

## pH Reading from the President

Dear ARCS Foundation - Orange County Chapter members and friends,

It has been an exciting and busy spring for ARCS OC Chapter. Topping off the season with the annual Scholar Awards Dinner in March and now planning for our Dinner with a Scientist event on May 24. In addition to ARCS Orange County events, in this newsletter we are featuring two ARCS OC Chapter scholars; Clayton Elder, 2015-16 scholar, currently a doctoral student in the UCI School of Physical Sciences' Earth System Science department, and Claire Robertson, 2013 scholar, a post-doctoral student at Lawrence Berkeley National Lab who received the 2015 L'Oréal Fellowship for Women in Science award. The ARCS scholar awards assist graduate students in many ways, and for Clayton, the award has supported his travels so that he could attend scientific conferences and do fieldwork in Alaska studying arctic ecosystems.



We also have a special feature for two ARCS OC members, Sue Alexopoulos and Barbara Hamkalo. Sue and her husband Nicolaos were recently honored with a named Presidential Chair in the UCI Samueli School of Engineering and Barbara was a keynote speaker at the April 2016, Women in Science (WinS) Symposium at the University of North Carolina.

We always look forward to welcoming new members to the ARCS Orange County Chapter and invite you to pass this newsletter along to colleagues and friends. As one of 16 regional ARCS Foundation chapters, the Orange County Chapter joins more than 1500 women volunteer members recognizing leaders in science and engineering fields by funding the most promising scholars at the startup or "see stage" of their work and discovery. To learn more about ARCS Orange County Chapter, sponsor a scholar, donate, or become a member, please visit our web page. [https://www.arcsfoundation.org/orange\\_county/](https://www.arcsfoundation.org/orange_county/)

We hope you find this newsletter informative and invite you to join us in the ARCS Foundation challenge to "advance science in America". Chandra Jain, President

## ARCS Scholar Alums, We'd Like to Hear from You!

You are a vital part of our mission. Your stories encourage current scholars and help us attract new funding for future scholars. Stay involved with ARCS Foundation members and other scholars if you live in Orange County or want to give back in any way, including speaking about your research at an ARCS Foundation event. Let us know how you would like to participate in carrying ARCS Foundation work into the future.

To notify the Orange County Chapter that you are in the area, please email us at [orangecounty@arcsfoundation.org](mailto:orangecounty@arcsfoundation.org).

## 2016 ARCS Foundation, OC Chapter - Dinner with a Scientist

Mark your calendar for Tuesday, May 24 for the ARCS OC Chapter Dinner with a Scientist event. Join us for dinner and a visit with Dr. Manuela Raffatellu, Associate Professor, UCI School of Medicine, Microbiology and Molecular Genetics and the Institute for Immunology.



**Dinner with a Scientist - Tuesday, May 24, 2016 - 5:30 PM - UCI UNIVERSITY CLUB, ROOM C**  
**Guest Speaker: Professor Raffatellu - "Strategies to Combat Bacterial Infections"**

Dr. Raffatellu will discuss her laboratory's progress in understanding how bacteria cause disease, how the immune system and the body's good bacteria help to fight infections, and what we can learn from these processes to design new strategies to prevent and treat infection.

For dinner select Chicken Champignon (grilled chicken breast and wild mushrooms with fresh herbs and Española Sauce) or Grilled Portobello Mushrooms (with grilled vegetables and rice). Wine is included.

Please send your RSVP, along with your dinner choice and a check (\$55/person) made out to Arcs Foundation, Inc. to Barbara Hamkalo, 1040 Miramar St., Laguna Beach, CA 92651 **no later than Friday, May 20**

## ARCS OC Chapter member Sue Alexopoulos & her husband Nicolaos honored with a Presidential Chair at UCI



The UCI Henry Samueli School of Engineering has announced the creation of a new endowed Presidential Chair in electrical engineering and computer science, named in honor of a former Samueli School dean and his wife, Nicolaos and Sue Alexopoulos. Sue Alexopoulos is a long-time supporter of the Samueli School and a charter member of the ARCS Foundation Orange County Chapter, which supports UCI graduate students studying science, medical research and engineering. She has also been active on the organization's national board.

The UC Irvine Samueli School of Engineering is planning a special event with a banquet to honor Nick and Sue for their excellent service and contributions over the years for the benefit of engineering and science students. Sue, in particular, will be honored for her service and leadership for the ARCS Foundation in Orange County as well as at the National level.

Read more about the Presidential Chair honoring the accomplishments of Nick and Sue on the [UCI Samueli School of Engineering News & Events web page](#).

## Featured News & Events

2016 Dinner with a Scientist May 24, 2016

ARCS OC Chapter member and her husband honored with a UCI Presidential Chair

L'Oreal Fellowship Awarded to ARCS Orange County Alum Claire Robertson

ARCS OC member is keynote speaker at the Women in Science Symposium (WinS)

ARCS OC members attend the LA Chapter Gala honoring the Malouf family

## Featured Scholars & Alumni

Clayton Elder, School of Physical Sciences' Earth System Science, 2015-2016

Cynthia Bui, ARCS/Hach Scientific Foundation Scholar, 2011-2012

## L'Oréal Fellowship Awarded to ARCS Foundation Orange County Chapter Alum – Claire Robertson



Claire Robertson, 2011-12 and 2012-13 ARCS OC Chapter Scholar is one of five scientists awarded the L'Oréal USA "2015 Women in Science Fellowship." Dr. Robertson received a Ph.D. in Biomedical Engineering from the University of California, Irvine, Henry Samueli School of Engineering. As noted in the L'Oréal press release announcing the award, the fellowship "honors female scientists at critical stages of their career with \$60,000 fellowships to advance their postdoctoral research."

Claire currently holds a postdoctoral position at the Lawrence Berkeley National Lab. Her research, building upon her doctoral expertise in biomechanics, is focused on understanding how breast cancer tumors are naturally suppressed so as to eventually create better treatment options. While completing her doctoral research, Claire published four papers in peer-reviewed journals and gave seven presentations at conferences.

"The L'Oréal-UNESCO For Women in Science initiative began 17 years ago. Since that inaugural year, the L'Oréal Foundation and UNESCO (the United Nations Educational, Scientific and Cultural Organization) have strived to support and recognize accomplished women researchers, to encourage more young women to enter the profession and to assist them once their careers are in progress." For more information about the program and fellowships, visit the L'Oréal-UNESCO For Women in Science web page: <http://www.fwis.fr/en/home>

Claire continues to be an active mentor for female scientists. Chandra Jain, President of the Orange County Chapter, says "The three women who founded ARCS after Sputnik was launched in 1957 started funding scholars to foster American competitiveness as the great space race unfolded. The groundbreaking work of ARCS alumni like Claire validates the importance of ARCS mission and underlines its impact on science in America." See more on the ARCS Foundation, Scholar Achievements web site: <https://www.arcsfoundation.org/scholar-achievements>

ARCS Foundation advances science and technology in the United States by providing financial awards to academically outstanding U.S. citizens studying to complete degrees in science, engineering and medical research. Since 1999, the ARCS Orange County Chapter has provided 232 scholar awards totaling over \$2,000,000 at UCI.

**To learn more about ARCS Orange County Chapter, sponsor a scholar, donate, or become a member, visit us on the web, [https://www.arcsfoundation.org/orange\\_county/](https://www.arcsfoundation.org/orange_county/)**

## ARCS OC member is keynote speaker at the Women in Science Symposium (WinS)



Barbara A. Hamkalo, Professor Emerita, Molecular and Cell Biology & Past President, ARCS-OC was invited to be the keynote speaker at the Second Annual Women in Science (WinS) Symposium at the University of North Carolina on April 6. In her speech, "Cracking the Glass Ceiling", she described how her career began when she was a student at an all-girls' public high school in New York city and realized she had no constraints on what she could do. Interestingly, significant mentors were incredibly supportive men in college, graduate school and beyond. The very rare female scientist didn't seem to feel that their mentorship was important! Barbara also described some of her research projects and accomplishments and emphasized the importance of collaboration, especially in the current era of multidisciplinary research. She enumerated issues that, in her opinion, young female scientists should be addressing. The most important one is mentoring at all levels.

In her address, Barbara noted in the book, *Every Other Thursday*, written by Dr. Ellen Daniell, who, after being denied tenured at UC Berkeley, moved to the biotechnology industry, and established an informal get-together for female scientists in the Bay area as a professional problem-solving group that for over 25 years has provided practical and emotional support. Finally, Barbara encouraged young female scientists to be proactive in negotiations, be they for lab space, set-up funds or salary – men are expert at this! In retrospect, she said that she was both impressed and excited about this generation of female scientists both at UNC and UCI – and, "I confidence that you will DESTROY the glass ceiling."

Read more about the symposium on the [UNC at Chapel Hill web page](#)

## Featured Scholar - Clayton Elder, 2015-16 ARCS OC Chapter Scholar



Clayton Elder is a Ph.D. Candidate in Earth System Science in the School of Physical Sciences at UC Irvine (UCI). He received a B.S. in Environmental Science from Oklahoma State University (OSU) and an M.S. in Earth System Science from UCI. His dissertation research focuses on understanding the natural cycling of carbon through arctic ecosystems and weighing the impact that arctic greenhouse gas emissions have on global climate. This exciting research culminates his appreciation and curiosity for nature and research skills that he fostered from an early age. As a science-practicing humanitarian, he also volunteers as a board member for the student-led, non-profit education and outreach organization, Climate Literacy, Education, and Empowerment (CLEAN Education). Officially, Clayton's research career began at OSU, where he investigated greenhouse gas evolution from fertilized biofuel feedstock production. During feedstock fertilization, excess nitrogen is converted to a powerful greenhouse gas, nitrous oxide, and is emitted into the atmosphere. This study emphasized the potential negative impacts from inefficient biofuel fertilization and addressed the importance for considering the complete cycle of greenhouse gas production during cultivation. For his academic achievements, he received the Fleming Outstanding Environmental Science Scholar Award during his senior year.

Following his experience at OSU, Clayton participated in the NASA Student Airborne Research Program under the mentorship of Dr. Donald R. Blake of the UCI Department of Chemistry. This program introduced him to airborne trace gas sampling techniques and the processes that produce emissions of urban and rural atmospheric pollutants. Following the NASA program, he began research on arctic carbon cycling as a graduate student in the Earth System Science Department at UCI, where he continues that work today.

His Ph.D. study utilizes radiocarbon and stable carbon isotope analysis to specifically quantify the sources and pathways of methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>) emissions from thawing permafrost regions in arctic Alaska. Over many thousands of years, cold and wet conditions in the Arctic have allowed plant-and-animal-derived organic carbon to accumulate in perennially frozen soils known as permafrost. Arctic permafrost may store twice as much carbon as what is currently in our atmosphere. With current warming rates approximately twice the global average, the Arctic is rapidly thawing and its preserved carbon reservoir is increasingly vulnerable to decomposition. Methane and CO<sub>2</sub> (powerful greenhouse gases) are products of this decomposition. If their emissions increase, this could initiate a positive climate warming feedback, where additional greenhouse gases induce further warming and thawing of permafrost, thereby accelerating decomposition and gas emissions. To address the need for improved regional understanding of these processes, he designed and built novel sampling techniques to enable the



first radiocarbon measurements of dissolved CH<sub>4</sub> and CO<sub>2</sub> in thawing permafrost features across the arctic Alaskan landscape. Conclusions from this regionally comprehensive study will elucidate a better understanding of which environmental processes either encourage or abate the release of CH<sub>4</sub> and CO<sub>2</sub> from decomposing organic carbon that was previously preserved for thousands of years. This information is useful for improving our estimates of future gas emissions and climate warming.



Outside of scholarly activities and volunteer work, Clayton is a lover of travel and the outdoors. When he's not in the lab at UCI, you can find Clayton on a local hiking trail, snorkeling off OC's beaches and coves, or enjoying a weekend excursion with his wife Katy.

The ARCS Fellowship Award has significantly reduced the cost burden of not only directly funding two Alaskan fieldwork campaigns, but also the travel associated with attending the American Geophysical Union Conference in San Francisco, CA in 2014 and 2015, as well as the International Conference on Permafrost in Potsdam, Germany in 2016. These opportunities are vitally important for young researchers to showcase their work and to network with professionals in their fields. The experiences supported by this ARCS award have without doubt improved the quality of Clayton's research and broadened the horizons for his career as an Earth System scientist and philanthropist.

### Featured Scholar Alum - Cynthia Bui, 2004-05 ARCS OC Chapter and Hach Scientific Foundation



Cynthia Bui, an ARCS OC Chapter Scholar Alumna, is currently conducting research at Mount Sinai Hospital in Plastic and Reconstructive Surgery. In 2004-05, She received an ARCS/Hach Scientific Foundation Scholar award, as an undergraduate at UCI.

Cynthia graduated cum laude from UC Irvine in 2007 with a degree in Biological Sciences. Between 2007-2008, she worked as a Research Scientist I for Varian, Inc. (now Agilent Technologies) in their Biosolutions Department under the direction of Daniel Wang, MD, PhD. In 2008, Cynthia matriculated to West Virginia University School of Medicine and received her MD in 2012. She did a General Surgery residency at Brookdale Hospital in Brooklyn, NY, completing a six year categorical program (5 years clinical + 1 year of funded research).

Currently, Cynthia conducting research at Mount Sinai Hospital in the Plastic and Reconstructive Surgery and Orthopedics Departments. Her research focus is on tendon healing. Cynthia's intention is to pursue a Plastics or Hand Fellowship following

completion of her general surgery residency.

About ARCS OC Chapter, Cynthia writes, "I hope the ARCS Foundation Members are doing well. I still think of the ARCS women and am very grateful for the organization's support through the years. I will continue to try my best in all my endeavors and hope that I will be able to help others as you have helped me."

### ARCS Los Angeles Chapter - GALA 2016 honoring the Malouf family on May 15

Twenty-five ARCS Orange Chapter members attended the ARCS LA Chapter Gala honoring the Malouf family on Sunday, May 15. A wonderful evening under the Space Shuttle Endeavor at the Samuel Oschin Space Shuttle Pavilion in Los Angeles. The event started with a reception followed by dinner at guest speaker, Captain Mark Kelly. ARCS Orange County Chapter joins the LA Chapter in congratulating and thanking the Malouf Family for their contribution in establishing ARCS and supporting ARCS Chapters.



Florence Malouf and three close friends founded the ARCS Los Angeles Chapter a year after the race for space and launch of the Russian satellite Sputnik in 1957. While NASA scientists spearheaded the early space missions, ARCS scholars surely provided back-up assistance. These great events were the culmination of the original vision of Florence Malouf and, along the way, Marlene Malouf Hall who founded the ARCS Auxiliary for younger members. The current generation of Maloufs – Gary, Robert, and Carol – continue to support the ARCS Foundation.

"What a tremendous evening... sitting under the wing of the Endeavour at the California Science Center, and listening to Captain Mark Kelly, the last commander of the Space Shuttle Endeavour. It was great way to honor the Malouf family and all that they have done for ARCS!" Terri Carr

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