Greetings from the Chair

Wow! Another fall semester brings another large class of incoming students to Westminster. This time, the 450 incoming first-year students bring 29 incoming chemistry and biochemistry majors—a departmental record. This number of students, when combined with last year’s very large incoming class, is a tremendous challenge that the Department of Chemistry is ready to undertake.

The fruits of previous chemistry grads will help us meet the needs of those who are here now. One specific fruit is Sarah (Huffman) Kennedy ’02 who is back as a visiting professor for the year. She joins the tenured faculty, Drs. Boylan, Joseph, Smith (on sabbatical) and myself, along with two other visiting faculty, Drs. Miller and Viskari, to work with the current students. Sarah, with her ready smile, brings energy and creativity, along with her technical prowess as a Ph.D. biochemist. Our goal is to help educate the citizens and the scientists of tomorrow.

While the growing number of science majors on campus brings certain pressures, the department still focuses on experiential learning and undergraduate research. Last year, six students presented research at the Pittsburgh Conference in Chicago, and seven students presented research at the national ACS meeting in Salt Lake City. Over the summer, nine students had internships or research positions. Additionally, Drs. Boylan, Kennedy, Miller and Smith were also busy working on research projects off-campus. We are very thankful for the College and the alumni support of student travel and research. Please remember that as alumni, you are always part of this department and help us achieve these successes.

In closing, I wish to invite you to stop by and visit the department. The rest of the faculty and I enjoy meeting with you and touring the department whether during homecoming weekend or some other day when you come by New Wilmington.

Dr. Timothy Sherwood
Chair, Department of Chemistry

Department Welcomes
Dr. Sarah (Huffman) Kennedy

The department of chemistry welcomes back Dr. Sarah (Huffman) Kennedy ’02 to Westminster College as a visiting professor for the 2009-2010 academic school year. Dr. Kennedy received her B.S. in chemistry from Westminster and in March 2009, she completed her Ph.D. in chemistry at the University of North Carolina at Chapel Hill where she worked on protein crystallography.

When Dr. Kennedy learned that Westminster was hiring, she was instantly reminded of the small class sizes and the personal relationships that are developed between professors and students. Dr. Kennedy is teaching sections of organic chemistry, principles of chemistry, and biochemistry this year. She is developing undergraduate research projects related to wine chemistry and she plans to apply her expertise in protein crystallography to determine the crystal structures of enzymes related to the wine-making process.

Dr. Kennedy and her husband, Chris, reside in Meadville with their two cats, Snickers and Velcro. When she is not teaching, Dr. Kennedy spends her time hiking, backpacking, camping, and cooking.


Chemistry Awards and Scholarships for Academic Year 2008 –2009

DeWitt Scholarship Award
Nicholas Mizenko ’10
Christina Hamill ’10
Keri Biedka ’11
Andrew Brown ’09
Andrew Davic ’09
Gavin Buckholtz ’10
Natasha Kassim ’10
Nathan Barefoot ’11
Casey Schmidt ’12

Dunlop Scholarship

Louis Skurczenski

Ken Long Book Award

Society of Analytical Chemists of Pittsburgh

Analytical Chemistry

Penn-Ohio Border Section of ACS

Freeman Award

CRC Award

Chemistry Award winners.
9 Majors Involved in Summer Research, Internships across the United States

Nine chemistry and biochemistry majors traveled outside of their comfort zones to explore the glorious world of research and possible future careers.

“Summer internships and research experiences open doors for undergraduates that the classroom cannot and give these students a competitive advantage,” said Dr. Timothy Sherwood, chair of the department. The emphasis the College places on getting involved in research puts Westminster students ahead of many of their peers.

The National Science Foundation Research Experiences for Undergraduates (NSF REU) program sponsored six Westminster students at various universities.

Nichole Batey '10 studied sodium phosphate effects on the helical structure of a mainly alanine peptide at Duquesne University.

Monica Hall '10 traveled west to the University of Utah to study Suzuki coupling and nanopore technology.

Christina Hamill '10 traveled south to continue her research on the synthesis of PNPs as hafnium complexes at Texas A&M University.

Natasha Kassim '10 conducted clinical research concerning adenotonsillectomies and pediatric sleep apnea at the University of Rochester.

Ryan Konik '11 focused on the mechanical unfolding of G-Quadruplex/i-motif using laser tweezers at Kent State University.

Nicholas Mizenko '10 studied beta-lactamases using bioanalytical chemistry at Case Western Reserve University.

Three students held internship positions in industry and government.

Eric Cargal '11 interned at the Food and Drug Administration, Center for Device and Radiological Health, Office of Science and Engineering Laboratories, Department of Chemistry and Materials Science, White Oaks Campus outside of Washington, D.C., to study drug elution and polymer matrix degradation from absorbable stent coatings.

Linda Farnham '10 worked as an environmental specialist at AGX, Inc. in Wexford. She monitored air particulates associated with asbestos abatement, conducted lead surveys of houses, and monitored arsenic levels at local power plants.

Stephanie Gollos '10 conducted an internship with the Department of Laboratory Animal Resources (DLAR) at the University of Pittsburgh where she worked with veterinary technicians and assisted with surgical research.

Science in Motion Remains in Motion

Since the birth of Science in Motion (SIM) in 1987, it has become a state-funded program that provides science and technology labs for elementary, middle and high schools. There are 12 colleges in the state of Pennsylvania that have their own SIM division to provide these services to more than 200 schools. Westminster College’s division of SIM serves 53 schools in its neighboring counties. Last year, 101 teachers worked with the mobile educators from Westminster’s SIM program to reach 14,630 students with various labs and scientific equipment.

Mobile educators travel from school to school in order to meet the requests of the teachers by providing labs in chemistry, biology, physics and elementary science. The labs allow students to use LabQuests and diode-array spectrometers, along with many other instruments, to conduct protein electrophoresis, to study rocks and minerals, or to investigate water cycles. One lab even utilizes UV lights and Glowgerm soap to teach elementary students the importance of hand-washing.

Through partnerships between Westminster College and the neighboring area school teachers, schools have access to equipment that no one teacher would have. Mobile labs make lesson planning and preparation easier and more diverse for the teachers because they do not have to do any lab preparation and are not limited to the instrumentation within their school district. Workshops are held by the Science in Motion staff to familiarize teachers with what the mobile educators have to offer and how the traveling labs can be used in the curriculum.

For information on SIM visit www.westminster.edu/acad/sim/sim_overview.cfm.

Analytical Chemistry, Environmental Science Students Investigate Fish Kill

Last September, a mysterious odor permeated Westminster’s campus via the waters of McClure’s Run, the stream that runs through the College. Shortly after the odor was reported, fish began appearing belly-up. Dr. David Swerdlow of the chemistry department confirmed that propylene glycol had been released upstream from the College. Since propylene glycol is water soluble, no remediative action could be taken, but a company responsible for the release was fined, according to the DEP.

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Eight analytical chemistry students and 17 students from the environmental science/studies cluster teamed up to collect and analyze samples of contaminated water, dead fish, other stream-dwelling organisms, and sediment for chemical and biological analysis. Instrumentation in Westminster’s chemistry department was used to test for the presence of volatile organic compounds in the stream.

The Department of Environmental Protection (DEP) confirmed that propylene glycol had been released upstream from the College. Since propylene glycol is water soluble, no remediative action could be taken, but a company responsible for the release was fined, according to the DEP.

“This has been a wonderful collaborative experience involving numerous faculty members, students, and community residents. This project confirms that environmental issues require interdisciplinary perspective,” said Boylan.
Faculty and Student Publications and Presentations for Academic Year 2008-09
Note: only Westminster authors are listed.

Faculty publications:

Presentations at the *American Chemical Society National Meeting.* Salt Lake City, UT. March 22-26, 2009:
- Gavin Buckholtz, Emily Landis, and Peter M. Smith. **Using microwave heating to promote the Heck reaction.**
- William M. Kochemba and Peter M. Smith. **Synthesizing and characterizing lanthanide complexes containing tripodal Schiff-base ligands.**
- Spencer Rohrbacher and Martha Joseph. **Pseudo rate law determination of FD&C green No. 3.**
- Brandi Weigand and Peter M. Smith. **Luminescence of lanthanide complexes containing novel macromolecular Schiff-base ligands.**

- Helen M. Boylan. **What Works: Assessment of a Watershed Service Learning Project.**
- Andrew Brown. **2D NMR technique for detecting multiple quantum coherences using projective measurement.**
- Andrew Davic. **Trace detection of converted and fluorescently tagged primary fatty acid amides (PFAMs) using HPLC coupled with fluorescence detection.**
- Mallory Lichwa and Helen M. Boylan. **Forensic analysis of fingernail polish using laser induced breakdown spectroscopy: A preliminary investigation.**
- Leah Maxwell. **Effects of anti-diabetic drug, Rosiglitazone, on mesenchymal stem cell differentiation to adipogenic and osteoblastic phenotype.**
- Tara Pregibon. **Validation of green tea extracts by liquid chromatography-particle beam/electron ionization mass spectroscopy.**
- Theresa Swanson. **Kelvin probe microscopy on graphene.**

Other presentations:

Laser Induced Breakdown Spectroscopy (LIBS) was used for forensics analysis related to the Anthony investigation, but those involved in that case could not discuss it. A “48 Hours” producer found the research abstract of 2009 Westminster biochemistry graduate Mallory Lichwa’s LIBS project online. The project, which Lichwa presented at Pittcon, involved the forensics analysis of fingernail polish using LIBS. The producer contacted Lichwa’s research mentor, Dr. Boylan, to discuss the technique and later arrange a visit.

The film crew created a set surrounding the LIBS instrumentation, supplied by Dan Willoughby of D&N Scientific, in a laboratory of the chemistry department and shot footage of Boylan and Lichwa using it. Boylan and junior chemistry major Nathan Barefoot also demonstrated headspace gas chromatography-mass spectrometry, another technique related to the Anthony case, on film.

A producer and camera crew from CBS News’ “48 Hours” investigative program shot footage in Westminster College’s chemistry department in September. Two brief clips from the filming session aired as part of the Oct. 17 “48 Hours Mystery” coverage of the Caylee Anthony murder case in Florida. Additional footage may be used next summer when the case goes to trial. Dr. Helen Boylan and the Westminster College Department of Chemistry were included in the show’s credits.

Boylan and Lichwa during “48 Hours” film shoot.
Long Chemistry Lecture Honors Dr. Terrence Collins

Dr. Terrence Collins
Chemistry Professor Elected to National Office

Professor Emeritus Ken Long and his wife, Nancy, fund this Chemistry Professorship.

Dr. Collins is the Thomas Lord Professor of Chemistry at Carnegie Mellon University (CMU).

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