,000 to dismantle the "Tower of Babel" that currently impedes young researchers' efforts to work together to solve global environmental problems.

Susan Weiler, a natural scientist from Whitman College in Walla Walla, and Ron Mitchell, a social scientist from the University of Oregon in Eugene, plan to use the funds to build stronger ties between researchers who deal with the scientific and the human dimensions of climate change.

The program, said Weiler, will prepare the next generation of researchers to work in a more interdisciplinary and socially relevant context.

Mitchell said he hopes the program will help young researchers from different backgrounds better understand each other's work. "Fostering such mutual understanding will lead to more effective collaborative research. This can in turn provide us with a more complete and accurate understanding of the causes of climate change and the best responses to it."

Weiler, co-chair of the NSF-sponsored workshop "Meeting the Needs of Interdisciplinary Ph.D. Graduates in a Changing Global Environment," noted that a central imperative faced by today's researchers is to find a common language in which to communicate. "The complexity of environmental systems and rapid pace of human-induced changes by themselves make it very difficult to understand today's world and prepare for the future. This is compounded by the difficulties that researchers in very specialized disciplines have in communicating with each other. Interactions can resemble a modern-day 'Tower of Babel' in which experts from different academic cultures struggle to work together.

"Due to the different languages and methodologies," said Weiler, "it often takes years for meaningful relationships to develop across disciplinary boundaries. Given the enormity and immediacy of the challenges facing the world, we cannot afford this 'wasted' time."

Weiler and Mitchell plan to formally bring together a mix of young and established professionals from different backgrounds to "jumpstart" interdisciplinary interactions. These people will serve as agents for change at the individual, institutional, and societal levels, said Weiler.

Weiler and Mitchell said they have already begun this process informally by simply introducing young professionals to established role models and mentors, providing a "top down" and "bottom up" approach which they hope will catalyze interdisciplinary understanding, collegial networking and links between research, policy and management.

"This is important," said Weiler. "Graduates from a wide array of backgrounds must work together to address global climate-change issues, yet most are not trained to do so. We must do better if we are to respond quickly and wisely to the very real threats imposed by climate changes."

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**April 20, 2005 - Today's Other News Items**

# Patent Opens Door to Nano Transistors

First came the patent on a greener, faster way to synthesize gold nanoparticles. On March 29, University of Oregon chemistry professor **Jim Hutchison** received a second patent that could lead to a new class of nanoscale electronics and optics assembled from nanoparticles--including ultrasmall transistors that operate efficiently at room temperature.

An article describing the discovery leading to this latest patent was published in the June 2004 issue of Langmuir, the American Chemical Society's surface science journal. The process was developed by Hutchison with two of his students, Gerd H. Woehrle and Marvin G. Warner.

"This has been a prolonged effort," Hutchison says. "We reported this invention in 1997 and the original work began in 1996. We had a concept, we reduced it to practice and now we've received a patent on it. It's exciting to have all that effort pay off."

Hutchison's **first patent** was issued in May 2004. Since then, he says, interest in greener methods for nanotechnology has heated up significantly. At the same time, the quest to build ever-smaller computer chips continues, and Hutchison's new patent may be just the ticket to meet what seems like an endlessly, exponentially increasing demand.

"The first patent covered the use of greener methods to make building blocks. This one is about a greener approach to creating self-assembling structures with those building blocks-a bottom-up approach like using Legos as opposed to chiseling or etching away material like we currently do on silicon chips," Hutchison explains.

Nanoscale transistors such as those addressed in the patent are composed of nanoparticle building blocks (for example, a chemically functionalized gold core 1.5 nanometers in diameter) and function based upon a mix of classical and quantum mechanical properties.

The patent covers the assembly of devices using a biopolymer DNA as a template. Within living organisms, DNA comprises the genetic code, but by itself, DNA is just a polymer-a string of molecules hooked together in a chain whose links can encode information. In Hutchison's lab, the DNA polymer serves as an architectural scaffold for tiny particles of gold, the ultimate conductor of electricity.

"If you think about a structure of gold dots on a DNA strand, it's like a wire with a whole bunch of minute cuts in it, about 15 angstroms in size," Hutchison says. "In order for electrons to travel down a nanoparticle chain, they have to jump or tunnel from one particle to the next. As a result, these nanochains have different properties than a wire would have. That's why you can

make transistors out of them."

This tunneling behavior is a feature of quantum physics that creates problems when using current manufacturing techniques but becomes a boon when the workplace shrinks to nanoscale.

Hutchison directs the UO's **Materials Science Institute** and is co-director of **ONAMI**, the Oregon Nanoscience and Microtechnologies Institute. The National Science Foundation, the Alfred P. Sloan Foundation and the Camille and Henry Dreyfus Foundation, Inc., have funded his research.

Already known as a world leader for teaching green chemistry principles, Hutchison and his UO colleagues are pioneering the field of green nanoscience. "Jim Hutchison is clearly leading the way in identifying the scientific approaches that will be needed in designing the most innovative advances for nanoscience and technology in a way that is also not harmful to human health and the environment," says Paul Anastas, director of the Green Chemistry Institute, a nonprofit organization that is part of the American Chemical Society.

Hutchison, 42, is an Oregon native who earned his bachelor's degree at the UO and his doctorate from Stanford. He received an NSF Postdoctoral Fellowship to work on analytical and surface chemistry at the University of North Carolina, Chapel Hill. Since joining the UO faculty in 1994, he has received several awards and honors including an NSF CAREER Award and an Alfred P. Sloan Research Fellowship.

ONAMI is focused on research and commercialization of nanoscience and microtechnologies to foster the creation of new products, companies and jobs in the Pacific Northwest. It unites the University of Oregon (Eugene), Oregon State University (Corvallis), and Portland State University with the Pacific Northwest National Laboratory (Richland, Wash.), the state of Oregon and private industry.

The new patent is No. 6,872,971.

*For more news on university people, events and programs, you're invited to read the current issue of* Inside Oregon*, the official e-newsletter for UO faculty, staff and graduate teaching fellows.*

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# Child sex abuse policy recommendations published in Science magazine

*April is National Child Abuse Prevention Month*

For the first time, the journal *Science* (Friday, April 22) is publishing major policy recommendations regarding child sexual abuse.

The lead author of "The Science of Child Sexual Abuse" is University of Oregon psychology professor Jennifer Freyd, an authority on trauma. She and six colleagues who together represent the fields of medicine, law, political science psychiatry and psychology, call for action on three fronts:

- stepped up research aimed at determining the prevalence of child sex abuse and identifying its causes, consequences, prevention and treatment
- expansion of the National Child Traumatic Stress Network, a federally funded coalition of 54 centers providing community-based treatment to children and their families, to address the enormous public health consequences of child trauma
- creation of an Institute of Child Abuse and Interpersonal Violence within the National Institutes of Health

David Spiegel, professor of psychiatry and behavioral sciences at the Stanford University School of Medicine, said publication of this policy article in the nation's leading general science journal "is a tremendous opportunity to shed light on an important and neglected problem."

"Science is most needed where passion overshadows reason," Spiegel said. "Jennifer Freyd has applied the tools of science to this contentious area, helping us understand the effects of trauma in the family and the disruption of cognition and memory that can occur during and after childhood abuse."

Freyd, a University of Oregon psychology professor whose theory of betrayal trauma explains why some people do not recall their abuse until later in life, has conducted studies that show abuse perpetrated by a caregiver increases the likelihood of memory failure.

"Unfortunately, many factors silence victims of abuse," Freyd said. "Myths about the nature of child sexual abuse wrongly cloud the credibility of abuse victims in the eyes of the media and the public."

Freyd and her former students, Anne DePrince and Kathy Becker-Blease, have investigated the cognitive mechanisms involved in the forgetting of abuse. Terry Keane, associate chief of staff for research and development for the VA Boston Healthcare System and a professor of psychiatry at Boston School of Medicine, said Freyd and DePrince "have produced the best work to date" to reveal the true nature of memory for traumatic events.

"Their outstanding work on traumatic memory employs state-of-the-art empirical approaches derived from the cognitive neurosciences," Keane said.

The April 22 Policy Perspective article cites the body of research on child sexual abuse, which shows:

- child sexual abuse is associated with serious mental and physical health problems, substance abuse, victimization and criminality in adulthood
- under-reporting (including memory failure) leads to underestimation of the extent of abuse, which currently is reported by 20 percent of women and 5 to 10 percent of men worldwide
- although official reports of child sex abuse have declined somewhat in the U.S. during the last 10 years, close to 90 percent of sexual abuse cases are never reported to authorities
- most child sex abuse is committed by family members and individuals close to the child, which increases the likelihood of delayed disclosure and possible memory failure while increasing the potential for unsupportive reactions by caregivers and lack of intervention
- a number of factors undermine the credibility of abuse reports, despite evidence that when adults recall abuse, the truth of their memories is not correlated with when they regained awareness of a past incident

- cognitive and neurological mechanisms that may underlie the forgetting of abuse have been scientifically identified

Freyd's co-authors for the *Science* article include Frank Putnam, Cincinnati Children's Hospital Medical Center; Thomas Lyon, University of Southern California Law School; Kathryn Becker-Blease, University of New Hampshire; Ross Cheit, Brown University; Nancy Siegel of NBS Associates, Maryland; and Kathy Pezdek, Claremont Graduate University.

Freyd's groundbreaking book "Betrayal Trauma: The Logic of Forgetting Childhood Abuse" (Harvard University Press, 1996) was released in paperback in 1998. A Spanish edition appeared in 2003.

Recently named editor of the *Journal of Trauma & Dissociation*, Freyd directs an active laboratory investigating the psychology of trauma, with a focus on memory and awareness for trauma, and on the physical and mental health consequences of betrayal trauma.

Funders of her work have included the National Science Foundation, National Institute of Mental Health, the Pew Charitable Trust, the Guggenheim Foundation, the UO Center for the Study of Women in Society, the Northwest Health Foundation and the UO Foundation's Fund for Research on Trauma and Oppression. She is a Fellow of the American Psychological Association, the American Psychological Society, and the American Association for the Advancement of Science.

**Photo:** http://waddle.uoregon.edu/gallery/NewsImages/freyd
**Links:** Freyd lab: http://dynamic.uoregon.edu/
National Child Abuse Prevention Month (April): http://www.whitehouse.gov/news/releases/2005/04/20050401-3.html
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# The State of Innovation and the Innovation State

Governor Ted Kulongoski has become a staunch advocate for Oregon as the "Innovation State." The Governor clearly understands that our public research universities, industries, and research partners provide a fertile "greenhouse" for nurturing knowledge-based businesses.

An innovation economy derives from basic investments in R&D, and must be "globally competitive with quality jobs, a stable tax base, and a diverse economic future."

The UO has long been known for its healthy "state of innovation," reflecting the creative talents of its diverse faculty and student researchers. The stories in this issue of Inquiry provide just a few current examples of research excellence and the great things that the university is achieving through effective partnerships and financial support from the private and public sectors.

From developing plans to mitigate natural disasters, to statewide collaborations in nanotechnology, to models of economic activity, the UO serves not only to create new knowledge, but also to apply it for the direct benefit of Oregon's citizens. Little wonder why the governor is committed to using the UO's expertise as a key element in his vision of Oregon as the Innovation State!

*Richard Linton is the vice president for research and graduate studies, and dean of the Graduate School at the University of Oregon*

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B.S. Chemistry
Kansas State University

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Physical chemistry, environmental chemistry, optics and spectroscopy, surface and material science.

*Topics include:*

*Water surfaces*: Understanding the molecular properties of water surfaces make them central to so many important environmental, chemical and biological processes.

*Surfactants*: Determining the molecular structure of molecules

(surfactants) that adsorb to liquid surfaces and developing an understanding for how this molecular structure influences their function.

*Environmental processes*: Gaining insight into how environmentally important molecules adsorb, transport and react at water surfaces.

*Semiconductor, salt, mineral and oxide surfaces*: Understanding how molecules adsorb, react and cause physical changes for these surfaces in contact with aqueous solutions.

*Membrane and protein surfaces*: Understanding the role of water in the structure and the transport of species at these macromolecular surfaces.

*Nonlinear optics, lasers and spectroscopy*: Developing new optical devices and methods to probe surfaces and interfaces in-situ.

## RESEARCH PUBLICATIONS

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## TEACHING INTERESTS

Development of courses in science literacy for nonscientists, introductory chemistry courses for undergraduates and general science courses, recruitment and mentoring of women and minorities in science careers, working in the community to educate the public on science and science issues.

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