Welcome to our special edition of the Catalyst Alumni magazine dedicated to the upcoming reunion celebration of “125 Years of Excellence in the Chemical Sciences: 1891-2016,” which is taking place on the University of Arizona campus November 3-5, 2016. We hope you will be able to join us for what will be an exciting time of celebration as we revisit the past and look forward to the future.

We invited over 4,000 alumni and friends of the Department of Chemistry & Biochemistry, representing 75 years of graduates dating back to 1941. To get you energized for the reunion celebration, we asked eight of our alumni to write one-page stories reflecting the theme of “Then and Now” to give us a glimpse of what it was like when they were students and how they spend their time today. In addition, we have 90 alumni news reports listed here in the magazine and linked to our online version of the Catalyst. Take your time and read through the truly wonderful stories describing the journeys taken by your fellow alumni both young and old.

If you have started your own company, or are on the management team of a company, we hope you will read about two CBC programs that provide an opportunity for you to formalize a working relationship with the CBC research and workforce enterprise. One is the CBC Industry Associates Program (IAP), and the other is the CBC Careers in Chemical Sciences (CiCS) program. Lastly, please consider supporting the “Carl S. Marvel Laboratories Renovation Campaign” that is sponsored by the College of Science Development Office with the help of Dan Petrocelli, Senior Director of Development.

We invite you to join us in pushing the boundaries of Chemistry & Biochemistry in the areas of research, teaching, and outreach by helping support CBC@UA! with your tax-deductible donation.

Deaf Alumni and Friends of CBC@UA!

Dear alumni and friends of CBC@UA!

Thank You to Our Retirees

Faculty and Staff Awards

In Memoriam

Careers in Chemical Sciences (CiCS)

Industry Associates Program

Carl S. Marvel Laboratories Renovation

Fundraising Campaign

Outreach Activities

Student Adventures

CBC Scrapbook

Be sure to see the full PDF version of the Catalyst magazine posted on the CBC Alumni News website for Online Extras where you see this icon. cbc.arizona.edu/alumni_friends
Research and education in the chemical sciences have been an integral part of The University of Arizona since its founding. This year’s CBC Alumni Reunion celebrates “125 years of Excellence in the Chemical Sciences” dating back to the appointment of Charles Collingwood as the UA’s first Chemistry Professor in 1891. Please join us in November to celebrate this milestone in the history of our department!

Happenings at the Reunion

- Tour CBC facilities to see what research is being conducted
- Tour the tree-ring lab
- Take a guided walking tour of campus
- Have lunch with current Graduate students
- Visit with friends and faculty
- Attend short research talks about exciting developments given by current faculty
- Graduate student career and alumni networking event
- See a chemistry show presented by current students
- Share memories with Dr. Cornelius Steelink
- View CBC student posters
- See a star show at Flandrau Planetarium

Get Connected! Stay Connected!

Go to the cbc.arizona.edu/celebration website to register for the reunion celebration today!

Right photo: Chemistry class in Koffler Building, 2014. Photo by Mark Yanighashi.
ALUMNI NEWS

Gary Proksch – PhD Chemistry, 1965
My wife and I are now permanent residents of Tucson. We brought some of our business with us to Tucson and are opening a new lab called Creative Laboratory Partners, Inc.

Terry Holcslaw – BS Chemistry, 1968 (1)
I received my Masters and PhD degrees in Pharmacology from Purdue University. My wife and I have 2 daughters and 2 grandsons. Recently I was awarded a Purdue University Distinguished Alumnus Award.

Paul Sangster – MS Chemistry, 1968
I am Vice President, Radiologist at Northern Arizona Radiology P.C. I have 4 children and 9 grandchildren.

Jim Rhoades – MS Chemistry, 1971
I am semi-retired from my chemistry instructor position at Crowder College, and now I work quarter-time as the chemistry lab manager.

Larry Schwartz – PhD Chemistry, 1971
I have been running my own consulting business, which has taken me to India, Europe, and China in the past year. My wife Leslie (’72 Nursing) works as the lead nurse at Dignity Health.

David Bear – BS Chemistry, 1972
My wife and I moved back to Tucson in 2015 after 43 years. I was on the faculty of the University of New Mexico for 33 years and continue to teach at the UNM School of Medicine.

Bradley Vandermark – BS Chemistry, 1972
After living 50+ years in Arizona, we have permanently moved to the Portland, OR area, which we love for its cultural, artistic, climatic and ecological diversity.

Rick Yost – BS Chemistry, 1974
I just graduated my 85th PhD! I often think about how much I learned from Mike Burke, Bonner Denton, and Quintus Fernando.

Jay Crutchfield – BA Chemistry, 1985
Currently I am the Director and Chairman of Anatomy at the A.T. Still University School of Osteopathic Medicine (Arizona).

Ely Shemesh – MS Chemistry, 1986
I am working for AT&T as a Lead Product Marketing Manager.

D. David Smith – Postdoc Chemistry, 1986-1989
I joined the faculty of Creighton University in the Dept of Biomedical Sciences. My wife and I are now empty nesters.

Mark Jatcko – PhD Chemistry, 1990
I am working as a Senior Engineer at NXP Semiconductors.

Keith Pinckard – BS Biochemistry, 1990
I am the Chief Medical Examiner for the Travis County Medical Examiner’s Office in Travis County, TX.

Heather Clark – MS Chemistry, 1995
I am the Director of R&D Program Management at Vertex Pharmaceuticals, Inc. Our newest baby girl, named Emily Cottingham, was born February 4, 2015.

Dane Drutis – MS Chemistry, 1996
I am currently employed as a Sr. Scientist at Unilever.

Michael Tranovich – MA Chemistry, 1996
I am working at the Indiana Bar Foundation as IOLTA Manager/Finance Manager.

Kimberly Sparks – PhD Biochemistry, 1997
I’m happy to be back in Tucson after 16 years in Massachusetts! I am now working at Ventana Medical Systems, Inc. as a Manager for Assay and Reagent Development.

Jonathan Shackman – BS Chemistry, 2000
I am employed as a Sr. Research Investigator at Bristol-Myers Squibb.

Justin Sinohui – BS Chemistry, 2002
I am working as a Project Manager at Roche.

Stephanie Slater – BS/MS BMB, 2003/2004 (2)
I am currently a Drug Investigator at the U.S. Food and Drug Administration living in Alameda, CA. My job allows me to travel frequently. My most recent work-related overseas trip was to India.

Amanda Wendt – MS/BS BMB 2005/2006 (3)
I earned my PhD Nutrition and Health Sciences at Emory University. Currently I am working as an Alexander von Humboldt Postdoctoral Research Fellow at the University of Heidelberg.

We had too much Alumni News to fit. See the Online Extras for all the full stories! cbc.arizona.edu/alumni_friends
Matt Durban – BS Chemistry, 2007 (1)
I am a postdoctoral researcher at Lawrence Livermore National Lab.

Thomas Schultze – BS Chemistry, 2007
I am currently employed at SPEX CertiPrep as a Chemist II/ CDC Production Manager, and I recently became engaged to be married.

Michelle Brandon Hines – BS BMB, MCB, 2008 (2)
I am a clinical pharmacist in the emergency department at the University of Maryland Medical Center in Baltimore. My husband and I are enjoying life on the east coast. MORE

Melissa Martinez – BS BMB, 2008 (3)
I attended graduate school at Vanderbilt University, where I continued to research molecular mechanisms that confer protection to diabetes and cardiovascular disease. I recently moved back to Tucson and had a baby this past January. MORE

Ivan Ogloblin – MA Chemistry, 2008 (4)
Currently I am working toward specialization in Anatomic and Surgical Pathology at Tan Tock Seng Hospital in Singapore. MORE

Erin Palmer – BS BMB, 2008 (5)
I am in my 5th year of a PhD program called the Graduate group for Science and Mathematics Education that bridges chemistry and education at UC Berkeley. MORE

Ivan Grubisic – BS BMB, ENG MATH, BA GERMAN 2009 (6)
I recently received my Bioengineering PhD from UC Berkeley-UCSF. I am currently working on developing the next iteration wearable technologies at Jawbone. MORE

Martin Deymier – BS BMB, MCB, 2010
I am a postdoctoral fellow at Harvard University.

Katie Hope White – BS BMB, 2004; PhD Biochemistry 2010 (7)
After graduating I began working in a biochemical detection development group at Ventana Medical Systems Oro Valley. My husband and I have 2 children (Jeremiah, 8 and Zoe, 5). MORE

Alex Spicker – BS Chemistry, 2010 (8)
To celebrate my wife’s graduation from a master’s program, we just got back from a 10-day trip in wonderful Ireland. Spectacular people and beautiful countryside. MORE

Adam Stott – BS Chemistry, 2010
I am currently employed as a R&D Chemist at PPC Aerospace.

Samantha Bomotti – BS BMB, MCB, 2011 (9)
After receiving my MPH in Epidemiology from the University of Michigan, I am now pursuing a PhD in Genetic Epidemiology at the Johns Hopkins Bloomberg School of Public Health in Baltimore. MORE

Sarah Edwards – BS BMB, MCB, 2011 (10)
I recently earned a PhD from Stanford University. I am now working in the biotech industry in the Bay Area. MORE

Tara Hill – BS BMB; MA SPEC ED, 2011 (11)
I completed my MA in Special Education with emphasis in Visual Impairments in 2013, and now I am working as an elementary education teacher. MORE
**ALUMNI NEWS, CONT.**

**Samuel Jayakanthan – PHD BIOCHEMISTRY, 2011 (1)**
Currently I am in a postdoc position in the Physiology Department at the Johns Hopkins University School of Medicine. I am now married and have a 2½ year old son. **MORE**

**Kimberly Meyers – BS BMB, 2011 (2)**
I have been accepted to the Interdisciplinary Graduate Degree Program in Neuroscience at Arizona State University, where I will continue my research in Dr. Amelia Gallitano’s laboratory. **MORE**

**Alan Moghaddam – BS BMB, 2011 (3)**
I am getting ready for my PhD defense at the University of Oregon, where I have been working on bioinorganic chemistry stemming around the interactions between Pt and biomolecules. **MORE**

**Claire Nichols – BS BMB, CHEMISTRY, 2011 (4)**
I am now in my second year of pharmacy school at the University of California, San Francisco. My fiancé and I plan to get married in March of 2017. **MORE**

**Daniel Sanchez – BS CHEMISTRY, 2011 (5)**
I earned my Master’s degree in May 2015 at Ohio State. Currently I am in Portland, Oregon working at Hitachi High Technologies America as an Electron Microscopist.

**Kristen Sanders – BS BMB, 2011 (6)**
I earned my MS Chemistry in 2013 from Northwestern University. I currently teach chemistry/physics at BASIS Charter Schools. **MORE**

**Brett Stoll – BS CHEMISTRY, 2011 (7)**
I design all new products for our food pad business and analyze weekly production metrics. I am Dada to two very intelligent little girls. **MORE**

**Gabrielle Winston-McPherson – BS BMB, 2011 (8)**
I successfully defended my PhD in pharmaceutical sciences at the University of Wisconsin-Madison in May of 2016 and recently moved to Seattle, WA to begin a fellowship in Clinical Chemistry. **MORE**

**Ersilia Anghel – BS BMB, BA ART HISTORY, 2012 (9)**
I am in my final year of medical school at the UA-Tucson. I hope to become a plastic surgeon specializing in complex wound healing. **MORE**

**Julio Cardenas-Rodriguez – PHD CHEMISTRY, 2012 (10)**
After completing a postdoctoral fellowship at Vanderbilt University, I returned to the UA to start my own research group in the Department of Medical Imaging. My wife and I have two children. **MORE**

**Mitchell Catling – BS CHEMISTRY, 2012 (11)**
I have been working at BASF since graduation, where I recently was promoted to the position of innovation technical specialist. **MORE**

**Colin Jones-Weinert – BS BMB, MCB, 2012 (12)**
I expect to complete my MBA at the Eller College of Management’s evening program in December 2016. During the day I work full-time at SynCardia Systems, Inc. **MORE**
Nancy Leo – BS BMB, MCB, 2013; MS MCB, 2014 (1)
I currently volunteer as an interpreter, medication room assistant and nurse assistant at the Christian Neighborhood Clinic in Phoenix. My fiancé, Guillermo, and I plan to get married in November 2017. MORE

Lindsey Leve – BA Chemistry, 2012 (2)
I am recently engaged and live in northern New York, where I own my own marketing business, LL Marketing & Design. I spend my free time on the St. Lawrence River. MORE

Angela Yazzie Marquez – BS BMB, 2012; TTE, 2016 (3)
In addition to getting married recently, I completed my Masters of Education in Secondary Education with an emphasis in Mathematics. MORE

Syna Daudfar – BS Biochemistry, 2013 (4)
I have been working as a medical scribe and am now attending medical school at the Western University of Health Sciences College of Osteopathic Medicine of the Pacific-Northwest. MORE

Sean Fleming – BS Chemistry, 2013
While teaching English to elementary students in Korea, I spent my vacation time traveling through Asia. I now teach English to adults from different countries. MORE

Robert Kupp – BS Chemistry and Biochemistry, 2013 (5)
After graduation I joined a biomedical research lab exploring the biology of adult CNS-restricted neoplasms, and my first first-author publication was just accepted at a Cell Press journal. I am now at the University of Cambridge in the UK working on my doctoral degree. MORE

Katie Holso Stewart – PhD Biochemistry, 2013; BMBBS and MBBS, 2006 (6)
I am doing a postdoc at the University of Leeds, UK in the laboratory of Prof. Sheena Radford, where I am finishing up a 3-year project on the interaction of amyloid fibrils with carbohydrates. MORE

Keely Brown – BS Biochemistry, 2014 (7)
Nikola Kenjic (MS Biochemistry, 2014) and I got married recently. We are both at the University of Kansas, where I am in my 3rd year as a PhD student. MORE

Lauren McClure – BS Chemistry, 2014 (8)
I am a P3 Pharmacy student at the University of Texas at Austin and recently moved to San Antonio, TX to finish a PharmD at the University of Texas Health Science Center. MORE

Zachary Miles – PhD Biochemistry, 2014 (9)
I am a Postdoctoral Research Associate in the laboratory of Prof. Bradley Moore at the University of California, San Diego. Our lab is associated with the Scripps Institution of Oceanography, which means all our projects are ocean related. MORE

Nieves Montaño – MS Biochemistry, 2014 (10)
I currently work for a non-profit organization providing vocational and educational services for people who are at a transitioning moment in their lives. I also run a photography business. MORE

Iris Mora – BS Biochemistry, MCB, 2014 (11)
I decided to stay in Tucson after graduation, and I work for ALS Environmental as an analyst where I analyze samples for trace metals and determine their elemental composition. MORE

Rahul Purohit – PhD Chemistry, 2014 (12)
I am pursing postdoctoral research in Prof. Amy Rosenzweig’s lab at Northwestern University. I am now the proud father of a new baby boy, Kabir. MORE

Sho Taniguchi – BS Biochemistry, MCB, 2014; MPH 2016
I am working at the Arizona Alliance for Community Health Centers as an Oral Health Coordinator.
ALUMNI NEWS, CONT.

**Peter Verhey – BS Biochemistry, 2014 (1)**
Currently I am the Regulatory and Quality Assurance Specialist at Sterisil, Inc., in Palmer Lake, CO. I will play almost any recreational sport there is, and I have been touring Denver’s and Colorado’s breweries responsibly. [MORE](#)

**Cheryl Cheah – BS Biochemistry, 2015 (2)**
I am attending Oakland University William Beaumont School of Medicine in chilly Michigan. I am excited to start this new chapter of my life. [MORE](#)

**Guadalupe Davila – BS Biochemistry, 2015 (3)**
After graduation, I completed an accelerated master’s degree in cellular and molecular medicine. I am now attending Medical School at the UA in their Class of 2020. [MORE](#)

**Eileen Leaser – BS Biochemistry, BA Italian, 2015 (4)**
I am now in Graduate School for Occupational Therapy at A. T. Still University in Mesa, AZ. [MORE](#)

**Eleanore Leichtenberg – BS Chemistry, 2015**
In March 2016 I began working at The University of Arizona in the Department of Chemical and Environmental Engineering as a Research Technician working on the cultivation of microalgae as biofuel. [MORE](#)

**Megan Neeb – BS Biochemistry, MCB, 2015 (5)**
In June 2015 I married Taylor Turnidge and started in ASU’s MCB PhD program. I work in David Azorsa’s lab in downtown Phoenix, continuing research on G-quadruplexes. [MORE](#)

**Monica Nuvayestewa Reid – BA Biochemistry, 2015 (6)**
I am a Program Coordinator at the UA Office of Scholarships and Financial Aid. My husband and I plan to start a family, and I may pursue a second bachelor’s degree. [MORE](#)

**Lingzi Sang – PhD Chemistry, 2015 (7)**
I am a postdoctoral associate at the University of Illinois at Urbana-Champaign investigating new materials as solid state electrolyte and the critical interfaces for all solid state lithium ion batteries. [MORE](#)

**Nicole Schwalbe – BS Biochemistry 2015 (8)**
I am excited about starting a new chapter of my life in Seattle, as I pursue a master of public health degree at the University of Washington. [MORE](#)

**Katrina Farrell Sexauer – BS Biochemistry, 2015 (9)**
I got married in October 2015 and am now a medical student at Creighton University. I spent this past summer visiting Iceland and doing a rural family practice rotation in Saratoga, WY. [MORE](#)

**Keeper Sharkey – PhD Chemistry, 2015 (10)**
I recently accepted a postdoctoral faculty position at Washington State University in the Physics and Astronomy Department working with Associate Professor Jeffrey McMahon. [MORE](#)

**Christy Warner – BS Biochemistry, 2015 (11)**
I am currently employed at Ventana Medical Systems Oro Valley, AZ as a Quality Control Associate. I recently represented the UA's Beta Tau Chapter at the 53rd Biannual Alpha Chi Sigma Conclave. [MORE](#)

**Karen Armenta – BS SCED, Chemistry, 2016**
This past summer I hiked the tallest mountain in Arizona, Mount Humphreys. Now I am back in the classroom, teaching chemistry to high school students in Peoria, AZ. [MORE](#)
Send your news to Olivia Mendoza at omendoza@email.arizona.edu to be included in next year’s magazine!

**William Bahureksa** – BS CHEMISTRY, 2016
I am attending graduate school for my PhD in analytical chemistry at Colorado State University. **MORE**

**Trace Bartels** – BS CHEMISTRY, 2016 (1)
I just got back from an epic trip to Hawaii, where I snorkeled through stunning reefs and went shark cage diving. I am now attending Pharmacy school here at the UA. **MORE**

**Katie Burrell** – BA BIOCHEMISTRY, BS MCB (2)
I am currently a first year PhD student at the University of Utah with plans on studying pharmacology. **MORE**

**Barbara Chukwu** – BA BIOCHEMISTRY, 2016 (3)
I am attending St. George’s University of Medicine, working on achieving my goal of becoming a doctor. **MORE**

**Courtney Collingwood** – BS BIOCHEMISTRY, BA CHEM, 2016 (4)
I just started working as a project manager at EPIC Systems based in Madison, WI. This past summer I vacationed in Thailand, Japan, Malaysia and Australia. **MORE**

**Lisa Daconta** – BS BIOCHEMISTRY, MCB, 2016 (5)
I am pursuing a one-year Masters of Education degree here at the University of Arizona. **MORE**

**John De Lorenzo** – BS CHEMISTRY, BA ITALIAN, 2016 (6)
I own a real estate investment company in Tucson and also serve as the managing partner for my family’s real estate and property management companies in Arizona. **MORE**

**Heather Emmons** – BS BIOCHEMISTRY, MCB, 2016 (7)
I am pursuing a master’s degree in human nutrition (with clinical specialization) at the University of Glasgow in Scotland. I plan to return to the U.S. for a PhD program in nutritional biochemistry. **MORE**

**Melissa Harnois** – BS BIOCHEMISTRY, 2016 (8)
I just accepted an offer from a biotechnology company in Seattle called Juno Therapeutics, where I will be doing cancer research with their Cell Culture Process Development team. **MORE**

**Kylie Holliday** – BS BIOCHEMISTRY, MCB, 2016 (9)
In my final semester at the UA, I interned with the Arizona Department of Public Safety in their crime laboratory. I loved every minute of it, and I am hoping to call the crime laboratory my home in the near future. **MORE**

**Ali Icenogle** – BS BIOCHEMISTRY, 2016 (10)
I just started working on my Doctorate of Pharmacy at the University of Washington. My goal is to work on developing proteomics assays to sequence genes responsible for drug metabolism. **MORE**

**Jordan Levine** – BS CHEMISTRY, 2016 (11)
Right now I am starting a PhD degree in Chemistry at the University of Oregon. **MORE**

**Sarah Pattengale** – BS BIOCHEMISTRY, 2016 (12)
I am eagerly pursuing my PhD Biochemistry at the University of Texas at Austin. **MORE**

**Cody Schmidlin** – BS CHEMISTRY, BA SPANISH, 2016 (13)
I am pursuing my PhD degree with the Arizona Biological and Biomedical Sciences program here at the UA. **MORE**

**José Vásquez** – BS CHEMISTRY, BA SPANISH, 2016 (14)
I am working as a medical scribe at Southwest Orthopedic Surgery Specialists, gaining experience for my next phase in higher education. **MORE**

**Chris (Tian) Xue** – BS CHEMISTRY, 2016 (15)
I spent the summer at the Chemistry Department at the University of California, Berkeley working on molecular dynamics via transient absorption spectroscopy. **MORE**
MEMORIES OF A “HALF-WAY” (’54–’60) CHEMISTRY MAJOR

Kenneth Zahn | BS, MS in Chemistry, 1960, Col., US Army (Ret.)

“Y ou can achieve anything,” were teacher statements often heard in the early ’50s around Tucson High School. I didn’t believe I could achieve much of consequence as I looked ahead in my senior year. I was wrong. Life has been very interesting since I entered the UA in the CBC’s 63rd year of its 125-year history.

I didn’t know that I’d be pretty much on my own after arriving by train from Philadelphia, supposedly for a month’s “vacation” with owners of Rincon Kennels in June, 1949. I had just turned 13. Being only 4 years after the end of WWII, few women worked; so, when my dad left home with heavy debts (he loved gambling at NJ horse tracks I later found out), and my mother was left in Philadelphia with no job, no car, no money, and 2 other young children, I ended up working for room and board at the Tucson kennel for the next 6 years. A good student and athlete at THS, my “ticket” to the UA was a track scholarship, and my goal was to teach high school chemistry with a BS degree. By juggling heavy course and laboratory loads, plus ROTC and track practices, I did finish a BS in Education, was offered a Regular Army commission in 1959, and received a BS and MS in Chemistry in 1960. I finally saw my mother, sister, and brother again while on the way to my overseas Army assignment in November, 1960—11 years after my first arrival in Tucson. Yes, one can achieve things under difficult circumstances.

My favorite classes in Chemistry included “Qual Organic” under the always upbeat Millard G. Seeley and “P-Chem” under Lathrop E. Roberts—Department Head at the time. Cornelius Steelink and Leslie Forster were “relatively new hires,” and Henry Freiser took over as Department Head in 1958. James Berry was my 1959-1960 MS Thesis Director as I worked to synthesize seven-membered heterocyclic-ring azatropones and azatropolones—compounds of interest to Dr. Berry when he worked under N.J. Leonard at Illinois in 1953. The 13-yr-old, room-and-board kennel worker had already come a long way, thanks to that mid-to late-50’s CBC faculty. More was to come.

After a 2-yr stint in leading a nuclear-armed anti-aircraft missile unit in Germany, I returned to the Chemical Corps in 1962 and applied my chemistry background in helping to develop a non-standard way to convert army clothing to yield chemical-protective outerwear for the ground units in Europe. In 1963, I learned that the Army permitted certain officers to attend graduate school to fill specific Army slots requiring advanced degrees. I applied and was allowed to attend the U of Illinois starting September 1964 to study for 2 years under N.J. Leonard—James Berry’s Thesis Advisor there in the early 50’s. Fate and luck struck again when my UA Chemistry education enabled me to race through essentially all the PhD Program requirements by the end of the 1966 school year. Dr. Leonard then called the Army and suggested they leave me there through June 1967. They agreed, and in July, 1967, I drove to my next assignment in Utah having completed my degree in less than 3 years.

Applying chemistry in the remainder of my 26+ years in the Army came in many forms: Analyzing intelligence documents on Eastern bloc chemical capabilities; developing simulators for training units to decontaminate equipment after chemical attack; developing (in the field) an expedient method of quickly decontaminating jungle terrain covered with the powdered riot-control agent orthoclorobenzylidene malononitrile (CS-2); leading the development of the newer army chemical-protective masks; teaching for 3 years at the US Military Academy at West Point; directing the very large forensic science laboratory and school complex in Georgia; developing US military-wide guidance on predicting the plutonium-contamination hazards in case of nuclear weapon accidents; and serving as Deputy Commander of the large Army Chemical Research, Development, and Engineering Center at Edgewood, MD. These Army assignments and challenges may not be the typical path for UA Chemistry graduates, but they almost all used my UA Chemistry background (well, except possibly when shot down twice in helicopters while serving in Vietnam in 1968–69).

Retiring from the Army in 1985 at age 49 and then working in teaching (chemistry), and environmental protection and program management at Lawrence Livermore National Laboratory through age 68, I can now agree at age 80 that even a 13-yr-old dog-kennel worker earning only room and board could achieve things and can conquer life’s obstacles, thanks to the great grounding received through the UA’s Chemistry Department of the mid-1950s, the “half way mark” of its history. You can and will do so as well!
I consider myself one of the very fortunate graduates of the University of Arizona Department of Biochemistry Doctoral Program. I completed my degree in 1987 under the mentorship of Dr. Marc Tischler, and following postdoctoral work at Washington University School of Medicine, I was extremely happy in 1990 to return to the UA and accept an appointment as an assistant professor in the Department of Exercise and Sport Sciences (my appointment moved in 1994 to the Department of Physiology in the College of Medicine—but that’s another story!). It was awesome to be able to return to Tucson and the Sonoran Desert, which I have always loved.

At the UA I had a ready-made collaborator in Dr. Tischler. Over the next 14 years, we published numerous articles on the metabolic adaptations to real and simulated weightlessness in rodents. A highlight of our work together was a project, headed by Dr. Tischler, on the alterations in muscle insulin sensitivity in rats flown on the space shuttle Discovery in 1991.

In addition to these research activities in space medicine, in 1992 I was able to step into a long-term collaborative relationship with Dr. Stephan Jacob, a German physician-scientist I met while we were both working in Dr. Tischler’s lab in 1984-1985. We undertook basic science and clinical investigations over the next two decades on the beneficial metabolic actions of medications used primarily to treat hypertension, such as ACE inhibitors and drugs targeting the renin-angiotensin system. We also made significant contributions during this period on the cellular impact of oxidative stress and the beneficial effects of antioxidant compounds and exercise training in the context of insulin resistance in pre-diabetes and type 2 diabetes.

From 1998-2014, I was also deeply involved in investigating the role of the enzyme glycogen synthase kinase-3 in the etiology of insulin resistance in skeletal muscle, both in collaboration with scientists in the pharmaceutical industry as well as independently with support from the National Institutes of Health and the American Diabetes Association.

As a faculty member at the UA, I have taught thousands of students at the undergraduate and graduate levels, and this has been a source of great professional and personal satisfaction. A highlight of my career was my position as director of the Physiology Undergraduate Program (with over 2,000 students) from 2006-2015, a period of tremendous growth and numerous challenges.

For various personal and professional reasons, I was ready to call it a career this past February, and I retired from the university. So far, I have no regrets in this decision, and I now have ample time to devote to my wife, Jean, and our twin five-year-old granddaughters, Katelynn and Juliet, whom we are raising full-time in our home. I guess that tells you what I’ll be doing in my retirement!
I was born in Guatemala, where I became a medical doctor. As part of my medical thesis I had to do some biochemical assays, and so I met Dr. Oscar Pineda, one of the two persons in the country with a PhD in biochemistry. As I worked with him, I fell in love with basic science. In Guatemala, even today, there are no PhD programs, so I knew I had to study abroad. I spent two years after medical school doing clinical research, visiting embassies to try to find a scholarship, and applying to several PhD programs in the US.

In 1987, I was admitted to the Biochemistry Department at the UA and moved to Tucson. During a rotation in the laboratory of the late Mike Wells, I discovered the insect world and the power of using newly developed molecular biology tools to investigate their fascinating biology. Those were very exciting times; the Center for Insect Sciences had just been founded, which allowed me to interact with many world-class scientists working at the UA, such as the late Reg Chapman, John Hildebrand, Margaret Kidwell, Nancy Moran, Jose Ribeiro, the late Henry Hagedorn and John Law. Mike was working mostly with Manduca sexta, but when I joined his lab, I asked him if I could work with an insect that was a vector of human disease. I wanted to link my PhD thesis with my medical background in a project relevant to Guatemala. He suggested that we collaborate with Henry Hagedorn to introduce molecular strategies to study mosquito physiology. I did my PhD investigating the regulation of expression of midgut trypsins in response to blood feeding, and I graduated in 1992. Mike’s lab was an amazing place, with many bright international post-docs and students who were enthusiastic and happy to teach you. Mike was very kind, generous and always ready to help us move forward in our careers.

I did my post-doctoral training with Fotis Kafatos at Harvard, and then at the EMBL in Heidelberg, characterizing signaling pathways mediating immune responses in anopheline mosquitoes. EMBL was a great place to work and learn, with people from all the European countries. This was a great period in my life. I was able to travel several times a year around Europe, to work with more independence and mature scientifically. I got my first faculty position at Colorado State University (CSU) and then moved to NIH, where I have been doing basic science, investigating the interactions between the mosquito immune system and Plasmodium parasites that affect malaria transmission. This journey has been very interesting and exciting. I was recently elected to the National Academy of Sciences, something I never could have imagined when I was in Guatemala wondering for two years if I could ever get a PhD.

I am very grateful to the UA for accepting me as a graduate student; and to Mike Wells and Fotis Kafatos, two wonderful mentors who opened many opportunities for me. May I follow in their footsteps.

Carolina Barillas-Mury | PhD in Biochemistry, 1992
I spent my childhood years in the beautiful city of Qingdao, China, best known for its Qingdao beer. I loved two things growing up: dance, of which I was selected at a very young age to be trained as a performer, and science, from the shared influence of my parents and a biography about Madame Curie that I read at age 10. Although I continued my dance training and performing until I went to college, it was science that brought me to the University of Arizona to earn my PhD in Biochemistry in Dr. Richard Hallick’s lab.

The UA had profound impacts on my life. Firstly, I met my future husband Timothy Boyer (PhD MCB, 1998) there and started our family while a student in Tucson. Secondly, my years as a graduate student shaped my professional life where Dr. Hallick taught me the importance of achieving scientific excellence with his two-page “Principles of Scientific Communications.”

Dr. Hallick’s “Principles of Scientific Communications” guided me toward focusing on the “why, what, how, when, and where” of my research project as I learned how to form a hypothesis, test its merit, and write it for publication. These principles were repeatedly demonstrated during nerve-racking weekly lab meetings that challenged us to defend our research problem definition, choice of method, experiments performed and conclusions reached. It was from these grueling lab meetings that I learned the importance of setting a very high bar for myself and others that I carried throughout my career. I also recall the incredible comradeship with regular TGIF and parties attended by both Biochemistry and MCB graduate students that made college life fun.

It was from grueling lab meetings that I learned the importance of setting a very high bar for myself and others that I carried throughout my career.

Now 22 years after obtaining my PhD, I am a mother to a college-graduate son working in Beijing at a job he loves, and a daughter attending college at Washington University. I currently live in Singapore and am Executive Director to Procter&Gamble’s Global Life Sciences organizations. I am responsible for life sciences programs and employees located in the US, China, Singapore and Europe, which allows me to visit my children often during my frequent business trips to China and the US.

Looking back, I owe my success to more than “Principles of Scientific Communications.” I was able to survive and thrive in a demanding family life and workplace environment because of a very supportive husband who was an equal partner in raising our children and who has supported my career choices at every step. I also owe it to the mentors I’ve had, some of whom became my closest friends.

Lastly, I owe some part of my success to realizing that it is important to make time for yourself. Shortly after I joined P&G in 2000, I returned to an active dance life by volunteer-teaching dance classes and directing Chinese Dance performances during Asia Culture celebrations at the Greater Cincinnati Area. Today, I continue to teach a Chinese Dance class and participate in dance-related cultural events in Singapore.
The Power of Mentors

Shane Morrison | BS/MS in BMB, 2006/2007

Freshman year was more difficult than I expected. I needed tutoring in calculus, chemistry wasn’t exciting me, especially with OChem approaching, and I was spending a lot of time at the fraternity I joined. I chose to double major in chemistry and math because my high school classmate’s father did, and he was a physician. But I didn’t really have a passion in the classes I was taking; I just wanted good grades because that gets you into medical school.

After regrouping over the summer, sophomore year became more intriguing. Though OChem and vector calculus were overwhelming, Biology 181 with Drs. Grimes and Hallick really showed me how applying chemistry to organismal function could be more exciting than simply re-drawing SN1 reactions or NMR tracings for memorization. I never considered working in a lab, but I happened to apply for and receive an Undergraduate Biology Research Program (UBRP) spot and decided to give this lab thing a try.

I interviewed at various labs, but was turned down for spots or didn’t find them interesting. But a new faculty member in biochemistry was excited to talk with me and seemed almost overly enthusiastic about his research on protein function. It was my interaction with Dr. Vahe Bandarian, and not his research per se, which prompted me to join his lab. And it was probably one of the best decisions I made in my career.

Dr. Bandarian was the best mentor I’ve had! He was dedicated to teaching and my learning, and also wanted me to not only succeed, but be happy with what I was doing. It was his lab environment that led me to continue research and switch my major to biochemistry.

I continued on as a Masters student and eventually a Fulbright Fellow in Switzerland thanks to the support of the entire Biochemistry Department, especially Dr. Thomas Baldwin.

Now years later I am still excited about research and learning though my work hours permit much less than I would like. I am a Plastic Surgery Resident at the University of Washington (only four more years left...) and plan to continue work in the field of gender-confirming surgery after I finish residency. I have been lucky enough to have the support of many mentors along the way who have embraced my interests and pushed me to attain my goals. As a rising senior level resident I also try to cultivate interest in the scientific process in junior residents and medical students who join my team.

As for the future, I am uncertain where I will end up, but it’s the journey I choose to embrace now. I am getting married this September to a recently graduated Cardiothoracic Surgeon, Kathleen Berfield, who has taught me to accept the part of me that actually enjoys cats. It seems when you approach life with a positive attitude and seek out mentors who are truly invested in you, things just fall into place. And no matter where I go, I’m always a Wildcat!
I like to think my journey to becoming a Wildcat For Life began in March of 1997 with Mike Bibby, Miles Simon, and Lute Olson. I was in 7th grade and had never taken a chemistry class—but as basketball fever took over Tucson and the Cats secured the national championship in overtime, I knew I was destined to attend the University of Arizona.

Fast forward to 2002 when I applied to the UA as a chemistry major. I had loved my high school chemistry classes and thanks to Dana Scully, forensic science was calling my name. It’s possible I was a little too heavily influenced by my television. I changed my mind about my career path daily as a chemistry major here at the UA—but I didn’t change my major a single time. I found out environmental science sounded boring, math keeps getting harder and more fascinating, and organic chemistry is not even close to the hardest chemistry class you can take. In fact, the three semesters of O-chem I took were my favorite chemistry classes. And year after year, I found out I didn’t really want to be a lab scientist. I worked in Dr. Julia Cole’s geoscience lab and was most energized by talking to my lab-mates about pretty much anything: chai tea, scuba diving, geochemical evidence of El Niño, etc. I made friends with my TAs and lab partners and anyone else I could. I was a nerdy social butterfly. I even added and completed a linguistics minor as a fun senior year activity with my friend Karen.

Today, almost 20 years after that fateful basketball game and almost 10 after graduating with my BA in Chemistry, I am somehow still the same nerdy social butterfly. You could say I developed a knack for chatting with college students—I convinced the College of Science to actually pay me for it. I’m living in Tucson again (five years in Salt Lake City taught me that I hate winter) and working as an Academic Advisor in the department of Ecology & Evolutionary Biology. I live with my partner Kylee, who also works at the UA.

I love a lot of things about Tucson, my life now, and my job. I love getting to see 19-year-olds learn what it is to be on their own for the first time. I love when my students do great things, like publish a paper or get into medical school or pass that really tough class. I love helping them learn what area of biology they are passionate about. But what I love the most is being able to say to them, “Don’t worry. O-chem really isn’t as bad as everyone says it is.”
I arrived at the University of Arizona in the summer of 2000, hopeful and ignorant about the impending challenge. I started my journey working with Seth Marder at the Science and Technology Park off campus and continued my studies in Analytical Chemistry with Neal Armstrong. Graduate school was both trying and exciting, where I struggled through oral exams and cumes and enjoyed the excitement of the Zona Zoo at football games, agonized over March Madness basketball losses, and appreciated all of the outdoor activities Arizona has to offer. Sidewinder Thirsty Thursdays were a must, but we always had to be prepared for the monsoons, and happy hours at Ben’s were required for decompressing.

Through all of these times, good and bad, I had the department to support me. Anne Padias was (and is) a support for all of my teaching concerns, and often lends her ear for more personal matters. Debbie Boberg was a great graduate adviser when I arrived, and I got to work with her very closely while on the recruiting committee. I drove the recruiting van for several years, shepherding several years of incoming graduate students through the streets of Tucson, to the Desert Museum, and to Mount Lemmon. Finally, there were the faculty from whom I took classes, supervised my TA responsibilities in 400a and 528 labs, and mentored me through my tenure as a graduate student.

In those days, I would have never guessed I would end up where I am now: a teacher. I truly struggled as a graduate student, wrestling with whether or not chemistry research was my calling. But I always found great joy in teaching. In 2006, Steve Brown offered me the opportunity to manage the General Chemistry labs over the summer, which led to me teaching a lecture class that fall. That opportunity rekindled my love for teaching and breathed new life into my graduate career. I was so blessed for that second chance, and I feel fortunate to have the privilege of instructing students in chemistry and providing mentoring in life. At the University of Arizona, I have been teaching General Chemistry since 2011, and Analytical Chemistry since 2014. My experiences have afforded me great pride, responsibilities, and accolades. I was promoted to Lecturer and received the AAU STEM Excellence in Teaching Award in 2015. I genuinely enjoy teaching in one of the new Collaborative Learning Spaces on campus, coordinating General Chemistry preceptors, participating in Faculty Learning Communities, and being a Faculty Fellow.

I truly struggled as a graduate student, wrestling with whether or not chemistry research was my calling. But I always found great joy in teaching.

I still enjoy watching Wildcat sports, rejoicing in the wins and agonizing over the losses. I married Scott Dreisbach (building manager and storeroom guy extraordinaire) at Hotel Congress in 2012. We bought a house in Tucson and just put in a pool for some relief in the hot Tucson summers. We enjoy spending time playing with our dog, Peggy, brewing beer, and playing in a local wind ensemble. I look forward to what my future in CBC@UA holds!
In August 2004 I embarked on a 6.5-year graduate adventure that impacted and tested my character more than anything I had ever experienced. I grew up extremely poor, living in the projects in Culver City, CA and then in the barrio (poor Mexican neighborhoods) in Bakersfield, CA. My parents tried their best to provide for a family of six, but with both of them barely finishing 6th grade, speaking hardly any English, and having no real professional skills, it was difficult for them to find work. We were exposed to drugs, alcohol, gangs and gang violence.

However, with my family’s support, I was the first to graduate high school and attend a four-year university. I graduated from Cal State Bakersfield in 2002 with a BS in Chemistry, and I never thought I would become a Professor, especially a Biochemistry Professor with my own research lab. One of my undergraduate professors convinced me to go to a PhD program. He had always challenged me intellectually, and in fact he taught me how to read, study and do science. Therefore, I pursued PhD programs in Biochemistry, which led me to the University of Arizona. So in August 2004, I started my journey as a first-generation graduate student in the Department of Biochemistry and Molecular Biophysics. However, unlike many of my graduate colleagues, I was bringing a family (my wife Flor and 1-year old daughter Celeste). We had just been married for over a year and a new phase of our lives was about to begin.

I am not going to say it was easy. In fact, four years into my graduate career (even after advancing to candidacy) I almost left the graduate program due to reasons beyond my control. I had acquired great skills in protein expression, purification and activity assays from a great mentor and dear friend, Dr. James Spoonamore, but I still failed to see my future goal. This all changed when Dr. Roger L. Miesfeld gave a talk on mosquito proteases. That moment changed my whole career path.

Dr. Miesfeld had accepted me into his lab in my fourth year with the understanding that I would help collect data for an NIH grant and to allow me to graduate, and publish two manuscripts. Working in the Miesfeld lab was a great experience, as I learned so much in those two years. All in all, my love for science flourished, and with Roger’s guidance, I decided to pursue a teaching-research fellowship in order to determine if I wanted to become a Professor at a Research 01 institute or a Professor at a predominantly undergraduate institution. I was able to become a strong candidate for three NIH Institutional Research and Academic Career Development Award (IRACDA) postdoctoral fellowships at the University of Pennsylvania, the University of California, San Diego, the University of California, San Francisco, and I was a finalist in the Howard Hughes Medical Institute Teaching Fellowship at Dartmouth College (New Hampshire). I decided to accept the UCSF postdoctoral fellowship, and the rest is history.

My experience in the CBC department prepared me for UCSF, as well as for the competitive application process for tenure-track positions. I can honestly say that I learned the skills necessary to be a successful independent scientist, to be the mentor that I had needed myself in my first four years, and to trust and guide students individually. I learned how to balance both science and personal life. All of this has led to my success as a Professor at San José State University. In February 2016 our research lab was awarded an NIH NIGMS SCORE (SC3) grant for four years focusing on the *Aedes aegypti* mosquito midgut proteases.

Lastly, I cannot finish this without thanking all of the great people in the CBC department who helped me during my graduate career. In addition, a special thanks to my wife Flor, my daughter Celeste, and my little guy Alberto III (Buddy). They were always behind me no matter what went on in those 6.5 years!
2015–16 STUDENT AWARDS

UNDERGRADUATE AWARDS

CBC Outstanding Freshman
Nadia Ingibare - Biochemistry
CBC Outstanding Sophomore
Jean-Laurent Blanche - Chemistry
Ramya Ramesh - Biochemistry
CBC Outstanding Junior
Celina Nguyen - Biochemistry
Chemistry and Biochemistry Outstanding Senior Fall 2015
Timothy McDonald
Chemistry Excellence in Research
Spring 2016
Kexin Li
Biochemistry Outstanding Senior
Spring 2016
Nicole C. Schwalbe
Chemistry and Biochemistry Excellence in Research Spring 2016
Chris (Tian) Xue
Chemistry and Biochemistry Outstanding Senior Spring 2016
Chris (Tian) Xue
Chemistry and Biochemistry Outstanding Senior Thesis 2016
Ali Icenogle
Sarah Pattengale
American Chemical Society Hach Scholar
Karey M. Armenta
American Chemical Society Undergraduate Award in Analytical Chemistry
William Bahureksa
Charles Hoyt Scholar
Melissa Harnois
AZ Society for Coatings Technology Scholar
Clay Arrington
Excellence in Biological Sciences Scholars
Alexander Aydt
Elizabeth Brooks
Celina Nguyen
Benjamin Zaepfel
Michael A. Wells Research Scholars
Glória Le
Kyle Lopez
Elise Muñoz
Benjamin Zaepfel
HyperCube Scholar
Ben Wu
The Ronald Gonzalez Wildcat Spirit Award 2016
Victoria H. Teplitz

GALILEO CIRCLE SCHOLARS

Graduate Students
Isen Calderon
Iman Daryaei
Pradipta Das
Ritika Gautam
Jie He. Victor & Patricia Hruby Scholar
Bret Maughan
Nick Pavlopolous
Sanhita Sinharay
Brandon Smith
Jessica Wales, Michael Cusanovich Scholar
Undergraduate Students
William Bahureksa
Jordan Barrows
Katherine Burrell
Lisa Daconta
Kaitlyn Griffin
Melissa Harnois
Tyler Kennedy
Bailey Lahtinen
Jordan Levine
David Maestas
Sarah Pattengale
Dagoberto Robles, Gilbert R. Escalante Scholar
Eric Simental, Gilbert R. Escalante Scholar
Chris (Tian) Xue
Benjamin Zaepfel

GRADUATE AWARDS

Victor P. Thalacker Chemistry Graduate Fellows
Brandon Smith, 2015
Lindsay Guzman, 2016
David Smith, 2016
Carl S. Marvel Memorial Scholar
Philip Dirlam, 2015
Nicholas Pavlopolous, 2016
David F. O’Brien Fellows
Ritika Gautam, 2015
David Smith, 2016
Yueyan (Frida) Zhang, 2016
John Hostetter Scholar 2015-2016
Jessica Wales
Second Year Excellence in Graduate Research
Yueyan (Frida) Zhang
First Year Excellence in Graduate Research
Matthew Humphries
Reid McCarty Scholars
Michael Dzierlenga
Micah Nelp
Jessica Wales
Outstanding CBC Graduate Students 2015 - 2016
Outstanding Scholarship
Philip Dirlam
Outstanding Teaching
Varuni Livera
Outstanding Service
Jeff Ivie

SPECIAL RECOGNITION

Beckman Scholar 2015-2016
Benjamin Zaepfel
Marshall Foundation Graduate Fellow 2015-2016
Cyf Ramos-Colon
National Alpha Chi Sigma Scholar Award
Andrew Dixon
Honors Alumni Legacy Travel Grant
Alexander Aydt
CBC Graduate Research Symposium Poster Awards
Maha Ghaffari - 4th year
Jessica Wales - 3rd year
Maggie Scavello - 2nd year
Lindsay Guzman - 1st year
CBC Undergraduate Poster Fair 2016
Senior Thesis
1st: Anh Hua
2nd: Kexin Li
Biological Sciences Advanced
1st: Gloria Le
2nd: Connor White
Biological Sciences Emerging
1st: Jordan Barrows
2nd: Celina Nguyen
Physical Sciences Advanced
1st: William Bahureksa
2nd: Sona Avetian
Physical Sciences Emerging
1st: Priyanka Hadwani
2nd: Leo Hamerlynck
Biological, Engineering & Chemical Undergraduate Research Conference 2016
Vedanshi Bhargava
Kathryn Herrera-Theut
Elise Noelle Muñoz
Ladan Navari
Patrick O’Connor
Blanca Reilly
Anmol Singh
Nancy Tiet
Ben Wu

RESEARCH SYMPOSIUM Awardees

Outstanding Poster Presentations
Melissa Fairly
Drew Farrell
Adam Meier
Eye-Candy Award
James Sigenthaler
1st Year Early Career Excellence in Research Finalists
Kayla Clary
Steven Petritis
Kristin Watts
2nd Year Early Career Excellence in Research Finalists
Matthew Bienc
Matthew Humphries
Aaron Pejovas

Dr. Andrei Sanov and Chris (Tian) Xue

Carl S. Marvel Memorial Scholar 2016
Nicholas Pavlopolous

Victor P. Thalacker Fellows 2016
Lindsay Guzman and David Smith
The 2015–2016 CBC Awards and Commencement Ceremony was held on Thursday, May 12, 2016 at the Student Union Memorial Grand Ballroom. The 480 guests included 2015–2016 graduating students, student award recipients, student ambassadors, faculty, staff, family members, and friends of the department.

The program began with Dr. Roger Miesfeld, CBC Department Head, who welcomed everyone to the event, followed by the keynote speaker, Dr. James Hazzard, CBC Senior Lecturer, Manager of Biochemistry Instructional Lab. Dr. Andrei Sanov presented the undergraduate awards; Dr. Oliver Monti, Chair of the CBC Graduate Program Committee presented the Graduate student awards; College of Science Dean, Dr. Joaquin Ruiz, presented the Galileo Circle Scholars; the calling of the CBC Graduates was given by Drs. Roger Miesfeld, Andrei Sanov, and Zhiping Zheng. Chris (Tian) Xue, CBC/Chemistry Outstanding Senior, provided the closing remarks.

The 2016–2017 CBC Awards Commencement Ceremony will be held on Thursday, May 11, 2017 at the Student Union Memorial Grand Ballroom approximately from 8:30 am–10:30 am.
NEW FACULTY AND STAFF

Jessica Dipasupil, Administrative Assistant
Vlad Kumirov, Instructor
Michael Marty, Assistant Professor
Rebecca Page, Professor
Wolfgang Peti, Professor
Vanessa Sousa, Laboratory Coordinator

FACULTY AWARDS 2016

M. Bonner Denton, American Chemical Society Award for Distinguished Service in the Advancement of Analytical Chemistry
Indraneel Ghosh and John Pollard, UA Honors Professors for 2016-17
Amy Graham, UA Undergraduate STEM Education Teaching Excellence Award 2016
John Jewett, NSF CAREER Award; Thieme Chemistry Journal Award 2016; 2016 College of Science Distinguished Early-Career Teaching Award
Dennis Lichtenberger, AAAS Fellow
Jon Njardarson, UA Distinguished Scholar
Rebecca Page, Donna B. Cosulich Faculty Fellow
Wolfgang Peti, Homer C. and Emily Davis Weed Endowed Chair
Jeffrey Pyun, I-Squared Award for Chemistry and Physical Sciences, Tech Launch Arizona
Andrei Sanov, 2016 College of Science Distinguished Career Teaching Award
Vicente Talanquer, University Distinguished Professor; Arizona State awardee of 2015 UA Professors of the Year
Elisa Tomat, UA 2016 Excellence in Campus Outreach for STEM Diversity Award
Zhiping Zheng, Fellow of the Royal Society of Chemistry

RETIREEs

Charles Amling
James Hazzard
Sue Roberts
Ruben Vardanyan

IN MEMORIAM

PEOPLE WE LOST IN 2015–2016

Albert B. Hall, BS Chemistry, 1952; MS Chemistry, 1954; d. 7/29/2016
Patrick M. Hefferan, BS Chemistry, 1970; d. 12/8/2015
Harold Koenig, BS Biochemistry, 1957; d. 1/6/2016
Harold W. “Bill” Kohl, Jr., BA Biochemistry, 1956; d. 9/5/2016
Donald Macaulay, BS Chemistry, 1971; d. 3/22/2016
C. Dick Park, MS Chemistry, 1958; d. 3/10/2016

STAFF AWARDS 2016

Ed Autz, College of Science Staff Award 2016
Olivia Mendoza, College of Science Distinguished Advising Award
Andrei Astachkine, CBC McNair Staff Award
Martin Marquez II, CBC McNair Staff Award
Ellie Warder, CBC McNair Staff Award
Megan Cunnington, UA Wildcat Spirit Award, May 2016

Read more about our new faculty and staff and those we’ve lost in the Online Extras. cbc.arizona.edu/alumni_friends
BC@UA seeks to realize and be recognized as a top department of Chemistry & Biochemistry at a research public university. As such, CBC@UA focuses on fostering a vibrant community of scholars who conduct cutting-edge research to advance knowledge and technologies that benefit society. Moreover, we strive to provide rich and varied learning opportunities that prepare students for careers in academic and non-academic settings.

Careers in Chemical Sciences (CiCS) was conceived to specifically prepare PhD level students for post graduate careers. The three CiCS program objectives are 1) expand awareness of students to post-graduate career options in industries and organizations who hire PhD level scientists, 2) prepare students for successful interactions with potential employers, and 3) connect industry to the strengths of CBC@UA and the readiness of our students.

The priority CiCS initiatives for 2016-2017 are four-fold. First, we are delivering three information sessions to CBC graduate students over the course of the year that focus on communication, networking, and resume building skills. Second, we are identifying courses and curriculum across campus that inform students on the roles and expectations of professional scientists. Third, we are developing and launching a one-on-one mentoring program that matches employment-ready CBC graduate students with a CiCS mentor who has the skills and experience to help the student achieve their employment goals. Fourth, we are increasing connections between CBC and industry to create a pipeline of job opportunities for our students and to increase the number of Industry Associates Program (IAP) partner companies.

For more information about the CiCS program and how you might contribute as a company sponsor or graduate student mentor, contact Roger L. Miesfeld, CBC Department Head and CiCS Steering Committee Chair at rlm@email.arizona.edu.
The Department of Chemistry and Biochemistry is excited to develop closer relationships with small businesses and large corporations that seek ways to interface with leading academic researchers and highly trained students in the fields of nanomaterials, synthetic organic chemistry, polymer chemistry, biochemistry, protein structure and function, computational biophysics, and drug design.

We foster these corporate relationships through our Industry Associates Program (IAP), which provides an opportunity for companies to become partners with a top tier Department of Chemistry & Biochemistry at a world class Research I University located in beautiful Tucson, Arizona. Receipt of your company’s annual gift of $5,000 initiates your IAP partnership. Visit us on the web at cbc.arizona.edu/iap.

A primary benefit of an IAP partner company is preferred technical access and consultation services with our CBC scientific staff in the Research Support Services (RSS) unit, which includes expertise in 10 specialized areas of chemistry and biochemistry with expertise in analytical services and research design. Up to six employees of your company will become University of Arizona Designated Campus Colleague (DCC) associates of CBC, which includes online access to all electronic journal subscriptions and library databases.

Join our growing list of IAP partner companies and begin to build your company’s relationship with The University of Arizona!
CARL S. MARVEL LABORATORIES RENOVATION FUNDRAISING CAMPAIGN

YOU CAN BE A MARVEL, TOO!

If you were around campus in the early 1970s, you may remember the beautiful new lab building going up just west of the Old Chemistry Building. Originally called the New Chemistry Building, it was renamed in 1984 in honor of Carl Shipp “Speed” Marvel, a UA Chemistry faculty member from 1961 to 1988 and one of the world’s leading organic polymer chemists. While some of the Marvel labs were recently renovated, three more labs are in desperate need of updating in order to relocate CBC faculty from the Old Chemistry building, which is slated for partial demolition (back half will be replaced with new space).

Funds are not available for new building projects at this time, so it is up to the CBC Department and the College of Science to partner in their fundraising efforts to meet this critical need. We are looking for individuals or corporations who are interested in making a significant impact on chemical sciences by donating funds toward three state-of-the-art named laboratories in the Marvel Building. Our goal is to raise $1.8M over the next two years to renovate three labs.

For more information on how you can have a laboratory named for you, please contact College of Science Senior Director of Development DAN PETROCELLI dpetrocelli@email.arizona.edu or (520) 621-1215.

THE UNIVERSITY OF ARIZONA DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY IS A TRIPLE THREAT. THEY ARE SUCCESSFULLY CREATING NEW KNOWLEDGE, TRANSFERRING THAT KNOWLEDGE TO THE COMMUNITY, AND THEIR COMMITMENT TO STUDENTS IS UNPARALLELED. THEY ARE LEADERS IN ENZYME RESEARCH AND ANALYTICAL CHEMISTRY.

JOAQUIN RUIZ DEAN, UNIVERSITY OF ARIZONA COLLEGE OF SCIENCE

CARL S. MARVEL 1894-1988

Photo courtesy of the University of Illinois Archives

CARL S. MARVEL 1894-1988

Photo courtesy of the University of Illinois Archives
OUTREACH ACTIVITIES

ALPHA CHI SIGMA
by Jeff Ivie and Alicia Swain

AXΣ (Alpha Chi Sigma) is the nation’s only professional fraternity of the chemical sciences. The Beta Tau chapter at the University of Arizona was founded in 1967 by Curtis L. Schilling, Jr. with assistance from the late Prof. Carl S. Marvel. Since then, AXΣ has provided chemistry education and service to the Department by assisting with graduate student recruiting, setting up/breaking down poster sessions, and operating the grills at departmental events. AXΣ also provides service to the community as members perform chemistry shows at annual events such as Family Weekend and at the Tucson Festival of Books. MORE

CHEMISTRY CLUB
by Sona Avetian | President

Student Members of the American Chemical Society (SMACS), or more colloquially known as University of Arizona Chemistry Club, is an American Chemical Society recognized chapter. We are a primarily student-run club that focuses on the promotion of science throughout the community. This past year we hosted several chemistry shows at local schools in order to encourage young students to embrace science. One such school we visited was BASIS Oro Valley, where we performed a chemistry show to a very captive and enthusiastic audience! Apollo Middle School also came to campus, and we performed an exciting show. MORE

PROGRAM TO ADVANCE WOMEN SCIENTISTS
by Lindsay Guzman | President

The Program to Advance Women Scientists (PAWS) had a successful first year! The mission of PAWS is to empower women in the sciences through education, leadership, mentoring, and support. We hold seminars, professional development workshops, and outreach events. PAWS was first established in the CBC department during the Fall of 2015, and we are rapidly growing with members across departments at the UA.

For professional development, we held monthly seminars featuring faculty from the CBC department. This year, we were fortunate to have Drs. Jeanne Pemberton, Anne Padias, Elisa Tomat, John Jewett, Pascale Charest, and Ann Walker give professional development seminars to our group. MORE

BIOCHEMISTRY CLUB
by Gloria Le | President

The UA Biochemistry Club is an affiliated Student Chapter of the American Society for Biochemistry and Molecular Biology (ASBMB). Our main goal is to provide the community, specifically middle and high school students, with exposure to opportunities in scientific research and careers. In the spring of 2016, we held the Biochemistry, Engineering, and Chemistry Undergraduate Research Conference (BECUR) where students from Arizona universities and high schools presented their outstanding research to graduate student judges.

The Biochemistry Club runs a week-long summer camp called BlastOff!. Here, 15 middle school cadets participate in complex activities that closely relate to real-world science. MORE

More Outreach and photos in the Online Extras
cbc.arizona.edu/alumni_friends
STUDENTS’ RESEARCH, INTERNSHIPS, CONFERENCES, AND STUDY ABROAD

Sona Avetian – University of California, Irvine
Alex Aydt – SPIE BiOS Photonics West Conference, San Francisco
Jordan Barrows – Allied Genetics Conference (TAGC), Orlando, Florida
Calley Eads – Future Energy Leaders Summer Fellow, Germany
Mahsa Ghaffari – Protein Society, Baltimore, MD
Pearce Haldeman – Memorial Sloan-Kettering Center
Elizabeth Hannah – Galápagos Islands
Samantha Harrow – Grand Canyon internship
Kyle Lopez – Caltech
Elise Muñoz – Mass. Summer Research Prog. (MIT)
Alec Nienhauser – Germany
Celina Nguyen – Honduras, Global Medical Brigades
Destinee Ogas – Vivé Peru
Matthew O’Mara – International Dictyostelium Discoideum Conference, Tucson
Neal Patel – India, Singapore, and Thailand
Carlos Perez – ROTC: a leadership experience
Jose Rios-Monterrosa – Peru
Eric Simental – Mass. Summer Research Prog. (MIT)
Cristian Solano – Italy
Matthew Stagg – UA Football and Science
Avi Tarquini-Cassell – Israel
Bryce Tipton – England and Malaysia
Benjamin Zaepfel – Beckman Scholars Symposium

See the Online Extras for the student stories!
cbc.arizona.edu/alumni_friends
CBC SCRAPBOOK

WELCOME BACK CBC STUDENTS

RESEARCH SYMPOSIUM

BLASTOFF!

CBC POSTER FAIR
CBC AMBASSADORS

Top: Cody Schmidlin, Hugo Wilson, and Kyle Lopez
Bottom: Ali Ioenoglu, Gloria Le, Kristen Tucker, and Morgan Beckett

CBC BREAKFAST

New graduate students receiving their white lab coats

SALSA CHALLENGE WINNERS

Sarah Young, Mary Flores, Nadja Anderson, Olivia Mendoza, Ellie Warder and Michael Williams

BECUR WINNERS

Blanca Rielly, Kathryn Herrera-Theut, Elise Muñoz, Vedanshi Bhargava, Patrick O’Connor, Anmol Sing, Ben Wu, Ladan Navari, Nancy Tiet (not pictured)

MCNAIR STAFF AWARDEES

Andrei Astachkine, Ellie Warder, and Martin Marquez II

CBC OKTOBERFEST

Jean Laurent-Blanche, Lindsay Guzman, Tyler Kloefkorn, Matt Rollins, Flora Kimani, Mehrdad Shadmehr, Brandon Cornali and Amanda Hanson
If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!

CBC@UA!
cbc.arizona.edu/alumni_friends

If you received the 28-page print version of the fall 2016 Catalyst Alumni Magazine, be sure to go online to view and download the expanded version containing more exciting CBC Alumni News!
ALUMNI NEWS

Terry Holcslaw – BS Chemistry, 1968
I received my Masters (1972) and PhD (1974) degrees in Pharmacology from Purdue University after graduating from the UA in 1968. My wife, Anita, a Purdue Pharmacy graduate and I have two daughters, 41 and 39, and two grandsons, 13 and 10. Recently (April 1), I was awarded a Purdue University Distinguished Alumnus Award for my career works in research, teaching and community service. This was a highly significant award for a career by the University that trained me to be a scientist.

Larry Schwartz – PhD Chemistry, 1971
I have been running my own consulting business, which has taken me to India, Europe, and China in the past year. My wife, Leslie (’72 nursing) works as the lead nurse at Dignity Health. My oldest daughter Rachel is a 3rd year resident in radiology at UCSD, and my younger daughter Randee works in sales in Santa Cruz, CA.

David Bear – BS Chemistry, 1972
My wife and I moved back to Tucson in 2015 after 43 years. Upon finishing our educations in California, Oregon, and New Mexico, we worked in academics and health care. I was on the faculty of the University of New Mexico for 33 years and continue to teach at the UNM School of Medicine a few months of each year. I also work with several research and education groups at the UA College of Medicine.

D. David Smith – Postdoc Chemistry, 1986-1989
After Arizona, I moved to the cold of the Midwest and joined the faculty of Creighton University in the Department of Biomedical Sciences within the School of Medicine. Over the years, I have taught the finer points of biochemistry to medical and pharmacy students alike as well as continuing to work in peptide chemistry. With one daughter graduated from the University of Wyoming in Zoology, this fall, my wife and I will become “empty nesters” when our son commences undergraduate studies at Iowa State University in mechanical engineering.

Stephanie Slater – BS/MS BMB, 2003/2004
I am currently a Drug Investigator at the US Food and Drug Administration and living in Alameda, CA. I completed the Biochemistry and Molecular Biophysics 5-year BS/MS combined program in 2003 and 2004. I was also part of the Honors College and the Undergraduate Biology Research Program (UBRP), which led me to work in the laboratory of Dr. Mark Haussler at the Arizona Health Sciences Center. Dr. Haussler just retired this year (2016) and he will be greatly missed. He was an excellent mentor, a brilliant scientist, an inspiring teacher, and his laboratory staff became my second family. We (past Haussler Laboratory employees) all stay in touch, even more than a decade after my graduation.

Post-graduation, I worked as a Research Specialist under Dr. Haussler until I moved to Seattle, WA. I lived in Seattle for approximately 7 years, where I worked in the Seattle biotech industry and completed a second Master’s Degree in Biomedical Regulatory Affairs at the University of Washington. Despite my ties with UW, I am always a Wildcat first and for life!

My time at UW led me to the FDA, where I currently work to inspect drug product manufacturers of all shapes and sizes. I enjoy being part of the Regulatory Affairs field of work. I love my job, which has me travel frequently across the U.S. and overseas. My most recent Overseas trip for FDA was to India. I worked in New Delhi, Mumbai, and Hyderabad. I was fortunate to visit the Taj Mahal, one of our great “Wonders of the World”. It was breathtaking and quite memorable. I have been in most of the 50 states and on the other side of the world, but I will always call Tucson, AZ my home and I miss it dearly.

After graduation from the UA, I served two years in the U.S. Peace Corps as a Community Health volunteer in rural Peru. I then attended Emory University in Atlanta, Georgia where I received my PhD in Nutrition and Health Sciences in 2014. My dissertation centered around iron and folic acid supplementation of pregnant women through antenatal care in Bihar, India. I used qualitative and quantitative methods to examine
IALMNI NEWS, CONT.

IFA supply and demand aspects of distribution from government supply policy and protocols to women, family, and health worker beliefs, counseling, and behaviors.

I’m currently working as an Alexander von Humboldt Postdoctoral Research Fellow at the Epidemiology and Biostatistics Unit, Institute of Public Health, University of Heidelberg in Germany. Here I work in the research and management aspects of the Food and Agricultural Approaches to Reducing Malnutrition (FAARM) cluster-randomized controlled field trial in northern Bangladesh. This trial is in collaboration with Helen Keller International and examines the potential of their enhanced Homestead Food Production program to impact linear growth of children born into the trial. My research focus is maternal and child nutrition and I have recently received funding from the Thrasher Research Fund to conduct an etiology of anemia study as part of the FAARM trial. I’m looking forward to getting back into the lab with this new public health lens to further understand anemia causes in rural Bangladesh.

Matt Durban – BS CHEMISTRY, 2007
I am a postdoctoral researcher at Lawrence Livermore National Lab.

Michelle Brandon Hines – BS BMB, MCB, 2008
I double majored in Biochemistry and Molecular Biophysics and Molecular and Cellular Biology (prior to department change). I worked in the Wells/Miesfeld lab throughout my undergraduate years characterizing a phosphorylation cascade that led to translation of a protein necessary for egg development in the Aedes aegypti mosquito. I went on to complete a Doctor of Pharmacy degree across the street at the University of Arizona College of Pharmacy. After pharmacy school, I completed two years of post-graduate pharmacy residency training at the University of Maryland Medical Center, including one year of specialty training in emergency medicine.

I am now a clinical pharmacist in the emergency department at the University of Maryland Medical Center in Baltimore. I was recently appointed to the American Society of Health-System Pharmacists Section of Clinical Specialists and Scientists Advisory Group on the Emerging Sciences, where my basic science background will come in handy in assessing bench-to-bedside therapeutic approaches. My husband and I live in Washington, DC now and we are enjoying life on the east coast!

Melissa Martínez – BS BMB, 2008
After my time at the UA, I moved to Nashville, TN to attend graduate school at Vanderbilt University. In graduate school I continued to research molecular mechanisms that confer protection to diabetes and cardiovascular disease. I was also able to continue my training and develop my skills as a scientific writer.

During my time in TN, I also found my passion for trail running. I completed various marathon and ultra-marathon races where I placed top 6 or above in every race.

I recently moved back to my home state of AZ and had a baby in January. I currently work part-time as a scientific writer and editor which allows me to spend plenty of time with my son Nash. We are looking forward to fall in the valley and the exploring the local trails.

Ivan Ogloblin - MA CHEMISTRY, 2008
In 2011 I received the Goh Foundation Scholarship (Singapore) to pursue medical education in Duke-NUS Graduate Medical School in Singapore. In 2015, I graduated with the combined MD degree from Duke University and the National University of Singapore. Currently I work toward specialization in Anatomic and Surgical Pathology at Tan Tock Seng Hospital, one of the academic hospitals in Singapore as I try to combine my chemistry and biochemistry background with clinical knowledge and skills. The field of pathology allows me not only participate in a
patient’s care but also to engage in basic, clinical and translational research to bring the bench to the bedside.

Singapore is a city-state on the cross-roads of Asia. In the past six years I had a chance to experience new cultures, trying out new cuisines, and travel all around Southeast Asia. Despite all the changes and events have happened to me after the University of Arizona, I am still a proud Wildcat!

**Erin Palmer – BS BMB, 2008**
I am in my 5th year of a PhD program that bridges chemistry and education at UC Berkeley called the Graduate Group for Science and Mathematics Education. My work largely addresses issues of retention of students of color, low income students and first generation college students in STEM majors. I am working with Professor Angelica Stacy to redesign the undergraduate introductory chemistry course at Cal around collaborative learning, introducing practices to the course more consistent with productive science learning and more authentic to the nature of science. My dissertation will study our attempt to reorganize learning the course, seeking to understand if and how aspects of our redesign support more expansive understandings of what counts as science and who can be good at it.

While I’m super excited about this work, I also try to soak up the beauty of the Bay area, spending lots of time back packing and biking in the Oakland hills. I recently returned this week from a sailing trip with my brother off the coast of Juneau!

**Ivan Grubisic – BS BMB, ENG MATH, BA GERMAN 2009**
During my time at University of Arizona I graduated with degrees in BMB, Engineering Mathematics and German Studies. My interests have always been at the intersection of different fields. I pursued my interest in regenerative medicine and tissue engineering by completing a PhD from UC Berkeley and UCSF Joint Graduate Group in Bioengineering. My PhD was not only focused on understanding how mechanical and physical inputs affect stem cell differentiation pathways; I was also involved in the Open Science and Open Access communities by collaborating with eLife, a new premier Open Access Journal, to develop eLife Lens, a novel way of reading research articles. An example of my work in Lens is here.

My move into software development has now lead me to an engineering role at Jawbone where I am working on developing the next iteration of wearable technology to improve the health and awareness of everyone.

**Katie Hope White – BS BMB, 2004; PhD BIOCHEMISTRY 2010**
After graduating from Dr. Koen Visscher’s lab in 2009, I began working in a biochemical detection development group at Ventana Medical Systems in Oro Valley. While I’ll always be passionate about biophysics and reading about astrophysics, using my time and efforts in cancer research was very appealing to me. I work on developing cancer diagnostic tools as new biomarkers are found with unmet corresponding diagnostics. Each day we are challenged to use the knowledge and also wisdom gained during my years as a graduate study at the UA. I’m very thankful for the students and staff who taught me how to think about problems, how to design experiments, and how to present my work.

When I’m not at work, I’m taking care of my energetic kiddos (Jeremiah, 8 and Zoe, 5), helping with house renovations, watching the DBacks, and working beer events with my husband at Dragoon Brewing Co. Thank you, CBC!

**Alex Spicker – BS CHEMISTRY, 2010**
To celebrate my wife’s graduation from a master’s program, we just got back from a 10-day trip in wonderful Ireland. Spectacular people and beautiful countryside.

**Samantha Bomotti – BS BMB, MCB, 2011**
I am currently pursuing a PhD in Genetic Epidemiology at the Johns Hopkins Bloomberg School of Public Health. I received my MPH in Epidemiology from the University of Michigan before arriving in Baltimore for my PhD. While my Biochemistry and Molecular Biophysics BS from the University of Arizona was originally intended to prepare me
for Medical School, my hard science background has proven invaluable in aiding my understanding of the biological mechanisms underlying diseases/disorders I study as an Epidemiologist. The Genetics courses I took as an undergraduate in particular directed my interests specifically toward Genetic Epidemiology and the study of the genetic underpinnings of disease.

Being a PhD student consumes a vast majority of my time at the moment. However, I do manage to try out new recipes each week, garden, catch a movie here and there, and travel. I recently returned from a 3-week Europe trip through England and Italy with a friend. I hope to move back out west after graduation and begin a career in industry.

Sarah Edwards – BS BMB, MCB, 2011
I recently earned a PhD from Stanford University. For my thesis, I built molecular-scale tools to study DNA damage and repair. I am now working in the biotech industry in the Bay Area. The biotech community here is thriving and vibrant, and it’s exciting to see the technologies that are being developed! In our free time, my husband and I enjoy biking and board gaming with our friends.

Tara Hill – BS BMB; MA SPEC ED, 2011
Following graduation of my undergraduate Bachelor of Science program – Biochemistry and Molecular Biophysics (BMB) – in May 2011, I began working at a local elementary school as a paraeducator. I worked at the school from November 2011 to May 2012. I then returned to the University of Arizona to partake in a Masters of Arts (MA) – specifically Special Education with emphasis in Visual Impairments (SpEdVI).

You may be asking yourself how does one go from a BS in in BMB to a MA in SpEdVI, but the connection was my minor that I took as an undergraduate. I minored in Special Education and Rehabilitation (SER) in which I could only take vision and American Sign Language courses – due to time conflicts with my major classes, and the fact that I was only getting a minor. I decided at that point that I could see myself being happy about teaching in the field of Special Education (specially individuals with visual impairments). I completed my MA in December 2013; in the same month I obtained my Driver’s License. Since I was going to being into the real world the following month, I thought it might be time to start driving.

I began working at my current job – Foundation for Blind Children – January 2014. I am currently an elementary education classroom teacher; this means I teach students from kindergarten to fourth grade. Though not all students in my classroom are DeafBlind, the majority of them are. The majority of my students have both a vision and hearing loss. This allows me to use both the knowledge I gained in my Master’s program as well as American Sign Language (took in high school, as well as an undergraduate). August 2016 I will be starting my third full year of teaching – currently I have 2.5 years under my belt – I will have a total of 7 students, and be given the aid of three wonderful para-educators.

On a fun note – I recently went to Disneyland (July 2016). The last time I went to Disneyland (not counting 1 day trips with my high school marching band) was December 1995; I was 6 years at the time. This last trip occurred right before my 27th birthday, so I am able to say I went to Disneyland 20 years later – and I was able to get a picture with my favorite character – GOOFY!

Samuel Jayakanthan – PhD BIOCHEMISTRY, 2011
My passion for structural biology has its beginnings from my graduate training at CBC. I graduated with a PhD in Biochemistry in 2011. During my time at CBC, I worked in Dr. Megan McEvoy’ research group. I used X-ray Crystallography, NMR spectroscopy and various biochemical methods to characterize bacterial copper ATPases. My awesome advisor Megan, provided an environment where trainees could demonstrate their independence and creativity in advancing their projects while acquiring new skill sets. In collaboration with incredibly talented Macromolecular crystallography core scientists, Drs. Sue Roberts and Andrzej Weichsel, I was able to solve a couple of high resolution crystal structures of soluble domains of Copper transporters. As part of my program requirements, I had the
opportunity to be a teaching assistant to the CBC faculty for many of the core courses. My favorite TA assignment was BIOC 463A with Dr. James Hazzard. My time being a TA solidified my interest in being close to the class room and pursuing a career in academia.

After my graduate training at the UA, I moved to Baltimore, MD to take up a post-doc position in the Physiology Department at the Johns Hopkins University School of Medicine. As a research fellow, I have focused my efforts on studying localization and trafficking phenomenon of mammalian copper transporters in hepatic tissue and the brain. I have also been using Cryo-Electron Microscopy to decipher the 3Dimensional structures of transporters and other partner proteins in the secretory pathway. After the end of my training next year, I intend to transition to an academic position with both teaching and research components.

In the last 5 years, I have become a husband and a father. My wife and my 2½ year old son live in the Baltimore suburb of Towson and enjoy living near the Chesapeake bay where we have the pleasure of enjoying some sumptuous Maryland crab cakes. I am very grateful for my time at CBC/UA and I am very grateful to the Faculty and Staff at CBC – especially Olivia Mendoza and Margaret Gomez for their incredible support. I hope to visit soon.

Kimberly Meyers – BS BMB, 2011
Since graduating with my degree in biochemistry and molecular biophysics, I have encountered several unique and rewarding experiences that have cultivated my passion and drive for science.

A few months after earning my degree, I found an opportunity to work as a research technician with Dr. Kolby Jardine at the Biosphere 2, University of Arizona. Eager to contribute my efforts towards the field as a scientist, I assisted in the development of projects and specifically focused my efforts towards investigating the oxidation products of isoprene generated by the Mangifera indica, upon various environmental stress factors. I hypothesized that these oxidation products were generated as a means to protect the plant against stress and measured the levels of emission products through mass spectrometry methods. Along with developing the project and gathering the data, I assisted in writing grants, interpreting the results, participating in the development of manuscripts for publication, and even stepped into a leadership role as a mentor to an undergraduate student affiliated with a research summer internship program.

I loved the freedom and responsibility that accompanied my position as a researcher, and realized that in order to maintain such a degree of independence and creativity, I needed to pursue graduate studies. After realizing my ultimate goal to pursue graduate studies, I decided to enroll in upper division graduate level courses, while working full time as a research specialist, to truly gauge my interests in the field of neuroscience and medical pharmacology. I chose to enroll in both neuropharmacology and molecular pharmacological agents as I was fascinated by the mechanisms of drugs and their effects on the synaptic plasticity of the brain. I developed a passion for the material as I began to understand the intricate dynamics between the molecular mechanisms and the development of neuro-abnormalities, including psychiatric disorders, and how drug therapeutics could serve to rectify these chemical imbalances and improve synaptic plasticity.

Eager to apply my newfound passion for medical pharmacology to the field of research, I joined Dr. Amelia Gallitano’s laboratory in Phoenix, at the University of Arizona, College of Medicine. Here, I found my true passion in elucidating the mechanisms behind psychiatric disorders. For the past year, I have been utilizing physiological models of stress to investigate immediate early genes and their role on expression of a gene (htr2a) that has been linked to schizophrenia. Htr2a encodes the serotonin 2A receptor, which has been implicated in regulation of cognition, learning and behavior. Agonists of the serotonin 2A receptor, including lysergic acid diethylamide (LSD), mimic symptoms of schizophrenia, and provide further evidence for the serotonin hypothesis of schizophrenia.

A few months ago, I gained acceptance to the Interdisciplinary Graduate Degree Program in Neuroscience at Arizona State University where I will continue my research as a graduate student in Dr. Gallitano’s laboratory and work to understand the intricate dynamic between genetic and environmental factors that lead to the pathophysiology of schizophrenia.

My prior research experiences and love for neuropharmacology ultimately led me to have led me to apply for a PhD in the field of neuroscience at Arizona State University. Earning a PhD in neuroscience will grant me the opportunity to cultivate and develop my own research under the direction and guidance of experts to build a strong foundation for a career in research to further advances within pharmacological science which would prove difficult, if not impossible, without the doctoral degree. My strong background in neuroscience and exposure to different laboratories has prepared me to perform well in the core courses, matriculate with other graduate students in the program, and consult with faculty members to receive guidance and direction towards research projects. I plan to utilize this opportunity to achieve
Alan Moghaddam — BS BMB, 2011

It was this time around 5 years ago that I started my trek up to Eugene, OR. Over the course of those years I had the chance to do some really fun and interesting chemistry. At Oregon, I have had the pleasure to work under the mentorship of Prof. Victoria DeRose. In the DeRose lab, we do bioinorganic chemistry stemming around the interactions between Pt and biomolecules. For years, Pt(II) square-planar complexes have been used for cancer treatment, but a lot is not known about their cellular targets. In the DeRose lab we have synthesized an array of different azide and alkyne-modified Pt(II) complexes to be used in target analysis. Furthermore, we also explore the use of Pt as a structure mapping tool to ascertain higher order structures of cellular RNA. I have had the chance to do a number of fun and different techniques ranging from synthesis to cellular imaging. Currently I am getting ready for my PhD defense, and afterward I will be exploring opportunities in both teaching and industry.

Claire Nichols — BS BMB, Chemistry, 2011

After graduation I took a position at CVS Caremark as an account manager, which was very different than the lab life I was used to. On the first day I learned about their purpose: to help people on their path to better health. Helping people on their path to better health is something I hope to do every day. After working at CVS Caremark for a year, I was promoted to Senior Analyst. Six months later, I was promoted again to a benefits relationship manager, in which I acted as a liaison between my client, a large health plan, and my coding team to implement Medicare Part D, Commercial, and Exchange formularies. This experience helped me see the depth of the world of pharmacy. Each day I was immersed in ongoing changes to our health insurance system that are drastically altering the nature of health care in our country. For example, the Affordable Care Act has allowed preventative care to finally become accessible for many Americans. Caremark has also allowed me to work closely with pharmacists who have exposed me to many drug adherence regulations and drug determination processes. This knowledge further strengthened my drive to become a pharmacist.

Today, I am entering my second year of pharmacy school at the University of California, San Francisco. It is a challenging program, but also stimulating. Every day I am able to interact with medical students, nurses, dental students, pharmacist and most importantly, the patients. I am currently President-elect for UCSF Academy of Managed Care Pharmacy Student chapter. This opportunity has allowed me to meet many inspiring professionals in my field. I am looking forward to the next three years of school and I am excited to start my career as a Pharm D.

On a different note, I am engaged to a wonderful man. We meet over 3 years ago in Scottsdale and it has been an amazing adventure. We are slowly settling into San Francisco and love being closer to his family. Our wedding is in March of 2017, which is right around the corner. We are very excited to start the next chapter in our life.

Kristen Sanders — BS BMB, 2011

After graduating from the UA in May 2011, I received a fellowship from Northwestern University where I attended graduate school. I then earned my MS in Chemistry in 2013 and was the recipient of the Allen S. Hussey Award for Excellence in 200-Level Teaching. I was very successful during my time at Northwestern, partly due to the excellent education I received at the UA. Whether it was engaging in cutting edge research, leading exam review sessions as an organic chemistry preceptor, or participating in outreach events as an ambassador to the Chemistry & Biochemistry Department, my experiences at the UA helped to prepare me for life as a graduate student.

Since graduating with my master’s degree from Northwestern, I have been teaching chemistry and physics for BASIS Charter Schools and am currently teaching at a high school that was ranked #3 in the nation by US News and World Report in 2016. I have really flourished as a teacher and feel that teaching science is my true calling in life. I love connecting with my students, on an intellectual and an individual level, and have enjoyed watching them mature and achieve academic success, receiving some of the highest test scores in the country. I owe part of my achievements in...
ALUMNI NEWS, CONT.

teaching to my wonderful chemistry professors at the UA, whose memorable lectures and scientific reasoning skills I still call upon on a daily basis.

Since graduating from the UA, much of my time has been focused on academics. However, I still make time to enjoy life. I have developed a love for ballet and go to many local ballet performances in addition to taking ballet classes myself. I have also been fortunate enough to travel the world, visiting sites throughout Europe and North America. Some of my favorite trips included observing the wildlife in Bar Harbor, Maine and Acadia National Park as well as voyaging through Ireland and seeing spectacular sights such as the Cliffs of Moher and the historic town of Kinsale.

Brett Stoll – BS Chemistry, 2011

With much work during my final semester at Arizona I landed a job offer right before my last final to work as a Microbiology Lab Manager at a small company in Southern California doing food science and microbiology research in food packaging. The company specializes in absorbent media with expertise in food packaging science. After a year, I was promoted to Research and Development Lab Manager, after working on projects in the company’s medical absorbents applications, specifically a contaminated human remains pouch (CHRP), a specialized body bag, designed to contain chemical and biological agents for the US military. For four years I worked with our sales team and customers designing application specific products for the food packaging industry. I also worked closely with the quality and production staff to understand difficulties that can arise when taking lab products down to the production floor.

Last year a position opened that has led me to use a different skill set that I learned in the chemistry program, analytical thinking and problem solving, as it pertains to product design, manufacturing analytics, yields and optimization. Now I design all new products for our food pad business; analyze weekly production metrics, monitor and troubleshoot raw material quality and usages as they pertain to theoretical yields and bills of material. Recently our company finished Taguchi type designed experiment to create a more robust tissue recipe for our paper mill that improved key performance aspects of our tissue by 20%.

Outside of work, I am dada to two very intelligent little girls that like to be out in the world exploring nature and different cultures. I grow my own hops to use in my homebrewed beer, which I make on my rare, free weekends at home.

Gabrielle Winston-Mcpherson – BS BMB, 2011

After graduating from UA, I began a PhD program in pharmaceutical sciences at the University of Wisconsin-Madison. While in Wisconsin, I studied synthetic and medicinal chemistry under the advisement of Professor Weiping Tang. Aside from working in the lab, I spent my time eating cheese, drinking craft beer and exploring small towns. To my great delight, I successfully defended my PhD in May of 2016, after which I packed up a U-Haul and moved to Seattle Washington to begin a fellowship in Clinical Chemistry.

The field of clinical chemistry is quite small, but essential. The main role of a clinical chemist is to direct a hospital laboratory. This fellowship will help me to apply the analytical skills I developed in graduate school to clinical pathology and patient care. On a daily basis, I interpret clinical laboratory results, troubleshoot issues, analyze and evaluate laboratory performance, and research new methodologies. I spend my free time playing with my dogs and improving my cooking skills.

Ersilia Anghel – BS BMB, BA Art History, 2012

I am currently in my final year of Medical Doctor training at the University of Arizona–Tucson. As an undergraduate, I did my research with Dr. Ronald Heimark and Dr. David Armstrong on improving angiogenesis in wounds of compromised diabetic hosts. I was recognized for my academic scholarship in 2011 when I received the prestigious national Goldwater Scholarship. Working both in basic science on techniques to improve angiogenesis in diabetic models
and in the hospital to salvage patients’ compromised lower extremities led me to pursue medical training. As an undergraduate in our program, I completed inter-institutional projects at University of Washington through Amgen and University of Manchester, UK through BRAVO! I continued to do this throughout medical school, working at Stanford University and Georgetown University on wound healing and diabetic limb salvage leading to several presentations and publications. I hope to become a plastic surgeon specializing in complex wound healing. This spring I advocated on Capitol Hill in Washington, DC for increasing the surgical workforce to improve care in underserved and rural areas.

The University of Arizona CBC Department provided me with endless support and guidance throughout my undergraduate years. My experience in the BRAVO! Program doing research and being involved in clinical medicine in an international setting was a springboard for career development. My classmates were bright and motivated. My professors always had an open door. and our program coordinator Olivia Mendoza cared about each student tremendously. Recently, I met up with a classmate, Steven Fan, in Portland and we shared stories of our journeys. The CBC program creates a network of smart, motivated folks that I am lucky to know and continue learning from as time goes on.

Julio Cardenas-Rodriguez – PhD Chemistry, 2012
The Life Stuff: I was born and raised in México City, México. My mother was the first person in my family to attend and graduate from college. But despite her best efforts, I did not show any academic inclinations until my senior year of high school when my organic chemistry teacher (Sandra Martínez) helped me understand that my education was paramount. Unfortunately, my grades were so low that I could not gain admission to any university that year. Thus, I had to wait a year to take the national college entry exam and worked as a puppeteer in the meantime, and started college in 1997 at La Salle University in México City. Over the next ten years I performed much better in college than in high school, lived in Canada for a while, traveled to Asia and South America, and landed a great job at Merck & Co.

I arrived to Tucson on August 31st of 2007, ready to start my doctoral studies at the Department of Chemistry (only Chemistry back then) at University of Arizona, but unsure if selling all my possessions (car, furniture, apartment, etc.) and quitting a great job at Merck & Co. were wise decisions. After almost ten years in this country, a PhD degree, marriage to a wonderful woman, and two children; I can tell you that it was the best decision I could have taken despite the challenges that are part of starting a new life in a new country.

After completing a year of courses I was informed that the person I wanted to be my research advisor was leaving the university, and recommended that I join the group of Dr. Mark “Marty” Pagel who was scheduled to start at the UA in the fall of 2008. I interviewed for the position over the phone (Marty was still working at Case Western Reserve University in Cleveland), and started working with Marty as soon as he arrived to Tucson. This is the biggest stroke of luck I have had in my entire career. Marty is world-renowned MRI expert, a collegial and rigorous scientist, and a mentor beyond the research laboratory. After graduating from the Department of Chemistry and Biochemistry (now CBC), I landed jobs as a postdoc at Vanderbilt University in Nashville, TN. and a clinical research manager at PPD (Pharmaceutical Product Development) in Wilmington, NC. For my wife and I, Tucson offers the best combination of México and the United States, and we could not pass the opportunity to return to the University of Arizona to start my own research group in medical imaging and raise our children in this great city.

The Science Stuff: Since its inception in the early 1970s to differentiate tumors from normal tissue, innovation in MRI has been largely driven by two goals: 1) increasing the magnetic field at which MRI data is acquired, and 2) implementing new acquisition methods (pulse sequences) to extract new information from the MRI signal or to adapt known pulse sequences at higher magnetic fields. This strategy has proven very successful in the diagnosis, treatment, and prognosis of cancer. However, the most promising hardware innovations in MRI are not available to clinical practitioners (oncologists

Julio Cardenas (far left) and his lab group
and radiologists) outside academic centers because of their very high cost, the technical expertise needed for their implementation, and the requirement to collect additional images with an unclear clinical value to clinicians.

The Cárdenas Laboratory seeks to remedy these limitations of MRI by establishing a new paradigm for innovation in which we use machine learning methods to extract more and new information from MRI data currently being acquired as the standard and repose FDA-approved compounds as contrast agents for MRI. Our research efforts are led by current and former undergraduate CBC students. Joseph “Joey” DegrandChamp, a current CBC student (BS Class of 2017) has published a paper describing how to use a new method for the analysis standard-of-care MRI to predict response to neoadjuvant chemotherapy in patients with breast cancer. Joshua Goldenberg, a former CBC student (BS Class of 2014) discovered that Maltose (yes, the sugar in beer!) can be used as contrast for MRI and is currently preparing a manuscript that demonstrates that Maltose can be used to differentiate infections form lung tumors.

As we say in México, our science is aimed to be Buena, Bonita, y Barata (Good, Nice, and Cheap)!

**Mitchell Catling – BS Chemistry, 2012**

I started with BASF in August of 2012 (three months after graduation) working as a mining laboratory technician. Initially my job consisted of analyzing plant profiles coming in from copper, uranium, and nickel solvent extraction mines globally. This was a great chance to learn the science behind the business as I was exposed to the workings both chemically and physically through all of the different mining operations.

In 2014 I was promoted and became a full-time member of the BASF team. This promotion allowed me to work with world-class researchers in industry and academia combined. My primary focus has been to find a chemical solution to the large tailings issue generated by the oilsands industry around Fort McMurray, AB. Since that time I have been able to travel to the customer sites and work alongside them, understanding the different challenges they face, and then coming back into the laboratory to work on possible solutions.

Just last month I was promoted to the position of innovation technical specialist. This now allows me to directly enhance BASF chemistry to solve the problems the industry faces and bring more value to the customer. I have learned a great deal during my time with BASF, but it is the analytical and problem-solving skills attained during my undergraduate degree that have helped me to grow and develop in industry.

**Colin Jones-Weinert – BS BMB, MCB, 2012**

For the past 4 years, I have been working on the team that manufactures and sells the world’s only temporary total artificial heart (TAH-t). SynCardia Systems Inc., locally operated in Tucson, has made over 1,400 TAH-ts as of September 2014. The TAH-t is for people with extreme heart failure, and replaces all 4 chambers of the human heart. I started out as a manufacturing technician after finishing my BS in Biochemistry and Molecular Biophysics, and Molecular and Cellular Biology, with a minor in Mathematics. Currently, I am the Controlled Environment Suite (CES) Manager, and I oversee the manufacturing process of the implantable portion of the artificial heart. An external driver, also designed and manufactured by SynCardia, pumps air in and out of the heart, keeping the pulsatile device pumping blood non-stop. We are required to adhere to strict strict FDA and BSI guidelines due to our presence in both North America and in Europe. Learning how to handle regulatory agencies has given me an appreciation for rules and regulations in the medical industry. What may seem like a silly rule or law can actually prevent many deaths throughout the industry.

I am pursuing my MBA at the Eller College of Management through their evening program, and plan on graduating in December of 2016. Working full-time and going to school in the evening has been difficult, however the ability to learn new material on Monday and apply it at work on Tuesday has been extremely beneficial for my understanding of business and science. The biomedical device field is very exciting, and I look forward to all the new and promising developments in the coming years.
Nancy Leo – BS BMB, MCB, 2013; MS MCB, 2014
Sidewalks lined by towering palms, students bustling on bikes, fried chicken served hot at noon and science labs filled with humming instruments—these are the memories of the first moments that I walked the grounds of The University of Arizona. Enthusiastic explorations of lecture halls and laboratories filled the schedule, and I wanted to grasp all that I could in the limited time given! Little did I know, these laboratories and lecture halls would become my home over the next five years, a brilliant place that would fuel my love of the sciences, the arts, and the world!

The University of Arizona is a wondrous place, formed by the fruits of various nations and cultures. During my time at the UA, the campus served as my canvas, providing me the opportunity to establish new and thriving relationships, both personal and professional. Learning from, and working closely with exceptionally distinguished professors in my home Department of Chemistry and Biochemistry, granted me the opportunity to understand the power of knowledge. Upon graduation, I strived to share my knowledge by working as a community college student tutor. By offering my time and services to other students, I learned to become accustomed to the needs of the individual and I thrived by encouraging students to develop and condition technical skills.

My time as a community college tutor ended abruptly due to a chronic health condition that prevented me from continuing my work. During this time, my daily, weekly and monthly encounters with endless physicians and specialists encouraged me to find hope in the face of turmoil. I persevered, despite my pain, by focusing on my relationship with God. I turned to The Grove church in Chandler, Arizona, and became an active participant in their worship and meals ministry. I still actively serve for the community in this capacity, ensuring that my passion to inspire, love and bless others is fulfilled.

During my emotional and physical healing, I was filled with a new aspiration to provide medical care and treatment to the underserved of Phoenix. I currently volunteer as an interpreter, medication room assistant and nurse assistant at the Christian Neighborhood Clinic in Phoenix, Arizona. Everyday that I serve others, I am filled with an inexplicable joy. I help care and nurture the patients back to health by considering their physical, emotional and spiritual restoration. I plan to continue volunteering, as I prepare for next year’s application cycle to one of the best physician assistant programs in the United States.

One of the greatest blessings since my graduation has been my engagement to the love of my life Guillermo! Our wedding is set for November 2017, and we eagerly look forward to the eternal union of our lives, families and cultures.

The culmination of my time at the UA was simply the initiation of an unfathomable new season. The skills I acquired here have molded me into a woman that views obstacles and a constantly changing environment with a prospective of hope. I have obtained a special freedom of the soul, a freedom that constantly pushes me to aspire, grow, love and become an inspiration to others. As I continue on, I walk a path paved by faith, not knowing physically where I will end up, but knowing with certainty, that my life is for the service of others and for the glory of God!

Lindsey Leve – BA Chemistry, 2012
I am currently engaged and live in northern New York. I am lucky enough to live on Wintergreen Island in the heart of the Thousand Islands region with my fiancé and our two dogs, Duchess & Shelby. I previously worked at a local non-profit, Save The River, as the Outreach Coordinator and Catch & Release Program Manager. I spend my free time on the St. Lawrence River boating, swimming and enjoying every second on the water.

I currently own my own marketing business, LL Marketing & Design, a far cry from my chemistry days at UA. I am very thankful for the various skills I learned while studying at the University of Arizona that have helped me make my crazy career path possible and allow to me follow my real dreams.

Angela Yazzie Marquez – BS BMB, 2012; TTE, 2016
As I studied Biochemistry at the UA, I discovered the joy of research. All the years of my time at UA I worked in various research labs, helping Dr. Nancy Horton characterize DNA binding protein, working with Dr. John Szivek’s orthopedic stem cell research lab, and helping Dr. Jon Njardarson with Chemistry by Design. Even during the summer I traveled for a bio-statistical research internship and after I graduated with my degree, I continued research with Dr. Cori Carter in holistic laser therapy. I love the idea of learning something we didn’t know before and contributing to our understanding of the world around us.
In addition to falling in love with research, I also happened upon the man I would marry, in my last semester at the university as an undergraduate. Ivan shares in my love for learning and works as an electrical engineer for Raytheon. With his love and encouragement, I was able to continue my education and obtained my Masters of Education in Secondary Education with an emphasis in Mathematics. My thoughts are to eventually develop a high school math class to engage in their education to the extent of perhaps publishing their own research. My time at UA really solidified my desire to help others understand how fascinating math and science can be, especially when they are the ones that are making the discoveries, either in class or at the lab bench.

**Syna Daudfar – BS Biochemistry, 2013**

After graduating from the University of Arizona in 2013, I proceeded to become a scribe at Northwest Medical Center and Oro Valley Hospital in the emergency department. I worked with one doctor who I got to know extremely well and now consider a part of my family. I then moved up to Phoenix to continue my scribe experience. I have now been accepted to medical school at Western University of Health Sciences College of Osteopathic Medicine of the Pacific--Northwest (I know, it’s a mouthful). I plan on graduating medical school in 2020 and hopefully come back to Phoenix or Tucson to complete my residency!

For fun, I took my time away from a formal education to travel, establish a strong network of support, and develop personal characteristics like empathy, humanism, and my perseverant attitude. One of the most memorable experiences I had during my time away from a formal education was doing an 18-mile hike through Zion National Park in Utah. Otherwise, my hobbies are racquetball, outdoor adventures, and playing my violin and piano for stress relief. Some of my goals for this year is to learn a new piece to play every semester. My extreme outdoor bucket list item is to one day do the rim-to-rim-to-rim challenge in the Grand Canyon!

I also made the best use of my vacation time by traveling with friends to Malaysia, Thailand, Hong Kong, Taiwan, and Japan, and I took a Korean language course at Seoul National University before heading back to the states in 2015.

Upon my return I found a job at a summer program that provided English classes and excursions around the Boston area to high schoolers coming from Italy. As a perk, I got to go on a free trip to New York and Niagara Falls with the students. It was great being able to see the students’ excitement as they traveled, and knowing that I helped make that experience happen was very rewarding.

I then found a job teaching English to adults at a local community center during the school year. My students hail from a variety of different countries and have very different academic backgrounds. Every day I plan unique lessons that give my students the English they need for their daily life, and I try to keep it engaging. The students also sometimes make me some wonderful food.

I’ve been very lucky to have all these great experiences. I’ve learned so much from my students as well, and I’ve gained a deep appreciation for International Education. I truly think that language learning and travel can be life-changing experiences, and I want to provide those opportunities to everyone.

**Robert Kupp – BS Chemistry and Biochemistry, 2013**

Hello CBC! After completion of my undergraduate degree in 2013, I joined a biomedical research lab exploring the biology of adult CNS-restricted neoplasms. My work thus far has focused on transcriptional regulation of glial development and co-option of these mechanisms during brain tumor formation. I write this blurb on the eve of finding out...
my first first-author publication was just accepted at a Cell Press journal. There are no words to describe the feelings of excitement and joy I am currently experiencing. I am eternally grateful for my time at the UA and for my research experiences in Dr. Victor Hruby’s laboratory (most especially my mentor Dr. Yeon Sun Lee), which provided me with the foundation to inquire and answer meaningful scientific questions.

In the fall I will matriculate into a doctoral program at the University of Cambridge in the United Kingdom. In my spare time I listen to 19th century Italian opera and enjoy reading the neuro-development literature.

Katie Holso Stewart – PhD Biochemistry, 2013; BMBBS and MCBBS, 2006

My graduate experience at the University of Arizona was great preparation for my career in academic research, and allowed me to transition seamlessly (or as much so as possible) into a postdoctoral research position at the University of Leeds in the laboratory of Professor Sheena Radford. The wide range of biophysics techniques that I utilized in the Cordes Laboratory were adaptable to studying complicated amyloid systems from a structural perspective—something that has been my research goal for many years. I am finishing up a three-year project on the interaction of amyloid fibrils with carbohydrates, and will be soon be starting work on a search for small molecule inhibitors of amyloid formation in collaboration with others in my research group. I will be giving my first international research talk at the ‘Unfolded proteins: from basic to bedside’ conference at the Karolinska Institute (in Sweden) in September 2016, and look forward to continuing work in the amyloid field over the coming years.

While I do very much miss the weather and the people of Tucson, I am thankful for the opportunity to live and work abroad, and have had a great—though challenging—postdoctoral experience so far; I have Dr. Matthew Cordes and the rest of the faculty and staff of Arizona to thank for this. My time in graduate school and all the people I met and worked with will always be close to my heart, no matter where in the world I end up.

Keely Brown – BS Biochemistry, 2014

I am currently entering my third year as a PhD student in the laboratory of John Kelly in the Ecology and Evolutionary Biology department at the University of Kansas, having just successfully completed my comprehensive oral exams and advanced to doctoral candidacy. While attending the Evolution conference in Austin, Texas in June, I presented some collaborative research in the determination of self-incompatibility in Tolpis, a genus of angiosperms endemic to the Canary Islands. Shortly after, I had the unique opportunity to attend a summer course in plant technology at Cold Spring Harbor Laboratory, where I reveled in interacting with current and future leaders in the field of plant biosciences.

I also recently married Nikola Kenjic, who received his Master’s in Biochemistry from UA in 2014. After meeting in Dr. James Hazzard’s lab course, and studying together in Biophysical Chemistry, we moved together to Kansas to both begin PhDs. Nikola currently works for Audrey Lamb, trying to solve crystal structures for proteins involved in Pseudomonas aeruginosa infection. We’re not sure yet what the future might look like, but we are both open to exploring careers both in academia and industry.

I am continually grateful for UA and CBC for providing me the resources to make sure that a laboratory was really the place for me, and that graduate school was the right next step.

Lauren McClure – BS Chemistry, 2014

I am a P3 Pharmacy Student at the University of Texas at Austin and recently moved to San Antonio, TX as part of the cohort finishing my PharmD at the University of Texas Health Science Center. With my free time I enjoy road trips, intramural sports, and training dogs at the local animal shelter.

Zachary Miles – PhD Biochemistry, 2014

After completing my PhD in the winter of 2014, I moved to La Jolla, CA and started a position as a Postdoctoral Research Associate in the laboratory of Prof. Bradley Moore at the University of California- San Diego. Our laboratory is also associated with the Scripps Institution of Oceanography, therefore, all of our projects are ocean related. Specifically, I am studying the biosynthesis of chlorinated antibiotics produced.
in marine bacteria. As an added bonus, I have a view of the ocean from my desk! My wife and I recently purchased a house and intend to make San Diego our home for the foreseeable future.

I am very thankful for the education I received at the University of Arizona, as it has prepared me for research in all aspects of modern biochemistry. I am also grateful for all the wonderful faculty and staff that supported me throughout my graduate career, especially my dissertation advisor Prof. Vahe Bandarian for allowing me the creativity, independence, and support necessary to become a well-rounded scientist.

**Nieves Montaño – MS BIOCHEMISTRY, 2014**

I currently work for a non-profit organization, more specifically vocational rehabilitation. My job is to provide vocational and educational services for people who are in a transitioning moment in their lives—either after a time served in prison, mental or physical disabilities, substance abuse or domestic violence. Working for this type of population has been very humbling and has helped me to see the needs of underserved sectors of our community, and I’m glad that I’m able to provide my services to those who need them.

On the other hand, I’m also running a photography business, which started mainly because many of my friends needed profile pictures for their professional accounts, such as websites and LinkedIn accounts. It has given me a great opportunity to meet people and help others grow their small businesses.

**Iris Mora – BS BIOCHEMISTRY, MCB, 2014**

Throughout my undergraduate career, it was evident that I truly enjoyed being a student and I knew that I wanted continue being in school. My last two years I was involved heavily with research trying to gain as much experience as I could before I graduated and before I knew it, it was senior year and I still didn’t know what I wanted to do after I graduated. All I knew was that I wanted to continue to learn. At the time, the best idea was to take some off and decide what path I wanted to take.

After a couple months after graduating I noticed that I became really good at only being a student. I didn’t know how to be an adult. I needed to get a job and gain real life experience. I remember telling myself, “How am I supposed to ever be a doctor and tell people how to take care of themselves, if I can’t even take care of myself”. From that day, I knew that I had to do something different.

I had the opportunity to work for an analytical company, where I got the chance to learn a different field of chemistry. What intrigued me about this position was that it was completely different from what I studied, but I figured I would learn something unique and it would teach me how to adapt and gain personal character that can assist me in the future.

I have also been able to focus on my health and I exercise regularly, before I came to college I played competitive volleyball for almost 10 years and with studying and classes I wasn’t able to play a sport or exercise as much as I wanted. Now I have been able to set a schedule to do that again, and learn that it’s important to put your health first no matter what.

I have been able to experience many outdoor activities such as camping at the backside of Mt. Lemmon, or mountain biking, and hiking with my two year old boxer. Within the last 6 months, I got the chance to visit the Grand Canyon, Sedona and Bisbee and I am so glad that I decided to stay in Arizona; this state is truly a beauty.

It’s been two years since I have graduated, and even though every day I learn something new about myself I am excited for my next step toward my career.

**Rahul Purohit – PHD CHEMISTRY, 2014**

It's very exciting to share the space in the magazine that I have been following for last several years. Time flies by so quickly and I didn't realize that I am myself now an alumni of UA Chemistry & Biochemistry. When I joined the department in the fall 2008, I had no clue which direction I was going. I came from chemistry background but wanted to do biochemistry. It was Dr. Indra-neel Ghosh who suggested me to join the biological chemistry program during the graduate committee meeting and I am very thankful to him to steer me in the right direction. I joined Prof. Bill Montfort’s lab to work on soluble guanylate cyclase.
The lab provided me an exceptional learning environment and I can say I learned all the tools of the trade of the protein biochemistry.

Since graduating in August 2014 from Prof. Montfort’s lab I have been pursuing postdoctoral research in Prof. Amy Rosenzweig’s lab at the Northwestern University. In Amy’s lab I am working on metal transporters and trying to understand how these proteins work at the atomic level. I recently, received a postdoctoral training grant from the Chicago biomedical consortium to learn cryo-electron microscopy. Although working with the membrane proteins has been challenging, the collaborative research environment at the Northwestern University makes things easier and move faster. Things did move faster, and I just became father of a baby boy, Kabir.

Peter Verhey – BS Biochemistry, 2014
Currently, I am the Regulatory and Quality assurance Specialist at Sterisil, Inc. in Palmer Lake, Colorado. I manage and maintain our ISO 13485:2003, MDD 93/42/EEC, EPA, and FDA 510(k) certifications and registrations. I have been holding this position for the past two years. My duties are as the sole regulatory employee for the company, and I have been using my degree to gain a deeper understanding behind the manufacturing and technology behind our product line.

Outside of work, I have recently relocated to the Denver area, where I will play almost any recreational sport there is. As well as touring Denver and Colorado’s breweries responsibly. Recently I also officiated one of my best friend’s wedding.

Cheryl Cheah – BS Biochemistry, 2015
As the first in my family to attend college, I was anxious when I set foot on the campus of The University of Arizona. Fortunately, faculty and advisors of the CBC Department immediately made me feel welcomed. From their generous advices to the food-filled social events hosted, I met and quickly bonded with people who eventually became my support system throughout my time at the UA. The opportunities that I have received at the UA were astounding. From my first research opportunity in Dr. Katrina Miranda’s bioinorganic chemistry research lab, being a member of the UA synchronized swimming team, volunteering at a pop-up clinic in a rural town of Ghana with Global Medical Brigades, hosting the BECUR conference and the BlastOff! Summer Camp, to presenting my allergy asthma research at a national conference in Boston, all of these experiences have prepared me well for life after graduation.

After graduating from the UA, I worked as a research technician at the Arizona Respiratory Center in an allergy asthma lab. As an aspiring physician, I was hungry for more clinical experience and I got a medical scribe position at an orthopedic surgery clinic in town. This Fall, I will be trading in my tank top and shorts for a parka and a beanie, as I will be attending Oakland University William Beaumont School of Medicine in chilly Michigan. Being a physician is something that I have dreamt of since I was a little girl and I am excited to start this new chapter of my life.

Guadalupe Davila – BS Biochemistry, 2015
I am overwhelmed with excitement as I begin my journey at the University of Arizona College of Medicine-Tucson, Class of 2020. Exactly one weekend after undergraduate graduation in May 2015, I was fortunate enough to continue my education in the Pre-Medical Admissions Pathway (P-MAP) program at the University of Arizona. This one-year program has helped me prepare and refine my skills to become a successful medical student as well as a humbled future physician. During my training, I have been able to complete an accelerated masters degree in Cellular and Molecular Medicine. I have had the opportunity to develop my leadership skills by sharing my knowledge to a community with similar adversities as I have experienced. Coming from an underrepresented community, I understand the struggles student may face when pursuing higher education. I was fortunate, to continue on my non-traditional path to accomplishing my life-long dream of becoming a physician. I am proud to serve as a role model, to represent that although we might not walk along a straight and smooth path, if you keep striving forward, we can all accomplish our goals. With the support of my mentors, family, and friends, I look forward to the new friends, experiences, and challenges to come. Wildcat for life!

Eileen Leaser – BS Biochemistry, BA Italian, 2015
My time spent at the University of Arizona was life changing. When I came to college I was a pre-med who thought I
knew what biochemistry was, but quickly learned that there was a lot more to it than I had initially expected. This major constantly challenged me and pushed me to my limits, but in the best way possible. It taught me that I am fascinated by the brain and by metabolism. Working in the Beilstein Lab showed me how to do research and write scientifically, and the frustrating and elating feelings that go along with difficult research projects. It also helped me to learn that while I love research, I cannot dedicate my entire life to it. Rather, I need to be in a profession where I can both work with people and participate in research projects. Studying abroad in Italy, and backpacking through six other countries afterwards, helped me to discover new cultures, let me put my Italian major into practice, and sparked a desire to travel the world.

Outside of Biochemistry, I was very involved. The endless opportunities at the University of Arizona and in Tucson also helped me to discover where I was going in life. Through Relay for Life I found Arizona Camp Sunrise and Sidekicks, a camp for kids who have or have had cancer and their siblings. By participating in the pre-health fraternity AED, I learned about MDA camp, which I have attended for the past six years. There, I take care of a child with muscular dystrophy for a week while helping them participate in camp activities. Going to Honduras with Global Medical Brigades helped me to discover that I love the healthcare professions and traveling and experiencing new cultures, but also that I did not actually want to be a doctor. Volunteering in hospitals and clinics solidified the notion that I want to work with children. Volunteering at Therapeutic Riding of Tucson (TROT) helped me to discover my future profession, Occupational Therapy, while helping kids with special needs in both therapeutic riding lessons, and physical and occupational therapy sessions.

After my time at the University of Arizona, I took a year off and worked as a direct care worker providing habilitation, attendant care, and respite services. I saved up to go on one last adventure before graduate school. I spent my summer driving through Oregon and Washington to Canada to see the US Women’s National Team play soccer in the FIFA World Cup. I then traveled to Switzerland, Greece, and Italy where I went paragliding, bungee jumping, and canyoning in the Swiss Alps, hiked Santorini to watch a beautiful sunset, and watched a famous horse race, Il Palio di Siena, in Italy. The rest of my summer before graduate school was spent being a camp counselor at five different camps.

Today I am in Graduate School for Occupational Therapy at A.T. Still University in Mesa, AZ. I am currently in classes, but will go on rotations soon. I am also starting my research project looking at the relationships between sensory processing behaviors, visual-motor skills, and handwriting in school-age children with Autism Spectrum Disorder. I would not be here today if it were not for my experiences as a biochemistry major and volunteer in my time at the University of Arizona.

Megan Neeb – BS Biochemistry, MCB, 2015

It seems like it’s been ages since I graduated from the UA in May 2015. A lot can happen in a year! In June 2015 I married Taylor Turnidge, and started in ASU’s MCB PhD program a month later. I work in the lab of Dr. David Azorsa in downtown Phoenix, continuing research on G-quadruplexes that I was introduced to in my time as an undergraduate researcher in Dr. Laurence Hurley’s lab. All of those research hours I was required to take at the UA considerably shortened the amount of time I had to spend on training at the beginning, which was nice.

The highlight of my experience so far has been presenting a poster at the AACR annual meeting in New Orleans this year. It was incredible learning from so many experts in the field, and getting the chance to talk about G-quads to people from around the globe who had heard of and were interested in that type of research.

Being at ASU and working in Phoenix has given me unique opportunities to share science with younger generations as well. I’ve gotten the chance to volunteer at the Arizona Science Center, write articles about nanotechnology and cancer biology for kids on the site askabiologist.asu.edu, and answer emails kids send about genetics and cancer.

It’s been a busy year, but I do have a bit of free time. I spend most of it on DIY projects and painting for the apartment or for family. I suppose I could open an Etsy shop eventually. Unfortunately the trails here in Phoenix don’t really compare to what Tucson has to offer. I do miss hiking around the Catalinas with Taylor on the weekends, and the view from Safford (Sombrero?) Peak is unforgettable. Still, it’s great to
Monica Nuvayestewa Reid – BA BIOCHEMISTRY, 2015

Since graduating in May of 2015 I recently became a Program Coordinator at the University of Arizona for the office of scholarships and financial aid. As a Program Coordinator I mostly assist students and parents with any financial aid issues that they might have. I am glad to be working for the University of Arizona and I’m happy with this new direction that my career is going. My position does not directly deal with my degree however I am excited to be working with students from all backgrounds. I enjoyed my time at the UA as an undergrad and I’m really grateful for all the people in CBC for all the support that they provided me over the years.

In the future my plans are to continue working for the university, possibly returning to school to pursue a second bachelor’s degree and starting a family. My husband and I have been married for four and a half years now and soon he will begin taking classes at the UA in pursuit of an engineering degree. I am thankful for all the opportunities the university has provided so that we can reach our goals and hopefully in the future I will end up in the CBC department.

Lingzi Sang – PHD CHEMISTRY, 2015

I received my PhD in June 2015 and started my new journey as a joint postdoctoral associate with Prof. Ralph Nuzzo and Prof. Andrew Gewirth in UIUC two weeks after graduation. I was busy, exhausted and absolutely excited! I am now investigating new materials as solid state electrolyte and the critical interfaces for all solid state lithium ion batteries. I am very excited to still stay at the energy frontier and I truly enjoy the research life in Champaign-Urbana. The graduate training I received on surface chemistry, solid materials, electrochemistry and spectroscopy etc. from the Pemberton lab are proved very beneficial in many aspects to my career development.

Nicole Schwalbe – BS BIOCHEMISTRY, 2015

I graduated from the UA this past spring with a Bachelor of Science in Biochemistry and a minor in Public Health. I am starting graduate school this fall and pursuing a Master of Public Health degree at the University of Washington. I’m excited to start a new chapter of my life in Seattle and pursue two of my great passions: statistical analysis and health policy.

My time at the University and in the CBC department undoubtedly laid the foundation for and inspired my interest in this career path. Through involvement in organizations such as CBC ambassadors and college of science ambassadors, my passion for people and a desire to effect positive change in their lives blossomed. My courses in the CBC department prepared me for the outside-of-the-box thinking and logical problem solving necessary to flourish in the field of public health.

However, the thing I remember most fondly looking back on my time at the UA are the people of the CBC department. I am humbled by the amount of support and opportunity that this department gives its students. The advisors and professors are some of the most wonderful people I have ever met and truly show unparalleled compassion for the students.

Katrina Farrell Sexauer – BS BIOCHEMISTRY, 2015

The post-UA adventure began for me a bit earlier than most. I started by completing my last year of undergrad at Montana State University as part of an exchange program. This turned out to be an excellent move during which I fell in love twice. First, with my now-husband, and second with what it means to be outside. One of my biggest successes thus far has been making time to be a part of Mt. Crescent ski patrol which allows me to combine my affinity for medicine and for the slopes. This was in large part made possible by my degree in biochemistry from the UA. I started medical school afraid of the rigor that
is so greatly advertised, and began to see that my previous education has laid a beautiful foundation for smooth sailing. I had much more time than most of my classmates during that first semester because I came in well-equipped. Plus, what better motivation than reminding yourself to "Bear Down"?

Keeper Sharkey – PhD Chemistry, 2015

In the summer of 2015, after graduating with a PhD in Chemistry through the Chemical Physics Program, I attended Telluride Summer School on Theoretical Chemistry in Telluride, Colorado; I recommend this experience for any physical chemistry graduate student or postdoc. In the fall of 2015, I returned to my hometown Saint George, Utah for a short break to spend time with family and worked as a general chemistry Adjunct Lecturer at Dixie State University while teaching chemistry at Desert Hills High School. I also taught a concurrent enrollment class in which high school students could receive college credit for chemistry. Additionally, I was invited to work closely with Utah Science, Technology, and Research (USTAR), a department within the Governor’s Office of Economic Development, to accelerate funding in Southern Utah’s university and high school system.

I considered several postdoctoral positions at NIST, LANL, Sandia, etc., and recently accepted a postdoctoral faculty position at Washington State University in the Physics and Astronomy Department working with Associate Professor Jeffrey McMahon developing first-principles simulation methods to study dense hydrogen in the high-pressure and low-temperature region of the phase diagram. Hydrogen is predicted to exhibit ordered quantum states, such as possibilities of a low- or zero-temperature quantum liquid and high-temperature superconductivity. I am very excited to continue my research in this area while applying the skills I gained in CBC on theoretical chemistry and computational methods.

Christy Warner – BS Biochemistry, 2015

I earned my BS in Biochemistry in August 2015 and shortly after was offered a position working at Ventana Medical Systems in Oro Valley, AZ as a Quality Control Associate. The skills I learned not only in the classes I took, but also in the research conducted as part of the degree, I can say with absolute certainty helped make me stand out as a candidate for this position. As I return from the 53rd Biannual Alpha Chi Sigma Conclave representing Beta Tau Chapter here at University of Arizona, it brings to the forefront of my mind the connections made during my time spent at UA. My involvement with the CBC Department, Chemistry Club (SMACS), and Alpha Chi Sigma have enriched every aspect of my life.

Karey Armenta – BS SCED, Chemistry, 2016

I recently graduated from the UA with majors in chemistry and secondary education. I started out my first summer as a college graduate by exploring Arizona. I’ve lived here my entire life and have yet to visit all the beautiful sites we have to offer. I first traveled through Flagstaff where I hiked the tallest mountain in Arizona, Mount Humphreys & believe me, it was tough! And then I moved on Sedona where I camped for the very first time!

Now, with the start of the new school year fast approaching, I am heading back into the classroom, high school that is, to pursue my degree as chemistry teacher in Peoria, Arizona. I look forward to inspiring the same joy for learning in my students, as the UA’s CBC department did for me! I am so grateful to have had such great CBC mentors during my college career, as ultimately them, my instructors and advisors, who lead me onto the path I walk today and I couldn’t be more thankful for that.

William Bahureksa – BS Chemistry, 2016

The coursework in this program laid a foundation through which I could learn to think critically in chemistry. I made use of several resources offered by the department, such as the tutor rooms and workshops, though my studying primarily took place with other students of the major. I also joined the UA Chemistry Club that offered support and would perform outreach and fundraising for the community. The advisors were always available and very knowledgeable,
ALUMNI NEWS, CONT.

offering in-depth counseling on student’s specific needs and keeping students up to date on important deadlines. Outside of the required curriculum, I was able to join a research group. This gave me the opportunity to work in a realistic environment that would engage in the chemical community and gave me experience in conducting and presenting research.

In the fall, I will be attending graduate school for my PhD in analytical chemistry at Colorado State University. My experience in this program has been amazing and I hope for the best for incoming students.

Trace Bartels – BS Chemistry, 2016
Aloha Wildcats! I just got back from a truly epic trip to Hawaii where I was able to snorkel through stunning reefs and go shark cage diving (a bucket list item for me!). As an avid beach goer, I also explored all (well, almost all) the beaches Hawaii had to offer. Did I mention that Hawaii also has great food? I cannot wait to go back sometime!

But my summer was not all just fun and vacations—I put in some work in the lab too. I have been conducting research at the Arizona Cancer Center under the supervision of Eric Weterings, PhD. In this role, I investigated how to inhibit DNA repair mechanisms using novel drug compounds with the hopes of improving conventional cancer treatments. My lab has found and developed some promising small molecule inhibitors. One such molecule has earned me a publication in the Elsevier Journal of DNA Repair and a poster for the 2016 Annual ACCR Meeting in New Orleans. I have been with my lab since I was a freshman, and my four years of dedication has definitely paid off in terms of personal development and scientific exploration. I highly recommend research at any level, as it is an immensely rewarding endeavor.

Besides finishing up my research project and taking some much needed time off this summer, I have also been getting ready to embark on my next journey in life. In the fall, I will be attending pharmacy school here at the University of Arizona. Go Wildcats! In addition, I will be starting a new pharmacy internship in the fall at the UA Medication Management Center (MMC). With all of these events happening in the fall, I am very enthusiastic to see what the future holds in store for me.

I know I have been well prepared by my undergraduate degree and the CBC department. My chemistry and biochemistry undergraduate courses have greatly helped me with taking the required entrance examinations for pharmacy school. The strong scientific understanding that I now have thanks to my undergraduate career will benefit me immensely as I take new pharmacy courses in toxicology, pharmacodynamics, and pharmacokinetics.

The CBC department not only gave me a solid education, but also the professional skills necessary to apply this education. During my undergraduate career, I was a CBC ambassador and a CBC peer mentor. As an ambassador, I would professionally represent the CBC department by assisting with CBC departmental tours and functions. As a peer mentor, I would offer advice and guidance for lower division chemistry students. Being in both of these programs have taught me how to manage my time effectively while also helping me develop my organizational skills. All of these skills will prove to be invaluable in my future. Thanks CBC department, for everything!

Katie Burrell – BA Biochemistry, BS MCB
I am currently in Salt Lake City starting my first year at the University of Utah Biological Sciences PhD program with plans on majoring in pharmacology. I am forever grateful for the experience and opportunities that the Biochemistry program at the University of Arizona has allotted me during my four short years there, and I can say with confidence that I owe my motivation for my career path to the amazing faculty and students that I met there along the way.

Because of the emphasis on research integrated into the Biochemistry major, I was first introduced to the world of research during my freshman year when I volunteered for a chemical and environmental engineering lab studying the effects of water pollutants on certain cancer cell lines. Although I performed a simple dose experiment and learned very basic cell culturing techniques, I can say that the experience solidified my fascination with the effects of an outside chemical agent on biological systems. My interests in research narrowed to pharmacology more specifically when I joined the lab of Dr. Serrine Lau. Dr. Lau’s lab introduced me to planning, hypothesizing and designing experiments to take an entire project to promising directions. I had the opportunity to expand my experience when Dr. Lau transferred from the University of Arizona, and I then joined the lab of Dr. Todd Vanderah. In Dr. Vanderah’s lab, I realized that my interests and abilities are more in line with neuropharmacology and drug delivery rather than the
more toxicology-related in Dr. Lau’s lab. This series of research focus have been the largest determining factor to my current interests at the University of Utah, where I am planning on working with Dr. Karen Wilcox for my first rotation dealing with anticonvulsant drug neuropharmacology.

I have appreciated working under the guidance of the esteemed faculty and with the comradery of the supportive students at the University of Arizona. I know that the rigorous lectures and lab classes from the program have more than prepared me for my PhD studies. The research that I have conducted as an undergraduate has taught me that experimental design combines a deep knowledge of existing findings with artful creativity. I’ve found that studies, in pharmacology especially, require integration of various disciplines, making it a very multifaceted field. These challenges that I initially discovered at the University of Arizona are what have most galvanized my pursuits in pharmacology and what motivates me to continue these pursuits at the doctoral level.

Barbara Chukwu – BA Biochemistry, 2016
I am glad to have been under the Dept of Chemistry and Biochemistry. The route to earning my Biochemistry degree was not entirely easy, but with the help of my advisors, the journey was not so rough. My advisors cared not only about my academics, but also about my well being. Overall, Biochemistry was fun, not only because it is, but also due to my professors and faculty! Thus, I will be attending St. George’s University of Medicine in August 2016, where I will be achieving my goal of becoming a doctor.

Courtney Collingwood – BS Biochemistry, BA Chem, 2016
I will be working at EPIC systems based in Madison, WI this coming fall as a project manager. I am very excited to return to my home state, but also glad to have the summer off to travel and hang out in the Tucson heat. This extended summer vacation has taken me to Thailand, Japan, Malaysia, and Australia. I am also planning on visiting several different states and making a trip to Mexico before my work start date.

Lisa Daconta – BS Biochemistry, MCB, 2016
I can personally testify that the CBC staff has been amongst the greatest to work with and to work for. As a senior transfer student, I felt that Martin Marquez and Olivia Mendoza always had my back, even before day one! They went the extra mile to extradite my transfer paperwork and ensure that I had all of my bases covered while I integrated into the multifaceted senior CBC curriculum. As a chemistry supplementary instructor and lab TA, I felt thoroughly connected and incorporated into the CBC department. Over the short one-year period in which I finished my Bachelors of Biochemistry & Molecular and Cellular Biology degree, I had the privilege of getting to know, and growing quite fond of, many of the remarkable staff members in the CBC department; including, but not limited to: Tori Hidalgo, Anne Padias, Peggy Humbert, Mark Yanagihashi, Victor Hruby, James Hazard, and John Pollard; whom I wish to thank from the bottom of my heart for their support and guidance. Overall, the CBC department is my personal favorite!

Before I divulge my future route, it is essential to know that I became aware of my undying urge to teach others the wonders of something I had recently learned at the young age of five. Ever since that awakening, my desire to teach others blossomed fervently. Now, many years later, I realize that teaching is so much more than explaining a learned concept; it is empowering another individual with knowledge, providing them with a mentor, and pursuing the unanswerable or unimaginable. For as long as I can remember, I have eagerly anticipated the day where I could inspire students to love, or at least respect, the sciences as much as I do. I consider it my utmost reward to positively impact their personal lives just as the teachers before me have been instrumental in mine---and now that I have completed my Bachelor’s, I am pursuing this burning passion by completing the one-year Masters of Education degree at
John De Lorenzo – BS Chemistry, 2016

After completing my double-degree, with a BS in Chemistry and a BA in Italian Language & Literature, from the University of Arizona, my summer 2016 was a sprint right out of the gates. Concurrent with attendance at UA, I’ve owned my own real estate investment company in Tucson, as well as served as the managing partner for my family’s real estate and property management companies in Arizona. After graduation, several of my business partners from the real industry and I put our full efforts toward this year’s round of applications to the Arizona Department of Health Services Medical Marijuana Dispensary allocation. Our interests in this venture are for the service to local Tucson’s qualifying patients and caregivers who are in need of valued medicines and quality products, with a focus on variety of modes of administering their treatment. Traditional inhalation vehicles come with their own health risks, and so we seek to bring focus to better alternatives - edibles, topical applications, and other concentrates. This is where my chemistry background comes into play.

The experience I’ve gained as a university student, along with the connections to faculty, staff, advisors, mentors, other students - not to mention the lifelong friendships I’ve cultivated with many of them - have all been invaluable to me as an individual. I’m not speaking of the business interests, although those will hopefully bear fruit. I mean to say that the sense of personal fulfillment of earning my degrees has had a great impact on my confidence, my understanding of the world and the people in it, and my abilities to creatively and analytically approach and solve problems in my day to day life. The critical thinking skills and analysis tools that I’ve picked up along my journey to becoming a chemist and a linguist have expanded my views, patience, diligence, and expectations of others and of myself.

For my real estate projects, I’ve done some serious yard work to save money, learned how to fish wire and cables in attics and basements, and other tasks that gave me empirical evidence of what hard work was. However, from my time at UA, I wrote 15 page essays, 30 page laboratory reports, and a 45 page materials characterization project paper. My understanding and sense of “hard work” was ultimately and forever changed by the countless all-nighters, cups of coffee, and comrades-in-arms that I accrued during my six years’ transition from Pima Community College student to UA graduate. Times were tough, but there were figurative cups of water, bananas, and energy drinks given to me by my peers and mentors as I ran my mental marathon all the way up to the finish line. I’m thankful for all the additional opportunities that were opened up to me as a result of the care by my advisors, Olivia Mendoza, Megan Cunnington, and Martin Marquez in CBC and Anne-Marie Engels-Brooks in Italian, as well as many of my professors who were kind enough to give me great letters of recommendation. I will forever cherish my involvement in Undergraduate Research, Student Ambassadors, and as a mentor, myself. I’m also thankful for all the help I’ve received in accomplishing so much and making my family proud.

By now, you could probably tell that I’m a wordy guy. Let’s cut to the chase: I couldn’t be more proud, more thankful, more lucky, to have had the experiences and support from the wonderful staff in the College of Science’s Department of Chemistry and Biochemistry, as well as those in College of Humanities’ Department of French and Italian. You gave me wings.

Heather Emmons – BS Biochemistry, MCB, 2016

I am very grateful to have been a part of the Chemistry and Biochemistry Department here at the University of Arizona. I have had such a wonderful experience while forming friendships that will last a lifetime. CBC faculty from advisors to professors are extremely knowledgeable, friendly, and helpful. I was a transfer student and had just changed my major when I began my academic path at the UA; and from my very first day I had a clear academic plan laid out for me so I knew exactly what I needed to accomplish to earn my degree. As part of the biochemistry major program one year research experience is required along with completion of a senior thesis. The skills and knowledge I gained from this experience is priceless. Even though there can be some long hours and obstacles encountered I absolutely loved working on my project and found my true passion for research.
ALUMNI NEWS, CONT.

It is clear that the CBC department really cares about their students with all of the different activities and programs that are offered. I had the honor of being a mentor for incoming freshmen biochemistry students, which was such a rewarding and valuable experience. I also enjoyed all of the ice cream socials and pizza party hosted by the department as a nice way to mingle with other CBC students and take some time from studying to relax. It is very important to have a balance between schoolwork and fun; and the CBC department definitely embodies this idea making it a wonderful environment full of great people.

I will be continuing my education pursuing a master’s degree in human nutrition (with clinical specialization) at the University of Glasgow in Scotland. After completion of this program I plan to return to the U.S. for a PhD program in nutritional biochemistry, which is the field that I would really like to form a research career.

All my current dreams and aspirations have sprouted during my time as an undergraduate and it is with all of the support and encouragement from this department that I have the strength and courage to continue creating my own path. I will always remember this department and hold the experiences that I have had close to my heart.

Melissa Harnois – BS BIOCHEMISTRY, 2016

During the past four years at the University of Arizona, I have learned so much both in and out of the classroom, forged life-long friendships, and made some unforgettable memories while pursuing a Bachelor of Science in Biochemistry and a minor in Spanish. From day one, our Chemistry and Biochemistry department advisors stressed the importance of academics, community involvement, and research, but they also made sure we had many opportunities to get to know our CBC peers and faculty! Through all of the fun, often food-focused events, I was able to meet my professors and interact with other CBC students outside of the classroom, which quickly made me feel at home and helped me realize the value of creating a great network of people around you. My involvement with the Biochemistry Club originally stemmed from advice from my peer mentor, Shiana Ferng, who encouraged me to apply for an officer position at the end of my freshman year. From there, I held a different officer position each subsequent year and most recently served as President of the club.

From my involvement in the Biochemistry Club, I was able to truly learn what it takes to be a successful leader and I have also come away with an immense appreciation for the importance of scientific outreach and inspiring young students to pursue STEM fields. In addition to the club, I also had the opportunity to conduct research for the first time through the Undergraduate Biology Research Program. After one year of researching in an academic lab, I was offered a summer internship at Sanofi which extended through the duration of my Senior year. Aside from these activities, some of my most rewarding experiences within the CBC department were times when I could offer advice to younger students. Whether it was something as minor as help with homework, or as daunting as finding an open position in a research lab, one of my favorite aspects of the CBC community was the network of mentors and other inspiring people who were willing to help with anything in any way that they could. These are just a few of the many ways that the Chemistry and Biochemistry department impacted my experience as an undergraduate and I am so grateful to be a part of this wonderful community.

For quite some time now, my plan for after graduation has been to pursue a research position in industry and then return to graduate school once I have gained more experience and a better idea of which area of research I will want to pursue. After countless hours of job applications, resume editing, seemingly never-ending cover letters, and preparing for interviews, I finally accepted an offer with a biotechnology company in Seattle called Juno Therapeutics! At Juno, I will be doing cancer research with the Cell Culture Process Development Team. I am elated to begin this new chapter in the beautiful Pacific Northwest, but am already looking forward to visiting my sunny desert home again soon. Arriving to this point has taken a lot of hard work and patience, and I could not have done it without everything I learned and experienced as an undergraduate in the UA Chemistry and Biochemistry department.

Kylie Holliday – BS BIOCHEMISTRY, MCB, 2016

I recently obtained a Bachelors of Science degree from the University of Arizona in both biochemistry and molecular and cellular biology. My final semester at the University I had the opportunity to intern with the Arizona Department of Public Safety in their crime laboratory. Upon being accepted I had to undergo multiple background checks that enabled me to be eligible for the position. These included, but were not limited to, a polygraph test, drug screening, and fingerprinting. After completing this process I was introduced to the laboratory where I was given the opportunity to shadow each of the six forensic units that are within the Tucson workroom. The
units include DNA/serology, controlled substances, toxicology, blood and alcohol, latent prints, and firearms. The first month of shadowing allowed me to understand the life of a forensic scientist and I immediately fell in love with the lifestyle.

It wasn’t until a month into my internship that I was given my own personal project that was used to tie the latent print unit and the controlled substance unit together. This project was conducted to determine if trace substances and fingerprints could both be extracted from the same piece of evidence. By doing this, the officer that submitted the evidence would have more information that would allow him/her to convict the suspect.

Before beginning this process I underwent basic training on detecting specific substances, handling items, and operating certain laboratory equipment. I learned how to maneuver the cyanoacrylate cabinet that allowed fingerprints to be detected, as well as the GC Mass Spectrometer that generated a specific spectrum depending on which drug was present. I was also introduced to dye staining and drug color testing. Each of these processes allowed me to feel like a real life CSI agent and I loved every minute of it.

I am extremely grateful for the opportunity that the Arizona Department of Public Safety has given me. Each and every one of the scientists have helped me in every way possible and I will never forget everything they have done for me. Hopefully I will be able to work with a highly sophisticated staff in the near future, and call the criminal laboratory my home.

Ali Icenogle – BS Biochemistry, 2016
I recently graduated from the University of Arizona with a BS in Biochemistry and minors in Spanish and Gender & Women’s Studies. Much of my accomplishments in my time as an undergraduate I owe to the Department of Chemistry and Biochemistry. It is difficult to envision the path to graduation as a new freshman, but my apprehension and anxiety was assuaged with the help of the advisors, who made Old Chem 210 seem more like a home than an advising office. It is relatively easy to feel isolated at such a large university, but the Chemistry and Biochemistry advisors provide the resources to build a community among students. From ice cream socials to late evening study groups, I have made friends within my department that will last a lifetime. I have gained a bit of retrospective wisdom that I can impart on incoming students as well as those currently in the Chemistry or Biochemistry programs: grades are important, but – even as a recent graduate – the parts of undergrad that I primarily remember are the moments shared with my friends. One of the most helpful pieces of advice that I have received from my department is to get involved in research. Though obtaining a position requires persistence, the experience itself is valuable for further developing critical thinking skills.

My research in the Department of Pharmacology and Toxicology is what piqued my interests in pharmaceutics. In my lab, I was investigating the coenzymes involved in Glucocorticoid Receptor-mediated gene expression. Using pharmacological inhibitors, I could inactivate the enzymes in order to quantify the resulting change in gene expression. With respect to clinical relevance, we determined that Valproic Acid, used to treat epilepsy and bipolar disorder, significantly impaired the normal repression of Glucocorticoid Receptor-target genes. The observed results may explain why approximately fifty percent of patients experience weight gain and other associated metabolic disorders. In the fall of 2016, I will be attending the University of Washington, where I will gain a Doctorate of Pharmacy. Currently, I am looking into pursuing a concurrent PhD in Pharmaceutics, so that I may have the credentials necessary to work in pharmacogenomics research. My goal is to work on developing proteomics assays to sequence genes responsible for drug metabolism; this way we may better understand variations in drug metabolism at the individual level, and subsequently prescribe drugs with increased efficacy and lower toxicity. My background in Biochemistry has given me the background and confidence I need to pursue this field.

Jordan Levine – BS Chemistry, 2016
My experience at the University of Arizona was absolutely incredible and I could not have hoped for a better one. When I first came here I was a naïve pre-med student who was terrified of all of the chemistry classes required for that major. After 1 week of Dr. John Pollard’s gen-chem class I quickly fell in love with chemistry. I soon changed my major and could not have been happier. The professors and advisors were all extremely helpful throughout my undergrad years and I owe a lot of my success to them. Right now I am going to be an incoming PhD student in Chemistry at the University of Oregon. My interests include materials and polymer chemistry. Once I am finished with school, I plan to go into industry and find a job in the field that I love.
Sarah Pattengale – BS Biochemistry, 2016
I transferred from Asbury University in Kentucky to the University of Arizona over the summer of 2014. I was intimidated by the large size of the university and the amount of students. I remember attending a transfer welcome breakfast and the speaker stating there were over 40,000 undergraduates! My old college had about 1,200 students! At the time I was not confident about my decision to transfer but later I found that transferring to the UA was the best decision I ever made. Not only have I made amazing friendships and connections but I have also discovered my passion for teaching and research.

I was given the opportunity to be a chemistry tutor for CATS Academics in Fall 2014 and worked there until I graduated this past spring. It was a rewarding experience being able to work with students and help them succeed. The UA also gave me the opportunity to work in the research lab of Dr. Matthew Cordes where I researched protein fold evolution with the Cro family of proteins. Being a student researcher in the Cordes Group was a life changing experience. The mentorship of Dr. Matthew Cordes and Dr. Vlad Kumirov was invaluable. They have trained me, challenged me, and inspired me to pursue a career in biochemical research. Amazing professors like Dr. Jim Hazzard, Dr. Chad Park, Dr. William Montfort, and Dr. Nancy Horton have taught me the fundamentals to be successful in the biochemistry field. The CBC advising team Olivia Mendoza, Martin Marquez, and Megan Cunnington have helped me so much over the last 2 years with organizing class schedules, applying to grad school, and providing me with the resources I needed. One of the best experiences I had at the UA was participating in Visiting Scholars. The Visiting Scholars are CBC students that visit local high schools and talk to students about the transition from high school to college and about research at the UA. I shared my college experience with Tucson High students and discussed the advantages and disadvantages of large universities and small liberal arts colleges. I plan to continue participating in outreach activities in the future.

The UA has prepared me for a bright future in biochemical research and teaching. I will be pursuing my PhD in biochemistry at the University of Texas at Austin this fall and cannot wait to start this new chapter in my life. I would not be where I am today without the CBC faculty, staff, and students! Thank you! Bear Down!

Cody Schmidlin – BS Chemistry, BA Spanish, 2016
Throughout my time in pursuit of a degree in chemistry, I always felt a sense of welcome and genuine care from the Chemistry and Biochemistry Department at the University of Arizona. When I switched my major to chemistry, the advising team gave me excellent direction and helped me to plan out the remainder of my degree program. Not only did they assist in class selection, but they also took an interest in my future and helped me to craft a path of success that would lead me to my educational and career goals.

One of the great aspects of the chemistry degree at Arizona is the diversity of the classes. The education is well rounded. Particularly, the analytical based courses pushed me as a young scientist to develop a critical method of thinking. When dissecting products for their specific chemical ingredients, I began to understand the industrial and forensic aspects of chemistry. I did not think of it as homework or classwork, but rather these were real questions that as a chemist I needed to answer. The design of the classes inspired passion and forward thinking, and ultimately prepared me to be a career chemist.

The design of these classes and the manner by which they flowed was made possible by the department’s faculty. I appreciated in lecture scenarios when professors showed the application of different subjects in chemistry to current research. At that moment, you begin to understand the career you chose, and what problems need to be solved. The graduate students guided my learning experience in a way that they felt like a mentor. I never doubted their expertise because time and time again they demonstrated their knowledge by providing explanation and guidance to their students.

The value of participating in undergraduate research was immense in the overall development of my education. I worked for over two years studying natural product inhibition of human chaperone proteins with Dr. Eli Chapman. In this time, I began to outline problems with a hope that through experimental design I could find a solution. Research is taxing, but it teaches disciple and ignites a desire to understand today’s issues.

Due to this ignition from undergraduate research, I will continue to do research on a graduate student level. In August, I will pursue my PhD at the University of Arizona within the Arizona Biological and Biomedical Sciences
program. I am very grateful for the experience that the CBC Department gave me and encourage future students to utilize the knowledge and hospitality of this program.

José Vásquez – BS CHEMISTRY, BA SPANISH, 2016
I walk away from CBC experience at the University of Arizona confident, with my head held up high, knowing I can take ideas and networking I have develop and apply it to all my present and future endeavors. During my stay I have crafted my own a handy tool box with the help of my professors and peers, everyone chips in. For those who get involved the chemistry program, the whole CBC department, has a lot of great opportunities to offer the students, my only regret is that I did not get involved earlier in my undergraduate career. I think all undergraduates should research. That level of exposure facilitates the transition from lower division chemistry hopefuls to higher order thinking required in the home stretch of the grueling upper division courses and hopefully their graduate studies. I am currently working as a medical scribe at Southwest Orthopedic Surgery Specialist working on gaining experience for my own next phase in my higher education.

Chris (Tian) Xue – BS CHEMISTRY, 2016
How is every CBC Wildcat doing? I have started to work as a summer student in University of California, Berkeley chemistry department since this July. “The coldest winter I ever spent was a summer in San Francisco.” Although it is just a short period of time, I have already miss the heat and people in Arizona!

After the undergraduate study plus two-year training in Prof. Andrei Sanov’s lab, I figured out I want to do chemistry as a graduate student thought I have not figured out whether I want to go to academia or industry in the future for my long-term career yet. I am currently working on molecular dynamics via transient absorption spectroscopy with femtosecond laser produced by high harmonics generation in the soft X-ray region. It is fascinating to see how people with different background come to work on a project together. We are all somehow different, but we share some the same aims and values.

I believe the University of Arizona CBC department gets us well-prepared for going to graduate school. Not only the courses elective courses but also the undergraduate research opportunities give us the chances to explore our interests and to learn specified areas either deeply or broadly. Also, the professors, faculties and staff give us adequate support on learning and guidance on finding the most suitable choices for us. Even after graduation, I have met and got help from several alumnus from UA and I am so proud to be one of them!
NEW FACULTY AND STAFF

Jessica Dipasupil, Administrative Assistant
My name is Jessica Dipasupil and I am the new Administrative Assistant for the Graduate Program. I began working with CBC in June 2016, after working 6 years at the BIO5 Institute and I am excited to be here and working closely with Lori Boyd. I was born and raised in Tucson, AZ, and I love it here. I am a huge UA Wildcats fan. When I am not at work, I love spending time with my family. I have 2 beautiful girls that keep my husband and me busy with dance, soccer, and school events, and I wouldn’t have it any other way!

Vlad Kumirov, Instructor
I got my start at the University of Arizona as an aspiring undergraduate chemist and stayed on to receive my Ph.D. in Chemistry. During this time, I had the opportunity to teach many chemistry labs and other classes, and it is here that I found my passion for teaching. After 10 years of working in research labs spanning my undergraduate, graduate and postdoctoral careers, I am excited to begin teaching full time. I love working with students, and I love chemistry! Through teaching, I hope to make a big impact on the educational experience of many undergraduates.

Michael Marty, Assistant Professor of Chemistry & Biochemistry
Dr. Marty did his groundbreaking PhD and postdoctoral research with two eminent scientists, Stephen Sligar (University of Illinois Urbana-Champaign) and Carol Robinson (University of Oxford). In both labs, he integrated the expertise of the lab with his own independent research vision. He pioneered mass spectrometry of lipid Nanodiscs in the Sligar lab, in which he obtained his PhD in only three years and was awarded the Robert C. and Carolyn J. Springborn Fellowship, the top fellowship in the Department of Chemistry at the University of Illinois. He then leveraged his mass spectrometry/Nanodisc expertise and his background in mathematics to perform pioneering studies on membrane protein-lipid interactions in Prof. Robinson’s lab. By using gradual activation in the mass spectrometer, Dr. Marty was able to isolate membrane proteins in complex with a large number of bound lipids and characterize the number of lipids in direct contact with the protein surface. His considerable experimental accomplishments were complemented by important contributions in developing software and algorithms for data analysis. Specifically, his work has culminated in a software package, UniDec, which is in use by academic research groups around the world and is being evaluated for integration into biopharma workflows. This is a prime example of Dr. Marty’s unique multidisciplinary approach and illustrates his potential to become a scientific leader.

Dr. Marty arrived at CBC@UA in June 2016 and has already configured and ordered a state-of-the-art, high-resolution Orbitrap mass spectrometer and, in collaboration with the Research and Development team at Thermo Scientific, will be making custom modifications to this instrument to push the state-of-the-art in upper mass limit and resolution.

Rebecca Page, Professor of Chemistry & Biochemistry; Donna B. Cosulich Faculty Fellow
Dr. Page graduated from the University of Arizona in 1993 with a BS degree in Biochemistry with honors, magna cum laude and a BA degree in Applied Mathematics, magna cum laude. During her time at UA, Dr. Page was an inaugural Barry Goldwater Undergraduate Research Scholar, Arizona Regents Academic Achievement Scholar and one of the first students in the Undergraduate Biology Research Program. Dr. Page went on to Princeton University in 1993 to purse a PhD in Chemistry in the laboratory of Dr. C.E. Schutt where she was awarded an NSF Graduate Fellowship and graduated in 1999. Dr. Page trained as a post-doctoral research associate in the laboratory of Dr. R.C. Stevens at the The Scripps Research Institute in La Jolla, CA where she worked on structural biology of neuronal metabolic enzymes as a recipient of the Ruth L. Kirschstein National Research Service Award from the NIH. She spent one year as a Core Project Leader in the Center for Structural Genomics at Scripps working with Dr. I.A. Wilson and then moved to Brown University where she started her academic career as an Assistant Professor in 2005.

Dr. Page begins her academic appointment in CBC@UA in January 2017 and will be teaching undergraduate biochemistry courses and contribute to basic science teaching in the College of Medicine.

Wolfgang Peti, Professor of Chemistry & Biochemistry; Homer C. and Emily Davis Weed Endowed Chair
Dr. Peti received his Diploma Magister from the University of Vienna in Austria in 1998 with a degree in Chemistry and Diploma thesis with Dr. B.K. Keppler. Dr. Peti went on
to the University of Frankfurt in Germany to earn his PhD working in the laboratory of Dr. C. Griesinger and defended his dissertation in 2001. Dr. Peti was hired as a research associate in 2001 at The Scripps Research Institute in La Jolla, CA where he worked in the laboratory of Dr. K. Wuthrich (2002 Nobel Laureate in Chemistry) on the structural determination of proteomic target proteins using NMR. In 2004, Dr. Peti moved to Brown University where he started his academic career as an Assistant Professor. Dr. Peti has made significant progress in our understanding of enzyme function and specificity, with a special focus on cancer, diabetes and neurobiology research and ultimately drug design. Dr. Peti has led an exceedingly well-funded laboratory at Brown University focusing on important biological questions using a multiple biophysical and chemistry techniques, including NMR spectroscopy, X-ray crystallography, SAXS/WAXS among many others. A large number of high-impact publications and oral presentations at national and international conferences demonstrate the high quality of his scientific research, which is able to connect all aspects of biology with biochemistry and biological chemistry. His funding is from the NSF, ADA, and NIH.

Dr. Peti begins his academic appointment in CBC@UA in January 2017 and will be teaching graduate biochemistry courses and contribute to basic science teaching in the College of Medicine.

Vanessa Sousa, Laboratory Coordinator
Born and raised in Southern California, I owe my passion for chemistry to two highly inspirational junior college chemistry teachers. Without their encouragement, I would not be where I am today. I earned a Bachelor’s degree in Biochemistry from California State University, Channel Islands in 2012. My undergraduate research was an internship in the Toxicology Division of the Ventura County Sheriff’s Forensic Sciences Laboratory. It was there that I gained my first taste of method development and instrumentation which inspired me to apply and attend graduate school at the University of Arizona in analytical chemistry. I worked in Dr. Craig Aspinwall’s lab on the development of a cloning procedure for cell-free expression of ion channel coupled receptors for use in bioanalytical sensor platforms. While working on my Master’s degree, I found that I not only loved being in the lab but also teaching chemistry as a general chemistry and analytical chemistry teaching assistant. Upon completion of my Master’s degree in 2015, I was torn between a job in industry and teaching. By coincidence, at the time of my MS defense, a laboratory coordinator position, requiring knowledge of instrumentation and analytical chemical preparation, in UA’s CBC preproom became available. I’ve been with the preproom a year now, and I truly enjoy my job. It really is the best of both worlds, combining my love of being a “lab rat” with that of teaching interactions with staff and students.
IN MEMORIAM
PEOPLE WE LOST IN 2015–2016

Joseph Clifford Catlin, 73, of Westbrook, CT, passed away, surrounded by his daughters, Kelly and Kristina, on March 3, 2016, eleven years after first being diagnosed with Alzheimer’s Disease. Joe was born in Edgewood, MD on November 30, 1942. As a child, he was not expected to be able to learn to read. However with hard work, he graduated from Woodstown High School (NJ) and continued on to receive a BS in Chemistry from the University of Arizona and a PhD in Organic Chemistry from the University of Illinois. He then went on to Postdoctoral studies at Stanford Research Institute, Max Planck Institute, Saclay Nuclear Research Centre, and the Medical University of South Carolina. Joe worked as a synthetic chemist for Bayer for over 20 years. He enjoyed life and its many adventures, including traveling around the world, hiking, kayaking, backpacking, pottery and spending time with his daughters, sons-in-law, and five grandchildren. He was involved in his church and in Charleston Parks and Recreation, leading kayaking trips in the SC lowcountry. Joe is survived by his siblings, Margory Howe, Dan Catlin, and Ruth Catlin; his grandchildren; daughters; sons-in-law; and other family and friends. His parents, Willard Edwin Catlin and Ruth Louise Catlin, precede Joe in death.

Albert B. Hall, BS Chemistry, 1952; MS Chemistry, 1954; d. 7/29/2016
The extraordinary Albert Breckenridge Hall was born in Tucson, Arizona, on July 16, 1930. He died peacefully at home in Fort Bragg, California, on July 29, 2016. Early in his life, Albert developed a love of music resulting in his own high school band, The Righteous Fists of Harmony. That love of music carried throughout his life and included jazz, blues, flamenco and classical. He also loved science and earned a Master’s in Chemistry from the University of Arizona. He joined the U.S. Navy and mostly peeled potatoes and entertained his shipmates playing guitar. He left the Navy as Radar Man 3rd Class. After college, Albert was hired by Shell Chemical and rose to senior experimental chemist. He blew up his lab and the company built a new lab of Albert’s design for him and other experimental chemists, far from other buildings. He loved his work and developed many patents.

Albert raised his two children, Leslie and Bill, by himself. He built a houseboat with science fiction writers Paul Anderson, Jack Vance and Frank Herbert (“Dune”). He went to Tahiti with Vance and had more adventures with the natives there. Shell transferred Albert to Geismer, Louisiana, where he met and fell in love with the love of his life, Carol (soon to be Hall). He retired at the age of 40. He moved to Fort Bragg with Carol and her two sons, Paul and John Temple, to pursue a lifelong dream of being self-sufficient. He and Carol and the children raised all of their own food including many animals. Albert developed a project for Fort Bragg with a federal grant making use of the waste products at the time: fish frames from the fisheries in the harbor and sawdust from Georgia Pacific. He founded a compost company called Albert’s Best. Son Casey was born. Albert played more guitar and grew tomatoes. Albert taught many chemistry and math classes at College of the Redwoods. He went to Paris with Carol. Together they raised their five children and many other children along the way. He played more guitar. While teaching, Albert developed and wrote a college level lab manual for chemistry programs beginning with mostly household chemicals and ending with products to be reused in future experiments with no waste, called the No Waste Laboratory Manual. He studied molecular chemistry and physics until almost his last day.

He played guitar too. He loved and was loved by his wife, Carol, and was loved by all of his children and many others. His last meal was with Carol by his side: a tomato sandwich with his home-grown tomatoes. He died happy and in peace. Music, science, knowledge, nature, hard work, family and more family, friends—he did it all. It was a wonderful life.

Patrick M. Hefferan, BS Chemistry, 1970; d. 12/8/2015
Patrick Michael Hefferan, 68, died December 8, 2015, in Durham. Born in Seattle and raised in Phoenix, he graduated from the University of Arizona in 1970 with a BS in Chemistry. He served as a US Army Officer from 1970 to 1972, earning the Bronze Star in Viet Nam. He retired in 2014 after working for more than 40 years in the technology industry in Texas, New Jersey, Minnesota, and since 1994, in North Carolina.

Patrick is survived by his wife Anne Shotton of Durham, and sisters Colien Hefferan of Falls Church, Virginia; Stephanie Nelson of Phoenix, Arizona; brother-in-law, Hollis Summers of Falls Church; and niece, Margaret V. Summers of Arlington, Virginia.

Harold Koenig, BS Biochemistry, 1957; d. 1/6/2016
Harold P. Koenig, age 92, of Oro Valley, Arizona, passed away January 6, 2016. Harold was born to Arthur and Alma Koenig, in Ft Wayne, Indiana. He served in the Army Air Corps during WWII. He received his BS in Biochemistry from the UA and his Master’s Degree in Science from Purdue University. He married his wife of 53 years, Barbara (Downer), in August of 1962. He worked for Hughes Aircraft Company until his retirement in 1985. He had many hobbies including Navy-MARS ham radio, outdoor activities and art. He was a member of the Overton Art Club. Harold is preceded in death by his parents, and granddaughter, Morgann. Survi-
IN MEMORIAM, CONT.

Harold W. “Bill” Kohl, Jr. BA Biochemistry, 1956; d. 9/5/2016

Harold W. ‘Bill’ Kohl, Jr. MD, passed away September 5, 2016 in Austin, Texas at the age of 81 years after an extended illness. He was preceded in death by his wife of 55 years, Rose Ann. Bill was an internal medicine physician in Tucson for more than 38 years. He was born and raised in Tucson and graduated from Tucson High School and the University of Arizona. Bill returned to Tucson to raise his family after his medical training in St. Louis and Los Angeles. For nearly 25 years, Bill and his father, Harold Kohl, Sr. practiced medicine together.

He was an avid backpacker and trekked many miles in the mountain ranges around Tucson, the Grand Canyon and southwestern Colorado. Bill also was a huge supporter of University of Arizona athletics and for many years could be found in his 50-yard line seat at Arizona stadium on a Saturday cheering his beloved Wildcats. His family was very important to him. He is survived by his three children, Harold W. ‘Bill’ III of Austin, TX (Ann L. Kohl); Elizabeth Kohl Miller of Albuquerque, NM (Jeffrey W. Miller) and John T. Kohl of Colorado Springs, CO (Michelle G. Kohl), as well as three grandchildren, Kevin J. Kohl, Jeffrey M. Kohl and Colin G. Miller. He touched many lives, will be fondly remembered, always loved and deeply missed.

Donald Macaulay, BS Chemistry, 1971; d. 3/22/2016

Donald P. Macaulay passed from this life to the next after succumbing to heart complications. Born on a United States military base in Munich, Germany, he eventually moved to Tucson with his family in 1961. He soon married his wife, Susan and had three children with her, Joseph, Michael, and Rebecca. In life, he was a loving and caring father and husband, a master chemist, and devoted student of history. Donald also loved collecting black powder firearms and competing in marksmanship competitions. Often, he would donate his winnings to needy families. He also became the president of Old Pueblo Muzzleloaders.

In death, he is reunited with his wife, Susan, his mother Orpha, and father, William. He is survived by his son, Joseph and his three children, Eliana, Kate and Easton Macaulay; his son, Michael; his daughter, Rebecca; his brothers Roger, David and his wife, Pamela; Ronald and his wife, Cheryl.

C. Dick Park, MS Chemistry, 1958; d. 3/10/2016

Crawford Dick Park, 82, died March 10, 2016, in Portsmouth, Virginia. Dick was born to the late Crawford Hogue Park and the late Margaret Dick Park, in Valencia, Pennsylvania. He was a member of Green Acres Presbyterian Church. He is survived by his children Jennifer Bruggink (John), Rebecca Cameron (Christopher), Jonathan Park, Matthew Park (Laura), Andrew Park, and Anna Simons (Joseph) and grandchildren Catherine, Leandra, Jacqueline, J.D., Althea, and Ava. He is also survived by his sister, Margaret Park Tait, numerous cousins and many friends.

Dick enjoyed spending time with his children camping, boating, and traveling. A highlight of his semi-retirement was a summer-long trip to Alaska with his children. He was a passionate photographer, and his travels and the lives of his family are extremely well documented. Fortunately, he spent months scanning his enormous slide collection and distributing the images. He loved to design and build anything that might be a home improvement. His children were blessed with his unwavering love, kindness, dedication, and support.

He graduated from Geneva College (B.S.), the University of Arizona (M.S.), and the University of Pennsylvania (M.D.). He completed his surgical training at the Hospital of the University of Pennsylvania where he joined the faculty and rose to Associate Professor of Surgery before practicing as a cardiovascular and thoracic surgeon for thirty-seven years in the Tidewater region of Virginia. He was well known for his skill, high standards, and commitment to every patient.

We are grateful for the support and loving kindness of many of his friends. The family acknowledges the empathetic and skillful care given by Dr. Juanita Smith and the physicians and staff of Virginia Oncology Associates, especially Dr. Victor Archie.
OUTREACH ACTIVITIES

ALPHA CHI SIGMA  
by Jeff Ivie and Alicia Swain

AXΣ (Alpha Chi Sigma) is the nation’s only professional fraternity of the chemical sciences. The Beta Tau chapter at the University of Arizona was founded in 1967 by Curtis L. Schilling, Jr. with assistance from the late Prof. Carl S. Marvel and since then has continued to provide chemistry education and service to the community, as well as to our Department. At the UA, AXΣ members are CBC alumni, graduate and undergraduate students, and the chapter provides an opportunity for those students to get out and share their enthusiasm for chemistry with the local community.

AXΣ members assist the Department with the graduate student recruiting activities, setting up/breaking down poster sessions and operating the grills at departmental events. For students in our department as well as local CBC alumni, AXΣ provides many opportunities for participation in outreach activities. Members perform chemistry shows at events such as Family Weekend and Science City at the Tucson Festival of Books as well as travel out to local schools to perform hands-on demos as well as and assist with science fair judging. Members have been nationally recognized for their outstanding achievements within the past year, with member Andrew Dixon being awarded the Alpha Chi Sigma Scholar Award (CBC Spotlight Article).

CHEMISTRY CLUB  
by Sona Avetian | President

Student Members of the American Chemical Society (SMACS), or more colloquially known as University of Arizona Chemistry Club, is an American Chemical Society recognized chapter. We are a primarily student-run club that focuses on the promotion of science throughout the community. This past year we have hosted several chemistry shows at local schools in order to encourage young students to embrace science. One such school we visited was BASIS Oro Valley, where we performed a chemistry show to a very captive and enthusiastic audience! Apollo Middle School also came to campus, and we performed an exciting show.

In addition, we also helped in judging science fair posters at Empire High School, providing constructive advice to aspiring young scientists. We also worked closely with the Women’s Chemistry Group, volunteering at Fun Fest and the Tucson Botanical Gardens where we made silly putty. Our club also volunteers every month at Tucson’s Household Hazardous Waste, where we sort through waste to minimize contamination of landfills.

Despite our busy semester, we still managed to have fun by going on hikes and out for movies as a club—enjoying some quality bonding time! And at the end of the year the officers, as well as four of our hardest working members, traveled to the ACS conference in San Diego, California. At this conference we were able to present what we’ve
OUTREACH, CONT.

done, network with other chapters, received our award for the previous year and of course, spend some time on the beach!

PROGRAM TO ADVANCE WOMEN SCIENTISTS
by Lindsay Guzman | President

The Program to Advance Women Scientists (PAWS) has had a successful first year! The mission of PAWS is to empower women in the sciences through education, leadership, mentoring, and support. We hold seminars, professional development workshops, and outreach events. PAWS was first established in the CBC department during the Fall of 2015, and we are rapidly growing with members across departments at the UA.

For professional development, we held monthly seminars featuring faculty from the CBC department. This year, we were fortunate to have Drs. Jeanne Pemberton, Anne Padias, Elisa Tomat, John Jewett, Pascale Charest, and Ann Walker give professional development seminars to our group. In addition, we held a public speaking workshop featuring renowned speech coach Kathryn Kellner.

PAWS was also very active in outreach this year! We held a booth in the Science City at the Tucson Festival of Books. PAWS also volunteered with the Undergraduate Biology Research Program (UBRP) to perform science activities with local middle schoolers. Most recently, we did science experiments with the kids at the UA fusion camps held at the Flandrau Science Center and Planetarium this summer.

Due to the success of PAWS, ASUA (Associated Students of the University of Arizona) awarded us the ‘New Student Organization of the Year Award’! PAWS has had a great start, and we look forward to this upcoming year.

To learn more about PAWS, please visit our website at sites.google.com/site/pawsuofa, or email us at paws.cbc@gmail.com.

BIOCHEMISTRY CLUB
by Gloria Le | President

The UA Biochemistry Club is an affiliated Student Chapter of the American Society for Biochemistry and Molecular Biology (ASBMB). Our main goal is to provide the community, specifically middle and high school students, with exposure to opportunities in scientific research and careers.

In the spring of 2016, we held the Biochemistry, Engineering, and Chemistry Undergraduate Research Conference (BECUR) where students from Arizona universities and high schools presented their outstanding research to graduate student judges. The winners of this conference received travel grants to the 2017 ASBMB Conference, where they will participate in the national ASBMB Undergraduate Poster Competition. Last year, Corina MacIsaac (BECUR 2015 Travel Award Recipient) was named an honorable mention at this competition.

The Biochemistry Club runs a week-long summer camp called BlastOff!. Here, 15 middle school cadets participate in complex activities that closely relate to real-world science. At the end of the camp, the cadets take part in a poster conference where they showcase their work to parents and UA students and staff. Thanks to the hard work of the members, we received the 2016 ASUA Student Organization of the Year award.

To learn more about the Biochemistry Club, please visit our website at biochemistryclub.arizona.edu. For more information, please contact us at biochemistryclub@arizona.edu.
Sona Avetian – University of California, Irvine

This summer I was given the incredible opportunity to participate in the Center for Chemistry at the Space-Time Limit (CaSTL) program at University of California, Irvine. During this internship I had the privilege of working in Professor Wilson Ho’s lab, utilizing low temperature scanning tunneling microscopy (STM) to image single molecules on surfaces. This lab is very instrumentation oriented, allowing me to learn how to construct apparatuses, such as a molecular evaporator, from scratch. This included learning how to operate machinery, such as a milling machine, to make pieces and then assembling them. In addition to learning how the system operates, I was able to collect images of single molecules as well as spectra of the vibrational modes.

When not busy learning in the lab, I was able to explore the beautiful areas of Orange County as well as the diverse culture. UCI itself is a breathtakingly beautiful campus—the buildings are on a ring surrounding a spacious park filled with lush vegetation. With the ocean being just down the road, I was able to spend quite some time in Newport and Laguna beaches. Of course I also made a point to see some of Hollywood and Beverly Hills, and some of the landmarks such as the Chinese Theatre. I was able to see one of the most iconic views of Los Angeles, from the Griffith Observatory. This was one of the most incredible views—all of Los Angeles and some of the neighboring cities can be seen for miles!

In addition to great sights, there is really great food all over Los Angeles and Orange County. I tried authentic Chinese, Persian, Armenian and Korean food, and was able to experience the culture as well. With so much available to me, I was also able to push some of my boundaries and try unique foods, like chicken feet and raw oysters! Overall this experience was incredible, and I have learned so much both inside and out of the lab, doing and trying new things and experiences! The CaSTL program is certainly one of the best internships in which I have had the pleasure of working, and I highly encourage others to apply!

Alex Aydt – SPIE BIOS Photonics West Conference, San Francisco

This February, I was invited to attend the SPIE BIOS Photonics West Conference in San Francisco. With funding from the University of Arizona, I was able to attend and present a poster on research I had done over the past two years. The project I presented on was completed in the Optical Radiology Laboratory with Dr. Mikhail Berezin. The lab’s focus is the design of new contrast agents to allow doctors to more effectively image the body, allowing for both earlier detection and better treatment of a variety of maladies. We have been observing certain “Optical Windows,” specific wavelengths of light which are absorbed less by water and other components of skin and tissue. One of these windows occurs at the wavelength of 1300 nanometers. However, it is very difficult to create a molecule using conventional methods which will emit at this wavelength.

In looking for a compound capable of emitting at this range, I chose to investigate a nanoparticle known as the quantum dot. Quantum dots are miniscule spheres made of a semiconductor coated in an interchangeable ligand coating. They are far smaller than even the smallest cells. There are multiple reasons why quantum dots were chosen for this experiment. Quantum dots are extremely bright; where a conventional dye typically emits far less than 1% of the energy it absorbs as light, quantum dots have been synthesized that convert higher than 30%! The method by which quantum dots emit light is also strikingly different from dyes. Due to their nature, dyes emitting over 1000 nanometers are very difficult to create. As quantum dots do not behave similarly, they will not run into this problem. Also, as I mentioned earlier, the surface coating can be easily interchanged. The implications of this is that we can easily stick some sort of targeting molecule to the surface of the quantum dot, allowing them to seek out tumors or bacteria, and then the fluorescent signal can be used to find the site.

In the lab, we were able to successfully create such a nanoparticle, and even able to demonstrate a reaction which would allow the nanoparticles to be dissolved in water, a vital step in preparing for its eventual use in medical treatment. Presenting at the SPIE conference was crucial to the continuation of the project. It allowed me to share my knowledge of the project with scientists from around the world, as well as receiving a variety of questions and suggestions about how to overcome problems faced and determine alternate uses of our nanoparticle. The conference was also an astounding opportunity for personal development, providing me with an opportunity to learn how to present my own research.
and see the cutting-edge research presented by other scientists. The trip was a wonderful experience provided in part by the University of Arizona, and I am thankful that I was able to go.

**Jordan Barrows – Allied Genetics Conference (TAGC), Orlando, Florida**

I am a senior studying Biochemistry and Molecular and Cellular Biology at the University of Arizona. I have worked in the Zarnescu lab for 15 months now, using fruit flies as a model organism for amyotrophic lateral sclerosis (ALS) and studying them to elucidate the underlying mechanisms of the disease. As a result of this work, I recently had the opportunity to travel to and present at the Allied Genetics Conference (TAGC) in Orlando, Florida. Organized by the Genetics Society of America, TAGC was the first ever meeting of its kind, combining the annual meetings of seven genetics model organism communities—Drosophila, Mouse, C. elegans, Yeast, Zebrafish, Ciliates, and Population, Evolutionary, and Quantitative Genetics—into one joint meeting.

To say that the meeting was massive would be an understatement. With over 3000 presenters, the plethora of people and networking opportunities was astounding. Although I could not help feeling overwhelmed at the size of the meeting, it was exciting to have such a cornucopia of knowledge at my disposal. In addition to the sheer number, the joint nature of the meeting also provided an opportunity to explore and learn about research being conducted in other model organisms, both similar to and vastly different from the research with which I am familiar. While the Drosophila presentations tended to be more relevant and useful to my work, I was able to learn some incredibly interesting and useful things from other models as well, even if the majority of the content was a bit beyond my ken.

For me, however, the most engaging aspect of the meeting was the poster sessions. Spread out over three days, these sessions allowed me to endlessly browse and discuss nearly every topic I could imagine, and several of which I never even conceived. I also had the opportunity to present a poster on my own work, which spurred a number of excellent conversations with passersby, and even inspired a couple of new directions in my project. This last part was the most valuable for me, simply because it was an opportunity to have engaging conversations about my work outside of the familiar lab setting, an experience which helped me grow both as a person and as a researcher. As a result, I am very much looking forward to continuing to attend conferences and having more of these experiences in the future.

**Calley Eads – Future Energy Leaders Summer Fellow, Germany**

I was awarded the Future Energy Leaders Summer Fellowship under the umbrella of the UA Renewable Energy Network (REN) in April 2016, which allowed me to partake in a unique research opportunity in Jena, Germany during the summer of 2016. I traveled overseas to the university town of Jena, situated in mid-east Germany, and conducted research in a collaborator’s lab. The Friedrich Schiller University was founded in 1558 alongside the Saale river which meanders its way through the city landscape, and the university buildings are peppered throughout the city as is customary for European campuses.

I spent most of my time in the Physics building under the supervision of Prof. Torsten Fritz. The main goal of this international collaboration with Prof. Oliver Monti’s laboratory at Arizona was to provide fundamental insights into interfacial interactions in novel hybrid materials towards improved renewable energy devices, such as solar cells. In order to achieve this goal, I branched out to other multidisciplinary research groups on the Jena campus, including chemistry, physics and astronomy. I was able to expand the breadth of analysis approaches available to me while simultaneously learning new experimental techniques and establishing further collaborations.

Renewable energy sources are already firmly established throughout Germany in the form of solar, wind, and hydro energy sources. Much of the country is currently “off the grid” and the regions that are not are moving in the direction to be completely self-sustaining. Jena receives some of its energy through renewable means. The bustling optical and precision industries in the town, however, make it more difficult to be completely cut off from main electricity and water given the current renewable energy supply.

Germany has adopted green energy as its main priority and more and more countries are following suit. Consequently, there is a demand to design more efficient devices than what is currently available on the market. The fundamental research we perform on hybrid organic/inorganic interfaces helps to provide tunable and efficient interfaces through investigations of electronic structure and charge-transfer dynamics on ultrashort time-scales. Specifically, I studied the electronic structure of a two-dimensional material, molybdenum disulfide (MoS2), paired with conjugated molecules primarily using optical and photoelectron spectroscopy analysis techniques. These studies helped to reveal charge transfer mechanisms that are critical for understanding charge generation and charge separation between the materials of interest. These processes determine power generation in renewable energy platforms.
STUDENT STORIES, CONT.

To conclude, the research opportunity in Jena, Germany exposed me to many elements of academic research in the form of learning new analysis techniques, establishing interdisciplinary collaborations and dissemination of scientific knowledge. In general, this international research experience reinforced the ideals of an independent research scientist in the form of quick thinking, problem solving, creativity and persistence.

**Mahsa Ghaffari – Protein Society, Baltimore, MD**

My name is Mahsa Ghaffari, a 5th year graduate student in the department of Chemistry and biochemistry, and I work in the Ghosh Lab. This summer I had an opportunity to attend the 30th symposium of the Protein Society (PS) held in Baltimore, MD on July 16-19, 2016 to present my research. The PS, which was established in 1985, is where investigators across all disciplines of protein chemistry and from around the world get together to talk about protein structure, function, design and application. Besides providing the opportunity for scientific collaboration and communication, PS is one of the best places for professional and career development for young investigators through workshops and networking events.

Compared to other well-known conferences that consist of diverse fields of chemistry and biology, PS was more useful for my field of research, which is the study of protein kinases and phosphatasas as the major traffic signals for the signaling pathways. During the poster session presenting my research I had a chance to talk to various types of scientists and graduate students and I received useful comments and feedbacks. In addition, I was able to go over other posters and get the flavor of ongoing research at the other institutes. I also had an opportunity to attend talks and presentations of many of the brilliant scientists from both academia and industry. Due to the confidentiality required for the research in industry it is not often easy to get exposed to the detailed research conducting in the companies. However, in the PS conference several famous biotechnology and pharmaceutical companies such as Pfizer, Genentech and Eli Lily had presented their research. Moreover, I found an opportunity to talk to them individually about their long-term experience in industry.

Throughout the conference there were two career panels with the goal of helping people to understand different types of jobs associated with their fields of research from both academia and industry. Each panel consisted of four scientists and all four of them shared useful experiences about their own jobs, the advantages and disadvantages of each type of job and finally how to be prepared and qualified for academic or industrial roles in general.

I was fortunate to attend this conference with my labmates from the Ghosh group (Javier Castillo-Montoya, Matthew Bienick, and Chandi deSilva) and have even more pleasant time in Baltimore. I am so grateful for my travel award from the Protein Society as well as NIH funding for covering my travel expenses for this informative and inspiring four-day conference.

**Pearce Haldeman – Memorial Sloan-Kettering Center**

*Summer Undergraduate Research Program at the Memorial Sloan-Kettering Center*

After having the opportunity to take part in research for 2 years with Dr. Pascale Charest, I found myself wanting to broaden my research background and work with additional investigators. After applying for multiple summer research internships, I was ecstatic when I learned I had been accepted to the Summer Undergraduate Research Program (SURP) at the Memorial Sloan-Kettering Cancer Center (MSKCC). After a holistic 10-week research experience, I learned many things about working in the cancer research and treatment fields.

All students in the SURP were exposed to an unprecedented wealth of knowledge, concerning all forms of cancer research, during weekly seminars with world-renowned faculty. These faculty included scientists who were among those involved in the discovery of oncogenes such as Ras and the famous tumor suppressor p53.

Over these 10-weeks I worked in the lab of Dr. Richard White and more closely with Dr. Maomao Zhang who is currently doing a postdoc in Dr. White’s lab. My project focused on melanoma and the tumor microenvironment supporting metastasis, with the use of zebrafish as a model organism. I was introduced to many new techniques such as Gateway cloning, zebrafish husbandry, tumor cell transplants, fluorescence microscopy, flow cytometry, and ImageJ. I assembled a construct designed to overexpress the fatty acid transport protein 5 (FATPs). This construct was used to study melanoma lipid uptake in vitro using plate based functional assays, and tumor progression in vivo using a transparent zebrafish trans-
plant model. Strikingly, FATP5 overexpressing cells translated to a significantly greater tumor burden. These data lead to the conclusion that lipid uptake in melanomas support tumor progression, specifically through active transport as demonstrated with FATP5.

The location of Sloan-Kettering was an additional perk of the internship considering it is situated in New York City on the Upper East Side of Manhattan. All the interns were afforded the opportunity to live, courtesy of MSKCC, in the Marymount Manhattan Dormitory. This living arrangement was awesome considering its vicinity to the cancer center and Central Park, where I would spend some days wondering about trying to see every forest and field.

Activities outside of working in the lab were also provided by MSKCC, such as tickets to the Bronx Zoo, opportunities to see Broadway musicals, and a cruise around Manhattan with SURP and Gerstner Sloan-Kettering Graduate School students together. During the 10 weeks I wondered throughout the city seeing both the Yankees and Mets play, attending a Smorgasburg festival in Prospect Park, kayaking on the Hudson River, venturing up to Boston for a weekend, seeing Jesse-Tyler Ferguson perform on Broadway, and enjoying an incredible dinner in Little Italy with a very special someone.

Overall, this summer I lived and experienced New York for what it offers both scientifically in its dense population of research centers and academic institutions, as well as culturally with its profound museums, grand parks, and astonishing inhabitants.

Elizabeth Hannah – GALÁPAGOS ISLANDS
A Summer Under the Galápagos Sun
If you need to reach me on any given day during the school year, you’re likely to find me in one of two places: studying in between sips of coffee at Caffe Luce, or staring at my computer screen in a quiet corner of the UA library. Rarely do I venture outside of my studious self, and when I do, it’s typically to relieve stress through playing sports.

Last semester I finished up my junior year as a mathematics major with minors in biochemistry and Spanish. By the time finals were over, I felt thoroughly burnt out on school. While many of my peers planned to spend their summers participating in rigorous research or internship programs, I longed for a break from integrals and amino acids. I needed a summer filled with something out of the ordinary, and thus I wound up swimming with sharks and sea turtles in the Galápagos Islands.

During July of 2016 I immersed myself in marine biology on San Cristóbal, Santa Cruz, and Isabela, three of the many islands that compose the volcanic Galápagos archipelago. My experience was made possible by the UA’s summer Galápagos Marine Ecology program, led by Dr. Katrina Mangin of the UA ecology and evolutionary biology department and Dr. Dave Gori of the Nature Conservancy.

I could spend several pages raving about the incredible biodiversity I witnessed on the islands: our group spotted all kinds of Galápagos-endemic species, from penguins to lava lizards. However, the most impactful souvenir I took home from the Galápagos Islands was not my scrapbook filled with pictures of sea lions (though that was certainly an added bonus). Instead, it was my newfound understanding of what it takes to protect our environment.

From high-ranking government officials to hotel janitorial staffs, every single Ecuadorian citizen appears to be deeply invested in the preservation of the Galápagos Islands. The enormous resources expended on island conservation and restoration efforts – including money, time, and human energy – far surpass those invested here in the United States. Of the Galápagos archipelago’s 8,010 square kilometers of land, a full 97% are protected by Ecuador’s national park service. Quite literally, a person cannot travel between islands without having his or her suitcase inspected for invasive species, and only a certain number of tourists per year are allowed to visit the archipelago.

I will probably never earn a Ph.D. in ecology or marine biology. In fact, it is highly possible that I will finish my college career at the UA without taking another class in either subject. Nevertheless, I learned more from my study abroad experience than I have ever learned in a traditional lab-based course.

On the one hand, my studies in the Galápagos Islands made me fearful for the future of our planet. Despite the stunning conservation efforts aimed at protecting the islands’ flora and fauna, the negative impacts of human activity are clear: overfishing continues to threaten species in the waters surrounding the Galápagos, and invasive species have decimated innumerable terrestrial populations. It is difficult
to imagine how humankind will succeed in protecting the Earth’s ecosystems, when the most protected area in the world constantly hovers on the brink of catastrophe.

On the other hand, my study abroad experience vastly increased my optimism for the future: if it is possible for one country to devote such impressive resources to environmental protection efforts, it is possible for other countries to do the same. Conservation efforts in the Galápagos should serve as a model for scientists and citizens around the world.

As I prepare to begin my senior year, it is with a renewed sense of enthusiasm for school and learning. Our generation faces a number of daunting challenges, climate change being only one of many. My study abroad experience helped me remember why I invest so heavily in my classes at the UA: the world is an incredible place, and it is our responsibility as students to help keep it beautiful.

**Samantha Harrow – Grand Canyon internship**

The Grand Canyon North Rim has been my home for nearly three months, yet every day I am taken aback by the beauty of my surroundings. The canyon is alive with an immense diversity of plant life and the colors and textures of the earth are unlike any other. Contrasting the high desert and juniper forest environment of the South Rim, the North Rim is a lush Ponderosa forest, with an understory of green shrubs, wildflowers, and a variety of grasses. Each layer of the canyon differs in the plants, animals, and minerals found there, with distinct layers that bring a unique beauty to the landscape. On my first week, I attempted to paint a section there, with distinct layers that bring a unique beauty to the landscape. On my first week, I attempted to paint a section of the canyon and realized in full how complex and expansive even a small section of the canyon truly is. Nearly every weekend I go backpacking and explore the vast grandeur of the canyon, yet there is still always more to discover.

As a summer intern, I was fortunate to join the select and elite Vegetation Crew of the National Park Service. The North Rim Lodge Restoration project, begun in 2012, is designed to mitigate the effects of construction and decades of pedestrian and maintenance-vehicle traffic on areas surrounding lodge cabins. This continuous traffic reduced these areas to lots of barren, packed earth and prevented the reestablishment of native plant life. The top soil from these areas readily erodes from wind and water, producing runoff that accumulates against historic cabins, accelerating decay of the sill logs and threatening their structural integrity.

My team works to re-establish the native plant life through a variety of techniques, including basins, seed strips, vertical mulch, and invasive removal. Basins are wells in the ground a few feet deep and a couple feet in diameter that have been excavated to remove rocks and refilled with nutrient rich, moist soil. A barrier of a few inches of mud is built around them, which, combined with the lowered planting level, allows water to collect around the plantings to maintain health and accelerate growth. Planted seed strips help to re-establish the natural seed beds that accumulate in natural environments. The seeds for these we collect ourselves, travelling across our area of the North Rim as each plant fruits to create a seed mix of over 60 native species. Due to contractual obligations and our goal to restore a natural setting, fencing is strictly prohibited. Vertical mulch, our alternative “fencing”, is the strategic placement of aesthetically pleasing and natural logs, rocks, and thorny shrubs to discourage traffic while maintaining a natural composition.

The revegetation of these areas with native plant species achieves several desirable results: erosion reduction, increased water infiltration into the soil, re-establishment of habitat and resources for native wildlife, and improved aesthetics for visitors. Each day I am greeted by guests to the Rim who comment on the loveliness of our plantings and thank my team for our work, and I feel a sense of pride and accomplishment. I have a wonderful and unique opportunity to spread knowledge of our project, the environment, and the native plant life to people from across the country every day through my interactions with visitors. Though I grew up in the great metropolis of Phoenix, I always felt most at home in the forest of the Mogollon Rim during summer camping trips. To be working in restoration of this environment is the most fulfilling work I could imagine. Equipped with my degree in Chemistry from the UofA, I will begin my PhD work this fall, studying the chemical ecology of plants at UW-Madison. It is my sincere hope that my future research will help in the understanding, restoration, and conservation of our natural environments, such as our stunning Grand Canyon. I am so grateful to be involved in this line of work and to the opportunities and people who guided me here, for, in the words of Edward Abbey: nature is not a luxury, but a necessity of the human spirit.

**Kyle Lopez – Caltech**

During this past summer I was given the amazing opportunity to participate in the WAVE fellows program and to work in the Rees lab at the California Institute of Technology in Pasadena. With the Rees group I worked on a project consisting of biochemical and structural analysis of a high affinity methionine ABC transporter in E. coli. Prior to my arrival, the lab had ordered nanobodies isolated from llamas that bound specifically to the
STUDENT STORIES, CONT.

MetNI transporter. My goal for the summer was to characterize the binding of the nanobodies to MetNI by assessing conformational dynamics, enzymatic activity, and the binding affinity. I used lanthanide resonance energy transfer (LRET) to determine how the nanobodies were changing the conformation of the transporter by measuring the distances between the two nucleotide binding domains. To supplement the LRET data, I also determined how the nanobodies affected the ATPase activity of the transporter, which is coupled to methionine transport. I also utilized surface plasmon resonance (SPR) experiments to determine how tightly the nanobodies were binding to MetNI. Although I spent countless hours attempting to crystalize the transporter, I was not able to get crystals with good enough diffraction for solving the structure. Despite the lack of structures, I was able to characterize nanobody binding to MetNI using biochemical techniques. I learned a lot of things during the summer including working with membrane proteins and x-ray crystallography.

It was a fun summer escaping the arid climate of Arizona. Pasadena is a cool city with a lot to do within the city, as well as the surrounding areas. It’s only a 45-minute drive from LA, an hour from Santa Monica, and 30 minutes from the San Gabriel Mountains. I spent a majority of my days on the beach, when I wasn’t in the lab. The program offered many social events such as a trip to a Dodgers game, a trip to Santa Monica, and others. There were plenty of workshops geared towards preparing us for graduate school. Overall it was a great summer; I got to do some exciting research, and I got to relax on the beach.

Elise Muñoz – Mass. Summer Research Prog. (MIT)

I am a rising senior studying biochemistry, mathematics, and molecular and cellular biology. This summer I had the amazing experience to participate in the Massachusetts Institute of Technology (MIT) Summer Research Program (MSRP) in Biology and Neuroscience. Never in a million years would I have imagined myself standing in front of top-tier research scientists at MIT explaining my summer research and my future career goals, yet I was fortunate enough to do so this summer through MSRP. The MSRP program consisted of 45 diverse students from all over the United States and the world with a range of research interests in fields such as cognitive neuroscience, mathematics, and cancer biology.

I worked in Dr. Susan Lindquist’s lab where I studied Alzheimer’s disease (AD), an age-related neurodegenerative disease characterized by accumulation of neuropathological conformers of amyloid-beta (Aβ) peptides that results in extensive neuronal loss. Exploring peptide and antibody therapeutics to target and inhibit soluble, toxic, oligomeric forms of Aβ is gaining increasing attention. My specific project was aimed at identifying candidate cyclic peptides in preventing Aβ-toxicity in a cellular system. I worked with a yeast model that was developed in the lab that recapitulates the processing and transport of human Aβ corresponding with Aβ-toxicity. While in the lab, I was able to develop a system using sortase-mediated circularization to generate cyclic peptides in vivo in our yeast model and was able to show protective capability of a candidate cyclic peptide.

Not only did I gain valuable first-hand research experience and so much knowledge in the field of neurodegeneration, I was exposed to a range of research fields and opportunities through faculty seminars and conferences. My experience with MSRP taught me more about who I am as a researcher and will be influential as I apply to graduate school this fall.

In addition to spending countless hours in the lab, I was also able to explore the beautiful cities of Cambridge and Boston. I kayaked down the Charles River, ate dinner on the 52nd floor of the Prudential tower overlooking Boston, explored Martha’s Vineyard (Obama’s vacation spot), watched a Red Sox game at Fenway, and enjoyed a concert on a boat at the Boston Harbor. There was not a second that went by that was not enjoyable. MIT is a place of passion and innovation and home to people with amazing ideas and kind hearts. I could not have asked to spend my summer any other way. Biomedical research is what I plan to pursue in my future, and this summer experience with MSRP validated my love for the research field and motivated me to never stop asking questions.

Alec Nienhauser – Germany

As I sit in the lab the day after my final presentation, it is hard to believe I have been abroad for just three months. Most of my time in Germany has been spent in the lab synthesizing, experimenting and analyzing, yet every weekend seemed to bring a new, exciting adventure too. My study abroad experience differed from most; rather than taking classes and learning in a traditional setting, I chose a research project and spent 35-40 hours each week working in multiple chemistry labs trying to accomplish my end goal of creating a reusable, porous membrane that successfully filters water samples of high turbidity. In addition to working with a fourth year PhD student, I had the resources of the entire Fraunhofer Institute (Stuttgart Campus) at my fingertips.

Upon my arrival, I immediately began working on my project and experimenting...
with the properties of Chitosan, a polymer of which I quickly became fond. It was also apparent that my three-month time span would prevent my project from reaching fruition; however, I still managed to produce multiple deliverables.

Chitosan is the deacetylated form of chitin, the main component of crustacean skin and a very large waste product throughout the world. I was tasked with creating a stable nanoparticle emulsion (water droplets in oil) of Chitosan. In order to determine the appropriate amounts of each phase, (water, oil and surfactant) one must become familiar with HLB values and conduct extensive tests with analysis. Nanoparticle syntheses take multiple days due to long reaction cycles, difficulty of dissolving, and the need to crosslink our end sample.

After just three months in the lab, I was able to characterize 9 different types of Chitosan, all with differing polymer lengths. Using DLS (Dynamic Light Scattering) analysis, I successfully distinguished both the size of the nanoparticles and their surface charge (Zeta Potential), ultimately resulting in one graph that will be in my supervisor’s next published article. Over the course of this research, I was able to hone my organic synthesis skills, and master different types of emulsion preparation and nanoparticle analysis. Due to ongoing studies, I won’t go into deeper detail.

In Germany I was exposed to more chemical apparatuses than ever before. I performed analysis using the DLS and SLS, SEC (Size Exclusion Chromatography), SEM (Scanning Electron Microscope) and mastered the use of the HLB (Hydrophilic Lipophilic balance) value test. This lab experience was more than I could ask for, as I was given freedom, full responsibility over my lab space, and more respect than I could have imagined.

While devoting my weekdays to research, I had the good fortune to spend weekends in Munich, Düsseldorf, Switzerland, the Netherlands and Prague. As a solo traveler, this experience has been eye-opening. In Rotterdam, I met two local Mechanical Engineers who spent four days with me traveling around Holland, learning what it’s like to be a student from a different country with very different customs. In Munich, I met another solo traveler from Israel who wanted, like me, to immerse herself in Bavarian culture. I haven’t had a summer to date with so many bright memories and new experiences. This semester abroad was more eye opening than I ever expected.

Overall, while my experience abroad was different from most, it still held similar values and lessons learned by anyone who experiences life overseas. Traveling alone was the best decision I made on this trip. It was easy to hop onto someone else’s plans and go on a group venture, but it wasn’t until I decided to go on adventures by myself and expose myself to a new city, ultimately becoming vulnerable to the surroundings and strangers, that I truly began to learn more about myself. Not only was I exposed to friendly and fun travelers, I was also graced with generous locals who housed me and relatives abroad who opened their doors. Europe certainly wasn’t the safest place to be traveling in this summer, and it was also quite a strange summer in the US as well. With that said, it was nice to be away from all the drama, and I never felt unsafe once. There is so much to learn in new countries with different traditions. I’m excited to see how my experiences across Europe this summer will help shape my future, but I am certain that I am a more well-rounded student in the laboratory and a more well-rounded individual overall.

Celina Nguyen – Honduras, Global Medical Brigades

This year, I decided to devote my spring break to the people of Honduras through Global Medical Brigades. In just one week, my Brigade, composed of 23 U of A students plus me, provided medical aid as well as public health services to over 400 Honduran people. In a makeshift medical clinic set up in a small rural town, we worked alongside doctors as they assessed the medical conditions of their patients, dentists as they performed fillings and teeth extractions, and pharmacists as they filled prescriptions for every person who visited either a doctor or dentist. We taught kids how to brush their teeth and provided fluoride treatments on each one to further strengthen their teeth. At the end of the week, we built stoves with chimneys in six homes to prevent those families from inhaling soot from the fireplaces typically used for cooking. Although every day was definitely filled with hard work, this spring break was the most rewarding one in my life.

The highlight of the trip was meeting the people of Honduras. When I think about this developing country, I can recall so many grateful smiles. Engraved forever in my memory is the little girl who gave me a tight hug after receiving her fluoride treatment; the look of relief on a mother’s face after her child’s impacted tooth was removed; the excitement in the eyes of the owner of a newly built stove as the flames danced in it for the first time. These people had put so much trust in us, treating us like we were doctors. They didn’t care that my Spanish es muy malo or that I had to take their blood pressure several times. All they needed was health care and many were willing to walk up to seven hours to get it. The Honduran people were grateful that we provided medicinal attention, but we should thank them for clearly demonstrating the reason why many choose medicine: we want to help people, and in Honduras that’s what we did.
Honduras was not what I expected for a country located so close to the equator. I was prepared for humidity and jungles, but the air was mostly dry, and I saw more pine trees than anything else. What was not unexpected was the heat. After a long day at the clinic, the best feeling was the cold water from the shower washing away all of that day’s sweat. Even better was the feeling of the nighttime breeze as I swung in the hammocks right outside our room. While I wouldn’t call it a vacation, my trip to Honduras was calming. I was too far from the demanding atmosphere of the U of A to be thinking about homework and scholarship applications and exams. Instead, I spent my free time getting to know my fellow Brigaders, looking at the stars and landscape, reading, and playing some intense games of Mafia with everyone else. Unfortunately, this meant that I was scrambling to finish assignments when I got back to the States, but it was worth it!

Made on a whim, my decision to go to Honduras over spring break definitely changed my life, and I am willing to bet that the other Brigaders felt the same way. I met amazing people, many of whom are fellow students at the U of A, and learned how medicine is practiced when resources are minimal. My experiences in Honduras have energized my passion to help people in the future. I can’t wait to do it again next year!

Destinee Ogas – Vivé Peru
This past winter, I spent my Christmas vacation in Trujillo, Peru under the auspices of a wonderful non-profit organization called Vive Peru. Vive Peru has a variety of programs to aid Peruvian communities such as Clinical Medicine, Public Health, Teaching English and Music, Social Work and Engineering. I volunteered under the Clinical Medicine program, which was very exciting with lots of opportunities for hands-on experience.

I was very nervous about the trip, because I had never traveled out of the country before, plus I had never been in an airplane for more than an hour. After almost 2 days of traveling (by car, airplane and bus), I finally made it to Trujillo. Since Peru is on the opposite side of the equator, it was summer there while it was winter in Arizona. However, they did still celebrate Christmas with Santa hats and hot chocolate, even in 90° weather.

In my brief 3 weeks there, I shadowed pediatricians, lab technicians and gynecologists, observed a surgery, gave injections and even enjoyed ceviche with a dentist! To learn more about medical techniques, such as suturing and taking blood pressure, we had an evening class with one of the doctors. It is amazing how young their doctors are. In Peru, med school starts right out of high school.

One of the most valuable components of this trip was the bonds I made with the other volunteers. They were from all over the United States; there were others from UA, some from ASU and the rest were from Boston, Reno, Berkeley, Texas and New Jersey. Even though we had just met each other for the first time, we were all instant friends and went on many adventures together. On our weekends, we explored ancient ruins, toured botanical gardens, hiked the roads of rural Otuzs-co where we met llamas and tried Cuy (Guinea Pig), celebrated New Year’s Eve on beach in Pacasmayo, tried several bakeries at the Plaza del Armas, and we all figured out how to use the bus/taxi system together. We also celebrated several birthdays and even got to see the new Star Wars movie while we were there!

My favorite project that we did was the medical campaign. At that event, we provided free medical care to a neighboring town in need. We set up a clinic outdoors and met with nearly 100 patients. I am personally interested in pharmacy school and gladly volunteered to run the pharmacy station. I took inventory of the medications, filled the prescriptions and gave injections at that event. I really enjoyed the sense of community and even gave the patients hugs after giving them their instructions. It was at this event that I had met a very young boy who reminded me of my little brother. He was very excited to talk to me and was very intrigued about the United States. After talking to him, it made me realize how much we take for granted and how little is needed to be truly happy.

Being in Peru was an unforgettable experience. We all missed our families very much during Christmas, but I wouldn’t change a single minute of my experience there.

Matthew O’Mara – International Dictyostelium Discoideum Conference, Tucson
This past summer I was given the opportunity to participate in the 2016 International Dictyostelium Discoideum Conference. The Dicty (short for Dictyostelium Discoideum) conference is an annual conference for research scientists who conduct their research using the model organism Dictyostelium Discoideum. It was held at the Westward Look Wyndham Grand Resort in Tucson, Arizona. The conference was organized by my Research Faculty Mentor, Dr. Pascale
Charest from the University of Arizona, and co-organizer Dr. Derrick Brazill from Hunter College in Manhattan, New York.

During this conference I was given the opportunity to listen to many highly accomplished scientists talk about the research they were currently conducting. However, I took much more away from this conference than I was expecting. I was able to speak with a post-doctoral researcher from University of Geneva, Switzerland, who inspired me to continue my scientific career. On the first day of the conference this individual gave a talk about his research on the significance of reactive oxygen species produced in Dictyostelium Discoideum. Immediately I was intrigued by his presentation and demeanor in front of such an accomplished audience. He started his presentation with a joke that easily won over the entire audience and drew everyone’s attention. Even though the material being presented was a rather difficult concept to grasp, he presented it in a way that could easily be followed and understood by everyone in the room. On the third day of the conference I was given the chance to personally speak with this individual. Our initial conversation was what many people call “small talk”. We spoke about where we were from and the types of things we enjoyed doing in our free time. As the conversation progressed, I began to learn more about his research. Of course some of the information he was talking about blew right over my head, but he made an effort to break it down in a way that I could understand.

Even though this gentleman is considered a co-worker of mine, we were able to talk casually about our scientific research as if we were close friends. This really inspired me, because as an undergraduate at a conference full of graduate students, post docs, and professors, you begin feel like a little fish swimming in a big pond. It can be very intimidating talking with highly experienced professionals in the field that you are working. However, I was comforted by the fact that the people at this conference all seemed to be extremely friendly and talked to me as if I were just as experienced as them. This experience inspired me to continue pursuing my scientific career. I really enjoyed attending the 2016 International Dictyostelium Discoideum Conference, and I can honestly say that it’s been one of my best experiences in college so far. I hope to be able to attend again next year and share my experience with new members of the Dicty community.

Neal Patel – India, Singapore, and Thailand

With another year of college flying by, I took advantage of this summer to travel around various parts of Southeast Asia. My first destination was traveling back to my roots, India. From northern India to southern India, I was given the opportunity to explore all the distinct cultures. For such a small country, it’s surprising to find such vast differences from one side of the country to the other. Despite the differences found in language, customs, and culture, there was one thing in common all across: love. The hospitality offered in India was second to none; everyone was accepting and welcoming. The atmosphere created by the people in India made it as if I were at home, and as if they were all part of my family. However, there was also much pain given India’s poverty. I could only feel blessed for having the life I do. Not only did my time in India teach me humility, it also taught me to live life and have a positive effect on others. Everyone I met in India put aside their hardships and struggles and offered me the highest regard, care, and love that they could offer.

In addition to traveling across India to view historic sites, I spent much of my time in the small city of Chikhodra, where my father grew up. During my time there I went to the local public school (K-12) each day with my uncle, who was in charge of admissions. The schooling situation was unlike any I had seen before; the school was run down with minimal electricity, running water, and limited sanitation. Even though the school lacked basic accommodations, it was amazing how the school community worked together to do their best for their students. It was even more heartwarming to see the instructors teach the students as if they were their own; the extra time they put in was amazing. Seeing how little they have made me aware of the many blessings I have in life, and I will not take anything for granted again. This trip made me truly appreciate the opportunities and resources schools in America offer.

My next destination was Singapore, where I spent most of my time sightseeing. I had the opportunity to visit Universal Studios Singapore, Night Safari (exotic animals found around the world), Singapore Flyer (165m-tall public observation wheel), and the beautiful Sri Mariamman Temple. The best part of Singapore was finding Little India, a small area within the city of Singapore where it literally feels like India. The aroma of spices, Hindi dialect, and colorful souvenirs flooded the streets of Little India. The city of Singapore...
STUDENT STORIES, CONT.

flourishes with a diverse population of people, giving Singapore its unique traditions and customs.

My final destination was Phuket, Thailand, where I relaxed at a resort and went sightseeing. I had the opportunity to go visit Tiger Kingdom, Phi Phi Islands, James Bond Island, Old Phuket Town (historic building), Bangla Road Nightlife (mini Las Vegas), Big Buddha (45m high statue), and the beautiful Wat Chalong Temples. My time in Phuket flew by and left me mesmerized by the beautiful islands and historic attractions. Thailand was the perfect ending to an eventful summer break that not only served as a vacation, but also a period of self-reflection.

Carlos Perez – ROTC: A LEADERSHIP EXPERIENCE

I attended school and trained to serve in the United States Army.

In my freshmen year of college, I joined the Reserved Officer Training Corp (ROTC) for the United States Army. It is essentially a program that allows students to begin their army career as cadets where they learn how to become effective officers while earning their degree. Once the cadet completes the degree and the program, he/she then receives a commission as a Second Lieutenant. The ROTC program takes very good care of their cadets providing a scholarship for up to 4 years, a monthly stipend up to $500, and funds to pay for school supplies and books to cadets who display ambition and dedication to their training. As future leaders of our military, we make sure we take care of our colleagues, helping each other strive for success in our studies.

The program consists of physical training (PT) three times a week, unless the student participates in Rangers Challenge, which meets every school day at 6 am. We preform PT with our respected platoons so that we build esprit de corp, as well as our muscles. We also learn basic army etiquette as well as leadership procedures and types of communications used by officers. We practice squad level tactics and movements each Wednesday so that we further understand how to become effective leaders in army scenarios. At the end of every semester we perform a Field Training Exercise (FTX) at Fort Huachucu where we set up in an assembly area in a remote location with issued paintball guns. We are given a mission which we are to complete using all the skills taught during the semester. It’s just like camping outdoors with all your best friends, except we are given MREs (meals ready to eat), and we have to be alert as we risk getting shot by an enemy paintball. This FTX is loads of fun.

As a chemistry major, seeking a career in the military is very beneficial to me because all branches including Navy and Air Force are looking for bright STEM majors who are willing to help build and use cutting-edge technology essential for global operations. Most people think that joining the army means having a gun in your hand and shooting other people. Yes, that is one aspect of the military, but there are so many other career options as well. My goal is to pursue a career in medicine, where I hope to become a Medical Officer. Other careers I could pursue could be in the Chem Corp where soldiers learn to manage and control chemical, biological, radioactive and nuclear waste. There are many learning opportunities in the army, each just as exciting as the next.

Jose Rios-Monterrosa – PERU

Kids, Llamas, and Medical Campaigns

This summer, I was given the amazing opportunity to travel to Peru for a month in order to help organize a free medical campaign for the poor neighborhood of Chepen. While there, I had the chance to learn several medical skills like suturing, wound cleaning, and the proper technique to perform a standard physical. Then, I got to practice all these skills at various small hospitals in the northern region of Peru, such as Hospital Chepen and Hospital de Pacasmayo. Furthermore, the amazing staff let me attend several surgeries (i.e., a cholecystectomy), and they let me be on-call with them all night in the emergency room.

When we weren’t in the hospitals gaining hands-on experience, we spent our time practicing our medical Spanish, learning about the healthcare system of Peru, and preparing for our weekly classes for children in the small district of Pacasmayo called El Progresso. Since the most common illnesses seen in Peru are preventable via good hygiene, educating the kids about hygiene is extremely important.

During our time there, we held a total of three classes. We gave presentations on what hygiene was, the importance of eating a balanced diet, and how to practice good hygiene. Although these lessons were very important.
ant, they were not the only thing we did for the Peruvian community.

A week before leaving Peru, we held our main medical campaign. The volunteers were all assigned different jobs like registration, triage, and pharmacy while the three physicians provided free medical consults. Thanks to the donations of medications from the U.S, we were able to provide all the medicine prescribed by the doctors free of charge to the patients. By the end of the day, we saw over 100 patients in a little under 5 hours.

My trip to Peru is one I will cherish for the rest of my life. When I left, I was hoping to learn a few new medical skills and gain some hands-on experience. However, I learned something much more valuable than that. As I went to the various hospitals and talked with the medical professionals, it became more and more obvious to me that every day was a struggle for their communities. Since Hospital Chepen didn’t have a blood bank, they didn’t have the ability to handle major trauma incidents. This being said, the only hospital capable of handling trauma was a 2-hour ambulance ride away. Furthermore, the lack of education on contraceptives has led to a very high birth rate. Unfortunately, most families don’t have the resources to provide a healthy environment for their kids, so gastritis and similar diseases are extremely common. Lastly, many people simply can’t afford a medical consult. Therefore, they avoid treating an acute illness until they have developed into a major problem that is no longer an “easy” fix. With all this in mind, I now truly understand why programs like Doctors Without Borders exist. There are communities in the world that truly do need help. Next summer, I hope to return to Chepen and help the communities in whatever little way that I can. If one day I do get to become a physician, I aim to spend some of my time in places like Hospital Chepen.

**Eric Simental – Mass. Summer Research Prog. (MIT)**

This summer I was given the opportunity to conduct research through the Massachusetts Institute of Technology’s Summer Research Program (MSRP). I had actually learned about the program from Dr. Amy Keating, who was representing MIT’s Department of Biology at a conference I attended in November of 2015. At this conference I was introduced to a number of different programs, and I applied to several. MIT had never really been on my radar as somewhere I would want to attend graduate studies because it isn’t usually perceived as somewhere that places a strong emphasis on biology. I finished applying on a Saturday in February and much to my surprise I was offered a position in the program the following Tuesday, with six days to decide. This, as I was later told, was done so that I would be forced to accept before any other programs had really started looking at applications. However, looking back on the summer, I know my decision to spend a summer at MIT was the right choice.

I was lucky enough to get into my first choice of lab, that of Dr. Peter Reddien at the Whitehead Institute. Dr. Reddien is one of the few scientists I had known about, and had known about for years, as his work was something that had matched my own interests since high school. The focus of the Reddien Lab is understanding planarian regeneration. Planarians are aquatic flatworms with the ability to regenerate from seemingly any injury. Cut the worms in half and each half will regenerate into a new worm. Cut them into thirds, three new worms. We can generate animals with multiple heads, no heads, two mouths, six eyes, or really anything one could think of. The fact that I was able to study these incredible creatures in the lab of a scientist I have followed for years was incredibly surreal.

My time in Cambridge was amazing. Between the 50-70 hour work weeks, beach excursions, meeting faculty at both Harvard and MIT, and constant laughs, I grew not just as a scientist but as a person as well. MIT is a place where scientists thrive. The overwhelming support made for an environment where I felt not only welcome but accepted. I was forced to think in new ways and encouraged to challenge the ideas of even my own PI and mentors, which has only made me more prepared and confident in entering graduate school. Being at MIT was a dream come true.

**Cristian Solano – Italy**

**Culture, Cuisine, & Cobblestone**

Many people do not realize how a simple yes or no question can change their lives. “If you were given the opportunity to study abroad, would you take it?” Those few words turned into ideas as the months progressed, and eventually turned into a life-changing experience that took place thousands of miles from home. These were the words of Jim Hensley, the executive director of the Dorrance Scholarship Program, which not only funds my academic endeavors in Arizona, but sent my colleagues and me to the small, historical town of Orvieto, Italy. It was an opportunity for me to expand my knowledge; instead of focusing on STEM courses, I studied the classics belonging to the ancient world.

Our group had the opportunity to land in Macedonia and work with Habitat for Humanity to build homes for dis-advantaged families. Afterwards our academics began in a week-long visit to the country of Greece to witness the beauty the past has left us. We then embarked to Orvieto,
Italy to study and live within the high walls of the traditional duomo-based town. While becoming involved with Orvieto’s fruitful culture, we made numerous trips to Rome, Venice and Naples. I also had the opportunity to visit other nearby countries, such as Spain, France, and Germany. Upon our return to the United States, we landed in Washington DC to witness first hand how the ancient world has impacted our current one.

Although my courses did not coincide with my major, the knowledge I learned inside and outside the classroom is simply invaluable to me. In a traditional classroom, you could study a piece of art and that would be the end of it. However in Orvieto, we had the opportunity to study a piece of art and then make a short day trip to see the intricacies of the piece in person. This was simply an unfathomable experience that I hope every student has the opportunity in which to participate.

Beyond the scope of learning traditional material, the skills I learned throughout my travels are immeasurable. Being lost in the streets of Rome taught me to always be observant. Witnessing the grand glamour of St. Peter’s Basilica demonstrated that determination goes a long way. Learning to navigate the subway systems of Paris taught me independence. Building homes for the needy in Macedonia showed me that long nights of studying do not compare to the problems some face. Finally, coming out of the experience in one piece instilled within me the confidence needed to face any future challenges academia, or life, has to offer.

Now I ask you, if you were given the opportunity to study abroad, would you take it? It is my hope that my story, as well as the story of my fellow colleagues, appeals to your scientific nature, and convinces you to study the unknown, by studying abroad.
This combination of science, research, and service at the university is a bit alienating as a football player; an already rigorous academic schedule compounded with (what I hope to be) elite academic accomplishments certainly forces me to grow every semester, correct many mistakes, and focus on several targets at once. People often ask me what the point is, a question I don’t really understand. Call it obsession or call it dedication, but I like to describe it with what a coach once told me: never get comfortable, never be satisfied, and always stay hungry. Maybe if people heard that side of football more often, they would realize being an athlete and being a student aren’t quite so different.

Avi Tarquini-Cassell – ISRAEL
In Memoriam 1996–2016
Israel, an unexpected journey

Over the summer of 2016, I was fortunate enough to visit Israel for two weeks through Birthright. Israel This was a once-in-a-lifetime experience where I gained a much deeper connection with my Judaic roots. I traveled with students from the University of Arizona, Arizona State University, and even a few students from the University of California system, thirty-nine altogether. Thanks to our wonderful trip coordinator, Elyse, we were able to visit many of the country’s beautiful landmarks cities. We visited Tel-Aviv, Jerusalem, Haifa, Ashkelon, Gaza, and as many historical sites and places of significance as we could fit into our ten-day trip. I had a fantastic time and made many friends; however, something interesting happened while on the trip that I never expected.

On the second day of the trip, we stopped for lunch in Tel-Aviv’s famous Shuk HaCarmel Market. We ended eating at this restaurant and like most places we visited, the food was delicious, the conversations lively, and the meal filling. However, later that day a mystery began to develop. I’m a nationally and state licensed EMT and a junior in the College of Public Health. Some of my travel companions developed some gastrointestinal distress. At first I presumed it to be traveler’s diarrhea, as many of us had been eating freely of fresh local vegetables and fruits. Over the course of the next several days more trip members fell ill: nausea, vomiting, fever, chills, and gastrointestinal distress. Dehydrated, one of the girl’s went to an Israeli urgent care. Interest piqued, I put my studies in epidemiology to use and began an investigation.

With the help of another student who had a Master’s degree in Public Health, I designed a thirty-five patient interview guide and conducted nine patient interviews with each of the affected students. After collecting all of the data, a pattern emerged. Several students had just irritated their celiac disease or gluten intolerance. But for the others, it became evident that the prodromal stage was about 24-48 hours depending on the health of the student and their individual susceptibility to the disease. I suspected, due to the nature of the illness, the pathogen was bacterial in origin, and I was excited to learn that a local NP at the urgent care who had seen one of the students had determined that the Israeli Public Health authorities had confirmed a local bacterial infection had been spread along the Mediterranean coast, and more specifically in Tel Aviv.

So, what happened? Working backwards I was able to deduce the restaurant had prepared food for a party of 40, and one of the staff members there had likely contaminated the food and had not followed the appropriate procedures for keeping the food contaminant free. I shared my findings with everyone on the final day of the trip, the food poisoning was self limiting, and although my finding didn’t make anyone feel better, the resulting information led to a formal investigation of the restaurant in question by Israeli Public Health officials.

At the conclusion of the trip we said goodbye, and I stayed in Israel, catching a bus to Eilat to scuba dive in the red sea. Then I caught another bus up to Jerusalem and spent the night with my cousin who I last saw while I was still in diapers. I ended my trip with a lazy couple of days in Tel Aviv.

Traveling to Israel under the auspices of the University of Arizona was one of the most memorable experiences of my life, and I am grateful to the people I met and the friends I made, as well as to the people of Israel for making the trip so wonderful. As I continue on with my career in Public Health, I am interested in studying the biochemical and psychosocial aspects of infectious diseases. I have the University of Arizona’s College of Science and College of Public Health to thank for the skills I developed that allowed me to have such a wonderful time in Israel. Our slogan for the Birthright trip is: I don’t have family, I got ָשְׁהֵפָה (family).

Bryce Tipton – ENGLAND AND MALAYSIA

By chance during my freshman year at Arizona, I landed at Manzanita-Mohave, one of the international dormitories. I was kicking around my soccer ball in the parking lot, and
the Brazilian exchange students were quick to join in with me. I spent many days showing them the aspects of American culture that I cherish, and many southwest destinations later they became some of my dearest friends. Their drive to explore and learn about our culture was brilliant and a catalyst for my decision to study abroad.

Ultimately, it was my love for soccer, alongside with a desire to explore my ancestral roots that led me to Great Britain for the fall semester of my junior year. After reviewing a list of Universities with transferable credits, I chose to attend the University of Nottingham because of an excelling chemistry program and its location in England’s East Midlands.

Two of the most stimulating classes I took there were physical chemistry and stellar structure. There was a major emphasis on independent study; each class occupied only two hours of lecture per week. This structure suited me quite well because while it required discipline, it allowed the flexibility to tour the region and meet new friends. Spending winter break with my English relatives and catching a Newcastle United match (my and my granddad’s favorite soccer club) were memories I won’t soon forget.

A few weeks later, I flew to Southeast Asia to start the spring semester at Monash University Malaysia. The warm dense air of Malaysia was a stark contrast to the slicing cold English climate. Another major difference this time around was the accommodation. In England, I was staying in a student apartment complex. In Malaysia, I lived with a friend that I met at the University of Arizona in a house located in the outskirts of Kuala Lumpur. It was my first taste of big city life. The population of Malaysia is fairly evenly split between three main ethnicities; Malay, Indian, and Chinese. Incredible food options were represented by each culture, and it became clear why Malaysia is famous for its cuisine. I gained a familiarity with many tropical fruits that otherwise I would have never encountered. The most popular fruit amongst Malaysians is durian. On the outside, it is prickly and smells like ‘a garbage truck that ran over a skunk’. On the inside however, it is the sweetest and creamiest fruit with a texture similar to that of a ripened avocado.

The most interesting course during my stay in Malaysia was an environmental chemistry course that focused on the modern aquatic issues. This course supplied me with the expertise needed to do a research project on environmental pollution in the Klang River Basin (Kuala Lumpur). Paired with an interesting course on the historical and political governance of Malaysia, it provided me with insight around the challenges of maintaining the environment during a time of rapid economic development.

Throughout this past year I have been enchanted by the striking sense of kindness present far and wide. From the cold and rainy island of England, to the hot and sunny peninsula of Malaysia, I was met with care and consideration from those with whom I crossed paths.

Benjamin Zaepfel – Beckman Scholars Symposium
More than Simply a Symposium
In the bustling city of Irvine, California, undergraduate Beckman Scholars, Post-Doctoral Fellows, and Young Investigators gathered first and foremost to share exciting new research with their peers. With generous funding from the Arnold and Mabel Beckman Foundation, the conducted research spanned across a diverse range of chemical and biological studies. Among the presented work was that of Ben Wu, a recently graduated UA alumnus, and Jordan Barrows, a rising senior in the Departments of Chemistry and Biochemistry and Molecular and Cellular Biology. Notably, Ben was selected as one of only three undergraduates to present his 15-month research project to the entire symposium.

Exciting as it was, the sharing of research was but one of many goals of the conference. Beckman Scholars from all different parts of the country also befriended one another throughout the weekend, embodying the idea that science recognizes no borders. These elite undergraduate researchers shared their insights and passion with each other, bringing to light new directions in which to take their ongoing research.

2016-2017 Beckman Scholars Ben Zaepfel and Stephen Yao took part in the symposium as spectators, as they have another 12 months to accumulate data before presenting their work at next year’s event.

While the scientific achievements presented during the conference are too numerous to list, the resounding mantra that all participants were left with came from no other than the late Arnold Beckman himself: “Don’t be afraid to make mistakes. If you’re not making mistakes, you’re probably not doing much.”