Achievement Rewards for College Scientists

Northern California Chapter

2020–2021 Annual Report

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ARCS Foundation, Inc.
1008 General Kennedy Avenue
P. O. Box 29405
San Francisco, CA 94129-0405

Phone: (415) 561-6537
E-mail: ncalifornia@arcsfoundation.org
www.northern-california.arcsfoundation.org

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MISSION

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

ARCS STORY

ARCS STORY: In 1958, a group of intrepid women in Los Angeles took on the challenge of the "space race" and created ARCS Foundation, funding gifted science, medical and engineering students to help re-establish our country's leadership in science. Today the challenge is achieving breakthroughs in biotechnology, regenerative medicine, and clean energy to secure our country's future. We once again risk falling behind other leading nations, with only 15% of U.S. college students majoring in science or engineering. Our answer is still the same: when we support brilliant young scientists, we invest in America's future in a powerful way.

Every dollar contributed to ARCS Foundation's Scholar Awards Fund goes directly to students selected by their universities for their merit and the caliber of their research. The impact is profound: ARCS scholars appreciate our belief in them as much as the financial help.

ARCS has 15 chapters in the United States and has raised nearly $121 million in support of more than 10,900 scholars since 1958.

NORTHERN CALIFORNIA CHAPTER

NORTHERN CALIFORNIA CHAPTER: The Northern California Chapter of ARCS Foundation was established in 1970 and has funded 2,900 Scholar Awards totaling over $23.6 million. For the 2021-2022 academic year, the Chapter distributed a record $1,032,800 to 76 scholars attending six prestigious Northern California universities.

ARCS IS UNIQUE

* ARCS is 100% FOCUSED: ARCS is the largest private membership organization in the United States focusing on support to the most promising U.S. science scholars.
* ARCS grants are 100% FLEXIBLE: ARCS award recipients decide how best to use ARCS funds to pursue their academic research efforts.
* ARCS is 100% VOLUNTEER: ARCS members donate their time, talents and financial resources in order to foster academic excellence and research in the sciences, mathematics, medicine and engineering.
* ARCS is 100% EFFECTIVE: 100% of all donations to the annual Scholar Awards Campaign are directed to the best and brightest scholars at our nation's top universities.

Recipient Schools of ARCS Foundation Grants

ARCS FOUNDATION, INC. can boast of alumni who have achieved distinction in their fields and are making significant contributions to the strength and leadership of our country.

The scholar awards program is administered by the academic institutions to which ARCS chapters make allocations. Recipient institutions are approved by the National Board of ARCS FOUNDATION, INC. according to exacting standards.

Following is a list of the recipient schools of ARCS Foundation scholar awards for the fifteen chapters which make grants.

Atlanta Chapter
Emory University
Georgia Institute of Technology
Morehouse College
University of Georgia (Athens)

Colorado Chapter
Colorado School of Mines
Colorado State University
University of Colorado at Boulder
University of Colorado at Colorado Springs
University of Colorado at Denver
University of Colorado
School of Medicine

Honolulu Chapter
University of Hawaii, Manoa

Illinois Chapter
Illinois Institute of Technology
Loyola University of Chicago, Stritch
School of Medicine
Northwestern University
The University of Chicago
The University of Illinois at
Urbana-Champaign

Los Angeles Chapter
California Institute of Technology
Harvey Mudd College
Pomona College
University of California, Los Angeles:Brain
Research Institute
University of Southern California:
Keck School of Medicine
Viterbi School of Engineering

Metropolitan Washington Chapter
Georgetown University
The George Washington University
The Johns Hopkins University
University of Maryland, College Park
University of Virginia

Minnesota Chapter
University of Minnesota

Northern California Chapter
San Francisco State University
Stanford University
University of California, Berkeley
University of California, Davis
University of California, San Francisco
University of California, Santa Cruz

Orange County Chapter
University of California, Irvine

Oregon Chapter
Oregon Health and Science University
Oregon State University
University of Oregon

Phoenix Chapter
Arizona State University
Northern Arizona University
University of Arizona

Pittsburg Chapter
Carnegie Mellon University
University of Pittsburgh

San Diego Chapter
San Diego State University
Scripps Research Institute
University of California, San Diego
University of San Diego

Seattle Chapter
University of Washington
Washington State University

Utah Chapter
University of Utah

Recipient Universities' Leadership

ARCS Foundation Northern California Chapter appreciates its strong alliance with each of the universities receiving award funds. We hereby salute the presidents and chancellors of these, our area's finest universities, and list their names together with the departments in which scholars were funded this year.

Dr. Lynn Mahoney, President
San Francisco State University

Department of Biology
Department of Geosciences
Department of Mathematics
Department of Physics & Astronomy

Dr. Marc Tessier-Lavigne, President
Stanford University

Department of Bioengineering
Department of Biology
Department of Biophysics
Department of Chemical Engineering
Department of Civil & Environmental Engineering
Department of Earth System Science
Department of Electrical Engineering
Department of Mathematics
Department of Physics

Dr. Carol Christ, Chancellor
University of California, Berkeley

Department of Electrical Engineering & Computer Science
Department of Environmental Science, Policy & Management
Department of Integrative Biology
Department of Mechanical Engineering
Department of Metabolic Biology
Department of Molecular & Cell Biology
Department of Nuclear Engineering
Department of Plant & Microbial Biology

Dr. Gary S. May, Chancellor
University of California, Davis

Agricultural & Environmental Chemistry Graduate Group
Animal Behavior Graduate Group
Department of Biomedical Engineering
Department of Civil & Environmental Engineering
Department of Earth & Planetary Sciences
Ecology Graduate Group
Integrative Pathobiology Graduate Group
Molecular, Cellular & Integrative Physiology Graduate Group
Neuroscience Graduate Group
Department of Pharmacology & Toxicology
Population Biology Graduate Group
Department of Soils & Biogeochemistry

Dr. Sam Hawgood, Chancellor
University of California, San Francisco

Department of Bioengineering
Department of Biomedical Sciences
Department of Biophysics
Department of Chemistry & Chemical Biology
Department of Developmental & Stem Cell Biology
Department of Microbiology & Immunology
Department of Oral Craniofacial Sciences
Department of Epidemiology & Biostatistics
Department of Pharmaceutical Science & Pharmacogenomics
Department of Physiology

Dr. Cynthia Larive, Chancellor
University of California, Santa Cruz

Department of Astronomy & Astrophysics
Department of Biomolecular Engineering
Department of Chemistry & Biochemistry
Department of Computational Media
Department of Earth & Planetary Sciences
Department of Ecology & Evolutionary Biology
Department of Electrical & Computer Engineering
Department of Environmental Studies
Department of Microbiology & Environmental Toxicology
Department of Molecular, Cell & Developmental Biology
Department of Ocean Sciences
Department of Physics
Department of Statistics
Science Communication (Master's Program)

San Francisco State University

Department of Biology
Department of Geosciences
Department of Mathematics
Department of Physics & Astronomy

Department of Geosciences
Master's Program

ANDREW BAYS

ARCS Foundation Scholar

Andrew studies environmental change associated with the end-Ordovician mass extinction, specifically the stable isotopes and trace elements contained within dolomite. He presented his research results at the Geological Society of America National Conference in the fall of 2019, and was awarded the Thalman Award for academic excellence while an undergraduate at San Francisco State.

Department of Biology (Cell & Molecular)
Master's Program

JAN MIKHALE CAJULAO

Robert Lansdon Trust Scholar

Jan's work focuses on the viral G Protein Coupled Receptor of the cancer-causing Kaposi's Sarcoma Herpesvirus. This receptor (vGPCR) has been shown to cause cancer, inflammation, formation of new blood vessels, and is required for the virus to replicate within its human host. Less known are the mechanisms that this receptor uses to signal within host cells. As he continues to optimize protocols and characterize the lab's in vitro model system, Jan is monitoring the physical localization of vGPCR within host cells, and the impact of its expression on host genes important for metabolism and the formation of new blood vessels. In addition to his research interests, Jan is interested in community outreach as a member of the SFSU Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) chapter.

Department of Biology (Marine Estuarine Sciences)
Master's Program

SHEA GRADY

Peggy Newton Scholar

Shea is currently a fellow of SFSU RIPTIDES, a marine science graduate program with an interdisciplinary approach including professional internships, workshops, and coursework that includes emphasis on communication and teaching skills. He is investigating the effect of ocean acidification on behavioral responses of the blue-banded goby *(Lythrypnus dalli)*, an ecologically significant and prevalent California reef fish, via rearing *L. dalli* under varying Ocean Acidification conditions. He has developed a behavioral assay to compare gobies reared in normal pH vs. future OA conditions. Shea has previously worked as an ocean lifeguard and has conducted research on a marine station on Catalina Island.

Department of Geosciences
Master's Program

LAURA HORSLEY
ARCS Foundation Scholar

Laura plans to combine field-based mapping, computer modeling, and radiometric age dating to form her Master's research and thesis. In August 2021 she led a group of four students to the Adirondack Mountains (New York) to map the area around Ledge Mountain at 1:12,000 scale over three weeks, supported by a U.S. Geological Survey EDMAP grant that will also facilitate publication of that work in 2022. Laura spent the 2020-2021 academic year reading background literature on the Adirondacks, learning a thermodynamic modeling program and working with a uranium-lead geochronology dataset for Ledge Mountain rocks. Laura was part of the undergraduate team that collected those age data for zircon on Stanford's sensitive high resolution ion microprobe (SHRIMP) in 2018 and will bring that project to a close with her Master's thesis. A San Francisco native, Laura is also Head Coach for the club swim team at St. Ignatius High School.

Department of Biology (Ecology & Conservation)
Master's Program

POONEH KALHORI
Nordstrom Stores Scholar

In her second year as a Master's student, Pooneh has begun working on a collaborative project studying the population history of the Galapagos rail, a flightless bird endemic to the Galapagos islands which has had its population decimated by the introduction of goats to the islands for agriculture. As a part of the collaboration, she has access to genomic data that she has been using to infer the demography of these birds through the use of population genetic programs. The goal is to see if it is possible to detect a reduction in the size of these populations in the recent past, as well as potential gene flow between different populations of the species. She also plans to obtain Galapagos Yellow Warbler DNA samples and send them to be sequenced to begin her analysis of climate change adaptation. Pooneh's outside interests include swimming, learning about different languages, and baking

Department of Physics
Master's Program

KEN LUU
ARCS Foundation Scholar

As an undergraduate, Ken conducted research in a variety of topics in computational nuclear physics at San Diego State University where he graduated cum laude. He then had a summer internship at Los Alamos National Laboratory (LANL) with the Parallel Computing School, where he studied the physics of fireballs and how they evolve over time. Also at LANL, he worked on the stability of molecules in the atmosphere of white dwarfs. At San Francisco State he will be working on 3D General Relativistic simulations of jets in black hole-disk systems. His research interest is motivated by the fact that computation can be used alongside experiments and theory to stimulate progress. Outside the lab, Ken enjoys rock climbing and learning guitar, with the goal of performing in front of a live audience

Department of Biology (Integrative)
Master's Program

KATHERINE MONTANA

Carol Henwood Scholar
Susan & Dennis Mooradian Scholar

Katherine Montana is a scientist, advocate, and change-maker. While earning her B.A. in Anthropology and Integrative Biology with honors at UC Berkeley, she researched the genetics of potential environmental toxin resistance in frogs and the phylogenetic relationships of sea slugs. As a graduate student at San Francisco State and the California Academy of Sciences, Katherine is proud to conduct ground-breaking spider systematics research, reveal untold stories found in the Academy Library's archives, and mentor other emerging scientists. Her research focuses on using genomic and morphological data to determine the phylogenetic relationships between spider species in the genus *Lathys* of the family *Dictynidae*, a group that has been understudied and whose relationships need resolving. She is honored to form community with other scientists, especially those who have been underrepresented in the field.

Department of Mathematics
Master's Program

LAUREN NOWAK

Charlie & Jamie Campbell Scholar
Vanessa & Thomas Whitfield Scholar

Prior to entering the Master's program at San Francisco State, Lauren taught mathematics at two Bay Area public charter schools serving high-needs student populations. During her first year at SFSU, Lauren excelled in her mathematics course work, while also earning a certificate in ethnomathematics from the University of Hawai'i at Mānoa. She is pursuing research interests in both mathematics and mathematics education. Her mathematics thesis research is in the area of matroids and graph theory, topics that fall in the intersection of algebra, geometry, and combinatorics. Simultaneously, Lauren is conducting a mathematics education project investigating the application of ethnomathematical principles to promote more equitable learning opportunities for students in entry-level undergraduate math courses. In addition, based on her outstanding work as a Graduate TA in entry level mathematics, Lauren was hired by the department to assist in planning and coordinating in the Early Start summer mathematics courses in summer 2021.

Department of Mathematics
Master's Program

LUIS PEREZ

Jack Lund Endowment Fund Scholar

Luis is interested in mathematical coding theory, specifically in researching the mathematics behind error-correcting codes, which includes topics in algebra and combinatorics. He has previously spent time learning about bounds on the goodness of codes through a computer science capstone during his undergraduate studies, and he aims to gain a better understanding of the algebra used in mathematical coding theory while at San Francisco State. In summer 2021 he continued his research, taught in the week-long early start to college mathematics course, and participated as a graduate mentor for a math REU program. Luis hopes to start working towards a Ph.D. in Mathematics starting in fall 2022.

Department of Biology (Marine Estuarine Sciences)
Master's Program

AMY WONG

Ji Ing Soong Endowment Fund Scholar

Amy's research interests lie in the interactions among species in the San Francisco Estuary. Two common zooplankton species, the copepods *Eurytemora carolleeae* and *Pseudiodiaptomus forbesi*, serve as an important food source in the diets of fish and fluctuate in abundance on opposite seasonal patterns. Amy will use high-throughput DNA sequencing to determine the diets of these two species to see whether similarity of diets, possibly implying competition, plays a role in the transitions between these two species. Amy has been awarded a COAST grant for her project. Before entering graduate school, she worked for the environmental consulting company ICF as a fish biologist, contributing to projects throughout the San Francisco Estuary. Outside of work and school, she enjoys making visual art and created a small business during COVID quarantine to fulfill her creative goals.

Stanford University

Department of Bioengineering
Department of Biology
Department of Biophysics
Department of Chemical Engineering
Department of Civil & Environmental Engineering
Department of Earth System Science
Department of Electrical Engineering
Department of Mathematics
Department of Physics

Department of Chemical Engineering
Ph.D. Program

KATIE ANTILLA

ARCS Foundation Scholar

Katie is broadly interested in biomolecular engineering research aimed at medical and healthcare applications. She is currently working on three projects: (1) developing a giant magnetoresistive (GMR) biosensor assay for detecting mutations in circulating tumor DNA from non-small cell lung cancer patients, (2) prototyping a GMR-based on-chip real-time PCR system for point-of-care testing, and (3) discovering methylated cancer biomarkers using a new layered bioinformatics method and validating those biomarkers using targeted bisulfite sequencing. She has served as a TA for several Chemical Engineering courses and is a member of the Tau Beta Pi National Engineering Honor Society. Outside of research, Katie likes to participate in volunteer outreach activities, especially teaching science to younger kids, as well as play tennis, hike, ski, and do crafts.

Department of Biophysics
Ph.D. Program

KEVIN DANIEL PALACIO ARIS

Kimball Foundation Scholar

Kevin's keen interest in biophysical problems led him to pursue a double major in physics and biology at the University of Florida, where he conducted undergraduate research in the Laser Interferometer Space Antenna laboratory and graduated summa cum laude. His thesis work in the Bryant lab uses single-molecule measurements to study the activity, specificity, energetics, and mechanics of CRISPR-Cas9 and related enzymes used for gene editing. These experiments will elucidate the role of supercoiling in coordinating Cas9 and Cas12a conformational checkpoints as they cleave their DNA targets. Kevin has additionally been involved in outreach and diversity efforts at Stanford since joining the community and continues to push for equal representation in science.

Department of Bioengineering
Ph.D. Program

JULIE CHANG

Dana & Robert Emery Scholar

Julie's research in Dr. Ovijit Chaudhuri's laboratory explores the mechanics of collective cell invasion through a 3D in vitro model of breast cancer. Specifically, she is investigating how cells use force to breach through the basement membrane barrier. Prior to joining Stanford, Julie earned her B.S. in Biomedical Engineering at Yale and interned in the Biochemical and Cellular Pharmacology group at Genentech. She was an NDSEG research fellow and NSF GRFP research fellow. Outside of lab, Julie works as a Graduate Writing Tutor at the Stanford Writing Center and enjoys rock climbing, hiking and playing video games.

Department of Bioengineering
Ph.D. Program

MICHAEL GREGORY CHAVEZ

Carol & Dixon Doll Scholar
Leslie & George Hume Scholar

Michael's undergraduate work sparked an obsession with using synthetic biology to advance medicine, clean chemistry, cellular agriculture, and beyond. Now, his research aims to improve the reach and effectiveness of cell-based therapies by developing novel tools that control their phenotype. Utilizing CRISPR technologies, viral engineering, and receptor engineering, Michael not only builds more effective immune cells to treat cancer but also pushes cell therapies to overcome autoimmunity, infectious diseases, and ageing. Beyond his research, Michael enjoys communicating science to a broader audience through his podcast, Translation, and exploring the San Francisco Bay Area. He is featured in over 10 peer-reviewed publications and was awarded the NSF Graduate Research Fellowship.

Department of Electrical Engineering
Ph.D. Program

VICTORIA LI CHIEN CHEN

Kimball Foundation Scholar

Victoria's research investigates fundamental properties of nanomaterials for thermoelectric energy harvesting. Scavenging waste heat is an increasingly promising approach to fulfilling the world's growing energy needs, and due to their unique physical properties, 2D materials are especially poised to make efficient thermoelectric harvesters. Therefore, a major aspect of Victoria's project is to fabricate test structures and characterize these materials. One research focus concentrates on depositing and characterizing a 2D, layered material, hexagonal boron nitride, for eventual integration into other devices and systems. Outside of this work, she has gained additional experience through internships at Intel and Applied Materials, and also serves as the Atomic Force Microscope Instrument Manager with the Stanford Nano Shared Facilities.

Department of Civil & Environmental Engineering
Ph.D. Program

Laura Clark

William K. Bowes, Jr. Foundation Scholar

Motivated by the problem of microplastics in the ocean, Laura's research investigates how small, non-spherical particles are transported by waves. Her first set of experiments focused on how these particles settle in wavy flow. This work was published in 2020 in Physical Review Fluids. Currently, she is building an experiment to measure dispersion rates of these particles in wavy flows. These results will be important for effective building models of microplastic transport in the ocean. Laura is planning a career in the academy once she graduates, and in contributing to solutions to California complex water issues. She is a big fan of outdoor exploration and once paddled a kayak in a raging "once in 10 years" storm purely for the experience.

Department of Biology
Ph.D. Program

James Fahlbusch

Rhoda Goldman Memorial Scholar

James is a computer scientist turned marine biologist with a decade of field experience in some of the most remote and extreme habitats on the planet. James develops cutting-edge tag technology to understand how the world's largest whales find ephemeral food in a seemingly featureless ocean. These biologging technologies reveal fine-scale daily diaries of where and when whales feed in a deep dark ocean. James integrates this information using an array of remote sensing techniques to reveal previously unrecognized ecological patterns and behavioral responses to ocean dynamics. Such an approach is paramount for the conservation of these economically and ecologically important whale species.

Department of Earth System Science
Ph.D. Program

Caroline Alexa Famiglietti

Marion Moore Cope Scholar

Caroline's research fuses data and models to evaluate the nature of uncertainties characterizing projections of land carbon uptake in the terrestrial biosphere, whose behavior strongly influences the magnitude of future climate change. Before Stanford, Caroline graduated summa cum laude from UCLA with a B.S. in Applied Mathematics and worked as an intern in the Carbon Cycle & Ecosystems Group at NASA's Jet Propulsion Laboratory. She is the recipient of a Stanford Graduate Fellowship and a Future Investigator in NASA Earth and Space Science and Technology (FINESST) award. In her free time, Caroline enjoys running, baking, and playing guitar.

Department of Chemistry
Ph.D. Program

ANNA MAKAR-LIMANOV
ARCS Stanford Graduate Fellow

Anna is a first-year Ph.D. student interested in the synthesis of novel sustainable materials and is passionate about using chemistry to help tackle challenges facing humanity. She received her B.A. magna cum laude with distinction in Chemistry and Mathematics from Amherst College in 2020. At Amherst, she worked on metal alkoxide initiators for the ring-opening polymerization of cyclic esters. In 2018, she was a Center for Sustainable Polymers Summer Undergraduate Fellow at the University of Minnesota, Twin Cities. Outside of the lab, Anna enjoys singing in choirs, knitting, hiking, and listening to podcasts.

Department of Physics
Ph.D. Program

JEDIDIAH OLIVER THOMPSON
ARCS Foundation Scholar

Jed's interests lie at the intersection of particle physics, astrophysics, and cosmology. His research is primarily focused on discovering new ways to look for and test models of dark matter, with an emphasis on ultralight candidates such as axions and hidden photons. At the moment, his primary projects include a few different studies of how even very small self-interactions in a sector of dark matter can drastically affect its behavior and can thus have observational consequences. In his free time, he is a tour guide at the Stanford University art museums and enjoys flying small planes whenever he has the chance.

Department of Mathematics
Ph.D. Program

KEVIN YANG
ARCS Foundation Scholar

Kevin studies probability theory and statistics of random growth models with a focus on the Kardar-Parisi-Zhang equation. This equation is conjectured to universally describe the large-scale behavior of many random growth models but mathematical proof has been an elusive open problem. Kevin works to confirm this universality and has done so for a number of growth models associated to interacting particle systems. Outside of research, Kevin participates in the Directed Reading Program at Stanford to mentor undergraduates. Aside from math, he enjoys running, biking, and hiking.

University of California, Berkeley

Department of Electrical Engineering & Computer Science
Department of Environmental Science, Policy & Management
Department of Integrative Biology
Department of Mechanical Engineering
Department of Metabolic Biology
Department of Molecular & Cell Biology
Department of Nuclear Engineering
Department of Plant & Microbial Biology

Department of Mechanical Engineering
Ph.D. Program

ALANNA COONEY

Molly Hauser Scholar
Bailey & Chris Meyer Scholar

After obtaining her B.S. in Mechanical Engineering, Alanna spent four years working as a project manager and HVAC designer specializing in mission critical facilities and high-tech workplaces. She then completed her M.S. in Mechanical Engineering. Her research project in Berkeley's Energy and Multiphase Transport Laboratory involves performing experiments to characterize the performance of thermal energy storage devices or "thermal batteries. These devices capitalize on the energy stored and released during solid-liquid phase change processes. By better understanding the performance characteristics of these devices, we can create models to predict how they would function in building heating, ventilation, and air conditioning (HVAC) systems in order to utilize them to offset peak demand loads and run buildings more efficiently using model predictive controls. Outside of research, Alanna teaches a weekly ESL citizenship class for refugees, takes every opportunity to travel, and enjoys the friendly competition of her playing card league. Motivated by a passion for both research and teaching, Alanna plans to pursue a career in academia.

Department of Molecular & Cell Biology
Ph.D. Program

CYNTHIA "ABBY"HARRIS

Rhoda Goldman Memorial Scholar

Ferroptosis is an iron-dependent type of cell death that results from the accumulation of reactive lipid peroxides. Cynthia (or "Abby" to most acquaintances) is looking into elucidating the participation of copper and potentially other redox-active metals in ferroptosis, with the aim of expanding our understanding of its mechanism and allowing the development of new ways to induce ferroptic cell death in cancer and other disorders. As an undergraduate, Abby conducted research on translesion DNA synthesis, an important DNA damage tolerance process in eukaryotes, and its relationship to chemo-resistance in cancer. She additionally pursued another side of cancer research as an intern at Genentech, where she worked on identifying novel drug targets. Abby loves claymation, carnivorous plants, and anyone with a good sense of humor.

Department of Electrical Engineering & Computer Science
Ph.D. Program

LOGAN HOROWITZ

Diana & Steve Strandberg Scholar

Logan is interested in working on novel power converter design, focusing on applications in renewables integration and implementation. Commercial air travel accounts for a large proportion of pollution and wasted energy all over the world, but new technologies are emerging which have enabled hybrid aircraft. Logan's project focuses on the design optimizations required for a high-power-density, high-efficiency, high-frequency electric drivetrain. Outside of work, Logan loves wrestling, climbing, running, ping pong, camping, biking, and reading.

Department of Plant & Microbial Biology
Ph.D. Program

NICHOLAS KARAVOLIAS

Elizabeth & Clark Callander Scholar

In his pursuit of a Ph.D., Nicholas is looking at drought tolerance in cereal crops with the goal of finding discrete gene targets for genetic engineering of monocotyledonous crops for improved water use efficiency. CRISPR/Cas9 mediated editing of genes involved in stomatal development in rice can improve water-use efficiency, and fine-tuning reductions in stomatal density may reduce water requirements without concomitant reductions in photosynthesis. As global aridification and erratic rainfalls threaten the food system, improved water-use efficiency and overall photosynthetic capacity are essential to safeguard food security and farmer livelihoods. Nicholas's background as a first-generation American and college student has inspired his dedication to improving the quality of life for all global citizens

Department of Integrative Biology
Ph.D. Program

LOURENCO MARTINS

ARCS Foundation Scholar

From a young age Lourenco always knew he wanted to be a biologist, having spent his childhood chasing after the bugs in his family's backyard garden. Lourenco is interested in using genomics to explore how environmental factors, like climate, drive evolution in invertebrates. During his undergraduate career he used bioinformatics to investigate the genes that allow diurnal fireflies to attract mates through pheromones. Lourenco is also a Latinist, having earned a B.A. in Classics alongside his Neuroscience B.S. at Bucknell University. When not in the lab, he can be found hiking and backpacking, perusing local coffee shops, and fighting for equitable and inclusive representation in the scientific community.

Department of Computer Science
Ph.D. Program

REESE PATHAK
ARCS Foundation Scholar

Reese's current areas of interest include distributed and non-convex optimization problems as well as the estimation problems with deep ties to applied probability, such as matrix completion and community detection. Recently he has been working on algorithms for distributed optimization in large networks. These types of problems arise in many modern applications of statistical learning. After graduating from Stanford with a degree in Computer Science, Reese spent a summer working as a Research Associate at the Center for Computational Mathematics at the Flatiron Institute of the Simons Foundation.

Department of Nuclear Engineering
Ph.D. Program

ROBIN PETER
Ramsay Family Foundation Scholar

Robin is pursuing research at the intersection of particle physics, quantitative biology, and humanitarian application. She is currently involved in projects in medical imaging, radiation detection, and radiation therapy. Her multidisciplinary interests stem from an eclectic mix of past research endeavors: memory device simulation with IBM Research, construction of a spark chamber, and studies in cuttlefish camouflage. During her undergraduate career at the University of Chicago, she was distinguished as both an Enrico Fermi Scholar in the Physical Sciences and as the Mary Jean Mulvaney Scholar-Athlete for the Class of 2020.

Department of Environmental Science, Policy & Management
Ph.D. Program

SOPHIE RUEHR
Dolores & Mike McMullen Scholar

Sophie's graduate work is focused on the ecosystem-scale dynamics of water cycling. Using date from satellites, she studies the links between the carbon and water cycles over space and time to better understand how the terrestrial land sink may respond to climate extremes in the future. Her research has implications for both sustainable water management and predicting future climate change. In 2017, Sophie researched hurricane paleoclimatology as a Summer Student Fellow at Woods Hole Oceanographic Institution. In 2018, she received the Parker Huang Fellowship from Yale University to undertake an independent research project in Vanuatu, where she collected oral histories regarding cyclones and climate change. In her free time, Sophie enjoys playing jazz guitar, running, and learning Italian.

Department of Metabolic Biology
Ph.D. Program

RACHELLE STARK
Lakeside Foundation Scholar

Rachelle received a B.S. in Molecular, Cell and Developmental Biology from UCLA, where she utilized murine models to study the molecular mechanisms behind Duchenne muscular dystrophy, a severe muscle wasting disease. She was awarded the Dean's Prize for Excellence in Undergraduate Research for this project. Additionally, Rachelle participated in a summer research internship in Dr. Jicheng Gong's lab at Peking University in Beijing, China, where she performed experiments to detect biomarkers of recurrent lung adenocarcinoma. Rachelle enjoyed her molecular biology education but is also intrigued by the relationship between diet and disease, and therefore chose to pursue a Ph.D. in Metabolic Biology. In her free time she loves to cook, bicycle, and hike.

University of California, Davis

Agricultural & Environmental Chemistry Graduate Group
Animal Behavior Graduate Group
Department of Biomedical Engineering
Department of Civil & Environmental Engineering
Department of Earth & Planetary Sciences
Ecology Graduate Group
Integrative Pathobiology Graduate Group
Molecular, Cellular & Integrative Physiology Graduate Group
Neuroscience Graduate Group
Department of Pharmacology & Toxicology
Population Biology Graduate Group
Department of Soils & Biogeochemistry

Molecular, Cellular & Integrative Physiology Graduate Group — **ANNA ADHIKARI**
Ph.D. Program — Jill H. Kramer Scholar

Anna's research interest is in translational science –exploring the connection between science and the people it is for. She seeks to study and understand the intricacies of the central nervous system and ultimately develop novel therapeutics to reduce the burden of neurological diseases of known genetic origin. She is key personnel on large ongoing collaborative projects between the Silverman Laboratory and the Institute for Regenerative Cures to treat Angelman Syndrome. The labs are advancing a novel approach in which blood stem cells are transduced ex vivo with a lentiviral vector expressing UBE3A, which after transplantation would engraft, secrete, and deliver therapeutic UBE3A into deficient neurons via cross-correction. Functional rescue of numerous Angelman Syndrome phenotypes when the subject mice were engrafted with modified HSCs as neonates and adults has been confirmed, and the findings were accepted for publication in *Human Molecular Genetics* (Adhikari et al., 2021). Outside of lab, Anna is an avid gardener and enjoys crocheting and hiking.

Department of Pharmacology & Toxicology — **PETER ANDREW**
Ph.D. Program — Michele Goss Scholar

Peter's research interest is to better understand the processes that drive epilepsy. His current project is focused on understanding the role of neuroinflammation in acquired epilepsy following acute intoxication with organophosphate pesticides. He was awarded the 2020 Graduate Student Achievement Award by the Northern California Regional Chapter of the Society of Toxicology. Prior to UC Davis, Peter worked as a research technician at the AstraZeneca-Tufts Laboratory under Stephen Moss. When not in the lab, he enjoys biking and cooking.

Department of Biomedical Engineering
Ph.D. Program

ALENA CASELLA
Barbara A. Wolfe Scholar

Laney's broad research interests are in the development of biomaterials to promote the clinical translation of engineered tissues. She aims to provide insight into the relationship between a material's electrical and physical properties and how the interplay of these properties direct cell behavior. She is especially interested in using conductive biomaterials to promote nerve cell survival and regeneration in biologically challenging conditions. Currently, she is working to develop an electrically and mechanically tunable hydrogel platform to both direct cell behavior and provide more insight about the specific benefits of using electroactive materials for medical applications. Outside of the laboratory, Laney is involved in the Biomedical Engineering Student Association, where she has served in various leadership positions, and STEM for Girls, an outreach event that engages minority students in underserved communities.

Population Biology Graduate Group
Ph.D. Program

KATHERINE CORN
ARCS Foundation Scholar

Katherine's research integrates phylogenetic comparative methods, biomechanics, and her love of fishes to explore the macroevolutionary consequences of major ecological transitions. Suction feeding is the dominant mode of prey capture in aquatic vertebrates, but some of the 35,000 species of fishes rely on biting feeding modes, where the jaws make contact with the substrate during prey capture. Katherine's research measures the implications of transitions to biting on cranial mobility of fishes and uses the largest vertebrate body shape dataset ever produced to explore how changes in feeding mode affect the evolution of body shape. She is an award-winning speaker, having won the Wake Award for Best Student Presentation in the Division of Phylogenetics & Comparative Biology at the Society for Integrative & Comparative Biology. Outside the lab, Katherine enjoys swimming, reading, and baking pastries.

Department of Soils & Biogeochemistry
Ph.D. Program

KALYN DIEDERICH
ARCS Foundation Scholar

Kalyn's dissertation work seeks to compare above and belowground ecosystem service contributions in perennial versus annual grain cropping systems in California. Furthermore, her work strives to advance our understanding of how soil microbes drive soil carbon sequestration and provide data regarding the potential mechanisms behind soil ecosystem services. She can typically be found managing plots at her long-term field experiment, coding in R, or preparing a talk for an extension workshop or conference. When she is not in the field or lab, you can find Kalyn walking her 18-year-old dog, reading personal narratives, or cooking.

Molecular, Cellular & Integrative Physiology Graduate Group — **JUAN FLORES**
Ph.D. Program — Mary Ann Peoples Scholar

Juan's research focuses on the molecular signaling pathways that are involved in learning. His current work investigates the molecular and cellular mechanisms that regulate the ability of synaptic connections between neurons to undergo learning-induced changes. These studies will further our knowledge of the molecular mechanisms that govern learning and how we can leverage them to improve learning outcomes in disorders associated with learning deficits. It is hypothesized that saturation of plasticity is linked to the efficacy of spaced learning techniques, which have been shown to improve learning in models of neurodevelopmental disorders such as Angelman's and Down's syndromes. Outside of the lab, Juan is a dedicated father and husband and he enjoys rollerblading and playing tennis.

Agricultural & Environmental Chemistry Graduate Group — **HILARY GREEN**
Ph.D. Program — Katherine Hellman Black Endowment Fund Scholar

Hilary's research interests stem from her passions for food and the environment through the lens of analytical chemistry. Hilary's dissertation focuses on ensuring the authenticity and quality of edible oils. She has published a faster and less wasteful method to detect olive oil adulteration as well as a work evaluating the chemical composition of avocado oils on the US market. She is now working to develop a method to detect adulteration in avocado oil, quantify toxins, and support standard development for avocado oil. Hilary's research is closely connected to the food industry and consumers; thus, she is broadly interested in improving the communication of scientific research to the public. Outside of lab, Hilary enjoys using her chemistry background for baking projects. She also loves to sing, play piano, and go on road trips.

Animal Behavior Graduate Group — **CARLY HAWKINS**
Ph.D. Program — Nordstrom Stores Scholar

Carly seeks to understand how birds choose their mates in an increasingly human-dominated landscape. In socially monogamous (but sexually promiscuous) songbirds, many mating tradeoffs are rooted in vocal communication, wherein females choose their mates in part by the quality of male song. Carly uses novel bioacoustics technology to determine how individual male differences and the surrounding acoustic environment influence male mating tactics in white-crowned sparrows near Yosemite National Park—adjacent to Hwy 120, where birds must compete with traffic noise to hear each other sing. As a first-generation college student, Carly has a deep commitment to undergraduate mentorship on campus and in the field; she brings students to her field site each summer to get hands-on experience in field biology. Outside of academia, Carly loves to bake, go on hikes, and play with her sassy cat, Moop.

Department of Earth & Planetary Sciences
Ph.D. Program

MICHAEL HUH
ARCS Foundation Scholar

Michael's research interests include understanding the delivery of water and other gases during the accretion of the Earth, and the formation and composition of the Earth's earliest atmosphere. The record of this accretion and the history of magmatic degassing is preserved deep inside the Earth. Minute amounts of gases trapped in volcanic rocks erupted at the bottom of the ocean provide a window into the deep Earth. By developing new methods to efficiently extract these rare gases, combined with the latest generation of mass spectrometers, Michael is reading the record of the assembly of our planet and its early atmosphere. Michael has previously worked in the oil and gas industry and as a laboratory manager at Arizona State University where he helped build a new experimental petrology laboratory. Outside of the lab, Michael enjoys helping his young son explore and discover the world.

Ecology Graduate Group
Ph.D. Program

ALISON KE
Marcia & Max Messmer Scholar

Alison is interested in how climate and land-use change interact to structure tropical bird communities in order to understand which bird species are most vulnerable to global changes and how to conserve vulnerable species. Her career goal is to conserve wildlife to prevent extinctions in the face of imminent threats to biodiversity, such as climate change and deforestation. To reach this goal, she investigates how biodiversity can be enhanced in agricultural landscapes in the Neotropics. Alison collaborates with NGOs and other universities to conduct field research in Costa Rica, Colombia, and Ecuador. Closer to home, she created a nest box network in Davis parks to conserve local birds and serves on her graduate group's Diversity, Equity, and Inclusion Task Force. Outside of academia, Alison is an avid rock climber.

Animal Behavior Graduate Group
Ph.D. Program

CARTER LOFTUS
Marie & Barry Lipman Scholar

Carter leverages newly developed methods in computer science and computational physics to enable innovative research on the processes and outcomes of decision-making in highly-structured animal groups. Carter's research interests began as an undergraduate at Cornell University, where he studied decision-making in honey bee colonies and graduated *summa cum laude*. Currently, he is using high-resolution thermal imagery, accelerometry and 3D laser scanners to determine how baboons navigate a complex physical and social environment when deciding where to sleep at night, and how this choice impacts their sleep quality. Carter received an NSF Doctoral Dissertation Research Improvement Grant and a Coss Wildlife Research Award to fund this project. As an active member of his graduate group's Diversity Committee, Carter works passionately towards increasing diversity and inclusion in science.

Department of Biomedical Engineering
Ph.D. Program

CONARY MEYER

Agilent Technologies Scholar

Conary began pursuing bioengineering research in high school and has since engaged in numerous research projects including solar energy harvesting, exosomal drug delivery and automated DNA cloning. These efforts resulted in numerous research related awards, several papers, and a patent. Conary's current research efforts are focused on the ex vivo synthesis of membrane proteins for structural determination, drug screening, and volatile small molecule sensing. He leverages high throughput microfluidic reaction generation and machine learning to rapidly test and model the performance of cell-free protein synthesis reactions to establish methods for predictive synthesis. Outside of lab, he mentors local high schoolers, practices woodcraft, paints, and backpacks.

Department of Earth & Planetary Sciences
Ph.D. Program

TYLER SCHLIEDER

Montgomery Street Foundation Endowment Fund Scholar

Tyler's current research integrates a variety of geochemical and petrological techniques to probe the pre-eruptive thermal and physical evolution of active silicic volcanic systems including Mount St. Helens, USA and the Taupo Volcanic Center, NZ. In order to investigate these topics, he integrates multiple chronometers in volcanic crystals, including Uranium-series disequilibria and diffusion modeling of trace element concentration profiles, with compositional information recorded within crystal and melt components of erupted lavas. Prior to beginning his Ph.D. work, Tyler studied the generation of basaltic magma during his B.S. and M.S. at Oregon State University and Northern Arizona University, respectively. Outside of academia he is passionate about running, mountain biking, and music.

Integrative Pathobiology Graduate Group
Ph.D. Program

ANNICA STULL-LANE

Betty & Bruce Alberts Scholar
Susie Boeing Scholar

Annica is an MD/PhD student completing her dissertation work in the laboratory of Renée Tsolis. Her experiences span public health, global health, microbiology, immunology and emerging diseases. She came to Davis after undergraduate education at Oberlin College and an Emerging Infectious Diseases CDC Laboratory Fellowship. With a designated emphasis in translational research, Annica aims to bridge bench-to-bedside and has focused her graduate studies on better treatments for emerging multidrug-resistant Salmonella strains and SARS-CoV-2 vaccine development. Annica enjoys playing team sports and contributing to collaborative team science.

Department of Civil & Environmental Engineering
Ph.D. Program

MICAH SWANN

Carmi & Darrell Ticehurst Scholar

Prior to attending UC Davis, Micah worked as an environmental consultant in California. As a graduate student researcher, Micah has led lake field studies including hydroacoustic bathymetry surveys and physical/water quality data collection for a highly eutrophic lake. In his doctoral research, he is leading field data collection and development of three-dimensional hydrodynamic models for lakes in Northern Patagonia, Chile. These models will be used to simulate impacts of watershed development and climate change on water quality, using Lake Tahoe as a baseline comparison. He hopes his research will help guide sustainable, proactive lake management. In his free time, Micah enjoys backpacking, swing dancing, and flag trivia.

Neuroscience Graduate Group
Ph.D. Program

MAXEMILIANO VARGAS

ARCS Foundation Scholar

Max has a passion for neuropharmacology and the development of next-generation medicines. Psychedelic science really piqued his interest due to the potential these unique molecules have shown for treating mental illness. Since joining the Olson Lab, Max's research has focused on understanding the role of the serotonin 2A receptor in mediating the neural plasticity-promoting and therapeutic effects of psychedelics. He has been the recipient of several awards including an NIH Initiative for Maximizing Student Development fellowship and an NIH T32 fellowship. Outside of lab, Max enjoys hiking and backpacking in the Sierra Nevada and is an active curator of vintage watches.

Integrative Pathobiology Graduate Group
Ph.D. Program

DAVID YANG

Georgiana Ducas Endowment Fund Scholar

David's research interests lie in the integrative understanding of the intersection of cellular signaling, immune response, and metabolic changes and the role these compartments play in coordination to drive fibrotic disease. Further, he is deeply invested in translational work; much of his work has been centered on discovering potential therapeutic targets and strategies. His current research is centered on applying integrative approaches to understand the role of macrophage cells, an important immune cell type, in initiating and promoting fibrotic disease. In addition to his academic pursuits, David is a co-founder of EffectorBio, Inc., a UC Davis-based start-up company.

University of California, San Francisco

Department of Bioengineering
Department of Biomedical Sciences
Department of Biophysics
Department of Chemistry & Chemical Biology
Department of Developmental & Stem Cell Biology
Department of Microbiology & Immunology
Department of Oral Craniofacial Sciences
Department of Epidemiology & Biostatistics
Department of Pharmaceutical Science & Pharmacogenomics
Department of Physiology

Department of Pharmaceutical Science & Pharmacogenomics — **ANNAMARIE BUSTION**
Ph.D. Program — Dr. & Mrs. Bernard M. Kramer Endowment Fund Scholar

One of Annamarie's career goals is to improve drug-candidate investigations by bringing her growing expertise in pharmacomicrobiomics (the study of bacterial influence on drug disposition) to the pharmaceutical industry. In her current graduate work, Annamarie employs novel computational techniques to identify previously unknown bacterial enzymes responsible for drug metabolism in the human gut microbiome. Annamarie has received several honors during her time at UCSF, including the Dean's Apple Award for Teaching, a Predoctoral Informatics Fellowship from the PhRMA Foundation, and a UCSF Benioff Center for Microbiome Medicine Trainee Pilot Award. Outside of her scientific research, Annamarie enjoys performing and choreographing modern dance, surfing, and serving on the editorial collective of *Science for the People* magazine.

Department of Physiology — **CHRISTOPHER CARLSON**
Ph.D. Program — ARCS Foundation Scholar

Chris received a Bachelor's degree in Biochemistry with highest honors from UC San Diego. He joined the Morgan lab at UCSF with a goal to understand complex mechanisms regulating the cell cycle through a biochemical lens. At the onset of the pandemic, he undertook a coronavirus-related project to understand how SARS-CoV-2 packages and unpackages its rather large ssRNA genome. The project has yielded several unexpected results and has been the focus of Chris's studies for the last year. Outside of lab, Chris enjoys running, hiking, reading and walking around San Francisco.

Department of Bioengineering
Ph.D. Program

GAUREE CHENDKE

ARCS Foundation Scholar

Gauree is interested in applying principles of fundamental biology to design clinically relevant medical implants. Prior to joining graduate school, Gauree demonstrated expertise in using biomaterials for drug delivery and designing clinically translational devices for enhancing treatments used for Type I Diabetes. Her thesis work builds off her previous research, as she focuses on further understanding cell-material interactions, notably with the immune system. Specifically, Gauree has created an independent, niche project that explores how biomaterials can be designed to modulate the local immune microenvironment and promote tissue regeneration post transplantation of material implants.

Department of Biomedical Sciences
Ph.D. Program

CAMBRIA CHOU-FREED

Venetta & John Rohal Scholar
Shelagh & Thomas Rohlen Scholar

Cambria graduated from Brown University in 2017, where she earned a B.S. in Neurobiology. There she studied transsynaptic tracing of neural circuits in *Drosophila melanogaster*. In 2018, she moved to La Plata, Argentina on a Fulbright Research Grant to study GPCR regulation of voltage-gated calcium channel activity at the IMBICE institute. Now at UCSF, she's interested in intracellular pH dynamics during the development of zebrafish neural crest, a conserved vertebrate embryonic type of stem cell that gives rise to diverse cell types in the adult, including peripheral nerves, craniofacial cells, and melanocytes. She is also very interested in teaching and mentors Bay Area high school students through UCSF's Brain Camp.

Department of Oral Craniofacial Sciences
Ph.D. Program

JESSICA COOK

ARCS Foundation Scholar

After completing her B.S. in Biology at UCLA, Jessica began pursuing dual DDS/PhD degrees at UCSF in 2018. Her project focuses on uncovering the subpopulations of fibroblasts within the oral mucosa and deconvoluting their roles in the efficient wound healing that occurs in the oral mucosa, a project with strong translational potential that Jessica hopes to apply in her clinical work. Jessica is also a NIDCR F30 recipient and a UCSF Discovery Fellow. In her free time, she prefers to be outdoors, either rock climbing, backpacking, or just relaxing and reading a book.

Department of Epidemiology & Biostatistics
Ph.D. Program

JEAN DIGITALE

Barbara Glynn, Sheila Larsen, Judy Swanson & Anne Thorson Scholar

Jean's research focuses on improving the quality of care in hospitals for pediatric patients. There is a lack of consensus around guidelines for pediatric extubation, resulting in variation in care that may potentially harm patients. The objective of this work is to create machine learning models using a large electronic health record dataset to predict when to extubate patients and to estimate how many ventilator days could be saved if such models were used in practice. Jean has a decade of experience working at the bedside as a pediatric nurse (primarily in the pediatric intensive care unit) and has also worked as a data analyst and research manager for cluster randomized controlled trials in Zambia. She is interested in epidemiologic methods, the intersection of machine learning and causal inference, and healthcare informatics. Her outside interests include theatre, photography, and travel.

Department of Developmental & Stem Cell Biology
Ph.D. Program

NICHOLAS ELDER

Deborah E. Mann Scholar

Nick attended Davidson College for his undergraduate studies, where he completed an Honors Biology thesis optimizing an optogenetic tool for expression in the *C. elegans* nervous system. At UCSF, he has found a home in the lab of Dr. Todd McDevitt at the Gladstone Institutes. Nick's current research uses genetic engineering and human stem cell differentiation techniques to model interneuron populations, specifically V2a excitatory interneurons, at different levels of the spinal cord. This will allow us to better characterize regionalized neural populations and to produce neurons in vitro for the treatment of spinal cord injury and neurodegenerative diseases.

Department of Bioengineering
Ph.D. Program

JESSICA GAINES

Connie & Robert Lurie Scholar

Jessica conducted undergraduate research at Hope College developing computational models of single neurons and published a paper in the *Journal of Computational Neuroscience*. After graduating *summa cum laude* she worked as a controls engineer in industry. Jessica is now applying this background to study the neural mechanisms of speech motor control for her dissertation research, using computational modeling, behavioral speech experiments, and MEG imaging. She has two peer-reviewed conference proceedings papers in the International Seminars on Speech Production. She is also involved with Expanding Your Horizons, a conference for middle school girls to promote interest in science and engineering, and is training for her third marathon.

Department of Biophysics
Ph.D. Program

DOMINIC GRISINGHER

Arlene Inch Scholar

Dominic is interested in understanding how protein-protein interaction affects protein dynamics and applying this knowledge to engineering new proteins using computational methods. Dominic attended Arizona State University where he received a B.S. and a Master's in Biochemistry with a focus in Medicinal Chemistry. At ASU his lab work focused on incorporating non-canonical amino acids into computational designed proteins. During his free time, Dominic enjoys golfing, cooking, sailing, traveling, and exploring the San Francisco Bay Area.

Department of Microbiology & Immunology
Ph.D. Program

SARAH HEATER

MJ Whitehouse, MD & Michael Heffernan Scholar

Sarah has a long-standing interest in microbial genetics and molecular biology, especially with relevance to human infectious disease. She is intrigued by how fungal pathogens sense the temperature of their mammalian host and is exploring some of these understudied human pathogens during her PhD. Specifically, she is investigating mechanisms of temperature response in the fungal pathogen *Histoplasma capsulatum* with the goal of uncovering a molecular thermometer that triggers cell shape changes and virulence pathways. Additionally, on the host side, she is characterizing the pulmonary immune response associated with *Coccidioides immitis* infection, which is a major health problem in California. Sarah has always valued teaching and has been an instructor in a variety of fields, including botany, math, philosophy, and environmental education. Outside the lab, she enjoys hiking, baking, reading, traveling, and volunteering.

Department of Chemistry & Chemical Biology
Ph.D. Program

JORDAN KLEINMAN

Lisa & Derek Kirkland Scholar
Merrill Randol Scholar

Jordan received her B.S. in Chemical Biology at UC Berkeley, where she worked in the Nomura lab developing heterobifunctional small molecule degraders. Now a 3rd year in the Fujimori lab at UCSF, Jordan's research aims to tackle the problem of "undruggable" proteins from the other side of proteostasis via sequence-specific inhibition of nascent peptides at the ribosome. Enhanced understanding of this interaction will provide the foundation for a tool capable of inhibiting specific proteins on the basis of their sequence at the ribosome. Outside of lab, Jordan enjoys various opportunities for mentorship, along with serving as new student coordinator for her program's incoming first years. Her other interests include baking, hiking, kayaking, and puzzling.

Department of Chemistry & Chemical Biology
Ph.D. Program

REGAN VOLK

Jane Fuller Gillespie Memorial Scholar

Regan utilizes recent advances in proteomics to understand how the innate immune system changes in response to infection or cancer. She initially developed her interest in mass spectrometry-based techniques through her work at Pacific Northwest National Laboratory and has applied the skills to her work at UCSF. Her current project aims to characterize a protein expressed by *Borrelia* which mimics the known 'don't eat me' signal CD*47*, binding to the cognate receptor SIRPα, and preventing phagocytosis by macrophages. By further understanding this interaction, she aims to profile mimicry across other bacterial species and their implications in disease progression. Regan hopes her project can inform immunotherapeutic strategies for more effective treatments of cancer, as well as bacterial infections. Aside from research, she enjoys trying out new recipes, roller skating, and exploring the Bay Area.

Department of Biomedical Sciences
Ph.D. Program

JIAXI (JESSICA) WANG

Chris Simpson Brent & Bruce Brent Scholar
In Memory of Dorothy Lewis Simpson

Jessica has a longstanding interest in immunology, studying NK cell biology as an undergraduate at UC Berkeley where she received departmental awards in immunology and wrote an honors thesis, and doing post-graduate work with Lawrence Fong at UCSF in tumor immunity. She has coauthored publications eLife, the JCI, and JEM. Her graduate work in the Gardner lab is focused on defining the transcriptional and functional roles of Autoimmune Regulator (Aire) gene in dendritic cells. Jessica has a passion for advocating for women and underrepresented populations in science, working for the Science and Health Education Partnership on community outreach, and volunteering in the UCSF ImmunoXX symposium. Her other interests include hiking, yoga, and dance.

University of California, Santa Cruz

Department of Astronomy & Astrophysics
Department of Biomolecular Engineering
Department of Chemistry & Biochemistry
Department of Computational Media
Department of Computer Science & Engineering
Department of Earth & Planetary Sciences
Department of Ecology & Evolutionary Biology
Department of Electrical & Computer Engineering
Department of Environmental Studies
Department of Microbiology & Environmental Toxicology
Department of Molecular, Cell & Developmental Biology
Department of Ocean Sciences
Department of Physics
Department of Science Communication (Master's Program)

Department of Chemistry & Biochemistry
Ph.D. Program

DANIEL DROEGE

Nancy S. Mueller Scholar
Libby Tyree-Taylor & Barry Taylor Scholar

After graduating from UC Irvine, but before beginning his doctoral studies, Daniel worked for three years as a medicinal chemist at the Institute for Neurodegenerative Diseases based at UC San Francisco. There he gained invaluable experience in synthetic organic chemistry while working on brain-penetrating drug candidates targeting prion-related disorders (e.g., Alzheimer's disease). At UC Santa Cruz, he is expanding his expertise to include bioinorganic chemistry. His doctoral work is focused on designing and synthesizing iron-porphyrin complexes and evaluating their ability to function as antidotes for carbon monoxide poisoning.

Department of Electrical & Computer Engineering
Ph.D. Program

NEIL HARDY

Agilent Technologies Scholar

Neil is developing state-of-art brain-machine interface technologies that can help people suffering from neurodegenerative and neuropathic diseases. He has recently developed optical (wireless) bioelectric probes and demonstrated unprecedented high-throughput and subcellular resolutions sensing for electrophysiological activity of cells. He has received numerous awards including the Regents Fellowship and the Chancellor's Fellowship from UCSC. In addition to being an accomplished researcher, Neil has consistently received excellent reviews as a teacher and tutor in both physics and electrical engineering. Outside of academics, Neil enjoys climbing, surfing, and foraging.

Department of Statistics
Ph.D. Program

ZACHARY HORTON
ARCS Foundation Scholar

Zach's research interests include Bayesian nonparametrics, renewal process modeling, and functional data analysis. Currently he is working on developing a fully nonparametric model for inhomogeneous renewal processes, with applications in seismology and linguistics. He has received various academic honors (both graduate and undergraduate), including merit-based scholarships and graduating *magna cum laude*. His work experience includes an actuarial consulting internship, several years of teaching assistantships, and a part-time research position in an investment firm. Zach enjoys exploring hi-fi audio and spending time with his wife and daughter.

Department of Ecology & Evolutionary Biology
Ph.D. Program

JESSICA KENDALL-BAR
Wildcat Cove Foundation Scholar

Jessica is studying marine mammal neurophysiology. Her dissertation research explores new techniques for monitoring sleep in wild marine mammals. Previous electroencephalogram (EEG) studies revealing the unique sleep patterns of marine mammals relied on invasive methods and captive animals with restricted mobility. Jessica's study establishes and validates the use of non-invasive EEG techniques, like those used in human sleep studies, to record sleep in free-ranging, wild marine mammals for the first time. Jessica is also a freelance artist and science communication strategist who creates data visualization animations, children's book illustrations, underwater photography, and cinematography to accurately portray science and its role in preserving underwater ecosystems. At the interface of science and art, Jessica endeavors not only to make meaningful discoveries, but also to convey those results broadly and creatively to impact diverse populations within and outside of academia.

Department of Environmental Studies
Ph.D. Program

JUSTIN LUONG
Joan Diehl McCauley Endowment Fund Scholar

Justin studies the interactive effects of land management and extreme drought on ecosystems to generate data-driven solutions for restoration and conservation. His dissertation focuses on the responses of plant communities to extreme drought and long-term restoration success. Justin is passionate about mentoring diverse students in STEM fields. He has done so by independently running an undergraduate grassland ecology internship program since 2018. Through these efforts, Justin has helped four undergraduates obtain research scholarships for their senior theses, and has supervised about 120 undergraduate internships. When he is not identifying grasses and wildflowers for research, he enjoys searching for rare plants and the perfect sunset.

Department of Biomolecular Engineering
Ph.D. Program

JAKOB MCBROOME

Devlin Family Endowment Fund Scholar

Jakob is focused on studying the evolution of chromatin interactions and nuclear structure, including the effects thereof on the evolution of transcriptional regulation and other elements of the genome. His work in this interdisciplinary field effectively requires expertise in both evolutionary genomics and chromatin biology. As a result of his scholastic and research performance in his first year, he was awarded a position on the Department's NHGRI T32 Training Grant. In addition to his thesis work, he made impressive contributions to ongoing work in SAR-CoV-2 genomics. Jakob is clearly very committed to his own projects as well as advising and assisting others, and has displayed all of the components of a successful researcher.

Science Communication
Master's Program

BRITTNEY MILLER

ARCS Foundation Scholar

Brittney is a graduate of the University of Florida's Class of 2021, where she received Bachelor's degrees in Biology and Journalism. There, she worked in both research labs and newsrooms – a background that cultivated her rich passion for communicating science. Her environmental articles have been published in more than 65 publications nationwide, including the Associated Press and the *San Francisco Chronicle*. Upon graduation, she received the Outstanding Journalism Scholar award from the UF College of Journalism and Communications and a 2021-22 Taylor/Blakeslee Fellowship from the Council for the Advancement of Science Writing. When she's not reading or writing, Brittney enjoys cooking, photography and spending time outdoors.

Department of Ocean Sciences
Ph.D. Program

JOSEPH ("JB") NOVAK

Linda Dyer Millard Scholar

Joseph measures molecular fossils to study relationships between climate, vegetation, and fire regime in Siberia. The goal of his research is to use this fossil data to predict how climate change will alter northern ecosystems and fire activity. Originally from Raleigh, NC, JB entered college skeptical of climate change. An introductory undergrad course led him to understand the real threat climate change poses to the planet, and JB is committed to using his research to improve our predictions of, and preparation for, the climate impacts from global warming. He is an outstanding student, with exceptional research preparation including two co-authored publications and one first-author publication. JB uses his studies in Geology, Biology, and Russian to research how climate dictated ecosystem composition and fire activity in Siberia during warm periods of Earth's past.

Science Communication
Master's Program

McKenzie Prillaman
ARCS Foundation Scholar

McKenzie is interested in writing about neuroscience, bioethics, and science-art. Prior to her graduate studies, she worked at the Dialogue on Science, Ethics, and Religion program of the American Association for the Advancement of Science and was the volunteer blog editor for Art the Science. She also has an extensive background in scientific research, having studied adolescent nicotine dependence as a post-baccalaureate fellow at the National Institute on Drug Abuse. She holds a B.A. in Neuroscience and a minor in Bioethics from the University of Virginia.

Department of Astronomy & Astrophysics
Ph.D. Program

Amanda Quirk
Wreyford Foundation Scholar

Amanda is interested in the dynamics and evolutionary history of disk galaxies. She is currently leading studies of the Triangulum Galaxy using the largest spectroscopic data set obtained with the Keck telescope and DEIMOS spectrograph. She has been awarded an NSF GRFP Fellowship and the Department's Whitford Prize for this work. She is also dedicated to teaching and has participated in several education certificate programs, including being chosen as a Graduate Pedagogy Fellow. In addition to teaching on campus, Amanda is the co-director of the Project for Inmate Education program. In teaching and outreach, her focus is on increasing accessibility for students.

Department of Computational Media
Ph.D. Program

Veronica Rivera
NVIDIA Scholar

Veronica's research focuses on improving the well-being of platform-based gig workers by taking into account the goals and needs of workers. Her work has been published in ACM CSCW. Veronica is also passionate about supporting undergraduate computer science education for underrepresented groups. She has worked to increase access to research opportunities for these groups within her department and has mentored 12 students in research herself. Veronica has received various honors including the UCSC Chancellor's Graduate Internship, two CRA travel scholarships, and a Regent's fellowship. She holds a B.S in Joint Computer Science and Math from Harvey Mudd College.

Department of Ecology & Evolutionary Biology — **REGINA SPRANGER**
Ph.D. Program — Eileen D. & Lisa C. Ludwig Endowment Fund Scholar

Regina studies how organisms' physiology interacts with the abiotic conditions in the environment. Her dissertation focuses on the acclimation potential of salamander physiology and how that affects their climate change risk. A large part of her research requires raising animals in laboratory settings, and she has created an inclusive program to mentor dozens of undergraduate research assistants. The outcome of her thesis will be a more accurate extinction risk model for amphibians that can be applied broadly as well as to specific conservation projects, and she has already started working with two local endangered amphibians to implement these models.

Department of Physics — **CLAYTON STRAWN**
Ph.D. Program — ARCS Foundation Scholar

Clayton is conducting research on the circumgalactic medium, the gas surrounding galaxies out to and beyond the virial radius of the galaxies' host halos. He recently studied physically motivated definitions of the processes of collisional versus photon ionization of the medium, and the agreement between simulations and observations of the boundary layer between inflowing material streams and the surrounding outflowing hot low-density gas. Clayton is also working on a comparison between high-resolution galaxy simulations using different simulation codes with the same initial conditions. He has been involved in research in astrophysics, published several papers already, and also has a keen interest in theoretical physics. Clayton mentored two high school students in summers 2018, 2019, and (remotely, because of Covid) 2020, as part of UCSC's Science Internship Program. He is also active in local affairs and is a founding member of the housing nonprofit Coastal Commons Land Trust, the first Community Land Trust in Santa Cruz County.

Department of Molecular, Cell & Developmental Biology — **JEREMIAH TSYPORIN**
Ph.D. Program — Edina Jennison Scholar

Over the past four years Jeremiah has made contributions to the study of brain cancer and neural stem cells. Currently, he is working on understanding the molecular and environmental cues that regulate the precise generation of the diverse cell types comprising the mammalian cerebral cortex, the region of the brain responsible for cognition and perception. In addition to research, Jeremiah has mentored seven undergraduate and four high school students in the lab and has been a TA for a broad range of topics in MCD biology. He also organizes monthly neuroscience seminars featuring Postdocs and graduate students from around the Bay Area.

Department of Earth & Planetary Sciences
Ph.D. Program

MADISON WOOD

Laine Buckingham, Karin Chamberlain,
Niantic Charitable Trust Scholar

Maddie was introduced to paleoclimatology and geochemistry as an undergraduate while studying global climate change during a Fulbright UK Summer Institute. Maddie's research is motivated by her interest in the climate system; she uses geochemical signatures of seawater chemistry preserved in marine sediments to reconstruct past changes in the carbon cycle. Her current work uses marine barite to reconstruct the stable strontium isotope composition of seawater over glacial/interglacial cycles to determine whether high frequency fluctuations in the marine carbonate system are recorded. Outside of the lab, Maddie's dedication to outreach and mentoring is illustrated by her time spent developing effective, inclusive teaching practices and serving as a peer mentor.

Department of Microbiology & Environmental Toxicology
Ph.D. Program

CHRISTINA YANG

Shirley Freund Memorial Scholar

Christina's research project has been to understand how *Helicobacter pylori* infection leads to disease, focusing on the bacterium's ability to use quorum sensing as a way to modulate its numbers and, in turn, inflammation. She has published a first author review on bacterial abilities needed for growth in particular host niches, and a co-authored paper on metabolites *H. pylori* uses during infections. Christina is passionate about educational equity. This interest started during her undergraduate years working as a tutor, and continued in graduate school to mentoring undergrads from groups underrepresented in STEM. In METX, she served as the graduate student liaison to the faculty, helping to communicate difficult realities to the faculty and promote a better working environment for all grad students.

Galileo Circle Members

(as of 6/30/2021)

The Galileo Circle was established in 2003 to honor those donors whose cumulative contributions to ARCS Foundation Northern California Chapter equal or exceed $50,000. ARCS Foundation NCC is profoundly grateful for the generosity of these individuals, corporations, and foundations.

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$50,000 to $99,999

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Diane B. Wilsey

ARCS Foundation, Inc.
2020-2021 Donors

(gifts received between 7/1/2020 and 6/30/2021)

Scholar Awards Fund

Summa Cum Laude
($50,000-$99,999)

Marion Cope
Dagmar Dolby
The Kimball Foundation/Gretchen Kimball
Arthur Rock and Toni Rembe Rock

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Ramsay Family Foundation
Barbara A. Wolfe

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($2,500–$4,999)

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Pat Calarco and Michael Isaacson
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Jerry DiVecchio
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John Fogelsong
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Paulette and Dr. David Kessler
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Barbara Glynn
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Sherry Lundeen
Linda Millard
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Joan Foley
Jane Gardner
Cynthia Haueter
Janet Huston
Joachim Herz Stiftung SAG
Eve Masonek
Kathleen Rydar
Barbara A. Wolfe

In Memory Of

Clarissa Dyer
Ann Getty
Doug Kramlich
James & Eileen Ludwig
Mary Ann Mason
Patricia Pope
George Shultz
Sister Mary Joseph of the Trinity OCD (Ann Russell Miller)

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Sponsors

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$25,000
Marion Cope

$10,000
Deborah Mann

$5,000
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Scholar Speakers

Hersh Bhargava, UCSF
Jan Mikhale Cajulao, San Francisco State University
Margaret Coad, Stanford University
Richard Grewelle, Stanford University
Jerry Lin, UC Davis
Amelia Munson, UC Davis
Thi Nguyen, UC Davis
Sophie Ruehr, UC Berkeley
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Our Thanks to Those Who Also Helped ARCS During the 2020-2021 Year:

Lee Dickinson of Advanced Visual Production
Deborah Greenwood and Leanne Reiter of the ARCS office
MCmarket by McCall's
Novogradac & Company
Andy Peay and Peay Vineyards
Martie Bateson Sautter/Sautter Graphics & Print

Emeritae Members

Thank you to our Emeritae Members
for over thirty years of dedication to ARCS.
We are honored by your commitment and generous contributions over the years.

Emeritae Members (30+ Years)

(as of 12/2021)

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Susan Andrews
Donna Miller Casey
Cynthia Coolidge
Marion Cope
Gretchen de Baubigny
Dagmar Dolby
Joan Edwards
Doris Fisher
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Bailey Meyer
Linda Dyer Millard
Ellen Magnin Newman
Ada Regan
Adrianna Pope Sullivan
Judy Swanson
Katharine Thompson
Laura Waste
Beverly Willis
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ARCS Foundation, Inc.
Northern California Chapter
Founded October 22, 1970

Founders

Phyllis De Young Tucker+
Ann Russell Miller+
Ji Ing Soong+

Past Presidents

1970–1974 Ann Russell Miller+
1974–1976 Joan Cochran+
1976–1978 Jane H. Otto+
1978–1980 Diana Knowles+
1980–1982 Ji Ing Soong+
1982–1984 Penny Devlin+
1984–1986 Gail Glasser
1986–1988 Shirley C. Freund+
1988–1990 Eileen Ludwig+
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1992–1994 Susan Boeing
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1996–1998 Elizabeth Davis Devlin
1998–2000 Donna Miller Casey
2000–2002 Mary Beth Starzel
2002–2004 Linda Millard
2004–2006 Molly Hauser
2006–2008 Sheila Larsen
2008–2010 Vickie Johnston
2010–2012 Cynthia W. Haueter
2012–2013 Donna Miller Casey & Sheila Larsen
2013–2014 Roulhac Austin & Donna Miller Casey
2014–2015 Roulhac Austin
2015–2017 Susan Mooradian
2017–2019 Chris Simpson Brent
2019–2020 Chris Simpson Brent & MJ Whitehouse, MD
2020–2021 MJ Whitehouse, MD

+ Deceased

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ARCS Foundation, Inc.

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(as of 12/2021)

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Elizabeth Adams
Betty Alberts
Susan Andrews
Pat Applegate
Roulhac Austin
Janet Berry
Allison Bhusri
Genny Biggs
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Noelle Filippenko
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Michele Goss
Cynthia Haueter
Molly Hauser
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Blair Heath
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Carol Henwood
Tina Bartlett Hinckley
Susie Hoganson
Fifi Holbrook
Stacy Holland
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Katy Hope
Melanie Horn
Heidi Huchberger
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Kira Kramlich
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Deborah Mann
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Beverly Willis
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Anne Zerbst

ARCS Foundation Endowment Fund

The Northern California Chapter Endowment was established in 1987 with $10,000 to initiate provision for a perpetual source of funds for science scholarships. Subsequent gifts have substantially increased the corpus of the Endowment. There are two types of Endowment assets: (1) permanently restricted per donor instructions, and (2) as designated by the ARCS Foundation Northern California Chapter Board from large, unspecified donations and excess funds raised.

The Endowment offers an excellent vehicle for memorial funds and planned giving. The ARCS Foundation NCC Endowment Fund provides for establishment of named funds. Named funds established and fully funded to date are as follows:

- Katherine Hellman Black Fund
- Devlin Family Fund
- Georgiana Ducas Charitable Trust
- Dr. and Mrs. Bernard Kramer Fund
- Robert Lansdon Trust Fund
- Eileen D. and Lisa C. Ludwig Fund
- Jack Lund Fund
- Joan Diehl McCauley Fund
- Montgomery Street Foundation Fund
- Nordstrom Fund
- Ji Ing Soong Fund

In addition, the following named funds have been established by Barbara Wolfe and are in the process of being funded:

- Linda Dyer Millard Fund
- Barbara A. Wolfe Fund

If you would like more information regarding the ARCS Foundation Endowment, please call the ARCS office at 415-561-6537.

NOVOGRADAC & COMPANY LLP®

Independent Accountants' Compilation Report

To the Board of Directors of

Achievement Rewards for College Scientists Foundation, Inc.
Northern California Chapter:

Management is responsible for the accompanying financial statements of Achievement Rewards for College Scientists Foundation, Inc., Northern California Chapter, (a nonprofit organization), which comprise the statement of financial position as of June 30, 2021, and the related statements of activities, functional expenses, and cash flows for the year then ended, and the related notes to the financial statements in accordance with accounting principles generally accepted in the United States of America. We have performed a compilation engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. We did not audit or review the financial statements nor were we required to perform any procedures to verify the accuracy or completeness of the information provided by management. We do not express an opinion, a conclusion, nor provide any assurance on these financial statements.

Novogradac & Company LLP

Walnut Creek, California
October 19, 2021

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
STATEMENT OF FINANCIAL POSITION
June 30, 2021

	Net Assets without Donor Restrictions	Net Assets with Donor Restrictions	Total
ASSETS			
Cash and cash equivalents	$ 180,611	$ -	$ 180,611
Contributions receivable	33,889	-	33,889
Investments, at fair value	5,130,290	-	5,130,290
Beneficial interest in assets held by CIBC Private Wealth Management	-	4,344,503	4,344,503
Prepaid expenses and deposits	515	-	515
Total assets	$ 5,345,305	$ 4,344,503	$ 9,689,808
LIABILITIES			
Advance payments	$ 2,719	$ -	$ 2,719
Total liabilities	2,719	-	2,719
NET ASSETS			
Without donor restrictions	212,296	-	212,296
Board designated	5,130,290	-	5,130,290
Endowment fund	-	4,344,503	4,344,503
Total net assets	5,342,586	4,344,503	9,687,089
Total liabilities and net assets	$ 5,345,305	$ 4,344,503	$ 9,689,808

see accompanying notes and accountants' compilation report

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
STATEMENT OF ACTIVITIES
FOR THE YEAR ENDED JUNE 30, 2021

	Net Assets without Donor Restrictions	Net Assets with Donor Restrictions	Total
SUPPORT AND REVENUE			
Grants and contributions	$ 842,208	$ 372,231	$ 1,214,439
Membership dues and fees	51,850	-	51,850
Scholar awards luncheon	151,153	-	151,153
Field trips and other events	4,540	-	4,540
Investment income, net	1,040,926	-	1,040,926
Appreciation of endowment funds	-	744,176	744,176
Net return on assets held by CIBC Private Wealth Management	-	61,517	61,517
Interest	858	-	858
Amounts appropriated for expenditure	101,584	(101,584)	-
Total support and revenue	2,193,119	1,076,340	3,269,459
EXPENSES			
Program services			
Scholar awards	1,032,800	-	1,032,800
Other program services	12,557	-	12,557
Supporting services			
Management and general	173,976	-	173,976
Fundraising	34,698	-	34,698
Total expenses	1,254,031	-	1,254,031
INCREASE IN NET ASSETS	939,088	1,076,340	2,015,428
NET ASSETS			
Beginning of the year	4,403,498	3,268,163	7,671,661
End of the year	$ 5,342,586	$ 4,344,503	$ 9,687,089

see accompanying notes and accountants' compilation report

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
STATEMENT OF FUNCTIONAL EXPENSES
FOR THE YEAR ENDED JUNE 30, 2021

	Program Services	Supporting Services: Management and General	Supporting Services: Fundraising	Total Expenses
Expenses				
Grants and other assistance	$ 1,037,398	$ -	$ -	$ 1,037,398
Salaries and wages	-	81,943	-	81,943
Accounting and legal	-	8,500	-	8,500
Office expenses	-	11,582	-	11,582
Occupancy	-	12,690	-	12,690
Insurance	-	2,461	-	2,461
Member events	-	8,242	-	8,242
Member communications	7,959	44,040	-	51,999
Community outreach	-	-	34,698	34,698
Miscellaneous	-	4,518	-	4,518
Total expenses	$ 1,045,357	$ 173,976	$ 34,698	$ 1,254,031

see accompanying notes and accountants' compilation report

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED JUNE 30, 2021

CASH FLOWS FROM OPERATING ACTIVITIES:	
Increase in net assets	$ 2,015,428
Adjustments to reconcile increase in net assets to net cash provided by operating activities:	
Net realized and unrealized gains	(1,846,619)
Increase in contributions receivable	(3,889)
Decrease in advance payments	(49,931)
Net cash provided by operating activities	114,989
CASH FLOWS FROM INVESTING ACTIVITIES:	
Purchases of investments	(372,231)
Withdrawal of investments	125,916
Withdrawal of beneficial interest in assets held by CIBC Private Wealth Management	101,584
Net cash used in investing activities	(144,731)
NET DECREASE IN CASH AND CASH EQUIVALENTS	(29,742)
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	210,353
CASH AND CASH EQUIVALENTS AT END OF YEAR	$ 180,611

see accompanying notes and accountants' compilation report
5

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS
FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
NOTES TO FINANCIAL STATEMENTS
June 30, 2021

1. Organization

Achievement Rewards for College Scientists Foundation, Inc., Northern California Chapter (the "Organization") was formed in October 1971 and incorporated in November 1973 for the purpose of funding science scholarships for students of high achievement at Northern California universities.

2. Summary of significant accounting policies and nature of operations

Basis of accounting
The Organization prepares its financial statements on the accrual basis of accounting consistent with accounting principles generally accepted in the United States of America.

Basis of presentation
The Organization is required to report information regarding its financial position and activities according to the following net asset classifications:

Net assets without donor restrictions: Net assets that are not subject to donor-imposed restrictions and may be expended for any purpose in performing the primary objectives of the Organization. These net assets may be used at the discretion of the Organization's management and the board of directors.

Net assets with donor restrictions: Net assets subject to stipulations imposed by donors and grantors. Some donor restrictions are temporary in nature, which will be met by actions of the Organization or by the passage of time. Other donor restrictions are perpetual in nature, whereby the donor has stipulated the funds be maintained in perpetuity.

Donor-restricted contributions are reported as increases in net assets with donor restrictions. When a restriction expires, net assets are reclassified from net assets with donor restrictions to net assets without donor restrictions in the statement of activities.

Estimates
The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Cash and cash equivalents
Cash and cash equivalents include all cash balances on deposit with financial institutions and highly liquid investments with a maturity of three months or less at the date of acquisition.

Concentration of credit risk
The Organization maintains its cash in bank deposit accounts, which, at times, may exceed federally insured limits. The Organization has not experienced any losses in such accounts. The Organization believes it is not exposed to any significant credit risk on cash and cash equivalents.

ACHIEVEMENT REWARDS FOR COLLEGE SCIENTISTS
FOUNDATION, INC.
NORTHERN CALIFORNIA CHAPTER
NOTES TO FINANCIAL STATEMENTS
June 30, 2021

2. Summary of significant accounting policies and nature of operations (continued)

Contributions and accounts receivable

Contributions received are recorded as net assets without donor restrictions or net assets with donor restrictions, depending on the existence and/or nature of any donor-imposed restrictions. Contributions that are restricted by the donor are reported as an increase in net assets without donor restrictions if the restriction expires in the reporting period in which the contribution is recognized. All other donor-restricted contributions are reported as an increase in net assets with donor restrictions, depending on the nature of restriction. When a restriction expires (that is, when a stipulated time restriction ends or purpose restriction is accomplished), net assets with donor restrictions are reclassified to net assets without donor restrictions and reported in the statements of activities as net assets released from restrictions.

Unconditional promises to give that are expected to be collected within one year are recorded at net realizable value. Unconditional promises to give that are expected to be collected in future years are recorded at the present value of their estimated future cash flows. The discounts on those amounts are computed using risk-adjusted interest rates applicable to the years in which the promises are received. Discount amortization is included in contribution revenue. Conditional promises to give are not included as support until the conditions are met.

As of June 30, 2021, the Organization's contributions receivable consisted of unconditional promises to give in the amount of $33,889.

Management considers receivables to be fully collectible. If amounts become uncollectible, they are charged to operations in the period in which that determination is made. Accounting principles generally accepted in the United States of America require that the allowance method be used to recognize bad debts; however, the effect of using the direct write-off method is not materially different from the results that would have been obtained under the allowance method.

Investments

Investments in marketable securities with readily determinable fair values and all investments in debt securities are reported at their fair values in the accompanying statement of financial position. Realized and unrealized gains and losses are included as a component of net investment income on the accompanying statement of activities.

Transfers of assets to a recipient organization

The Organization will occasionally transfer assets to a recipient organization. When the Organization specifies itself or its affiliate as the beneficiary, the Organization reports the transfer as a decrease in the asset transferred and an increase in another asset.

Endowment funds

In August 2008, Financial Accounting Standards Board ("FASB") provided guidance on the net asset classification of donor-restricted endowment funds for a not-for-profit organization that is subject to an enacted version of the Uniform Prudent Management of Institutional Funds Act of 2006 ("UPMIFA"). This guidance also improves disclosures about an organization's endowed funds (both donor-restricted endowment funds and board-designated endowment funds) whether or not the organization is subject to UPMIFA.

2. Summary of significant accounting policies and nature of operations (continued)

Endowment funds (continued)
The Organization is subject to the required disclosures in that the Organization classifies its unrealized gains and losses on donor-restricted endowed funds as net assets with donor restrictions. As of June 30, 2021, no fund balances were below the historical gift amount. The Organization is subject to additional disclosures regarding endowment funds, which are further detailed in Note 6.

Income taxes
The Organization is exempt from federal income taxes under Internal Revenue Code Section 501(c)(3) and from California income and franchise taxes under Revenue and Taxation Code Section 23701(d). It has also been determined by the Internal Revenue Service that the Organization is not a private foundation within the meaning of Internal Revenue Code Section 509(a).

The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires the Organization to report information regarding its exposure to various tax positions taken by the Organization. Management has determined whether any tax positions have met the recognition threshold and has measured the Organization's exposure to those tax positions. Management believes that the Organization has adequately addressed all relevant tax positions and that there are no unrecorded tax liabilities. Federal and state tax authorities generally have the right to examine and audit the previous three years of tax returns filed. Any interest or penalties assessed to the Organization are recorded in operating expenses. No interest or penalties from federal or state tax authorities were recorded in the accompanying financial statements.

Revenue recognition
Membership dues are deferred and recognized in the appropriate membership year. Special even ticket sales are deferred and recognized when the event takes place.

Functional expenses
The costs of providing program services and other activities have been summarized on a functional basis in the statement of activities. Accordingly, certain costs have been allocated among program services, administrative and support, and fundraising services benefited. Such allocations are determined by management on an equitable basis.

Subsequent events
Subsequent events have been evaluated through October 19, 2021, which is the date the financial statements were available to be issued, and there are no subsequent events requiring disclosure.

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3. Liquidity and availability of financial assets

The Organization's financial assets available for general expenditure, that is, without donor restrictions limiting their use, within one year of the statement of financial position date, comprise the following:

Cash and cash equivalents	$	180,611
Contributions receivable		33,889
Investments, at fair value		5,130,290
Total	$	5,344,790

The Organization regularly monitors liquidity required to meet its operating needs and other contractual commitments, while also striving to maximize the investment of its available funds. Additionally, the Organization operates with a balanced budget and anticipates generating sufficient revenue to cover general expenditures.

4. Investments

Investments are comprised of the following as of June 30, 2021:

Money market funds	$	92,584
Fixed income		1,121,614
Equities		2,760,277
Bond funds		140,072
Equity funds		898,555
Exchange traded funds		90,984
Other assets		26,204
Total	$	5,130,290

The following schedule summarizes the investment return and its classification in the statement of activities for the year ended June 30, 2021:

Interest and dividends	$	86,421
Fees		(27,097)
Net realized/unrealized gain		981,602
Total	$	1,040,926

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5. Beneficial interest in assets held by others

In 2008, the Organization transferred assets to the San Francisco Foundation (the "Foundation") as part of an agency endowment agreement. Under the terms of the agreement, the Organization and the Foundation established the ARCS Endowment Fund (the "Fund") on the books of the Foundation, to be used for the support of charitable, scientific, or educational purposes of the Organization. The agreement was subject to the Foundation's power to modify any restriction or condition on the distribution of funds for any specified charitable purposes or to specified organizations if, in the sole judgment of the Foundation (without the necessity of the approval of any other party), such restriction or condition becomes, in effect, unnecessary, incapable of fulfillment, or inconsistent with the charitable needs of the community or area served. Distributions from the Fund were made to the Organization as determined by the Foundation.

In 2017, the beneficial interest in the Foundation was transferred to CIBC Private Wealth Management, formerly known as Atlantic Trust Private Wealth Management (the "Trust"). The market value of the assets transferred to the Fund as of June 30, 2021 was $4,344,503. During the year ended June 30, 2021, the Organization distributed a total of $101,584 from the Fund. The return on the assets for the year ended June 30, 2021 was a net gain in the amount of $805,693, which is comprised of unrealized gain of $744,176, dividends of $82,114, and fees of $20,597.

6. Endowments

The Organization's endowment, established in 1988, exists in perpetuity to produce income to supplement current fundraising for the Organization's annual scholar awards. Its endowment includes both donor-restricted endowment funds and funds designated by the Board of Directors to function as endowments. As required by accounting principles generally accepted in the United States of America, net assets associated with endowment funds, including funds designated by the Board of Directors to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions.

The Organization has adopted investment and spending policies for endowment assets that attempt to provide a predictable stream of income to supplement fundraising for scholar awards as needed. Endowment assets include those assets of donor-restricted funds that the organization must hold in perpetuity as well as board-designated funds. Under this policy, as approved by the Board of Directors, the endowment assets are invested in a manner that is intended to produce results that meet or exceed the performance results of the S&P 500 index while assuming a moderate level of investment risk. The Organization expects its endowment funds, over time, to yield an average rate of return of approximately 5-10%. Actual returns in any given year may vary from this amount.

To satisfy its long-term performance objectives, the Organization utilizes a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The Organization targets a diversified asset allocation that places an emphasis on equities and fixed income investments to achieve its long-term return objectives within prudent risk constraints.

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6. Endowments (continued)

The Organization maintains a policy of appropriating no more than a 5% annual distribution of its endowment fund's average fair value over the prior 12 quarters. In establishing this policy, the Organization considered the long-term expected return on its endowment and expects the current spending policy will maintain the corpus of the endowment assets held in perpetuity as well as provide additional growth through new gifts and investment return.

As of June 30, 2021, endowment net assets consisted of the following:

	Without donor restrictions	With donor restrictions	Total
Donor-restricted endowments	$ -	$ 4,344,503	$ 4,344,503
Board-designated endowments	5,130,290	-	5,130,290
Total	$ 5,130,290	$ 4,344,503	$ 9,474,793

Changes in endowment net assets for the year ended June 30, 2021.

	Without donor restrictions	With donor restrictions	Total
Endowment net assets, beginning of year	$ 4,215,280	$ 3,268,163	$ 7,483,443
Net investment return	1,040,926	805,693	1,846,619
Contributions	-	372,231	372,231
Withdrawals	(125,916)	-	(125,916)
Amounts appropriated for expenditure	-	(101,584)	(101,584)
Total	$ 5,130,290	$ 4,344,503	$ 9,474,793

7. Contingencies

The severity of the impact of a novel strain of coronavirus ("COVID-19") on the Organization's operations will depend on a number of factors, including, but not limited to, the duration and severity of the pandemic and the extent and severity of the impact on the Organization's employees and donors, all of which are uncertain and cannot be predicted. The Organization's future results could be adversely impacted by delays in collections. Management is unable to predict with absolute certainty the impact of COVID-19 on its financial condition, results of operations, or cash flows.