Dear Alumni and Friends of the Department

S. Scott Saavedra  
CBC DEPARTMENT CHAIR

Roger L. Miesfeld  
CBC DEPARTMENT CO-CHAIR

This past year has been one of transition for the Department of Chemistry and Biochemistry (CBC), as one of us (Scott) became the new Department Chair, and the other (Roger), the new Department Co-Chair. Although we had hoped to tap into Vicki Wysocki’s leadership expertise after she stepped down as the CBC Chair this past summer, she has recently moved to The Ohio State University where she is an Ohio Eminent Scholar in the Department of Chemistry and Biochemistry. We, wish both Vicki and Ron Wysocki well in their new academic positions and know they will always be UA Wildcats at heart!

We have kicked off the new academic year with our “CBC@UA” branding icon, which will be present on all of our materials sent to CBC alumni and friends. The CBC@UA icon conveys two messages as we build on our strengths in the second decade of the 21st century. First, the merger of the former chemistry and biochemistry departments in 2009 led to the formation of a nationally-ranked Chemistry and Biochemistry department, which is one of the largest academic units on the UA campus. CBC has nearly 40 faculty, 200 PhD graduate students, 750 undergraduate majors in chemistry or biochemistry, and 120 staff members—we are CBC at UA! Second, because of advances in electronic technology and information systems, our CBC alumni and friends will be interacting with us more often through electronic media. This includes email communication with the CBC Chair (cbc-chair@email.arizona.edu), visiting the CBC website (www.cbc.arizona.edu), and connecting through the CBC facebook page (www.facebook.com/Chemistry-Biochemistry/Alumni). You can stay in touch with us 24/7 because CBC is always online!

This issue of the Catalyst contains two new sections we hope you enjoy. The “Then and Now” section on pages 4 and 5 features an article by a CBC alumnus, which in this issue is Dr. Wayne Woesolowski, a 1971 Chemistry graduate. Wayne, or “Weso” as he affectionately is called, gives his personal account of returning to teach chemistry at UA after spending 30 years as a chemistry professor at Benedictine University. In the section called “The Cutting Edge,” you will find articles written by current CBC faculty members, of which two are featured in this issue. The first, on page 6, is written by Dr. Neal Armstrong, Director of the UA Center for Interface Science: Solar Electric Materials, who describes the efforts required by him and his team to land a five year $15 million grant from the DOE. The second article is written by Dr. Indraneel Ghosh, co-founder of Luceome Biotechnologies, who describes on page 7 how he and his wife, Dr. Reena Zutshi, launched their UA Science in the 60s,” to be held November 14–16, 2013, in Tucson. More information about this exciting event can be found online at www.cbc.arizona.edu/celebration.

Thanks for supporting CBC@UA!

If you received the 16-page print version of the Fall 2012 Catalyst alumni newsletter, be sure to go online at http://www.cbc.arizona.edu/alumni_friends to download and view the expanded 36-page version containing more exciting CBC alumni news!

Alumni News

Thank you to all our alumni who dropped us a line to let us know where they are and what they’re up to personally and professionally.

We’re giving you just a sample here.

Click the button below to see complete updates!

Andrew Lemieux | BS 2005, MS 2006 | is currently working as a researcher at The Netherlands Institute for Crime and Law Enforcement (NSCR) helping the Uganda Wildlife Authority (UWA) combat poaching in Queen Elizabeth Conservation Area located in western Uganda.

Steve Vanhoy | BS 2008 | was awarded a fellowship grant from the Foundation for Anesthesia Education and Research to work with the University of Utah on their rescue echocardiography service.

Gregory J. Longoni | BS 2010 | is currently doing forensic science work for the Arizona Department of Public Safety.

Dario Pasalic | BS 2010 | is studying medicine at the Mayo Clinic Medical School.

If you’d like the CBC community to know what you’re up to, drop Olivia a line at omandezoa@email.arizona.edu
beloved Old Main and… a little out-building—the “chemistry

An 1891 UA map shows a basically empty campus with stables, freshman chemistry has changed over the years. I thought I would share with you my view of how the teaching of

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the title “Grandpa Chem” from my students. I am constantly back to Tucson where I accepted a lecturer position in the UA Chemistry Department. What a great way to semi-retire! I love the theater of the big classroom at the UA and have earned its inception.

Teaching, Trains and Tucson—

I have been teaching chemistry for 40 years, and boy have things changed! I earned my PhD at UA in Inorganic Chemistry in 1971 in Dr. Robert Feltham’s lab. After leaving UA, I spent four years as an environmental chemist, and then in 1975, accepted a full-time position on the faculty at Benedictine University in Lisle, Illinois. After 30 years of teaching chemistry in a small classroom setting—only five students in Physical Chemistry—I retired from Benedictine University and headed back to Tucson where I accepted a lecturer position in the UA Chemistry Department. What a great way to semi-retire! I love the theater of the big classroom at the UA and have earned the title “Grandpa Chem” from my students. I am constantly searching for new ways to engage my students in a technology driven world, which has included burning a $100 bill in class to illustrate thermodynamics and having the students calculate the radioactivity of my prostate cancer implants. One of my passions is science history, especially as related to chemistry, and I thought I would share with you my view of how the teaching of freshman chemistry has changed over the years.

An 1891 UA map shows a basically empty campus with stables, beloved Old Main and… a little out-building—the “chemistry lab.” Teaching chemistry has been essential to the University’s mission since its inception. In the beginning, we served mining, agriculture and engineering, but in the 1960s there was a shift from training chemists to research. We’ve always been innovative teachers, from including women in the labs in 1924 to closed circuit black and white TV lectures in 1961. Curriculum adaptations included honors chem, microscale laboratories, Dr. Philip Keller’s NewCHEM textbook, and more recently, a total revision of the first year curriculum by Dr. Vicente Talanquer, a CBC Professor. Indeed, the textbook publishers are just now catching up to us with the “Atoms First” tests (molecular forces produce chemical properties). As Dr. Philip Keller said in a recent interview, “The evolution of chemical education is not a straight line like biological evolution, but a series of zigs and zags always looking for the best.”

UA Chemical education has grown from 800 students in chemistry classes (1957) to over 10,000 in 2012. In 2010, the CBC Department added a large “optical mark scanner” to create scantron-like scoring sheets of any length programmed to look for certain marks in exact locations. Chem 151 exams can be 50% multiple choice and 50% open format problems graded by the teaching faculty and TAs. Once there were cohorts of TAs spending a week just totaling thousands of tests, which are now scored, totaled and posted in a few days. On five Friday evenings, first year students take the same examination at the same time. The fall am lecture section can’t tell the 2 pm class what’s on the exam. Common exams are created—imagine five PhDs agreeing on an exam—by the teaching teams and administered in various large venues across campus. The Teaching Support Office coordinates with faculty and TAs who deliver, distribute, proctor, collect and return the exams. Think about passing out 2000 exams in less than five minutes! The lines outside Centennial Hall once extended back and around Old Main!!! We’ve learned and become rather efficient in crowd control. Working in teams, groups of TAs grade the “open format” portion of the exam. No TA grades his or her own students or the same group of students twice. The exams are returned in the lab sections personally by TAs who can help their students celebrate or work to improve.

The days of a professor with a chalk-dusted coat and stacks of papers to grade at home are over. Teaching first year chemistry is not a job; it is a mission of continuous improvement.

UA Old Chem lecture Hall in 1951, circa 1950 and today. Archive photo used with permission by UA Archives

TEACHING TEAM LA: R. Vicente Talanquer, Wayne Wesolowski (1st Semester Coordinator), Tom Loceett, Andy Grell (2nd Semester Coordinator). Laura Van Dorn, Amy Graham, John Pollard (Director of General Chemistry), Steve Brown (Laboratory Manager)

A fun fact about me—Wayne Wesolowski PhD | UA Chemistry 1971

Wayne Wesolowski won the 2012 Faculty Excellence in Teaching Award from WISE, the UA Women in Science and Engineering Organization and won the 2012 runner-up for the UA Five Star Teaching Awards. Way to go WISE!
Building a Winning Team
by Neal Armstrong, PhD | Professor and CSSEM Director

The Energy Frontier Research Center (EFRC), also called the Center for Interface Science: Solar Electric Materials (CISSEM), had its genesis in 2005 when the Department of Energy convened a large group of scientists from around the world to provide guidance on defining the basic research thrusts needed to develop new forms of solar energy conversion to electricity. Throughout this two-day event it was clear that the chemistry and physics of interfacial processes, at nanometer length scales, would be a foundational issue which would transcend the development of all new solar cell technologies, especially those based on organic electronic materials.

It was also clear to me that we had a critical mass of scientists at The University of Arizona that could form the centerpiece of a multi-investigator center, especially in Chemistry and Biochemistry, and that we had been accumulating a unique blend of technologies in CBC in our various research facilities and individual labs, that could provide us with unique strengths to address these problems. We also had a brand new, uniquely facilitated building that could support the activities of a center like CISSEM. With the addition of other groups that I had been collaborating with in other NSF- and DOD-funded centers, I knew we could form a very competitive center focused on the basic science of interfaces between organic and metal or metal oxide materials, the processes that control device efficiency in these new solar cell platforms, and that we could provide a unique training experience for a large number of postdocs, scientists, engineers, staff, and principal investigators. As we begin the fourth year of CISSEM we have published 70 papers in high impact journals, submitted six patent applications, given numerous talks at public and professional meetings, and most importantly, have graduated 16 PhD scientists and trained 20 postdocs who have gone on to good academic, industrial, and government positions. Our focus has increasingly tightened, and we look forward to the competitive renewal of this center and to solidification of CBC, UA, and CISSEM as an international resource in understanding interfacial science of solar energy conversion. The key to building a winning team in big science research is to build on your strengths, as we have here in CBC, and then inspire a collaborative spirit amongst all of the players, in this case our faculty, scientific staff and students.

In 2008, DOE announced its intention to proceed with a call for large EFRC programs, and in 2009 46 of these centers were funded nationwide (out of a total of 278 proposals), for five years, many of them with America Recovery and Reinvestment Act (ARRA) funding. In order to build a winning team in solar energy research and execute successfully the five year $15 million DOE grant, we enlisted an outstanding group of cutting edge scientists from UA, Georgia Tech, NREL, Princeton University, and the University of Washington. This team of chemists and engineers includes more than 70 members, including graduate students, postdocs, scientists, engineers, staff, and principal investigators. As we begin the fourth year of CISSEM we have published 70 papers in high impact journals, submitted six patent applications, given numerous talks at public and professional meetings, and most importantly, have graduated 16 PhD scientists and trained 20 postdocs who have gone on to good academic, industrial, and government positions. Our focus has increasingly tightened, and we look forward to the competitive renewal of this center and to solidification of CBC, UA, and CISSEM as an international resource in understanding interfacial science of solar energy conversion. The key to building a winning team in big science research is to build on your strengths, as we have here in CBC, and then inspire a collaborative spirit amongst all of the players, in this case our faculty, scientific staff and students.

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Our research program in Bioorganic Chemistry and Chemical Biology focuses upon the design and construction of therapeutics and biosensors. Our research laboratories are located in the UA Chemical Sciences building where we utilize techniques in organic synthesis, biochemistry, and molecular biology. Our long-term research goals are simple—we want to develop methods that help unravel mysteries and enable discoveries in biology that can provide diagnostics and therapeutics. One of the projects developed in my lab was the creation of a rapid method to utilize biosensors for visualizing the interactions between almost any biological macromolecule, such as proteins, DNA, and RNA. For example, we can engineer the luciferase enzyme, which produces light in fireflies, into a conditional sensor by “cutting” the luciferase enzyme into two fragments leading to the production of split protein domains that individually lack catalytic activity but under appropriate conditions can be assembled to form an active enzyme that produces light which we can detect. As illustrated below, we can attach user-defined proteins to each of the luciferase domains and create a sensor to detect drugs that inhibit the activity of a protein of interest. In the presence of a designed probe, the two luciferase subunits can interact and produce light by catalyzing the conversion of luciferin to oxyluciferin and light. When light production is inhibited by adding a specific drug it tells us that the drug is active against the protein attached to the luciferase enzyme. Arizona’s Office of Technology Transfer filed a patent on “Cell free methods for detecting protein-ligand binding” in 2008 based on this research and the US patent was issued on August 14, 2012.

In 2008, my wife Dr. Reena Zutshi and I co-founded a UA spin-off company called Luceome Biotechnologies that licensed the cell free split protein technology through the University of Arizona’s Office of Technology Transfer. Luceome Biotechnologies was founded to develop technologies that use light to interrogate the proteome and genome. We came up with the name “Luceome” that plays on the Italian word “luce,” which means light and “ome” that is widely used for signifying totality in biological systems, such as genome or proteome. After approval from the Arizona Board of Regents to launch Luceome as a spin-off company based on research conducted at the UA, we invested our money to provide seed funds to cover patent costs and develop the technology at an off-campus research laboratory. Reena had previous experience in biotechnology start-up companies having served as the Vice President of operations for ImmaRx Therapeutics. Reena now serves as the President and CEO of Luceome Biotechnologies, which is currently located in a 2400 sq. ft research facility at the Tucson Tech Park off of Kinlo Parkway. Luceome Biotechnologies has received funding through several Small Business Innovation Research (SBIR) grants from the federal government and most recently secured a Phase II SBIR grant of $1.6 million to continue developing the technology and launched an assay called KinaseSeeker to identify how drug candidates interact with protein kinases, implicated in cancer progression. Several industrial and academic laboratories have started using Luceome’s assays to understand how their inhibitors work, which is important for establishing the broad utility of a drug candidate and its safety profile.

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The Birth of a Spinoff
by Dr. Indraneel Ghosh | Professor | Co-Founder, Luceome Biotechnologies

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Michael A. Cusanovich, a Regents’ Professor and a vocal advocate for advancing biotechnology research and economic development for more than four decades at the University of Arizona, passed away in 2010 at the age of 68. To commemorate his life and his many accomplishments, the Mike Cusanovich Symposium and Golf Tournament was held in Tucson in March 2012. If he had been there, Mike would have had a great time seeing so many friends and relatives enjoying themselves in the beautiful weather we had that weekend. The symposium had two strands that covered areas of interest to Mike: 1) Protein Biochemistry and 2) Engineering and Industry. Keynote speakers were Garth Powis (MD Anderson Cancer Center, U. Texas, Houston) and Stuart Williams (U. Louisville). During the day there was a poster session, which was well attended by faculty, students, staff and friends of the department. A dinner and silent auction followed the day’s talks. The bidding at the silent auction was fierce for one of Mike’s favorite bolo ties, as well as for the Sean Miller autographed basketball.

On Saturday, March 3, we continued our celebration of Mike’s life with one of his favorite activities—golf! It’s not that Mike was a great golfer, but he was very enthusiastic about the game. It was a bit chilly at the start of the golf tournament, but the day warmed up nicely. The University of Arizona cheerleaders were on hand to help us start the day off with a UA cheer. Mike Duran won a 5-day Carnival Cruise for Two in the putting contest, and Erin Ratcliff and Will Fitz each won Two tickets to a Big Game in the Closest to the Pin contest and the Longest Drive contest, respectively. Bob Logan, John Humenik, Greg Hansen, and Dennis Bene comprised the foursome that placed 1st in the tournament. Second place went to Mark Baraza, Armando Lopez, Mike Duran, and Joe Resign, and 3rd place winners were Wendell Neal, Charles Leftault, Mike Valentine and Tom Boesel. Congratulations to all the winners!

The Michael A. Cusanovich Endowment Fund has been established in the College of Science as a lasting tribute to his many contributions to the UA and will support scholarships for meritorious, underserved undergraduates in any discipline and fellowships for science-oriented graduate students.

Donations to the Michael A. Cusanovich Endowment may be made at: http://www.uafoundation.org/impact/articles/article_00053.shtml
Victor Hruby received multiple awards: he was selected as the 2012 recipient of the Neese-Holder Award, an award that is presented each year to a scientist in recognition for his or her lifetime contribution to peptide science. He was also elected to the ACS Medicinal Chemistry Hall of Fame.

Marc Tischler was honored as the Outstanding Teacher in the Basic Sciences by the UA graduating Medical Student Class of 2012 and by the College of Medicine Faculty for “Outstanding Teaching in Teaching by a Block for DMH.”

Matt Cordes and Vahe Bandarian won the Pilot Project Award from the UA Bio5 Institute.

Bonner Denton and Roger Sperling received a 2011 R&D 100 Award for the development of the Array Detection Technology for Mass Spectrometry (ADT-MS), a better bomb sniffer.

Anne Padas won the 2012 College of Science Distinguished Advising Award.

Roger Miesfeld was awarded the 2012 UA Honors College Faculty Excellence Award.

Michael Brown was elected Fellow of the American Physical Society in 2011.

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Faculty and Staff News

Vicente Tolaini received the ACS Northeastern Section’s 2012 J. Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry, as well as the UA 2012 Henry and Phyllis Koffler Prize for Education.

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Student News: Postcards from Travels Abroad

Nina Martin | Germany and Hong Kong | In the summer of 2011, I participated in the RISE program hosted by the DAAD. The program selects roughly 300 American, Canadian, and UK students to research in German university and private research laboratories under German PhD candidates. Fields of research range from molecular biology and synthetic inorganic chemistry, to theoretical physics and psychology.

Jonas Furtado | Germany and Hong Kong | In the fall of 2012, I will be doing a year abroad in Germany. I will be pursuing my interest in environmental chemistry and I will have the opportunity to interact with younger generations of Germans and other nationalities. Additionally, I will have the chance to work with and learn from German PhD students and researchers.

Nicholas Nelson | Italy | After a year of hard work due to an intense class schedule which included physics, genetics, physiology, metabolism, nucleic acids, and biochemistry lab and research along with working off campus 20–25 hours a week, my brain was ready for a vacation. I decided to fulfill a lifelong dream of studying abroad in Italy.

Brenna Sullivan | China and Spain | The summer of 2012 brought many adventures, airline miles, unforgettable experiences, and travel across the world... twice.

Louis J. Chavez | Ecuador | Having never studied abroad before, being in Ecuador for the Fall 2012 semester has helped me grow and changed me in ways that I would have never imagined. I’ve been exposed to a country where household pets (Cuy, or guinea pigs in English) are delicacies.

Sean Reming | Nottingham University, UK | The historians have named the bond between America and Britain “The Special Relationship,” as cultural and social ties allow the countries to cooperate in a way like no other. And I’ve truly seen it in action.

New CBC Staff

Janet Perchesky | Accounting Assistant, Senior | After thirteen years working for the residuals department at Warner Brothers Studios in Los Angeles, I followed some friends to Tucson for a much needed change of scenery four years ago. I love the laid back atmosphere, the hiking trails and 4th Avenue shopping. I also work with a local paranormal investigation team, Parazona Investigations.

Stephanie Moyer | Human Resources Representative | I am married with two four-legged kids: a dog and a horse. When I am not in the office, you can usually find me down at the barn with my horse Sedona, who I ride and train in the discipline of dressage. I have a Bachelors in Business/Marketing and a Masters in Business Administration, and I am constantly looking for the next thing to learn. Throughout my time in CBC, I hope to learn more about the different types of research being conducted in the department.

Alicia Cool | Accountant, Associate | Mari Jimenez | Administrative Assistant | Peggy Humbert | Administrative Assistant
And 3 Tiny Additions!

Tori Lockett | Adjunct Lecturer | welcomes her newest addition, Sophie.

Prof. Pascale Charest and Antonio Ubach | Professor and Researcher | welcome Xavier.

Lily Yates | Advisor | with new baby, Leona.

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Undergraduate Awards
CBC/Chemistry & College of Science Outstanding Senior Spring 2012
Tony Comi
Biochemistry Outstanding Senior Spring 2012
Aubri Carman
CBC/Biochemistry Excellence in Research Spring 2012
Tony Comi
Chemistry Excellence in Research Spring 2012
Tarik Ozumerzifon
CBC/Chemistry Outstanding Senior Fall 2011
Saheli Mehta
Biochemistry Outstanding Senior Fall 2011
Amanda Davis
Chemistry Excellence in Research Fall 2011
Allena Goren
Biochemistry Excellence in Research Fall 2011
Andrea Hartzell
Biochemistry Outstanding Senior Thesis
Jonathan Merritt
CBC Outstanding Freshman, Sophomore & Juniors
CBC Outstanding Freshman, Sophomore & Juniors
Biochemistry
Stephanie Kha, Freshman
Jonathan Ferrg, Sophomore
Andrew Ma, Junior
Chemistry
Meghan Hess, Freshman
Eric Hansen, Sophomore
Tyler Chozinski, Junior
American Chemical Society Haich Scholars 2011
Melissa Espindola
Kimberly Heisterkamp
Hypcrubi Scholar 2011
Thomas Yi
Michael A. Wells Memorial Research Scholars 2012
Jonathan Ferrg
Shinya Ferrg
Nancy Leo
Angela Schlegel
Graduate & Undergraduate Awards
Galileo Circle Scholars 2012
Aeen Aghgar
Logan Ahlstrom
Michael Casanovitch Scholar
Victor Arias
Gilbert Escalante Scholar
Nabila Brabez
Kristin Bratton
Alice Cai
Aubri Carman
Jonathan Ferrg
Alayna George Thompson
Steven Gunawan
Eric Hansen
Dimitry Khudyev
Hsiao-Chu Lin
Robert Soto
Gail Willette
Mowei Zhou
Graduate Student Awards
Carl S. Marvel Scholar 2012
Lori Cullberon
David E. D’Brien Graduate Fellow 2012
Lindsay Morrison
John Hostetter Scholar 2012
Stephanie Jensen
Victor J. Hruby Fellow 2011
Joel Nyberg
Biochemistry Outstanding Scholarship
Zachary Miles
Outstanding Service
Katie Holso
Outstanding Teaching
Santosh Shah
Chemistry Outstanding Scholarship
Anne Blackwell
Outstanding Service
Clifford Coss
Outstanding Teaching
Christian Bell
Special Recognition
The Honors College Outstanding Senior 2012
Aubri Carman
Merrill P. Faison Memorial—UA Senior Award 2012
Aubri Carman
Robert L. Nugent Award—UA Senior Awards 2012
Aeen Aghgar
Alice Cai
Biological Chemistry Program NIH Training Grant Fellows 2011 – 2012
Rebecca Johnson Giron
Christine Kaiser
Zachary Miles
Breland Smith
CBC Undergraduate Poster Fair 2012
Biological Sciences Emerging 1st: Jonathan Ferrg
2nd: Blake Tyte
Honorable Mentions:
Aishan Shi
Duyen Vo
Biological Sciences Accomplished
1st: Shiana Ferrg
2nd: Andrew Ma
Honorable Mentions:
Jennifer Bao
Alex Hailey
Physical Sciences Emerging
1st: Kyle Marshall
2nd: Alyssa Vollar
Honorable Mention:
Eric Hansen
Physical Sciences Accomplished
1st: Lesland Voight
2nd: Spencer Carey
Honorable Mentions:
Abby Gelb
Alexandria Stanton
Senior Thesis
Honorable Mentions:
2nd: Colin Jones-Weinert
Jonathan Merritt
Tory Comi
Viewers’ Choice
Yanira Fernandez & Nihanka Changavalli
Mikala Mehlau
Michelle Salloum, Jacque Platta & Mai Ngo

2012 Student Awards

2012 Commencement

2012 CBC Awards & Commencement Ceremony was held Friday, May 11, 2012, from 12:00 pm-2:00 pm, at the Tucson Marriott University Park. The 500 guests included 2011-2012 graduating students, CBC award recipients, CBC Ambassadors, faculty, staff and friends of the department.

The program included: Welcome by Dr. Vicki Wysocki, Chair of CBC; keynote presentation given by Dr. Gail Burt, VP for Academic Affairs; Dr. Katrina Miranda presented the undergraduate awards; College of Science Dean Joaquin Ruiz presented the Galileo Scholars; the presentation of the Michael A. Wells Memorial Scholars was given by Dr. James Hazzard; Dr. Dominic McGath, Chair of the Graduate Program Committee, presented the Graduate Student Awards; Dr. Scott Saavedra presented the McNair Staff Awards; the calling of the Chemistry and Biochemistry Graduates was given by Dr. Vicki Wysocki; the closing remarks were given by Troy Comi, 2012 CBC/Chemistry and College of Science Outstanding Senior as well as the recipient of the CBC/Biochemistry Excellence in Research Award Recipient.

The 2013 CBC Awards & Commencement Ceremony will be held on Thursday, May 9, 2013, at the Student Union Memorial Center approximately from 10:30-12:30.
In Memoriam: People We Lost 2011–2012

John Valentine Rund | Associate Professor Emeritus
Alec Ervin Kelley | Retired Professor of Chemistry
Leslie S. Forster | Professor Emeritus
Benjamin Robert Padgett and Catherine Beatrice Padgett | BS 1950 and MS 1951, respectively | CBC alumni
Jerry Roland Seiler | CBC alumni

The following areas have been identified as our highest priorities:

- Undergraduate and Graduate Student Fellowships and Travel Awards
- Endowed CBC Faculty Chairs
- Gifts to renovate the Carl S. Marvel Laboratories
- Endowed CBC Annual Lectureships
- Gifts to support student events like the CBC Awards & Commencement Program and Frontiers in Science
- Named laboratories and conference rooms in the planned CBC research tower to be built behind Old Chemistry in 2016

Your generous gifts enable CBC to fund a variety of departmental student activities throughout the academic year, award prestigious undergraduate and graduate scholarships, purchase state-of-the-art equipment for named CBC laboratories, and endow chairs and professorships to attract and retain renowned faculty members.

CBC Snapshots

The Annual Salsa Challenge awarded honors for most original, hottest, and people’s choice.

Peace, Love, Chemistry & Biochemistry

Are you a child of the 60s? Did you get your CBC BS, MS, or PhD between 1960 and 1972? Then join us for a very special (and groovy) weekend: CBC then and now class reunion

There will be a dinner reception, poster session, lunch with the students and tours of CBC facilities, Mirror Lab, UA campus, and Rand Paul Planetarium. There will also be plenty of time to do fun things in beautiful Tucson. Mark your calendars: November 14, 15 and 16, 2013.

www.cbc.arizona.edu/celebration.

Marilyn Kramer | Retired BMCB Graduate Program Coordinator and one time assistant to the MCB Department Head
Marwan Mustafa Farah | BS 2009 | CBC alumnus

CBC welcomed the 2012/2013 undergraduates with a water balloon toss and an ice cream treat in August.

CBC alumni newsletter

In April, chemistry and biochemistry undergraduates presented their research and seniors presented their senior thesis/capstone projects at the Bear Down Gym.

Read full tributes to our friends and colleagues who passed away last year.

cbc wish list

The 3rd Annual CBC Chili Cook-Off featured 20 different chili concoctions entered this year, and we raised over $550 for the CBC Graduate Student Scholarship Fund. Congratulations to our winning chefs!
Joan Gregg Fornara | BS 1948 | just celebrated her 60th wedding anniversary this past June. Her grandson, Joel Fornara, continued the family’s Wildcat tradition by entering the UA Law School in Fall 2012.

Edward H. Andres | BA 1960 | recently received the Physician of the Year Award for his work at the Heartland Regional Medical Center. He plans to retire at the end of 2012, and his 50th wedding anniversary is coming up in 2013.

Robert Christie | BS 1963 | retired in June 2009 from The Burrows Company.

Paul Sangster | MS 1968, MD 1974 | has retired. He and his wife, Sandie, were able to vacation in Scotland this past June. Paul says the scenery in Scotland is beautiful to behold.

Walter Rudzinski | PhD 1977 | plans to retire from Texas State University-San Marcos in a few years so he can enjoy more time playing golf, travelling, and birdwatching.

Leslie D. Quinn | BA 1980 & 1984 | is a Pediatrician at a Children’s Advocacy Center in Phoenix, which isn’t as bad as she thought it would be after spending eight years in Tucson.

Robert Gonzalez | BA BS 2010 | has worked as a science reporter at io9, a popular science and culture magazine. He was recently recognized as an emerging writer and “next generation science communicator” with an NSF-funded science policy fellowship.

Laura Van Dorn | PhD 2004 | CBC Adjunct Lecturer | “I came to Arizona a graduate of a small state university in northern Minnesota. The resources and opportunities, as well as the abundance of the previously unfamiliar phenomenon of sunshine attracted me to the UA like a magnet.

"I had always been fascinated with electrons, and so of course I joined the group of Dennis Lichtenberger. The greatest appeal of this group was that it allowed me to explore many different areas of chemistry using photoelectron spectroscopy. I got a chance to do everything from synthesizing complex inorganic molecules with multiple metal-metal bonds, to discovering and characterizing a stable closed-shell molecule with the lowest ionization potential known to man, to getting my hands dirty repairing and building instrumentation. This work also gave me a chance to spend two unforgettable weeks in Al Cotton’s lab at Texas A&M learning the art of inorganic synthesis.

After completing my PhD, I joined the group of Professor Matt Cordes in the former Department of Biochemistry and Molecular Biophysics at the UA. In this postdoctoral position, I learned about protein design, exploring specific amino acid substitutions and their influence on secondary structure. That experience allowed me to broaden my knowledge of biochemical sciences and yielded several fruitful collaborations, including a visit to Brian Kuhlman’s lab at the University of North Carolina, Chapel Hill.

“My exposure to the field of Biochemistry led me to the UA College of Medicine, where I had the opportunity to do another postdoc in molecular imaging. Under the direction of Prof. Bob Gillies I used MRI in clinical research to identify possible methods for early detection of risk factors of breast cancer. When Bob Gillies moved his research group to Florida, I decided to stay in Tucson and, realizing my long-time passion for chemistry, enthusiastically accepted the Chemistry Department offer to become an instructor in General Chemistry.
Since then, I have taught first and second semester general chemistry, as well as both semesters of the General, Organic, and Biochemistry course. The number of students that I have taught in the last four years is so large that it now approaches the total enrollment at my undergraduate university, and counting."

Andrew Lernieux | BS 2005, MS 2006 | The WILD LEO Project Netherlands Institute for Crime and Law Enforcement (NSCR) researcher Andrew Lernieux, UA Biochemistry ’05 and ’06, is currently helping the Uganda Wildlife Authority (UWA) combat poaching in Queen Elizabeth Conservation Area located in western Uganda. Andrew has developed the Wildlife Intelligence and Leadership Development (WILD) program to provide law enforcement officers (LEOs) in the protected area with advanced intelligence gathering and analysis training. Using technology donated by the NSCR, a select team of rangers, known as WILD LEOs, will collect photographic evidence of poaching activity using digital cameras embedded with GPS units. By photographing signs of poaching such as snares and animal carcasses, the rangers will create a spatial database that describes where poachers are operating within the reserve. Moreover, arrested poachers will be photographed at the hunting site and the photograph, that shows the latitude and longitude where it was taken, will be used in court to prove the hunting occurred inside protected area. The goals of the project are twofold: (1) increase poacher apprehension using crime mapping and analysis techniques and (2) increase poacher conviction rates using better courtroom evidence.

Steve Vanhoy | BS 2008 | “After graduating I decided to pursue my passion in medicine. But, before giving my life to the books, I worked as a scribe for 3 years at Northwest Medical Center in the Emergency Department while traveling the world. I was able to visit Greece, Spain, Hawaii, and Turkey. They were all incredible journeys, that taught me a lot about different cultures. I will always treasure my decision to take a little time off before entering medical school. After my adventures around the world I began working on my MPH degree while applying for medical school and was happily accepted at the University of Arizona College of Medicine—Phoenix. I am now pursuing a combined MD/MPH degree. My interests lie in the field of anesthesia and critical care medicine. I hope to one day use the critical thinking I’ve gained from the biochemistry department in my acceptance into medical school and being awarded my current scholarship. Opportunities that the biochemistry department offered were instrumental in my acceptance into medical school and being awarded my current summer fellowship.”

Sarah Nelson | BS 2009 | “After graduating from the UA with a degree in Biochemistry in 2009, I moved to Denver to pursue an MD/PhD through the University of Colorado’s Medical Scientist Training Program. After completing the first two years of medical school, I moved to Boulder to pursue a PhD in Biochemistry under Dr. Natalie Ahn at CU Boulder. Currently, my research is focused on understanding how microRNAs combinatorially regulate protein expression in melanoma, and how gain of function mutations in the protein B-Raf dysregulate microRNA expression. After I graduate from the MD/PhD program, I plan on becoming a physician scientist specializing in the pediatric oncology.

“Looking back, it’s hard to believe how lucky I was to be an undergraduate in the Biochemistry Department at the UA. At the UA, I was able to work closely with top-notch faculty who were fully invested both in the classroom and at the bench. And consequently, the successes I’ve had as a medical student and as a graduate student can largely be attributed to the outstanding education I received while at Arizona.”

Brittany Perkins | PhD 2009 | “I knew I needed a PhD to realize my dream of becoming a chemistry professor, but with a husband in the military, I wasn’t sure how that would work. I’m so thankful that we were stationed in Arizona; as a midwest girl, I’m not sure I would have chosen the University of Arizona, but I can’t imagine a better experience in pursuing a PhD. When I think back on my time there, I am reminded of all the people who helped me succeed. The professors considered my very late application (we were stationed there in March), taught great classes, and challenged me to improve. I remember the staff who helped me navigate all the ins and outs of the University systems and the other students who made it fun during the long hours of research. My advisor, Vicki Wysocki, gave me opportunities to pursue my interests in research and truly encouraged me to achieve.”

Greggory J. Longoni | BS 2010 | “I am currently doing forensic science work for the Arizona Department of Public Safety. I specifically work with mitochondrial DNA, which is used as an identification tool. Mitochondrial DNA analysis can be used for a variety of things, which includes solving cold cases as well as missing person cases. Nuclear DNA is typically the primary target of analysis for biological evidence, however, if the evidence is of limited quantity (a hair with no root) or degraded (charred remains), mitochondrial DNA is the primary target for analysis as it has a higher copy number and is more stable than nuclear DNA. The types of samples we can obtain mitochondrial DNA from include but are not limited to hair, teeth, bones, organ tissue, and even fingernails.

“Mitochondrial DNA analysis is a relatively new tool used in forensic science. Because it is a very specialized type of analysis, few crime laboratories perform this type of testing. The Arizona Department of Public Safety is one of the few laboratories in the nation that do Mitochondrial DNA work. Our unit is funded by and has a cooperative agreement with the Federal Bureau of Investigation (FBI). Our Laboratory is one of the two FBI Regional Mitochondrial DNA laboratories in the nation. Our group works cases from Arizona and from other law enforcement agencies cases around the nation.”

Dario Pasalic | BS 2010 | “Since graduation I have been working, volunteering and traveling as much as possible before making my way towards medical school. Straight out of college I was fortunate to find work with the Northwest Tucson Emergency Physician group as an assistant “scribe” in a bustling hospital. This gave me first-hand access to a number of physicians and clinical experience with a diverse patient population. All those lectures finally had significance in a clinical setting! Meanwhile, I also continued my service in the community by working with recently relocated refugee families and at-risk youth. While demanding and satisfying at the same time, I found these experiences to be most meaningful because of the amount of teaching and mentorship
involved. The latter, in particular, was something I valued throughout my time in the Department of Chemistry and Biochemistry, whether with students or faculty members. All in all, the time off has been a welcome change of pace, allowing me to pursue new interests on a professional and personal level. As a result, I now feel more grounded and prepared to take on the challenges in the coming years.”

Wesston Stover | BS 2011 | “Less than a week after graduation I was in Montgomery, Alabama at the Maxwell Air Force Base Officer Training School for a summer of Officer Training. After my commissioning ceremony I immediately moved to Washington, DC to attend Georgetown University School of Medicine and embark on my goal of becoming a surgeon. During my first year of medical school, I felt like I had an advantage over most of the other students due to the education I received as a Biochemistry & Molecular Biophysics student at the University of Arizona. It didn’t matter what the course was, how much material was presented, or the difficulty, because I felt prepared. I was a member in the military medicine and surgery interest groups, the treasurer of Georgetown’s St. Baldrick’s event, and I gained extracurricular clinical observation while working with the Chief of General/Pediatric Surgery at GUMC.

“During the summer between the first and second years of medical school, I kept myself busy. I was a TA for a high school summer anatomy program run by Georgetown, which included teaching basic anatomy and suturing techniques. I am in the OR twice a week and am involved in a surgical education/clinical research project with hopes of a publication towards the end of second year. Lastly, I had an active duty tour at the Wright Patterson AFB School of Aerospace Medicine taking the first of 3 courses towards my flight surgeon wings. We received introductory military grade flight training, hypobaric/altitude chamber qualification, and rapid decompression emergency training. The flight training included takeoff, 30˚/45˚/60˚ bank turns, stall recovery, and landing.

“As I start my second year, I am the president of the military medicine interest group, will continue my research project, but most importantly will be preparing for the USMLE Step 1 exam. As it stands, I am currently interested in both pediatric surgery and combat trauma surgery. Although extremely challenging, time consuming, and somewhat stressful, I never regret the decision to pursue medicine.”

Aeen Asghar | BS 2012 | graduated Summa Cum Laude with a Bachelor of Science in Biochemistry and Molecular Biophysics with Honors, as well as a Bachelor of Arts in Middle Eastern and North African studies.

Aeen has shown leadership since his freshman year at the University of Arizona where he joined and was selected as an officer in Alpha Epsilon Delta, the National Pre-Health Honors Society. He has remained an active member of the organization and served as the president in 2011.

He has held many more leadership rolls such as treasurer for the student club G.J.V.E., a club that promotes college education to underserved high school students. He is also the president of the Persian Club and an ambassador for the Department of Chemistry and Biochemistry and the UA College of Science.

Demonstrating merit in the three pillars of scholarship, leadership and service, Aeen was selected as a member the Mortar Board Senior Honors Society and elected as the co-director of the cleanup crew. He led the community service project to clean the streets and landscape the five neighborhoods around the UA, which involved over 400 students and community members.

Aeen has also helped to run a free medical clinic in the underserved community of Agua Prieta, Mexico as a member of the UA College of Medicine club, Flying Samaritans. He also founded STAND: A Student Anti-Genocide Coalition to raise awareness of atrocities in Darfur (Sudan), which also provided ESL classes to local refugees from across the globe. For his work with STAND, Aeen was nominated with the Center for Student Involvement & Leadership’s Accolade Award as Outstanding Social Justice Advocate.

Aeen has worked in four research labs at the UA where he participated in a variety of health related research including providing health education for type II diabetes patients; research on the various issues related to successful surgical transplants; research on issues in cardiac arrest and resuscitation and studied the excitatory and inhibitory properties of motor neurons.

He has received the Galileo Circle Scholar Award and is the two-time recipient of the Michael A. Wells Undergraduate Research Scholarship. After graduation, Aeen will attend medical school at Georgetown and aims to become a surgeon working in academic medicine.

Alice Cai | BS 2012 | “I am currently a medical student attending Washington University in St. Louis. School has not yet begun; I am writing this during pre-orientation public health plunge week. Since this is a research-focused university intent on training academic physicians, my experience with research as part of the Department of Chemistry and Biochemistry provided me with skills that not only helped me gain entry into medical school, but now greatly facilitates my search for a lab here.

“During my undergraduate studies, I was an MCB and Biochemistry student. MCB provided me with a variety of interesting electives, whereas the Biochemistry curriculum had stricter, more uniform, and more challenging requirements. My most rewarding experiences, however, were in the Department of Chemistry and Biochemistry, and the wealth of activities built a strong community amongst the students, especially the Ambassadors, and those involved with any of ASMB UAN activities. One of my favorite things to do was also to stop by Olivia’s office on the way down to the computer lab in Bio Sciences West (and to grab a free Snickers).

“Some of my favorite professors, e.g. Prof Monti, turned legendary suicide courses like Physical Chemistry into understandable, manageable, and fun mornings. Honors offerings took projects above and beyond basic course requirements, and taught students to use Pymol. That was actually one of my favorite programs. I also had significant exposure to Dreamweaver in Dr. Bourque’s Honors Biochemistry 462h, building my own website to translate a metabolic paper from gibberish to terms understandable for students and lay people.

“And if I haven’t hammered it in enough, Dr. Hazzard’s 463a course taught me techniques I had not seen in my research lab, including Western Blots, and helped me decipher the meaning of the pharmacological dose-response and inhibition curves I used almost every day. Even better, I eventually used some of the techniques we learned in lab, such as running anion exchange columns, as part of longer assays for my thesis research. Dr. Hazzard himself went above and beyond his du--
studies as a professor and brought students to Experimental Biology as an active member of ASMBMB, presenting about 463’s work for University of Arizona’s ASMBMB Undergraduate Affiliate Network, and also helped plan summer camps to encourage high school involvement in science.

“St. Louis is extremely different from Tucson. I never expected to enter the Bible Belt, or be faced with an indigent population with HIV rates, life expectancies, and poverty rates comparable to those in third world countries. The challenges in college, the extracurriculars, and overall character-building experiences I had as a Biochemistry major in college were one important part of maturing enough to face the monstrous problems facing health care in an underfunded, neglected city such as this one.”

Aubri Carman | BS 2012 | Flinn Scholar, graduated Summa Cum Laude | Honors College and Biochemistry Outstanding Senior | Honored with the Pillars of Excellence Award | UA Medical School, Class of 2016 | “As a recent graduate of the CBC program, I cannot express how thankful I am to have been part of the biochemistry major. Though the requirements of the program were rigorous, the CBC Department offered the extensive student support and mentorship that was needed to excel. I was offered a faculty mentor from the department who helped me get involved in a multi-disciplinary pediatric infectious disease project using biochemical methods. In my research, I was able to directly apply knowledge I had learned in biochemistry classes to exploring questions that were of interest in my future career field.

“The outstanding advising in the Department of Chemistry and Biochemistry allowed me to complete all of the program requirements while still being able to complete coursework in other fields that interested me, such as political science, public health, and Spanish language. However, unlike many of the other departments from which I took classes, the faculty and staff in the CBC Department are truly invested in their students. Professors were always more than willing to meet outside of class time to offer extra help or discuss research/current topics in the field, and were eager to hear about their students’ activities both academically and extracurricularly. The CBC program is also very apt to recognize students, as scholarship opportunities for both academic and research excellence are abundant and CBC students have a rich history of winning University-wide honors thanks to nominations from CBC faculty and staff. As a CBC student, I felt as though I was part of a family of dedicated scholars, top-notch faculty, and helpful staff.

“From the Biochemistry program, I learned how to problem solve and think independently and practically—skills that will benefit me as I begin my pursuit of a career in medicine at the University of Arizona College of Medicine this fall. I highly recommend the CBC Department to any student interested in science, as the CBC undergraduate programs are truly unparalleled in the University community.

Kayya Girdharan | BS 2012 | “Teaching is one of the best things I can think of doing with my Biochemistry degree. Sure, I’m teaching first graders, so I highly doubt we will get to do SDS PAGE assays or determine the Km of lactate (although I would love to play a Dr. Hazzard character with my scholars), but it is absolutely rewarding to be a critical player in establishing the foundation students need to eventually be in our shoes, getting fancy science degrees. Moving to Chicago has also been crazy and exciting at the same time, and this will definitely be an experience (or career?) that will stay with me for my entire life.

“After graduation, my husband and I moved to New Mexico, where I’ve been able to fulfill my dream of teaching chemistry as a part-time instructor at Central New Mexico Community College. CNM has been the perfect place for me to teach—the administration are very supportive of my desire to teach part-time while my kids are young, and I enjoy the opportunity for one-on-one interactions with the students (the grading, a little less so...). The rest of my time is spent with my two little future chemists, Katie and Luke—we’ve already started on the periodic table!”

Anne Simon | PhD 2012 | “I will be starting work this fall at Sabic-Innovative Plastics in Albany, NY as an Analytical Chemist after defending my PhD. Sabic is a global petrochemical company investing in long-term innovation and technology. My education at the University of Arizona and work in Scott Saxevoda’s research lab has been essential in preparation for my career. My research focused on instrument development and required expertise in a variety of analytical methods. The research I conducted was funded by a US DOE, Energy Frontier Research Center: Center for Interface Science, Solar Electric Materials. Through this center I collaborated with graduate students at other institutions and presented my research to a variety of audiences.

“Another key aspect of my time at the UA was my role as Chair of the Energy Science Group. This interdisciplinary group reminded me of the importance of dialogue not only between scientists of different disciplines, but also with the broader University and Tucson community. I am grateful I had the opportunity to learn about the wealth of research in the Department of Chemistry and Biochemistry as well as on the UA campus, especially those focused on sustainability and energy solutions. Most importantly, I cherish the relationships I made in the department; in particular, where I met my fiancé, John Lemon, who also is defending his PhD this fall.”

The development of the technology and the subsequent spin-off company would not have been possible without excellent graduate students that spearheaded the research. The graduate students involved in the initial discovery were Cliff Stains, now an Assistant Professor at the University of Nebraska, Lincoln; Jason Porter, now an American Cancer Society Postdoctoral Fellow at UCSF; and Jenny Furman, now a NIH Ruth Kirstein Postdoctoral Fellow at Scripps Research Institute. Lucome’s KinaseSeeker platform is largely based on Ben Jester’s graduate research; Ben joined Lucome Bio-technologies to see his research commercialized. There is no question that starting a spin-off company is hard work with many challenges but it can indeed be a very rewarding experience that can directly provide real world applications that benefit society.

Kavya Giridharan
BLASTOFF 2012! In June 2012, fifteen 6th grade students participated in a weeklong science day camp, BlastOff! 2012, hosted by the UA Biochemistry Club on the UA campus. Themes around space exploration, the camp was designed to allow students to participate in a variety of investigative, hands-on experiments, covering every scientific discipline from physics and engineering to molecular biology. “Cadets” learned how to build simple water purification systems (from 2-litre soda bottles, sand, charcoal, and coffee filters), synthesize polymers from skim milk, and utilize the principles of geometry to build weight-bearing towers from spaghetti! In addition to the daily experiments and activities, students also took field trips to the UA Steward Observatory Mirror Lab and Flandrau Planetarium, to better understand the universe and the ways in which we study it. There was even a guest lecture by Dr. Carol Dieckmann (MCB) on swimming plants!

BlastOff! is the product of a challenge given to the UA Biochemistry Club by Dr. James T. Hazzard, the club’s faculty advisor. Based loosely on a preceding camp, Innovoworks (started by former members of the Biochemistry Club in the mid-2000’s), BlastOff! was designed to provide students the opportunity to discover and engage in science, beyond the traditional classroom setting. Students specifically from lower-income middle schools were targeted, and many of the participants were from minorities historically underrepresented in the sciences.

The original concept was designed by UA Alumni Mary-Helen Wanat (‘11) and Nina Martin (‘12), and brought to production by Jonathan Merritt (‘12), Michael Nelson (‘12), and Nina Martin. All counselors were volunteers, both from within the UA Biochemistry Club, as well as other departments. The camp was supported in part by generous donations from the Department of Chemistry and Biochemistry, the UA College of Science, the Office of the Vice President for Research, Dr. Marc E. Tischler, Dr. James T. Hazzard, and ASBMB. Café 54, Eegee’s, Fry’s and Brooklyn’s Pizza Company also made donations to support the camp.

BlastOff! 2012 was met with tremendous success, and it is our hope that the camp will continue to evolve and become even better in the succeeding years. We thank everyone who has been involved in this adventure, and look forward to welcoming the next round of bright, eager minds to the exciting world of science!
Sean Fleming | Nottingham University, UK | Chemistry Undergraduate, Sazavdra Group | Honors College | "So, are there any study abroad programs for Chemistry majors?" I, as a wide-eyed prospective freshman, asked this tantalizing question to my future advisor Robin Ranick during orientation. I braced for the worst; I had heard that many science majors do not get the chance to go abroad due to their comprehensive curriculums.

"Actually, we do. We have a program with the University of Nottingham in England." As Robin said these words, my mouth dropped. I was first surprised that such a program exists, and second, that the program was at the University of Nottingham, of all places. So, before I had even begun my first university course, I knew I was headed across the Atlantic for my junior year.

Some background information is required: in high school my brilliant Chemistry teacher, Mrs. Fari Khalili, showed her class a video on Sodium, where Dr. Martyn Poliakoff, a professor with glasses and grey, Einstein-esque hair gave insight on the unique properties of the metal, and then another professor showcased an experiment demonstrating its reactivity. This video was part of The Periodic Videos, a project run by the Chemistry Department at the University of Nottingham that set out to create a YouTube video for every element. I enjoyed the video in class so much that I continued to watch it in action. Save for learning to look the opposite way to cross the street, I experienced no culture shock. I spoke (mostly) the same language as the locals. My American-ness, with my accent and odd vocabulary, was a point of excitement during Freshers’ week, the rowdy UK version of Wilder."weekends.

The historians have named the bond between America and Britain "The Special Relationship," as Robin said these words, my mouth dropped. I was first surprised that such a program exists, and second, that the program was at the University of Nottingham, of all places. So, before I had even begun my first university course, I knew I was headed across the Atlantic for my junior year.

The interesting part (and sometimes the challenging part) of this program was experiencing the surprising differences between the American and British university systems. To start, there are no tests, quizzes, midterms during the semester and homework is rare. You are assessed by one exam, worth a hundred percent of the grade, at the end of the semester- a bit terrifying when you are used to continual benchmarks. This means you have more time during the semester, but the three weeks before the exam period you are expected to do some heavy “revision” or as we call it, studying.

The most fun aspect was undoubtedly the amount of travel I was able to accomplish. Nottingham itself is an extremely historical town- founded in the 1200s, I lived a 15 minute walk from Nottingham Castle, the former home of a certain infamous sheriff. I lived a 30-minute bus ride away from Sherwood Forest, Robin Hood’s rumored stomping grounds. Across the street from the university lies Wollaton Hall, a 17th century manor used as Wayne Manor in the most recent Batman movie. With my Youth Rail Pass I rode their efficient train system up and down the country- from the urban grit of Manchester to the mountainous coast of North Wales, to the Scottish Highlands, and of course, to the great city of London.

Now that I’m back in Arizona, I, understandably, have a lot of people asking, “How was England?” And I tell them that it was the absolute best.

Kenneth Olson | Osaka, Japan | It was a hit like coming home, but I was getting off a plane 6,000 miles from my hometown of Glendale, Arizona. I had been to Japan many times as a child, but this was the first time back in six years, and the first time ever that I would be working in a research lab there. The familiar cadence of Japanese over the intercom, the commuters power-walking through the train station, the high-density neighborhoods unlike the sprawling suburbs of Arizona—all of these things brought about a sense of nostalgia but also novelty. There was something entirely new waiting for me though: the research lab of Dr. Mikio Kataoka at the Nara Institute of Science and Technology, or NAIST.

NAIST, in Ikoma, Nara, is a graduate school founded in 1991 as part of the Keihanna Science City, a loose collection of universities and research institutions. Located about 30 minutes from Nara, and an hour from Osaka and Kyoto, many of the students and faculty commuted to the campus, but I would be spending my ten weeks in the guesthouse on campus, instead commuting out to sightsee on the weekends.

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As a representative of Dr. John Kyndt, I was sent to Japan to research chimeric photoactive yellow protein (PYP). Photoactive yellow protein is, as the name might suggest, a yellow protein that responds to light (specifically blue light). It has many functions, for example, in signaling bacteria to swim away from light, but the exact mechanism isn’t known. To try to elucidate this, our lab prepared four chimeric PYPs, assembled from parts of Halorhodospira halophila PYP and Rhodobacter capsulatus PYP. R. capsulatus PYP has a faster photorecovery and different spectrum than the well-studied H. halophila PYP, but we wanted to investigate which part of the protein specifically was responsible for these characteristics.

During the first half of my trip, I spent most of my time making and purifying my protein, during which I learned a new method to grow PYP in E. coli. PYP contains a cofactor, p-coumaric acid (pCA), which is necessary for the protein to function. In Dr. Kyndt’s lab, we used a plasmid containing the genes necessary for the E. coli to make pCA, which allowed the bacteria to make fully-functional PYP. In the Kataoka lab, however, they used a reconstitution method, where PYP is first made without the cofactor, and then mixed with pCA. I then spent the second half of the trip analyzing the chimeric proteins, looking at how they recover in different solvent conditions, and I even got to try out flash photolysis, a sort of high-speed absorption spectroscopy.

Because of my proximity to the megalopolis of Osaka, the historical treasure box of Kyoto, and its older cousin Nara, I had the opportunity to explore a variety of places over the weekends. The region around Osaka, known as Kansai, is a vibrant and diverse mixture of new and old Japan, and is seen as a bit of a foil to the sprawling and businesslike Kanto region surrounding Tokyo (on a relative scale, of course). Osaka is known for its comedians, its outgoing inhabitants, and its unique food, including takoyaki, a ball-shaped snack made with batter containing pieces of octopus. I visited Osaka a few times, but found its non-grid-aligned streets confusing and once walked around the same station three times trying to orient myself.

My personal favorite was Kyoto, a city of more than 2,000 religious sites dating back as far as the 8th century. It’s the sixth-largest city in Japan but still retains its historical heritage even as it continues to grow. My labmates were kind enough to take me out to the Gion Festival, an annual quasi-religious festival organized by the descendants of the old merchant families of Kyoto. Because I had only ever visited Japan in June, and because the festival season doesn’t start until late July, this was the first time I had the opportunity to experience the atmosphere of a matsuri, when the streets are closed to cars and vendors set up shop on every main and side street selling all manner of street food.

I’d like to thank Drs. John Kyndt and Carol Bender for the support and assistance throughout the application process and my trip, as well as researchers both in Tucson and in Ikoma. I would also like to recognize the funding provided by the NIH (MD001427) that made this wonderful trip possible. All in all, I had a great time in Japan, and I made it a point to tell my labmates to come visit Arizona, because after ten weeks surrounded by greenery, sometimes it’s nice to see some dirt and a cactus.

Overall, this was a fantastic opportunity, as I was treated like a visiting PhD student. Not only was I responsible for performing my own experiments and maintaining my cells, but I was also actively involved in the weekly seminars, laboratory meetings, and journal/data clubs that occurred, as well as attending nationwide conferences. This was the first time I had ever worked in a foreign laboratory: I learned how to adapt to a field of study entirely different from my previous training, how to fit into a new work culture and environment, and apply my skills and logic to investigate a problem and produce publication-worthy results.

Besides working, I thoroughly enjoyed immersing myself in the beautiful culture of Munich. The city has all the conveniences of a major international city, but a “small town” feel. I was 15 minutes by subway from the city center, yet lived on the border of fields stretching to those beautiful rolling Bavarian hills. My three months in Germany were a time to explore the countryside and the different regions of the nation, participate in local village festivals, hike in the Alps, and discover how much liquid really is in a Maß of beer.

After this program, I feel that I have made friends both through common ties of science and the desire to explore beyond one’s own knowledge. I left a bit of my soul in Bayern, and cannot wait to go back! Ein schöne Sommer zu nie vergessen!

In the fall of 2011, I set off for a semester on exchange at the University of Hong Kong, China. Unlike my summer in Germany, here I would be only a student—taking classes, experiencing student life, and learning more about China!
Immediately upon arrival, I was swept up in the bustling, hyperspeed life of Hong Kong. This former British colony, consisting of an island (Hong Kong Island) and a peninsula (the New Territories), is a unique hybrid of old and new. In a place smaller than the metropolis of Los Angeles, the rich culture of China thrives within one of the banking and economic centers of the world—living side-by-side are people from the mainland, Hong Kong, Europe, Southeast Asia, India, and the street is constantly buzzing with Chinese (the local dialect of Cantonese), English, and many other languages.

Another noticeable shock of Hong Kong was the extreme lack of space—a big contrast to the wide deserts of Tucson! Due to the scarcity of land in Hong Kong, people move upwards: high-rises easily over 30 stories are normal, and tucked in between are thousands of restaurants (offering traditional Cantonese cuisine, Japanese, Indian, or the elusive “Western”), shops, and even a cafe only three feet wide. Whether at ten in the morning, or midnight, there is always something to do—it is a city that truly never sleeps.

A unique aspect of living in Hong Kong as a foreigner is experiencing a legacy the British left behind: democracy. When China regained Hong Kong in 1997, the former colony was deemed a “Special Administrative Region” of China—this ensured (until 2047) that Hong Kong can continue to maintain a government relatively independent from that of China, with its own economic and judicial systems. Discussing this with my local friends, I found that this does not make Hong Kong entirely immune from the influence of the Chinese government, but it does make the HKSAR the only place in China where one can legally access Facebook!

As an international student, I was able to meet both local Hong Kong students, and others from across the globe: together we celebrated the Mid-Autumn festival, lighting lanterns in Victoria Park, played Danish Christmas games, and even observed Guy Fawkes Day. At HKU, I also had the chance to expand my educational background: I took classes in genetics, but also traditional Chinese medicine, English literature, and international relations. This broad range of classes and the diverse student body provided the perfect environment where we could learn about our different cultures from each other, and better see the common ties that link us all.

These two radically different experiences, Germany and Hong Kong, East and West, back-to-back, are things that I would not trade for a lifetime of Raging Sage coffee. I have met friends from all different cultures from each other, and better see the common ties that link us all.

Nicholas Nelson | Italy | After a year of hard work due to an intense class schedule which included physics, genetics, physiology, metabolisms, nucleic acids, biochemistry lab and research along with working off campus 20-25 hours a week, my brain was ready for a vacation. I decided to fulfill a lifelong dream of studying abroad in Italy. With its laid back lifestyle, good people, great food, and even better wine it was the perfect place to escape, however briefly, from my chaotic world of school and work. For six weeks I studied Ancient Roman art and archeology as well as the Italian language. We traveled throughout Italy to Rome, Venice, Siena, Florence, and Naples to name a few.

Brenna Sullivan | China and Spain | The summer of 2012 brought many adventures, airline miles, unforgettable experiences, and travel across the world… twice. The first two weeks of my summer were spent in Northeast China, mostly at the Shenyang Conservatory of Music. From the second we made our late night arrival to the Shenyang International Airport, the whirlwind two weeks of travelling and learning commenced. The conservatory welcomed us with open arms, and did nothing but shower us with kindness, gifts, and a very full schedule. Each day of the two weeks, we were presented with new topics in Chinese music, language, and culture through an array of short “crash courses” in everything Chinese. We were even taught how to make dumplings, correct seating for formal meals, and how to participate in traditional tea ceremonies! During the week, we were kept busy with classes and trips to museums, palaces, and trips to nearby cities such as Dalian and Beijing. While the classes provided insight on the Chinese people and their long history, the most rewarding educational experiences did not happen in the classes; they happened by walking on the streets, visiting ancient palaces and tombs, running the Great Wall, visiting the Summer Palace and Temple of Heaven and experiencing places most only read about in history books. These amazing two weeks taught me to value the education I am fortunate to be receiving, how different American Chinese food is from authentic Chinese food, and how complex the language of Mandarin really is! The two weeks I spent in China were very rewarding, and I hope to find myself back there in the future, but the summer adventure did not stop there.

Missing luggage, a new transportation system (i.e. trains), and, of course, the language barrier always lead to adventures. Needless to say my trip started off a bit rocky like most trips do. I ended up having to spend my first night in Rome after my luggage was lost for a short amount of time, which caused me to miss the last train to Orvieto where I was staying. The next morning I attempted to catch a train to Orvieto… three times. I eventually made it to Orvieto but not without learning some very valuable lessons in my first 12 hours abroad: Never assume that your bags will arrive in time to catch a train and always follow your gut when it comes to finding the correct platform.

The trip got much better after my arrival to Orvieto. I met my professors, friends, and host family and got acquainted with the small town on the hill. During the week, my time was spent in class, doing homework, and spending time with friends on the town while weekends were dedicated to traveling the country. My favorite day trip was to Siena. I can’t tell you why, exactly, but when we arrived I had this feeling. A feeling of satisfaction, of comfort, and as I explored the town the more I liked it. That day I created a new dream, to live in Sienna, possibly own a vineyard, and enjoy the Italian lifestyle.

While many people decide to spend their summers doing research or taking summer classes, or simply returning home to rest after a long, hard school year, I decided to explore my liberal side. The side that does not get to show very often as it is usually masked by the overpowering, theory based, fact driven science side. I believe traveling teaches a lot, not just about the world and its many different cultures, but teaches about who you are as a person. It pushes you to extremes, out of your comfort zone, and you must adapt to the environment. It was by far one of the best summers of my life, expanding my cultural knowledge, knowledge about myself and how far I can be pushed without crumbling. Because of the great people I met, fantastic monuments, museums, and of course churches, and new found strength in myself, I would certainly recommend traveling abroad during your college years, not only to Italy, although it is my preferred place of travel.
A short two days later, I found my jet-lagged self in Segovia, Spain for what would be some of the most challenging weeks of my academic career. For the duration of my 6 weeks in Spain, I studied Spanish at IE University in the beautiful medieval town of Segovia where I lived with a host family and became completely immersed in the culture and language of this captivating place. While living with my host family, nothing but Spanish was spoken at all times, proving to be a very difficult situation for students who have only studied in the classroom. As challenging, and frustrating, as it was, there is no better way to learn the language and customs of the Spanish people than to live with them! The town of Segovia had so much to offer from its rich history starting from the Ancient Roman times. Segovia is home to the longest and most complete section of a Roman Aqueduct from the 1st century, a castle that is the former home to Ferdinand and Isabella, King and Queen of Spain, and many other lesser known sites. The weeks were full of classwork and homework, but the weekends were for exploring the beautiful country of Spain. While there, I visited the cities of Alcalá, Salamanca, León, Ávila, Valencia, Granada, Toledo, and Madrid and saw many incredible places such as one of the oldest universities in the world, the University of Salamanca, and the birthplace of Cervantes in Alcalá. Overall, these trips allowed me an education far beyond what can be taught in a classroom and gave me knowledge beyond what a book can teach!

Louis J. Chavez | Ecuador | Having never studied abroad before, being in Ecuador for the Fall 2012 semester has helped me grow and changed me in ways that I would have never imagined. I’ve been exposed to a country where household pets (Cuy, or guinea pigs in English) are delicacies. A place where I can get a three-course lunch for $1.75 (yes, USD.) A metropolis where the buildings make sardine cans look empty in comparison. A utopia surrounded by unmatched, surreal beauty of mountains, volcanoes, forests, and countless places for me to make unforgettable memories while abroad.

As a newcomer to this city, I wanted to see the city of Quito as a whole. I took El Teleférico (a cable car) to one of the highest points of the city—WOW! I could see everything. The architects of this city really utilized every possible inch of this city. In the center of Quito lay high concentrations of buildings. The buildings wind their way through narrow mountains and stretched out to the north, south, and more rural areas. The mountains were freckled with little homes scattered on the plains on the mountains. Needless to say, I felt on top of the world being on top of this mountain... probably because I was on top of a gargantuan mountain. I felt a smile spread across my cheeks as I realized that this was my new home, a new home with so much to offer.

Within my first few weeks here, I got to run in one of the biggest races in Quito: La Ruta de Las Iglesias (The Route of the Churches.) The race squeezed through the narrow, angular streets of downtown Quito and gave me a breathtaking tour of the historic center of my new home. I ran my first 10,000m (10k) within my first weeks in Ecuador... did I mention Quito is at more than 9,000-foot altitude? Although severely exhausted after the first 20 seconds of the race, I still “Ooh’d” and “Ahhr’d” at every turn due to the historic churches that seemed to reach towards the very heavens with their grandiose statures. What a great first tour of Quito, with a really comfortable Ruta de Las Iglesias shirt to commemorate the event!

La Mitad del Mundo (The Middle of the World)— my first thought: “So we’re traveling to the center of the world... to the core?” I was mostly wrong in my presumptions. La Mitad del Mundo was the spot located exactly on the equator. I should have figured—Equador = equator. So I got to take some very vogue, touristy pictures while simultaneously being on the Northern and Southern hemisphere. I also took some similarly awesome pictures with some freshly cooked Cuy (guinea pig), but was not feeling brave enough to indulge on what could have been a child’s pet in the States.

Eventually, I trekked out of Quito to two different cities: Mindo and Baños. Although in completely different locations (Mindo in the North, Baños in the South), they are both nestled in forests and offer similar commodities and activities for travelers. In Mindo I partook in canopying (I wasn’t really sure why the Ecuadorians decided to call ziplining “canopying” in Spanish...) and dined at a delicious eatery where my lunch was only $2.75 (I will never get over how cheap such large-portioned lunches are here!) Again, there were scrumptious little Cuy squealing out my name, but I couldn’t handle ingesting the little fellows. In Baños, I played around with fate a little bit. I went paragliding (lucky fancy to say jumping off a bridge with a rope attached to me.) I went rafting (that’s actually the Spanish translation...) in some of the most daring and intense waters that I have ever laid eyes on. I rode a bike around the rural city of Baños, and got to ride around the outskirts of the city to witness some breathtaking cascadas (waterfalls.) They even had pools/spas with natural water from the waterfalls in Baños... how unique is that? I’m still shocked that Ecuador has so many natural, beautiful scenery. This country isn’t just known for one or two fascinating locations—it offers a myriad of activities for people of all interests to indulge in.

After experiencing some of the activities Ecuador has to offer, I wanted to give back to this wonderful country. Luckily, volunteers are greatly appreciated in many different settings, and I found myself volunteering in two different areas: a children’s school and a psychiatric clinic.

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The first place I was given the opportunity to volunteer at was San Juan Bautista, a public school for children of ages 3 to 5. Words don’t begin to describe how lucky I feel to volunteer with these children. I only see them on Tuesdays and Thursdays, but they brighten any bad day I’m having. They have an unconditional love for anyone that tries to help them, and are so grateful to be in the school. It makes me so happy to see that these children value their education so highly—I can see each and every one of my little jirafas (the name for the three-year olds I work with at the school) doing something spectacular when they grow older.

My other volunteering position has completely different responsibilities. It is a psychiatric clinic, La Clínica de Neurociencia. In this clinic, I work with three psychologists and work to overcome the difficulties that our psychiatric patients must deal with. It is incredible to be able to see these disorders and disabilities in person, things that before I had only studied in psychology books. Volunteering here is so rewarding though, because I feel like I am helping these people grasp their lives that have been enveloped and overtaken by these disorders.

From traveling, to running, to eating, to volunteering, this noble country known as Ecuador has done something spectacular when they grow older.

In Memoriam

Marilyn Kramer | After a long hard fought battle with Ovarian Cancer, our beloved retired Graduate Program Coordinator and one time assistant to the MCB Department Head, Marilyn Kramer passed away peacefully June 14, 2012, surrounded by close friends and family.

Marilyn was extraordinarily passionate about her BMCB graduate students, many of whom came to adore her long before they stepped foot on campus. She was their advocate, confidant, and often their biggest cheerleader. With compassion, patience and persistence she shepherd many a student through our program.

In addition to her commitment to our students, she was the proud mother of four children. She was also a tireless advocate for peace and justice; the ultimate motivation for her enrollment in the Political Science program here at UA. Even amidst her own challenges, she persevered and earned that degree in December 2010.

Marwan Mustafa Farah | BS 2009 | died in a car crash in Iowa on June 28, 2012.

John Valentine Rund | Associate Professor Emeritus Rund, a long-time member of the Chemistry Department faculty, passed away this past August. He received his BS in 1959 at the University of Illinois, and his PhD in 1962 at Cornell University. He joined the faculty of the Chemistry Department at the University of Arizona in 1963, and retired from the Department in 2000. He was an inorganic chemist with wide-ranging research interests, including reaction mechanisms of transition metal coordination compounds and organometallics, substitution reactions of square-planar complexes, the chemistry of platinum metals, ligand exchange of metal carbynols and trifluorophosphines in the gas phase, resolution and photochemical racemization of asymmetric metal compounds, and model compounds for metalloenzymes.

Professor Rund also was active in chemical education. In collaboration with Professor Phil Keller, he developed a lecture demonstration course to train high school teachers to present science demonstrations to their pupils.

Alec Ervin Kelley | retired UA professor of Chemistry, died on April 8, 2012 in his home in West Chester, PA. He is survived by his wife, Alita, and two daughters. He was 88 years old. Dr. Kelley joined the UA faculty in 1952 and retired in 1986. He was a graduate of the University of Texas, BS 1944, MS 1948 and Purdue University, 1956. During 1943–45 he worked for the Manhattan Project.

Leslie S. Forster | Professor Emeritus Forster passed away January 2012. Dr. Forster was born in Chicago, IL on May 10, 1924 and came to the Department of Chemistry at the University of Arizona in 1955. He received his BS from the University of California at Berkeley and his PhD from the University of Minnesota. He served as a postdoctoral fellow at the University of Rochester and was an instructor at Bates College before coming to the University of Arizona. He was a physical chemist interested in electronic spectra of metal complexes and molecules of biological interest.

Dr. Forster was co-author (with Dr. Cornelius Steelink) of the book, The First Hundred Years, A History of the University of Arizona Chemistry Department 1891-1990.

Benjamin Robert Padgett and Catherine Beatrice Padgett (née Gainaid) | BS 1950 and MS 1951, respectively | passed away at the age of 85 on December 16, 2011 & October 26, 2011, respectively.

Catherine Padgett had battled Parkinson’s disease for almost 30 years; both went peacefully in their sleep, and are buried at Quantico national Cemetery in Virginia. They are survived by their three children Robert, Marianne & Janet, two grandchildren Randall & Corrine Padgett, plus Ben Padgett’s older brother Warren & his children.
Jerry Roland Seiler | 77, of Del Mar, California, passed away April 2, 2012. He was born Sept. 15, 1934 in Freeport, Illinois, and moved to Tucson, Arizona, where he graduated from the UA. He loved the UA and was very proud to be a Wildcat for life. He was a fine vocalist and trumpet player. He formed a popular barbershop quartet and performed at reunions for over 50 years. In ROTC, he was cadet commander and president of Scabbard and Blade. After his tour in the U.S. Army as First Lieutenant Armor Tank Division, he graduated from George Washington Law School and worked as a patent attorney for Shell Oil Co. in San Francisco before moving to Los Angeles to work at Fraser and Bogucki. In 1968, Jerry moved to Las Vegas, where he was the first patent attorney in the state of Nevada and later formed Seiler, Quirk, and Tratos. In 1988, he moved to San Diego and became of counsel at Knobbe, Martens, Olsen and Bear. During his career as patent attorney/agent, he facilitated 190 patents, including US Patent 4,000,000th to Bob Mendenhall/Las Vegas Paving. He was known for his quick wit, gentle laugh, leadership in his church, and his love and knowledge of wines. He is survived by his loving wife, Alexandrea Williams; three children, Shawn, Shelby, and Shannon; five grandchildren, Jordan, Jayde, Gunnar, Morgan, and Reagan; and sister, Janice.