Yellow is the New Green: Dr. Jeff Pyun turns waste sulfur into plastics
DEAR ALUMNI AND FRIENDS OF THE DEPARTMENT

It has been another year of change here in the Department of Chemistry & Biochemistry. Scott Szareeda completed his term of service as CBC Chair, as did Katrina Miranda as Assistant Chair of Education and Assessment. We thank them for their hard work and dedication! Beginning in July, Roger Miesfeld began serving as the CBC Department Head and was joined by Andrei Sanov, Associate Head for Education & Academic Affairs, and Zhiping Zheng, Associate Head for Research & Faculty Affairs. Roger is a Professor in the CBC Biochemistry Program, Andrei is a Professor in the CBC Physical Chemistry Program, and Zhiping is a Professor in the CBC Inorganic Chemistry Program. In addition, a CBC Leadership Team was formed, which consists of the Office of the Department Head (Roger, Andrei, Zhiping), and three staff Directors: Anne Padias, Director of Academic Services; Ken Nebesny, Director of Research Support Services; and Kris Pope, Director of Finance & Administration.

Research, teaching, and outreach are where we put our efforts as a 21st century department of Chemistry & Biochemistry. The research group of Jeff Pyun made great strides in figuring out a way to convert waste sulfur to usable materials in the form of optical lenses and batteries. Jeanne Pemberton continued to help her start-up company GlycoSurf expand its production of glycolipids that may someday provide "green biosafe surfactants" to a growing market. The team of Vicente Taltanguer and John Polland made headlines at the UA as they took their innovative method of teaching, known as Chemical Thinking, to a broader audience of STEM-centered students. There are nearly 3,000 students enrolled this Fall in the general chemistry lecture sections teaching the new curriculum that emphasizes conceptual learning in an active classroom environment. Steve Brown, Hamish Christie, Jim Hazzard, and Elisa Tomat spent many exciting hours this past year with hundreds of K-12 students in a variety of outreach activities showing students the thrill of scientific discovery. Enjoy the Fall 2014 edition of the Catalyst Alumni magazine, especially the faculty profiles (Jeff Pyun and Jon Njardanson), our featured alumnus (Jim Hazzard), and photo essays of the November 2013 Then & Now CBC Scrapbook.

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.

ALUMNI NEWS

Ernest McCray BS Chemistry 1954
At age 82, I have become a life master in Bridge.

Jules Kalbfeld BA Chemistry 1956
Retired. Volunteering: Volunteers in Medicine (Pharmacy Assistant) and Survivor Citizen Patrol.

Robert Greene BS Chemistry 1958
My wife and I have been enjoying retirement for 22 years.

Richard Finn BA Chemistry 1959
Now retired. I graduated with an MD, did a stint in the military, then set up a practice first in Tucson and then North Carolina.

Robert Herrmann BA Chemistry 1961
Owner and PO of Ellipsis Corp, my personal consulting firm. Most recently involved with fly ash remediation.

Carlton Bostic MA Chemistry 1961
Retired and living in the mountains of western NC. Current hobbies include hiking, bicycling, square dancing and writing.

Roger D. Fellows BS Chemistry 1961
Completely retired. I spend time in Utah, Hawaii and some time in Arizona visiting family.

Ted Reid MS Chemistry 1964
My wife Nancy and I have 2 children and a grandchildren.

Jerry Gin BS Chemistry 1964
In May, 2014 I was awarded the UA’s Spirit of Inquiry Award and was Keynote Speaker at the Honors College Pre-Commencement ceremony.

Winston Tilzey MS Chemistry 1965
Taught secondary school for 54 years and won several awards.

Harold Hilliard PhD Chemistry 1969
I am getting: 1. Older, 2. Confused by computers, etc., 3. Distressed with politics.

Mark Nupen BA Chemistry 1966
Just now retiring at age 70. I play golf, am President of Friends of Namakagon Barrens Wildlife Area in northwestern Wisconsin, and have 4 grandchildren.

Suzanne Fuhn Johnson BS Chemistry 1966
I built an ecologically designed, sustainably built solar home in Nevada.

Mark Allen Yeamon BA Chemistry 1966
I have been a Cardiologist since 1976. My wife, Jacqueline Marsh Yeamon, and I have 2 children and 3 grandchildren.

Larry Fox PhD Chemistry 1966
We travel and are raising a new Labrador Retriever puppy.

Linda Honig MS Chemistry 1967
We recently celebrated our 50th wedding anniversary.

Dan Nathan BS Chemistry 1967
I have been retired for six years and currently teach on a part-time basis through the State of California Dept. of Justice.

Jim Foster PhD Chemistry 1968
Still giving tours at Lotusland, playing handball, cutting gemstones and cooking.

Howard P. Klein PhD Chemistry 1968
My wife Sue and I have 2 daughters and 3 grandchildren.

James Dillard BS Chemistry 1970
Chair 2014-2015 Chattanooga TN Section of the American Chemical Society Executive Committee.

James Madden BS Chemistry 1970
I am currently working with career and technology education (CTE) teachers in Arizona to help them emphasize Math in their curriculum.

Armando Angel MS Chemistry 1970
Owner and PI of Ellipsis Corp, my personal consulting firm.

Armando Angel MS Chemistry 1970
Owner and PI of Ellipsis Corp, my personal consulting firm.

Robert E. Kelley PhD Biochemistry 1974
We recently celebrated our 50th wedding anniversary.

Carver Kelley and I have been married for 39 yrs.

My wife Judy and I are retired, wintering in Arizona and spending the rest of the year in Missouri.

Clark W. Smith PhD Chemistry 1973
I am the Chairperson of the Board of Directors of Proteos Inc., a recombinant protein engineering company that I co-founded.

Robert E. Kelley PhD Biochemistry 1974
I tutor math at Santiago Canyon College in Orange, CA. Carol Carver Kelley and I have been married for 39 yrs.

Send your news to Olivia Mendoza at omendoza@email.arizona.edu to be included in next year’s magazine!
2 Dan Villalanti BA Chemistry 1974
I worked at Shell Dev for 11 years before starting Triton Analytical Systems Corp in 1991.

3 Richard Yost BS Chemistry 1974
Co-Director and PI of the newly NIH-funded Southeast Center for Integrated Metabolomics.

Daniel Chang PhD Chemistry 1974

James Day BA Chemistry 1974
After 25 years running a technology marketing agency, I launched a company to address sustainable, green produce production.

Donald Upson PhD Chemistry 1975
My wife Rosalyn and I recently moved to an active adult golf community in Marana, AZ. We have been married for over 43 years and have 2 children and 6 grandchildren.

Anne Yoshino BA Chemistry 1979
I have been directing the BIOTECH Project at the University of Arizona for 12 years.

Gordon Kitsuwa MA Chemistry 1979
Investing in the stock market, taking business classes, and learning Japanese.

John Algeo PhD Chemistry 1981
Back in Tucson since 2003. 1st grandchild just born!

Germain Fernando PhD Biochemistry 1982
I am finishing my 18th year of teaching chemistry at Olympic High School in Eugene, OR.

Todd Rockway PhD Chemistry 1983
Retired from Abbott Laboratories in 2012. Presently teaching Chemistry in two area community colleges.

Soonya Wilson McDavid BS Chemistry 1984
I have been working for WL. Gone for 16+ years. Currently I am a quality engineer in quality assurance.

Clark Colville BA Biochemistry 1984
I have been an orthodontist for 21 years. I helped develop Inviasign brand clear aligners.

Matthew E. Austin BS Chemistry 1985
I work as an Environmental, Health & Safety Chemist at Huntsman Advanced Materials.

Robert McKee PhD Biochemistry 1987
I lead a Global Manufacturing Science & Technology organization at Bristol-Myers Squibb focused on transitioning new medicines from pharmaceutical development into commercial manufacturing.

Dharshi Bopagedera PhD Chemistry 1989
I was awarded the “President’s Faculty Achievement Award” by the President of Evergreen State College.

David Benz PhD Biochemistry 1991
After I retired, I started Caretaker Farm, a non-profit organization that rescues and rehabilitates abused/neglected domestic animals.

Qiang Chen PhD Biochemistry 1992
I am a Professor at ASU developing therapeutics and vaccines against infectious diseases and cancer.

Patrick Desrochers PhD Chemistry 1992
Summer 2014 marks 22 years of service for me at University of Central Arkansas where I am chair of the Dept of Chemistry.

KC Russell PhD Chemistry 1992
Currently I am President of the Kentucky Academy of Science.

Bruce Armitage PhD Chemistry 1993
The Center I co-direct, CNAST, recently received a $3.1M grant from the DSF Charitable Foundation to support fundamental research in the chemical biology of nucleic acids.

Ted Baldwin MS Chemistry 1994
I am finishing my 18th year of teaching chemistry at Olympic College in Bremerton, WA.

Subo Liao PhD Chemistry 1997
I work on process improvement and inventing new methods/processes to manufacture active pharmaceutical ingredients including peptides and conjugates.

Vincent S. Hau BS Biochemistry 1997
I am a vitreoretinal surgeon at Kaiser Permanente in Riverside, CA. I recently ran the Boston Marathon.

Gwen Gross BS Chemistry 1998
Recently, I was included in the ACS’ new web resource targetted at college students looking into future careers.

Susanne Raelfski BS Biochemistry 1999
Currently Assistant Professor at UC Irvine.

Michael Boyles BS Biochemistry 1999
I hiked the Milford Track in New Zealand in February 2014 and am planning to summit Mt Kilimanjaro in September 2015.

Giang Pham BS Chemistry 1999
I am working as a criminalist (forensic scientist) with the Arizona Dept of Public Safety, and I recently got married.

Nadja Wehmeier Anderson BS Biochemistry 1999
I have been directing the BIOETECH Project at the University of Arizona for 12 years.

Julia Metzker PhD Chemistry 2001
I was recently selected as the Director of a new initiative at Georgia College called ENGAGE.

Darrin Smith PhD Chemistry 2002
Appointed to Associate Chair in the Eastern Kentucky University Chemistry Department.

Andy Yu BS Biochemistry 2004
I fulfilled my goal of having my own dental practice.

Christina Bauer PhD Chemistry 2005
Currently Assistant Professor in Chemistry at Whittier College and have 2 daughters.

Channa De Silva PhD Chemistry 2007
Right now I am an Assistant Professor of Chemistry at Western Carolina University in North Carolina.

Katy Mullens BS Biochemistry 2007
Completed pediatric residency and now working as an academic general pediatrician at Phoenix Children’s Hospital.

Bruce Armitage PhD Chemistry 1993
The Center I co-direct, CNAST, recently received a $3.1M grant from the DSF Charitable Foundation to support fundamental research in the chemical biology of nucleic acids.

Ted Baldwin MS Chemistry 1994
I am finishing my 18th year of teaching chemistry at Olympic College in Bremerton, WA.

Subo Liao PhD Chemistry 1997
I work on process improvement and inventing new methods/processes to manufacture active pharmaceutical ingredients including peptides and conjugates.

Vincent S. Hau BS Biochemistry 1997
I am a vitreoretinal surgeon at Kaiser Permanente in Riverside, CA. I recently ran the Boston Marathon.

Gwen Gross BS Chemistry 1998
Recently, I was included in the ACS’ new web resource targetted at college students looking into future careers.

Susanne Raelfski BS Biochemistry 1999
Currently Assistant Professor at UC Irvine.

Michael Boyles BS Biochemistry 1999
I hiked the Milford Track in New Zealand in February 2014 and am planning to summit Mt Kilimanjaro in September 2015.

Giang Pham BS Chemistry 1999
I am working as a criminalist (forensic scientist) with the Arizona Dept of Public Safety, and I recently got married.

Nadja Wehmeier Anderson BS Biochemistry 1999
I have been directing the BIOETECH Project at the University of Arizona for 12 years.

Julia Metzker PhD Chemistry 2001
I was recently selected as the Director of a new initiative at Georgia College called ENGAGE.

Darrin Smith PhD Chemistry 2002
Appointed to Associate Chair in the Eastern Kentucky University Chemistry Department.

Andy Yu BS Biochemistry 2004
I fulfilled my goal of having my own dental practice.

Christina Bauer PhD Chemistry 2005
Currently Assistant Professor in Chemistry at Whittier College and have 2 daughters.

Channa De Silva PhD Chemistry 2007
Right now I am an Assistant Professor of Chemistry at Western Carolina University in North Carolina.

Katy Mullens BS Biochemistry 2007
Completed pediatric residency and now working as an academic general pediatrician at Phoenix Children’s Hospital.

Alan Wang BS Biochemistry 2007
I am finishing my first year of residency at Thomas Jefferson University Hospital. I got married in 2013.

Joon S. Kim BS Biochemistry 2008
I recently graduated from medical school and am now working as a resident at Verde Valley Medical Center, AZ.

Brooke Beam Massani PhD Chemistry 2008
I was married on Nov 10, 2010.

Jimmy Chun BS Biochemistry 2010
I will be completing a Masters of Public Health degree (MPH) in epidemiology at the University of Arizona.

Kimberly Yang Chea BS Biochemistry 2010
I am starting my residency in emergency medicine at Maricopa Medical Center, and I recently got married.

Karl Gerhardt BS Biochemistry 2010
Working on PhD research in the area of synthetic biology and optogenetics.

Michael Ortega BS Biochemistry 2010
I recently received my Pharm.D. from the Univ. of Colorado.

Andrea Hartzell BS Biochemistry 2011
I am finishing my second year of graduate school in the Neurosciences Dept. at UC San Diego. I got married last December.

David Harris MS Chemistry 2011
My wife and I adopted a baby last summer, and now I am attending law school.

Sarah Edwards BS Biochemistry 2011
I’m pursuing a PhD in Biophysics at Stanford University. I got married in April.

Nabila Brabez PhD Chemistry 2012
I am working at ExxonMobil developing new technology for industrial lubricants and diesel fuels.

Kavya Giridharan BS Biochemistry 2012
I am moving to Mumbai, where I will coach and support a group of first year teachers through Teach for India.

Sara Zart BS Biochemistry 2012
I just graduated from the Master’s Entry to the Profession of Nursing program at the University of Arizona.

Anthony Marino BS Biochemistry 2012
I started at ASU’s law school in fall 2014.

Andrew Ma BS Biochemistry 2013
Finishing my first year of medical school!
I have been a UA Wildcat since 1984, when I first came to Tucson to work with Professor Gordon Tollin. Times were different back then, believe me.

My story starts in Lower Delaware, Seaford to be exact, surrounded by farm land, rivers, the Atlantic Ocean, and the Chesapeake Bay. I wish I could say I was a studious young person, but my studies were more focused on enjoying the bountiful natural world while fishing, duck and goose hunting, boating, and surfing, rather than the classroom. One Biology teacher, C.B. "Spuck" Bennett, did have a profound influence on me, as he was a pioneer in what we now refer to as "interactive learning." Spuck designed an advanced biology class during my senior year in high school in which we were encouraged to carry out experiments in the woods and waterways in Sussex County, Delaware. One project included collecting water samples along the Nanticoke River which were tested for coliforms, an ideal project giving us an excuse to go out in my family’s canoe to collect the samples, sneaking in some fishing as well as searching out good sites for duck blinds. Our results were presented in a poster format at the University of Delaware during the spring, my first exposure to a large scale scientific conference. Tucson, Arizona, is a long way from—and a lot drier—than the Chesapeake Bay.

I moved to Tucson in 1984 to join the laboratory of Prof. Gordon Tollin. Gordon is an amazing scientist of the highest intellect and caliber, who not only knew how to ask important scientific questions, but was able to develop technologies to answer those questions. Amongst his other notable achievements, Gordon designed and built from scratch a laser flash photolysis apparatus that enabled us to study inter- and intra-molecular electron transfer reactions between two redox proteins or within a single multi-redox center enzyme. Using this system, we were able to generate in situ one electron reductants to study the electron transfer properties of a wide variety of bacterial, fungal, and vertebrate redox proteins.

One of my greatest joys of my time at the UA has been working with the student members of the Biochemistry Club for which I became faculty advisor in 2001. In 2004, the Biochemistry Club became a chapter in the ASBM8 Undergraduate Affiliate Network giving us access to tremendous benefits by being part of a national and professional scientific society. The incredibly talented and energetic students have developed a number of outstanding university and community outreach activities which have received national recognition.

One of my major accomplishments has been the annual undergraduate-focused research conference, BECUR, in which students from across the campus as well as other universities present their work as posters and oral presentations. In addition, I have been involved in hosting a one-week middle school summer science camp called BLAST Off!, in which students from more financially challenged schools get to engage in hands-on scientific investigations. Finally, our Visiting Scholars Program (now officially recognized as a UA course, BIO 395D) sends UA Biochemistry students to Tucson area high school classes in order to talk about their research and engage in a dialogue on how to succeed at the university/college level. It has been a genuine pleasure working with countless numbers of intelligent, energetic, and highly enthusiastic undergraduates both in and outside of the classroom.
GOING YELLOW!
FROM GARBAGE TO PLASTICS AND BEYOND
by Dr. Jeff Pyun | Associate Professor

ost consumers understand the importance of “going green” but surprisingly, it will soon be just as important to “get yellow!” On average, we consume approximately 20 million barrels of oil per day in the US, and every barrel of oil contains a certain percentage of sulfur that has to be removed.

In a process termed hydrodesulfurization, sulfur containing compounds are removed from crude oil to prevent environmentally harmful emissions which cause acid rain. The byproduct of hydrodesulfurization is elemental sulfur (S8), millions of tons of which remain unused every year. The major usage of elemental sulfur is for the production of sulfuric acid (H2SO4), and the remaining excess sulfur is simply stored as exposed, outdoor megaton deposits in either powder or brick form. The excess production of sulfur is a significant international environmental problem of which the average consumer is wholly unaware. To make matters worse, this excess sulfur problem is only anticipated to worsen as new gas and oil fields across the world produce very “sour” petroleum with a high content of sulfur-containing substances (up to 40-wt% sulfur in fossil fuel reservoirs in the Middle East!).

To address this, my research group developed a facile, one-step chemical process to directly convert elemental sulfur into a novel sulfur plastic. We developed a simple process termed inverse vulcanization. This process enables access to polymeric materials with a very high content of S-S bonds, which affords unique electrochemical and optical properties.

A key application of these sulfur plastics has been as polymeric electrode materials for a special type of battery known as the lithium sulfur (Li-S) battery. The Li-S battery is considered a “next generation” system that possesses 4-5 times higher charge capacity than current Li-ion battery technology. We have further exploited the optical properties of our new sulfur plastics as transmitting materials and lenses for infrared (IR) thermal imaging applications. We envision that these sulfur plastics could be used as lightweight inexpensive lenses for infrared devices such as night vision goggles. I anticipate that our early findings on the utilization of sulfur are the beginning of a new field of sustainable and materials chemistry with numerous possible directions for new students and researchers to explore.

This work could not have been possible without the contributions of Jared Griebel, Dr. Adam Simmonds, Phil Dirlam, Eui Tae Kim, Prof. HyunSik Yoon, Ngoc Nguyen and Dr. Woo Jin Chung. Special thanks also to my key collaborators Professor Dick Glass, Professor Bonner Denton, Dr. Roger Sperline and Professor Bob Norwood from the UA, Professor Kookheon Char and Professor Yung-Eun Sung from Seoul National University, Chris Soles from NIST and Professor Michael Mackay from the University of Delaware.

Applications range from high-end uses like next generation batteries and thermal imaging lenses, to plastics for novelty items.

Pyun research group. Back row: Adam Simmonds, Tristan Kleine, Yueyan Zhang, Laura Anderson, Gracie Pyun, and Jeff Pyun; front row: Nick Pavlopoulos, Jared Griebel, Phil Dirlam, Larry Hill, and Woo Jin

Sulfur is the “garbage” of fossil fuels! A facile, one-step process modifies sulfur with different comonomers to molten liquid sulfur to sulfur plastic.

Molten sulfur poured into a mold can become a lens … or could be used to make novelty plastics.
GIVING BACK
NEW TOOLS USING THE GRAPHICAL LANGUAGE
OF ORGANIC CHEMISTRY

by Dr. Jon T. Njardarson | Associate Professor

Soon after I began my independent career in 2004 in the Department of Chemistry at Cornell University, I started thinking about outreach opportunities and novel ways to give back to students, the broader scientific community and the public.

I decided to pursue new unchartered avenues of outreach wherein I would leverage the wonderful field of organic chemistry and use the internet and the capabilities of smart devices to reach the largest possible audience.

The first product in our educational outreach pipeline came about “organically” in our discussion about the impact and applications of the new chemical methods we were developing. I decided that it would be very helpful to present a large number of pharmaceutical structures together on a single large sheet to provide an impactful visual tool. We spent one year designing posters that we made available for free in 2006 as PDF files on our website for everyone to enjoy. These first-generation posters display the top 200 pharmaceuticals according to sales and prescriptions and are used all over the world by chemists in academia and industry.

My move to the department of Chemistry and Biochemistry (CBC) at the University of Arizona in 2010 inspired me to pursue larger and more impactful educational outreach projects. The first such project had been brewing in my belly for some time. The idea was to create a website and free applications (apps) that would recreate important parts of the organic chemistry literature. Because we were not limited by what one can display on a sheet of paper, our product would be superior to the original articles, be free, and most importantly, provide opportunities for unique interactive learning experiences.

Soon after I arrived at UA I learned that the Office of Instruction and Assessment (OIA) was interested in developing apps for the UA community. I pitched my idea, and they got excited about it, from which an enjoyable and successful partnership emerged resulting in the launch of Chemistry By Design (CByD), the first UA app, in June 2011. Chemistry By Design was launched as a website as well as free apps for both Apple and PC devices. It is the most successful UA app with more than 700,000 visits to date (without any advertising). CByD grows weekly as members of my research group and helpful individuals from all over continually contribute so that the content grows (65% growth since launch).

Soon after arriving at UA, I recruited a team of undergraduates to help draw the structures of all small molecule drugs approved by the US FDA since it was founded. Our reason for initiating this project was to get away from displays based on sales and prescriptions and instead focus on the diseases for which these drugs were used. This new database allowed us to create the first disease-focused drug posters (12 in total), which display all the small molecule drugs approved for a given disease category (oncology, cardiovascular, etc.). This year we designed and launched new structure-focused posters, wherein our first three posters showcase all the pharmaceuticals containing fluorine, sulfur and chlorine, respectively.

I am really proud of the outstanding work my undergraduate and graduate students have accomplished in making these ideas a reality and rising to the occasion and delivering beautifully crafted products. I am also proud that all of our new educational projects have been published in the Journal of Chemical Education. We have many other exciting educational projects in our pipeline, including several app ideas. I can’t wait to see the projects in our pipeline being launched. Stay tuned!

Jon is originally from Iceland. He grew up in the small town of Akranes, which is close to the capital (Reykjavik). Like his ancestors 1000 or so years ago, Jon then headed west. He first studied organic chemistry at Yale University, then moved to The Memorial Sloan Kettering Institute, where he completed a postdoctoral stay. He started his independent career at Cornell University in 2004. In 2010, Jon and his fiancée Betsy Eigenberg decided to get married in Iceland. They picked an old tiny wooden church located at Thingvellir, which is significant as it is the place where the oldest parliamentary institution (Althingi) in the world was established (year 930). Not only is it a spectacularly beautiful place, but it is also of great geological significance as it is located on the exact fault line where one tectonic plate pulls towards the US and the other towards Europe, which Jon and Betsy found particularly appropriate for their union.

The first product in our educational outreach pipeline came about “organically” in our discussion about the impact and applications of the new chemical methods we were developing. I decided that it would be very helpful to present a large number of pharmaceutical structures together on a single large sheet to provide an impactful visual tool. We spent one year designing posters that we made available for free in 2006 as PDF files on our website for everyone to enjoy. These first-generation posters display the top 200 pharmaceuticals according to sales and prescriptions and are used all over the world by chemists in academia and industry.

My move to the department of Chemistry and Biochemistry (CBC) at the University of Arizona in 2010 inspired me to pursue larger and more impactful educational outreach projects. The first such project had been brewing in my belly for some time. The idea was to create a website and free applications (apps) that would recreate important parts of the organic chemistry literature. Because we were not limited by what one can display on a sheet of paper, our product would be superior to the original articles, be free, and most importantly, provide opportunities for unique interactive learning experiences.

Soon after I arrived at UA I learned that the Office of Instruction and Assessment (OIA) was interested in developing apps for the UA community. I pitched my idea, and they got excited about it, from which an enjoyable and successful partnership emerged resulting in the launch of Chemistry By Design (CByD), the first UA app, in June 2011. Chemistry By Design was launched as a website as well as free apps for both Apple and PC devices. It is the most successful UA app with more than 700,000 visits to date (without any advertising). CByD grows weekly as members of my research group and helpful individuals from all over continually contribute so that the content grows (65% growth since launch).

Soon after arriving at UA, I recruited a team of undergraduates to help draw the structures of all small molecule drugs approved by the US FDA since it was founded. Our reason for initiating this project was to get away from displays based on sales and prescriptions and instead focus on the diseases for which these drugs were used. This new database allowed us to create the first disease-focused drug posters (12 in total), which display all the small molecule drugs approved for a given disease category (oncology, cardiovascular, etc.). This year we designed and launched new structure-focused posters, wherein our first three posters showcase all the pharmaceuticals containing fluorine, sulfur and chlorine, respectively.

I am really proud of the outstanding work my undergraduate and graduate students have accomplished in making these ideas a reality and rising to the occasion and delivering beautifully crafted products. I am also proud that all of our new educational projects have been published in the Journal of Chemical Education. We have many other exciting educational projects in our pipeline, including several app ideas. I can’t wait to see the projects in our pipeline being launched. Stay tuned!

Jon is originally from Iceland. He grew up in the small town of Akranes, which is close to the capital (Reykjavik). Like his ancestors 1000 or so years ago, Jon then headed west. He first studied organic chemistry at Yale University, then moved to The Memorial Sloan Kettering Institute, where he completed a postdoctoral stay. He started his independent career at Cornell University in 2004. In 2010, Jon and his fiancée Betsy Eigenberg decided to get married in Iceland. They picked an old tiny wooden church located at Thingvellir, which is significant as it is the place where the oldest parliamentary institution (Althingi) in the world was established (year 930). Not only is it a spectacularly beautiful place, but it is also of great geological significance as it is located on the exact fault line where one tectonic plate pulls towards the US and the other towards Europe, which Jon and Betsy found particularly appropriate for their union.
2014 STUDENT AWARDS

Undergraduate Awards
College of Science, CBC and Biochemistry Outstanding Senior Fall 2013
Jessica Stokes
CBC and Biochemistry Outstanding Senior Spring 2014
Andy Phan
Chemistry Outstanding Senior Spring 2014
Gregory Potter
CBC and Chemistry Excellence in Research Award Spring 2014
Mei-Li Laracuente
Biochemistry Excellence in Research Award Spring 2014
Kevin Carlson
CBC Outstanding Freshman 2014
Benjamin Van Maren
CBC Outstanding Sophomore 2014
Nicole Schwabne
CBC Outstanding Juniors 2014
Brittany Forre
Stephanie Kha
Joseph Marshalek
Charles Hoyt Scholars 2013
Cheryl Cheah
Alyssa Vollaro
Excellence in Biological Sciences Scholars 2014
Brittany Forre
Kaitlyn McLeod
Michael A. Wells Memorial Research Scholars
Kaitlyn McLeod
Benjamin Van Maren
Biochemistry Outstanding Thesis 2014
Kevin Carlson
Julie Cheung
Graduate and Undergraduate Awards
David F. O’Brien Fellow 2014
Andrew Dixon
Carl S. Marvel Fellow 2014
Chris Archerley
CBC Graduate Student Excellence in Research Award 2014
Adam Meier – 1st year
Brandon Smith – 2nd year
John Hostetler Scholar 2013–14
Michael Remesic
Outstanding CBC Graduate Students 2013
Outstanding Scholar
Lingzi Sang
Outstanding Service
Sara Hall
Outstanding Teaching
Ilja Jones
Galileo Circle Scholars 2014
Alexander Aydt
Cheryl Cheah
Julie Cheung
S’Ana Coggris, Gilbert R. Escalante Scholar
Ramanan Ehamparam
Eric Figueroa
Harrison Frisk
Jared Griebel
Sara Hall
Teryn Homan
Stephanie Kha
Mei-Li Laracuente
Kaitlyn McLeod
Nicole O’Connor
Suchithranga M.D.C. Perera
Andy Phan
Kayla Polzin,
Michael Cusanovich Scholar
David Racke
Kameron Rodrigues
Nickie Seto
Taylor Szyzskka
Edson Vitaku
Melissa Wennrich
Alyssa Vollaro
Jonathan Yamaguchi
Merrill P. Freeman Medal
Jonathan Yamaguchi
Astronaut Scholar 2013
Eric Hanser
Beckman Scholar 2014
Shauna Hasan
Pillars of Excellence 2014
Stephanie Kha
Danny Brower Memorial Scholar 2013
Eric Figueroa
Glen W., Vanice, & Keith G. Reid Scholars 2013
Stephanie Kha
Brittany Forte
Nicole O’Connor
Paul G. Koch & Elise M. Koch Memorial Scholar 2013
Benjamin Van Maren
Charles, Charles Jr. & Anthony Vomaska Scholar 2013
Benjamin Van Maren
Magellan Circle Scholar 2013
Alyssa Vollaro
Biological, Engineering & Chemical Undergraduate Research Conference 2014
Chi Chan
Brittany Forte
Harrison Frisk
Matthew Goysman
Marissa Lopez-Pier
Austin Miller
Briania Mnoon
Iris Mota
Kameron Rodrigues
Taylor Szyzskka
CBC Poster Fair 2014
Senior Thesis
1st: Sophia Louise Park
2nd: Nickie Seto
Biological Sciences: Accomplished
1st: Shaina Hasan
2nd: Stephanie Kha
Biological Sciences: Emerging
1st: Rachel High
2nd: Benjamin Van Maren
Physical Sciences
1st: Laura Anderson
2nd: Wilfred Russell
2nd: Ivan Garcia
2nd: Kenzi Li

2014 COMMENCEMENT

T
he 2014 CBC Awards and Commemoration Ceremony was held in the Student Union Memorial Grand Ballroom. The 500 attendees included 2013 – 2014 graduating students, CBC award recipients, CBC Ambassadors, faculty, staff, family, and friends of the department. The program began with a welcome by Dr. Scott Saavedra, Chair of CBC, followed by the keynote speaker, Fernando D. Martinez, MD, Regents Professor, Director, BIO5 Institute and Arizona Respiratory Center. Dr. Katrina Miranda presented the undergraduate awards; Dr. Dominic McGath, 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 Dr. Saavedra and Dr. Roger Miestef. The closing remarks were given by Andy Phan, 2014 CBC/Chemistry Outstanding Senior. The 2015 CBC Awards Commencement Ceremony will be held on Thursday, May 14, 2015 at the Student Union Memorial Grand Ballroom approximately from 10:30 am – 12:30 pm.
NEW FACULTY AND STAFF

Jacob Schwartz, Assistant Professor
Robyn Burkey, Administrative Assistant
Molly Cheng, Accountant, Associate
Maribel Jimenez, Administrative Assistant
Minqing (Stephen) Li, CBC Electronics Shop
Samuel John Maez, Accountant, Associate
Michael Morris, CBC Computer Technology Manager
Tom Solsten, Mass Spectrometry Facility
Jennie VanderHooven, CBC Advisor

UA FACULTY AWARDS 2014

Neal Armstrong, UA Regents’ Professor
Michael Brown, Galileo Circle Fellow 2014, Biophysical Society 2014 Avanti Award
Bonner Denton, Lifetime Achievement Award, Scientific Detectors in Astronomy Conference, Honorary Membership in the Society for Applied Spectroscopy
John Enemark, Dreyfus St. Scientist Mentor Award
Victor J. Hruby, Portoghese Lecturer, University of Minnesota
Dominic McGrath, 2014 Distinguished Career Teaching Award
Katrina Miranda, elected AAAS Fellow for work on nitric oxide, 2014 Distinguished Advising Award
Oliver Monti, 2014 Distinguished Early-Career Teaching Award
Jeanne Pemberton, GlycoSurf LLC, Catapult Award from Tech Launch Arizona, named to the Analytical Scientist Power List
John Pollard, 2014 Distinguished Achievement in Science Education

UA STAFF AWARDS 2014

Steve Brown, CBC McNair Staff Award, CoSASC Star Award
Latamaria Dione Johnson, CBC McNair Staff Award
Martin Marquez II, Wildcat Family Spirit Award, CoSASC Star Award
Anne Padias, CoS Staff/AP Recognition Award, CoS Dean’s Award of Excellence “Best of the Best”
Mark Yanagihashi, UA Award for Excellence

IN MEMORIAM

ALUMNI

Victor Berner, BS Chemistry, 1968
James Fedrick, BA Chemistry, 1953
Richard Grote, BS Chemistry, 1953
Reid McCarty, BS & PhD Biochemistry, 2004 & 2011

Reid McCarty

Stanley Mogerman, BA Chemistry, 1954
Robert Temple, BA Chemistry, 1963
Willis (Bill) Tolley, BS Chemistry, 1950

FACULTY

Associate Professor Emeritus Michael F. Burke, a long time member of the Chemistry Department faculty, passed away on Saturday, June 14, 2014. He joined the faculty of the Chemistry Department at the University of Arizona in 1967, and retired from the Department in 2001.

Michael F. Burke

Henry Freiser

It is with sadness that we report that UA Professor Emeritus Henry Freiser passed away in August 2013. Professor Freiser joined the Department of Chemistry at the University of Arizona in 1958 and served as department head from 1958-67.

CBC THEN & NOW ALUMNI REUNION

In November 2013, CBC Alumni came to the University of Arizona campus for two days of fun and learning. Alumni had an opportunity to tour campus and see the state-of-the-art CBC research labs. There was time for tours of Biosphere 2 and the Arizona-Sonora Desert Museum as well. It was great to see old friends and meet new ones, and we look forward to seeing YOU at our next CBC Reunion.

CBC@UA! CBC@UA!
OUTREACH ACTIVITIES

AX (ALPHA CHI SIGMA) is the professional chemistry fraternity. The University of Arizona chapter (Beta Tau) was founded in 1967 by 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 mostly our CBC graduate students, and this organization 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 graduate student recruiting activities, setting up/breaking down poster sessions, operating the grill at departmental events, and planning/organizing the holiday party. For graduate students in our department, AXΣ provides many of the opportunities for participation in outreach activities. Members are always eager to perform chemistry shows, and facilitate hands-on activities with interested groups, usually children.

SMACS (STUDENT MEMBERS OF THE AMERICAN CHEMICAL SOCIETY) is our other student run chemistry group. In this group all of the members are undergraduates. There are typically around 40 active members, which means there are always plenty of people to go out and do demos! SMACS’s big event every semester is their free public “Chemistry Magic Show,” held in one of our CBC lecture halls.

Chemistry Discovery is a chemistry course and an outreach program with the goal of promoting and facilitating chemistry learning for middle-school students (grades 6-8). This initiative was created and launched by Prof. Elisa Tomat in Fall 2012, and it is now in its third year of activity.

The main objective of the course is the development of a series of workshops for middle-school students at the Flandrau Science Center, the main venue for scientific outreach activities on our campus. The undergraduate and graduate students enrolled in Chemistry Discovery apply the knowledge acquired in their chemistry classes to the development of educational activities. The resulting workshops prompt our visitors to discover chemical concepts in their daily experience. Furthermore, the program promotes higher education by providing an opportunity for middle-school students to discuss scientific observations while interacting with college students.

Over the past two years, Chemistry Discovery has reached more than 200 middle-school students and several workshops are being planned for this fall. CBC Prof. Nancy Horton and John Jewett have been contributing to the program since its inaugural semester, and Profs. Jeanne Pemberton and Hamish Christie are joining the team this year. Students continue to enroll in this unique course that blends chemistry learning and communication with a rewarding outreach experience, therefore we anticipate that Chemistry Discovery will continue to produce exciting educational events for years to come!
CBC THEN & NOW ALUMNI REUNION

See story on p. 15.

November 14–16, 2013
University of Arizona
Tucson, AZ

ALUMNI NEWS

Ernest McCray BS CHEMISTRY 1954

I have become a life master in Bridge and enjoy playing at Tucson Charity Bridge Club and Adobe Bridge Club. I am 82 years old and I follow Climate Change and Peak Oil closely. I will probably die before the oil runs out.

Richard Flynn BA CHEMISTRY 1959

I went to med school at Tulane U. in New Orleans, graduating with an MD in 1963. Post graduate training was completed in 1967, and I entered military service in the USA. I was stationed at VA, at Ft Monroe. In 1969 I left service, and returned to Tucson and set up practice. I remained in Tucson until 1996, when I moved my family to NC, where I practiced medicine until 2002. I am now retired.

Robert Herrmann BA CHEMISTRY 1961

Owner and PI of Ellipsus Corp, my personal consulting firm. Most recently involved with fly ash remediation, more specifically the treatment of aqueous leachates from fly ash immobilizing sulfur and selenium compounds.

Ted Reid MS CHEMISTRY 1964

I am still married to the same person who was my wife (Nancy) during my stay at the U of A. We have 2 children and 4 grandchildren. Our oldest grandchild will graduate from the University of Texas next year. I am still employed at Texas Tech University as a Professor in the Health Sciences Center. However, my plan is to retire in 5 years. My research mainly centers on the use of organo-selenium incorporated into polymers to inhibit the formation of bacterial biofilms on the surface of medical devices. Selenium in this format can catalyze superoxide on the surface of the device which kills bacteria which try to attach. At the moment we are working on contact lenses, tympanostomy tubes, catheters, stents, bandages, heart valves, and knee implants. We are also using these organo-selenium compounds to design a new generation of antibiotics that will not allow for bacterial resistance.

As far things outside the body we are also working on selenium containing RO spacers and membranes. Another area of research is on the use of neuropeptides to promote wound healing for diabetic ulcers. At the moment we have a product that is in phase one clinical trial for this purpose. We have treated over 1000 patients and it appears to work quite well. For this work I received the Chancellor’s Medal for Research and Commercialization last year.

ONLINE EXTRAS

Winston Tilley MS CHEMISTRY 1965

Taught for 34 years. Finalist for teacher of the year award. Given by Univ. of Idaho District Teacher Excellence award. District 3 (Southwest Idaho) Local Teacher of the year award (twice) Teacher of the month (twice). 33 grandchil-
dren and 1 great grandchild. Managed the State Tennis tournament for the last 16 years (still active). Work for the Idaho High School Activities Association for other sports. Awarded a lifetime membership for the third district coaches association. I need to give credit to the UI of Ar-
izona for much of my success. The five summers I spent on campus did much for my preparation to teach. Names of great profs that I remember well are Dr. Millard Seeley and Dr. Bonner Denton.

Mark Nupen BA CHEMISTRY 1966

Just now retiring at age 70. Activities: golf, President of Friends of Namekagon Barrens Wildlife Area in north-
western Wisconsin, grandchildren (4) and other whims and projects. Became a general contractor for a 2000 sq ft cabin ‘up north’ and highly recommend the effort to anyone with some time available to oversee project and save money and superior results.

Mark Allen Yeoman BA CHEMISTRY 1966

I have been a Cardiologist since 1976 on the same cam-
pus I am on now. My wife, Jacqueline Marsh Yeoman was graduated from the university of Arizona the same time. We both were from Tucson. We married following our graduation and she taught school in the Philadelphia area while I attended medical school at the University of Penn-
sylvania. I was graduated from medical school in 1970 and was an Intern, Resident, and Fellow at the Baylor Col-
lege of Medicine from 1970 to 1976 in Internal Medicine and Cardiology. I am Board Certified in Internal Medicine, Cardiovascular Diseases, and Interventional Cardiology. Jackie and I have two children (San Francisco and Dallas) and three grandchildren (Dallas). My mother is 93 and still alive. She was from Peoria, Arizona but raised us with my deceased father in Tucson. My mother and two of my brothers now reside in North Mississippi (Pontotoc and Lee Counties) where we have a farm.

Larry Fox PhD CHEMISTRY 1966

We travel, are attending grandchildrens gradu-
ations, are raising a new Labrador Retriever pup, Past President (2009-2010) of the Rotary Club of Austin - University Area. We participate in the University of Texas at Austin UFF Forum Other Lifelong Learning Institute program on the Executive Committee, the Lecture Commit-
tee and as the Webmaster. We are also involved with BookSpring, which is Austin’s answer to the national Reading is Fundamental and Reach Out and Read programs for preschoolers, mostly from minority families who have no books in the home to provide read-
ings readiness before Kindergarten. We also travel a couple times of years, mostly abroad.
ALUMNI NEWS, CONT.

William John Brinkman PhD Chemistry 1973

In 2011 I was elected a Fellow of the American Industrial Hygiene Association. Judy and I both retired in 2012, and since then we have been living at our condo in Mesa, Arizona (yes, we are snowbirds) and spending the rest of the year in Kansas City, Missouri. Our first grandson was born in Sept 2011, so we are frequent travelers to Oxford, Ohio, where both of her parents are on the faculty of Miami University.

Clark W. Smith PhD Chemistry 1973

I am the Chairperson of the Board of Directors and one of the principal shareholders of Proteins Inc, a recombinant protein engineering company that I co-founded. I am retired from the active management of the company. I spend my time in Texas in the winter and the remainder of the year in Michigan teaching flying, riding my Harley and pursuing other outdoor sporting interests.

Don Villanant BA Chemistry 1974

After completing a postdoctoral fellowship in Hydrology, I enjoyed working at Shell Dev for 11 years before starting Triton Analytics Corp in 1991. We work for over 250 companies worldwide focusing on the characterization of petroleum crude oil and products. I am also the Chairman of ASTM D02.04 Section K Committee on Correlative Methods. I wish to thank Prof. Burke, Wilson, Denton, Fernando, Freiser, and Armstrong for their guidance, patience, advice and friendship. Daughter Gabriella (third generation Wildcat) recently completed her B.S. at the UA and was a four-year varsity cheerleader.

Richard Yost BS Chemistry 1974

Co-Director and PI of the newly NIH-funded Southeast Center for Integrated Metabolomics; Also an Affiliate Professor, Pathology, Immunology, and Laboratory Medicine, University of Florida and Adjunct Professor, Pathology, University of Utah and ARUP.

James Day BA Chemistry 1974

After 25 years running a technology marketing agency (NYC, Silicon Valley and Seattle), The Day Group, Inc., I’m finally beginning to apply some of my chemistry and biochemistry education in the real world. In 2011, I launched a company to address sustainable, green produce production in controlled-greenhouse environments. And yes, I’ve reconnected after all these years with UofA’s Chemistry and Biochemistry Department.

Richard Yost

I am designing instrumentation.

Anne Yoshino BA Chemistry 1979

I’m happily married for the past 23 years to (retired biochemistry professor) Bill Grimes. We do lots of outdoor activities with our dog and horses as well as traveling. Bill and I were foster parents to Iditarod puppies from Dallas Seavey kennel. We spend part of each year in Willow, Alaska, Bedrock, Colorado, and Tucson. We enjoy photography and have been learning lots of new skills in (semi-) retirement.

Germaine Fernando PhD Chemistry 1982

My wife Rosanne, two sons, Brian & Randall, and I are living in Brisbane, Queensland, Australia. I have been working at the University of Queensland for the last 25 years. My two sons are doing their postgraduate studies also at the University of Queensland. I entered the University of Arizona Biochemistry Department at the Medical College in 1977 and did my PhD studies in Dr. Michael Wells’ lab. I enjoyed my stay in Tucson very much.

John Hurley PhD Chemistry 1982

Scientist at Ventana Medical Systems working on multiplexed fluorescence detection of antibodies in the fight against cancer.

Clark Colville BA Biochemistry 1984

I have been an orthodontist for 21 years and continue to practice today in Seguin, Texas. In addition, I teach graduate residents at the University of Texas Health Science Center School of Dentistry as an assistant clinical professor. I help develop Invisalign brand clear aligners, serving as a member of the clinical advisory board since 1998. I have developed an orthodontic app for iTunes and android platforms that is the most downloaded orthodontic app on iTunes, orozcoortho.com. I currently own an online consulting company called Smile Assist, where we have consultants help doctors develop digital treatment plans for orthodontic patients using manufacturers’ proprietary software.
Soonya Wilson McDavid  BS CHEMISTRY 1984

After graduating with a BS in chemistry from the UofA, I worked as a peptide chemist for a biotechnology company in Tucson for 2 years. I got married and decided to go to grad school in the Washington, D.C. area and compiled a MBA in international business two years later. I worked as a chemist for the EPA Sample Management Office during my studies reviewing sampling data from Superfund sites, as well as a research assistant for an international engineering company. Upon graduating with an MBA, I worked for two chemical industry trade associations in Washington, D.C. for almost 10 years as a manager of technical affairs and assistant director of environmental affairs. I had a son and got divorced. I decided to move back to Arizona to be closer to family, so I moved to Flagstaff and started working for W.L. Gore Medical Products Division as a quality engineer and quality assurance. I have been at Gore 18+ years and have been a QA Leader on the operations side for the aortic products business for many years and going strong. I am looking forward to expanding my role in international business development as we expand our global reach.

My son is in college at University of Washington, studying microbiology with a minor in chemistry with hopes of pursuing genomic engineering.

Matthew E. Austin  BS CHEMISTRY 1985

Works as an Environmental, Health & Safety Chemist at Huntsman Advanced Materials, where he is assisting in the company’s transition to the GHS standards going into effect in 2015.

Roberta McKee PhD BIOCHEMISTRY 1987

After graduating from the UofA in 1987, I went on to do a Post-Doc Fellowship in the pharmaceutical industry (Merck & Co., Inc.). Upon completion, I have continued my professional career in the biopharmaceutical industry. Today I lead a Global Manufacturing Science & Technology organization at Bristol-Myers Squibb. I have been in the pharmaceutical business for years and have brought thousands of K12 students.

Bruce Armitage PhD CHEMISTRY 1993

The Center I co-direct, CNAST, recently received a $3.1M grant from the NSF to support fundamental research in the chemical biology of nucleic acids. The company I co-founded, PNA Innovations, has raised $5.1M in private investment and NIH SBIR funding to support our initial R&D efforts.

Ted Baldwin MS CHEMISTRY 1994

I got my MS in chemistry with Dr David Wigley in December of 1994. I am finishing my 18th year of teaching chemistry at Olympic College in Bremerton, WA. We have 5 chemists in our department and I have been here the longest. My wife Katy and I are immensely enjoying the major shift in our life after the birth of our first child, Coinal.

Vincent S. Hau BS BIOCHEMISTRY 1998

Vitreoretinal surgeon at Kaiser Permanente in Riverside, CA. Just elected Co-Chair of the Young Physicians Section of the American Society of Retina Specialists. Expecting first baby (a girl) in December. Also, just ran the Boston Marathon.

David Benz PhD BIOCHEMISTRY 1997

After I retired from careers in education, science, and business, I started a non-profit foundation in 2008, named CaranTaker Farm. We rescue and rehabilitate domestic animals (horses, goats, dogs, and cats) that have been abused and neglected, and co-ordinate ongoing care for them. We are currently in our seventh year of operation in the Applegate Valley in Southern Oregon, and we have provided sanctuary, both temporary and permanent, for dozens of animals.

Qiang Chen PhD BIOCHEMISTRY 1992

I am a Professor at ASU developing therapeutics and vaccines against infectious diseases and cancer.

Patrick Desrochers PhD CHEMISTRY 1992

Summer 2014 marks 22 years of service for me as a tenured tenure-track professor at the University of Central Arkansas. I am currently chair of the Department of Chemistry. (Video of STEM posters) My oldest, Claire, graduated with her BS in chemistry and is now pursuing a graduate degree in chemistry at Wash. U. in St. Louis. My middle daughter, Marie, is working toward an art history degree UCA. Her honors thesis is dealing with cataloging/preserving New Beul era murals com-missioned and painted in rural post offices. My youngest, David, is a sophomore in HS and recently completed his Eagle Scout rank with BSA. My wife, Linda (Comiskey) is currently employed part-time with the chemistry department at Hendrix College across town. We recently celebrated our 25th wedding anniversary.

KC Russell PhD CHEMISTRY 1992

Currently I am President of the Kentucky Academy of Science.

Gwen Gross BS CHEMISTRY 1998

In December of 2013, I was included in the ACS’ new web resource targeted at college students looking into future careers.

Glenn Pham BS CHEMISTRY 1995

Migrated to my high school town and we are starting to work on a family Working as a criminalist (forensic scientist) with the Arizona Dept of Public Safety.

Susanne Rafelski BS BIOCHEMISTRY 1999

Currently Assistant Professor at UC Irvine. See more at my website.

Nadja Wehmeyer Anderson PhD BIOCHEM 1999

I have been directing the BIOTECH Project for 12 years and have brought hands on engaging science to literally hundreds of thousands of K12 students. One of the biggest stories stories of this program has been the development of these new biotechnology courses throughout the Tucson area. As teachers have become familiar in the use of new equipment and supplied with the materials for their classroom, they began to conduct new activities, such as, amplification of a specific gene sequence, genetic transformation of bacteria, and DNA fingerprinting with their students. This resulted in excitement generated by their students in biotechnology. Many of these teachers have taken the initiative to further develop biotechnology programs at their respective schools.

In Spring 2013, University of Arizona’s Molecular and Cellular Biology Department (MCB) began offering three units of UA credit for each of the two biotechnology courses as MCB 101 and MCB 102. Currently, Tucson schools offer biotechnology programs at ten schools, and we hope to have Phoenix schools on board for next year. If you want to learn more about the program visit the website. To learn more about the BIOTECH Project visit their website. MCB 101 focuses on the techniques used in biotechnology, while MCB 102 students conduct research projects which they present at the Southern Arizona Research Science and Engineering Fair. Last year we began to coordinate UA graduate students to interact with MCB102 classrooms. The collaboration allowed for high school students to work on a real time research project and interact with UA researchers. Because these classrooms are very well equipped with molecular biology equipment, most of the research was conducted in the high school classroom. For next year, I would like to see every MCB 102 classroom with at least one UA graduate student and high school student research collaboration.

In April we published one of the activities used to teach Mendelian genetics, Cootie Genetics, which has been used by hundreds of teachers. I have noticed for years that UA students in freshman biology do not understand Mendelian genetics, even though they have theoretically been exposed to it 2 to 3 times. I am excited about the idea of kids actually understanding Mendelian genetics prior to their university biology classes.

In 2011 I was awarded the Michael A. Cusanovich Educator of the Year, which was a huge honor. In late 2012 I was invited to present at an annual AZBIO conference. I am honored to share this award with some of the best instructors, who I am honored to have had the opportunity to work with these past 12 years.

Julia Metzker PhD CHEMISTRY 2001

I was recently selected as the Director of a new initiative at Georgia College called ENGAGE.

Andy Yu BS BIOCHEMISTRY 2004

Fulfilled my goal of owning a dental practice. And expecting our first child in June 2014!

Christina Bauer PhD CHEMISTRY 2005

Since 2011 I have held the position of Assistant Professor in Chemistry at Whittier College in Southern California. First baby girl born in Jan. 2011; second baby girl born in Jan. 2013.

Channa De Silva PhD CHEMISTRY 2007

Right now I am an Assistant Professor of Chemistry at Western Carolina University, Cullowhee, NC. I teach inorganic chemistry to our students. I carry out research with our students. I and my wife had a baby after we moved to North Carolina.

Katy Mullens BS BIOCHEMISTRY 2007

Completed pediatric residency at Phoenix Children’s Hospital and accepted a position as an academic general pediatrician at Phoenix Children’s Hospital starting in July 2014.

Alan Wang BS BIOCHEMISTRY 2007

Graduated from med school at the University of Arizona College of Medicine – Phoenix, and will be finishing first year of neurology residency at Thomas Jefferson University Hospital. Met my wife (we got married in 2013) in med school; she is now finishing her first year of pathology residency at the Hospital of the University of Pennsylvania.

Kimberly Yang Chea BS BIOCHEMISTRY 2010

Graduated from Medical School at the UA campus in Phoenix! Starting residency in emergency medicine at Maricopa Medical Center. Married my husband, whom I met at the UA (Computer Science 2009).
The Catalyst | CBC Alumni Magazine

ALUMNI NEWS, CONT.

Emily Grumbling  
**PhD Chemistry 2010**

I arrived at the University of Arizona in 2004 with a liberal arts background and enthusiasm for learning chemistry. Inspired by the foundational nature of negative ion photoelectron imaging, I joined the research group of Professor Andrei Sarov. My doctoral studies examined the electronic structure and dynamics of gas-phase and cluster anions, by relating the observed energies and symmetries of photoelectrons to the symmetry of the orbitals from which they were removed. I saw my graduate work as a “pure,” rather than “applied” science, pursuing knowledge for the sake of better understanding the physical world.

Upon completing my Ph.D. in 2010, I sought to broaden my range of knowledge, gain deeper insight into the role of science in society, and have a more direct impact on people’s lives. Instead of accepting a postdoctoral research position, I applied and was selected for an American Chemical Society (ACS)-sponsored Congressional Fellowship. I stayed on as a CBC Lecturer for one semester, and moved to Washington, D.C. in August 2011 for the fellowship.

In all, I spent just over three years in federal policy, first as a Fellow in the office of Congresswoman Diana DeGette in the U.S. House of Representatives, and then as a Fellow in the office of Congresswoman Diana DeGette in the U.S. House of Representatives, and then as a CBC Lecturer for one semester, and moved to Washington, D.C. in August 2011 for the fellowship.

In these positions, I had some opportunity to apply my technical expertise in chemistry (for example, Congressional work on hydraulic fracturing, toxic substances and drug policy), but mostly made use of the general analytical skills I developed through my scientific training (analyzing legislation, recommending voting and co-sponsorship actions, and strategizing on funding programs and fellowships).

These fellowship programs, both coordinated by AAAS, are amazing opportunities for scientists to broaden their expertise and learn about national policy. Not only does the fellowship provide participants with opportunities to contribute their scientific knowledge and inform decision making, but it also connects them with a large and diverse network of scientists and engineers engaged in the policy arena and provides an inside view into how national policy affects scientific funding, and how science and scientists can help make a difference in society.

Emily Grumbling

David Harris  
**MS Chemistry 2011**

I have 7 patents pending for polymer catalysts and polymer functionalization. My wife and I adopted a baby last summer. I started law school and plan to finish in May of 2016.

Andrea Hartzell  
**BS Biochemistry 2011**

I am finishing my second year of graduate school in the neurosciences department at UC San Diego. In 2013 I was awarded a graduate research fellowship from NSF. I also got married in December 2013. My new husband is also a UA alum who completed his bachelor’s and master’s degrees in the mechanical engineering dept.

Jimmy Chhun  
**BS Biochemistry 2012**

I will be completing a Masters of Public Health degree (MPH) in epidemiology at the UA’s Mel and Enid Zuckerman College of Public Health.

Kavya Giridharan  
**BS Biochemistry 2012**

I am currently finishing my second year of graduate school in biochemistry. I teach math and science and bring a unique perspective of where students need to be academically to excel in accelerated science courses in college. In July I will be moving to Mumbai as a Program Manager through Teach for India where I will coach and support a group of first year teachers. As a founder of University of Arizona’s Om Shanti (first nationally ranked Bollywood dance team in AZ), I am continuing to spread the love of dance by starting Soul to Sole, LEARN Excel’s first dance team! This year we had over 100 kids participate in our dance program! I hope to continue to find dance opportunities in Mumbai as well.

Sara Zarr  
**BS Biochemistry 2012**

I am currently in the Master’s Entry to the Profession of Nursing program at the University of Arizona. I was just inducted into the Honor Society of Nursing, Sigma Theta Tau International, and will be graduating in August 2014.

Josh Strom  
**BS Biochemistry 2010**

When I first started my undergraduate studies in biochemistry at the University of Arizona I had planned on moving on to medical school following graduation. My time as an undergraduate in the Department of Biochemistry changed all that. My experiences with the courses and the research opportunity as part of the Senior Capstone opened my eyes to just how much I loved science and research. I was fortunate enough to work in Dr. Qin Chen’s lab as an undergrad and that more than anything else prompted me to switch my goals from an MD to a PhD. After graduating with a BS in Biochemistry in 2010, I was able to continue in Dr. Chen’s lab as a PhD student in the Department of Medical Pharmacology. My PhD research focused on characterizing cardiac protective genes and identifying their mechanisms of action. I graduated with my PhD this year and will be staying here at the University of Arizona as the director of a new Cardiac Phenotyping Core Facility.

Josh Strom

Kameron in Boston

Kameron Rodrigues  
**BS Biochemistry 2014**

After graduating in Spring 2014 from the University of Arizona (UA), I moved to Boston for the Summer Training in Academic Research and Scholarship Program at the Brigham and Women’s Hospital (BWH STARS Program). During this 8-week program, I engaged in a translational research project in the lab of Dr. Vijay Kuchroo, a top Harvard Medical School researcher. There, I aided in researching the pathogenesis of Multiple Sclerosis through the use of mouse models. The BWH STARS program also gave me valuable exposure to clinical medicine. I had the opportunity to shadow clinicians and network with members of the Brigham and Women’s Hospital and Harvard Medical School Faculty. Additionally, I participated in a number of educational and training seminars from a wide variety of researchers, clinicians, and physician scientists. Overall, the program was a wonderful opportunity for me to experience translational research and how it interfaces with clinical medicine.

I appreciate how the UA Chemistry and Biochemistry Department prepared me for my life in the biomedical sciences. The UA Biochemistry curriculum taught me the scientific knowledge that is universal to any lab across the country. As a result of completing a senior thesis while at the UA, I was equipped with a necessary foundation of skills. These skills I strengthened by participating in research at Harvard Medical School over the summer. Now, I am very excited to continue learning new techniques and methods at my newest research fellowship. I am working just outside of Washington D.C. as a Post-Baccalaureate Fellow at the National Cancer Institute within the National Institutes of Health (NIH). Specifically, I work in the Laboratory of Cancer Biology and Genetics, directed by Dr. Stuart Yipura. In this lab we study the pathogenesis of skin cancer using mouse models. Ultimately, I aspire to become a physician scientist and help bridge the gap between the laboratory bench and bedside. While at the NIH, I plan to continue gaining experience in translational research and exposure to clinical medicine as I prepare to apply to MD-PhD programs. The education I obtained and the relationships I formed while at the University of Arizona have genuinely supported me throughout my career and, for that, I am very grateful.

Andrea Hartzell

Josh Strom

Sara Zarr

Kavya Giridharan

Emily Grumbling

Michael Ortega  
**BS Biochemistry 2010**

I recently received my Pharm.D. from the University of Colorado and will be working as a Pharmacist at King Soopers upon being licensed.

Kavya Giridharan

Josh Strom

Sara Zarr

Michael Ortega

Andrea Hartzell

Sara Zarr

Kavya Giridharan
Jonathan Yamaguchi  BS Biochemistry 2014

Senior year was chaotic. If I was not in class, I basically lived at the University of Arizona Medical Center either volunteering as part of the Research Associates Program in the Emergency Department or I was working in the research lab of Dr. Slepian. During my time in Dr. Slepian’s lab, I was funded by UBRP to research the changes in human platelet aggregation by modulating the platelet membrane with common chemical agents. It is thanks to Dr. Slepian, Dr. Tran, and the entire lab team that I was able to receive a phenomenal experience in scientific research. Additionally, through the Slepian Lab, UBRP, and the Biochemistry Club, I joined the Galileo Circle Scholars and was able to present at the ASBMB Conference held in San Diego.

More than anything, I loved serving the many facets of the UA community. Outside of academia, I was heavily involved in the Asian Pacific American Student Affairs—the Asian American Cultural Association in particular—Residence Life, Dia Clones Dance Crew, Department of Chemistry and Biochemistry Ambassadors, David Rhoads Lab, and Mortar Board National College Senior Honor Society. It is thanks to the people that I was able to meet in all of these organizations that I was able to receive the UA Foundation’s Outstanding Senior Merrill P. Freeman Award at commencement and several other awards and honorary memberships. In addition, although my senior year was hectic, it was one of the best experiences of my life and I treasure every moment of it.

Following graduation, I accepted a position as a research technician at the Barrow Neurological Institute in Phoenix and am applying to medical school. During my short summer off, I have started rock climbing, focusing on fitness, and mentoring kids from my church. In the future, I hope to utilize my experiences to become a physician scientist that will simultaneously perform clinical duties and lead a research lab. In addition, I want to also become a disaster relief physician and be ready to travel immediately to places of dire need.

Ram Dharanipragada

I am an Associate Director at Sanofi where I manage a team of chemists working on drug discovery of molecules for unmet medical needs. This also includes working on peptides, which I was introduced to in my tenure with Dr. Victor Hruby.

Robert Keese
daughter Margarett is graduating from Guilderland High School in June 2014 and headed to the University of Vermont in August to study mechanical engineering and design.

John Krstenansky

After 19 years in the pharmaceutical biotech industry (Merrell Dow, Syntex/Roche, EnzyMed/Albany Molecular Research), I’m now at my third start-up School of Pharmacy (Loma Linda University, Marshall University and now Keck Graduate Institute). It never gets old being in a vital research environment.

Terry Matsunaga

Still doing research but now in contrast agent development for ultrasound. Was in the private sector for 16 years but then came back to the University of Arizona in 2007. Having a great time doing research.

Steve Brown, CBC McNair Staff Award, CoSSAC Star Award

Latamarla Dionne Johnson, CBC McNair Staff Award

Martin Marquez II, Wildcat Family Spirit Award, CoSSAC Star Award

Anne Padias, CoS Staff/AP Recognition Award, CoS Dean’s Award of Excellence “Best of the Best”

Mark Yanagihashi, UA Award for Excellence

POSTDOCTORAL FELLOWS AND OTHER FRIENDS

Steve Brown, CBC McNair Staff Award, CoSSAC Star Award

Latamarla Dionne Johnson, CBC McNair Staff Award

Martin Marquez II, Wildcat Family Spirit Award, CoSSAC Star Award

Anne Padias, CoS Staff/AP Recognition Award, CoS Dean’s Award of Excellence “Best of the Best”

Mark Yanagihashi, UA Award for Excellence
NEW FACULTY AND STAFF

Jacob Schwartz, Assistant Professor
Jacob Schwartz completed his undergrad in Physics at the University of North Texas. He then completed a MS in Biology focused on Neuroscience at UNT before going onto the PhD program at UT Southwestern Medical Center. At UTSW Jacob studied the use of small RNA molecules to regulate transcription through interactions with noncoding RNAs in the lab of David Corey. After this he pursued his postdoc at CU Boulder in the lab of Tom Cech, where he studied another noncoding RNA binding protein named FUS, in which mutations cause the neurodegenerative disease ALS or Lou Gehrig’s disease. His current research continues with a focus on ALS as well as beginning a new avenue of research into pediatric cancers caused by FUS mutations and mutations in close homologues to FUS.

Robyn Burkey, Administrative Assistant
Hi, I’m Robyn Burkey the new Administrative Assistant to Lott Boyd. I am a mother to 2 beautiful daughters, 2 years and 6 months. I was a stay at home mom for 2 years but enthusiastic to be back in the work force. I enjoy spending time with my family and some of my hobbies are cooking, baking and reading. I love watching cooking shows and scary movies. I am very excited to start this new journey with CBC at UA.

Molly Cheng, Accountant, Associate
My name is Molly Cheng and I am a new Accountant, Associate for CBC's business office. I have both business and HR background. I love the people who work in this department! I was born in China and came to the US 5 years ago. I go to the rec center every day after work, I also serve at my church!

Maribel Jimenez, Administrative Assistant
Maribel “Marti” Jimenez is excited to join the CBC Team once again. I came from the College of Medicine- Accreditation Office where I worked for almost two years and was a part of their accreditation in January 2015. I am married and have three handsome boys. When I am not working, I enjoy cooking, baking, exercising and spending time with my family.

Minqing (Stephen) Li, CBC Electronics Shop
Hi, my name’s Stephen Li. I am the new “artisan” for Chemistry Electronics Facility. I was a graduate student major in Mechanical Engineering at UA then I received my degree in May 2014. It’s so exciting to be a member of CBC family. Every day’s work here is fresh and challenging. Besides doing electronics and crafting parts, I am also fond of classical music, playing badminton, cooking and, of course, eating.

Samuel John Maez, Accountant, Associate
My name is Samuel John Maez and I am the new Accountant, Associate for the CBC department. I come from a customer service background, but I am excited to be in this new position. I was born and raised in Tucson Arizona. When I am not working, I enjoyed reading, playing guitar and spending time with my family.

Michael Morris, CBC Computer Technology Manager
I started with the UA in February of 2006. I come from UITS and am excited to be part of the CBC Family. I am genuinely looking forward to this next step in my career. I am an avid outdoors person. Camping, and fishing are a common part of my life. I recently have taken up hiking as well and have quickly grown to appreciate it. My other hobbies include painting, reading horror novels, and loosing hours of my time watching Animal Planet. Oh, I also have a cat named Huggabutt, he is a jerk.

Tom Solsten, Mass Spectrometry Facility
I have to thank my good friend Arpad Somogyi for convincing me to come out of retirement and join him having fun in the mass spectrometry facility at CBC. Unfortunately our collaboration lasted only a few months before he was lured away by Vicki Wysocki to the mass spectrometry facility at Ohio State University. As a result, I am holding the fort here in the MSF until we can find a replacement for Arpad. We are finding that he is a tough guy to replace. By returning to CBC I have come full circle since my graduation from the UA in 1984. Graduate school was followed by employment at Monsanto Co. in St. Louis and Belgium, then Discovery Partners, Aventis, and Ventana Medical Systems back here in Tucson. I am glad to be back at CBC after thirty years in the chemical and pharmaceutical industry.

Jennie VanderHooven, CBC Advisor
My name is Jennie Vander-Hooven and am the new Academic Advisor for this department. I hail from the great land of New Hampshire and, although I miss the skiing and snowboarding there, I am starting to find my niche here in the Sonoran Desert. I’ve done a lot of camping & hiking in Sabino Canyon, Saguaro National Park, Mt. Lemmon, the Grand Canyon & Havasupia Falls and am always eager to hear about other adventurous places to explore. Chasing after my three small children gave me enough energy to complete my first marathon in December 2013. I previously worked as an Academic Advisor at Granite State College (a University of New Hampshire satellite college) and I love the work that I do.

Michael Morris, CBC Computer Technology Manager
I started with the UA in February of 2006. I come from UITS and am excited to be part of the CBC Family. I am genuinely looking forward to this next step in my career. I am an avid outdoors person. Camping, and fishing are a common part of my life. I recently have taken up hiking as well and have quickly grown to appreciate it. My other hobbies include painting, reading horror novels, and loosing hours of my time watching Animal Planet. Oh, I also have a cat named Huggabutt, he is a jerk.

Tom Solsten, Mass Spectrometry Facility
I have to thank my good friend Arpad Somogyi for convincing me to come out of retirement and join him having fun in the mass spectrometry facility at CBC. Unfortunately our collaboration lasted only a few months before he was lured away by Vicki Wysocki to the mass spectrometry facility at Ohio State University. As a result, I am holding the fort here in the MSF until we can find a replacement for Arpad. We are finding that he is a tough guy to replace. By returning to CBC I have come full circle since my graduation from the UA in 1984. Graduate school was followed by employment at Monsanto Co. in St. Louis and Belgium, then Discovery Partners, Aventis, and Ventana Medical Systems back here in Tucson. I am glad to be back at CBC after thirty years in the chemical and pharmaceutical industry.

Jennie VanderHooven, CBC Advisor
My name is Jennie Vander-Hooven and am the new Academic Advisor for this department. I hail from the great land of New Hampshire and, although I miss the skiing and snowboarding there, I am starting to find my niche here in the Sonoran Desert. I’ve done a lot of camping & hiking in Sabino Canyon, Saguaro National Park, Mt. Lemmon, the Grand Canyon & Havasupia Falls and am always eager to hear about other adventurous places to explore. Chasing after my three small children gave me enough energy to complete my first marathon in December 2013. I previously worked as an Academic Advisor at Granite State College (a University of New Hampshire satellite college) and I love the work that I do.

DO YOU HAVE NEWS TO SHARE?
Fill out our CBC Alumni Survey at: www.surveymonkey.com/s/survey-cbc
IN MEMORIAM

Associate Professor Emeritus Michael F. Burke, a long time member of the Chemistry Department faculty, passed away on Saturday, June 14, 2014. Professor Burke received his BS in 1960 from Regis College, and his PhD in 1966 from Virginia Polytechnic Institute. He joined the faculty of the Chemistry Department at the University of Arizona in 1967, and retired from the Department in 2001. He was an analytical chemist and an expert in separation science. Much of his research was focused on the chemical modification of solid surfaces, particularly the development of adsorbents to enhance selectivity and efficiency in high performance liquid chromatography. He also studied the chemical and physical parameters responsible for the selectivity of molecular interactions at interfaces.

In memoriam

It with sadness that we report that UA Professor Emeritus Henry Freiser passed away in August 2013. Professor Freiser joined the Department of Chemistry at the University of Arizona in 1958 and served as department head from 1958-67. This period saw great expansion of the faculty and the graduate research program, and the awarding of the first PhD degrees from the Department of Chemistry.

CBC THEN & NOW ALUMNI REUNION

John Schaefer

Harold Vincent

John & Ila Rupley

Ann and Keith DeArmond

John Dichiaro and Corny Steelink

COME VISIT OUR NEXT REUNION!

Fill out our CBC Alumni Survey at:
www.surveymonkey.com/s/Survey-CBC

AXΣ AND SMACS

In the past year, AXΣ has been involved with demonstrations at events such as “Science Night at the Valley of the Moon”—an open air, night time event with hundreds of spectators, UA autism camp (on campus), and the New Planetarium Projector Event at Flandrau. AXΣ also provided hands-on activities, such as making slime and liquid nitrogen ice cream for the Streetcar Opening event at Flandrau planetarium.

It with sadness that we report that UA Professor Emeritus Henry Freiser passed away in August 2013. Professor Freiser joined the Department of Chemistry at the University of Arizona in 1958 and served as department head from 1958-67. This period saw great expansion of the faculty and the graduate research program, and the awarding of the first PhD degrees from the Department of Chemistry.

Another batch of liquid nitrogen ice-cream gets mixed at the Streetcar Opening event!

Andrew Dixon, AXΣ President, amazes onlookers by converting a copper coin to silver, and then to gold (actually the coin surface is converted from copper to zinc and then to brass).

A SMACS member disappears behind a cloud formed from liquid nitrogen hitting a container of hot water at the Chemistry Magic Show.

SMAC members Matthew Posnansky and Sara Hermann showcase during an Apollo Middle School visit.

It with sadness that we report that UA Professor Emeritus Henry Freiser passed away in August 2013. Professor Freiser joined the Department of Chemistry at the University of Arizona in 1958 and served as department head from 1958-67. This period saw great expansion of the faculty and the graduate research program, and the awarding of the first PhD degrees from the Department of Chemistry.

Another batch of liquid nitrogen ice-cream gets mixed at the Streetcar Opening event!

Andrew Dixon, AXΣ President, amazes onlookers by converting a copper coin to silver, and then to gold (actually the coin surface is converted from copper to zinc and then to brass).

A SMACS member disappears behind a cloud formed from liquid nitrogen hitting a container of hot water at the Chemistry Magic Show.

SMAC members Matthew Posnansky and Sara Hermann showcase during an Apollo Middle School visit.

It with sadness that we report that UA Professor Emeritus Henry Freiser passed away in August 2013. Professor Freiser joined the Department of Chemistry at the University of Arizona in 1958 and served as department head from 1958-67. This period saw great expansion of the faculty and the graduate research program, and the awarding of the first PhD degrees from the Department of Chemistry.

Another batch of liquid nitrogen ice-cream gets mixed at the Streetcar Opening event!

Andrew Dixon, AXΣ President, amazes onlookers by converting a copper coin to silver, and then to gold (actually the coin surface is converted from copper to zinc and then to brass).

A SMACS member disappears behind a cloud formed from liquid nitrogen hitting a container of hot water at the Chemistry Magic Show.

SMAC members Matthew Posnansky and Sara Hermann showcase during an Apollo Middle School visit.
**Courtney Collingwood – Guatemala**

This past summer, I returned to Guatemala (my second trip) to work for a program called Los Patos. I was awarded an internship scholarship from the Honors College to help pay for my flight and homestay. The funding they provided allowed me to make the trip possible after working extra hours and saving for a year.

Los Patos is a nonprofit that helps the children and youth of Jocotanango and the surrounding communities stay off the streets and away from drugs and violence. The project is run out of the home of its founder and services around 200 children. It has four main focuses: alimentation, education, health, and art. The impact this program has on its community is remarkable. They are currently building a new facility that will serve as a certified school in the mornings, the after school program in the afternoons, and a restaurant/café at night and on the weekends. The plan for the restaurant/café is to teach the youth how to work outside of peddling or dealing, in hopes they will want to work a job that contributes to society when they're older.

The first time I walked through the doors of this program, I knew I would be returning as much as possible. Last year, my project was a video promoting their program and reaching out to possible sponsors and volunteers. This year, I spent my time volunteering and offering English help. I translated documents and communicated with visitors. I helped groups with cultural projects and English lessons. This time, my project extends past my time in Guatemala. I am currently trying to develop ideas for promoting the program and educating communities across America on the problems down in Guatemala.

I plan on returning a year after I graduate to help with their health program and work as an instructor in their school for 6 months. During my trip, I also had the opportunity to go caving in Semuc Champey. It was very “Indiana Jones” style and definitely would not be legal in the United States. We traveled under natural pools in caves that were ancient. Our only source of light was a candle, and we had to swim, climb, and hike through these caves while keeping the candle lit. The trip was full of adventure. I ended the weekend with a full body bruise from cliff and bridge jumping into the Semuc river. It was an eventful and tiring weekend and one I will never forget.

I am extremely grateful to the Honors College, Dean Pat MacCorquodale, Rachael Ronald, and David Allen for this wonderful opportunity. I would not have been able to travel to Guatemala this time or the previous without all of their help, guidance, and encouragement.

**Natalie Debolske – Barcelona, Spain**

This past semester, Spring 2014, I was lucky enough to study abroad in Barcelona, Spain. I was there for a total of 4 and a half months. I always knew I wanted to study abroad but was always a bit hesitant. About a week before the date of departure, it sunk in what I was getting myself into. I was going away for a long time from my friends, family, and school. While there, I took 5 classes: Career Development, Advanced Spanish, Spanish for Business, Spanish Culture, and Architecture in Spain. While none of these classes related to my major, it was an amazing chance for personal growth. Being taken out of my comfort zone in many different ways, socially and scholastically, forced me to adapt to unfamiliar situations. One of the biggest obstacles, but probably my favorite, was learning the language. That was one of the biggest reasons I studied abroad—to improve my Spanish.

During my free time I was able to explore Barcelona. There were endless things to see, and there was always something new and exciting to do. On Monday nights I volunteered at one of the largest children’s hospitals in Spain, Sant Juan de Deu. I was able to interact with many patients and practice my Spanish a lot there! I was able to brighten the day of sick children by playing and talking with them, which I found most rewarding. On the weekends, I traveled to different cities within Spain and throughout western Europe. Some of the places I visited were Madrid, Sitges, Valencia, Granada, Lisbon, Intetúxens, Amsterdam, Brussels, and Paris. Every place I went was different and had something special to offer. Having the opportunity to see all of these places was a once-in-a-lifetime experience, and I cherish the memories. I am so grateful to have been able to do something so life changing and amazing.

**Lauren Dominick – Nicaragua**

In the fall of 2013, I co-founded the University of Arizona chapter of Global Student Embassy (GSE), an organization devoted to global health and sustainability. Our mission is to educate about the important link between health and sustainability and spread access to these programs. Last summer, I had the opportunity to do just that with 14 other club members in the under resourced communities of Boaco and Chacraseca in Nicaragua. The trip allowed me to continue exploring the world and experiencing new cultures while offering me the opportunity to gain clinical experience and spread health education.

I was able to take patients’ blood pressures and histories and shadow clinic nurses and doctors. I also accompanied nurses on house visits to see patients that were unable to make it to the clinic. During this time, I saw numerous patients with a variety of chronic and acute conditions. It was humbling to see patients with conditions such as kidney stones and high blood pressure that are easily treated in the United States, but are life threatening conditions in Nicaragua due to the limited resources.

My trip to Nicaragua solidified my desire to pursue a career in medicine because it gave me a hands-on approach to healthcare that I hadn’t experienced before. I was able to interact with patients as I took their medical histories and vital signs to then report to the doctors. It was humbling to have to ask questions such as the material of the floor in the patients’ homes and hear that they were simply dirt. This opened my eyes to the disparity in access to resources that exists and further fueled my goal of helping bring healthcare to those in need.

I also was able to engage in agricultural volunteering opportunities such as starting school and community gardens and helping to construct garden irrigation systems. I learned composting techniques and ways of returning nutrients to the soil to make the land fertile and productive. The goal behind the gardens is to promote sustainability and self-sufficiency in the communities and encourage healthier diets by providing easier access to fruits and vegetables. I was able to work with Nicaraguans from the community and learn about their lives and goals. Along with the gardens, I educated the communities about the importance of nutritious diets and the connection to good health.

Witnessing the healthcare disparity first hand has motivated me even more to search for opportunities to assist underserved populations in our local community. I have been exploring opportunities to volunteer with these populations in the Tucson area so I can share them with other University of Arizona students and hopefully inspire them to volunteer not only abroad, but at home as well. For more information about GSE, please visit www.globalstudentem- bassy.org or if you would like information about the University of Arizona chapter, feel free to check out the ASUA club list!
Eric Figueroa – Finland

My summers usually consisted of volunteering in a research lab near my home in Phoenix or Tucson—further developing my research skills. This past summer wasn’t much different…except for the fact that I was performing research in Finland! I had always wanted to visit Europe, but I hadn’t considered visiting, let alone doing research in, the Nordic country. When I was awarded a grant from the BRAVO! Program, I was ecstatic. I had only traveled outside of the United States to visit relatives in Mexico before, so my stay in Finland was my first true foreign experience, and one that I will never forget.

I had the opportunity to work with Dr. Alexander Kastaniotis. One aspect of his lab focuses on the mitochondrial and its fatty acid metabolism. My project consisted of investigating the mammalian protein, holocarboxylase synthetase ligase (Hlcs), and how it becomes localized in the mitochondria.

Various proteins have been shown to be dually localized within cells. Mitochondrial proteins that serve similar purposes in the mitochondria and cytosol are just one example of this phenomenon. The mechanisms by which a protein dually localizes within cells can vary. The Kastaniotis Lab at the University of Oulu in Finland has found evidence that yeast homolog, biotin protein ligase, may be dually localized.

I hope to experience the Finnish culture. We get so comfortable with and accustomed to the lifestyle in our hometown that spending more than a few days in a faraway place can be an eye opener. My first observation upon arrival was how beautiful the country was. Everything was clean and green—a vastly different scene from the desert in Tucson. The weather was gloomy for most of my stay, but there was a period of a few weeks when the temperature was very pleasant. Anyone could tell the Finns appreciated good weather because the entire city would be out walking, skateboarding, or biking around on the nicely paved paths that can take you almost anywhere. I used them extensively to go sightseeing. The paths were surrounded by beautiful forests, a sight to see in itself. On one of these nice days, my lab mate invited me to Tuira Beach to swim in the river. She plays beach volleyball and many people took advantage of the great weather to hang out there as well. It was the first time I had ever gone swimming in a river. It was much colder than I would’ve preferred but the locals had other opinions. Swimming in the river is a popular thing to do in Oulu, but enjoying time in sauna is the ultimate Finnish pastime. I was astonished to discover that just about every house/building would have a sauna. After trying one out for the first time, I found how relaxing it was and how nice it felt if it was a little cold out. The Finnish winter can be a rough one, with it always being nighttime and really cold (around -20°C), and I could see how the sauna can help during those times. The sauna also felt so relaxing and good after going berry picking. This was my first time picking blueberries, so I was excited. I geared up in boots and bug net clothes and readied my berry scoper. After two hours in the woods and swampy areas, I probably collected as many mosquito bites as I did blueberries. The delicious wild blueberries and sauna afterwards were worth the bug bites though. I enjoyed my time in Finland so much that the only thing I would have done differently was to apply for an entire year in the BRAVO! Program. Then I could have worked longer on my project and experienced more of the beautiful country of Finland.

I want to thank my PI, Dr. Carol Dieckmann, for mentoring me as I grow as a scientist. I would also like to thank Dr. Carol Bender for the help and opportunity to partake in BRAVO! And finally, I would like to thank Dr. Alex Kastaniotis and everyone I met in Finland for all the experiences and knowledge I have gained throughout my time in Finland.

This opportunity was funded in part by a grant to the University of Arizona from the National Institute of Health (MD001427).

Johnna Hartenstein – Aachen, Germany

During the summer of 2014, I was granted the incredible opportunity to not only study nuclear medicine but also learn the German language and explore European countries through the UROP (undergrad research opportunities program) at RWTH Aachen, Germany. I have always wanted to study abroad and continue my studies in a foreign country but, as a chemistry major, I found it difficult to take time off of my heavy course load. Thankfully, I researched for summer programs abroad and was privileged to gain my first research experience in Germany. Not only did I broaden my experience in the research lab, but I also gained the knowledge of a new foreign language as well as having an adventure filled summer.

I spent two and a half months in Germany with students in areas of study such as mechanical engineering, world economics, polymer science, and most important chemistry. I researched in Dr. Vogt and Dr. Bauwen’s labs labeling a potential molecular tracer with a radioactive nuclide and its ability to be imagined in vivo on Swiss mice induced with hind limb ischemia. Since this was my first research position I was naturally nervous to begin but excited to learn more about my field.

A typical week consisted of the following: German class Monday and Wednesday mornings until noon and then research in the lab until 5 or 6. On all other days, the entire day was dedicated to research in the lab with time in the evening to unwind with friends. On the weekends, we could travel to surrounding countries such as the Netherlands, France, and Belgium.

The summer taught me how to adapt to my surroundings, how to start initiative and set goals, and how to be open to new ideas and people. When I arrived in Germany, I knew no German and immediately felt out of place but quickly picked up the language. I also had the unique opportunity to conduct research not only in Germany but also in the nuclear medicine department at the Maastricht Hospital in the Netherlands. By gaining experience in two labs, I learned how to adapt to unique policies and cleanliness in both labs. I also learned that if I want to be successful in the field of medicine, I have to be innovative and precise in order to think around an issue. Finally, my time in Germany was a rewarding educational experience but the incredible other students studying with me and my new local friends helped me to feel at home during world cup celebrations or weekend trips to the farmers market in Liege or even a small barbeque in the park.

I concluded my summer with a poster and oral presentation, along with paper, that summarized my research and was accepted to the annual spring meeting of the American Association of Physiological Sciences. I was also able to attend joint sessions with the National Institutes of Health on my career path and the European Physiology and Pharmacology Society meeting.

I want to thank my PI, Dr. Carol Bender for the help and opportunity to partake in BRAVO! And finally, I would like to thank Dr. Alex Kastaniotis and everyone I met in Finland for all the experiences and knowledge I have gained throughout my time in Finland.

This opportunity was funded in part by a grant to the University of Arizona from the National Institute of Health (MD001427).
rized my work and taught me how to present my findings in a professional manner. Spending my summer in school was more enjoyable than I could ever imagine due to the degree I have grown as a chemistry student, grasping an entirely new language and feeling comfortable speaking it in public, along with the unforgettable memories from my new friends.

Stephanie Kha – London, UK
“Cheers!”
My name is Stephanie Kha, and I am a proud Biochemistry Major at the University of Arizona. In Summer 2014 I had the opportunity to fly to the bustling, bustling city of London, England. Many people raise their eyebrows when they find out that I travelled abroad as a Biochemistry Major. This major is indeed academically rigorous, research-oriented, and time-intensive. However, with support and careful planning, anything is possible.

I travelled to London to pursue a study-abroad program at the University of Westminster, and I also conducted an independent research study on a topic that I am very passionate about - supportive cancer care for patients and caregivers. Specifically, I researched the different models of accommodation and patient housing in London provided to cancer patients and their caregivers. This preliminary study is a comparative analysis of six patient housing facilities (three located in the US, three located in the UK) that provides insight into the most important features of a patient housing model: the facility’s environment and atmosphere, patient eligibility requirements, private and community resources offered, and financial support system. Understanding the differences in these housing facilities on a global scale can help bring together the best available resources to develop an accommodation model that alleviates the emotional and financial burdens of cancer on patients and their caregivers.

I am especially appreciative of the Department of Chemistry and Biochemistry at the University of Arizona, because my advisors and professors here continue to encourage and support my passions and research interests without limits. My experience as a Biochemistry Major is truly interdisciplinary and enriching, and most importantly, it demonstrates that learning takes place inside and outside the classroom—and sometimes even outside the country.

Benjamin Van Maren – London, UK, and Paris, France
As a Tucsonan, summer is the perfect time to go abroad and escape the incapacitating heat. This summer, I was fortunate enough to study abroad in two stupendous cities: London and Paris. I was accepted into the 6-credit University of Arizona 2014 Honors Trip, where I spent two weeks in London and two weeks and Paris immersing myself in the bountiful culture, people, and traditions “over the pond.” Before I continue, I must give my utmost appreciation and thanks to the Honors College for funding much of the trip and making it a lifelong memory. I also cannot thank the UA professor on the trip, Dr. Brown, enough; her engaging, lively, and enthusiastic teaching style and personality revolutionized the experience of my classmates and myself.

The Honors Trip was brilliantly designed: each day (sans weekends) would begin with a whole-class assignment in which the entire class would travel somewhere, have an activity for a few hours, and then be given a reflective assignment. Then, small groups of three would be created, and each group would be released into the marvelous city to complete a second group assignment (and explore the city as they wish on the way).

In London, class excursions ranged from a walking tour of London proper (by a quite enthusiastic historian, mind you), a trip to the serene Stratford-upon-Avon, to an animated tour of the Tower of London. Paris was equally as magnificent, with a trip to the sublime Versailles and a tour through the historic Marais District. There was a common theme with all of these excursions: we, the class, were exposed to the city’s culture and treasures from a resident’s perspective. Each day was as breathtaking as the previous—I found that as I gradually created a mental map of the city, the activities still managed to surprise me thanks the city’s diverse culture.

The small group assignments were spectacular because they forced us to engage ourselves in the city’s culture. Each group was given the independence to roam and experience the city (and complete the group assignment along the way). One assignment, for example, was to go to Regent’s Park in London, interview someone (on your own), and write a reflection of the interview. Talk about cultural immersion! There were a few assignments akin to this over the month abroad, and with each one, I learned a new perspective on life. One person said he lives in Paris and took the Eurostar to London for the weekend (the dream). Another interviewee was a barrister’s assistant at the Inns of Court in London (who, surprisingly, had fabulous bright red hair, and told me about her occupational journey as a barrister’s assistant). Often times, once a group assignment was finished, I would go explore an art museum, have lunch on the Seine, or simply get lost in the city and stumble upon random treasures.

What truly made the Honors Trip magical was the fact that the most enriching, cultural, and intriguing experiences happened when I was simply exploring the city (not for an assignment). For example, I purchased a Paris Museum Pass, and over the following four days, I went to roughly six museums—for free—each one legendary in its own way. I saw Rodin’s famous sculptures, Rousseau’s grave, a museum devoted to Marie Antoinette’s imprisonment, Mont- et’s Water Lilies, historical army garments—the list is endless. I climbed (yes, climbed!) the Eiffel Tower and went to the world’s biggest flea market. I even met a Tucsonan who was living in Paris, and she showed me Paris from a Parisian’s perspective.

I could not ask for anything more from studying abroad. Having spent two weeks in each location and with structured activities, I was able to get a genuine glimpse of what it’s like to be a Londoner (or a Parisian). I explored my interests, tastes, and limits. Often times, I started a day with no explicit plans, and over the course of the day, I seized opportunities as they came—be it going to a market, a restaurant, or taking a double decker bus instead of the underground. In my opinion, that is the ultimate goal of the Honors Trip (or any trip abroad), to engage oneself in another culture with enough confidence and curiosity to become culturally immersed.
Overwhelming, but the second I set foot in that show ring or into class on test days, I know it’s all been worth those long nights and seemingly endless days.

Shaina Hasan – Cancer Researcher

Hello! My name is Shaina Hasan, and I am currently a senior in Biochemistry and Molecular & Cellular Biology. A large part of my undergraduate experience revolves around research, primarily through the Undergraduate Biology Research Program (UBRP). I’ve always had an interest in the biological sciences, and although I can read all the facts about biology in my classes, it is through scientific research that I can actually see its practical application.

When I first joined UBRP, I was a part of a molecular biology lab with Dr. Sourav Ghosh whose research had implications for cancer treatment. Being a part of UBRP allowed me to connect and network with other undergraduate students interested in research and help spread science throughout the local community, promoting its importance.

In the summer of 2013, I received a grant from the BRAVO program (Biomedical Research Abroad Vistas Open) to perform research in Singapore for three months, investigating protein-protein interactions that might contribute to colorectal cancer development. I was able to see research conducted at the international level, as I had the opportunity to work with scientists from all around the world and to learn how to communicate science with people with all kinds of backgrounds.

As a result of my various experiences in research, I applied for and received the Beckman Scholarship, which allows students to fully immerse themselves in an independent research project and present their work at a national conference. As a Beckman scholar, I am now in a molecular genetics lab with Dr. Frans Tax who studies the model plant organism, Arabi-