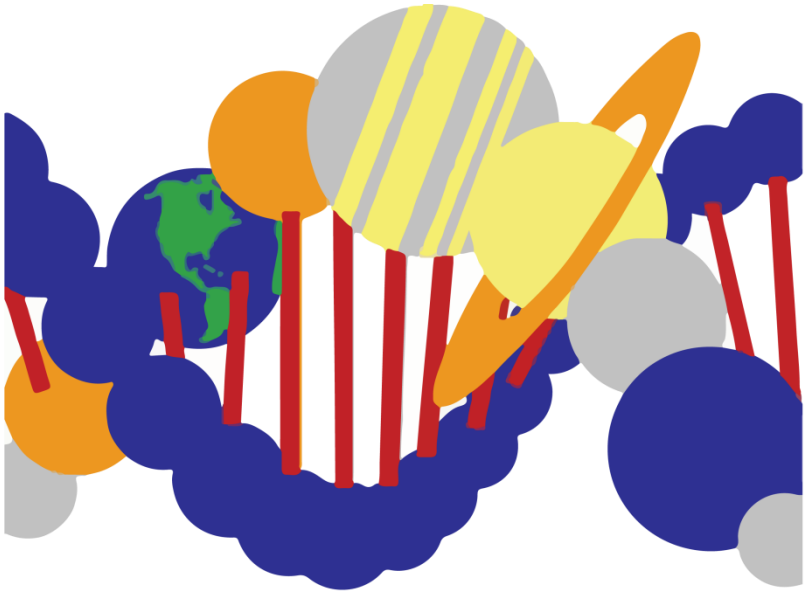
NASA Space Life Sciences Training Program 2015



SPACE LIFE SCIENCES
TRAINING PROGRAM

Profile Book
Ames Research Center
Moffett Field, CA

NASA Space Life Sciences Training Program 2015 Profiles

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NASA Space Life Sciences Training Program

Introduction

The NASA Ames Space Life Sciences Training Program is a unique summer institute of higher learning. The objective is to produce technically skilled scientists and engineers with the potential to become leaders in the U.S. space program by providing a glimpse into the many disciplines that are required to conduct biological research in space. The success of the Space Life Sciences Training Program is a result of the interaction of government, academia, and the private sector with each sector playing an essential and different role in the program.

NASA's charter, written in the 1958 Space Act, gives NASA the main role of using and exploring space for the betterment of humankind. Congress and the President have supported and directed NASA as its programs have evolved. President John F. Kennedy's challenged the country and the agency to put a man on the Moon by the end of the 60's. Neil Armstrong's first steps on the moon proved that the US and NASA were up to the challenge. Since Apollo, the Skylab missions, the Space Shuttle, and now the International Space Station have shown that humans can continually live in space and travel to and from space on a frequent basis. Unmanned satellites such as Kepler, Hubble, and Galileo have expanded our understanding of the universe. Aeronautics research is a continuing endeavor, producing technologies that allow aircraft to fly faster, farther, more efficiently, and more quietly.

As part of the human exploration mission, NASA conducts biological research. NASA studies how traveling into space affects humans and other living organisms. Astronauts experience bone and muscle loss, as well as a range of other physiological changes. Mice and rats exhibit similar changes, while bacteria become more virulent. Plants grow differently because of the absence of gravity. Researchers throughout NASA are studying life in space, defining ways to make space travel safer for astronauts, and the fundamental mechanisms that trigger the changes in living organisms. Biotechnology research is also important to NASA. The agency looks at bioengineering organisms to perform critical functions on a space mission, such as life support and food production. Recent advances in biotechnology are giving researchers insight into how genomic data is different for life in space.

The NASA Ames Research Center

NASA Ames Research Center (ARC) is located at Moffett Field, CA in the heart of Silicon Valley. It offers new insights about the universe, planetary systems, and the life sciences. Technologies developed at NASA Ames enable exciting new ventures in aeronautics and space exploration and have impacted quotidian life on Earth. The results from research at Ames have significantly influenced national and international policy, enabled most of the major space missions of the past thirty years, and contributed science discoveries and engineering insights that have revolutionized fields. In the process of these endeavors, Ames has made numerous contributions to environmental protection, public health, and the nation's economic well-being.

Ames is a pioneer in the application of the multidisciplinary approach in science, technology, and projects. Multidisciplinary approaches are flexible and tend to stimulate innovative concepts. Successful application of this technique requires a deep appreciation for the talents, skills, and insights of individuals. Today, more and more scientists and advanced technology industries are using this approach with remarkable results.

It is in the spirit of shared discovery and the synthesis of diverse talents that Ames offers the NASA Space Life Sciences Training Program. Students contribute to all aspects of successful multidisciplinary research on Earth, be it: in the air or in space. They experience the entire project process including the formulation of an idea, the procurement of goods and services necessary to develop it, the management, marketing, and manufacturing necessary to turn their concepts into reality.

Space Life Sciences Training Program History

The SLSTP at NASA Ames is based on an extremely successful program begun at NASA Kennedy Space Center called the NASA Spaceflight and Life Science Training Program in 1985. The Kennedy SLSTP begun under the leadership of the late Dr. Gerald Soffen, former Director of the Office of University Programs at Goddard Space Flight Center. The Ames SLSTP is unique in that it focuses on integrating the expertise of multiple disciplines into the space life sciences to gain a better and more comprehensive understanding of what is taking place today in the Space Program and thus, mold its future.

SLSTP at NASA Ames provides opportunities usually unavailable to those outside and within the Agency. The objective of the program is to expose research associates to various aspects of NASA and the Space Program. Topics include, but are not limited to: current research projects, developing the unique tools necessary for discoveries in space, tracing the progress of an idea from concept through completion, technology development through flight operations, data analysis to publication, the acquisition and communication of knowledge and its impact on science and society.

In 1993, the first SLSTP was formed at Kennedy Space Center. Twenty students, undergraduate and graduate, took part. Due to its success it was duplicated the following year, adding four more students and a staff member to the program. In 2013, NASA Ames restarted the Space Life Sciences Training Program to support biosciences research at the center. As Director, Dr. Brad Bailey heads the SLSTP at NASA Ames. SLSTP support staff will be Saumalu Mataafa and Rebecca Stevick, both of whom are alumni of the 2014 SLSTP at NASA Ames. Kristina Gibbs, Jon Rask and Desireemoi Bridges are a part of SLSTP Management Team.

Ames SLSTP Program Structure

SLSTP is designed to operate as a joint effort with equal input, ideas, and energy coming from both the SLSTP Management Team and the research associates. The group meetings and discussions form part of the experience, which will help to shape SLSTP to your specific goals and interests.

The program runs from the second week of June to the third week of August. These dates were selected to give most students a respite before returning to the complexities of school life. This is a compromise as no two schools have identical schedules. It is important that the students commence and complete the program together. The success of the SLSTP ultimately depends on the students. The program does not accept people who are not able to attend this entire period. All students must be U.S. citizens or residents.

One goal of SLSTP is to ensure that the students interact as a “team.” Activities spark the development of each student’s leadership qualities. All students are housed in apartments at the NASA Ames Exchange Lodge. Transportation is provided each day and for weekend activities.

The students go on several trips on the weekends. These include trips to the other NASA Centers, such as the Jet Propulsion Laboratories and the Armstrong Flight Research Center. Shorter trips to Lawrence Livermore Laboratories, Monterey Bay Aquarium Research Institute, and other areas of interest in the West are also made. The students plan additional weekend trips when they arrive. Each of the ten weeks are a unique group experience, but at the same time the student are working on a research project with investigators in the Ames’ laboratories or on the group projects.

Group Project

Throughout the summer the research associates participate in a group project. The final result is an official project plan with the potential for implementation at NASA Ames. The SLSTP students self-organize into a mock company while Dr. Jeff Smith acts as the NASA customer. Presentations by the students throughout the summer deliver components of the project plan as they are developed. The project leverages the individual strengths of the individuals within the group while still providing a complex scientific and engineering challenge. All aspects of project development are carefully considered including, but not limited to, feasibility, importance, science requirements, launch vehicles, concept of operations, data collection, and flight instructions.

This project is intended to be a lesson in management, collaboration, and exploration. By the end of the summer the complete project plan will be presented to a board of experts from the Ames Research Center.

Student Eligibility

To be eligible for the Space Life Sciences Training Program, students must:

- demonstrate an interest in space biosciences
- enroll as a junior, senior, or graduate student as of June 1 of the program year
- maintain a minimum 3.2 cumulative GPA
- concentrate in science (physics, chemistry, biology, etc.), math, engineering, computer science, or other areas of interest to the space biosciences
- be a US citizen or permanent resident as of June 1 of the program year

Contact Information

NASA Space Life Sciences Training Program information can be obtained through:
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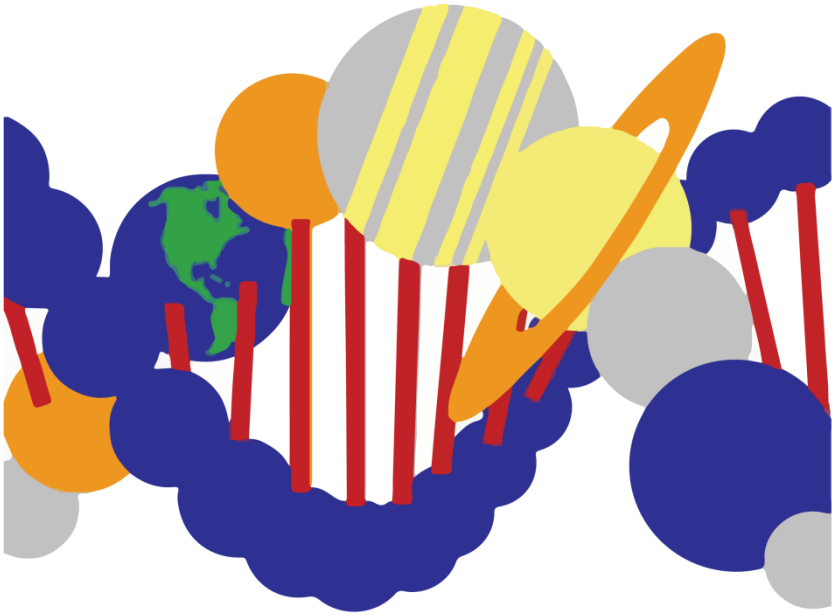
2015 Research Associates



SPACE LIFE SCIENCES

TRAINING PROGRAM

Basem Al-Shayeb

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University of Minnesota- Twin Cities

Microbiology; Genetics, Cell Biology & Development

Project: Epigenetic Mechanisms of Perinatal Programming of Adult Brain and Behavior

PI: April Ronca, PhD

Participating in original research for the past three years has been one of my most rewarding life experiences, driving me toward a research career and providing me with valuable experiences in the scientific community. I am motivated by a desire to broaden our understanding of complex networks in cellular physiology and to harness and expand the capabilities of biological systems in a myriad of different applications to help us lead healthier and happier lives in a cleaner and greener world, and to sustain human activities across the solar system. My curiosity about the universe compels me to continuously think of new ways to re-engineer biochemical pathways to solve global problems, or new tools and technologies that could allow scientists to better understand and reprogram molecular pathways to advance hypothesis-driven investigation.

During my junior year, I led an interdisciplinary team of students in the biochemistry and biophysics lab of Dr. Jeffrey Gralnick to develop a heavy metal bioremediation device from a faint idea into a fully integrated machine that uses engineered, silica-encapsulated microbes to convert neurotoxic organic and ionic forms of mercury and cadmium in contaminated waters into less toxic form that can be captured and disposed of more sustainably. The construction of this device won us the Gold Medal and Best Environment Project trophy at the International Genetically Engineered Machine (iGEM) competition. I have also worked in the neuromodulation lab of Dr. Jerrold Vitek for the past 3 years studying physiological changes in the pedunculopontine nucleus of the brain in Parkinsonian non-human primate models, and testing promising oral and electrophysiological therapeutics.

In addition to becoming a researcher, I aspire to be a popularizer of science. I believe that scientists' duty to foster the spark of scientific interest in children and the local community is just as important as their mission to advance science itself. Neil deGrasse Tyson and Carl Sagan are two of my greatest personal heroes for inspiring millions to wonder about mysteries of the universe. As such, I started the Educating Communities On Research Innovation (ECORI) initiative through which my group developed and taught a synthetic biology and bioethics curriculum to over 500 middle school students and several fairs in the Twin Cities area, and established a public engagement project with the Science Museum of Minnesota and Museum of Science- Boston to expand our impact. In addition to these academic ventures, I also volunteer as a sexual assault crisis counselor and violence prevention educator.

I am very excited to spend this summer exploring the avenues that NASA has to offer, and to be part of extending human reach to the stars above. I hope that I can expand my knowledge and skills as well as my capacity for innovation and leadership in this endeavor.

Maximilien Baas-Thomas

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Massachusetts Institute of Technology

Biology

Project: Assessing Effects of Hypergravity and Pro-Oxidants on Drosophila Survival and Reactive Oxygen Species Production

PI: Sharmila Bhattacharya, PhD

I've had a love of space since I was little, and throughout elementary school my go-to answer for "What I want to be when I grow up" was definitely an astronomer. The surfaces of other worlds, black holes, the largest structure of the universe—all of them captured my imagination. I remember making an illustrated report in second grade where I proudly asserted that no black hole could exist in the Milky Way, or else it would probably have sucked us all up! There weren't many stars to see through the city lights of San Francisco where I lived, but I still had a telescope and did the best I could.

At the same time, I also loved biology. Learning how cells function to keep the body alive—and realizing that that was all happening in me—was a constant source of wonder. All I knew for sure was that I wanted to do research in something that could tangibly change people's lives. There was a science center with regular astronomy talks in Oxford, England, where I lived for high school, and I attended as often as I could. However, with a much better formal training in the living sciences, I chose biology as my major going into MIT.

At MIT, my interest in space has been revitalized. There are many opportunities to learn and see new projects related to space exploration and research. In addition, many of my friends also share some level of interest in space—as I think we all do as human beings. We've gone out to try and see meteor showers, woken up early to watch rocket launches live over the Internet, and so on. Meanwhile, my undergraduate research topic has been about neural development and autism-related genetics using Drosophila as a model. It has given me a lot of knowledge and experience that I hope to apply in my contribution to humanity's steps forward into space, and I've enjoyed the opportunities I've had to present my research within MIT. My future plans include going to grad school and aiming for a career in space and biology. I'm very excited for the opportunities that NASA's SLSTP will bring me, and for the best possible introduction into how I can finally apply my training in biology to the amazing goal of space.

Catherine Choi

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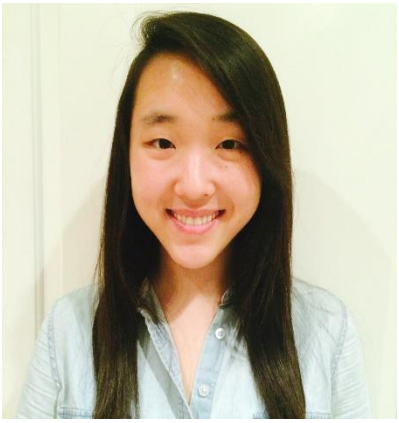

University of California, Berkeley

Molecular Cell Biology

Project: Study of Sex-Hormone Receptor Signaling in Bone and Altered Bone Remodeling During Simulated Weightlessness

PI: Joshua Alwood, PhD

Born and raised in Palo Alto, CA, I was surrounded by the constantly developing science and technology in the heart of Silicon Valley. As a child, I loved my science classes because of the multitude of hands-on activities that the teacher always prepared. I was fascinated by the scientific community, and I knew that I wanted to become a part of it. My parents encouraged my curious and creative mind, patiently answering all of the "Why's?" that I asked throughout my childhood. As a habit that stemmed from my elementary school days, on clear nights, I walk with my head tilted back to take in the distant sparkles in the sky and the vastness that is beyond Earth.

My fascination with stars and space grew during my senior year of high school, when I had the opportunity to take an astronomy course. Our midterm was to trace out certain constellations given a map of the stars. It was the most fun I had studying for an exam, as I practiced drawing out the constellations over and over again. One evening every week, we trekked up as a class to the school observatory to gaze at nearby stars and constellations. The view was always breathtaking, and after each session, I looked forward to the next. The big question that remained with me after that course was: Could life be sustained beyond Earth?

My interest in space life science is part of a larger passion for research. I first began as a research assistant at the UCLA Medical School during the summer after my sophomore year of high school, performing my first Western Blot and becoming exposed to the field of scientific research. The following summer, I was an intern for Partners HealthCare Personalized Medicine in the Laboratory of Molecular Medicine at Harvard Medical School. I was able to see firsthand the bridge between laboratory research and clinical medicine. Half of the floor was lined with lab benches and researchers extracting and analyzing DNA from patients' samples, while the other half had offices with people making phone calls to doctors and patients to discuss in detail the results from the lab. This direct flow of information from laboratory research to clinical application made me realize the significant impact that research has on people's lives.

This fall, I will be entering my third year at UC Berkeley, pursuing a major in Molecular Cell Biology and a minor in Molecular Toxicology. My future aspirations lie in medicine, and I am hoping to attend medical school with the ultimate goal of providing medical attention and treatment to as many people possible in the effort to alleviate pain and suffering.

I'm very excited to be given this opportunity to be a part of SLSTP and to explore this field of research. Working with a mentor at NASA is a valuable experience, and I'm looking forward to learning new research techniques and gaining insight into the world of space life sciences.

Christopher DeMatteo

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Cornell University

Biology

Project: Stem Cell Differentiation Gene Markers in Hindlimb Unloaded CDKN1a/p21 Transgenic Mice

PI: Elizabeth Blaber, PhD

Though I was born in Tampa, Florida, it was only ten short months before my family moved to suburb of San Francisco where I grew up with my two parents and older sister. For as long as any of us can remember, I have always been The Science Kid according to my teachers and friends. For example, Mrs. Traekner had to discontinue her policy of rewarding her second grade students with teddy grams for correct answers in class, on account of me always filling up during science period (11-12 AM) and ruining my lunch. I never owned a remote control car/ boat/ airplane that I didn't eventually take apart and turn into a robot of my own creation, and while I never owned a copy of any of the Harry Potter books, I had read Stephen Hawking's A Brief History of Time like it was my own kind of fantasy novel.

In high school, my friends and I formed a team to compete in international creativity/ engineering competitions through Odyssey of the Mind. Our team, The Torque Dorques, spent many nights in my garage working on projects that ranged from choreographed song and dance numbers to building rockets and paddle-boats out of only mousetraps.

Now, as an undergraduate at Cornell University, I am studying Biology and minoring in Information Science and Business. I am part of a cognition and development lab with Professor Qi Wang, studying the effects of social media usage on the way we form interpersonal judgements. I've also really loved getting involved in community service in Ithaca by joining the co-ed service fraternity Alpha Phi Omega and by founding a chapter of an international service group, Volunteers Around the World. In my free time, I captain an intramural inner-tube water polo team and I love hiking, sailing, and playing guitar.

This summer I am incredibly excited to be working at NASA Ames because I will be able to contribute to the growing body of life science literature and work with some of the best scientists in the field to do so. I hope not only to be of great use to the scientific to community but also to gain the skills and experience necessary for a long career therein.

Anna Hayden

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University of Maine

Chemical Engineering

Project: Design of the Brine Evaporation Bag for Increased Water Recovery in Microgravity

PI: Lance Delzeit, PhD

My interest in science and engineering began in high school with AP chemistry. Before that class I intended to be an elementary school teacher, but by the end of it I was hooked on chemistry. My teacher convinced me to attend a summer camp hosted by the College of Engineering at the University of Maine, where I found my love of engineering. I had always enjoyed problem-solving and wanted to understand how and why things worked, and at this point realized these were characteristics of engineers. The next logical step was enrolling in undergraduate chemical engineering at UMaine, so that is what I did. I have just graduated with a B.S. this spring and will begin earning my Master's degree (also in chemical engineering) at the University of Michigan this fall.

During my undergraduate career, I worked on several research projects for the Forest Bioproducts Research Institute, an initiative within UMaine with the goal of producing fuel and commodity chemicals from forest waste. I also co-oped for two semesters at the R&D center for Sappi Fine Paper, where I was involved in projects ranging from industrial automation to product development. Additionally, I interned twice at NASA Ames, where I became interested in life support in space. The first Ames internship involved water recycling on the International Space Station (ISS), and the second was with the nanotechnology group researching carbon nanofiber sensors used to detect neurochemicals in humans. This summer I am fortunate to return to NASA Ames for a third time and will again be researching water recycling on the ISS.

Over the next few years, I will be working with the Department of Defense at the Washington Aqueduct in Washington, DC as a part of my Master's program. I hope to continue on to a research-oriented career related to water or energy, which are two issues I find fascinating and extremely relevant to this century's challenges- both on Earth and in space.

In my limited free time, I enjoy many of the standard Maine outdoor activities, including hiking, kayaking, rafting, and cross country skiing. After traveling to NASA Ames and the West Coast for the first time, I discovered a love of travel and am always open to visiting new places. I also like to cook, bake, and play card or board games with friends.

Joseph Lowman

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Massachusetts Institute of Technology

Mechanical Engineering

Project: Spacecraft Life Support Using Catalytic Conversion of CO_2

PI: Darrell Jan, PhD

I grew up in the San Francisco Bay Area, and I am thankful for very supportive family members, coaches, and teachers who always pushed me to work hard and maintain a high standard of excellence. As an elementary school student, I dreamed of being an astronaut and seeing the Earth from outer space. I was fascinated by the notion of living beings on other planets and the technology that would allow us to explore deep space. Throughout my early education, I loved math and science, particularly physics. I've always been intrigued by machines, and I spent much of my childhood taking things apart to see how they worked. As I progressed through high school, I realized I wanted to be an engineer. I am pursuing a degree in mechanical engineering with a focus in biomedical engineering at the Massachusetts Institute of Technology. My favorite undergraduate class thus far was Design and Manufacturing, where each student designed, tested, and built a robot to compete in a final competition. I learned so much in the class, from SolidWorks modeling and stress analysis, to hands on fabrication techniques and prototyping.

Last fall, I worked in the Laboratory for Bio-Inspired Photonic Engineering as a lab assistant. I collaborated with a fellow undergraduate in developing a blade coating method in order to manufacture photonic fibers efficiently at a large scale. The fibers were composed of a polymer bilayer, and a blade coating technique would allow the polymers to be applied to the substrate quickly and uniformly. To accomplish the goal of developing a blade-coating manufacturing technique, I assisted in developing roll-to-roll processing equipment and evaluating blade type, height, and processing speed. In addition, we tested the spectral tuning range of the fibers when exposed to repeated longitudinal mechanical strain. In the future, this research could be used to implement color-tunable photonic fibers in smart textiles. Alternatively, these fibers may become useful in medical applications such as compression bandages, allowing nurses to apply the correct compression every time.

I am thrilled to be a part of the NASA Ames team this summer, and I am eager to begin work with the best engineers in the country on cutting-edge technology. I can't wait to see all that the Space Life Sciences Training Program has in store, and to further develop my engineering education. Outside of classes, I am a captain on the MIT wrestling team, and I enjoy the fierce physical and mental competition. The physically-taxing nature of the sport balances out the mentally challenging academics at MIT. As a club team, we are part of the NCWA, a national collegiate wrestling program. I also enjoy spending time outdoors hiking, fishing, and camping. I like to read non-fiction books; my favorites are the autobiographies of Anthony Robles, an NCAA national champion born with one leg, and Henry Cejudo, the youngest USA Olympic Wrestling Champion who came from an extraordinary childhood of poverty. I am inspired by these amazing athletes who achieved greatness through hard work and discipline.

Victor Quach

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University of California, Santa Barbara

Biochemistry

Project: Low-shear Modeled Microgravity Alters Virulence of *Serratia Marcescens* in *Drosophila melanogaster*

PI: Sharmila Bhattacharya, PhD

I grew up in the humble, small mountain town of Fort Collins, Colorado, a community that teaches you to smile at strangers, be kind to your neighbors, and love the great outdoors-a place where you can reel in trout in the summer and take to the powdery slopes in the winter. It was also here that I would lie in my red racecar bed as a little boy and look out the window into the night sky. A quiet and surreal night sky absent of light pollution, something I didn't appreciate until moving to the large city of San Jose. I always wondered, "Is the moon actually made of cheese?" as depicted by everybody's favorite clay characters Wallace & Gromit, or how the moon seemed to follow me no matter where I went. I also used to frequent the Denver Museum of Nature & Science where they had a space exhibit that included the evolution of the NASA Spacesuit. I would stand there with my face pressed on the glass and stare with envy, awe, and grandeur at those suits; the suits that enabled a lucky few the opportunity to literally travel out of this world. I would imagine myself bouncing up and down in microgravity and flying around in a rocket ship and like many other kids, had myself thoroughly convinced that I was going to be an astronaut when I grew up, even after eating the lovely astronaut ice cream that was sold in the gift shop.

Fast forward to the future to my college years where I chose to study Biochemistry at the beach, where it is always sunny and 75, at the University of California, Santa Barbara. I am now an incoming junior and play on our intercollegiate hockey team, as well as perform research in the lab of Dr. Stephen Proulx regarding the theoretical principles of evolution as well as investigating the genetic and environmental factors that drive biodiversity. My work revolves around the use of Saccharomyces cerevisiae and Drosophila melanogaster as model organisms. I am currently on the track to become a physician and researcher, and hope to be applying to medical schools by next summer.

When I was digging for summer internships and research programs, I was overwhelmed by the choices and numerous applications, however there was one opportunity that immediately caught my eye. And of course that was the NASA's SLSTP. First I thought to myself "Wow, NASA!" a reaction everybody gets when thinking of this organization. I also thought that since it *was* NASA, that this position would be near impossible to attain, and that I'd be better off spending my time applying elsewhere. After all, these are the world's top engineers and scientists capable of sending life into space, and I have a hard time dealing with kinematic equations, why would *they* want *me* working for them? However all those memories and nostalgic feelings of my love for space as a kid, which ultimately started my love for science as a whole, came rushing back to me and I decided to go for it. Little did I know at the time, that four months later I would be counting down the days, like a kid does for Christmas, until *I* get to work at NASA. Now that I know that the moon isn't made of cheese, and that it isn't actually following me, I'm ready to work with Dr. Sharmila Bhattacharya and Dr. Ravi Hosamani in investigating acute hypergravity-induced oxidative stress in *Drosophila.* I've never been more excited for anything in my life, and can't wait to join an organization that literally reaches for the stars.

Victoria Rael

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University of Chicago

Biology and Biochemistry

Project: Role of Oxidative Stress and Autophagy Signaling in Osteocyte Response to Spaceflight-Like Radiation

PI: Ruth Globus, PhD

I grew up in Louisville, Kentucky, then moved to Milton, Georgia (a suburb of Atlanta) before my freshman year of high school. The first part of my life was defined heavily by my gymnastics career. Through eighth grade, I was a competitive gymnast competing for the club Champion Gymnastics, and I was all-around state champion in seventh grade as a Level 7. I reached Level 8, and then started competing for my high school once my family moved to Georgia. In high school, I also got to enjoy my first job, a gymnastics coach, coaching young girls and boys beginning the sport. I retired from gymnastics before entering college, and though I miss it, my gymnastics career still remains extremely important to me. It taught me discipline, perseverance, and courage and also gave me a sense of adventure and daring.

I have always been passionate about science. The first time I can remember being really fascinated with space and space exploration is riding Space Mountain at Disney World. I was eight years old, and I just remember imagining that I was actually rocketing around space, excited by the fact that there was so much out there to see and explore. It's that wonderment and passion that I still value today. I'm currently an undergraduate student at the University of Chicago, graduating in 2017, and I am pursuing a BS in biology and biochemistry. On campus, I perform research on the differentiation of astrocytes during development in the hindbrain, in the lab of Dr. Nancy Schwartz under the mentorship of Miriam Domowicz. I am looking forward to being a teaching assistant for a lab class next year.

Outside of the lab, I volunteer as UChicago's Co-Coordinator for Peer Health Exchange. PHE is a national non-profit organization, and we go into south-side Chicago Public Schools to teach ninth graders classes from a comprehensive health curriculum. I have loved getting to work with students across many different schools as we try to give them the skills they need to make healthy decisions. In addition, I work as an Orientation Leader, helping to plan Orientation Week and run orientation meetings for the first-year students at UChicago. I am also a member of the Student Alumni Committee, and I volunteer for the admissions office, serving to help organize events and overnight visits for prospective high school students. I have made some of my closest friends at UChicago within Henderson House, the group of people that live in my section of my dorm building, and I love playing intramural sports against other houses.

At home in Georgia, I have a younger brother and sister and two dogs, and I'm extremely grateful for the support my parents and my family has continuously provided. Currently, I plan to pursue an MD/PhD program after graduation, and I have thought about attending flight school in between undergraduate and graduate programs. I would like to be a doctor for part of my future career, working with patients perhaps as a pediatric oncologist. I would also like to use my degree to perform research, though I am unclear on what field. However, my ultimate dream goal is to work for NASA, as a scientist studying astrobiology or space life sciences or even, with a little luck, as an astronaut. I'm extremely excited to be working with the Ames SLSTP this summer and explore my interests in these fields.

Jonathon Sosa

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San Jose State University

Electrical Engineering

Project: Air Revitalization System Modeling for Lower CO_2 Operation

PI: Darrell Jan, PhD

I was blessed with a supportive family who indulged in my interests at a young age; I found my interest in electronics and circuitry after turning on a light bulb with a battery in the 4th grade. I was so excited that I went home and built my first portable lamp with a battery, a Christmas light, and a Tupperware container that I 'borrowed' from the kitchen. My curiosity shifted to music at age 10 when I started self-lessons in guitar and school lessons in trumpet. During high school I focused my studies on guitar, and by way of my custom guitar building business I started, I became interested in electronics again. I soon started to begin to study tube amplification in my free time which led to building my first guitar effects unit. After high school, I spent lots of time on the road with my band and found that with the harsh conditions of touring that it was necessary to have some electronics background in order to repair often damaged equipment. With the help of my previous studies I was happy to save many musicians from the burdens of having to buy new equipment on their small budgets.

Once I made my way to community college, I became interested in microprocessors, my first being an Arduino Uno that was loaned to me as a sophomore. I used its capabilities to build a 64 LED cube that could create 3d images and run 3d image simulations that I would program into the memory. This idea got me to thinking about music again and how this technology could be used to enhance the live musical experience without having to buy fancy equipment. After being accepted into an internship at ZVEX Effects, a guitar electronics manufacturing company, in Minneapolis, MN for the summer of 2014, I developed a Musical Instrument Digital Interface (MIDI) controlled light system with the head engineer and president of the company Zachary Vex that can be easily programmed to give a professional light show at any concert venue without excessive amounts of equipment and costs.

It was during my experiments with microprocessors that I realized the beauty of thinking machines and their abilities to make operations easier for humans to live. My view of the uses of electronic design expanded from music and guitars to the potential for assisting in many of the world's problems. With this new mindset I earned the chance to take part in NASA's Aerospace Scholar program at the Jet Propulsion Laboratories in Pasadena, CA, where I discovered a completely new way of seeing engineering and re-established my beliefs in what a career should provide. The NASA teams that I met and worked with were so filled with joy and determination to help the world that I was inspired to keep working hard in hopes to get the chance to join NASA in an internship opportunity where I could take part in their goals to help the planet.

Now as an electrical engineering student at San Jose State University, and President of the Universities IEEE Honor Society, Eta Kappa Nu, I am happy to say that I finally have my chance to be a part of such a great organization that is constantly at the forefront of modern ingenuity and human imagination. I hope to take what I will learn and use it to make a better future for our planet as well as to inspire others to do the same.

Amanda Vu

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University of California, Berkeley

Bioengineering

Project: Retinal Image Quality Assessment for Spaceflight-Induced Vision Impairment

PI: Patricia Parsons-Wingerter, PhD

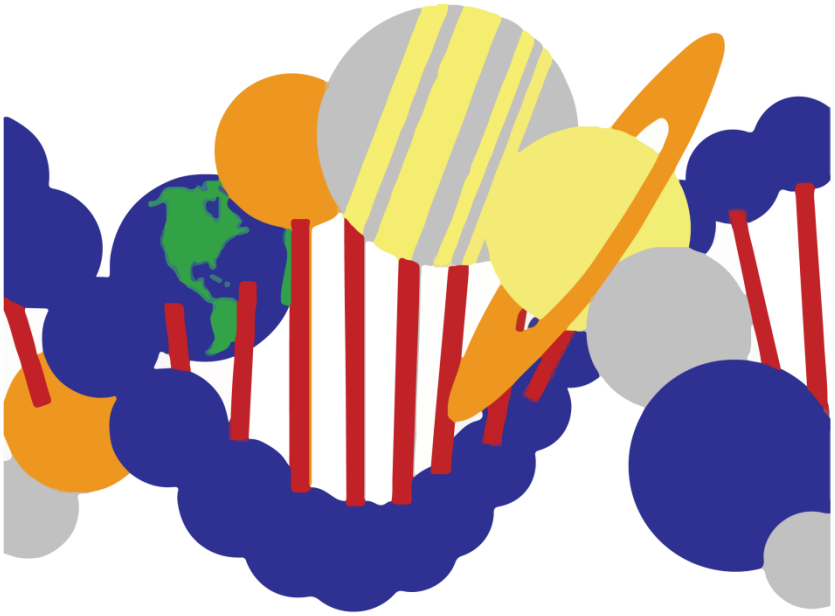
Growing up, I watched Star Trek (The Original Series & The Next Generation were family favorites), and remember being particularly impressed by the character Geordi La Forge. Not only was he smart, resourceful, and Chief Engineer, he also wore the VISOR – a piece of technology that immediately captured my young imagination. The VISOR allowed La Forge, blind since birth, to see by sending information directly to his brain. I remember wondering how the VISOR worked and if it was possible I could build one. This child-like fascination was one of many experiences that eventually led me to pursue a career in engineering.

In 2012, I entered UC Berkeley as a Bioengineering major with a focus in computer science. During my second and third years, I conducted research in the Bionanomaterials Lab at Lawrence Berkeley National Laboratory (LBNL). My research project involved optimizing the fabrication of a virus-based piezoelectric material, investigating the effects of substrate surface chemistry and bioconjugated phage on material performance, as well as building and programming a robotic arm for material fabrication. In my fourth year, I joined the RUGS Research Group in the UC Berkeley Electrical Engineering & Computer Science Department. My current research project focuses on model-based inference of human physiology, using the Dynamic Bayesian Network (DBN) framework to model intracranial hemodynamics and predict pathophysiological states such as hematoma, edema, and autoregulation failure.

Outside of academia, I enjoy being a part of the campus community. I am an active member of the student chapter of Engineers Without Borders, where we are working with two rural communities in Peru to improve water safety for over 2,500 community residents. I am also a part of the Undergraduate Engineering Peer Advising Team, and have been a Computer Science Lab Assistant for the past year.

This summer, I am very excited to be joining NASA's SLSTP Program. I look forward to collaborating with NASA engineers and scientists, as well as contributing to exciting projects in the field. In the future, I hope to work in the aerospace industry, developing technologies that will help advance our understanding of how organisms are affected by zero-gravity environments. Humans are explorers, and I believe our next frontier is space. I am excited to be a part of the group of engineers, scientists, and researchers at NASA who are working to make this possible!

2015 SLSTP Staff and Management



SPACE LIFE SCIENCES

TRAINING PROGRAM

Sidney Sun

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Chief of the Space Biosciences Division

NASA Ames Research Center
Moffett Field, California

Sidney Sun has been leading the Space Biosciences Division at NASA's Ames Research Center since February 2011. This position is an outgrowth of his experience leading research and development efforts in a multitude of areas, including space biology, space technology, information systems, and spaceflight systems development. Following his lifelong dream that started as a child watching every Apollo moon landing, Mr. Sun is committed to space exploration, eager to see how humans and other living systems can prosper as they travel great distances into space.

Mr. Sun has a B.S. degree in Mechanical Engineering from Case Western Reserve, and an M.S. degree in Mechanical Engineering from the University of California at Berkeley. He started his career at NASA in 1988, working on early concepts for a biology laboratory for the International Space Station. Space biology has been the central theme to his career at NASA Ames, including assignments as project manager for the Life Sciences Glovebox, Specimen Chamber Service Unit, and Lab-Scale Controlled Ecological Life Support System. His first management assignment came in 1998, when he was Staff Assistant to the Deputy Director of Ames. From 2000 to 2006, he served as Deputy Chief of the Life Sciences Division, the organization that would eventually become the Space Biosciences Division. More recently, he's served as: Project Manager for ISS Research, Deputy Project Manager of Constellation Data Systems, and Project Manager for Lunar Lander Collaborations.

As a Certified Professional Coach (certification from New Ventures West), Mr. Sun helps others become stronger leaders. By blending a supportive one-on-one approach with an indepth knowledge of the challenges facing leaders today, he helps agency personnel to define and achieve professional and personal goals. Within his own career, he's received two individual leadership awards from Ames, as well as awards from the NASA Human Spaceflight Program, the American Institute for Aeronautics and Astronautics, and the Federal Asian Pacific American Council. He's also been cited on numerous NASA Group Achievement Awards.

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Jeffrey Smith, PhD

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Manager of the Space Biology Project

NASA Ames Research Center
Moffett Field, California

Today, Dr. Smith is the Manager of the Space Biology Project at NASA Ames Research Center, in Moffett Field, California. Space Biology at NASA has three primary goals: 1) to effectively use microgravity and the other characteristics of the space environment to enhance our understanding of fundamental biological processes, 2) to develop the scientific and technological foundations for a safe, productive human presence in space for extended periods and in preparation for exploration, and 3) to apply this knowledge and technology to improve our Nation's competitiveness, education, and the quality of life on Earth. Space Biology spans cell and molecular biology research, developmental biology research and whole organism research with plants and animals. At Ames, the Space Biology Project primarily supports animal and cell biology research including spaceflight and ground-based studies. The Project supports development of NASA grant solicitations, manages Space Biology grants and performs the payload development and operations for space biology experiments on the ISS and on other free-flyer platforms.

Dr. Smith has been with NASA Ames Research Center for 17 years. He currently serves as the Manager of the Space Biology Project which supports grant-based research, technology development and spaceflight experiments to the ISS and on other free-flying spacecraft such as nanosats. The Ames Space Biology Project manages approximately 50 grants across the Nation and between 6-9 spaceflight experiments annually. Prior to his Space Biology appointment, Jeff served as Chief of the Space Biosciences Research Branch in the Space Biosciences Division (2010-2013). During his tenure as Chief, the Branch grew from 12 to 15 research and project scientists who performed research and technology development for a number of NASA missions including fundamental space biology, translational space biology, gravitational biology, radiation detection and biology, and countermeasure development. Dr. Smith has also served in a number of roles at NASA Ames including Science Project Manager for the Space Biosciences Division (2009-2010), Deputy Chief of the Entrepreneurial Initiatives Division (2007-2009) and as a manager and research scientist within the life sciences division at Ames (1997-2006). He also served a 1-year fellowship to the Office of Program Analysis and Evaluation at NASA Headquarters (2006-2007). Dr. Smith's research interests/expertise include scientific data visualization and analysis, computer-based simulation and modeling, cell biology/biotechnology, gravitational physiology and spaceflight hardware development for bioscience research. He has published over 40 journal articles, proceedings, technical reports and abstracts in the scientific literature.

Dr. Smith graduated from Miami University, Oxford Ohio, in 1991, with a Bachelor's of Science degree in Engineering Physics and Bachelor of Arts degree in Zoology. After attending Miami, Jeff went on to graduate school at the University of Colorado, Boulder, to earn his Master's ('93) and Ph. D. ('96) in Aerospace Engineering Sciences.

Brad Bailey, PhD

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Director Emeritus for SLSTP

NASA Lunar Science Institute Senior Scientist

NASA Ames Research Center
Moffett Field, California

Brad Bailey received his B.S. in physics with minors in optics, chemistry and Japanese from Rose-Hulman Institute of Technology. From there, he received his M.S. in astrophysics from New Mexico Tech where he used the Very Large Array (VLA) to qualitatively analyze spectra from pulsars. After working for 2 years at NASA Ames as a hardware engineer for the International Space Station, Brad went back to graduate school at Scripps Institution of Oceanography in San Diego where he got his PhD in marine microbiology and geochemistry. In addition to being the Director of the NASA Academy, he also acts as the senior scientist for the NASA Solar System Exploration Research Virtual Institute.

In 1998, Brad was accepted into the NASA Ames Astrobiology Academy where he worked with PI's Lou Allamandola and Doug Hudgins on the spectroscopic determination of polycyclic aromatic hydrocarbons in the interstellar medium. He enjoyed the Academy experience so much that he came back in 1999 to work as a staff member for the Academy.

With his varied scientific background, Brad will be a good contact and resource for students looking to break into new fields of interdisciplinary science or for graduate school advice. The Academy was a life changing summer experience for Brad as he would guarantee that he would be working at an optical plant as an engineer in Albuquerque, NM without the experience and contacts that the Academy gave to him. Brad is excited to give back to the Academy in this capacity and is looking forward to meeting all of the Research Associates when they arrive in June!

Desireemoi Bridges

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Deputy Director for the NASA Ames Academies

NASA Ames Research Center
Moffett Field, California

Desireemoi Bridges is the Deputy Director for the NASA Ames Academy for Space Exploration, Space Life Sciences Training Program, and MARTI. Desi has had a hand in coordinating all the operational needs of the 2009-2015 Academies. She gets things done efficiently and with minimal collateral. Desi is available to help you and the staff with any logistical issues.

Desi joined NASA Ames as a contractor seven years ago as an administrative assistant. In addition to working with the NASA Ames Academies, she is supporting the NASA Ames education office as the Center NIFS, (NASA Internships, Fellowships and Scholarships) lead, Student integration manager and task manager for the education office under the FILMSS contract. Prior to working with us, Desi was employed as a funding specialist and software tester in the mortgage industry.

Desi looks forward to working with all of you.

Kristina Gibbs

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Project Manager for the NASA Ames Academies

NASA Ames Research Center
Moffett Field, California

Kristina Gibbs is the Project Manager for the NASA Ames Academy, overseeing the planning and implementation. In addition to the student programs, Kristina is the Flight Definition and Planning Manager for the Space Biology Project at NASA Ames.

Kristina has been working at NASA Ames in support of various missions and programs at for over 20 years. She spent her first 15 years supporting NASA Ames Life Science Payloads. She first started as a liaison between NASA and the Principal Investigators of the Mir /Shuttle payloads, working collaboratively with Russian Researchers. From 1999 to 2002, Kristina was the Project Scientist for two of the first life science payloads in the ISS. As the first Lockheed Martin employee to manage a NASA payload, Kristina facilitated microbiology hardware development and flight operations. Kristina has supported over 10 Mir, STS and ISS payloads and over 20 Principal Investigators.

In 2009, Kristina was appointed as Manager to the Lockheed Martin Institutes and Collaborative Technologies section. In this role she managed staff and task for the virtual institutes at NASA Ames; NASA Astrobiology Institute, NASA Lunar Science Institute/Solar System Exploration Research Virtual Institute and the NASA Aeronautic Research Institute. Support includes science program management, virtual collaboration technology, education and public outreach, and administrative support. At this time she also took management responsibility for the NASA Ames Academies.

Kristina is looking forward to your arrival and working with you this summer.

Jon Rask

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SLSTP Director

NASA Ames Research Center
Moffett Field, California

Jon Rask is a Research Scientist in the Space Biosciences Division at NASA Ames Research Center. His research focuses on human health effects of space flight and the exploration of the Moon and Mars. Jon has characterized the toxicity and abrasiveness of Apollo lunar dust specimens, and supported development of novel brick-like regolith biocomposite technologies made from lunar dust simulants. Jon has also developed and tested life science hardware and experiments that flew aboard the Space Shuttle and the International Space Station. He has performed experiment operations aboard the NASA C9B parabolic aircraft, been a test subject in hypergravity experiments aboard the centrifuge facilities at NASA Ames, and served as Principal Investigator for a human study aboard the NASA Ames Human Performance Centrifuge.

Jon has also been involved in Mars analog research at the Mars Desert Research Station, in the Mojave desert, in the Empty Quarter Desert of the Middle East, in deserts of Western Australia, in the relic glacial terrains and badlands of North Dakota, in the Arctic on Svalbard, and in Antarctica, where he has tested prototype space suit technology, operated the Amundsen-Scott South Pole Station's Food Growth Chamber, and explored the polar plateau.

Saumalu Mataafa

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SLSTP Program Coordinator

NASA Ames Research Center
Moffett Field, California

My name is Saumalu Mataafa and I am a program coordinator for the 2015 SLSTP. I recently graduated from Embry-Riddle Aeronautical University (ERAU) with a Master's degree in Human Factors and Systems. At ERAU, I worked in the Aerospace Physiology Lab, conducting research studies with the FAA. One of my projects, entailed collecting color vision data through both operational and diagnostic tests to improve the color palette used in current air traffic controller displays.

Last year I was a research associate for SLSTP where I helped build a conceptual design for a multigenerational rodent habitat to be used on the International Space Station. I also helped in the NASA Ames Bone and Signaling lab, contouring vertebrae with Micro Computed Tomography (MicroCT) software, to see if radiation had any effects on bone degradation and growth. Currently I am working in the NASA Ames Advanced Controls and Displays Lab where I am researching the difficulty encountered during remote control of robots.

I look forward to having an amazing summer experience and bonding with all the research associates!

Rebecca Stevick

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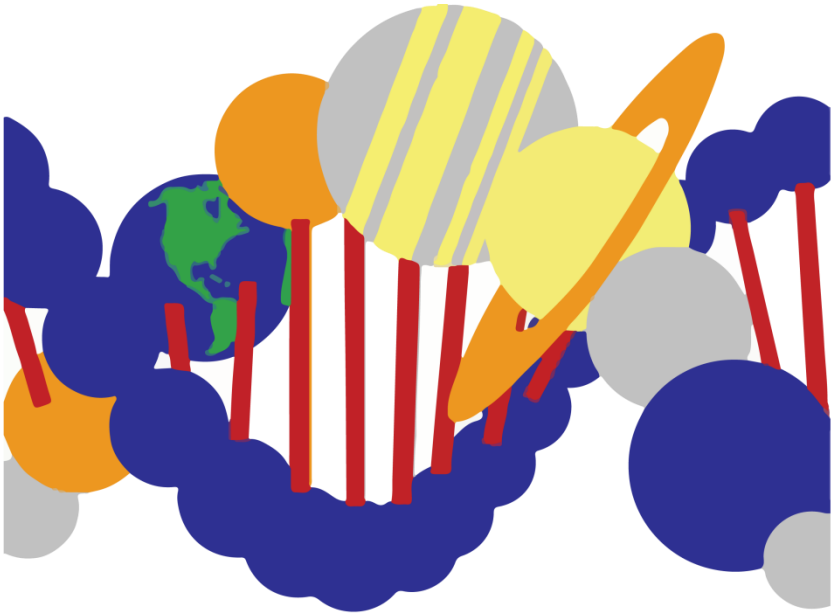
SLSTP Program Coordinator

NASA Ames Research Center
Moffett Field, California

Rebecca recently received her Bachelor's degree in Bioengineering with a minor in International Engineering from the University of Maryland, College Park. During her undergraduate career, she worked in the Orthopaedic Mechanobiology Lab studying the effects of simulated microgravity on cellular traction forces and cell behavior. This fall, Rebecca will be attending the University of Rhode Island to pursue a Ph.D. in biological oceanography. Outside of the classroom, Rebecca enjoys skiing, swimming, and sewing.

Last summer, Rebecca was a member of the SLSTP program at Ames and enjoyed learning more about the space biosciences world. She worked with Dr. Josh Alwood on a project regarding changes in DNA methylation profiles in bones due to microgravity and exercise. Rebecca is excited to be back as a staffer and to make this another memorable summer!

2015 SLSTP Mentors



SPACE LIFE SCIENCES

TRAINING PROGRAM

Joshua Alwood, PhD

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Research Scientist

Space Biosciences Division
NASA Ames Research Center
Moffett Field, California

As a Scientist at NASA's Ames Research Center, Josh Alwood examines how spaceflight (for example, the associated weightlessness and radiation exposure) and mechanical loading trigger complex changes in living systems, particularly in the skeleton.

He recently completed a NASA Postdoctoral Program Fellowship at Ames Research Center. Josh received his PhD from Stanford University in Aeronautics and Astronautics and his B.S. degrees from the University of Florida in Physics and Astronomy. In April, Josh was honored at the White House as a 2012 Presidential Awardee for Early-Career Scientists and Engineers.

Sharmila Bhattacharya, PhD

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Director of the Biomodel Performance Laboratory, Senior Scientist

Space Biosciences Division
NASA Ames Research Center
Moffett Field, California

Dr. Sharmila Bhattacharya is a senior scientist and the Director of the Biomodel Performance Laboratory in the Space Biosciences Division at NASA Ames Research Center in California. Dr. Bhattacharya has served as the Principal Investigator for the shuttle flight experiment (Fly Immunity and Tumors, or FIT) that utilized fruit flies (Drosophila melanogaster) to understand the effects of space flight on the immune system and has been involved with several science experiments on space flight missions.

Sharmila Bhattacharya earned her Master's and PhD degrees in Molecular Biology at Princeton University, followed by post-doctoral research in Neurobiology at Stanford University. After Bhattacharya moved to NASA Ames Research Center, she served as the Lead Scientist for the Insect Habitat, a collaborative effort by NASA and the Canadian Space Agency and developed a habitat for the International Space Station. Sharmila served as the Acting Project Manager for Small Biological Payloads flying on Progress, Soyuz and shuttle missions. Later Dr. Bhattacharya served as Chief Scientist for Astrobionics and the Small Spacecraft Division, helping integrate science payloads on a variety of space flight platforms. Her own research at NASA has involved studying immune changes during spaceflight, and the effects of radiation and altered gravity on the neurobehavioral system. Dr. Bhattacharya's research utilizes cell culture models and whole animal models, including Drosophila melanogaster, to study oxidative stress mechanisms as it relates to space flight related conditions. A new and exciting collaboration that she is involved with is an upcoming spaceflight experiment using fruit flies as a model to understand the effects of space on the cardiovascular system.

Elizabeth Blaber, PhD

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Research Scientist

Space Biosciences Division
NASA Ames Research Center
Moffett Field, California

Dr. Blaber worked at NASA Ames Research Center in June 2010 as a research fellow in the NASA Ames Academy Program and established a collaboration as a visiting doctoral student with the Bone and Signaling Lab working with Dr. Eduardo Almeida. During this time she conducted research on mouse and stem cell experiments flown on the Space Shuttle BSP experiments on STS-131, and STS-133 and, Space Tissue Loss – Stem Cell Regeneration on STS-131 and STS-135. In 2013, Dr. Blaber was awarded a NASA Postdoctoral Program fellowship to continue her studies on the role of CDKN1a/p21 on mechanical unloading induced bone and tissue loss at Ames and also participated in the US/Russia collaborative BionM-1 Mouse Biospecimen Sharing Program in Moscow, Russia. Dr. Blaber is currently a NASA Cell Science Spaceflight Principal Investigator at NASA Ames Research Center focusing on the role of CDKN1a/p21 in stem cell regenerative health during mechanical unloading in microgravity.
Her contributions to space biosciences include articles defining cellular, molecular and tissue mechanisms of bone loss in microgravity as well as the effects of microgravity mechanical unloading on mesenchymal and hematopoietic stem cell proliferation and differentiation during tissue regeneration.

Lance Delzeit, PhD

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Physical Scientist

Space Biosciences Division
NASA Ames Research Center
Moffett Field, California

Dr. Lance Delzeit received B.S. degrees in both Chemistry and Applied Mathematics. He also has a Ph.D. in Chemistry which he received from Oklahoma State University. He came to NASA Ames in 1997 for an NRC Fellowship which led to a permanent position as a civil servant. At NASA, he has worked on origin-of-life questions, nanotechnology, growth of carbon nanotube growth and their applications, and most recently life-support development. Dr. Delzeit is currently developing the Brine Evaporation Bag (BEB) which is a brine water recovery system being direct towards space applications aboard the International Space Station and future space missions.

Ruth Globus, PhD

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Research Scientist

Space Biosciences Division
NASA Ames Research Center
Moffett Field, CA

Dr. Ruth Globus is a space biologist studying how the space environment influences mammalian cell biology and physiology, with a focus on the skeleton and osteoporosis. She was awarded her undergraduate degrees in biology and sociology from the University of California, Santa Cruz and her doctorate degree in endocrinology from the University of California, San Francisco. Dr. Globus has worked at NASA Ames Research Center as a principal investigator in the Space Biosciences Division since 1993. She co-directs the Bone and Signaling Laboratory, where students, postdoctoral scholars and scientists perform hypothesis-driven research, working with mice and cultured cells as model systems. In addition to her activities as a research scientist, in the past she has led NASA project science activities, such as the ARC Centrifuge Facilities (Space Biology Program) and the Artificial Gravity project (Human Research Program). Currently, she serves as lead project scientist for the Rodent Research project, providing scientific guidance for the development of a newly established capability to perform long duration experiments on the International Space Station.

Darrell Jan, PhD

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Research Scientist and Manager

Space Biosciences Division
NASA Ames Research Center
Moffett Field, California

Darrell Jan holds a BS in Bioengineering from UC Berkeley, and a PhD from MIT Department of Mechanical Engineering, where he performed research in the areas of cardio and pulmonary fluid mechanics. His doctoral thesis involved flow visualization in three dimensions using neutrally buoyant fluorescent particles that he made in the lab. His involvement with NASA started during his student days with a summer internship at JPL with the Viking Biology Team, and a co-op position at Ames Research Center in space suit development. Dr, Jan started at JPL in 1987. His fluid mechanics background first led him to work on rocket plume modeling and propulsion system filtration, which involved particle flow analysis. He later worked on chemical and biological astronaut habitat sensors. During 1997/98 he was detailed to NASA Headquarters Code UL, where he served as Program Coordinator for the Advanced Environmental Monitoring and Control (AEMC) Program Element, part of the Advanced Human Support Technologies Program.

Upon return to JPL he took the position of Group Supervisor for Planetary Protection Technologies. Soon after he became AEMC Project Manager and Deputy Manager for the NASA Biomolecular Systems Research Program in the Biological and Environmental Technologies Office of the Life Detection Science and Technology Program Office. As AEMC Project Manager, he was responsible for two JPL instruments which were flown on the International Space Station: the Electronic Nose (ENose) and the Vehicle Cabin Atmosphere Monitor (VCAM). In September 2012 Dr. Jan transferred to the Bioengineer Branch in the Biosciences Division of NASA Ames Research Center, where he took on responsibility for development of Air Revitalization technologies. The work focuses on sorbent technology development for removal of moisture and carbon dioxide. In 2013 he became acting Life Support Branch Chief which includes Water Reclamation and Waste Processing in addition to Air Revitalization.

April E. Ronca, PhD

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Research Scientist

Space Biosciences Division
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Moffett Field, California

April E. Ronca, Ph.D. is a Scientist in the Space Biosciences Research Branch and Adjunct Professor Obstetrics & Gynecology, and jointly, Neurobiology & Anatomy, Molecular Medicine & Translational Science, and the Center for Biomolecular Imaging at Wake Forest School of Medicine. Dr. Ronca's research focuses on mammalian pregnancy, birth and the transition from prenatal to postnatal life emphasizing early sensory experience, epigenetics, sex differences, and the prenatal origins of neurodevelopmental disorders. Her translational approach combines MRI and MR spectroscopic brain imaging, neurobiological, biochemical, epigenetic and behavioral analyses to elucidate effects of perinatal environment on later life phenotypes. Dr. Ronca has published over 75 peer-reviewed publications, has received grants from NIH and NASA, and served on the NIH Biobehavioral Regulation, Learning and Ethology Study Section from 2009 to 2013. Dr. Ronca was an Investigator on two spaceflight experiments jointly sponsored by the National Institutes of Health (NIH) and NASA (NIH.R1 and NIH.R2), the first in which pregnant mammals were flown on the Space Shuttle. Her work has been featured on the Science Discovery Channel, and she was interviewed for the History Channel Universe segment on 'Sex in Space'.

In 2004, she was honored with the Thora W. Halstead Young Investigator Award and the NASA Exceptional Achievement Medal. She has served on numerous federal review panels and working groups, including the National Academy of Sciences Animal and Human Biology Panel for the Decadal Survey on Biological and Physical Sciences in Space. Dr. Ronca serves on the American Society for Gravitational and Space Research Board of Directors (2003-2011 and 2013- present). Since 2004, she has served as Associate Editor for the journal, Gravitational & Space Biology. From 2009-2013, she was Director of the Women's Health Center of Excellence Research Program at Wake Forest School of Medicine, a position through which she established new translational research initiatives in sex/gender biomedicine. In 2013, she Co-Chaired the NASA Headquarters Review of The Role of Sex/Gender in Adaptation to Spaceflight Reproduction Workgroup, coincident with the first NASA Astronaut Class comprised of 50% women. Dr. Ronca also leads the Ames Translational Research effort fostering cell, molecular and organismal biology research to inform astronaut health in space.

Patricia Parsons-Wingerter, PhD

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Biomedical Research Engineer

Space Biosciences Division
NASA Ames Research Center
Moffett Field, CA

Patricia Parsons, a Biomedical Research Engineer, has worked at NASA since 2001 as Lead Innovator and Principal Investigator for the VESsel GENeration Analysis (VESGEN) Software, a fractal-based systems approach to vascular mapping and quantification. Research by her team in angiogenesis and other microvascular remodeling phenomena, particularly in the human retina, are being applied to astronaut health problems and ISS Life Sciences research. Prior to her transfer to the Space Biosciences Division at Ames in 2014, Patricia worked at the John Glenn NASA Research Center. Patricia trained in junior faculty and postdoctoral positions in angiogenesis research in the Schools of Medicine at UCSF and University of Washington, Seattle. She obtained her PhD in tissue engineering from the Department of Chemical Engineering at Johns Hopkins University in 1992, and her Master's Degree in Chemical Engineering at Case Western Reserve University. Prior to graduate school, she worked for several years in a biotechnology startup at KMS Industries, an optical physics research company in Ann Arbor, MI.

NASA Ames SLSTP
2015 Profile Book