

chemistry@wwu

Chemistry Department • Western Washington University
Newsletter for Alumni and Friends of the Chemistry Department

Number 6 Spring 2005

A New Material Science Research and Education Center

This year Western received a \$400,000 grant from the National Science Foundation to purchase several new specialized instruments and create a new center dedicated to materials science research and teaching. Three Chemistry Department faculty (David Patrick, Mark Bussell, and Steven Emory) along with Professors from the Engineering Science and Physics Departments co-wrote the grant.

The new Center will provide undergraduate and graduate students access to state-of-the-art equipment and help to support materials science research and teaching in several departments. In the Chemistry department, this includes research programs on organic electronic materials and liquid crystals, new catalysts, and nanomaterials.

The Materials Science Research and Education Center (MREC) is part of a college-wide initiative promoting cross-disciplinary research in materials science. One goal of the program is to better train students to conduct research at the boundaries between traditional disciplines. According to Patrick, "It is increasingly important for our students to graduate prepared for interdisciplinary research, where many of the most



Grant writers Mark Bussell, David Patrick, and Steven Emory

important scientific advances are now occurring. MREC will help to do this by fostering collaborations between research groups from different departments and by pooling resources to gain the greatest leverage." The new center will include an X-ray diffractometer, a combined differential scanning calorimeter / thermogravimetric analyzer system, and a vacuum evaporation system. In addition to its use in research, MREC will serve about ten undergraduate science and engineering courses, giving students hands-on experience with a range of modern techniques. MREC is expected to open in early Spring of 2005.

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Message from the Chair

Greetings to all our alumni and friends! This year marks the half-way point of our major six-year, \$750,000 Department Development grant from Research Corporation and the Murdoch Charitable Trust. We are in the midst of a major transition

period with respect to faculty. Don King, Sal Russo, and Jack Weyh retire this year after 39, 37 and 37 years of service respectively. We made a significant new tenure track hire in chemistry and science education, adding Emily Borda who will join us in September. In fall 2005, we plan to recruit for tenure-track faculty in biochemistry, organic chemistry and physical chemistry.



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The department continues to emphasize the undergraduate research experience. For faculty and students this is a rich and intensive one-on-one form of instruction. During the past academic year 55 undergraduates participated in faculty-supervised research projects and 32 worked full time on funded research projects during the summer.

External recognition for the department and its students has come in the form of new student scholarships. For the second consecutive year the Hach Foundation funded six annual scholarship awards of \$6,000 for WWU students planning to teach high school chemistry. And in a very competitive process, the Beckman Foundation of California awarded a stipend of \$17,600 to a junior chemistry major for carrying out undergraduate research over a 15 month period.

Special recognition goes to Lisa Gentile, our newest biochemistry faculty member who recently received a National Science Foundation CAREER Award. We are very proud of Lisa!

We continue to buy new instrumentation with funding from external agencies. Recent acquisitions include a fluorescence spectrometer for undergraduate instruction and research. In order to prepare our students for the workplace and graduate school, we want them to work with the most current instrumentation, hence the need to continually upgrade and replace older equipment.

If you would like to keep posted about department news, we invite you to visit our website at www.chem.wvu.edu. We also cordially welcome you to stop by and visit the department any time you are in the vicinity of Bellingham.

~Mark Wicholas

Message from the Editor

I want to thank everyone who made contributions to the text. Gary Lampman and I planned the Newsletter while Melissa Maxwell of Publishing Services was responsible for design and production. In addition, we gratefully acknowledge the Western Alumni Association and Research Corp/Murdoch Trust who paid for the printing. We invite you to fill out an alumni questionnaire that you will find on the last page or use other ways of staying in contact with the Department.

~Sal Russo

Social Activities

While the weather did not cooperate fully with the outdoor activities planned, the Department picnic on May 22, 2004 proceeded as scheduled. The rainy, cool, wet conditions did not stop the students, faculty, and staff from coming out in droves, much to the delight, and surprise, of the organizers (ACS Student Affiliates Chem Club). One of the highlights of the afternoon was a 3rd floor versus 4th floor softball game that ended in a 4-4 tie.

The department held a "Congratulations" dinner on June 3, 2004 at Bob's Burger in Fairhaven to acknowledge the hardwork and strong effort of the graduating chemistry and biochemistry students of 2004. The food and drink were enjoyed, and we plan to make this an annual event.

On August 10, 2004 the department set out to Safeco Field to see the Seattle Mariners play host to the Minnesota Twins. It was an exciting game that the Mariners won 4-3. Another summer event was the formation of an intramurals softball team named The Dopamines. The team made it to the quarter finals and enjoyed the postgame with food and beverage at Bob's Burger or Boundary Bay.





Members of one team showing off the scanning tunneling microscope they built themselves. Left to right: Daryl Colman, Joelle Thomas, Jacob Yeager, and Alex Anderson.

Honors General Chemistry

It's the most powerful microscope ever conceived, able to take pictures of individual atoms and molecules. It won its inventors the Nobel Prize. Now students enrolled in Honors General Chemistry get to build one for themselves. In an experiment which lasts all quarter long (and is the only one of its kind as far as we know), freshman students design, build, and operate their own scanning tunneling microscopes (STM).

After learning about the theory of its operation, students are divided into small teams and given free reign to dream up their own designs. They have parts made by our campus machinist, then assemble and test their microscope. The only requirement is that they must construct an STM capable of taking pictures of individual molecules by the end of the quarter.

The laboratory experience is one of the most important parts of the Department's new Honors General Chemistry course, which is co-taught by Spencer Anthony-Cahill and David Patrick. The experiment involving STM teaches students about teamwork, creative problem solving, as well as a number of important scientific topics. According to Patrick, who oversees the STM lab, "the originality of their designs, and the dedication with which all the students approached this project were extraordinarily impressive." Toward the end of the quarter as the deadline for demonstrating their STMs loomed, teams of students worked late into the night making final solder connections, fine-tuning their designs, and in one case, applying liberal quantities of duct tape.

An STM works by scanning a sharp metallic wire about 0.1 nm (the diameter of a single atom) above a surface and measuring the flow of electricity to produce an image. Surprisingly, most of the components needed to construct an STM can be

found at the hardware store. A few parts are more specialized however, and last year the Chemistry Department also received a generous donation of piezoelectric actuators valued at close to \$1000 from Staveley Sensors Inc., without which the lab would not have been possible. Tiny preamplifiers were also designed and purpose-built for this experiment by Jeff Frost, an electronics technician in Western's Scientific and Technical Services group.

Were the student teams successful? As it turned out, by the end of the quarter, every group was able to obtain molecular resolution images on test samples consisting of a liquid crystal film on graphite substrates. Here's how one student, Alex Anderson, described the experience, "It seemed impossible. Nothing went right. We broke two piezo tubes, rewired countless times, and ended up with fantastic data. The truth is there are few words to explain the intimidation of trying to build an STM as a first year Chemistry student; there are even less to explain the sheer ecstasy of accomplishing it. Everything is doable." Oh, and the team using duct tape - their microscope ended up producing some of the best images of all.

Gentile Receives Career Grant



Assistant Professor Lisa Gentile received a Faculty Early Career Development (CAREER) Grant from the National Science Foundation. The CAREER grant program is one of NSF's most prestigious awards for new faculty members who are most likely to become the academic leaders of the 21st century, and is the first step in the competition for the Presidential Early Career Award for Scientists and Engineers (PECASE). Lisa's CAREER grant provides \$650,926 over five years for her research project "Macromolecular recognition and differential ion channel functioning." The educational component of the grant focuses on an inquiry-based project for a total of 10 high school chemistry/biology teachers and 10 of their students. More information about Lisa's research can be found on her webpage at <http://www.chem.wvu.edu/dept/facstaff/gentile/gentile.shtml>.

Faculty

John Whitmer Retires



When John Whitmer first arrived at Western in 1965, there was a baseball field adjacent to the east side of Haggard Hall which eventually became “Red Square”. Haggard Hall was then home to Biology, Chemistry, Geology, and Physics. John describes his career at Western as being “varied, satisfying, and a bit nonlinear”.

After a little over one year on Western’s faculty, he joined the Peace Corps and after several aborted training programs (due to civil unrest in west Africa) took an independent contract position at the University of East Africa in Uganda, a country on the equator that is blessed with physical beauty, a fine climate, gracious people, and at that time political and economic stability. After two years living and teaching in Africa, a position in Western’s Chemistry Department opened that included a part time commitment in the science teacher education program. The dual aspect of the position was attractive and fortunately he was able to return to Western where, except for sabbatical leaves at the University of Trondheim in Norway (1976-77) and the University of York in England (1990), he has been since, teaching physical and general chemistry as well as courses for elementary and secondary pre-service teachers. This spectrum of teaching styles and student perspectives has been a major source of satisfaction during his years at Western. John’s research involved spectroscopic techniques for the elucidation of molecular structure.

Having always enjoyed the interaction with students of various professional interests and faculty across departmental boundaries, the shift to retirement in the past few months has a bittersweet aspect. Although he certainly plans to return to campus and the department from time to time, John looks forward to reducing the pace of some aspects of life and expanding others. In June 2004 John biked from Washington state to Maine. Good job, John! In addition, John and his wife Kathy, a retired elementary/middle school teacher, have already increased their travel activities.

To Western’s Chemistry graduates John sends his best wishes and sends the following message: “ Your choice to study Chemistry at Western was a good one. If you have not been back on campus in recent years do so or at least explore the department website. You will find ample and continuing evidence - if such were needed - that chemistry students at Western continue to chose well. For me it has been grand. I look forward to watching the Department and Western continue to prosper in the years ahead. “

Sal Russo Retires



Sal Russo retired in March 2005 after a 37 year career as a faculty member at Western. In 1968 he joined Sea Bong Chang in the teaching of biochemistry. In 1972 Sea Bong tragically died of cancer which meant that Sal became the only biochemist in the department for about a decade.

Sal’s early research involved the use of a fluorescent probe for hydrophobic sites on proteins such as haptoglobin and salmine. Later a fluorescent probe for the active site of the enzyme trypsin was synthesized and shown to be a competitive inhibitor. Fluorescence was also used in the assay of angiotensin-converting enzyme which is important to human blood pressure regulation. Another project in collaboration with Don Williams (Biology) involved the characterization of starfish proteins. More recently his research group studied the irreversible thermal denaturation of the enzyme glyceraldehyde 3-phosphate dehydrogenase. Graduate students were very important to his career because they did research for several quarters which provided continuity to the effort. Those involved were Wendy Chen, Randy Engel, Tom Holzman, Debby Yadoff, Nick Morris, Erin Wahl, and Sharon O’Reilly. In addition, many undergraduates were in his research group with Richard Heath, Matt Kaerberlein, and Julia (Whitford) Bach writing Honors theses.

In a fast-moving field like biochemistry sabbatical leaves are essential to provide time for a faculty member to learn new skills. Sal was fortunate to go on three sabbaticals (1977-78, 1984-85, and 1993-94) with all of them taking place at the University of Colorado in Boulder. During those times his wife Judy, daughter Amy, and son Alan grew to love the climate and outdoor opportunities found in that state. During the last sabbatical it was delightful for Judy and Sal to live in Estes Park close to Rocky Mountain National Park with Sal commuting to Boulder every day.

Sal has made many contributions to the biochemistry laboratory curriculum over the years. In addition, in collaboration with Wes Sadler he produced a computer-assisted instruction module for the charge behavior of polypeptides and then a solo effort on enzyme nomenclature. In 1991 he began teaching a biophysical chemistry course in the department which has been expanded by new faculty.

(Continued on page 5)

Faculty

What will Sal do in retirement? There will be more time for him to devote to singing, hiking, volunteer activities, and contradancing. In fact, he will celebrate his retirement by going to a contradance vacation on the Big Island of Hawaii. When asked about that he replied "If I die from overexertion at least I will have started in Paradise with the final destination undetermined." Retirement will also provide more time to spend with family especially grandson Holden and granddaughter Imani.

Tom Pratum



Tom Pratum joined the Department as a temporary instructor for the Physical Chemistry series to replace Mark Bussell who is on sabbatical for one year. Tom, who is originally from Bellingham, earned his bachelors degree at the University of Puget Sound and PhD at the University of California at Berkeley studying solid state NMR. He then did post-doctoral work in the Physics department at the University of British Columbia prior to accepting a long-term position as a research scientist and NMR specialist in the Chemistry Department at the University of Washington. After 15 years at the UW, he decided that a change was in order, and he moved back to Bellingham - where the traffic is considerably reduced in volume - in June 2000. Since that time he has performed various consulting duties, mostly relating to NMR work at UW.

He was recently appointed adjunct faculty, and as such, has appreciated having access to the 500 MHz NMR spectrometer here at WWU which the Chemistry Department acquired in 2003. He hopes to be of service in the Chemistry Department whenever he can help with NMR related issues.

Tom has been involved as a volunteer for a number of different environmental organizations since returning to the Bellingham area. He continues as volunteer web developer for the Whatcom Humane Society, Whatcom Land Trust, and Whatcom Watch newspaper. He is a member of the board of directors of the North Cascades Audubon Society where he chairs the Conservation Committee, and also takes care of the organizations' web site. He and his fiancé Ellen Kramer share their Whatcom County home with a cat and dog.

Jeff Hurlbut



Jeff has taught part-time for the department since 2000, and when a one year position opened he set aside his consulting work with the Food and Drug Administration in Bothell and eagerly switched to full time teaching. Jeff was pleasantly surprised to find that there are currently five WWU chemistry graduates working at the FDA in Bothell.

In 1965 Jeff graduated from Western with a chemistry major and obtained his first job as an analytical chemist at Georgia Pacific in Bellingham. He then received a doctorate degree from the University of California at Santa Barbara in bio-organic chemistry and joined the chemistry staff at Metropolitan State College in Denver Colorado (MSCD) in 1969. While teaching and performing research there, he also worked for several other groups as an analytical chemist. These included Dow Chemical, Rockwell International, Optech International, Colorado Bureau of Investigation, Alltech Chromatography, Colorado State University, University of Colorado Medical School, U.S. Fish and Wildlife, and the Food and Drug Administration.

Jeff first met Pat Hudson at Western in the Haggard Science Hall in 1963 and they were married in 1967; he took her away from Western Washington State College and beautiful Bellingham. They adopted two children: Tim and Beth. Tim works in Irvine, California and Beth is presently attending WWU. After teaching full-time for 31 years, Jeff retired from MSCD and moved to Bellingham.

Returning to Bellingham has been a blessing for Jeff and Pat. They built a home near Lake Whatcom, found a place to worship, made new friends, and thoroughly enjoy the beauty of the Bellingham area. In addition Jeff appreciates the teaching opportunity at Western. He has always enjoyed teaching, and being able to teach at his undergraduate school is special. Jeff is thankful for his past WWU chemistry professors - Professors Eddy, Knapman, Neuzil, Chang, Besserman, Frank, and Lampman, and hopes to have significant input into the lives of his students just as they had in Jeff's life.

(More FACULTY/STAFF NEWS on page 9)

Graduation



RECENT DEGREES AWARDED CLASS OF 2004/2005

Co□

in parentheses behind each graduate's name.

MS Chemistry

Celeste Loitz

(PhD Program, Chemistry,
Univ of Utah)

Stephanie Sawhill

(Materials Chemist, Sienna
Technologies, Woodinville WA)

Teresa Wenda

(Environmental Chemist, Kuo
Testing Lab, Othello WA)

BA Education

Chemistry/Biology

Christopher Craggs

BA Chemistry

Khani Duong

Jill Larson

On-You Sunwoo

BS Biochemistry

Zach Biddle

(Chemistry Dept Honors;
Cum Laude; PhD Program,
Chemistry Dept, Pennsylvania
State-University Park)

Jessica DiBari

(Chemistry Dept Honors;
Chang Biochemistry Award;
continuing research with
Spencer Anthony-Cahill as a
Lab Associate, while preparing
for graduate school)

Dale (Wood) Gorton

Scott Haggerty

(currently in non-science job;
wants to study Kung Fu in
China for a year)

Justin Iwasaki

(2nd major in Philosophy;
applying to medical school)

Abigail Lambert

(Presidential Scholar;
Magna Cum Laude; PhD
Program, Biochemistry,
Univ of Washington)

Elisabeth Lasater

(PhD program, Biochemistry,
Indiana Univ at Indianapolis)

Elizabeth (McMonagle)

Rosenweig

Vlad Spivak

(Research Associate with Abbott
Bioresearch Center, Massachu-
setts)

Jeffrey Stetson

(applying to school of osteopathy)

BS Chemistry and ACS Certification

Ava Berg

(Cum Laude)

Jeanette Brizendine

(2nd major in Economics; Staff-
ing Specialist with Manpower
Temporary Agency, Bellingham)

James Coats

(MS Program, Chemistry Dept,
WWU)

Brandon Dietrich

(Chemistry Dept Honors; PhD
Program, Inorganic Chemistry,
Univ of Washington)

Kelsy Dunlap

(Secondary Education Certifica-
tion Program, WWU)

Amy Goodall

Lionel Kubiak

Jennifer Loyer-Drew

(PhD Program, Chemistry,
Univ of Pittsburgh)

Nicole Mead

(Peace Corps, followed by
graduate school)

Kasey Messer

(Applying to pharmacy school)

Korin Meyer

(PhD Program, Chemistry,
Univ of California at Davis)

Aimee Morris

(PhD Program, Inorganic
Chemistry, Colorado State Univ
at Fort Collins)

Melissa Pease

(Chemistry Dept Honors;
Chemistry Dept Outstanding
Graduate Award; Magna Cum
Laude; PhD Program, Organic
Synthesis, Colorado State Univ
at Fort Collins)

Haley Pugsley

(Chemistry Dept Honors; PhD
Program, Analytical Chemistry,
Univ of Washington)

Melanie Rehm

(Lab Technician, Intertek Caleb
Brett, Bellingham)

Bhupinder Sangha

Jonathan Stewart

(Lab Technician, Intertek
Caleb Brett, Bellingham)

Dawn Wagner

(Quality Control, Botanical
Laboratories, Ferndale)

F. Scott Wilkinson

(MS Program, Chemistry Dept,
WWU)

Awards

Pease Chosen as Outstanding Graduate

At the spring commencement ceremony Melissa Pease was honored as the 2003/04 outstanding chemistry graduate along with her mentor Mark Bussell. Melissa was awarded a number of scholarships during her undergraduate career including the prestigious Beckman Scholarship.

After completing two years of chemistry Melissa decided that participating in undergraduate research would be a great way to see if she wanted to make research a future career. At the end of her sophomore year she joined the Bussell research group and continued working through the summer following her graduation. Melissa's research involved the development of catalysts for hydrodesulfurization. Hydrodesulfurization is an industrial process in which sulfur is removed from petroleum in an effort to combat serious environmental problems such as acid rain. Melissa was able to present her results at two national American Chemical Society meetings.

After completing her summer research Melissa moved to Colorado where she is currently a Ph.D. student at Colorado State University. She has since changed her focus from physical chemistry to organic synthesis and will be joining a research group this coming spring.



Award Winners

Front, left to right: Nick Gislason, Aimee Morris, Melissa Pease, and Rebecca Jensen. *Back:* Abigail Lambert, Brandon Dietrich, Jessica DiBari, and Rebecca Newhouse.

2004/2005 Department Awards

Chemistry Department Awards

Outstanding Chemistry Department Graduate

Melissa Pease

Chang Biochemistry Award

Jessica DiBari

Hypercube Scholar

Aimee Morris

Outstanding Analytical Student

Rebecca Newhouse

Outstanding Organic Series Student

Nick Gislason

CRC Press Freshman Chemistry Award

Joelle Thomas

College of Sciences & Technology Awards

Outstanding Undergraduate Research Award

Brandon Dietrich

University Awards

Presidential Scholar Award

Abbie Lambert

Scholarships

2004/05 Scholarship Recipients

| | |
|--|--|
| Knapman Senior Renewal Rebecca Jensen | College of Sciences & Technology - Paul Woodring Scholarship Jessica Telleria |
| Knapman Junior Award Jennifer Angelosante | College of Sciences & Technology - Women in Science Scholarship Jessica Telleria |
| Ruth Watts Female Research Scientist Jessica Telleria | Biology & Chemistry Depts - Beckman Scholar Rebecca Jensen |
| Jerry Price/Nancy Sherer + Chemistry Fund Match Nick Gislason | Hach Chemistry Education Scholarship Whitney Bailey Michael Couto Danielle Moore Chuck Schelle David Stitt Sian Thornton |
| Verna Alexander Price Brian Jeppeson | |
| Barbara French Duzan + Chemistry Fund Match Laura Stoll | |
| Tuition/Fee Waiver Jacqueline Hawkins Daniel Roeter | |

DiBari Chosen for Sea Bong Chang Award

Jessica DiBari graduated with honors in June 2004 and received the Sea Bong Chang Memorial Award for outstanding achievement in biochemistry. During the last two years of her program, she participated in undergraduate research in which she studied circular permuteins of sperm whale myoglobin with Spencer Anthony-Cahill. The eventual goal of the project is to engineer single-chain hemoglobin which could be used as a synthetic blood substitute to assist in blood transfusions.

After graduating, Jessica worked as an intern at ZymoGenetics Inc which expanded her knowledge of the biochemical world. She has since traveled to Glacier National Park and spent one month in Peru. Currently she is working for Spencer again, continuing her research with sperm whale myoglobin. In the spring, she is planning a trip to Barcelona, Spain for the European Symposium of the Protein Society and will spend two months traveling around Europe.

Jessica is undecided about her future plans. She is considering graduate programs in environmental toxicology, protein biochemistry, and immunology. At this point she thinks that it is best to take some time to determine what she wants to do before proceeding with her education. She is certain that she will be returning to school soon, but is enjoying traveling and exploring other interests for now.



Scholarship Winners

Left to right: Back: Brian Jeppeson, Jennifer Angelosante, Jacqueline Hawkins, Rebecca Jensen, and Jessica Telleria. Front: Nick Gislason, Laura Stoll, and Daniel Roeter.

Abigail Lambert is a Presidential Scholar



Abigail Lambert (B.S. Biochemistry 2004) was honored at graduation as a WWU Presidential Scholar. This award recognizes graduates for their exceptional scholarship and service to the university and community. Abbie was active in research for two years with Lisa Gentile, where she worked with proteins involved in early-onset Alzheimer's disease.

She presented her work at a number of poster sessions in the area and received a Creative Research and Opportunities Award for the project. Abbie also worked in the department as a laboratory prepper for General Chemistry and the new Honors chemistry series as well as a teaching assistant for the biochemistry laboratory.

Abbie extended her involvement to other activities throughout the university, including the Western Washington University Symphonic Band where she was leader of the French horn section for four years. She was also a founding member of the American Red Cross club and participated in other community service oriented clubs on campus.

During her time at Western, Abbie was named to the President's list and received several prestigious scholarships and awards. She is now working towards her doctoral degree through the Biomolecular Structure and Design program at the University of Washington and plans to pursue a career in medical research.

Annual Colloquium

Our annual Scholars Day was held on Friday, May 21, 2004. Undergraduate and graduate students presented a total of 23 posters and 7 talks. The keynote speaker was John Bercaw, Centennial Professor of Chemistry at Caltech, whose talk was entitled "Organometallic catalysis for Making Polypropylenes: Controlling Stereochemistry and Polymer Microstructure."

For Scholars Day on Thursday, May 19, 2005, our keynote speaker will be James R. Heath, Elizabeth W. Gilloon Professor of Chemistry at Caltech, whose area of research is physical chemistry.

Faculty/Staff News

(continued from page 5)

Mark Bussell is on professional leave for the 2004-05 academic year. In fall and part of winter quarter he wrote grant proposals and journal manuscripts. For the remainder of the academic year, he is a visiting faculty member in the Department of Chemical and Biological Engineering at Tufts University in Medford, MA. While at Tufts, he is working as a member of a National Science Foundation-funded Nanoscience Interdisciplinary Research Team focused on developing catalysts for on-board fuel processors in vehicles powered by hydrogen fuel cells. His sabbatical also includes a week spent at the National Synchrotron Light source at Brookhaven National Laboratory where he is using x-ray absorption and diffraction methods to characterize the structure of water-gas shift catalysts.

Emily Borda has accepted a joint appointment as Assistant Professor in Science Education and Chemistry effective September 2005. Emily has a PhD in organic chemistry and an MEd in education leadership and policy studies. She is currently a postdoctoral research associate for the North Cascades and Olympics Science Partnership at Western.

Spencer Anthony-Cahill plans to visit the lab of Professor Chris Dobson at Cambridge University (UK) during a 2005-06 professional leave to study the dynamics of proteins and the kinetics of protein folding reactions. This work will shed light on an important intracellular process as well as increasing our understanding of diseases that are caused by protein misfolding such as Alzheimer's disease and Creutzfeldt-Jakob disease.

Jim Vyvyan will spend a 2005-06 professional leave preparing external grant proposals as well as developing curriculum in the organic laboratory courses. He will have time to write an invited review article for the journal *Organic Preparations and Procedures International* on the synthesis of aromatic bisabolene natural products, a class that includes the targets of his main research project- the heliannuols. He plans to spend some time at the U. S. Department of Agriculture Natural Products Utilization Research Unit learning how to conduct bioassays to assess the agricultural potential of synthetic heliannuols and structural analogues.

Alumni News

1960's

Richard Wojt '61 retired after 28 years of teaching high school science. He also served 3 terms (12 years) as a Jefferson County Commissioner and still resides in Port Townsend.

Terry Meredith '66, MS'73 retired from Western in December 2004. He spent fifteen years in Housing & Dining, primarily working in Maintenance and Operations Administration, followed by over seventeen years with Scientific Technical Services (STS) as the Scientific Services Coordinator. In the latter position, Terry assisted in the teaching of scientific lab courses that involved instruments housed in STS, performed chemical analyses for directed research, and also served as the university associate radiation safety officer. Many chemistry majors benefited from Terry's efforts over the years; thanks very much and enjoy your well-earned retirement!

1970's

Bradford Porter '72. In addition to being a Senior Manager in Business Solutions Computing Systems for The Boeing Company-26 years at the company-he has also owned his own business, performed IT consulting assignments and contributed to two published books. A sad note: Bradford's wife of 32 years recently passed away of breast cancer.

James Hungerford '79; MS '81 WWU; PhD '86 Univ Wash. Jim continues his work as a research chemist at the FDA's Seafood Products Research Center in Bothell, WA. In 2004 he organized the Association of Official Analytical Chemist (AOAC) Task Force on Marine and Freshwater Toxins, a large international group now numbering over 80 members in more than a dozen countries. This group was formed to accelerate validation of analytical methods for marine and freshwater toxins. The group addresses many different toxins which are problematic globally. More locally, the

toxins monitored in shellfish include those resulting from toxic algal blooms producing domoic acid and saxitoxins in the marine environments of Washington State. Check out the task force web site at http://www.aoc.org/marine_toxins/task_force.htm

1980's

Tom Gray '80 received his M.S. in Geology from the University of Oregon in 1988 and is an environmental scientist/lead inspector with the State of Nevada. He inspects Nevada mines for compliance with water pollution control permits.

Ken Roberts '83 received his PhD in 1989 from Washington State University under the direction of Michael Griswold, working on Sertoli cells which are the major epithelial cells of the testis. That experience introduced Ken to the research world of reproductive biology, where he has remained. In 1993, he completed a PostDoc Fellowship at Johns Hopkins Univ, in the Division of Reproductive Biology at the School of Hygiene and Public Health, where he worked with Barry Zirkin on spermatogenesis and the hormones that control the process. Immediately after completion of his postdoc, Ken accepted a position at the University of Minnesota Medical School in the Departments of Urologic Surgery and Cell Biology & Neuroanatomy where he has continued and broadened his research in male reproductive biology and was recently promoted to Associate Professor. He is also the Director of the Program in Human Anatomy Education and Director of the Genetics Testing Lab of Reproductive Health Associates in St. Paul, MN. Checking the Univ Minn Medical School website, we have also discovered that Ken received two honors in 2004. First, he was selected for the Outstanding Medical School Teacher Award for Basic Sciences. Second, he was

inducted into their Academy of Medical Educators. Congratulations! Ken resides in St. Paul with his wife, Meghan, and new baby daughter, Madeleine.

Dawn Balch '89. We are saddened to report that Dawn passed away April 27, 2004 at age 38 after a brief struggle with cancer. Dawn was a long-time Quality Control Chemist with Bordon Chemical in Portland, OR. Here is an excerpt from the note her husband, Daniel Ticknor, included with a donation to the Western Foundation Chemistry Fund in Dawn's honor. "Dawn's education at Western served her well in both her professional life, where she earned the respect and admiration of her peers and superiors, and in her private life, where she volunteered in the community and her daughters' schools."

Lori Thompson '89 and her husband Corey have given six-year-old daughter Katie a younger brother, Erik, born November 6, 2003. Congratulations!

1990's

Denise (Frantoni) Carozza MS '94. After completing her MS degree in the lab of Bill Wilson, Denise married Steve Carozza and made the first of several moves in connection with Steve's U.S. Army service. Their first stop was Ft. Bragg, North Carolina where Denise taught night school at Campbell College and did some work with endangered species. The next move was to Ft. Lee in Virginia, then to Germany and lots of traveling, eating and drinking! Denise also worked full time at an Army lab that tested drinking water, waste water, and soil samples for all military bases in Europe. Next they moved to Missoula, Montana where Steve taught ROTC and Denise stayed home to be with their two boys, Dominic (3) and Lorenzo (1). While in Montana they were able to visit with fellow WWU Chem Dept alumni, Bob and Susan (Neff) Lyon in Sammamish. Now the family is stationed in St. Peters-



Alumni News

burg, Florida and Denise will continue as a stay-at-home mom for the near future, at least through this period while the boys are changing, learning, and maturing so quickly.

Michael Haas '96; MD'01 Univ Wash. Michael is in his final year of residency in ophthalmology at Indiana University and will be looking for work in a private practice by summer 2005; he and wife Janna hope to relocate back west. Michael tells us ... "Indianapolis is nice but we miss the mountains! We have a three year old Golden Retriever, Scamper, and love to go outdoors for hiking, walking, or other activities. WWU was a great experience. Thanks for the memories."

Paul Keeffe '96. Paul continues his employment with Merck & Co, Inc. and is now a Pharmacy Specialty Sales Manager living in Snoqualmie, WA.

Nancy Brennan '97 completed her PhD in Medicinal Chemistry at SUNY-Buffalo in 2002, under the direction of Professor Michael Detty. That was followed by a two-year position as Postdoctoral Fellow in Organic Synthesis at Ohio State University in the lab of Professor Leo Paquette, which she completed in February 2004. In March 2004 Nancy relocated back to the west coast when she accepted a scientist position in the Department of Medicinal Chemistry at Syrrx Inc in San Diego. The company, to quote its website, focuses on "creating novel therapies for cancer, metabolic diseases, and inflammation."

Byron Gates '97; PhD '01 Univ Wash. Byron completed a two year post doc position with the Whitesides Group at Harvard Univ. He is currently an assistant professor in materials science at Simon Fraser University in the Vancouver, BC area.

Lila (Hepburn) Sacksteder '97. Lila worked for four years as an analyst at various environmental and water quality labs. She married Brian Sacksteder

in 2000 and is now a stay-at-home mom for Annika and Phoebe in the Tacoma area.

Brian Diaz '98, MS '01. Since completing his MS degree in the lab of Mark Bussell, Brian has been employed by Chiron Corp in Seattle as a process development chemist (Research Associate 3).

John Logan '98 completed his PhD in Physical Chemistry at the Univ of California, Berkeley under the direction of Alexander Pines in 2003. He then became a Postdoctoral Research Fellow at IBM Almaden Research Center in conjunction with Stanford University. He recently accepted an assistant professor position in the Chemistry Dept at San Jose State University. John is also a newlywed, having married Heloise Hwawen on April 9, 2004.

Ryan Looper '98, MS '99 completed his PhD in Organic Synthesis at Colorado State University, Ft. Collins in 2004 and is now a Postdoctoral Fellow at Harvard with Stuart Schreiber.

Heather (Callery) Barrieau '99 (and former Chemistry Dept General Chem Lab Coordinator). Her husband, fellow WWU graduate Shawn Barrieau, accepted a new position in Ohio "... so we sold our Bellingham house in less than 48 hours, packed up our goods and drove with the kids across the country with my parents following us in the motor home towing our jeep and we are now settled (somewhat) in Chagrin Falls, about 25 miles east of Cleveland. Phew!" Heather has gotten involved with MOPS and continues to be a stay-at-home mom with 21/2 year-old daughter Madisen and 1 year-old son Nathan.

Greg Cruikshank '99 relocated to New York City to pursue a master's degree in art conservation science at NYU. While he has discontinued work on that degree, Greg has remained in New York, as Core Lab Manager in the General Clinical Research Center of Albert Einstein College of Medicine. "The lab and

my work support mostly endocrinology research focusing on type 2 diabetes and the metabolic impact of the Atkins' diet."

Hawkins DeFrance '99 is in his third year at the Univ of Wash School of Pharmacy, pursuing his doctorate, while also continuing work at the in-patient pharmacy at Valley Medical Center in Renton.

Rachel Landingham '99 is currently a GC/Water Room technician with Shell Oil-Puget Sound Refinery in Anacortes.

Joseph Mougous '99 completed his PhD in the research lab of Carolyn Bertozzi at Univ Calif, Berkeley in the fall of 2004. He relocated in Feb 2005 to begin a Postdoctoral Fellowship with John Mekalanos, Dept of Microbiology and Molecular Genetics, at Harvard Medical School.

Blake Purnell '99 completed his PhD in Physics at Univ Calif, Santa Barbara in 2004 and began work December 2004 in Washington, D.C. as a Strategic Security Research Assistant with the Federation of American Scientists.

Charlie Trimm '99. He and wife Mariah are currently living in Jerusalem, Israel where Charlie is studying Hebrew and Bible at Hebrew University.

2000's

Kate Bailey '00 is still with Quest Pharmaceutical Services in Delaware, where she relocated after graduation from WWU. Her current position is that of Staff Scientist and her work focuses on performing HPLC-MS/MS analyses of pharmaceutical drugs extracted from biological samples.

Brian Gilbert '00 is in his first year of graduate studies at Oregon State University in the Molecular and Cellular Biology program.

Eric Heggem '00 has remained in the Bellingham area and is employed as a production operations technician at the BP Oil Cherry Point Refinery.

Alumni News

Bekah (Main) Mellema '00; MS'02 Cal Tech (and current WWU Chem Dept General Chem Lab Coordinator). Bekah is on parental leave during Winter Qtr 2005 for an excellent reason. On January 23rd she and husband Tyler (a fellow WWU graduate) welcomed the birth of their first child, John Samuel.

Jennifer Oaksmith '00. Jenny is finishing her graduate studies in the Department of Chemistry and Chemical Biology at Cornell Univ and anticipates graduating in the summer of 2005. She has accepted a process engineer position with Intel in Oregon.

Emily Peterson '00. After completion of her PhD at Univ Calif, Irvine in winter 2005, Emily will begin postdoctoral study with Eric Jacobsen in the Dept of Chemistry and Chemical Biology at Harvard.

Dave Svilar '00 has been skiing in Colorado while working towards his Science Education Teaching Certification. Dave's goal is to teach math and chemistry at the secondary level.

Allison (Johnson) Torgesen '00 married Lance Torgesen in July 2004. They bought a home in Woodinville and Allison continues her work at Amgen in quality control.

Kevin Bonney '01. Kevin is in his third year of the Doctor of Pharmacy program at Washington State University College of Pharmacy.

Andy Bookter '01 is enrolled in the surface hydrology masters program at the Univ of Montana in Missoula. He has received a research assistantship to study the effect of post-wildfire ash on debris flows. "In other words, fluvial geomorphology-related work. Certainly a lot different than chemistry, but the mix of degrees is fun and should be valuable when seeking environmental related work down the road."

Connor Christy '01 recently left Frontier Geosciences where he worked for three years, most recently as an analyst. He married Cristi on July 4, 2004 and in fall 2004 began studies at the Univ of Wash School of Pharmacy,

Stephanie (Tedrow) Garofoli '01 is now working as a technician in the analytical chemistry division of the Pacific Northwest National Lab.

Courtney Rubens MS '01 is still in the Bay Area, where he manages to fit in many weekends on his sailboat. Courtney is currently a Research Associate with ARYx Therapeutics in Santa Clara, CA.

David Shock '01 and Amy (Kendall) Shock '01. David and Amy relocated overseas in November, 2004 when he accepted the position of Sales Manager in Phenomenex's Australian office located in Sydney. They look forward to many exciting adventures "down under" when not working.

Stephen Chrisman '02 has accepted a position as a technician with New Mexico Highland University where he also will be pursuing a master's degree in chemistry. In his free time Steve enjoys skateboarding and snowboarding.

Trisha Duffey '02 is a graduate student at the University of Michigan, Ann Arbor in the organic research lab of Edwin Vedejs.

John Flanagan '02 is at the University of Virginia, where he completed his masters in May 2004 and is now pursuing his PhD. He is also serving on the graduate bioscience council, recruiting speakers for student talks. His work on the x-ray structure of a chromatin binding protein has taken John to Advanced Photon Source at the Argonne National Lab in Chicago and to National Synchrotron Light Source at Brookhaven National Lab on Long Island.

Rikki Larson '02 made an interesting career change in May 2004. She moved from an inspector position with Intertek Testing Services Lab in Bellingham to a dude ranch in Montana. The appeal? Ride horses, be outdoors, meet new people, raft on the rapids, things like that!

Stephanie Sawhill '02, MS '03 is a Materials Chemist with Sienna Technologies, Inc in Woodinville and is the principal investigator on a National Science Foundation Small Business Innovative Research (NSF-SBIR) Grant in which she is trying to develop commercial hydro treating catalysts based upon her thesis research in the area of metal phosphide catalysis. Speaking of her thesis work, Stephanie recently became the fourth student from our department to win the Western Association of Graduate Schools' Distinguished Master's Thesis Award. Congratulations to Stephanie and her MS research advisor, Mark Bussell. They will be formally honored at an April 2005 ceremony in Sun Valley, Idaho at the annual WAGS conference.

Mike Vieira '02. After graduation from WWU he returned to Alaska and graduated with a Masters in Teaching from the University of Alaska Southeast in July 2003, earning teaching endorsements in chemistry and physics. Mike was hired in December 2003 by the Snoqualmie Valley School District back in Washington State to teach middle school science for the remainder of the school year.

Nick Vincent-Maloney '02 works at the Prostate Cancer Center of Cedars-Sinai Medical Center in Los Angeles. He does serum proteomics for clinical outcomes. "Our goal is to try and tie serum proteomic data to clinical outcomes for various diseases, including cancer. My instrumentation is HPLC-MS, and I use a high power mass spectrometer called a Fourier Transform Ion Cyclotron Resonance (FT ICR) mass spectrometer. It's pretty cool!"

(continued next page)



Alumni Spotlight

Randy Engel



In 1975, Randy Engel earned an MS degree in chemistry at Western Washington University, concentrating in biochemistry with Sal Russo as his thesis advisor. While at Western, he also completed the requirements for a secondary teaching certificate. After leaving Western, he began his teaching career at Oak Harbor High School where

he taught first and second year chemistry classes. Two years later he moved on to Wenatchee Valley College where he taught chemistry for 9 years. In 1984, he began teaching at Green River Community College, with organic chemistry the main focus of his responsibilities.

During his first year at Green River CC, he attended an ACS talk by Stanley Pine on a new approach to teaching organic chemistry laboratory, called microscale. In this approach, the quantities of chemicals are reduced about 100-fold compared to the traditional values and the glassware is also reduced in size to accommodate the smaller amounts of chemicals. Because there are several important advantages, mainly safety and costs, with microscale techniques compared to the traditional approach, this caught his interest. In the summer of 1986, he attended the first microscale workshop at Bowdoin College for organic chemistry teachers and in the fall converted the organic laboratory at Green River CC to microscale. In the following summer he made a presentation on their microscale program at an ACS meeting at Western. After the meeting he talked briefly with Don Pavia about their program and a couple

months later received a phone call from George Kriz. George asked him if he wanted to co-author a new microscale organic laboratory textbook with the Western group of Don Pavia, Gary Lampman, and himself. It's now hard for Randy to believe that he told George he would need to think about it overnight! They began working together in 1987 and the group has produced textbooks for microscale, traditional macroscale, and organic laboratory techniques.

In the spring of 1993, Mary O'Brien of Edmonds Community College, Nancy Howe of Everett Community College, and Randy organized the first meeting of the Washington College Chemistry Teachers Association. This organization has been meeting every year since 1993. After leaving Green River CC in 1993, he taught for 6 years at Edmonds Community College.

In 1999, Randy "retired" from teaching, partially to help care for his father and to continue writing organic chemistry textbooks. He also taught part-time at North Seattle Community College. In August 2002, Western hosted the 17th Biennial Conference on Chemical Education where Randy along with Jim Patterson of the University of Washington co-chaired over 70 workshops.

Since "retiring" Randy has been active playing tennis, bicycling, and hiking. His latest passion is ballroom dancing. He has also been a hospice volunteer with his therapy dog Tawny, and he co-founded the World Association of Wizards and Clowns for Peace.

Alumni News *(continued)*

Rebecca Zapf '02 is currently finishing up the second year of her organic chemistry PhD program in the lab of Tomislav Rovis at Colorado State University, Ft. Collins.

Christina Hampton '03 relocated in summer 2004 to Atlanta, Georgia, in order to enter the analytical chemistry PhD graduate program at Georgia Tech. She has joined the research group of Facundo Fernandez who specializes in analytical mass spectrometry.

Casey Kulla '03 has returned to WWU after spending a year as a volunteer at Holden Village, Lake Chelan. He is a graduate student in the MS Environmental Science program

at Huxley College of the Environment. "I am working on characterizing soil microbial communities under differing nutrient regimes in organic agriculture for my thesis." Casey is also serving the Chemistry Department during part of the 04/05 academic year as a graduate teaching assistant, offering lab instruction at the general chemistry level.

Andy Morgan '03 is a lab assistant with Dendreon Corp, a Seattle biotech company working on producing a cancer vaccine. His wife Jamie is also working in the Puget Sound biotech industry for CEREP, a company in Redmond.

Alumni Spotlight

Chuck Hilton



Chuck Hilton graduated in the first class from Sehome High School in 1968, and entered Western in the fall. He intended to major in math and minor in chemistry. His plans changed after taking organic chemistry his second year. Chuck's realization that there were hundreds of ways to put molecules together, with "simple" natural math-based rules to control things allowed him to visualize the possibility of becoming a creative individual. Everything hadn't been invented yet in chemistry! He began his research career that spring with George Kriz, and left Western with a good background in physical organic chemistry. He married Jan Cowlings (BA, English & Education) during his senior year, and joined Georgia-Pacific in late 1972 in research in Portland, and later manufacturing on the east coast.

Chuck continued his education in 1974 at Oregon State, earning a PhD. in physical organic chemistry with Professor Elliot Marvel. He then began a 25-year career with Celanese in 1978 which resulted in 19 patents and several commercialized processes. He and Jan were blessed with four children during this time, with the youngest still at home.

Chuck joined Celanese a few weeks after traces of iodide (10 ppm) were found in finished feedstock, causing a loss of \$10 million or more. He was told to develop a "guard bed" to prevent reoccurrence. He was successful in about two months, developing a process that could remove iodide to less than 1 ppb. Commercialization ultimately earned Celanese hundreds of millions of dollars, using the guard bed as a purification aid, rather than a "guard". One of the keys to success in a big business is to be visible and successful - Chuck states he was blessed with both attributes in his first few months of work. A fascinating project working on the free radical telomerization of formaldehyde and methanol to make ethylene glycol followed, before he joined managerial ranks.

In his first supervisory role, a group member came up with the idea that they could acylate aromatic rings very selectively by using HF as both catalyst and solvent. Conventional acylation is not highly regioselective or catalytic because the conventional "catalyst", AlCl_3 , complexes with product and is

not recoverable. The work had been targeted toward the synthesis of 2,6-substituted naphthalenics, and while the chemistry worked out, process economics did not. He was then asked an extremely open ended question; 'what else might Celanese do with the technology'? Chuck was sent to work in a business development group, and asked to come up with 3 or 4 small opportunities. Out of this came a new way to make acetaminophen (and eventually ibuprofen), which were commercialized in 1987 and 1991. Key to the company's success was its strength in chemical engineering which enabled issues associated with HF (containment, metallurgy, separation and recovery) to be solved.

Chuck then moved on to director roles in specialties (fine chemicals, dyes, and photoresists), central polymer research, a generic drug manufacturing effort, and finally back to commodity chemicals. He states that he was blessed during his career with constant intellectual challenge which for him was the key to satisfaction.

What will challenge the current generation of chemists? For the big chemical processors, direct hydrocarbon conversion will be the next big bang. Exotic catalysts that mimic biocatalysts will have to be developed. Bio-feedstock substitution for oil-based feedstocks will become competitive as oil moves beyond \$50/bl. CO/H_2 (from methane or bio-sources) conversion to ethanol (from which many commodities can be prepared with "old" chemistry) may become viable. Improvements in synthetic techniques will drive the fine and specialty chemical businesses, with evolution towards biosynthetic processes underway. Peptide chemistry may play a significant role in medicine, though the product delivery hurdles suggest that this "chemistry" will have to be played out in the host.

Chuck and Jan's lives since retirement are busier than ever. They are quite active in church, and in mission projects (using his hands as a carpenter is richly rewarding to Chuck). Jan is attending seminary part-time, while Chuck stays home with their youngest child. He exercises his mind by developing models for short-term stock price movements, often finding his "discoveries" already written down somewhere. Good scientists "go to the literature first", but its more fun to experiment!

Thank You to Donors

We wish to thank the following alumni and friends of the department who donated to the following Chemistry Department Western Foundation Funds during the 2003/04 academic year. Employers that matched donations are noted in brackets following the donors' names. Donations during the past year funded a variety of activities, including scholarship matching, academic awards, undergraduate research projects, small equipment purchases, and events for department majors and alumni.

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