



Editor: Rachel Baugh

Summer Program 2022

We are excited to welcome another exceptional group of interns to the Aspironaut™ Summer Research Internship program. **Sixteen undergraduate and 18 high school students from 13 states will be trained by 24 mentors** for a summer of discovery science research, professional skills development, and wellness training. Welcome, 2022 Aspironauts!



Kidney 101 Course Launch



Aspironaut™ will launch a **Kidney 101 course this summer that will cover topics in basic renal biology and disease**. Four one-hour sessions will be led by Tom DuBose, M.D., a nephrologist, senior scientist, and former president of the American Society of Nephrology. He will cover the following topics: 1) what the kidneys do, 2) the nephron, 3) glomerular function with emphasis on filtration, 4) highlights of tubular transport, 5) primary and secondary disease of the kidney that causes loss of function, 6) disorders of transport that cause electrolyte and acid-base disorders, 7) chronic kidney disease, scope, consequences, and strategies to slow progression, and 8) kidney failure, an overview of dialysis and transplantation.

DONATE NOW

We Matched!

Congratulations to six Aspirnauts who have finished medical school and matched into medical residency programs!

Kodi Alvord, a 2015 Aspirnaut™ intern, graduated from Brown University School of Medicine and will be completing his residency at Hilo Medical Center in Hawaii in Family Medicine.

Kevin Fialkowski, a two-time Aspirnaut™ intern and resident counselor, graduated from the University of Arkansas Medical School and will be taking a transition year at St. Joseph Mercy Hospital in Ann Arbor before starting his diagnostic radiology residency at Massachusetts General Hospital/Harvard Medical School in Boston.

Meghan Kramer, a 2016 Aspirnaut™ intern, graduated from the University of Tennessee Health Sciences Center in Memphis and will begin her residency at the UTHSC-Nashville Internal Medicine Residency program at Ascension St. Thomas.

Christina Patel, 2016 Aspirnaut™ intern, graduated from the University of Tennessee Health Science Center and will complete her internal medicine residency at Providence St. Vincent Medical Center, Portland, Oregon.

William Drake Sanders, a 2015 Aspirnaut™ intern and resident counselor, graduated from Duke University School of Medicine and will begin his residency at the University of Texas Southwestern School of Medicine, Dallas, Texas, in anesthesiology.

Cody Stothers, a five-time Aspirnaut™ intern, JW Freytag Scholar, and resident counselor, graduated from Vanderbilt University School of Medicine's M.D./Ph.D. program and will complete his residency at the University of Cincinnati Medical Center in emergency medicine.



Kodi Alvord

Hilo Medical Center in Hawaii,
Family Medicine



Kevin Fialkowski

Massachusetts General
Hospital/Harvard Medical School



Meghan Kramer

University of Tennessee Health
Sciences-Nashville Ascension St.
Thomas
Internal Medicine



Christina Patel

Providence St. Vincent Medical Center
Internal Medicine



William Drake Sanders

University of Texas Southwestern
School of Medicine
Anesthesiology



Cody Stothers

University of Cincinnati Medical Center
Emergency Medicine

Featured Aspirnaut™

Neve Redhair

Neve Redhair is a two-time high school Aspirnaut™ participant and will return for a third summer as an undergraduate intern and resident counselor this summer. Neve grew up in Arizona and is currently a freshman at Stanford University in Palo Alto, California.

1. Tell me a little about your heritage and time spent on the Navajo Reservation.

I am of the Bitter Water clan, born for the Salt People clan. My maternal grandfather is of the One-Who-Walks-Around clan, and my paternal grandfather is of the White People. I grew up and went to school in Page, Arizona. Although I did not live in the Navajo Nation, I take great pride in my Diné (Navajo) culture. For as long as I can remember, many of the Diné elders stressed to the younger generations the importance of education. Education is power. It can shape one's life, as it did for me.

Most of my time on the Navajo Reservation took place during the summers and school breaks. I visited my mother's hometown, Tuba City, Arizona, to connect with my relatives. My auntie, Raquel, is fluent in our native language and understands so much of our Navajo history and tradition. She is always available to answer any of my questions regarding our culture. She has played a significant role in my perception of who I would like to become in the future.

I have absorbed many valuable teachings from my family, but most of what I have learned comes from shináí asdzaan (my paternal grandmother), the former Miss Navajo in 1976. She tells me creation stories during the winter, stories of my ancestors that escaped the Long Walk, and many details of her past that have shaped her into who she is today. My Navajo culture continues to shape the type of person I will become.

I knew that choosing a career path in medicine would take dedication and resilience. I am proud of my indigenous background and past ancestors who endured many hardships. I know that my culture will always guide me in the right direction.

2. What has influenced your educational and career path most?

The start of high school was when I developed my passion for the medical field. My mom first inspired me to love medicine and all of its glory. I have indirectly witnessed her practice as a physician assistant in primary care medicine on the Navajo Reservation. She has been a huge influence on my career path and a strong example for native women. Over the years, I realized the magnitude of rising health issues on the Navajo Reservation compared to the national average. One of my main ambitions in the future is to come back and help resolve current medical problems in my community.

There are not enough physicians across the nation who are Native American. I feel the need to lead by example for future generations, just as my mother did for me. It is stated by the 2018 AMA Council on Medical Education report that out of the estimated 5.2 million American Indians and Alaska Natives in the U.S., only 3,400 are physicians. That is just 0.4% of the physician workforce. As an indigenous woman, I hope to bridge this diversity gap.

3. How did you hear about Aspirnaut™? What made you apply?

Lori Alvord, M.D., is a long-time family friend and was the first Diné (Navajo) woman ever to become board certified in surgery. One day, my family was wake surfing with the Alvords on their boat at Lake Powell, just outside of my hometown. I was just a sophomore in high school, but Lori spoke highly of the Aspirnaut™ research internship at Vanderbilt University Medical Center. Both Lori's children, Kate and Kodi Alvord, had attended the Aspirnaut™ program in the past. The next step was clear; there was no way I could turn down this fantastic opportunity. I applied and became an intern during the



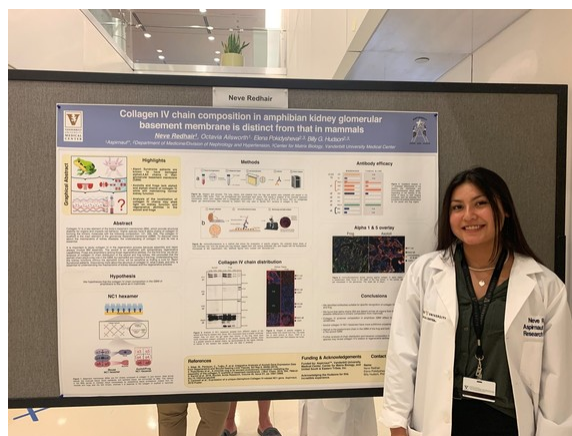
summers of 2019 and 2021. This year will be my third summer as an Aspirnaut™ intern, and I couldn't be more thrilled.

4. How has Aspirnaut impacted you?

The Aspirnaut™ program has widened my perspective on potential opportunities and what I can achieve in the future. I have made valuable connections through Aspirnaut™, and I cherish those relationships greatly. My past mentors have exuded a passion for their work, which has helped form my perception of the biomedical science field. There are various learning opportunities outside the lab for students that help guide my personal journey, from the ACT study session, the one-on-one mentoring sessions with Dr. Julie Hudson, the luncheons with highly respected speakers, and so much more. The Aspirnaut™ program was challenging in the best way possible, but most importantly, it helped me to develop skills in and out of the lab that I can continue to build.

5. What is your favorite memory from your summers with Aspirnaut™?

The primary outline of any film starts with the exposition, leading to rising action, which build-up to the climax or big moment. The big moment for me during my summers with Aspirnaut™ is definitely when we all present our scientific posters. I vividly remember the days when I gave my poster presentation in the main lounge of Light Hall. So many emotions ran through my mind, like exhilaration, tension, passion, and gratification. All of the work I had conducted over the summer was displayed for physicians, post-docs, scientists, students, and locals to ponder or ask questions.



6. What is your proudest achievement or contribution to science?

This past summer, I worked with Dr. Elena Pokidysheva on the collagen IV chain composition in amphibian kidneys. To obtain a good picture of the collagen IV chain in the frog and axolotl, we processed the organs of both amphibians through immunofluorescence staining. This tedious process could've gone perfect the first time, or it could've been inconclusive. Dr. Pokidysheva and I took the picture on this intensely precise microscope, and I remember her becoming excited and grateful at how beautiful our overlay looked. This data helped us conclude that axolotls are missing two alpha chains that frogs and mammals already have. This finding led to more questions and directions for the future.

7. What challenges have you faced and overcome in life?

One of the obstacles I overcame during high school was how easy it is to get wrapped up in things like partying, drinking, and drugs. I found ways to keep myself busy that were beneficial to my well-being. Choosing the right opportunities like sports, volunteering, clubs, and developing hobbies contributed to my support system and social involvement. Balancing responsibilities as a student-athlete was something I prioritized and was the most difficult to grasp. The coursework in all of my STEM classes required out-of-class work, textbooks, reading, and studying. I participated in varsity basketball and volleyball all four years of high school and multiple extracurricular activities outside the classroom. Maintaining a routine, blocking out study time, keeping a healthy sleeping schedule, attending all classes, and communicating with my teachers are habits I developed that helped guide my academic success.

8. What are your future goals and aspirations?

The start of high school is when I developed my passion for the medical field. Since then, I have second-handedly witnessed the poverty and health problems of the Diné people. Healthcare is a critical component of the wellness of all people. COVID-19 has shown the various limitations of the Diné healthcare systems. Our tribal communities took the most brutal hit from the pandemic due to lack of affordable testing, not enough healthcare workers, low capacities, and limited resources. There is so much I want to provide, and pursuing a medical degree is a start. In the long-term, I want to start campaigns to prevent diseases like diabetes, lead the youth of my community by being a role

model, and integrate Navajo techniques into modern medicine. As a Diné woman, I believe it is my duty to give back and return to my Native American community.

Welcome Our New Team Member



Meagan Postema, Ph.D.

Program Manager

Meagan Postema joined the Aspirnaut™ team in January as the Program Manager and manages day-to-day operations. Born and raised in rural Michigan, Meagan became interested in science at a young age and went on to receive her B.S. in Biomedical Sciences from Central Michigan University in 2012. She then completed her Ph.D. in the Department of Cell and Developmental Biology at Vanderbilt University in 2019. Her research interests include the molecules and mechanisms underlying intestinal brush border assembly. Additionally, Postema has completed an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellowship at the National Science Foundation (NSF) where she worked on several projects focused on mitigating global environmental change. She has certifications in Education Program Evaluation from Georgetown University and Science Diplomacy from the Inter-American Institute for Global Change Research. She is currently in the process of completing a Project Management Professional (PMP) certification from the Project Management Institute.

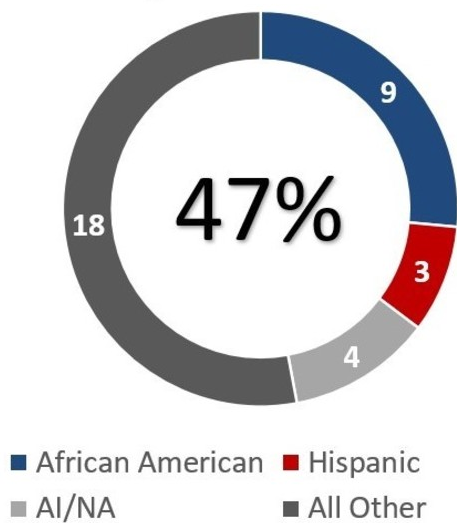
During graduate school at Vanderbilt, Meagan developed a passion for science education and STEM outreach. She became involved with several non-profits in the Nashville community and helped develop workshops and activities to foster excitement among K-12 students about science. Meagan is also passionate about career development and making sure that students interested in STEM have a thorough understanding of the many career paths available.

In her free time, Meagan enjoys practicing vinyasa yoga, reading thriller novels, traveling around the world, taking care of her plants, and hanging out with her two fluffy orange cats.

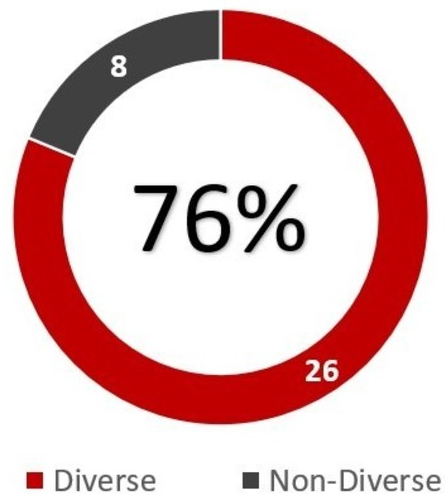
2022 Aspirnaut™ Participant Data

Over the years we have established a successful framework for diversity recruitment. Recruitment begins in September of the year preceding the summer research program. Each fall, our internship announcement is posted on multiple websites, and a letter and program brochure are sent to over 1,700 key STEM faculty and administrators. Below is a snapshot of data for incoming 2022 interns.

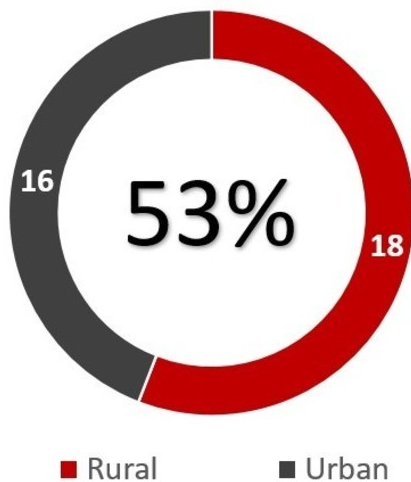
RACIAL/ETHNIC DIVERSITY



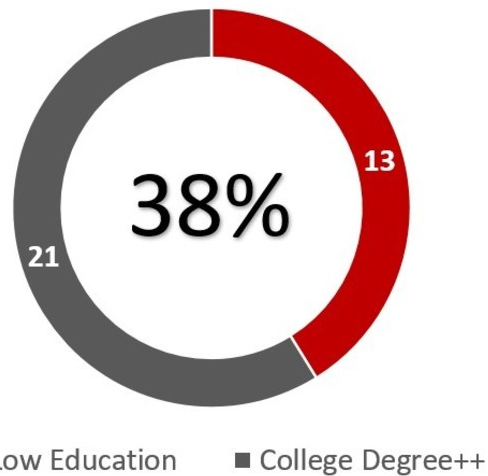
ECONOMIC DIVERSITY



GEOGRAPHIC DIVERSITY



FAMILY LEVEL OF EDUCATION: NO COLLEGE DEGREE



Urbanized: Area of 50,000 or more people

Rural: Populations not included in an urbanized area or part of a metropolitan statistical area

Low Family Level of Education: No parent/guardian has a 4-year college degree

If you would like more information on how to get involved with Aspernaut™, please contact Rachel Baugh @ rachel.baugh@aspernaut.org

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