

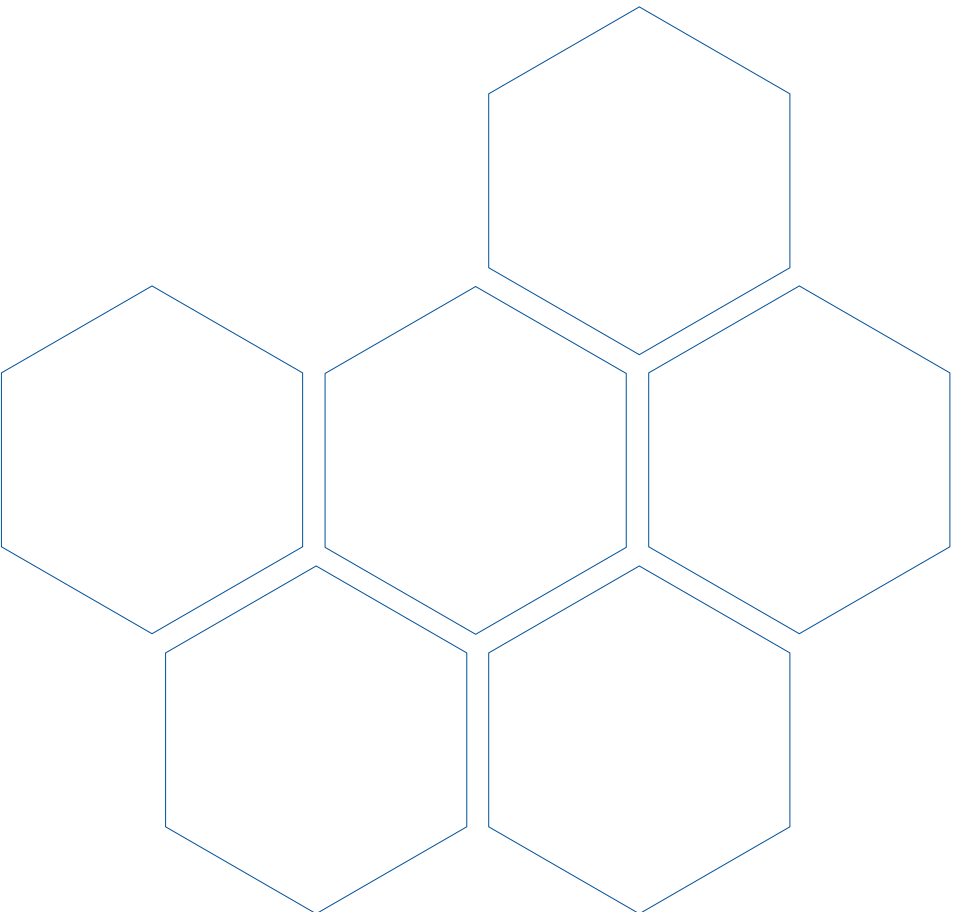
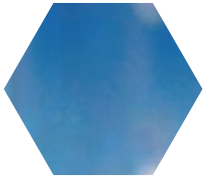


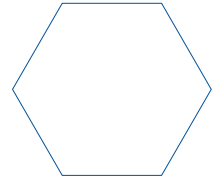
ARCS ADVANCING
SCIENCE
IN AMERICA®

SAN DIEGO CHAPTER

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS

INTRODUCING THE SCHOLARS 2022-2023





ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS

SAN DIEGO CHAPTER

san-diego.arcsfoundation.org

ARCS MISSION

ARCS® Foundation, Inc. advances science and technology in the United States by providing financial awards to academically outstanding U.S. citizens studying to complete degrees in science, engineering and medical research.

WHO WE ARE

October 4, 1957 was a game-changer. On that date, Russia launched Sputnik, a 183-pound spaceship, roughly the size of a beach ball, into space. This surprise launch shocked the United States and forced it to rethink its place as the technological leader of the world. It also ushered in the Space Age and the Cold War. The Russian action touched all areas of America, including politics, patriotism, science, the military, and education. In response, the U.S. undertook an unprecedented push to educate Americans in science and math.

As part of that initiative, a group of women in Los Angeles saw the opportunity to make a difference by creating a partnership between science and society. Their goal was to re-establish and re-energize the technological superiority of the United States. They started the first ARCS Foundation chapter in September 1958. ARCS (Achievement Rewards for College Scientists) is a nationally recognized nonprofit organization founded and administered by women who support American leadership and aid advancement in science and technology, now comprised of 15 chapters across the nation.

In 1985, four San Diego women established ARCS Foundation San Diego: Karen Bowden, Karon Luce, Barbara McColl, and Pattie Wellborn. Thirty-eight years later, ARCS San Diego has provided over \$11.8 million in financial awards to the brightest STEM scholars at four local academic institutions. By investing in these scholars, we are securing a better future for America and the world.

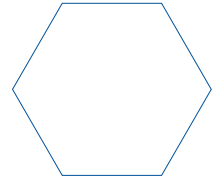


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SAN DIEGO CHAPTER

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2022-2023 SCHOLARS

SAN DIEGO CHAPTER

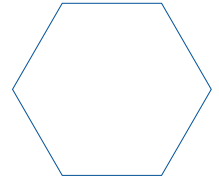
The San Diego chapter of ARCS began in 1985 and has grown from the original four founders to more than 100 members today. As we enter our 38th anniversary year, we have made awards totaling over \$11.8 million. Our academic partners are:

[San Diego State University](#) | [Scripps Research](#)

[University of California San Diego](#) | [University of San Diego](#)

ARCS Scholars are selected by their institutions in recognition of their achievements and their exceptional promise to contribute significantly to their fields. Basic requirements have been established by ARCS® Foundation, Inc.: Scholars must be U.S. citizens, have at least a 3.5 GPA, and they must be enrolled full-time in academic degree programs in science, engineering, and medical research. Awards are \$10,000, unrestricted, and renewable for three years. The San Diego chapter focuses on supporting students in doctoral programs, and the ARCS Scholars we have funded have a 98% graduation rate. For the 2022-2023 academic year, the San Diego ARCS chapter has awarded \$500,000 to 50 Scholars.





SUMMARY

ARCS Foundation - San Diego Chapter 2022-2023 Scholars

All ARCS Scholars supported by the San Diego Chapter are enrolled in doctoral programs.

SAN DIEGO STATE UNIVERSITY

Jason Lajos Baer – Cell and Molecular Biology
Maricruz Henkel Carrillo - Mechanical Engineering
Ashley Dang-Nguyen - Chemistry
Jessica Eileen Griffin - Marine Ecology
Tiffany Luong – Cell and Molecular Biology
Adrian Xavier Rivera - Structural Engineering
Jovan San Martin – Chemistry
Ashley Valentina Schwartz – Applied Mathematics
Laura Gilman Sisk-Hackworth - Microbiology
Lilith Astete Vasquez – Environmental Engineering
Jennifer Anne Waters - Biology

SCRIPPS RESEARCH

Roger Justice Fleischmann III - Immunology
Brett Michael Garabedian - Molecular Medicine
Nathalia Romanio Gazaniga – Biomedical Sciences
Sergio Rodriguez Labra - Biomedical Sciences
Garrett Lee Lindsey – Chemical Biology
Michaela Medina – Cell Biology
Hailee Rose Perrett - Biophysics and Structural Biology
Caroline Rose Stanton - Biomedical Sciences
Nelson Ren Wu – Immunology

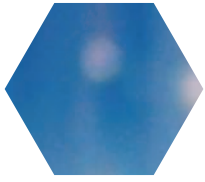
UNIVERSITY OF CALIFORNIA SAN DIEGO

Anela Kanani Akiona - Marine Biology
Gabriel Antonio Ascui-Gac - Biomedical Sciences
Krista Patrice Balto – Chemistry
Laura Lynn Becerra - NanoEngineering
Alec Joseph Calac - Medicine and Public Health
Austin Joseph Carter – Geosciences
Kellen James Cavagnero – Immunology and Microbiology
Minerva Contreras - Cellular and Molecular Biology
Ruben Daniel Elias - Biophysics
Sonya Renee Haupt - Biomedical Sciences
John Jaeun Holoubek - NanoEngineering
Nathaniel Max Klevit Hopkins - Computer Science/Engineering
Jervaughn DeAnthony Hunter - Bioengineering
Pratibha Jagannatha – Bioinformatics
Nishtha Krishnan – NanoEngineering
Sahana Kuthyar – Ecology, Behavior and Evolution
David Ambrose McBride - Chemical Engineering
Joshua Manalo Mesfin - Bioengineering
Eleonora Rachtman - Bioinformatics and Systems Biology
Sankaran Ramanarayanan - Mechanical/Aerospace Engineering
Chiaki Isabela Santiago - Neuroscience
Samantha Lylah Sison - Neuroscience
Angus Blacklaw Thies - Marine Biology/Physiology
Brian Kha Tran - Computational Mathematics
Alisha Anish Ukani - Computer Science
Alicia Ann Van Enoo - Neuroscience

UNIVERSITY OF SAN DIEGO

Andrea Marie Correia – Nursing
Jennie Miko Lee - Nursing
Patricia Jinhae Magdaluyo - Nursing
Nicole Renae Marcy - Nursing



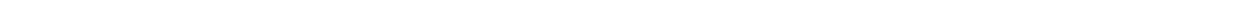


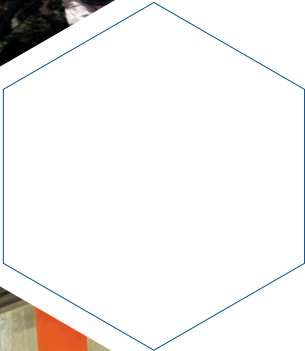
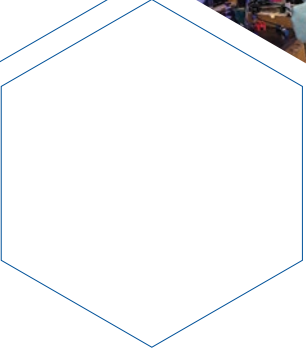
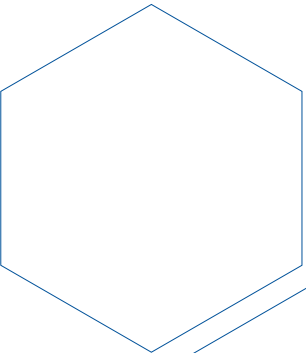
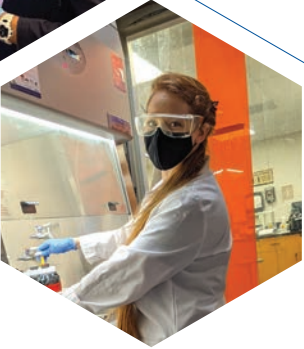
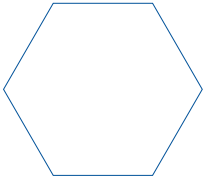
ARCS FOUNDATION, INC. | SAN DIEGO CHAPTER



SAN DIEGO STATE UNIVERSITY

The San Diego State University doctoral programs here are offered jointly with either the University of California Davis, the University of California San Diego or the University of California Irvine as noted in the Scholars' profiles.





JASON LAJOS BAER

San Diego State University / University of California San Diego

College of Sciences

Concentration: Cell and Molecular Biology

Specialization: Microbial Ecology

Donors: Karen and Robert Bowden/ARCS Foundation - San Diego Chapter



Despite major advances in our understanding of coral reefs, we have not yet had much success in rebuilding these highly diverse and interconnected ecosystems. For his Ph.D., Jason is designing, building, and deploying midwater structures called Coral Reef Arks as tools to pick apart the complexity of coral reefs and to help restore them. Jason is using these “mini-reefs” to create pockets of reef biodiversity that can help reseed the surrounding areas, as well as in-water laboratories to study reef processes and test new conservation tools.

Personal Interests: As with research, I prefer to spend most of my time in the field. I am an avid SCUBA and freediver, surfer, photographer, camper, and national park aficionado.

MARICRUZ HENKEL CARRILLO

San Diego State University / University of California San Diego

College of Engineering

Concentration: Mechanical Engineering

Specialization: Material Science and Manufacturing

Donor: Reuben H. Fleet Foundation



Maricruz’s research focuses on the additive manufacturing and sintering of ceramic samples to be used as bone implants. Or, as she puts it, she is 3D printing bones. The aim is to manufacture patient specific bone scaffolds that mimic native bone properties by combining 3D printing and sintering technologies. A technology like this will be a crucial advancement in the orthopedic implant field because it will increase implant biocompatibility, decrease healing time, and avoid re-operations, ultimately leading to a better quality of life for orthopedic patients.

Personal Interests: Sustainability and entrepreneurship - I have a small business called Menos Waste. For fun, surfing and salsa dancing are my hobbies!



ASHLEY DANG-NGUYEN

San Diego State University / University of California San Diego

College of Sciences

Concentration: Chemistry

Specialization: Organic Chemistry

Donor: Drs. Mara and Larry Ybarrondo/ARCS Foundation - San Diego Chapter



Electrophilic aromatic substitution is a common methodology used to functionalize pharmaceutical scaffolds and make additional analogues, aiming to synthesize more potent drugs targeting different diseases and cancers. However, the lack of site specificity makes it difficult to attach the functional group of interest at an exact position in high quantities. Ashley is currently designing and developing methodologies to address this issue in producing the target isomer. Her work aims to streamline pharmaceutical synthesis by allowing for direct access to produce analogues of lead compounds.

Personal Interests: Rock climbing, video games, and playing with my pug, Oliver.

JESSICA EILEEN GRIFFIN

San Diego State University / University of California Davis

College of Sciences

Concentration: Marine Ecology

Specialization: Coastal Marine Community Dynamics

Donor: The Heller Foundation of San Diego



Jessica is a marine ecologist whose research focuses on the conservation of coastal marine ecosystems, which are rapidly degrading due to climate change, invasive species and pollution. Jessica studies California seagrass beds, which perform vitally important ecosystem services, such as carbon sequestration and providing habitat for many fishes and invertebrates. Jessica's research addresses three threats to eelgrass survival: invasive species, eutrophication (addition of nutrients to the water), and climate change, and will provide insight on how to preserve these ecosystems under the stress of global change.

Personal Interests: In my free time I enjoy hiking, traveling, and reading.

TIFFANY LUONG

San Diego State University / University of California San Diego

College of Sciences

Concentration: Cell and Molecular Biology

Specialization: Bacteriophage Biology

Donor: Hervey Family Fund



Antibiotic-resistant bacterial infections are a growing concern worldwide. Due to their ability to infect and kill bacteria, there has been renewed interest in harnessing bacteriophages, phages for short, as an alternative treatment against antibiotic resistance. Currently, phage therapy can only be approved by the FDA as an emergency treatment. During Tiffany's PhD research, she developed a method to produce high-quantity clinically safe phage preparations for personalized emergency patient treatment. Her ongoing research will focus on the tripartite interactions between bacteria, phages, and the mammalian host.

Personal Interests: Some of my interests and hobbies include piano, tabletop role-playing games, mahjong, food & travel, video games, science fiction and fantasy literature.

ADRIAN XAVIER RIVERA

San Diego State University / University of California San Diego

College of Engineering

Concentration: Structural Engineering

Specialization: Non-Destructive Evaluation

Donor: ARCS Foundation - San Diego Chapter



Adrian's research is focused on analyzing manufacturing imperfections in aluminum honeycomb sandwich composites. The impact of this research will increase the understanding of how imperfections affect the material performance of aluminum honeycomb cores, allowing engineers to better identify potential failure of future aerospace structural designs. Furthermore, the tools used to construct finite element models of honeycomb core materials can be used for design optimization, improving the reliability and performance of fracture critical structures.

Personal Interests: I have played tennis at a collegiate level (Division III) and continue to play in local tournaments. I also have a great love of food, especially tacos.



JOVAN SAN MARTIN

San Diego State University / University of California San Diego

College of Sciences

Concentration: Chemistry

Specialization: Photocatalysis

Donor: The Hervey Family Fund



Jovan specializes in the design of new perovskite photocatalysts that use renewable energy in the form of visible light to drive chemical reactions. Perovskites are effective materials for solar cell technology and Jovan aims to repurpose such materials for enhanced photochemical reactions. His work has shown perovskites can produce a variety of organic compounds that can be the scaffold for future pharmaceutical drugs. Since perovskites are cheap, quick to produce, recyclable, and powered by renewable energy, Jovan's work can lower both the economic and environmental cost of producing pharmaceutical drugs.

Personal Interests: In my free time I like to raid in Destiny 2, lift weights, and make my friends laugh.

ASHLEY VALENTINA SCHWARTZ

San Diego State University / University of California Irvine

College of Sciences

Concentration: Applied Mathematics

Specialization: Computational Toxicology

Donor: Robin Luby/ARCS Foundation - San Diego Chapter



Environmental contaminants that pose a threat to the health and well-being of society are continually emerging, and high-throughput biological testing helps to characterize that risk. Ashley's research focuses on building mathematical and computational toxicology models to improve chemical safety assessment by leveraging available public data and creating an alternative to extensive animal testing. Ultimately, she hopes to shed light on the way environmental pollutant exposures can impact our health and development.

Personal Interests: I enjoy spending my free time outside walking my dog and appreciating all that nature has to offer.

LAURA GILMAN SISK-HACKWORTH

San Diego State University / University of California San Diego

College of Sciences

Concentration: Microbiology

Specialization: Microbiome-Host Interactions

Donor: Ellen Browning Scripps Foundation



You probably remember puberty as a time of immense and confusing changes, but you might not know that the microbes in your gut were changing with you. Laura's research focuses on how the physiological changes that we experience during puberty, like soaring hormone levels and metabolic shifts, affect which microbes live in our gut and what they do there. Knowing how puberty shapes the gut microbiome will help us better understand microbiome-related diseases that emerge during puberty, like polycystic ovary syndrome and type I diabetes.

Personal Interests: I spend my free time reading literature, gardening, and hiking around San Diego.

LILITH ASTETE VASQUEZ

San Diego State University / University of California San Diego

College of Engineering

Concentration: Environmental Engineering

Specialization: Sustainable Onsite Sanitation Systems

Donor: The Hervey Family Fund



Across the globe, 3.6 billion people living in vulnerable and disadvantaged communities lack access to improved facilities for the storage and treatment of fecal waste. To reduce these numbers, sanitation systems that are economically sustainable while minimizing impacts to human and environmental health must be further explored. Lilith's research contributes to these efforts through the study of a user-friendly waterless flushing toilet that treats waste via anaerobic digestion, for applications ranging from short-term encampments of unhoused or displaced people to long-term use at the household scale.

Personal Interests: I enjoy painting, cooking, gardening, singing, dancing, and raising butterflies. I often read about plants, animals, and odd history.



JENNIFER ANNE WATERS

San Diego State University / University of California San Diego

College of Sciences

Concentration: Biology

Specialization: Cancer Biology

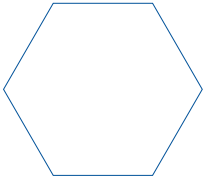
Donor: ARCS Foundation - San Diego Chapter



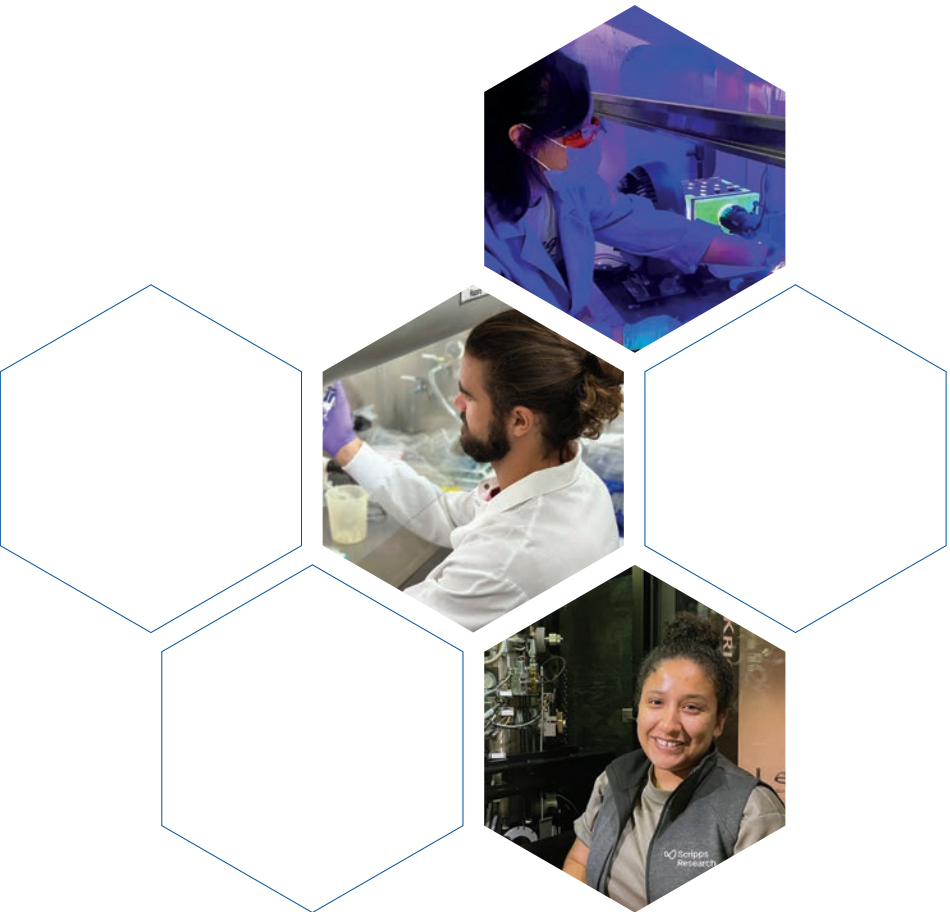
The way ovarian cancer spreads is heavily influenced by signals from the cells and tissues that surround the tumor, which is collectively referred to as the tumor microenvironment. Jenny is researching how immature fat cells in the tumor microenvironment, called preadipocytes, enhance the ability of ovarian cancer cells to spread and metastasize to the omentum, a fatty tissue that attracts ovarian cancer cells and has the highest tumor burden in patients. She hopes to identify potential drug targets that could reduce the rate of omental metastasis in ovarian cancer.

Personal Interests: Outside of the lab, I enjoy rock climbing, baking, trail running and cuddling with my dog.





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ROGER JUSTICE FLEISCHMANN III

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Immunology

Specialization: Cell Therapy

Donor: The Paul Bechtner Foundation /ARCS Foundation - San Diego Chapter



Justice investigates the factors which provoke and inhibit immune rejection of cellular transplants. His research revolves around genetically engineering donor-derived white blood cells to eliminate tumors, while also designing them to safely persist inside the patient. By studying the biology of these cells, Justice will produce novel strategies to transplant various types of cells, reduce the economic burden of cell therapy, and improve access to cell therapy.

Personal Interests: I enjoy surfing, rock climbing, gardening, dance, DEI and STEM education, contemporary art, traveling, cooking, Dungeons and Dragons, interior design, and my dog.

BRETT MICHAEL GARABEDIAN

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Molecular Medicine

Specialization: Glycoimmunology

Donor: ARCS Foundation - San Diego Chapter



Brett uses chemistry and protein engineering to empower our immune system against diseases including chronic infection and cancer. His work focuses on the dense layer of sugars (glycans) that populate the cell-cell synapses formed between white blood cells and diseased cells. By tailoring these interactions using chemical biology tools, Brett is developing novel therapies of disease that will advance the field of “glycoimmunology” and broadly benefit patient outcomes in the clinic.

Personal Interests: SciComm, cooking, guitar, gardening, and prospecting for minerals.



NATHALIA ROMANIO GAZANIGA

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Biomedical Sciences

Specialization: Immunology

Donor: ARCS Foundation – San Diego



Nathalia utilizes high throughput drug screening methods to identify small molecule immunomodulators in the context of tumors. By being a part of both a chemical biology and an immunology lab, she can screen for small molecules and subsequently work to understand their mechanism in vitro and in vivo. Her project focuses on applying these small molecules to alter the balance of immune cell populations in the tumor microenvironment.

SERGIO RODRIGUEZ LABRA

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Biomedical Sciences

Specialization: Translational Neuroscience

Donor: Toby Eisenberg



Alzheimer's disease is the most common form of dementia worldwide and is growing at an alarming rate without a cure. Sergio's research seeks to address a critical need in the field, that is, the lack of adequate pre-clinical models. By innovating stem cell-derived human brain organoid-based models to better reproduce the progression of Alzheimer's disease, Sergio's efforts focus on uncovering new disease mechanisms and more reliably testing promising new drugs in development as potential treatments for the disease.

Personal Interests: Volunteer with Cientifico Latino as co-director of a STEM graduate mentorship program for underrepresented minorities.

GARRETT LEE LINDSEY

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Chemical Biology

Specialization: Chemical Proteomics

Donor: [The Reuben H. Fleet Foundation](#)



In the Cravatt lab, Garrett uses the application of Activity-based Protein Profiling (ABPP) to discover and functionally annotate proteins that contribute to human diseases, such as cancer. His research focuses on developing small molecules that target novel proteins to suppress pro-tumorigenic transcriptional networks. Currently, he is studying the mechanism of small molecules that modulate the RNA-binding protein, NONO. Studying these small molecules could provide a way forward for drugging the NONO protein for cancer therapy and more specifically treatment resistant forms of prostate cancer.

Personal Interests: I stay active through weightlifting, hot yoga, or practicing my golf swing at a driving range.

MICHAELA MEDINA

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Cell Biology

Specialization: Quantitative Cellular Biology and Biophysics

Donor: [The Conrad Prebys Foundation](#)



Michaela uses light microscopy, electron microscopy, and biochemical techniques to investigate how mitochondria sense and adapt to cellular stress. Her work focuses on how mitochondrial membranes remodel in a variety of different cellular contexts to gain a greater understanding for how these processes are regulated. Her goal is to understand of how dysregulation of mitochondrial dynamics results in unhealthy mitochondrial populations that are a hallmark of neurodegenerative diseases, metabolic diseases, and cancer.

Personal Interests: I am an avid music lover especially K-pop and the South Korean band BTS. I enjoy learning languages, reading, hiking, and traveling.



HAILEE ROSE PERRETT

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Biophysics and Structural Biology

Specialization: Structural Virology

Donor: Kurt Benirschke Family



For her research, Hailee uses cutting-edge electron microscopy, computational, and biochemical techniques to investigate viral glycoproteins that facilitate host cell attachment. Her work focuses on developing a more robust understanding of arenaviruses, which include the etiologic agents of various hemorrhagic fevers such as Lassa fever. The latter is endemic in West Africa and is recognized by the World Health Organization as a disease with pandemic potential. By defining these proteins' structures and functions, Hailee aims to contribute to the development of next-generation protein tools, therapeutic strategies, and vaccine candidates.

Personal Interests: I love the arts and spend a lot of time creating science-related digital illustrations as well as surreal oil paintings. My other hobbies include surfing, cooking, writing, and walking my cat.

CAROLINE ROSE STANTON

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Biomedical Sciences

Specialization: Chemical Biology

Donor: Karen and Robert Bowden



Caroline's graduate research focuses on understanding the regulation of the NLRP3 inflammasome, a protein complex closely tied to sterile inflammation in numerous diseases including gout, rheumatoid arthritis, multiple sclerosis, and stroke. To accomplish this goal, she has performed a high-throughput screen to identify new compounds which inhibit NLRP3 and is determining the mechanism of action of these compounds to establish new ways by which NLRP3 is regulated. This allows her to identify potential new drug targets to reduce NLRP3 activity and inflammation.

Personal Interests: Classical singing including art songs and opera, walking on the beach, reading, and baking.

NELSON REN WU

Scripps Research

Skaggs Graduate School of Chemical and Biological Sciences

Concentration: Immunology

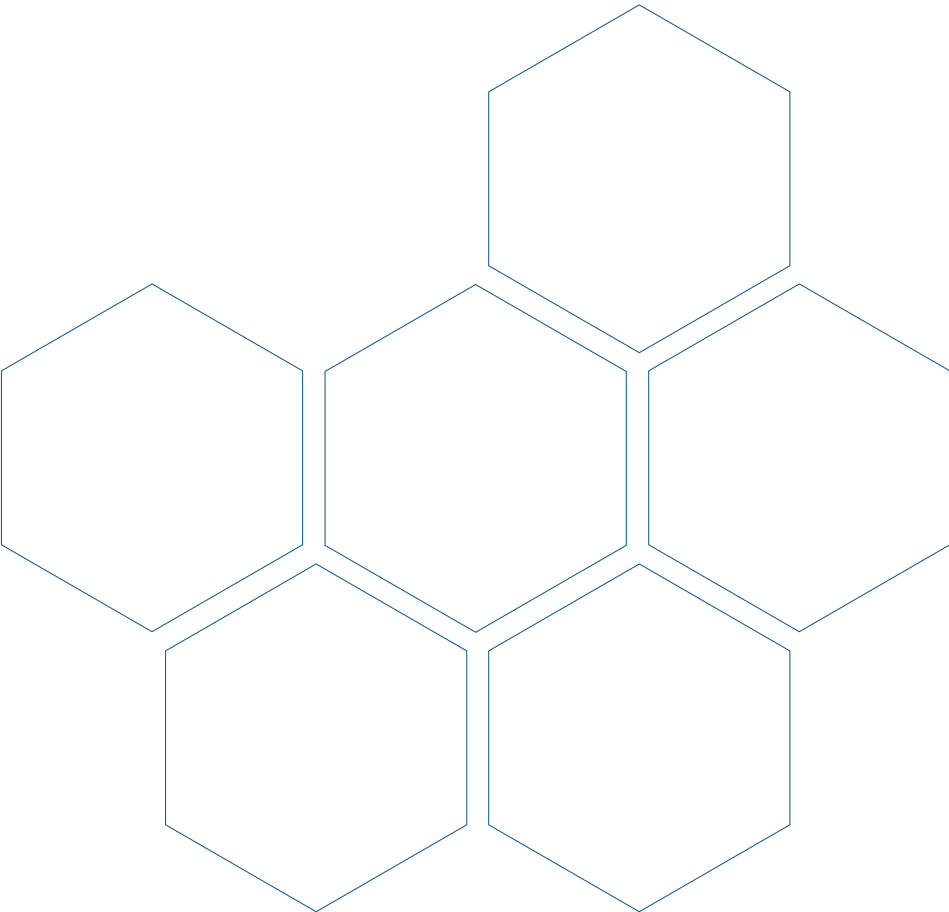
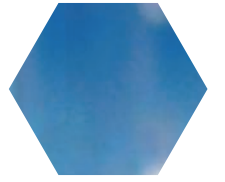
Specialization: Vaccine Design

Donor: Laurie and Michael Roeder

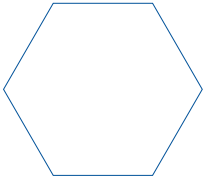


Malaria is an ancient tropical disease caused by parasites carried by mosquitoes. While insecticide-treated nets and anti-malarial drugs have largely contributed to a decline in malaria cases, increasing drug resistance by malaria parasites necessitates the development of an effective vaccine. The most advanced vaccine for malaria is the RTS,S/AS01 vaccine approved for use in select African countries, but that is only partially effective. Nelson's research seeks to apply computational modeling to design and screen more effective vaccine candidates.

Personal Interests: In my spare time, I like performing Chinese-Yoyo, reading fantasy novels, and playing with my Siamese cat.



UC San Diego



ARCS FOUNDATION, INC. | SAN DIEGO CHAPTER



ANELA KANANI AKIONA

University of California San Diego

Scripps Institution of Oceanography

Concentration: Marine Biology

Specialization: Coral Reef Ecology

Donor: [Kenneth and Marjorie Blanchard/ARCS Foundation - San Diego Chapter](#)



Anela studies what determines species distribution on coral reefs, which are under threat from climate change. She uses data from scuba surveys to model how emerging interventions might make reef ecosystems in the Maldives, an island nation which relies heavily on coral-related tourism, more resilient as global temperatures rise. Her research seeks to bridge the gap between conservationists, managers, and scientists as the Maldivian government works to build their national coral conservation strategy.

Personal Interests: I enjoy scuba diving, hiking, going to the beach, cooking, buying plants, fostering dogs, and embroidering.

GABRIEL ANTONIO ASCUI-GAC

University of California San Diego

La Jolla Institute for Immunology

Concentration: Biomedical Sciences

Specialization: Immunology

Donor: [Legler Benbough Foundation](#)



Lung infections are major killers globally. Pneumonia alone is responsible for the deaths of 11% of children under 5 years old in the world. This makes it important to understand how protective immune responses in the lung are generated. Gabriel's research focuses on Innate T cells and their importance for protection against bacterial infections. These innate T cells have rapid and donor-unrestricted responses making them important targets for vaccine development. He is using cutting-edge CRISPR screen technology to better understand the lung immune response and to describe novel mechanisms for protection and cellular interactions which aims to improve current therapeutic interventions.

Personal Interests: I like hiking around the San Diego area, and I also enjoy reading, playing bass guitar and painting.



KRISTA PATRICE BALTO

University of California San Diego

Department of Chemistry and Biochemistry

Concentration: Chemistry

Specialization: Inorganic Synthesis and Materials Chemistry

Donor: [The Conrad Prebys Foundation](#)



Krista's research focuses on the creation of unique, highly reactive metal-based materials. Once created, Krista determines what these materials are capable of; some aid in the creation of organic molecules or polymers, like plastics, while others are capable of gas and liquid separations for industrial purposes.

Personal Interests: I enjoy weightlifting, surfing, running, trying new restaurants, and traveling.

LAURA LYNN BECERRA

University of California San Diego

Jacob School of Engineering

Concentration: NanoEngineering

Specialization: Medical Devices and Systems

Donor: [Kevin and Robert Bowden/ARCS Foundation-San Diego Chapter](#)



Laura's research focuses on flexible sensor systems and haptic materials (which convey information via sense of touch) for physiological measurements. Her sensors are used to measure breathing activity in humans, as well as to prevent scar tissue from radiation treatments in the throats of cancer patients. She also investigates materials and their properties to create a desired touch sensation in humans, such as moisture or temperature. This is used for developing realistic technology to be used in surgical training simulations, virtual doctor visits, and virtual reality platforms, among other applications.

Personal Interests: I enjoy salsa and bachata dancing, baking, and spending time with friends and family.

ALEC JOSEPH CALAC

University of California San Diego

Herbert Wertheim School of Public Health and Human Longevity Science

Concentration: Medicine and Public Health

Specialization: Global Health

Donor: Lambert Foundation for Education



Alec is an MD/PhD Candidate at UC San Diego School of Medicine and Herbert Wertheim School of Public Health and Human Longevity Science. He works collaboratively with the Global Health Policy and Data Institute on research projects integrating social media, health technology, health policy, and Tribal public health. He currently serves as the National President of the Association of Native American Medical Students. In 2022, he was named a 40 Under 40 Leader in Minority Health by the National Minority Quality Forum and was also chosen to participate in the White House Leaders in Health Equity Roundtable Series.

Personal Interests: Homemade ice cream, indoor rock climbing, mentoring youth, exploring craft breweries, and checking out new coffee shops.

AUSTIN JOSEPH CARTER

University of California San Diego

Scripps Institution of Oceanography

Concentration: Geosciences

Specialization: Geochemistry

Donor: The Reuben H. Fleet Foundation



Austin studies the chemistry, shape, and concentration of mineral dust (fine-grained particles of rock) trapped in polar ice. He drills cores of ice on the East Antarctic Ice Sheet, carefully separates the dust, and measures its properties. These small, solid impurities can provide insight into how the conditions on the Earth's surface and the flow of air may have changed through time. By understanding how the environment has changed in the past, his research aims to better project how the environment will change in the future.

Personal Interests: I enjoy listening to music, exploring the beach, making paper crafts, and baking some indulgent dessert that I will regret later.



KELLEN JAMES CAVAGNERO

University of California San Diego

Department of Dermatology

Concentration: Immunology and Microbiology

Specialization: Inflammation and Infectious Disease

Donor: Dr. Patricia Judd



Kellen's mission is to better understand the immune system in order to more effectively prevent and treat infectious disease, autoimmunity, allergy, and cancer. Specifically, his research focuses on defining what happens after initial exposure to an inflammatory stimulus. Prior to starting his Ph.D., Kellen made significant contributions to the field of allergic airway disease under the mentorship of Dr. Taylor Doherty. Now, as a Ph.D. student under the mentorship of Dr. Richard Gallo, his work is changing how we think about skin and gut infectious and inflammatory diseases.

Personal Interests: I enjoy spending time with friends and family and outdoor activities like surfing, hiking, and scuba diving.

MINERVA CONTRERAS

University of California San Diego

Neurosciences Graduate Program

Concentration: Cellular and Molecular Biology

Specialization: Neurobiology

Donor: Laverne Briggs Family



The brain can modify its connections in response to experience, this is known as plasticity. During development, the brain's ability to respond to experience by making new connections, strengthening, or eliminating old ones, is high. As one gets older, this ability decreases. This explains why learning a new language is easier when one is young, for example. Minerva studies the mechanisms by which astrocytes, a type of non-neuronal cell, regulate plasticity in response to experience. She also hopes to elucidate therapeutic targets for neurodevelopmental diseases where plasticity alterations are hallmarks.

Personal Interests: When not in the lab, you may find me outdoors enjoying this beautiful San Diego weather with my wife and dogs. I love hiking, camping, going to the beach, and snorkeling.

RUBEN DANIEL ELIAS

University of California San Diego

Department of Chemistry and Biochemistry

Concentration: Biophysics

Specialization: Structural Biology

Donors: [Paul and Cleo Schimmel/ARCS Foundation - San Diego Chapter](#)



Ruben's work focuses on understanding how disordered proteins are utilized to orchestrate large scale biological events such as cell division and HIV-1 replication. Protein regions without well-defined, three-dimensional structures are often heavily involved in signal transduction pathways which regulate the timing of cellular processes. Viruses such as HIV-1 take advantage of this by using their own disordered domains to hijack cellular machinery. Ruben develops and applies methods to characterize these disordered proteins, providing valuable insight into their biological significance and towards future drug development.

Personal Interests: I am involved in science outreach and enjoy writing music.

SONYA RENEE HAUPT

University of California San Diego

Health Sciences

Concentration: Biomedical Sciences

Specialization: Immunology

Donors: [Timkin-Sturgis Foundation/ARCS Foundation - San Diego Chapter](#)



Sonya is researching novel technology to be used in HIV (human immunodeficiency virus) vaccines. She evaluates the immune response in model organisms to project what vaccination strategy will create broadly-neutralizing antibodies in humans. Her first project is developing a helper T cell epitope tag that can work across all human HLA types to boost germinal center education of antibody responses. Her second project is modeling how vaccines benefit from different components administered in each dose to progressively coach cells to evolve better neutralizing antibodies. Although HIV vaccines are not effective yet, she hopes that her contribution may help her see an approved HIV vaccine in our lifetime.

Personal Interests: I enjoy mentally challenging exercise and connecting with others. I have found such with ultimate frisbee and outdoor rock climbing.



JOHN JAEUN HOLOUBEK

University of California San Diego

Jacobs School of Engineering

Concentration: NanoEngineering

Specialization: Electrochemical Energy Storage

Donor: [Ellen Browning Scripps Foundation](#)



John's work aims to understand the energetics and dynamics of various ionic processes at the electrolyte/electrode interphase of electrochemical devices. He currently studies these charge-transfer processes in the context of lithium batteries, which typically fail to provide meaningful power output when operated under significant kinetic strain. He is currently engaged in a long-term effort to develop electrolyte design principles for lithium metal batteries at ultra-low temperatures. These findings aim to convert fundamental electrochemistry principles to application-based technological progress, which will have impact beyond batteries.

Personal Interests: In my free time, I enjoy playing basketball, and I am currently learning to surf (with limited success).

NATHANIEL MAX KLEVIT HOPKINS

University of California San Diego

Jacobs School of Engineering

Concentration: Computer Science/Engineering

Specialization: Theoretical Computer Science

Donor: [Kathryn Crippen Hattox Endowment](#)



From measurements of the largest galaxies to the smallest proteins, scientists now record more data in a day than they can possibly handle in a lifetime. This has led to a modern-day scientific revolution, where data-hungry machine learning techniques are used to attack age-old problems like protein folding. These applications, however, require data annotated by people, which is prohibitively expensive for applications like computer-assisted medical diagnosis. Max's research focuses on the theory behind how easily-accessible raw data combined with a few enriched annotations can significantly reduce otherwise infeasible labeling costs.

Personal Interests: In my free time I sing acapella and barbershop music, and enjoy pretty much every form of game.

JERVAUGHN DEANTHONY HUNTER

University of California San Diego

Jacobs School of Engineering

Concentration: Bioengineering

Specialization: Tissue Engineering and Regenerative Medicine

Donor: [Wally Schirra Memorial Endowment Fund](#)



Jervaughn's research focuses on utilizing injectable therapeutics to treat right ventricular heart failure. After injury, the right ventricle undergoes negative remodeling which can be characterized by cardiac cell death and the healthy tissue being replaced with scar tissue, resulting in heart failure. Currently, there are no treatments on the market that address this remodeling and the only cure would be total organ transplant. By evaluating these therapeutics in pre-clinical models, Jervaughn hopes to demonstrate their efficacy in mitigating this remodeling and ultimately bring these treatments from bench to bedside.

Personal Interests: I love traveling in my spare time. I also enjoy outdoor adventures, movies/video games, and discovering new premium beverages.

PRATIBHA JAGANNATHA

University of California San Diego

Jacobs School of Engineering

Concentration: Bioinformatics

Specialization: RNA Biology

Donor: [Virginia Lynch Grady Endowment](#)



The central dogma of biology states that RNA converts information stored as DNA sequences, a process called transcription, into proteins, a process called translation. RNA isoforms result from the same DNA sequences being transcribed into different RNA sequences. RNA isoforms are essential for proper functioning of neurons, highly regulated cells of the nervous system, and help support its unique morphology. Using computational and experimental approaches and third generation sequencing, Pratibha studies the relationship between RNA isoforms and translation in the context of normal cellular processes and disease development in neurons.

Personal Interests: I enjoy singing, dancing, painting, and watching documentaries. I also enjoy participating in outreach and mentoring programs.



NISHTA KRISHNAN

University of California San Diego

Jacobs School of Engineering

Concentration: NanoEngineering

Specialization: Immunology and Drug Delivery

Donor: The Reuben H. Fleet Foundation



Nishta's research focuses on cell membrane-coating nanotechnology, in which cell membrane is derived from live cells and coated onto the surface of synthetic nanoparticulate cores. In particular, Nishta is developing the next generation of these nanoparticles via genetic modification of the source cells. By introducing proteins onto the nanoparticle surface, she can integrate new capabilities and better address challenges in cancer therapy. She uses these genetic engineering approaches to develop nanoparticles with enhanced functionalities including improved targeting to disease sites, enhanced cellular entry, and superior biointerfacing capabilities.

Personal Interests: I enjoy board games, learning aerial skills and eating otter pops!

SAHANA KUTHYAR

University of California San Diego

Division of Biological Sciences

Concentration: Ecology, Behavior, and Evolution

Specialization: Microbial Ecology

Donor: The Allen Fund



Sahana studies how ecological and evolutionary factors impact the ability of animal-associated commensal microbes to prevent pathogen colonization. She uses domestication as a framework to explore how genetics and local ecology shape these phenomena. Her research seeks to understand under which contexts the gut microbiome of domestic animals defends against infectious disease. Her work will permit us to develop microbially minded interventions to manage infections and improve the productivity of animal rearing.

Personal Interests: I enjoy running, dancing, and generally being outdoors.

DAVID AMBROSE MCBRIDE

University of California San Diego

Jacobs School of Engineering

Concentration: Chemical Engineering

Specialization: Immune Engineering and Biomaterials

Donor: ARCS Foundation - San Diego Chapter



Dave's research focuses on the development of biomaterials to improve outcomes in patients with chronic autoimmune diseases. The current medications for autoimmune diseases are designed to systemically inhibit key inflammatory pathways. However, these approaches don't work in all patients, and may have adverse effects on the patient's ability to fight off infection or cancer due to a suppressed immune system. The biomaterials that Dave develops are designed to rebalance important cell subsets in the body's immune system to prevent autoimmune disease while retaining the ability to fight off infection.

Personal Interests: I spend the majority of my free time training intensively for beach volleyball, but also enjoy backpacking and painting.

JOSHUA MANALO MESFIN

University of California San Diego

Jacobs School of Engineering

Concentration: Bioengineering

Specialization: Tissue Engineering and Bioinformatics

Donor: The Reuben H. Fleet Foundation



Josh's research focuses on utilizing and understanding the effects of injectable therapeutic biomaterials to treat the heart after a heart attack. After a patient undergoes a heart attack, there are very few treatments to prevent scar tissue that forms around the heart, which can lead to eventual heart failure and death. By using a therapy that can molecularly mediate the heart tissue and prevent scarring, Josh hopes to fully understand how these biomaterials mechanistically work via pre-clinical heart attack models, improve upon these biomaterials, and ultimately bring these treatments to the clinic.

Personal Interests: I enjoy traveling, baking, and cooking. I'm also a fan of board/video games and finding things I haven't tried.



ELEONORA RACHTMAN

University of California San Diego

Jacobs School of Engineering

Concentration: Bioinformatics and Systems Biology

Specialization: Genetics and Phylogenomics

Donor: ARCS Foundation - San Diego Chapter



Eleonora works on the development of computational methods for analysis of large-scale genomic datasets. She focuses on finding efficient ways to derive evolutionary relationships between species to answer questions in areas of biodiversity and ecology. Results of her research can be used for identification of novel or rare species to inform conservation efforts. Eleonora's work can be utilized in tracing bacterial or viral evolution to identify patterns of disease spread and likely sources of transmission. This information is key to finding ways to combat pathogen outbreaks and developing successful vaccines.

SANKARAN RAMANARAYANAN

University of California San Diego

Jacobs School of Engineering

Concentration: Mechanical and Aerospace Engineering

Specialization: Fluid Mechanics

Donor: Beyster Family Foundation



Sankaran is interested in problems involving steady streaming – a distinguishing characteristic of non-harmonically pulsating fluid flows. He is currently applying analytical and numerical methods to investigate the physics of bidirectional squeeze-film levitation: a phenomenon wherein a flexible plate vibrating near a parallel wall can generate repulsive and adhesive forces at different vibration frequencies. Advancing the understanding of steady streaming will allow scientists to better leverage its mechanics in applications ranging from soft-robot locomotion to targeted drug delivery.

Personal Interests: I spend time building and flying model airplanes, and I love listening to percussive music.

CHIAKI ISABELA SANTIAGO

University of California San Diego

Division of Biological Sciences

Concentration: Neuroscience

Specialization: Cellular and Molecular Neuroscience

Donor: Elizabeth Taft



Chiaki's thesis project aims to understand the molecular mechanisms that drive experience-dependent circuit plasticity in the mammalian brain. The animal brain extracts salient information from its environment, generating memories and behavioral adaptations that allow it to survive in a complex world. This is done through the activity of excitatory and inhibitory neurons that are organized into synaptically connected circuits. Chiaki studies how experience, through the execution of activity-dependent gene expression, regulates the connections between excitatory and inhibitory neurons, and how these processes relate to animal behavior and disease states.

Personal Interests: I love spending time in nature - playing volleyball, disc golf, surfing, or exploring our beautiful national parks.

SAMANTHA LYLAH SISON

University of California San Diego

Neurosciences Graduate Program

Concentration: Neuroscience

Specialization: Neurodegenerative disease modeling

Donor: Dorothy Georgens/ARCS Foundation - San Diego Chapter



Sammi's research project aims to understand the molecular mechanisms underlying Huntington's disease, a progressive neurodegenerative disorder that leads to motor and cognitive problems and eventually death. With a background in stem cell biology and neuroscience, Sammi uses induced pluripotent stem cells from Huntington's disease patients to study the genetic pathways that may be contributing to neurodegeneration in the brain. By using this system, she hopes to identify therapeutic targets for the potential treatment of Huntington's disease patients.

Personal Interests: I volunteer for a student-led non-profit organization, called Nucleate, that is aimed at breaking down the barriers to life science entrepreneurship. Besides volunteering, I love to hike, rock climb, and spend time with my two dogs Ash and Rex.



ANGUS BLACKLAW THIES

University of California San Diego

Scripps Institution of Oceanography

Concentration: Marine Biology/Physiology

Specialization: Photosymbiosis

Donor: Carlos and Sharon Arbelaez



Angus studies the physiology of corals, the animals responsible for building coral reef ecosystems. These habitats support thousands of species, provide food for millions of humans, drive global tourism, and protect coastlines from storm damage and erosion. Alarmingly, coral populations are declining rapidly due to climate change not only threatening ecological biodiversity but endangering the food supply and livelihoods of local communities. Angus' research focuses on (1) understanding why coral populations are declining and (2) identifying coral species suitable for conservation and propagation efforts to rebuild degraded coral reef ecosystems.

Personal Interests: I love to rock climb, cook, spearfish, explore national parks, start (and maybe finish) DIY projects, and maintain close friendships.

BRIAN KHA TRAN

University of California San Diego

Department of Mathematics

Concentration: Computational Mathematics

Specialization: Geometric Integration

Donor: ARCS Foundation - San Diego Chapter



Brian investigates computational techniques for applications to problems in mathematical, theoretical, and computational physics. Specifically, he focuses on constructing structure-preserving and geometric discretizations of field theories in physics which provide a means of computationally modeling complex physical phenomena, such as electromagnetism and fluid flow. Such structure-preserving discretizations are characterized by the fact that they preserve, at the discrete and computational level, the geometric structures inherent to the physical phenomena of interest. This allows for robust and faithful modelling with applications throughout science and engineering.

Personal Interests: I enjoy playing the guitar and the piano, I love to surf, and I am an avid gamer.

ALISHA ANISH UKANI

University of California San Diego

Jacobs School of Engineering

Concentration: Computer Science

Specialization: Internet Measurement

Donor: ARCS Foundation - San Diego Chapter



Alisha's research focuses on using Internet traffic data to improve the performance and reliability of critical infrastructure like large-scale data centers, which power vital web services in healthcare and education. She has created a method to identify network outages at Google using network availability data. Alisha plans to build and leverage large-scale measurement systems to make web service infrastructure more reliable and thus better serve the public.

Personal Interests: I enjoy reading fiction, interior design, and spending time with my dog. I also like to play tennis and play acoustic guitar.

ALICIA ANN VAN ENOO

University of California San Diego

Neurosciences Graduate Program

Concentration: Neuroscience

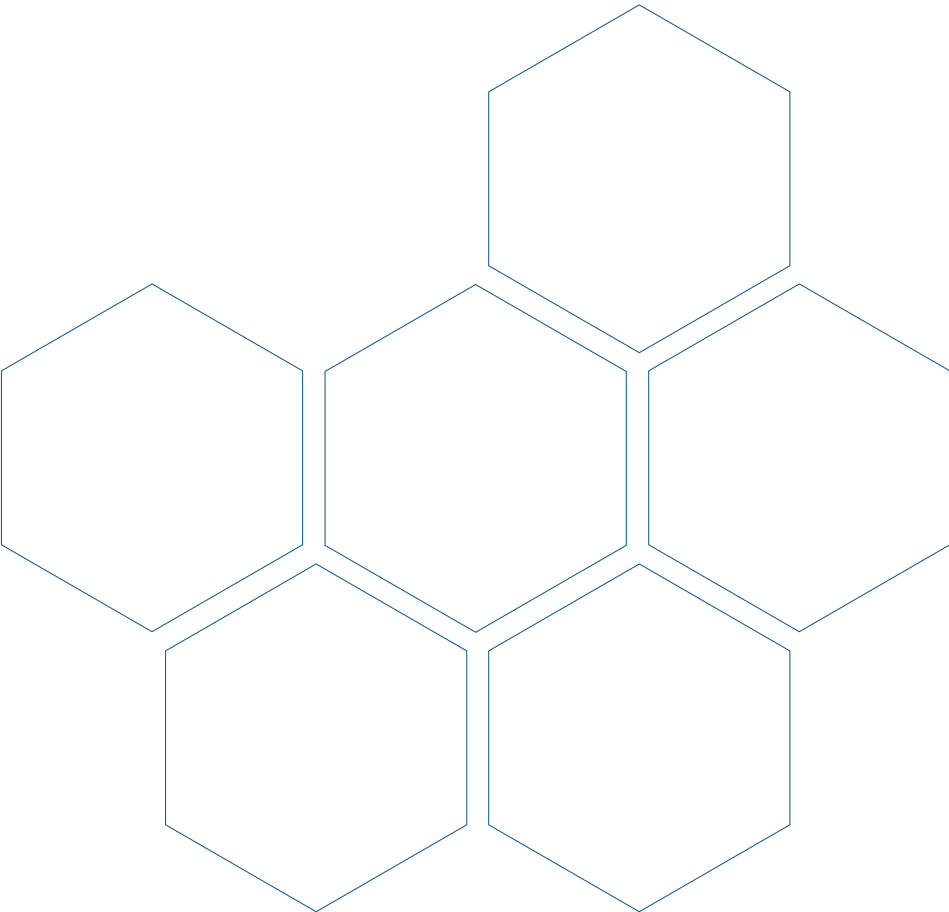
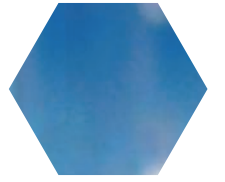
Specialization: Developmental Neuroscience, Stem Cell Biology

Donor: ARCS Foundation - San Diego Chapter



Alicia's research is aimed at understanding the molecular mechanisms underlying abnormal neurodevelopment in autism spectrum disorders (ASD). She uses patient-derived and CRISPR engineered stem cells to create 3-D cortical organoids, nicknamed "mini brains". By studying how these mini brains develop in a dish, Alicia hopes to gain a better understanding of what goes wrong during fetal brain development in ASD patients. These studies will provide the much-needed groundwork necessary to identify novel therapeutic targets for the potential treatment of ASD.

Personal Interests: In my free time, I enjoy going to the beach, exploring new restaurants, and snowboarding.





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ANDREA MARIE CORREIA

University of San Diego

Hahn School of Nursing and Health Science

Concentration: Nursing

Specialization: Pediatrics

Donor: [Beyster Family Foundation](#)



Healthcare-related workplace violence perpetrated by patients and caregivers has steadily increased. Numerous studies have been conducted to understand the prevalence and cause. However, few studies have considered adverse childhood experiences or trauma as potential factors. Andrea plans to explore the possible role adverse childhood experiences and trauma have in healthcare-related workplace violence. Such an understanding can eventually lead to improved preventative measures for healthcare organizations.

Personal Interests: My interests include reading, traveling, and spending time with family and friends.

JENNIE MIKO LEE

University of San Diego

Hahn School of Nursing and Health Science

Concentration: Nursing

Specialization: Maternal Health Disparities

Donor: [Beyster Family Foundation](#)



Jennie's research is aimed at improving maternal outcomes with reduced rates of morbidity and mortality due to maternal hemorrhage, the leading cause of maternal morbidity. Her research project is focused on disadvantaged people, exploring the relationship between social determinants of health and maternal mortality by investigating social and economic variables of access to healthcare and health disparities that correlate with maternal mortality.

Personal Interests: I enjoy spending time with family, training Brazilian jiu-jitsu, bodyboarding, running, playing guitar and fishing in Alaska and the Eastern Sierras.

PATRICIA JINHAЕ MAGDALUYO

University of San Diego

Hahn School of Nursing and Health Science

Concentration: Nursing

Specialization: Oncology Patient Experience

Donor: [Beyster Family Foundation](#)



Patty’s research interest is to understand the lived experience of oncology patients. She is interested in barriers to care and underserved populations. Results of this research will give nurses firsthand knowledge about oncology patients’ daily living and functioning. Patty hopes that through this, we will all be better equipped to communicate with the patient about their quality of life. This will give us the foundation to develop interventions that will improve patient outcomes across the care continuum.

Personal Interests: I enjoy indoor cycling, coffee shops and podcasts.

NICOLE RENAE MARCY

University of San Diego

Hahn School of Nursing and Health Science

Concentration: Nursing

Specialization: Machine Learning

Donor: [Reuben H. Fleet Foundation](#)



In 2019, 51.5 million U.S. adults were living with a mental illness. It is estimated 8 million deaths per year globally are attributed to a mental health condition. It is known that over half of mental health cases go untreated. Research shows that mental health issues are on the rise. There are estimates that mental health issues cost several billions of dollars annually globally. Application of artificial intelligence (AI) in mental health could expand access, reduce costs and save lives. Despite the achievements of AI, there is room for improvement. Nicole will investigate the effectiveness of AI in mobile applications used in mental health diagnosis and treatment.

Personal Interests: Off road rally navigation, overlanding, yoga, meditation, pilates, camping, hiking, reading, art, music, and travel.



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