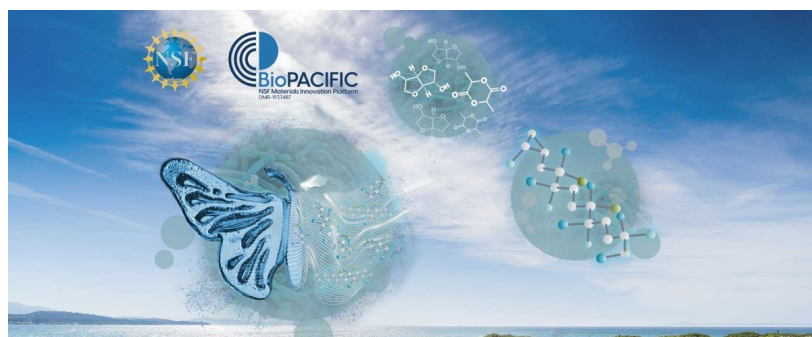


UC **SANTA BARBARA**

Chemistry and Biochemistry

**DCB TODAY***Department of Chemistry and Biochemistry Newsletter*

*Artist's concept illustration depicts the transformation resulting from using bio-based micro-organisms as the building blocks for better polymers*

*Photo Credit: LILLIAN MCKINNEY*

The National Science Foundation (NSF) has named UCSB and UCLA joint partners in the BioPolymers, Automated Cellular Infrastructure, Flow, and Integrated Chemistry: Materials Innovation Platform (BioPACIFIC MIP). The five-year, \$23.7 million collaboration is part of the NSF Materials Innovation Platforms (MIP) Program.

BioPACIFIC is a collaboration between the CNSI teams at UCSB and UCLA. Prof. Javier Read de Alaniz, an Associate Director at CNSI UCSB, is a co-PI for BioPACIFIC, teaming with Prof. Heather Maynard who is an Associate Director at CNSI UCLA.

<https://biopacificmip.org/>

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# Letters from the Chair(s)

June 30th, 2021 was my last day as the Chair of the Department of Chemistry and Biochemistry. Professor Mattanjah de Vries has officially taken over as chair on July 1st, 2021.

It has been my pleasure to serve as chair these past 7 years. I am looking forward to spending more time on my research program and teaching. I want to thank all of you for your support, especially over the past 15 months during the COVID-19 Pandemic. We have a special and very resilient department. I wish Prof. de Vries good luck as he begins his tenure as chair and I know that we, as a department, are in good hands.



**STEVEN BURATTO, CHAIR**  
**2014 - 2021**



**MATTANJAH DE VRIES**  
**NEW CHAIR**  
**2021 -**

This is an opportunity to thank Prof. Steve Buratto for 7 years of service, including navigating the department through the travails of the pandemic. We think of the many people who suffered in many different ways from the hardships as a result of Covid-19. As we finally appear to emerge from the worst impacts, we look forward to a brighter future.

The recent review of the department provides a roadmap for moving on as we transition to some form of normalcy. I look forward to working together with the DCB community of faculty, staff and students to continue to make this the best department it can be for all of us.



# Letter from the Editor

*Thank you, Department of Chemistry and Biochemistry, for the opportunity to work with you and prepare the annual DCB Newsletter for the past 3 years. I started this newsletter as part of my service to the department to capture all the amazing accomplishments of our department in the past year. I have greatly enjoyed the process as it brings me closer to all of our students, faculty, and staff. In the process of gathering material throughout the year, I got the chance to attend all the departmental events and joined classrooms to take pictures of experiments and student life.*

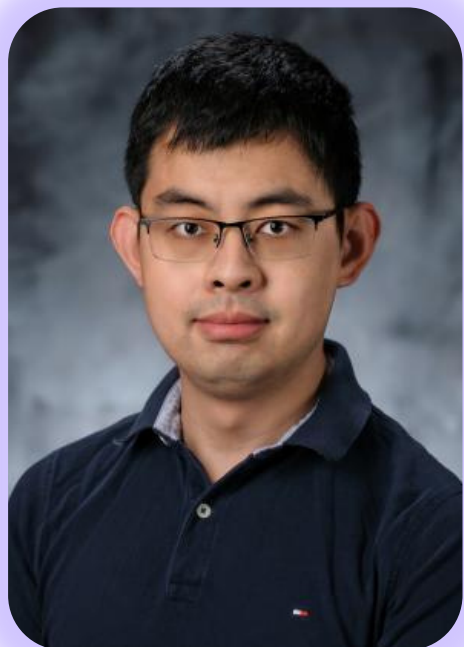
*I started in the department as a Faculty and Administrative Assistant and have since transitioned into the Research Administrator position. This will be my last newsletter for the department as I will be starting graduate school in the fall of 2021.*

*It has been my great pleasure working for the Department of Chemistry and Biochemistry for the past 3 years and I wish everyone the best of luck in their future endeavors.*

**Sincerely,**

**Olivia Hwang**  
**Research Administrator**

# Welcome New Faculty!



## DR. YANG HAI

ASSISTANT PROFESSOR

### WHAT'S YOUR ACADEMIC BACKGROUND?

I received my Ph.D. in chemistry at the University of Pennsylvania under the advisement of Prof. David Christianson. I did my postdoctoral work at UCLA with Prof. Yi Tang.

### WHAT WILL BE THE FOCUS OF YOUR RESEARCH GROUP?

My group is interested in how biosynthetic enzymes work, especially those that carry out interesting chemical transformations on amino acids and peptides. We would like to understand their catalytic mechanism and structure-function relationship, and to expand the toolbox of enzymes through protein engineering and enzyme discovery.

### FAVORITE THING ABOUT UCSB SO FAR?

My favorite thing here at UCSB so far is interacting with the bright students.

### WHERE ARE YOU FROM?

I grew up in Yinchuan, a city in the northwestern part of China.

### SOMETHING YOU LOOK FORWARD TO TRYING IN SB.

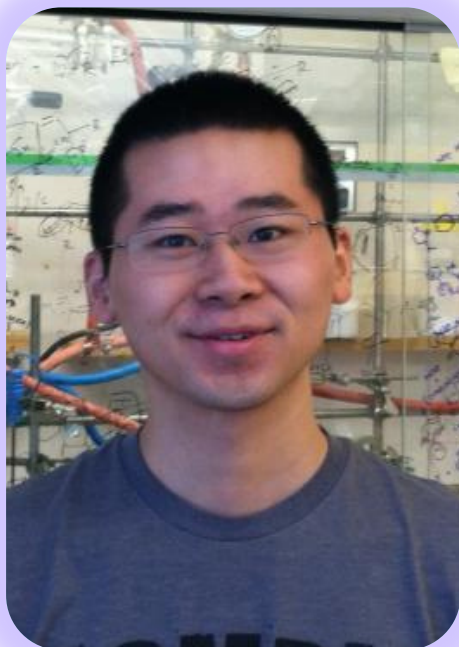
I would like to try surfing one day

### AS A NEW FACULTY MEMBER WHO STARTED DURING COVID, WHAT CHANGES DO YOU LOOK FORWARD TO?

I feel very isolated during COVID. I look forward to interacting with more of my colleagues soon.



# Welcome New Faculty!



## DR. YANG YANG

ASSISTANT PROFESSOR

### WHAT'S YOUR ACADEMIC BACKGROUND?

I received my PhD degree from the Massachusetts Institute of Technology under the direction of Prof. Stephen Buchwald. My postdoctoral research was carried out under the guidance of Prof. Frances Arnold at the California Institute of Technology.

### WHAT WILL BE THE FOCUS OF YOUR RESEARCH GROUP?

My group seeks to bridge the fields of enzyme catalysis and small-molecule catalysis to develop new stereoselective processes of use. Taking inspiration from synthetic organic and organometallic chemistry, we will repurpose natural enzymes to catalyze reactions that are not found in the biological world.

### FAVORITE THING ABOUT UCSB SO FAR?

I really like the intellectual breath, dedication to interdisciplinary research and the collegial environment in the department. I am excited about the prospects of working at the chemistry-biology interface at UCSB. Additionally, I am also attracted by the very collaborative materials research happening at UCSB, and I hope to contribute to this ongoing program by leveraging our expertise on protein engineering.

### WHERE ARE YOU FROM?

I grew up in Hangzhou, China, but have lived in Massachusetts and California.

### SOMETHING YOU LOOK FORWARD TO TRYING IN SB.

I enjoy exploring the natural world with my family, and we have been to all the national parks in the State of California. Moving to Santa Barbara, my wife and I look forward to camping in the Channel Islands National Park.

# Congratulations on your retirement!

## Krista Mastres



Krista Mastres worked for UCSB for 35 years and recently retired at the end of June 2021. She is also an alumnus of UCSB with a B.S. in Pharmacology and after 3 years working for Allergan Pharmaceuticals in Irvine, she returned to the Santa Barbara area to begin her academic career at UCSB. She started as a Staff Research Associate in the research lab of the late Prof. Robert Jacobs supervising undergraduate students doing research with marine natural products investigating them for agents that prevented inflammation as potential anti-inflammatory compounds and/or inhibited cell division as potential anti-cancer drugs. During her 17 years in this first role, she also obtained her Master's degree in Cell Biology and Marine Pharmacology and had two sons. Krista was also involved in the undergraduate pharmacology instructional program as an Academic Coordinator and taught molecular modeling when that new technology was in its infancy as well as helped place pharmacology graduates in internship opportunities in pharmaceutical companies across the U.S. Her academic program management positions that came after this initial employment included the Biomolecular Science and Engineering Graduate Program, the Center for BioEngineering and finally, the department of Chemistry & Biochemistry for the past 3 years. Krista will miss many people she has worked with over her career at UCSB but plans to visit campus frequently to walk out to campus point and meet with friends and colleagues to stay in touch.

MEET OUR NEW MSO

*Heather Gardner*

Heather Gardner brings over 10 years of experience at UC Santa Barbara, having served in various roles on campus. As a UCSB Gaucho alumnus, Heather graduated with a B.A. in Environmental Studies in 2012. She began her career with the Women's Center as a non-traditional student coordinator in 2010. Since then she has worked on campus in the Materials Department as an academic personnel analyst and in the Division of Mathematics, Life, and Physical Sciences as the dean's executive assistant and financial analyst for the division. Most recently, Heather has served as the Financial Manager for the Department of Chemistry & Biochemistry for the last 5 years.

Heather is a certified Scrum Master and will complete a Masters of Science in Organizational Leadership from Johns Hopkins University in 2022. Heather is also an active campus community member, serving on the Campus Child Care Advisory Committee, Gaucho Mentor Connection, and the GUS Working Group. We are confident that Heather's strong leadership skills, experience, and commitment to our campus community will serve the department well.



# FACULTY

# Awards & Honors



**THUC-QUYEN NGUYEN**

2019-20 Outstanding Graduate  
Student Mentor Award



**BRUCE LIPSHUTZ**

2020 Bill and Melinda Gates  
Foundation Grant



**JAVIER READ DE ALANIZ**

2020, Lead of \$24M NSF-  
Funded Materials Innovation  
Platform (BioPACIFIC MIP)



**PETER FORD**

2020-21, UCSB Academic  
Senate Outstanding Graduate  
Student Mentor Award



**SONGI HAN**

2021, Eastern Analytical  
Symposium Award for  
Outstanding Achievements in  
Magnetic Resonance



**DAN LITTLE**  
**EMERITI PROFESSOR**

2022, Manuel M. Baizer Award



**ALISON BUTLER**

2020, Faculty Research  
Lecturer Award



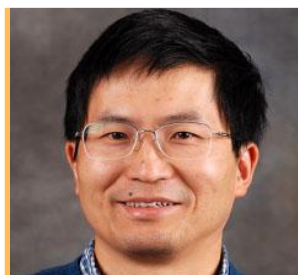
**CRAIG HAWKER**

2020, American Chemical  
Society Kathryn C. Hach Award  
2021, Elected to National  
Academy of Engineering



**VOJTECH VLCEK**

2020, National Science  
Foundation Career Award -  
Invitation for special issue of  
"Emerging Leaders"  
nominated by the Editorial  
Board of *Journal of Physics -  
Condensed Matter*



**LIMING ZHANG**

2021, NIH R35 MIRA Grant  
recognizing Prof. Zhang's  
outstanding career productivity and  
contributions to science

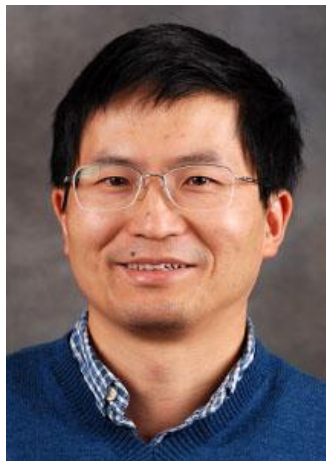


**KEVIN PLAXCO**

2021, Advances in Measurement  
Science Award



# FACULTY HIGHLIGHTS



## *Prof. Liming Zhang*

The Zhang research group has been awarded an R35 MIRA grant (Maximizing Investigators' Research Award) by the National Institute of General Medical Sciences (NIGMS), a branch of the NIH. The award provides over \$300,000 in annual funding for 5 years. This grant recognizes Prof. Zhang's outstanding career productivity and contributions to science and is intended to provide long-term and flexible support for the Zhang lab to pursue novel research in homogeneous catalysis and glycoscience.

## *Prof. Vojtech Vlcek*

Prof Vlcek, together with Prof. Aniya Jayich from Department of Physics, organized the first Quantum Science Winter School which was conducted virtually. For the week-long school, a great team of speakers from MIT, U Chicago, USC, TU Munich, IBM, and Google was assembled. The mornings were devoted to lectures, afternoons to hands-on activities. Google made a virtual tour through their facilities in Goleta. IBM gave extensive training on quantum computers. On Friday, students get training on D-Wave Quantum Annealer at USC. There was a total of 70 participants (17 from the industry). In total, students from 15 universities and 1 national lab attended this school.



## *Prof. Songi Han*

Prof. Songi Han was awarded an NIH S10 High End Instrument grant in 2021. The award will be for establishing a dedicated ThermoFisher Glacios 200 kEV microscope for single particle imaging (SPA), cryo electron tomography (cryo-ET) and micro electron diffraction (micro-ED) in the Structural Biology facility at UCSB. This instrument will serve both, as a stand-alone instrument for cryo-EM applications, and as a screening instrument for those who are preparing their samples for applying for the high-end 300 kEV instruments at national facilities (PNCC, Stanford SLAC, NY Structural Biology Center etc).

# Megan Moore

*Faculty Assistant*

Megan Moore joined DCB in March 2021 and is the new Faculty Assistant for Professors Han and Plaxco. She received her education here in Santa Barbara at Dos Pueblos High School, SBCC, and UCSB Extension. She started working at UCSB many years ago as the front desk assistant in the Engineering Dean's Office. She then moved to the Electrical & Computer Engineering Department. Next she worked in Religious Studies, and then Chicana/o Studies after that. Megan is very happy to be back in the sciences.

She currently lives in Lompoc with her husband, two young sons, and their pup. Her favorite hobbies are dancing and making jewelry. The latter she likes so well that she was able to start her own business. If you're interested in hearing more about Megan's business and Etsy shop, please email her!

Megan is passionate about art, as well as advocacy, particularly for children. She is looking forward to working together and getting to know you all.



# New Staff!



## Natalie Nomura

*Financial Coordinator*

Natalie Nomura joined the department in June of 2021 as the new Financial Coordinator. Natalie was born and raised in Santa Barbara, California where she attended Laguna Blanca School. She graduated from California State University Channel Islands in May 2019 with a B.A. in Psychology. Natalie loves sports and is a huge New Orleans Saints football fan. She enjoys hiking, going to the beach and spending time with her dog and cat.



# Department News

## Chemistry Career Day

On September 24, 2020, ChemPD hosted the 2nd Annual Chemistry Career Day. This year, ChemPD joined forces with the Department of Chemical Engineering's Graduate Student Symposium to create the first ever Chemical Sciences and Engineering Career Fest. 2020 posed an extra challenge, as the organizers needed to adapt and host the event online.

The Chemistry Career Day started out with a panel discussion by industry professionals on career opportunities and personal experience, followed by a company showcase, and concluded with a small group students-to-industry representative networking session.

Despite the event being hosted online, attendance did not waver. Over 120 graduate students and post doctoral fellows from all disciplines of the chemical sciences attended to network with 33 Industry Reps from 15 companies.

The leaders of ChemPD has started to plan the 2021 Chemistry Career Day. Please contact co-presidents, Vani Singhania and Allison Abdilla for details.

COVID-19 INFORMATION: THESE EVENTS WILL BE ONLINE

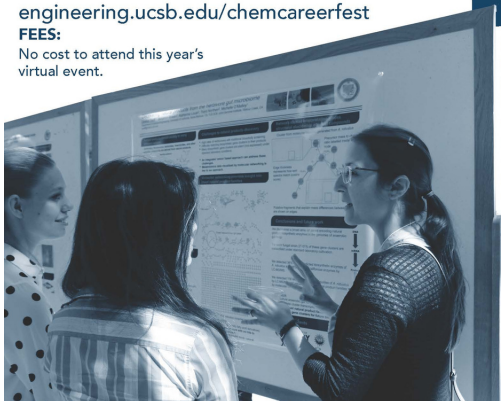
UCSB CHEMICAL SCIENCES & ENGINEERING

**CAREER  
FEST 2021**  
SEPTEMBER 14 & 17

[engineering.ucsb.edu/chemcareerfest](http://engineering.ucsb.edu/chemcareerfest)

FEES:

No cost to attend this year's virtual event.



UCSB CHEMISTRY AND  
BIOCHEMISTRY CAREER DAY  
TUESDAY, SEPTEMBER 14



UC SANTA BARBARA  
Chemistry and  
Biochemistry

This symposium, hosted by the Chemistry Professional Development (ChemPD) group, is designed to inspire the next generation of chemistry professionals. It serves as an exceptional opportunity to connect with chemistry students and faculty at UC Santa Barbara. Our program agenda will include:

- Panel discussion by industry representatives
- Company showcase
- Small group student-to-industry networking session

The goals of the Chemical Sciences and Engineering Career Fest are for the students to gain first-hand insight into industry, as well as strengthen the network between industry and our UCSB students.

UCSB CLOROX-AMGEN  
GRADUATE STUDENT  
SYMPOSIUM  
FRIDAY, SEPTEMBER 17



CHEMICAL ENGINEERING  
UC SANTA BARBARA

The UC Santa Barbara Chemical Engineering Graduate Student Symposium is a forum for Chemical Engineering Ph.D. students to present their original research. The event is designed to provide a networking opportunity between industrial attendees and members of the department with two main goals:

- Highlight ongoing work in the department to stimulate industrial collaborations
- Facilitate interactions with students seeking future employment opportunities

The symposium will consist of oral presentations by senior graduate students as well as a keynote address. Attendees will receive the abstracts and CVs of presenting students to enable future connections.

## ChemPD Leaders



Vani Singhania  
Co-President



Allison Abdilla  
Co-President



Ann Williams  
Networking Officer



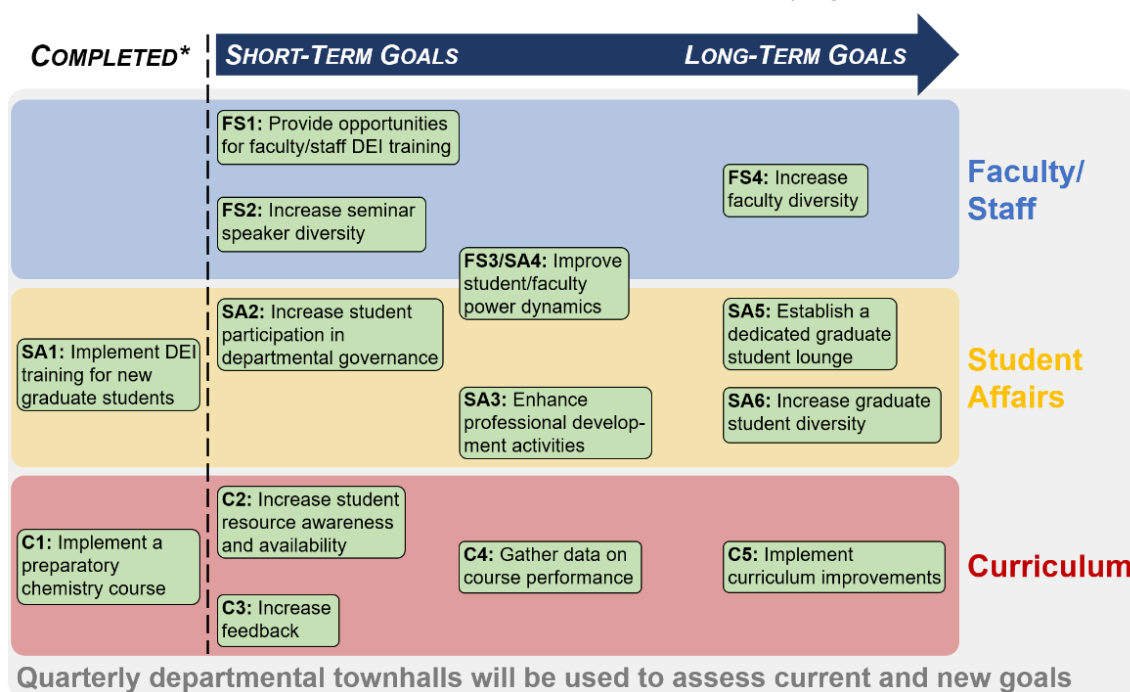
Gregg Keng  
Networking Officer

# Committee on Diversity, Equity, and Inclusion

The Department of Chemistry and Biochemistry (DCB) is committed to fostering an inclusive and welcoming environment for all sectors of our diverse community (URM, BIPoC, Women, LGBTQ+, etc.). In order to better promote, educate, advocate, and respond to all topics and issues related to diversity, equity, and inclusion (DEI), this past summer (2020) the DCB created the Committee on DEI (CDEI).

Chaired by Prof. Gab Ménard, our department diversity officer, the CDEI is the first and only committee in the department that includes members from every group of stakeholders in our department, including: faculty members, graduate students, undergraduate students, and staff. The CDEI will be recruiting postdocs to also serve as these positions are currently vacant. The CDEI is split into three sub-committees – Faculty/Staff Initiatives, Student Affairs Initiatives, and Curriculum Initiatives – with each of these sub-committees having membership from each stakeholder group.

The CDEI was tasked with, among other things, developing the DCB's Strategic Action Plan (SAP) which is organized into three categories following the three sub-committees. The SAP and its stated goals were developed based on various feedback from the DCB community. Any member of the DCB can view the full SAP by requesting a copy from the CDEI at [cdei@chem.ucsb.edu](mailto:cdei@chem.ucsb.edu). Additional information on the CDEI's mission, as well as upcoming departmental townhalls, inclusion resources, and other information can be found on the CDEI's webpage at [chem.ucsb.edu/inclusion](http://chem.ucsb.edu/inclusion).



\*The CDEI will ensure that "completed" tasks remain so from year to year

**Faculty/Staff sub-committee:** Gabriel Ménard, Javier Read de Alaniz, Olivia Hwang, Dimagi Kottage, Phoebe Hertler

**Student Affairs sub-committee:** Quyen Nguyen, Mattanjah de Vries, Heather Gardner, Junru Su, Ziyue Zhu

**Curriculum sub-committee:** Brandon Greene, Bryanna Sylvester, Olivia Hwang, Melinna Nguyen, Istvan (Steve) Szabo



## SENIOR SPOTLIGHT

# Afton Gustafson

### **TELL US ABOUT YOURSELF & YOUR ACADEMIC EXPERIENCES AT UCSB**

When I first applied to colleges as an incoming undergraduate student, I fully intended to study English. I never could have imagined that I would be graduating with a degree in chemistry. Out of not wanting to stop growing my knowledge of mathematical and scientific concepts, though, I had a change of heart and decided to take a risk and try chemistry. Through many wonderful and inspiring professors, incredibly intelligent and

caring peers, and fascinating course work, I realized that this was one of my greatest decisions. It opened my eyes to how beautiful science is and gave me a chance to be passionate about my studies. I am so grateful for my time spent at UCSB, and all of the opportunities I have been given such as doing undergraduate research in a lab and being involved in science education research. Although I still do constantly immerse myself in the academic world outside of science, always with a good novel in my bag and planning out which interesting film I will watch and analyze next, I truly cannot wait to continue to learn about the exciting world of chemistry.



### **WHAT PROGRAMS ARE YOU INVOLVED IN OUTSIDE OF CLASS?**

I am a member of Team SciTrek which has given me the opportunity to work with local elementary and secondary students on scientific modules, design scientific modules aimed at improving students' ability to think critically and be interested in science, and conduct research in the field of science education.

### **WHAT ARE YOUR PLANS/GOALS AFTER GRADUATION?**

I am moving to New York City to join the Chemistry PhD Program at New York University where I hope to begin research related to drug design.

# Outstanding UNDERGRADUATES



**ZIXUAN JIANG**

Recipient of the 2020-2021  
Undergraduate Research and Creative  
Activities Grant



**JASPER MOH**

Recipient of the 2020-2021  
Undergraduate Research and Creative  
Activities Grant;  
Richard and Leslie Anderson Scholarship



**DARWIN LARA**

Recipient of the 2020-2021  
Gene and Susan Lucas Undergraduate  
Research Fund

# Overview of the Year

587

DECLARED  
UNDERGRADUATES

125

BACHELOR  
DEGREES

21

DOCTORATE  
DEGREES

## 2020-2021 Student Awards

### Department Undergraduate Award Recipients

American Institute of  
Chemists Award

Awarded to an outstanding senior majoring in chemistry in recognition of a demonstrated record of ability, leadership, and professional promise.

Zhizhong Chen

American Chemical  
Society Awards

Awarded for recognition of a student with an aptitude in different divisions of chemistry.

*Analytical Chemistry*

Joseph August

*Inorganic Chemistry*

Trevor Odell

*Physical Chemistry*

Max Schrock

*Organic Chemistry*

Olivia Langner

Rowina Bell

The Bernard  
Kirtman Scholarship

Created by Dr. Gary Krouth, this scholarship recognizes a chemistry or biochemistry major with an aptitude in physical chemistry and has demonstrated the potential for a career in research and teaching.

Aiying Huang

Lucas Ransom  
Memorial  
Scholarship

This award is in honor of Lucas Ransom, a junior Chemistry major who passed away tragically on October 22, 2010. This scholarship is presented to outstanding undergraduate students who are declared as Chemistry majors, entering their junior or senior years.

Zixuan Jiang

Richard and Leslie  
Anderson Scholarship

This scholarship is established to reaffirm UCSB's strong commitment to academic excellence, and provides funding to undergraduate students engaged in research within the Department of Chemistry and Biochemistry.

Jasper Moh

Daniel Pan

**Robert H. DeWolfe  
Undergraduate  
Research Award**

The Robert H. DeWolfe Undergraduate Research Award allows for students to conduct research in organic chemistry in memory of Robert H. DeWolfe, Professor of Chemistry, 1955-1977.

Paris Dee  
Yunlong Zhao

**Royal Society of  
Chemistry Award**

The Royal Society of Chemistry Award honors an undergraduate student who shows high achievement in the chemical sciences.

Cathy Li

**Tom and Paula  
Bruice Academic  
Achievement in  
Biochemistry**

Awarded to the graduating biochemistry major in the Department of Chemistry and Biochemistry with the highest overall academic performance.

Cathy Li

**Willard L. McRary  
Prize**

The Willard L. McRary Prize is awarded to graduating seniors whose attainment in chemistry is outstanding and reflects promise of the same high-quality scientific achievement that characterized the career of Willard L. McRary, Professor of Chemistry, 1940-1958.

Olivia Langner  
Marielle Cooper  
Hanbin Song  
Xijun Zhu

**Distinction in the  
Major**

The Distinction in the Major honors students who, in addition to having attained high scholastic achievement, have achieved excellence in undergraduate research at UCSB.

Afton Gustafson  
Nathan Incandela  
Xijun Zhu

**Phi Lambda Upsilon  
(National Honorary  
Chemical Society)**

Awarded to seniors majoring in chemistry who rank in the top 20 percent of their class with a minimum grade point average of 3.0.

Joseph August, Julia Balsamo, Rowina Bell, Alex Busse, Chih-Chung Chen, Steven Collari, Marielle Cooper, Michael Davis, Gabby Dolgonos, Thomas Gean, Afton Gustafson, Kelsey Harrison, Jonas Kaare-Rasmussem, Olivia Langner, Cathy Li, Michael Lum, Trevor Odell, Leo Roberts, Max Schrock, Hanbin Song, Pepper Wang, Ran Wang, Eric Yoshida, Siwei Yu, Xijun Zhu

## **Department Graduate Award Recipients**

**Jarrold Davidson  
Memorial  
Scholarship**

The Jarrold Davidson Memorial Scholarship Fund was established to celebrate the memory of Jarrold Davidson, UCSB Chemistry PhD candidate from Fall 2003 through Spring 2004.

The Jarrold Davidson Memorial Scholarship is awarded annually for the benefit of graduate students studying chemistry at UCSB and facing special challenges raising a family.

Krystal Vo



**Sandra Lamb  
Memorial Award**

Awarded to an outstanding graduate student for excellence in research, in honor of Dr. Sandra Lamb Sanford, Professor of Chemistry (1959 - 2002)

Alexander Touchton  
Osvaldo Ordonez

**B.R. Baker  
Memorial Award**

Awarded to an outstanding graduate student who has given strong indication that they will make continued and substantial contributions to the progress of organic, medicinal, or biological chemistry.

Jeffrey Self

**Phillip Joshua  
Chase Mabe  
Memorial  
Fellowship**

Awarded to a graduate student with great passion and intelligence in Chemistry and Biochemistry, in honor of Phillip Joshua Chase Mabe.

Allison Abdilla

**John H.  
Tokuyama  
Memorial  
Fellowship**

The John H. Tokuyama Memorial Fellow is selected from the pool of organic graduate students making good progress towards the degree, with an effort to address financial need. The funding is variable, based upon the annual income from the endowment and longer term considerations.

Yuanxin Li  
Kan Tagami  
Celeste Tobar Tobar

**UCSB Central  
Fellows**

Awarded annually by the Graduate Division to outstanding graduate scholars following a campus-wide competition.

KC Chen  
Xinpeng Cheng  
Miranda Sroda

**Phi Lambda Upsilon  
(National Honorary  
Chemical Society)**

Awarded to seniors majoring in chemistry who rank in the top 20 percent of their class with a minimum grade point average of 3.0.

Katie Albanese, Karthik Iyer, Sadia Nowshin, Ryan Helsel, Alison Marsh, Rohan Thomas

## National Science Foundation Graduate Research Fellowship Program Grant

**NSF GRFP**

The NSF Graduate Research Fellowship Program is a highly competitive grant that recognizes “outstanding graduate students in NSF supported science, technology, engineering and mathematics disciplines who are pursuing research-based master’s and doctoral degrees.” Fellows were chosen from a pool of over 13,000 applicants and each receives a three-year annual stipend of \$34,000 along with a \$12,000 education allowance.

**Recipients**

Kaylaa Gutman  
Jacob Levitt  
Brian Roehrich  
Olivia Langner

**Honorable Mentions**

Harrison Szeto  
Phoebe Hertler  
Osvaldo Ordoñez

## Service to the Department

Outstanding TAs	<p>Jeff Carmichael - Excellence in Teaching Award</p> <p>Anthony Wong - Honorable Mention - Excellence in Teaching Award</p>
Outstanding Service	<p>Asish Chacko (1st year)</p> <p>Arun Chakraborty (Menard and Sepunaru Groups)</p> <p>Jack Hopper (Abu-Omar Group)</p> <p>Melissa Sanchez (Abu-Omar Group)</p> <p>Dallon Penney (Buratto Group)</p> <p>Yingying Jin (Buratto Group)</p> <p>Trevor Cohen (de Vries Group)</p> <p>Gwen Weng (Vlcek Group)</p> <p>Elizabeth Murphy (Hawker and Bates Groups)</p> <p>Haley Bates (Lipshutz Group)</p> <p>Zhongheng Wang (Ménard Group)</p> <p>Hiba Wakidi (Nguyen Group)</p> <p>Nora Schopp (Nguyen Group)</p> <p>Kaylaa Gutman (Zhang Group)</p> <p>Alex Wu (Plaxco Group)</p> <p>Brian Roehrich (Sepunaru Group)</p> <p>Oswaldo Ordonez (Hayton Group)</p> <p>Phoebe Hertler (Hayton Group)</p> <p>Elena Paola (Zakarian Group)</p> <p>Joon Lee (Zakarian Group)</p> <p>Joshua Gladfelder (Zakarian Group)</p> <p>Rohan Thomas (Zakarian Group)</p> <p>Greta Koumarianou (Paterson Group)</p>
Grad Slam	Greta Koumarianou

# 2020-2021 Ph.D. Graduates



MIKIYAS KURABACHEW ASSEFA, PH.D.  
SUMMER 2020  
HAYTON GROUP



TIMOTHY CARROLL, PH.D.  
SUMMER 2020  
MÉNARD GROUP



NATHANIEL CHAREST, PH.D.  
SUMMER 2020  
SHEA GROUP



BO "JERRY" JIN, PH.D.  
SUMMER 2020  
LIPSHUTZ GROUP



AKCHHETA KARKI, PH.D.  
SUMMER 2020  
NGUYEN GROUP

MEGAN KEENER, PH.D.  
SUMMER 2020  
MÉNARD GROUP



ZHIPENG LU, PH.D.  
SUMMER 2020  
SEPUNARU GROUP



HAOBO "REX" PANG, PH.D.  
SUMMER 2020  
LIPSHUTZ GROUP



MOLLEIGH PREEFER, PH.D.  
SUMMER 2020  
SESHADRI GROUP



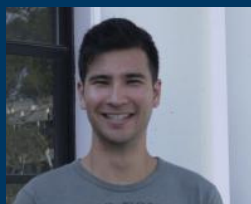
TAYYEBEH BAKHSI CHAMP, PH.D.  
FALL 2020  
ABU-OMAR GROUP



# Congratulations!



KYLE CLARK, PH.D.  
FALL 2020  
READ DE ALANIZ GROUP



GREGORY GATE, PH.D.  
FALL 2020  
DE VRIES GROUP



MICHAEL HAGGMARK, PH.D.  
FALL 2020  
DE VRIES GROUP



MEGHAN NICHOL, PH.D.  
FALL 2020  
READ DE ALANIZ GROUP



ZACH REITZ, PH.D.  
FALL 2020  
BUTLER GROUP



NATHAN SVADLENAK, PH.D.  
FALL 2020  
DE VRIES GROUP

NNAMDI AKPORJI, PH.D.  
WINTER 2021  
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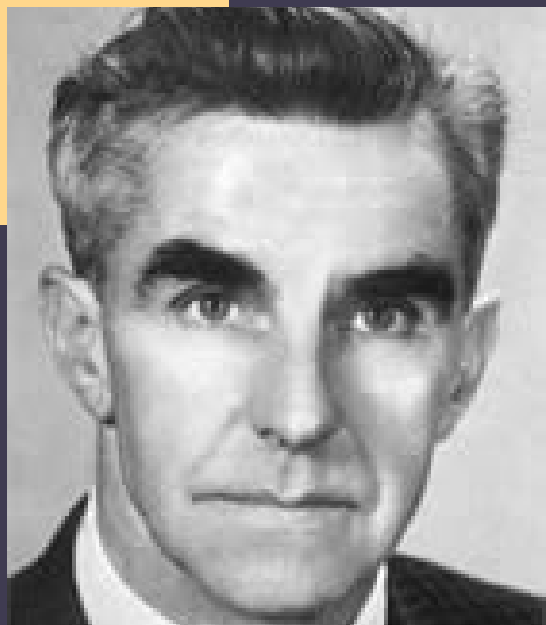


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We hope for your continued success.





IN MEMORY OF

CLIFFORD A. BUNTON

1920 - 2020

Clifford A. Bunton passed away last year in his 100th year. His career spanned over eight decades during which he contributed a remarkable 600 publications (1945 to 2016). “Bunny” was born in Chesterfield, England in 1920 to a family with nonagenarian genes. He began his chemistry career studying at University College, London with Sir Christopher Ingold at a time when electronic theories of bonding began to have a major effect upon thinking in chemistry, in considerable part, stimulated by Pauling’s publication of “The Nature of the Chemical Bond” in 1939 based upon his 1937 Baker Lectures at Cornell University. Great Britain was then a major center at the beginning of this modern era of organic chemistry, with two rival legends, Sir Robert Robinson at Oxford University and Sir Christopher Ingold at University College, London. Ingold and his colleague Edward Hughes examined the kinetics of many basic organic chemical reactions and defined the mechanisms and terminology that persist today for  $S_N1$  and  $S_N2$  substitutions,  $E1$  and  $E2$  eliminations, aromatic substitutions, ester hydrolysis, and inductive and resonance (mesomeric) effects. Bunny earned his Ph. D. in 1944 within what became known as the “English School” of physical organic chemistry working on aromatic nitration reactions at University College, which was relocated to Aberystwyth, Wales during the war. He went on as a Lecturer, and later a Reader, to make many contributions to the Hughes-Ingold school of thought. These were summarized in Ingold’s seminal 1953 book “Structure and Mechanism in Organic Chemistry” based upon his 1950 Baker Lectures. Bunny’s independent contributions in the 1940’s and 1950’s involved mechanistic studies on reactions such as oxidation, ester hydrolysis, glycoside hydrolysis, nitration, pinacol and benzidine rearrangements,  $S_N1$  reactions of alcohols and halides,

and deaminations. Bunny and his colleague, D. R. Llewellyn, enriched water in the heavy isotope, O-18, by distillation and constructed a home-made mass spectrometer to carry out pioneering experiments on isotopic labelling in hydrolysis and other reactions to fully establish the textbook mechanisms of reactions that included hydrolysis of carboxylic esters, sulfites, sulfates, and phosphates.

In 1963, Bunny moved from London to the University of California, Santa Barbara in part of the British 'brain drain' of the 1960's. UCSB, then, was emerging as a new research campus of the University of California. The Chemistry department had three predominant newly-hired senior faculty, "the three B's", Bunton, Bruice, Baker. Professor Bunton soon became Department chairman from 1967 to 1972 and started to build the faculty and graduate population. He was helped by Glyn Pritchard as Graduate Advisor (1960-1980), a fellow kineticist and photochemist and expatriot from Manchester. Marie Wilson very competently led the non-academic staff. Glyn and Bunny and Curt Anderson grew to be close friends and regular noon-time running buddies for many years. Glyn Pritchard succeeded Bunny as chairman from 1972 to 1980.

Bunny, and Ingold, were involved in mountaineering in Europe, and he climbed in the Andes on trips to Chile, once summiting the 18,000 ft. Cerro El Plomo. Bunny was a very proficient sailor and made that a weekend passion when he arrived in Santa Barbara, owning, first, small Geary-18 sailboats, one of which capsized on a trip with Dan Santi in rough weather and sank just as they got back to tow it. Later, he owned a share in a quarter-ton class boat kept in the harbor, and he was active in the Santa Barbara Yacht club.

At the time Professor Bunton began at UCSB, he had written an authoritative review and a monograph on nucleophilic substitution reactions summarizing what was known on the mechanisms of these reactions, in considerable part from the work of Hughes and Ingold and his own studies. This subject was just then growing into the all-consuming and deeply controversial non-classical carbocation problem for physical organic chemists in this country.

Though his reviews had set the stage for this arena and he was well-positioned to enter it, Professor Bunton chose instead to focus more on new studies on the effects of micellar media on the rates of hydrolysis and other reactions. This area of research was outside the more normal range of physical organic chemistry, but he, and Ingold before him, tended to

take a more unitary view of subdivisions within chemistry. His work in this area brought his experience in kinetics to bear on the complex problem of understanding rates and mechanisms under these non-homogeneous conditions. He helped to develop the quantitative pseudophase ion exchange model for these reactions and published extensively in this field, including studies with NMR and dynamic light scattering in addition to kinetics. He has written numerous influential reviews in the field and can be regarded as the 'father of micellar kinetics'. His work had practical application in the development of methods for decontamination of chemical weapons such as mustard gas and VX nerve gases and was supported for many years by DOD funding. His work also has implications for industrial processes such as emulsion polymerization and drug delivery systems and biological processes in membranes.

Professor Bunton formed collaborations with scientists in Chile, Italy and Brazil. These collaborations gave rise to a large number of scientific papers and have led to an extensive interest in South America in micellar chemistry. His influence was truly international, extending to at least three new generations of scientists working on micellar 'catalysis' in those countries. He was honored with visiting professorships at the Universities of Buenos Aires, Santiago, Sao Paulo, Toronto, and Lausanne, and was the Rhoads and Raulins Lecturer at the University of Wyoming. He was a Fellow of the American Association for the Advancement of Science, and a member of both the Chilean and Brazilian Academies of Science. He received an Honorary Doctorate from the University of Perugia, one of the Italy's oldest universities, dating back as far as 1200 to 1308. In 1987, he won the Richard C. Tolman medal from the Southern California section of the American Chemical Society.

A more detailed tribute to Professor Bunton's career, written by a former student and collaborators in the year 2000, can be found in the preface of a special issue of the journal *Langmuir* of The American Chemical Society in his honor, a high honor indeed:

"Clifford A. Bunton: From Reaction Mechanisms to Association Colloids; Crucial Contributions to Physical Organic Chemistry" in *Langmuir* 2000, 16, 1-4, by Hernan Chaimovich, Gianfranco Savelli, and Larry Romsted.

<https://pubs.acs.org/doi/pdf/10.1021/la991518n>





IN MEMORY OF  
GLYN OWEN  
PRITCHARD

1931 - 2020

Glyn Owen Pritchard passed away July 2020 at the age of 88. He was born in Bangor, Wales in 1931 with his Welsh origins forever a proud part of his personality. As a boy, "Pritch" moved with his family to the town of Altrincham in the Manchester greater area of England, where he grew up under challenging wartime conditions. Following his older brother, Huw, he began his chemistry career at the University of Manchester, where he received his Ph.D. in 1955 studying gas-phase kinetics under the tutelage of Aubrey Trotman-Dickenson ("T-D"). His first papers, co-authored with Huw and T-D, dealt with photolytically induced reactions, particularly involving alkyl and fluoroalkyl radicals.

After his Ph.D. Pritch took up a postdoctoral/teaching position with J.R. (Jack) Dacey at the Canadian Royal Military College in Kingston. This was the beginning of a long-term scientific relationship that continued into the early '70's, as well as a lifetime personal relationship. Dacey was instrumental in bringing Pritch to UC Santa Barbara (UCSB) in 1958 along with Glenn Miller, who was the Department Chair beginning in 1960. He published extensively with Glenn Miller (sometimes together with Dacey as well). These early investigations evolved into extensive studies on reactions involving various alkyl and fluoroalkyl radicals generated from gas-phase photochemical cleavage of ketones, imines, and azo compounds. Of special interest was the disproportionation and recombination reactions of these radicals.

Some notable discoveries are contained in more than 70 research papers. Unlike alkyl radicals, fluoromethyl radicals were found to have a non-zero recombination barrier. In collaboration with Bruce Rickborn, the photochemical loss of carbon monoxide from substituted cyclohexanones and cyclopentanones was found to be non-stereospecific and, therefore, not concerted. For the case of highly exothermic recombination of fluoroalkyl radicals, in which initially formed fluoroalkane products are vibrationally activated before collisional stabilization, his studies revealed the occurrence of interesting high-barrier elimination reactions at low pressures. These HX elimination reactions were modeled with quantum calculations in collaboration with Bernie Kirtman.

Those early years marked the very beginning of the Chemistry Department's Ph.D. program. Pritch played a central role in the recruitment and nurturing of graduate students, while simultaneously maintaining an energetic and productive research effort of his own. Indeed, a full cadre of graduate students, and undergraduates, passed through his lab at that time. He became the Department's first Graduate Advisor in 1960 and retained that responsibility for twenty years, including his entire tenure as Department Chair which ended in 1980. Pritch was always very devoted to graduate students throughout the Department, knew them all, and looked after their welfare. His sense of humor and likability diffused stressful situations and very positively enhanced the climate of the graduate program and of the department as a whole. During that period the Department's graduate program experienced impressive growth in size and reputation. Based on his personal reputation in that capacity, he was later offered the position of Graduate Dean but turned it down in favor of his work in the Department.

In recognition of his administrative leadership skills Pritch was appointed Department Chair in 1972. In this capacity, he was personally responsible for hiring many of the faculty that remain at UCSB today, in large measure contributing to the Department's current stature as being among the top-rated in the country. In those days being Chair was a full-time job, although he was ably assisted by Curt Anderson and Marie Wilson. Often their efforts continued

into the evening over a drink or two at Jensen's or the Blue Ox. He had played soccer and cricket in Great Britain and was an accomplished all-around athlete. Pritch continued his soccer after coming to Santa Barbara and also liked to play a round of pool in the evenings. In addition, he enjoyed golf, usually at the Ocean Meadows course near his home and sometimes at Sandpiper. When Joe Hirschfelder made regular Winter visits to Santa Barbara, Glyn, Joe and Don Aue would regularly play – Joe with what his golf teacher called his short-but-accurate 'arthritic swing', and Glyn with his effective low-ball-trajectory three iron from 'a cricket swing'. At noon times Glyn, Curt Anderson and Clifford Bunton regularly ran on the beach for fun and companionship as well as to keep their hearts healthy.

After serving meritoriously as Department Chair, Pritch was asked just a few years later to serve as vice-chair, 1987-1994, in large part to organize the Department's input into the planning for a new chemistry building – Physical Sciences Building-North (PSB-N) – to be followed by a renovation of the original 20-year old facility, particularly to accommodate planned development of the biochemistry area. Because of his experience and know-how, he was later recalled, after retiring in 1991, to assist with oversight of the construction phase, which is not to mention subsequent recalls occasioned by the need for remodeling of individual labs. Pritch's knowledge and expert advice has proved to be invaluable in that regard, and PSB-N, now over 25 years old, has served the department well, not only for the laboratories provided but also for the major research equipment included as part of the overall building project.

Glyn had a sharp mind, an encyclopedic memory for events and dates, and a fondness for word twists and limericks, some of his own making. He and his family often returned to Ontario (Canada) for pleasant Summer vacations with his brother Huw's family after Huw had moved from Manchester to a Professorship at the University of York. Glyn is survived by his wife of nearly 60 years, Jean, his daughters Lynne, Megan and Bronwyn, and his grandchildren, Emma, Connor and Griffith.



# Friends of Chemistry

During the spring quarter of each year, the Department convenes a Faculty Awards Committee for the purpose of selecting our top students to be honored at an annual Departmental Awards Ceremony. This ceremony, presented by the Department Chair and attended by the MLPS Divisional Dean, recognizes our outstanding students and new graduates. The gifts and fellowships, many of which are named for our contributors, presented during the ceremony are made possible entirely by the Friends of Chemistry and Biochemistry.

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Bernard Kirtman Scholarship  
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Robert H. DeWolfe Teaching Fellowship in Organic Chemistry  
Sandra Lamb Memorial Award  
Tom and Paula Bruice Academic Achievement in Biochemistry  
Professor Willard L. McRary Prize

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The Department of Chemistry and Biochemistry would like to give a special **THANK YOU** to our UC Santa Barbara Foundation Donors who have made a Permanent Investment in the Future of the Department of Chemistry and Biochemistry through Endowment Gifts

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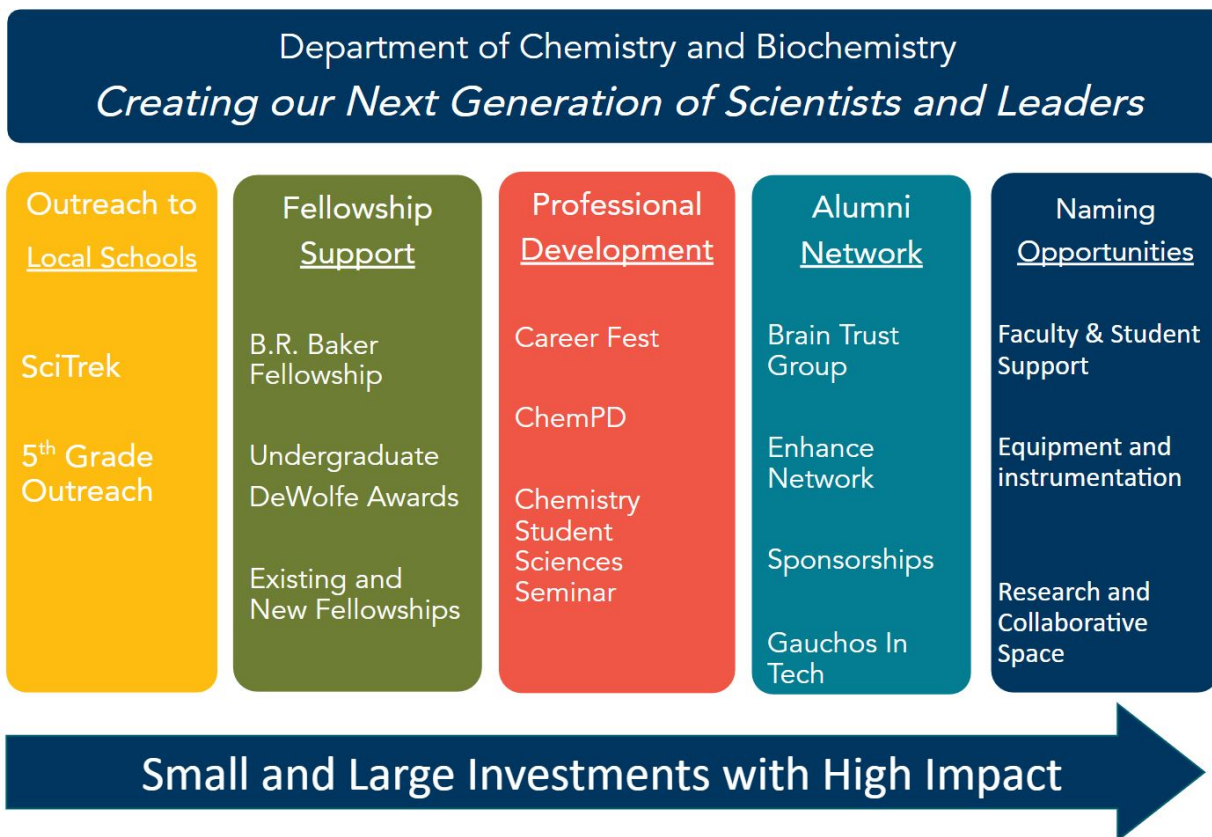
The Stauffer Undergraduate Chemistry Research Summer Scholarship offers a matching opportunity that provides undergraduate students a summer research program that is collaborative, highly focused, and an integral part of scientific discovery and innovation, preparing them to become leaders in the field of Chemistry. Undergraduates in this program will be mentored directly by industry-leading faculty members while assisting in conducting collaborative and innovative research. Contributions to this fund will be matched dollar for dollar by the John D. Stauffer Charitable Trust up to \$500,000.



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There are many ways to support the Department in our educational and research endeavors.



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**Bryan Kerner**

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 2221A Cheadle Hall  
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 Santa Barbara, CA 93106-6035  
[bryan.kerner@ucsb.edu](mailto:bryan.kerner@ucsb.edu)

**Erin Kozaki**

Senior Director of Development for the Sciences and Bioengineering  
 Phone: (805) 893-5254  
[erinkozaki@ucsb.edu](mailto:erinkozaki@ucsb.edu)

**Bethany Innocenti**

Lead Director of Development for the Sciences, Dean's Office  
 2517E Phelps Hall  
 Santa Barbara, CA 93106-6035  
[bethany.innocenti@ucsb.edu](mailto:bethany.innocenti@ucsb.edu)

**Department of Chemistry & Biochemistry**

University of California Santa Barbara

Santa Barbara, CA 93105-9510

Phone: (805) 893 - 5675

Fax: 906 893 4120

<https://www.chem.ucsb.edu/>

For more information about this newsletter,  
please contact writer and editor, Olivia Hwang  
[ohwang@chem.ucsb.edu](mailto:ohwang@chem.ucsb.edu)



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