

CHEMISTRY & BIOCHEMISTRY

WINTER 2024

CALIFORNIA
STATE UNIVERSITY
LONG BEACH



Inside:

Two Faculty are awarded NSF CAREER:

Dr. Fangyuan Tian & Dr. Elena Grintsevich

Alumni Interviews and Notes, Student & Faculty Awards, Research Reports

in memoriam Profiles

Les Wynston & Dot Goldish

About the cover
“halcyon on and on”
Dr. Michael P. Schramm

Dr. Michael P. Schramm
Editor's corner

As editor for the department newsletter, I make note that this is a large task that I enjoy. In all challenges there are opportunities and I've as ever done my best to present our vibrant department to you the reader as clearly as possible. Please enjoy the tangible nature of this physical object - whom the entire department took care to help construct. If it has found its way to you, then we hope you know you're a part of this department in the simple present tense, and not the simple past. We'd love to hear from you: do reach out if inclined and we'll include you, next time.
Welcome to our winter issue.

REMARKS FROM THE CHAIR



Dr. Lijuan Li

Greetings from the Department of Chemistry and Biochemistry.

Our department has a proud tradition of fostering student success in their careers, graduate studies, and professional journeys. We are pleased to offer Bachelor of Science (BS) and Bachelor of Arts (BA) degrees in both chemistry and biochemistry. Our BS Chemistry program is certified by the American Chemical Society (ACS), and our BS Biochemistry program is accredited by the American Society for Biochemistry and Molecular Biology. Additionally, we provide a BS degree in chemistry with a materials science option. Currently, our department has around 460 majors and pre-majors, and we celebrated the graduation of 105 undergraduate students last year.

With a strong commitment to teaching and research, our distinguished faculty members lead in their respective fields, consistently producing cutting-edge research. Currently, we have over 100 undergraduate students actively participating in directed research with our faculty, along with 80 graduate students engaged in thesis-based research. This collaborative effort has led to an impressive average of 55 peer-reviewed papers published annually over the past five years. Equally noteworthy is our faculty's success in securing grants from governmental agencies and private industries. Over the last five years, the majority of our faculty members have obtained major research grants or institutional training grants from external funding agencies.

We are delighted to share the remarkable achievement of two of our young faculty members, Dr. Grintsevich and Dr. Tian, who were honored with the prestigious National Science Foundation (NSF) Faculty Early Career Development (CAREER) grant award in 2022. This recognition underscores the NSF's acknowledgment of their potential to serve as academic role models and leaders in their respective fields.

Since our last newsletter, nine faculty members in our department have successfully secured new external grants and student training grants, greatly impacting our research and educational endeavors. Dr. Mezyk received the NSF Environmental Chemistry grant and the Department of Defense (DoD) MRI grant. Dr. Shon secured a grant from the Department of Energy (DoE) Frontiers Research Centers, in collaboration with UC Irvine. Dr. Slowinska obtained a grant from Shiseido Company, Ltd., and Dr. Tapavicza received the Support for Research Excellence (SuRE) grant from the National Institute of Health (NIH). Dr. Wahlman was selected to receive a summer research grant from Organic Syntheses, Inc. Furthermore, Dr. Bernal received a grant award from the U.S. Department of Education for the STEAM Ecosystem Expansion Demonstration (SEED) Project, in partnership with the Teacher Education Department. Drs. Narayanaswami and Schwans were granted the NIH Undergraduate Research Training Initiative for Student Enhancement (U-RISE) awards. Drs. Tian, Shon, Slowinska, and Tapavicza were recognized with a grant award for the University of California-Hispanic Serving Institutions Doctoral Diversity Initiative (UC-HSI DDI) program, in collaboration with UC San Diego.

Our esteemed faculty members have also received national and university-level awards, further emphasizing their unwavering commitment to excellence. Dr. Narayanaswami was honored with the 2023 Fulbright Award by the US Department of State, Bureau of Educational and Cultural Affairs. She has also received the 2023 CSULB President's Award for Outstanding Faculty Achievement and the 2022 CSULB Distinguished Faculty Scholarly and Creative Achievement Award. Dr. Slowinska received the CSULB Outstanding Professor Award in 2023, along with the 2022 CNSM Faculty Award for Excellence. Dr. Schwans was recognized with the 2023 CSULB Distinguished Faculty Research, Scholarly, and Creative Activity Mentoring Award in 2023, as well as the CNSM Mayfield Award for Excellence in Undergraduate Teaching in 2022. Dr. Shon received the CSULB Distinguished Faculty RSCA Mentoring Award in 2022. Additionally, emeriti professors Dr. Merryfield and Dr. Cohlberg received the CSULB Legacy Lecturer Award in 2022 and 2023, respectively.

This year, we are delighted to announce the establishment of several newly endowed scholarships, generously supported by our alumni and friends. (*continues middle of next page*)

A NOTE FROM THE DEAN

Our Chemistry department plays an important role in our college as a foundational discipline. Almost all of our students take Chemistry at some point, and the lessons they learn here set the stage for a fulfilling and meaningful scientific career.

Student success in Chemistry is clearly a major focus for the department, and much of that is owed to our esteemed faculty, several of whom are being spotlighted in this issue: Dr. Narayanaswami who received the 2023 Fulbright scholar award from the US Department of State, Bureau of Educational and Cultural Affairs, and Dr. Grinstvich and Dr. Tian, who were honored with the prestigious National Science Foundation (NSF) Faculty Early Career Development (CAREER) grant award in 2022. It has been a real joy to work with each of you and to see what your individual skills and resources bring to our CNSM community. Your dedication to providing equitable educational opportunities truly exemplifies our motto that STEM is for everyone!

Chemistry is a big department, and I'm so pleased to see it function as a training ground for our students. From lectures and labs to seminars and presentations, our Chemistry students regularly combine multiple scientific disciplines and must be proficient in them all – certainly no easy feat, and yet it is consistently achieved. An excellent example is the recent – and ongoing – success of our Student Affiliates of the American Chemical Society, receiving an Outstanding award for the second year in a row. This is a great accomplishment, not just for our students, but also for their mentors who put so much time and effort into ensuring our students have every opportunity to succeed.

I always look forward to seeing what kind of paths our graduates carve out beyond CSULB, and our Chemistry students never disappoint. Their success is truly our success.

Dean Curt Bennett

(*chair's remarks continue from page 1*)

The John and Elizabeth Leonard family has established a Recruitment Fellowship for master's degree students in our college, which was awarded to MS biochemistry student Ronald Chau. Dr. Merryfield and the Goldish family have created the Dr. Dot Goldish Scholarship Endowment in honor of Dr. Dot Goldish's leadership, mentorship, and service, with Dat Trang as the inaugural recipient. Dr. Leslie K. Wynston's estate donation is designated to support faculty-mentored summer research student assistantships within the department, with Vanessa Garcia and Maya Rogalski as the first recipients. The Dr. Roger Acey Endowed Undergraduate Summer Research Assistantship was established through a generous gift from Sylvia and Michael Nieto. Additionally, we've introduced a new Love Outstanding Teaching Assistant Award, with Linh Hang recognized as the first recipient.

Thanks to the generous donations from our alumni and faculty research grants, our department has sponsored over 60 students to present their research and attend scientific conferences since our last newsletter. Many students have received awards at national or regional conferences. Notable achievements include undergraduate student Ethan Luksik from Dr. Tian's group, who received the ACS Division of Colloid & Surface Chemistry Student Award and presented his research at the ACS National Meeting in San Francisco. Undergraduate student Nishi Rauth from Dr. Bhandari's group won the Glenn Nagel Research Award at the 2022 CSU Biotechnology Symposium (CSUPERB), and graduate student Miguel Palma received the Don Eden Research Award at the 2022 CSUPERB Annual Symposium, as well as the 2023 CSULB University Achievement Award for Outstanding Graduate Student in Research, Scholarly, and Creative Activity. Jasmine Nguyen from Dr. Narayanaswami's group was honored with the 2023 Doris A. Howell Foundation – CSUPERB Research Scholar Award. Furthermore, under the guidance of our faculty advisors, Dr. Buonora and Dr. Tian, our Student Affiliates of the American Chemical Society (SAACS) chapter received the Outstanding Chapter Award from the ACS for two consecutive years, in 2022 and 2023.

Last year, we also introduced the Lecturer of the Year Award to recognize sustained excellence in teaching by our lecturers. Ms. Andrea Chen and Dr. Surya Manandhar were recipients for 2022 and 2023, respectively. Our department received approximately \$170K in 2022/23 and \$284K in 2023/24 from the university's Student Excellence Fee program. These funds are designated for acquiring new or replacement equipment in analytical chemistry, biochemistry, general chemistry, inorganic chemistry, organic chemistry, and physical chemistry laboratories, ensuring that our laboratories are equipped with the latest instruments and technology.

Congratulations to all our award recipients! We extend our heartfelt appreciation to our dedicated faculty and staff members who play a key role in guiding and mentoring our students. We are also deeply thankful to our loyal alumni and friends for your unwavering support of our students and programs.

Lijuan Li, Ph.D., Department Chair

Chemistry & Biochemistry is published for past and present students and friends of the Department of Chemistry and Biochemistry. The opinions expressed on these pages do not necessarily reflect the official policies of the CSULB administration or those of the California State University Board of Trustees.

Winter 2024

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Faculty Focus: Take Two - Faculty Awarded NSF CAREER

Contribution from Prof. Kasha Slowinska

The Faculty Early Career Development (CAREER) Award is the National Science Foundation's most prestigious award in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization. It is rare that this recognition is given to mostly undergraduate institution, because it requires establishing very rigorous and potent research program, that must be maintained by mostly undergraduate students. Two faculty members from our department were awarded this prestigious award, Dr. Tian, Associate Professor of Chemistry and Dr. Grintsevich, Assistant Professor of Biochemistry.

Dr. Fangyuan Tian received the 2022 NSF CAREER Award from the Division of Materials Research (DMR) under the program of Solid State Materials Chemistry (SSMC). The focus of her research is to study the surface and interface chemistry of a type of porous materials, known as metal-organic frameworks (MOFs). These materials are composed of metal clusters linked by organic ligands by forming three-dimensional (3D) or two-dimensional (2D) structures. This project aims to enhance the scientific understanding of surface and interface interactions between crystalline coordination networks and semiconductors with combined analytical methodology and materials design. More importantly, this NSF support will provide early research opportunities to a diverse cohort of undergraduate students at the California State University Long Beach. This five-year project targets increasing diversity in materials science. Meanwhile, outreach activities are designed to involve local high school students and the general public with an aim at improving scientific awareness and interest in materials research.

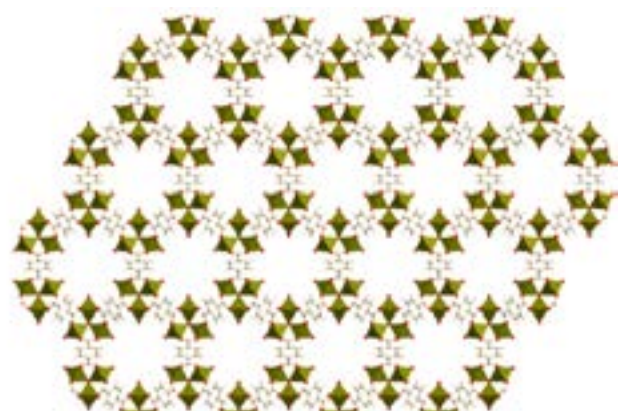


Fig1. An illustration of a metal-organic framework structure.

Continue reading about this work: Rodriguez, R., Palma, M. S., Bhandari, D., Tian, F., "Electrodeposition of Ag/ZIF-8 modified membrane for water remediation", Langmuir, 2023, 39, 6, 2291-2300.

Dr. Elena Grintsevich received the 2022 NSF CAREER Award from the Division of Molecular and Cellular Biosciences (MCB). The main interest of her work is cytoskeleton, in particular, regulatory processes leading to formation of actin filaments. In mammals, a variety of actin-based structures are built from six different isoforms that are expressed in a cell type-specific manner. How these cytoskeletal structures are differentially regulated based on their actin isoform composition is an open fundamental question. The goal of Dr. Grintsevich project is to understand how dynamics of actin isoforms are differentially regulated by a novel mechanism orchestrated by Mical and MsrB enzymes which involves site-specific oxidation/reduction of two methionines in actin's sequence. The proposed work will be carried out mostly by undergraduate students and the intension is to comprise a tight integration of research and education. This project will have a positive impact on development of a competitive STEM workforce, full participation of women, first generation students, and underrepresented minorities in STEM.

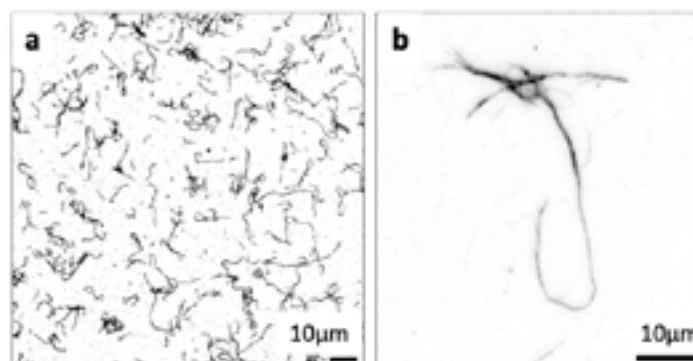


Fig 2. Picture of the unbundled (a) and bundled (b) Filamentous Actin

Continue reading about this work: Rajan, S., Yoon, J., Wu, H., Srapyan, S., Baskar, R., Ahmed, G., Yang, T., Grintsevich, E. E., Reisler, E., Terman, J. R., "Disassembly of bundled F- actin and cellular remodeling via an interplay of Mical, cofilin, and F- actin crosslinkers", PNAS, 2023, 120, 39, e2309955120.

Faculty Focus: 2022 & 2023 Lecturer of the Year

Contribution from Prof. Lijuan Li

The Lecturer of the Year Award, established in 2022 by the Department of Chemistry and Biochemistry, is designed to encourage, reward, and publicly acknowledge sustained excellence in teaching by members of the Department Lecturer teaching faculty. One award is given per year and we spotlight the inaugural winner Professor Andrea Chen and the 2023 winner Professor Surya Manandhar below.

The inaugural Lecturer of the Year Award in 2022 went to Professor Andrea Chen. Professor Chen received a BS degree from UCLA in 1996 and an MS degree in chemistry from Cal State Long Beach in 2004. While many of our faculty teach large numbers of students, work with TAs, and develop lecture and lab classes, Professor Chen is unique due to her attitude toward students' success, as noted in her nomination letters. She holds strict standards for her students but teaches in a fun manner. She maintains a record of excellence in her teaching duties and has won the CSULB Student Alumni Association's Golden Apple Award in 2002 and the College Mayfield Award in 2014 and 2015 – a public acknowledgment of how much her students appreciate her effort. In addition to sustained excellence in teaching, her involvement in course coordination, seeking funding for lab redesign, and student outreach programs set a high precedent for this award.



Professor Andrea Chen

Dr. Surya Manandhar received the award in 2023. Dr. Manandhar is originally from Nepal and received a Ph.D. in Biochemistry in 1990 from Karkiv State University in Ukraine. He joined CSULB in 2010 as a post-doctoral associate in the Department of Biology and has been teaching Biochemistry classes for our department since 2014. His former students noted in their nomination letters saying "Professor Manandhar has demonstrated an unwavering commitment to his student's success, providing us with consistency, accessibility, and punctuality....What sets Professor Manandhar apart is his ability to inspire his students and challenge us to reach our full potential. Professor Manandhar is a phenomenal educator who excels at making students excited to learn and inspiring us to relate the material to our lives and future careers."



Professor Surya Manandhar

in memoriam Profiles
Les Wynston

Leslie K. ("Les") Wynston (1934-2020) was a member of our faculty from 1965-1998. A native of San Diego, Les earned a BS in Chemistry from San Diego State. During his undergraduate years Les did research at the Scripps Clinic, which stimulated his interest in biochemistry. He then obtained his MS and PhD degrees in biochemistry at UCLA Medical School, studying the structure of thyroid stimulating hormone in John Pierce's laboratory, work that resulted in four publications. After brief faculty positions at Northwestern University Medical School and UCSF, Les had a two-year postdoc at the Max Planck Institute for Protein and Leather Research in Munich, Germany. At this point Les decided that he wanted a long-term job that involved extensive teaching and contact with students, preferably in his native California, and he accepted a position at CSULB.

Les taught all the undergraduate biochemistry classes in our department. He continued his research on protein chemistry and advised several MS students and undergraduates. He also consulted for the aerospace industry on projects that included finding a chemical approach to prevent disuse osteoporosis in astronauts as a consequence of extended weightlessness. He did research for the State Department on predicting chemical and biochemical development in China. Les took a sabbatical leave teaching and doing research at the University of Zurich Veterinary School. He spent a year teaching biochemistry at National Chung Hsing University in Taiwan as a CSU Exchange Professor and went on a lecture tour of East Asia.

Les was a passionate wine enthusiast. He taught several courses on wine through the Home Economics Extension program and conducted winery tours in Europe. Les was a licensed travel agent, and he and his wife traveled extensively in both Europe and Asia.



Les Wynston (left) and Jeffrey Cohlberg (center)

Les was heavily involved in advising pre-professional students, providing information to help them apply to medical and other professional programs. He served as president of the Western Association of Advisors for the Health Professions and as secretary of the national organization. For many years he was the faculty advisor to the campus Organization of Pre-Professional Students.

In 2011, Les established the Leslie K. Wynston Scholarship in Biochemistry. This annual award provides a \$1000 scholarship to a BS in Biochemistry student planning to attend a professional school related to the health sciences. In addition, in 2022 his estate made a gift to our department that established the Leslie K. Wynston Faculty-Mentored Summer Research Student Assistantship Award. We are grateful to Les for his support of our students in their research and in their pursuit of professional goals.

Contribution from Professor Emeritus Jeffrey Cohlberg

in memoriam Profiles
Dot Goldish

Scholarship honoring late professor champions careers in chemistry
Originally Published March 7, 2023
By Janis Carr, Updates Margaret Merryfield

Fresh from Stanford University with a Ph.D. in chemistry, Dorothy "Dot" Goldish arrived at a large consumer goods corporation to interview for a job as a chemist. But when the managers saw her, they changed it to a home economics position.

It was then when Dr. Dot Goldish decided to pursue a career in education, according to her daughter, Judith Goldish.

The year was 1958 and there weren't many female chemistry professors, but that didn't stop her from applying for a job at Cal State Long Beach (then Long Beach State College). As one of the first two female professors of chemistry, she stayed at the university for 50 years, serving in a variety of roles, although her passion was teaching.

"She loved being in the lab, but teaching the next generation was what mattered to her," Judith Goldish said of her late mother. "She loved chemistry, and she loved her students."

It was in that spirit that Margaret Merryfield, professor emerita of chemistry, established the Dr. Dot Goldish Endowed Scholarship for Cal State Long Beach chemistry students. The scholarship was awarded for the first time in Spring 2023.

Goldish passed away in 2018.

Scholarships enable The Beach to attract and support the brightest and most accomplished students who can shape California's future workforce. Investing in opportunities that make an indelible mark on the economic, educational and scientific evolution of our state is one of the priorities of the university's No Barriers comprehensive fundraising campaign.

"Scholarships like this can help encourage students to pursue careers in chemistry by providing them with the financial support they need to complete their education and gain valuable research experience," said Dr. Lijuan Li, chair of the chemistry and biochemistry department. "Thus, it can help to ensure that the field of chemistry is accessible to all students who are interested in pursuing careers in this exciting and important field."

Leah Webb, a fourth-year chemistry student, said the Dot Goldish scholarship is a wonderful way to encourage other women in STEM. The scholarship is for both male and female students.

"Scholarships for CNSM (College of Natural Sciences and Mathematics) students are very impactful," Webb said. "Providing financial assistance to students can allow them more time to fully immerse themselves in a research lab."

"In doing so, students can gain valuable lab skills that can be used in their future careers."

This is what Goldish would want, Merryfield said. Merryfield said the scholarship stipulates that the recipient needs to have shown leadership skills, either within the community or university in some capacity, reflecting the values that Goldish possessed. Goldish, who was honored as a CSULB Golden Faculty in 2018, not only was involved in various aspects of CSULB, but within the Long Beach Jewish community and her family life.

Goldish taught organic chemistry for 30 years, but when the French and Italian department needed an interim chair, Goldish volunteered. She also served three years as chair of the Academic Senate, associate dean of the liberal arts and sciences college and acting associate dean of the College of Business. Overall, she spent 50 years at The Beach.

"Even after she retired, she worked as a special assistant in the provost's office and then the president's office, doing problem-solving for students," Merryfield said.

Merryfield's memories of Goldish go beyond the classroom walls. Merryfield said the professor took her "under her wing" on her first day at The Beach. She turned out to be not only a mentor but a longtime friend.

"I remember at my interview, she came up to introduce herself because she realized the room was full of mostly men and at the time, she was the only woman on the faculty," Merryfield said. "She wanted to reassure me that there would be a positive climate here."



Merryfield, who worked at CSULB for 23 years and the CSU Chancellor's Office for 12 years before retiring and taking on her current role of faculty equity advocate, said Goldish set a standard for leadership and dedication, qualities that influenced her own career as a professor of biochemistry.

The two remained close over the years, often meeting for lunch, discussing university issues and family matters. Merryfield said the scholarships are one way to keep Goldish's memory alive.

"It's a way to carry on her legacy of education, of bringing education to the next generation, which is what she would have wanted," Judith Goldish said.



AWARDS, HONORS & SCHOLARSHIPS

Chemistry and Biochemistry Students, 2022

SUBJECT AREA AWARDS

AMERICAN CHEMICAL SOCIETY ORGANIC CHEMISTRY AWARD	NATALIE TRAN & JONATHAN GUTIERREZ
AMERICAN CHEMICAL SOCIETY POLYMER CHEMISTRY AWARD	SVETLANA SAFIR
AMERICAN CHEMICAL SOCIETY ANALYTICAL CHEMISTRY AWARD	AN HO
ANALYTICAL CHEMISTRY AWARD	TUAN NGUYEN
AMERICAN CHEMICAL SOCIETY AWARD IN PHYSICAL CHEMISTRY	LEAH WEBB
BIOCHEMISTRY AWARD	DAN TANG & MENANIE NGUYEN
FRESHMAN CHEMISTRY AWARD	KAYLA CHENEY
INORGANIC CHEMISTRY AWARD	JACQUELIN CHEN
JOHN H. STERN AWARD IN PHYSICAL CHEMISTRY	DAICHI NAKATANI
ORGANIC CHEMISTRY AWARD	BRIANA BRODERICK
SPYROS PATHOS IV AWARD	KATHERINE NGUYEN

SPECIAL DEPARTMENT AWARDS

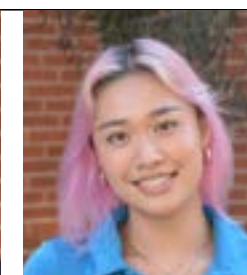
AMERICAN INSTITUTE OF CHEMISTS BACCALAUREATE AWARD	
BIOCHEMISTRY	ANGEL RUIZ
CHEMISTRY	BENJAMIN DAO
AMERICAN INSTITUTE OF CHEMISTS GRADUATE AWARD	
BIOCHEMISTRY	JOSE LUIS MARTIN
CHEMISTRY	DOUGLAS FOWLER
ROBERT B. HENDERSON MEMORIAL SCHOLARSHIP	AIDA HUSAIN & KAREEM ASHAM
JOHN H. STERN SUMMER RESEARCH AWARD	DIANA JIMENEZ
KENNETH L. MARSI AWARD	JACQUELIN CHEN
MCABEE-OVERSTREET AWARD	SARGIS SRAPYAN
MONAHAN MEMORIAL SUMMER RESEARCH FELLOWSHIP	MIGUEL PALMA & VIDYA METKAR
DAVID L. SCOGGINS MEMORIAL AWARD	KIM HONG KEU
LESLIE K. WYNSTON SCHOLARSHIP	SERLI KHANBABAEI
OUTSTANDING TEACHING ASSOCIATE AWARD	SHINTA TANAMAS
TONY HORALEK AWARD	LUIS RUIZ ARMENTA & CORTNEY NGO



NATALIE TRAN



Svetlana Safir



An Ho



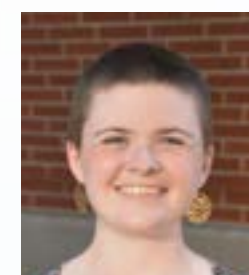
Tuan Nguyen



Leah Webb



Menanie Nguyen



KAYLA CHENEY



Daichi Nakatani



Angel Ruiz



Benjamin Dao



Jose Luis Martin



Aida Husain



Kareem Asham



Sargis Srappyan



Miguel Palma



Kim Hong Keu



SERLI KHANBABAEI



Shinta Tanamas



Luis Ruiz Armenta



CORTNEY NGO



AWARDS, HONORS & SCHOLARSHIPS

Chemistry and Biochemistry Students, 2022

DEPARTMENTAL UNDERGRADUATE HONORS

NATALIE TRAN, TINA NGUYEN, DANNA DE BOER

DEPARTMENTAL GRADUATE HONORS

PATRICK ALLEN, ADAM SMITH, VERNON BENEDICTO

COLLEGE OF NATURAL SCIENCES AND MATHEMATICS, CSUPERB AWARDS

- GRADUATE DEAN’S LIST AND RICHARD D. GREEN DEAN’S AWARD
- SHINTA TANAMAS
- CNSM OUTSTANDING GRADUATE RICHARD D. GREEN DEAN’S AWARD
- NISHI RAUTH
- CNSM OUTSTANDING THESIS AWARD IN CHEMISTRY & BIOCHEMISTRY
- STEVEN GUILLEN
- ORSP SUMMER RESEARCH FELLOWSHIP
- ZAHRAA HAGUAR
- UNDERGRADUATE RESEARCH OPPORTUNITY PROGRAM (UROP) AWARD
- KARAMA AL-UBIDY
- CSUPERB ANNUAL SYMPOSIUM
- NISHI RAUTH - GLENN NAGEL RESEARCH AWARD
- MIGUEL PALMA - DON EDEN RESEARCH AWARD

AWARDS, HONORS & SCHOLARSHIPS

Chemistry and Biochemistry Students, 2023

- SUBJECT AREA AWARDS
- AMERICAN CHEMICAL SOCIETY ORGANIC CHEMISTRY AWARD

AMERICAN CHEMICAL SOCIETY POLYMER CHEMISTRY AWARD

AMERICAN CHEMICAL SOCIETY ANALYTICAL CHEMISTRY AWARD

ANALYTICAL CHEMISTRY AWARD

AMERICAN CHEMICAL SOCIETY AWARD IN PHYSICAL CHEMISTRY

BIOCHEMISTRY AWARD

FRESHMAN CHEMISTRY AWARD

INORGANIC CHEMISTRY AWARD

JOHN H. STERN AWARD IN PHYSICAL CHEMISTRY

ORGANIC CHEMISTRY AWARD

SPYROS PATHOS IV AWARD
- TAYLOR MOORE

ADEN GOMEZ

KATLYN LAWRENCE

NATALIE TRAN

JOSE OCHOA

AHMAD MARDINI

DORSA KAMYAB

ANNA WESNER

DANIEL CHAVEZ-BONILLA


DAVID BRAVO

MAYA ROGALSKI




AWARDS, HONORS & SCHOLARSHIPS


Chemistry and Biochemistry Students, 2022




NATALIE TRAN




DANNA DE BOER




Patrick Allen




ADAM SMITH



Shinta Tanamas



NISHI RAUTH



Miguel Palma

AWARDS, HONORS & SCHOLARSHIPS

Chemistry and Biochemistry Students, 2023



TAYLOR MOORE



ADEN GOMEZ



KATLYN LAWRENCE



NATALIE TRAN



JOSE OCHOA



DORSA KAMYAB



ANNA WESNER



DANIEL CHAVEZ-BONILLA



DAVID BRAVO



MAYA ROGALSKI

AWARDS, HONORS & SCHOLARSHIPS

Chemistry and Biochemistry Students, 2023

SPECIAL DEPARTMENT AWARDS

AMERICAN INSTITUTE OF CHEMISTS BACCALAUREATE AWARD	
BIOCHEMISTRY	SERLI KHANBABAEI
CHEMISTRY	VICTORIA SARKISIAN
AMERICAN INSTITUTE OF CHEMISTS GRADUATE AWARD	
BIOCHEMISTRY	AIDA HUSAIN
CHEMISTRY	RAYMOND YU
ROBERT B. HENDERSON MEMORIAL SCHOLARSHIP	TUHINA BHATTACHARYA & RANJITH BURRA
JOHN H. STERN SUMMER RESEARCH AWARD	DANIEL CHAVEZ-BONILLA
KENNETH L. MARSI AWARD	ETHAN LUCSIK
MCABEE-OVERSTREET AWARD	MAGDALENE EBENEZER
MONAHAN MEMORIAL SUMMER RESEARCH FELLOWSHIP	ADITI ACHARYA & JOSE LEMON
DR. DOT GOLDISH ENDOWED SCHOLARSHIP	DAT TRANG
TONY HORALEK AWARD	LEAH WEBB
OUTSTANDING TEACHING ASSOCIATE AWARD	ERIK GALICIA
THE LOVE OUTSTANDING TEACHING ASSOCIATE AWARD	LINH HANG
LESLIE K. WYNSTON SUMMER RESEARCH ASSISTANTSHIP AWARD	VANESSA GARCIA & MAYA ROGALSKI

DEPARTMENTAL UNDERGRADUATE HONORS

JAQUELIN CHEN, JACKSON DINH, NOLAN JOHNSON,
SUSAN NGUYEN, PHUONGMY NGUYEN

DEPARTMENTAL GRADUATE HONORS

KAREEM ASHAM, ANH DANG, JOCELYN DOMINGUEZ

CNSM COMMENCEMENT AWARDS, CSULB & NATIONAL AWARDS

GRADUATE DEAN'S LIST AND RICHARD D. GREEN DEAN'S AWARD	MATTHEW PLAZOLA
GRADUATE DEANS LIST OF SCHOLARS AND ARTISTS	MIGUEL PALMA
CNSM OUTSTANDING THESIS AWARD IN CHEMISTRY & BIOCHEMISTRY	RICKY RODRIGUEZ
ACS OUTSTANDING STUDENT CHAPTER AWARD	SAACS, EXECUTIVE TEAM
ACS DIVISION OF COLLOID & SURFACE CHEMISTRY STUDENT AWARD	ETHAN LUCSIK
DORIS A. HOWELL FOUNDATION - CSUPERB RESEARCH SCHOLAR 2023	JASMINE NGUYEN
UNIVERSITY ACHIEVEMENT AWARD FOR OUTSTANDING GRADUATE STUDENT IN RESEARCH, SCHOLARLY AND CREATIVE ACTIVITY	MIGUEL PALMA
CSULB GRADUATE FELLOWSHIP ACADEMIC YEAR 2021-2022	MICHELLE CASTILLO
CSULB GRADUATE FELLOWSHIP ACADEMIC YEAR 2022-2023	JACK ROGERS & YOUN LWIN LWIN HAN
CSULB GRADUATE EQUITY FELLOWSHIP FOR THE 2023-24 ACADEMIC YEAR	TUHINA BHATTACHARYA & EMILY MARQUEZ
CSULB STUDENT SUMMER RESEARCH AWARD 2023	VIDYA METKAR & BRYAN KANG



SERLI KHANBABAEI



VICTORIA SARKISIAN



AIDA HUSAIN



RAYMOND YU



TUHINA BHATTACHARYA



RANJITH BURRA



DANIEL CHAVEZ-BONILLA



ETHAN LUCSIK



MAGDALENE EBENEZER



ADITI ACHARYA



JOSE LEMON



DAT TRANG



LEAH WEBB



ERIK GALICIA



LINH HANG



VANESSA GARCIA



MAYA ROGALSKI



JACKSON DINH



NOLAN JOHNSON



PHUONGMY NGUYEN



KAREEM ASHAM



ANH DANG



JOCELYN DOMINGUEZ



MATTHEW PLAZOLA



Miguel Palma



RICKY RODRIGUEZ



JACK ROGERS

FACULTY SPOTLIGHT: DR. VASANTHY (VAS) NARAYANASWAMI US-INDIA FULBRIGHT-NEHRU SCHOLAR 2023-2024

The Department of Chemistry and Biochemistry is excited to share the news that Biochemistry professor Dr. Vasanthi (Vas) Narayanaswami received the 2023-2024 US-India Fulbright-Nehru Scholar award that promotes exchange of scholars between the US and other countries. Awarded by the US State Department, Bureau of Educational and Cultural Affairs through funds appropriated annually by the US Congress, and from the Indian government, the award will allow her to carry out innovative research at the Tata Institute of Fundamental Research (Hyderabad), a renowned research institute supported by the Department of Atomic Energy, Government of India. The Fulbright Foreign Scholarship Board, a 12-member board appointed by the President of the US, oversees the global Fulbright program.

During her Fulbright Scholar program, Dr. Narayanaswami will be carrying out a basic research project that addresses the etiology of Alzheimer's disease (AD), a leading cause of dementia that is accompanied by decline in cognitive and behavioral function. Dr. Narayanaswami plans to apply her expertise in lipids and lipoproteins to study the effect of apolipoproteins on the abnormal buildup of amyloid peptides that form amyloid plaque, a characteristic feature of AD. She will use an interdisciplinary approach involving advanced microscopy and spectroscopy tools to investigate the mechanistic basis of amyloidogenesis in AD.

This is a new direction for Dr. Narayanaswami, who is an established investigator in cardiovascular research. Her scientific and service contribution in the areas of interest to the American Heart Association (AHA), the leading authority on all aspects related to cardiovascular events in the US and worldwide, earned her the title of the 'Fellow of the AHA' (FAHA). Together these accomplishments provide the backdrop for Dr. Narayanaswami to serve as a cultural ambassador for the US as a Fulbright Scholar in India. She will be an excellent role model not only for women of color in science but also for women in leadership positions.



As a Fulbright Scholar, Dr. Narayanaswami will also have the opportunity to engage with local research and scientific community, share her research work with visits and seminars at various research and educational institutes in India, and interact with students and trainees. She will engage in service and leadership activities to enhance diversity in research, increase engagement of women in leadership positions, and successfully involve undergraduate students in research, the latter a signature feature of CSULB and 'The Beach Experience'.

Previous recipients of the Fulbright Scholar Award from our department are Dr. Nail Senozan (1984-1985 and 1990-1991), Dr. Richard Hunt (1973-1974) and Dr. Darwin Mayfield (1966-1967).

Dr. Narayanaswami remarks: "I hope to enhance my expertise and bring back new knowledge about the role of lipoproteins in the amyloid aggregation process and engage our diverse array of students at CSULB in cutting edge biomedical research."

FACULTY REPORTS: Bhandari, Mezyk, Schwans, Schramm, Tian, Narayanaswami, Maricich, Wahlman, Weers & Shon

Bhandari Group

The Bhandari lab@ the Beach studies biochemical signaling pathways that are activated during cellular stress. Specifically, we investigate the role of these pathways in determining the fate of the stressed cells in the context of two pathophysiological conditions – cancer and type II diabetes.

Since the last newsletter, five graduate students (Kelly Araujo, Jamie Solorsa, Koyinsola Oloja, Miguel Palma and Aida Husain) have successfully defended their theses. Kelly and Aida are now pursuing Ph.D. programs at Loyola University Chicago and University of California San Diego, respectively. Koyinsola is working in industry.



Bhandari Group at CNSM Poster Session

Jamie is teaching at the Golden West Community college and Miguel is a part-time lecturer in our own department! Undergraduate students - Nishi Rauth and Kimberly Izarraras are now Ph.D. students at UC Santa Barbara and Rutgers University, respectively and John Pham is a medical student at the Cooper Medical School in New Jersey.

My students brought recognition to the lab by winning multiple awards, honors, and

scholarships/fellowships. Miguel Palma received the 2022 CSUPERB Don Eden Graduate Research award, 2022 Monahan Memorial Summer Research Fellowship, 2023 CSULB Graduate Student RSCA award, and graduated with the 2023 Graduate Dean's List honors. Aida Husain received the 2022 CSUPERB Graduate Student-Faculty Collaborative Research grant, 2022 Robert H. Henderson Memorial Scholarship, and graduated with the 2023 AIC Biochemistry Graduate Student award. Nishi Rauth received the first-place award for poster presentation at the 2021 ABRCMS meeting, won the 2022 CSUPERB Glenn Nagel Undergraduate Research award, and graduated with the RDGD Outstanding Graduate award.

Graduate students - Michelle Castillo and Tuhina Bhattacharya received the 2022 University Graduate Research Fellowship and the 2023 University Graduate Equity Fellowship, respectively. In addition, since January 2022, my students have presented 18 research posters - 5 at National/international meetings, 5 at regional and 8 at local symposia.

While we bid a fond farewell to the graduating students, we also welcomed three new

graduate students - Anthony Rios, Samantha Perez (both Anthony and Sam are NIH Bridges to Doctorate Fellows), Tuhina Bhattacharya and four new undergraduate students - Shayla Tran, Gabriel Tan, Oshiana Schenkelberg and Sebastian Bonca. I am looking forward to another exciting year mentoring and rejoicing in my students' accomplishments. Go Beach!

Mezyk Group

The Mezyk RadKEMTM group celebrated this new, post-COVID, period by getting back to enjoying research, both at CSULB and on the road at the University of Notre Dame and Brookhaven National Laboratory. While it was a lot of fun for me to be back in the classroom again, rediscovering how teaching is so much better face-to-face, our students were much less prepared for their Chemistry classes after nearly two years of on-line instruction. This was especially evident in our PChem laboratory class (CHEM373) which was the first in-person laboratory many of these students had ever experienced at CSULB.

However, with several successful grants (two on-going from NSF at the start of this period, and now two new ones from NSF and DOD) and a sabbatical in Spring 2022 I was able to get my research efforts back on track. Over the past two years we've managed to publish 14 journal articles with 17 student co-authors and had 20 conference presentations with 25 students co-authors. I particularly enjoyed being invited to speak at the International Miller Conference on Radiation Chemistry in Corsica in June 2023, which allowed me to catch up with my colleagues in Europe and then spend more time there on vacation.

After graduating my six COVID-era starting MS students my group has been rebuilt from my General Chemistry undergraduate



Mezyk Group - Left to Right: Stephen Mezyk, Anh Dang, Andrew Beshay and Richard Faulkner at the American Chemical Society National Meeting in Indianapolis, March 2023.

students. While the focus of their efforts has been in my NSF-funded environmental areas, where these students are starting to become very productive, I am also happy that my nuclear chemistry funding is starting again after a 5-year hiatus! We are really getting some amazing results which we hope to be publishing soon.

As 2023 quickly draws to a close, it is very gratifying to be able to say that both the RadKEMTM group and I have been able to recover and thrive over the past two years and that we are all looking forward to an extremely successful 2024.

Schwans Group

Our lab continues to ask the question, "How do enzymes work?". To address this question, a few research directions were pursued over the past year: 1) Synthesis and biochemical studies of modified amino acids and coumarin based as cholinesterase inhibitors in the potential treatment of Alzheimer's Disease; 2) investigating the catalytic role of 'near active-site residues' in triosephosphate isomerase to aid in the design of new enzymes with new functions; and 3) using tyrosine phenol lyase to enzymatically generate unnatural amino acids. In addition to the current projects, it was great to see several stories published with Patrick Allen, Jordan Cook, Anh Colquhoun, Jonathan Godinez, Catherine Lee, and Alexa Novales as coauthors.

Progress by our talented team of undergraduate and graduate made great advances in all projects during the past year. For the cholinesterase work, we have now moved to new amino acid-based scaffolds as potential cholinesterase inhibitors. Francisco Bedolla, Nicole Lee, Natalie Monroy, and Stephanie Omagari have synthesized some ester analogs to evaluate the importance of an aromatic residue in the inhibitors.

Katrina Jensen and Mali Martinez are investigating compounds that resemble a neurotransmitter, and Briseida Quero Merino and Jasmin made and tested several analogs of lysine and tryptophan. Briana Hernandez, Nhan Huynh, Paris Marabut, Aran Multani, Ngoc Kim Phuong Nguyen, Mithi Roy, and Ivan Villavicencio are all developing approaches to make more amino acid analogs for biochemical studies.



Left to Right: Michael Schramm, Toru Amaya, Takashi Takahashi with Amaya group lab members.

A long-standing goal has been to mutate the enzyme to evaluate enzymatic features important for inhibition. This is now possible due to the work of Laura Shin and Lupita Hernandez, where based on literature precedent, they have generated a form of the cholinesterase that we can modify in the lab and produce in bacteria.

In addition to the cholinesterase studies, work with triosephosphate moves forward with Jordan Keys developing protocols to bacterially generate the chicken form of the enzyme in our lab. This is a great advance in helping the lab to connect the wealth of structural data. Finally, Aden Gomez has made excellent progress in our studies to use the enzyme tyrosine phenol lyase to enzymatic generate building blocks for potential pharmaceuticals. Aden has investigated multiple enzyme mutants to "carve out" the active to expand substrate scope and generate a range of molecules.

It has been an exciting year in the lab, and I look forward to the continued success of all in the lab.

Schramm Lab

I began the Fall 2022 semester on Sabbatical in Nagoya Japan with my gracious host Toru Amaya. As is my predilection for pursuing new science any chance I get, my semester in Japan was focused on two classes of carbon based materials: spirobifluorene and fullerene. Our work mostly focused on making new chiral spirobifluorene building blocks. These are not molecules we usually pursue at CSULB and their

synthesis and characterization require a different repertoire of analytical skills which I had some time to learn. We published some of this initial work (see publications section).

While there I got to take part in a great symposium in Kyoto on physical organic chemistry and separately spend an afternoon with Takashi Takahashi, of Taxol and automated synthesis fame, whose work with Stork on Chiral synthesis of prostaglandins puts him in an elite group of elites.

It was an incredibly productive period of time and it was over in almost an instant.

Spring 2023 led to Fall and work with Mr. Jack Rogers on his MS Thesis on new Gold-cavitands which he is completing right now. Mr. Luigi Gutierrez did some very nice work on both substrate synthesis for catalysis and did some important work on making chiral derivatives of spirobifluorenes.

I've returned to Japan for the next year, to continue to pursue chemistry, where it leads me - or perhaps intrigues me. My journey as a scientist has always been filled with unexpected and challenging adventure and what's next, I surely hope will be no different.

Tian Group

Our lab had another productive year with great student success. Six lab members graduated since winter 2022: Angel Ruiz (BS in Biochemistry, '22) joined the PhD Program

of Molecular, Cell, & Developmental Biology at UCLA; Benjamin Dao (BS in Chemistry with an option in Materials Science, '22) joined the PhD Program of Chemistry at UCSD; Nathaniel Cabral (BS in Chemistry with an option in Materials Science, '23) joined United Semiconductors, Inc.; Steven Guillen (MS in Biochemistry, '22) joined the Department of Chemistry & Biochemistry at USC as a technician; Ricky Rodriguez (MS in Chemistry, '23) joined Montrose Environmental company; Raymond Yu (MS in Chemistry, '23) moved to Palo Alto, CA; Linh Hang (MS in Chemistry, '23) joined Polypeptides, Inc. We wish them continued success in their future careers! We also recruited several new lab members since 2022: Truc Pho (Biochem Major, '26), Javier Rios (Chem Major, '24), Dorsa Kamyab (Biology Major, '26), Darren Fang (BS in MechEng, UC Berkeley, '21; Current PostBac), Victor Cortez (BS in ChemE, UCSD, '23; Current PostBac), Tristan Jongert (BS in Chem, CSULB, '21; MS Candidate, '24), Hiep Nguyen (BS in Chem, CSULB, '17; MS Student, '25), Cameron Fleischer (BS in Chem, Cal Poly SLO, '23; MS Student, '25'), and Ian Slowinski (High School Student, '24).

We started a new project to explore the electron transfer behaviors of conductive and semi-conductive metal-organic framework (MOF) thin films since 2022. Half of the lab continues to study Fe-containing MOFs for

drug delivery.

We published three peer-reviewed articles and one methodology paper in the last two years. Tristan's paper is currently under review in Langmuir. Our lab got a brand-new powder XRD; we have been using it to characterize our MOF crystal structures.

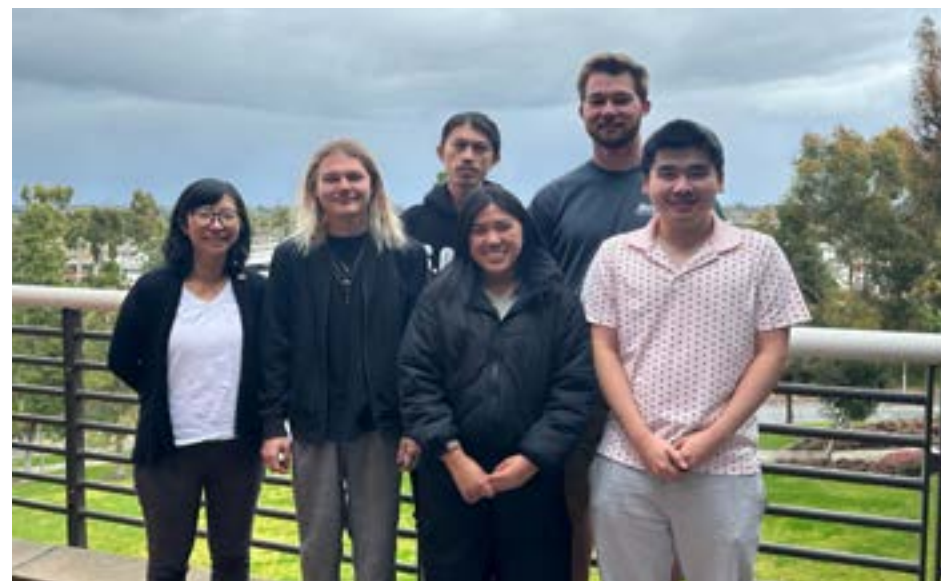
In the last two years, several lab members attended national meetings to present our research. Among all, Tristan, Ethan, Ian, and Raymond attended the 2023 ACS Fall Meeting in San Francisco; Ben and Ricky presented at the 2022 ACS Spring Meeting in San Diego. We look forward to another exciting year!

Prof. Tom Maricich

I received a call this past November from Dr. Andrew Roberts, of the University of Utah, informing me that he was just promoted with tenure. Dr. Roberts worked in my lab about 20 years ago during the summer while he was an undergraduate at UC San Diego. Andrew grew up in Long Beach and was valedictorian at Wilson High School. His grandfather was Professor Charlie Roberts of the Physics Department at CSULB.

Andrew went on to UCLA for his Ph.D. in organic chemistry, followed by a postdoctoral position at Cal Tech. He then went on to the University of Utah as an assistant professor. One of our former undergraduates, Lori Digal, went on to Utah and worked with Dr. Roberts for her recent Ph.D. She now has a postdoctoral position at UC Irvine. Lori first worked with me in her second year at CSULB on our SNAAP isopropylation reactions. She presented our work along with Hiep Nguyen and Faraz Hussain at an undergraduate research symposium at UC Irvine. Lori also worked with Dr. Schramm before going to Utah.

Faraz recently received his masters degree with Dr. Shon. Hiep is currently working on his M.S. with Dr. Tian. Therefore, one of my earlier undergraduate research students became the Ph.D. thesis advisor to a more recent research student of mine.



Tian Group

Another of my recent undergraduate research students, Robert Crowley, just received his Ph.D. at UC Riverside. Other than Dr. Roberts, all of these former students worked in my lab after I retired from formal teaching in the classroom. Some of these students presented our results at the National Meeting of the ACS in San Diego. Now, we need to get them published in a journal. Chemistry is still fun!

Narayanaswami Group

Research direction in my lab on structure-function analysis of apolipoprotein E and high density lipoprotein (HDL) is a tale of two diseases: cardiovascular and Alzheimer's disease (CVD and AD, respectively).

Looking back, I note that the research program in my lab is a deep-rooted tree that has blossomed, thanks to the active involvement of some talented young undergraduate and graduate student researchers. We have branched out to studying role of dysfunctional HDL as a risk factor in CVD and alterations to the HDL proteome and lipidome as it traverses the vascular wall. We are further sprouting fresh leaves in the direction of developing reconstituted HDL as a drug delivery vehicle and for enzyme replacement therapy. Lastly, new saplings are appearing in the area of amyloidogenesis and cellular aggregation processes and their role in AD brain.



The vibrancy of the program continues to grow with new graduate students (Vanessa Garcia, Youn Lwin

Lwin Hun, Issac Reddick) and undergraduates (Emaela Talavera Valdez, Lindsay Odell, Audrey Tse, Wayne Nguyen and Muhammad Abdulhasan) coming in to join the existing group comprising Jessica Shin, Vidya Metkar, Josh Garcia, Jose Lemon, Dhaval Patel and George Celis, Zahraa Hagar and Kasandra Khiev.

We waved goodbye to Daanish Kulkarni, Kyle Meyer, Vernon Benedicto, George Celis, Christy Nguyen, Abbas Abdulhasan and Jasmine Nguyen as they moved on to newer pastures.

Wahlman Group

Our organic chemistry research group was established in Summer 2022 and has grown in size over the past year and a half. We have been hard at work organizing our laboratory space, installing new equipment, and getting research projects up and running.

Our research focuses on the development and study of metal-catalyzed cross-coupling reactions, which are prevalent in various synthetic applications including pharmaceutical synthesis. The ongoing projects in our group take on a number of different forms such as natural product synthesis, reaction optimization, mechanistic studies, and computational data science.

Some of the projects we are currently investigating in our group include: 1) the synthesis of bioactive dihydrobenzofuran natural products using Ni-catalyzed reductive cross-coupling reactions, 2) the development of methods to prepare chiral allylic boronates using cross-coupling, 3) synthesis of 2,3-tetrahydrofurans from chiral allylic silanes, 4) the use of data-driven techniques

to predict enantioselectivity in cross-coupling reactions.

This past year we saw a number of students present posters at local conferences, including Eyas Alnasser, Maria Araujo, Kayla Ashton, and Bryan Navarro. We also saw a number of undergraduate students graduate with their bachelor's degrees from our group, including Mateo Ysmael, Sunny Nguyen, Eyas Alnasser, Arianna Gomez, and Martina Pedrina. All of them are looking forward to attending graduate programs or starting their careers.

Weers Group

Our group is specialized in the study of apolipoproteins, which aid in the transport of lipids in our circulation. We employ a structure-guided approach to better understand the function of two apolipoproteins, human apolipoprotein A-I (apoA-I) and insect apolipoprotein III (apoLp-III) which we use as a model system. ApoA-I is the major protein in high-density lipoproteins, well known for its role in cholesterol transport.

ApoA-I is composed of two domains, and the C-terminal domain initiates lipid binding and mediates self-association. We currently investigate how the protein transitions from a lipid-free to a lipoprotein-bound state, so it can transport cholesterol to the liver.

This research is funded by a grant from the National Institutes of Health. We were able to publish two papers, in Molecular and Cellular Biochemistry, and in Biochimica et Biophysica Acta - Biomembranes with the following student co-authors: John Burdick (now at UC Irvine), Rohin Basi, Kaitlyn Burns, James Horn, and Leesha Kaktani. Our current group has three graduate

Weers Group - Beach Day



students: Aditi Acharya (Monahan Chemistry Research Endowment Scholarship), Ronald Chau (The John and Elizabeth Leonard Endowed Fellowship), and Danielle Pullido.

We are very pleased that Juliette Jauregui and Judy Rodriguez recently graduated with a master's degree in biochemistry. Further, eight undergraduate students played a vital role in our research program, making important contributions to the various projects: Gia Arcillas, Trevor Chapman, Zeina Elrachid, Bryan Kang (Summer Student Research Assistantship from the Office of Research and Economic Development), Daniel Lopez (U-RISE scholar), Ramiro Monteon, Alan Montes, and Mariam Torres.

Shon Group

We have continued our NSF-funded research "liposome bilayer-embedded palladium nanoparticle catalyst" project along with the project on "the green catalysis using water-soluble colloidal palladium nanoparti-

cles" in our lab. Our research group published two research papers from these projects in the past years.

My former graduate students, Dominick Ortega, Nick Pavlakovich, Edwin Avila, and Chris Nixaridis are co-authors of these papers published in RSC Advances and Nanomaterials. Saba Dalaub and Jan Farag presented their research at the national meetings (ACS National Meetings in 2022 and ACS Green Chemistry & Engineering Conference in 2023, respectively).

Another research project related to the preparation and photocatalytic applications of photosynthetic nanoreactors based on hybrid nanostructured assemblies is now funded by the Department of Energy via the University of California Irvine. This subcontracted project involves three undergraduate students, Lillianne Aylward, Chloe Qian Yu Yeap, and Clara Yoon, in the STEM Microscopy Bridge Program established by the DOE-EFRC(Energy Frontier Research

Center)-EPN at UCI. Besides the weekly workshops provided by the ERFC (EPN), they are working on their research titled "The synthesis of titanium oxide-coated gold nanoparticles with different sizes and shapes as photocatalytic nanoreactors". When the nanomaterials syntheses are completed, they will continue the characterization and applications of these materials for photocatalysis at the other R1 institutions and national labs involved in the EFRC (EPN).

Jan Farag, Faraz Hussain, and Saba Dalaub completed their M.S. degree program during this period by defending their theses this year. Austin Nerhus, an undergraduate student who joined our research lab in the Fall of 2022, is continuing his studies on photocatalytic lipid nanoparticle assemblies as an M.S. degree candidate in the Spring of 2024.

Anais Johnson who has been in our lab since summer 2022 as a BUILD scholar has participated in the UCSD summer REU program as a UC-HIS-DDI scholar. Good news came from my graduate student alumni, Dr. Hanqing Pan, who started her research lab at the University of Nevada Las Vegas as an Assistant Professor in Residence in Fall 2022.

I am looking forward to another exciting year with both new and continuing students in the upcoming year. Our lab created the Nanomaterials Outreach Program (NOP) in the summer of 2022. Four high school students so far participated in this program in the summers of 2022 and 2023. Two 2022 cohorts are now science majors at Yale University and UCLA.



2022 & 2023 M.S. THESES

MS CHEMISTRY ‘22

BRANDY ESCOBAR
“POROUS MATERIALS FOR GAS SORPTION APPLICATIONS.”
(XIANHUI BU)

SMITH, ADAM C.
“MOLECULAR DYNAMICS SIMULATIONS OF PREVITAMIN D3 IN A PHOSPHOLIPID BILAYER.”
(ENRICO TAPAVICZA)

CISNEROS, CECILIA
“A NON-ADIABATIC MOLECULAR DYNAMICS STUDY OF CIS,CIS-1,3-CYCLOOCTADIENE PHOTODYNAMICS.”
(ENRICO TAPAVICZA)

MS BIOCHEMISTRY ‘22

STEVEN GONZALEZ GUILLEN
“EXPERIMENTAL AND COMPUTATIONAL STUDIES OF MIL-88B(Fe) ON COOH-TERMINATED FUNCTIONALIZED GOLD SURFACES.”
(FANGYUAN TIAN)

KYLE MEYER
“FLUORESCENCE SPECTROSCOPIC ANALYSIS OF APOLIPOPROTEIN AI DURING HDL PARTICLE MODULATION.”
(VASANTHY NARAYANASWAMI)

PATRICK ALLEN
“FORBIDDEN PROTEIN ANGLES: EXPLOITATION OF UNFAVORABLE DIHEDRALS FOR THE ENHANCEMENT OF HUMAN-DESIGNED ENZYMES.”
(JASON SCHWANS)

MS CHEMISTRY ‘23

CANDY DANG
“SYNTHESIS AND CHARACTERIZATION OF NEW METAL-ORGANIC FRAMEWORK MATERIALS FOR GAS SEPARATION.”
(XIANHUI BU)

JAN FARAG
“WATER-SOLUBLE PALLADIUM NANOPARTICLES WITH DIFFERENT CAPPING LIGANDS AND CARBON QUANTUM DOT COCATALYSTS FOR GREEN CATALYSIS.”
(YOUNG-SEOK SHON)

FARAZ HUSSAIN
“IN-SITU HYDROGENATION OF ALDOL CONDENSATION PRODUCTS USING LI-GAND-CAPPED Pd NANOPARTICLES FOR BIOMASS UPGRADING.”
(YOUNG-SEOK SHON)

SABA DALAUB
EFFECTS OF SURFACE LIGAND DENSITY AND LIPID ENCAPSULATION ON THE CATALYTIC ACTIVITY OF HYDROPHOBIC Pd NANOPARTICLES.”
(YOUNG-SEOK SHON)

JACOB BOUCHARD
“KINETIC MODELLING OF RADICAL REACTION SYSTEMS IN SUPPORT OF ADVANCED OXIDATION PROCESSES.”
(STEVE MEZYK)

ANH DANG
“SOLVENT-EXTRACTION LIGAND INTERACTIONS IN THE ORGANIC PHASE UNDER NUCLEAR REPROCESSING CONDITIONS.”
(STEVE MEZYK)

TRAN KHANH LINH HANG
“SURFACE-SUPPORTING MIL-88B(Fe) THIN FILM AS A NEW POTENTIAL DRUG DELIVERY SYSTEM.”
(FANGYUAN TIAN)

RAYMOND YU
“ENCAPSULATION OF FLUORESC EIN WITHIN ZEOLITIC IMIDAZOLATE FRAMEWORK: SOLID-STATE FLUORESCENCE AND ANALYTICAL APPLICATIONS.”
(FANGYUAN TIAN)

RICKY RODRIGUEZ
“ZIF-8 COATED STAINLESS STEEL MESHES WITH COLLOIDALLY CAPPED SILVER NANOPARTICLES (CC Ag NPs) FOR REMOVAL OF ORGANIC DYES AND BACTERIAL SPECIES.”
(FANGYUAN TIAN)

TANNER PEREZ
“SYNTHESIS AND CHARACTERIZATION OF HYBRID PEPTIDES PRODRUGS FOR COMBINATION THERAPY.”
(KASHA SLOWINSKA)

MS BIOCHEMISTRY ‘23

STEVEN GONZALEZ GUILLEN
“EXPERIMENTAL AND COMPUTATIONAL STUDIES OF MIL-88B(Fe) ON COOH-TERMINATED FUNCTIONALIZED GOLD SURFACES.”
(FANGYUAN TIAN)

DAANISH KULKARNI
“TARGETING METASTATIC BREAST CANCER CELLS WITH CHIMERIC ApoA1-AF7P NANOPARTICLES.”
(VASANTHY NARAYANASWAMI)

MIGUEL S. PALMA
“ROLE OF PROTEIN KINASE B ISOFORMS IN THE UNFOLDED PROTEIN RESPONSE”
(DEEPALI BHANDARI)

AIDA HUSAIN
“UNDERSTANDING THE MECHANISM UNDERLYING SC66-MEDIATED CELL DEATH”
(DEEPALI BHANDARI)

JULIETTE JAUREGUI
“INSIGHT INTO APOA-I SELF-ASSOCIATION USING PYRENE FLUORESCENCE AND CROSSLINKING.”
(PAUL WEERS)

JUDY RODRIGUEZ
“REMOVAL OF HIS6-TAG FROM APOLIPOPROTEIN A-I CHIMERAS BY TEV PROTEASE.”
(PAUL WEERS)

ANDREW BUCKLEY
“EVALUATING TIPS FOR THE PROTECTION OF FLUOROPHENOLS: A MODEL FOR THE PROTECTION OF FLUOROTYROSINES DURING SOLID PHASE SYNTHESIS”
(JASON SCHWANS)

JOSHA MERCADO
“THERMODYNAMIC STABILITY OF LOOP 6 MOTION IN HUMAN TRIOSEPHOSPHATE ISOMERASE VARIANTS” (JASON SCHWANS)

FACULTY PUBLICATIONS 2022-2023

DR. DEEPALI BHANDARI

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DR. XIANHUI BU

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ORGANIC SYNTHESIS INC. RESEARCH GRANTS FOR FACULTY AT PRINCIPALLY UNDERGRADUATE INSTITUTIONS – “INVESTIGATING REDUCTIVE CROSS-COUPLING REACTIONS FOR THE SYNTHESIS OF CHIRAL ALLYLIC BORONATES”

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PROF. ENRICO TAPAVICZA
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PROF. YOUNG-SEOK SHON
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PROF. STEVE MEZYK
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