



## Rising Stars

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### **Congratulations** Jennifer Bentz,

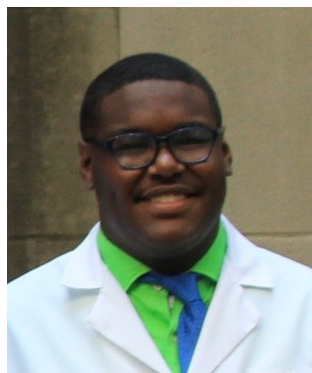
**Tyrone Gamble, Amy Rushing, and Mack Williams**

**Jr.** on their acceptances to advanced degree programs. **Jennifer Bentz** was a 2018 Aspironaut™ intern from Berea College and will start medical school at Washington University in St. Louis in the fall of 2020. **Tyrone Gamble**, a four-time Aspironaut™ intern and Hendrix College student, has been accepted to the University of Arkansas for Medical Sciences Master's of Public Health program. **Amy Rushing**, a 4-time Aspironaut™ participant and Vanderbilt University graduate, will start Yale School of Medicine's M.D./Ph.D. program in summer 2020. **Mack Williams Jr.** is a 3-time Aspironaut™ participant who will graduate from Xavier University in Spring 2020 and attend Tulane University Master's program for Biostatistics. We are proud of your accomplishments and wish you all the best!



**Jennifer Bentz**

Accepted to  
Washington University  
School of Medicine



**Tyrone Gamble**

Accepted to the  
University of Arkansas  
for Medical Sciences  
MPH program



**Amy Rushing**

Accepted into the  
M.D./Ph.D. program at  
Yale School of  
Medicine



**Mack Williams Jr.**

Accepted to Tulane  
University Masters  
program for Biostatistics.

# Summer Research Internship 2020

We have just made our selections for summer 2020 and look forward to introducing you to the group in our next issue. They are from 16 states, 12 universities, and 14 high schools. Special thanks to all who have helped fund this summer's program and make this spectacular opportunity available to talented students from diverse communities. For more information on how you can sponsor a student's experience, please email Rachel Baugh @ [rachel.baugh@vumc.org](mailto:rachel.baugh@vumc.org) or call 615-875-8723.

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## **Featured Aspirnaut™**

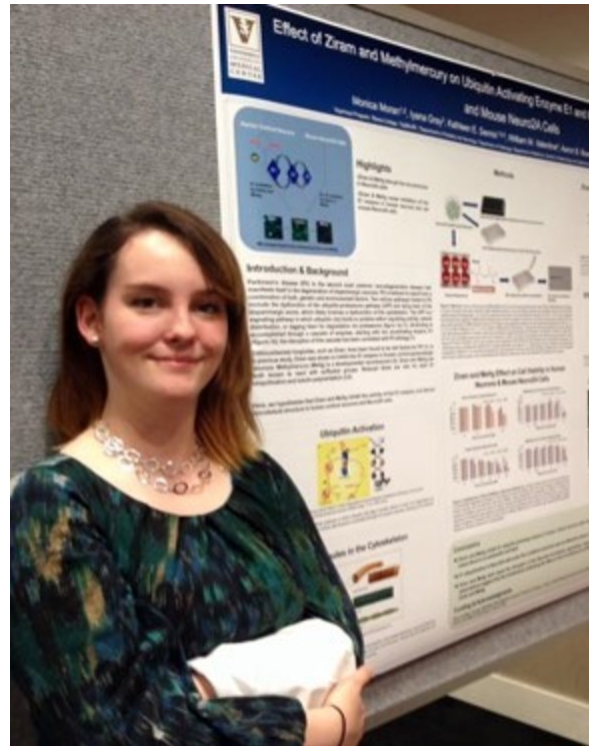
### **Monica Moran**

Monica is a six-time Aspirnaut™ summer research intern currently earning her Ph.D. from the University of Alabama Birmingham. She will present an abstract during the Immunology 2020 Convention in Honolulu, Hawaii. We caught up with her recently.

#### **1. Tell us about your graduate research.**

I am investigating both basic immunology with the regulation of macrophage-mediated inflammation and simultaneously studying the medical implications caused by cytomegalovirus-exacerbated inflammatory bowel disease (IBD).

My host lab, under Drs. Phillip Smith and Lesley Smythies, has characterized some unique features in human intestinal macrophages that allow them to be non-inflammatory despite toll-like receptor (TLR) stimulation. This lab also worked on cytomegalovirus (CMV), a  $\beta$ -herpesvirus, in how it resulted in acute inflammatory responses from infected intestinal macrophages. However, I want to know how these responses remain chronic.



#### **2. What sparked your interest in this topic of research?**

Basic biology has always been the most interesting general area of research to me because I just enjoy learning how things work mechanistically, especially within molecular immunology.

#### **3. Why is your research important?**

CMV has a seroprevalence greater than 50% on a global scale. In immunocompetent individuals, it is latent, thus asymptomatic. However, CMV can be reactivated during immunosuppression, which can be caused by HIV infection, post-organ transplantation, immunosuppressive therapy, and other immunocompromising conditions. CMV reactivation in the gut leads to IBD-like symptoms characteristic of ulceration and inflammation in sites of infection.

While we know the mechanisms by which CMV induces acute inflammatory responses in infected intestinal macrophages, we do not know how such responses are maintained to cause persistent macrophage-mediated inflammation. Therefore, understanding this important and unexplained component of CMV-macrophage immunobiology will provide insight into the mechanism of persistent CMV inflammatory disease and potentially uncover new possibilities for therapeutic intervention.

#### **4. What's it like to discover something?**



I become quite exhilarated. Discovering something new doesn't happen on a daily basis. If you ask any researcher, they'll probably tell you that most of their data isn't what they were hoping for. However, all of the hard work, dedication, and perseverance just makes finding something real and unique a lot richer. It's kind of like going without water for a while, but then you swear that the first drink of water afterward was the best drink you've ever experienced. And it's that feeling that overrides the memory of the negative aspects within research; you remember the hard

work involved, but you mostly remember the incredible experience of finally finding the answer to your question. It reminds you of why you chose to pursue research.

## 5. What is the coolest thing about your research, work, or education?

The coolest thing about this line of work is being surrounded by those who are as big of a nerd as you are. Growing up in the rural south, having an interest in STEM is a bit of an outlier; you tend to stand out. However, UAB has an atmosphere that sponsors so much collaborative energy; researchers are excited to explain what they do. It gives you a kid-in-the-candy-shop type of energy where there is just so much to learn and discover, and all of this information is being handed down to you.

## 6. How did you get where you are today?

I owe where I am to the Aspirnaut™ program, conducted by Drs. Billy and Julie Hudson at Vanderbilt. They accepted me into their summer research program when I was an upcoming junior in high school. I didn't even know that I was interested in research at the time; I enjoyed learning how things worked, especially in living organisms, but I had very limited direction.

The Aspirnaut™ program allowed me to work in Dr. Billy Hudson's nephrology lab for 2.5 years and four summers, and then in Dr. Diana Neely's neurology lab for another two summers. This program allowed me to discover who I am, and to reinvent my dreams to structure them into a reality. Working in the lab, I learned that I really enjoyed solving puzzles that could provide answers for a larger purpose. I found a field that addresses something much larger than myself by helping the medical community, but it's also a field that I can wake up to every day, excited to be a part of it.

## 7. What are your goals for the future?

Currently, my overall goal is to gain a faculty position in biomedical academia where I can focus on basic immunology in relation to autoimmunity. Following this, I would also be interested in establishing a program, or extend the Aspirnaut™ program, for underprivileged high school and undergraduate students curious about science and research just so I could give back to the community.

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## First Place

Congratulations **Clara Reasoner** for receiving 1st place for her oral presentation in the Cell and Molecular Biology section at the Kentucky Academy of Sciences. Clara's research is titled "Characterizing preferential RNA-binding targets of ELAVL during an immune challenge." Clara is a two-time Aspirnaut™ intern attending Berea College.



Berea University  
Student, **Clara**



## College Mentor: Cynthia Nash

Cynthia Nash, the founder of Amazing Journey College Counseling®, has spent over twenty years working in enrollment management guiding high school students through the admission and financial aid system. Since 2010, Cynthia has provided the Aspirnaut™ high school interns with strategies for creating the strongest possible college applications, writing powerful essays, and choosing the best teachers for letters of recommendation. Cynthia is a champion for students, and firmly believes, "Every journey to college should be amazing!"



Cynthia Nash working with 2019 High School Summer Interns

For first-generation and under-resourced students, Cynthia has the expertise to assist these students as they and their families navigate uncharted territory. She clearly understands that getting these students into college changes the future of their families for generations to come.

"It is an honor and privilege to work with the Aspirnauts! These students are shining stars, and as a result of the Aspirnaut™ Program, doors have been opened, and their futures have been changed! I am so humbled to have the opportunity to watch them bloom into incredible young adults; their research will impact all our futures!"

## Wellness Update

We are pleased to report that over 50% of our summer interns have continued with a physical fitness routine after the completion of the summer program. The group maintained a 23% improvement in their healthy lifestyle choices. We extended the workout program to include Aspirnaut™ mentors twice per week during the school year. Mentors engage in a customized workout designed for individual personal fitness needs. Kudos to both groups for keeping up their great work!



## Fitness Any Time Anywhere: The Plank

The plank is a simple and effective core exercise that helps build stability and strength throughout your entire body. You can perform a plank anywhere and won't need to buy expensive exercise equipment. There are a variety of modifications to the plank to accommodate all fitness levels.

Key tips

- Make sure elbows are directly under your shoulders with the hands pointing forward
- Keep chest and abs tight throughout the exercise. Don't let your back arch.

- Your thigh and glute muscle should be activated to help maintain balance.

To increase your core strength and endurance, begin by holding the plank for 20 seconds and build up your time.



Beginner:

Knee Plank



Intermediate:

Elbow Plank



Advanced:

Plank with Alternating Arm and  
Leg Raise

\*a special thanks to our fitness model, Dr. Julie Hudson

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