

**Infinite Possibilities: Profiles of Summer Research from
The Gatton Academy of Mathematics and Science in Kentucky**

Volume Twelve - Summer 2023



© 2023 Western Kentucky University.

The book author retains sole copyright to their contributions to this book.

Layout and design by Deanna M. Jenkins, Philanthropy & Alumni Engagement, WKU. Student headshots courtesy of Sam Oldenburg. Research photos courtesy of Clinton Lewis, University Photographer, WKU. Additional photos courtesy of Gatton Academy staff and students.

THE GATTON
ACADEMY 
of Mathematics and Science

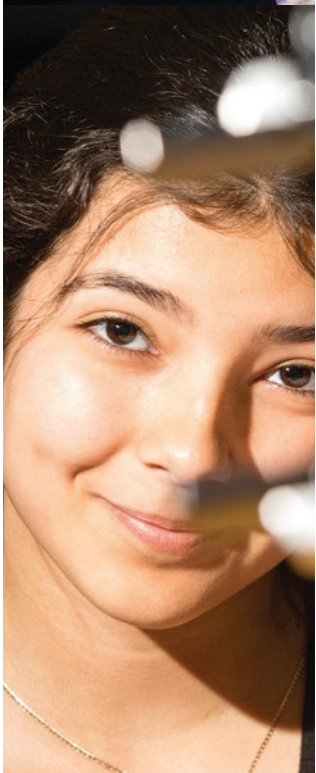
Infinite Possibilities:
*Profiles of Summer Research from
The Gatton Academy of Mathematics and Science in Kentucky*

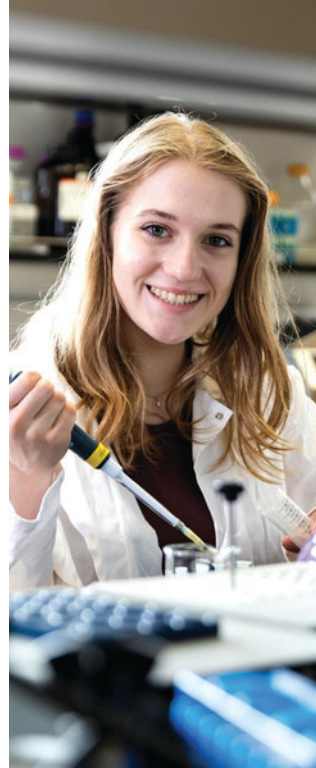
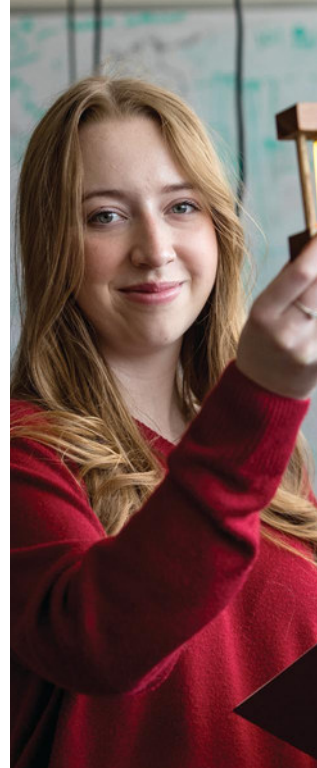
Volume Twelve - Summer 2023



Table of Contents

Introduction	8
Letter from Dr. Lynette Breedlove	10
Tobi Akangbe	12
Mykah Carden	16
Landon Carlton	20
Tyler Clifton	24
Kal-El Cline	28
Amelie Fuentes	32
Nikhil Kumar	36
Jacob Ladwig	40
Albert-Presley Mbanfu	44
Sara Nath	48
Mara Neace	52
Amy Pan	56
Om Patel	60
Braeden Patrick	64
Laurel Patterson	68
Sofia Sileo	72
Hunter Smith	76
Jacob Thomas	80
Gracie Veith	84
Vivianna Weaver	88
Thank You!	92
Students and Mentors	94





About the Gatton Research Internship Grant Program

The Gatton Academy of Mathematics and Science in Kentucky created the Gatton Research Internship Grant in 2010. Made possible from a gift from Mr. Carol Martin “Bill” Gatton, the program offers grants to Gatton Academy students between their junior and senior years to support summer research internships across the Commonwealth, the USA, and the world. By providing funding, the program directly creates research internships that otherwise would not have existed for Gatton Academy students. In its 14 year history, the program has created 216 research internships for Gatton Academy students to study STEM problems in their areas of interest in devoted, full-time research settings.

Each year, the research funded by the Gatton Research Internship Grant program yields significant outcomes for recipients. All 2023 recipients successfully completed their RIGs in various locations; WKU, Brown University in Providence, R.I., Boston University in Boston, Mass., Indiana University in Bloomington, Ind., Purdue University in Indiana, and the University of Kentucky. Each has plans for submitting their research to competitions, conferences, and/or disciplinary-appropriate journals for publications, just as 2022’s recipients did. A sampling of their achievements include:

- Chezney Boothe, who presented her research, “Molecular evolution of the cancer-related tyrosine Kinase ABL1 gene (ABL1),” at the WKU Student Research Conference, Bowling Green, Ky.
- Siheon Im, who presented his research, “The effects of V-ATPase on the air sac primordium,” at the Kentucky Academy of Science Annual Meeting, Morehead, Ky.
- Sean Korner, who presented his research, “Iron(II) metal-organic coordination polymer with open metal sites,” at the American Chemical Society Spring 2023 Conference, Indianapolis, Ind.
- Hannah Laney, who presented her research, “Synthesis of 4d- and 5d-element based transition metal oxides,” at the 61st National Junior Science and Humanities Symposium, Virginia Beach, Va., and was a Semi-Finalist in the prestigious Regeneron competition.
- Caden Lucas, who presented his research, “Business across generations: A regulatory focus theory and generational perspective on small-scale corporate social responsibility,” at the Small Business Institute Annual Conference, Denver, Colo.
- Divya Naidugari, who presented her research, “Regional control of hairless and hair bearing skin: with DKK2 Wnt/B-catenin signaling pathways with the LEF/TCF family,” at the Southern California Conference for Undergraduate Research in Malibu, Calif., and received 1st Place in her category at the Louisville Regional Science and Engineering Fair.
- Gabriel Nowaskie, who presented his research, “Quarkonium dynamics in phase space,” at the International Science and Engineering Fair, Dallas, Texas, and received 3rd Place in his category.
- Kareena Pansuria, who presented her research, “Iron-based metal-organic framework for photocatalytic reduction of carbon dioxide to carbon monoxide,” at the Louisville Regional Science and Engineering Fair and received 1st Place in her category.
- Maria Pfeifer, who presented her research, “College-aged women and their knowledge and attitudes of reproductive health,” at the Matthew Bulfin Educational Conference, Tucson, Ariz.
- Carolina Wheeler, who presented her research, “Virtual reality campus tour using 3D modeling and scanning,” at the Mid-South Association of Computing Machinery Conference, Gatlinburg, Tenn., and received 1st Place in her category at the Louisville Regional Science and Engineering Fair.

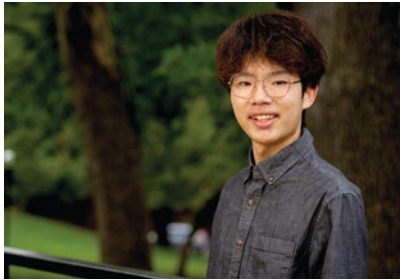
This year the Gatton Research Internship Grant program funded 20 rising high school seniors during the summer of 2023. The following pages feature these students.



Chezney Boothe



Gabriel Nowaskie



Siheon Im



Caden Lucas



Kareena Pansuria



Sean Korner



Divya Naidugari



Maria Pfeifer



Hannah Laney



Carolina Wheeler



Twenty students said yes to exploring their infinite possibilities through summer research opportunities made possible by Mr. Gatton's generous funding, funding through the GM Community Grant, the Kentucky legislature's annual funding of The Gatton Academy, and mentors generously giving of their time and knowledge. These intensive summer experiences provide students the chance to explore areas of deep interest, which directly impacts decisions they will make about future careers in science, technology, engineering, and mathematics.

While these students are part of the 17th graduating class of The Gatton Academy, they are the 14th set of students to participate in the Research Internship Grant (RIG) program. The program has expanded over the years to serve more students who work with mentors in a wider array of locations. This summer includes the first RIG mentored by a Gatton alum. We are grateful for the example Dr. Shelby Rader (Gatton 2009, Estill County High School) set, as she has inspired other alumni to reach out about hosting RIG students in their laboratories.

Each of the students highlighted in this book contributed to scientific advancements this summer, despite being teenagers who have yet to earn high school diplomas. They contributed to important work regarding Alzheimer's diagnosis, cardiac health, sleep deprivation, traumatic brain injury, robotics, the integration of computer science and performance art, water quality, language learning, polymers, and more.

I am grateful for these students saying yes to an opportunity and making the most of it. In addition, I am grateful for the wonderful mentors who invested in these students and their futures. I am also grateful to donors and the Kentucky General Assembly for financially investing in Kentucky's amazing teens, who are already positively contributing to Kentucky and beyond.

With gratitude,
Lynette Breedlove, Ph.D.
Director





Tobi Akangbe
Bowling Green, Kentucky (Warren County)

Dear Gatton Supporter,

My name is Tobi Akangbe, and I was blessed with the opportunity to participate in undergraduate research at Western Kentucky University over the summer. I received a Research Internship Grant (RIG) from The Gatton Academy to work in a research lab for eight weeks. I worked in the biology field with Dr. Noah Ashley and Dr. Van Thuan Nguyen. My research focused on motor coordination and balance in rodents with and without Sleep Fragmentation. While in the lab, I did all my experiments and data collection in the morning, then recorded and analyzed the results during the afternoon. I had a lot of fun working in the lab alongside my coworkers. Because of them, I truly enjoyed my eight-week undergraduate research.

This opportunity let me not only participate in research, but also helped me achieve my academic goals. My goal was to participate in a program that allowed me to explore and decide what I want to pursue as my career in college. With the help of this eight-week internship, I was able to determine that I love working in a lab and hope to pursue a career as a researcher in the medical field. Now that I know my interests, I will be taking many lab-related classes to help ensure this is what I want for myself and to get more experience. I am grateful to The Gatton Academy for the chance to participate in research, as well as my mentors, Dr. Ashley and Dr. Van, for helping make this all possible.

Sincerely,

Tobi Akangbe

Tobi Akangbe

Home High School:

South Warren High School

Research Area:

Biology

Research Topic:

Tobi Akangbe will be examining the effects of glucocorticoids on responses to sleep loss.

Career Goal:

Registered Nurse

Research Mentor:

Dr. Noah Ashley,
Department of Biology,
Western Kentucky University

Extracurricular Activities:

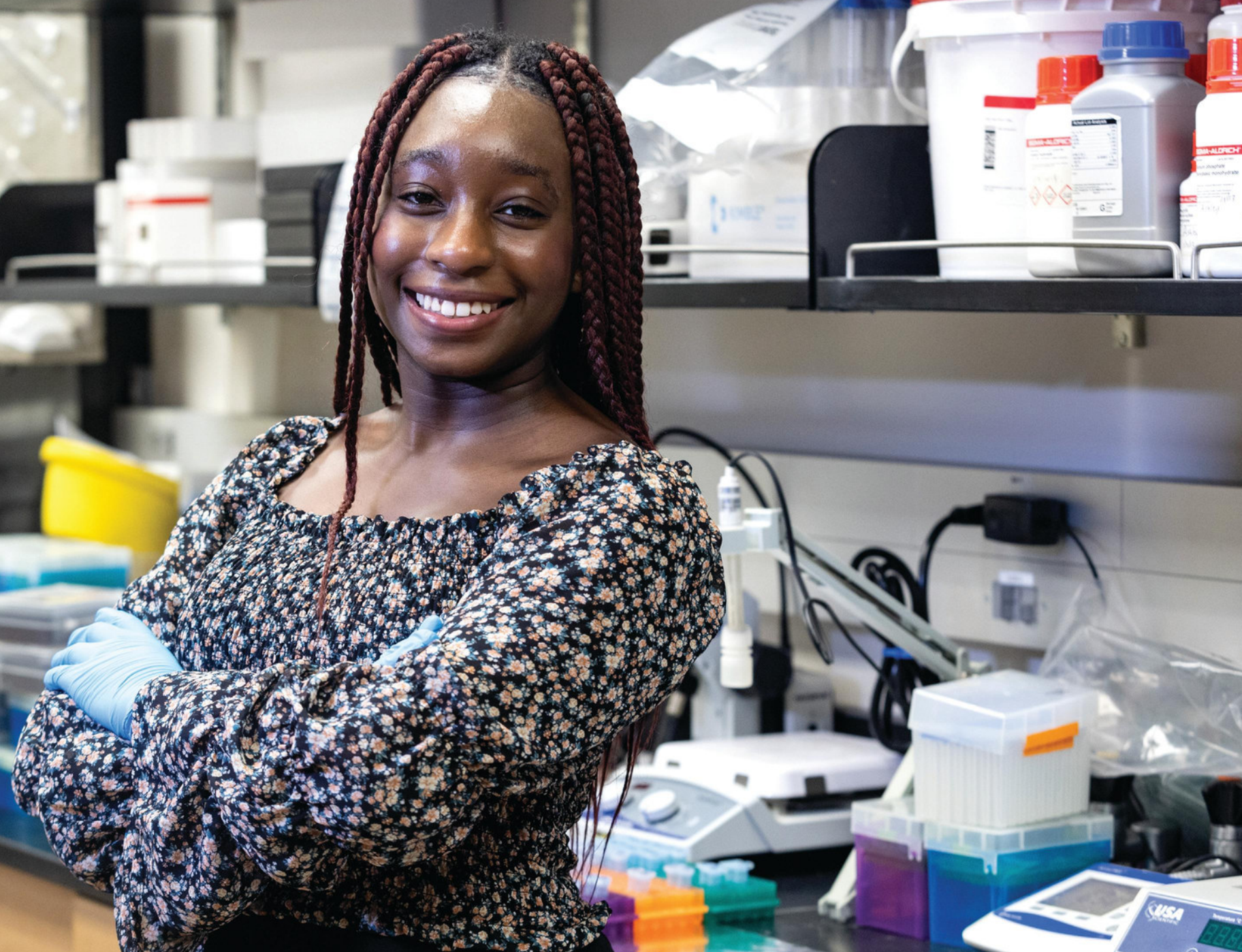
Gatton Academy Medical
Association, Biology Club, Chemistry
Club, Women in STEM

“To be a young person interested in research in the STEM field is a big deal to me. STEM has a huge impact on our society and being able to be a part of that at such a young age is a privilege I am truly grateful for.”

“The biggest change I have experienced in my first year at The Gatton Academy was having to make new friends. Leaving behind your old friends and going to a brand new school is difficult, but the Gatton community (students and staff) have made this change so much easier and worth it. I live in such a positive community with wonderful people and have made real lifelong friends.”

“The biggest challenge in my research I will have to overcome is when we don’t get the outcome we expected. Things are not always going to go as planned, but I will learn how to deal with those outcomes and make the most out of our findings.”







Mykah Carden
Greenville, Kentucky (Muhlenberg County)

Dear Gatton Supporter,

My research involved assessing the risk of building on a karst landscape by analyzing an area's geology, speleology, and geography, using the Plano area of Warren County as a case study. I spent the summer investigating and surveying various sinkholes and caves in Plano. Using speleological survey data, geological mapping, and the abundant field notes we collected, we assessed the potential issues and problems further urban development in the area could face.

I gave multiple talks over the summer, one of which included this year's National Speleological Society Convention in Elkins, W.Va. Later this year, I am set to give presentations at the Kentucky Speleological Society's annual meeting, the Tennessee Cave Survey's fall meeting in Sewanee, Tenn., and the National Cave and Karst Management Symposium in Chattanooga, Tenn.

Alongside the various opportunities to present my research, my internship has allowed me to develop many valuable skills needed as a future cave scientist. I got to take and assist in a Karst Field Studies course in Cave Survey & Cartography over the summer. The class taught me how to sketch all three views in a cave, handle survey instruments, and create cave maps. I also received training in advanced field techniques from my mentor, Dr. Patricia Kambesis. I was even able to purchase a full set of field gear for myself, including a vertical system and basic rigging supplies, through my grant funds.

I am extremely grateful for your support and the role it has played in allowing me to further develop my academic career and participate in research I am passionate about.

Thank you,
Mykah Carden

Mykah Carden

Home High School:

Russellville High School

Research Area:

Geology and Speleology

Research Topic:

Mykah Carden will be investigating the geological and hydrological aspects of the Hidden River Groundwater Basin.

Career Goal:

Environmental Consultant

Research Mentor:

Dr. Patricia Kambesis,
Department of Earth, Environmental
and Atmospheric Sciences,
Western Kentucky University

Extracurricular Activities:

Green River Grotto, Academic Team,
National Beta Club

“Before coming to Gatton, I really had no idea what I wanted to do. Research allowed me to explore what it was like working in different disciplines before I found one I was passionate about. Now that I do know what I like, research gives me the opportunity to give back and contribute to knowledge in a field I love.”

“The biggest challenge I will have to overcome in my research is the learning curve on the mapping software. I am already familiar with the survey and field work my project requires, but I have never worked with a geographic information system to map the data I collect in the cave.”

“After Gatton, I intend to earn a Ph.D. in Geology. This internship will give me more experience conducting research in my field, as well as presenting that research, something I have never done before. The skills and experience I gain from this internship will be invaluable to me later in my doctoral research.”







Landon Carlton
Rockcastle, Kentucky (Rockcastle County)

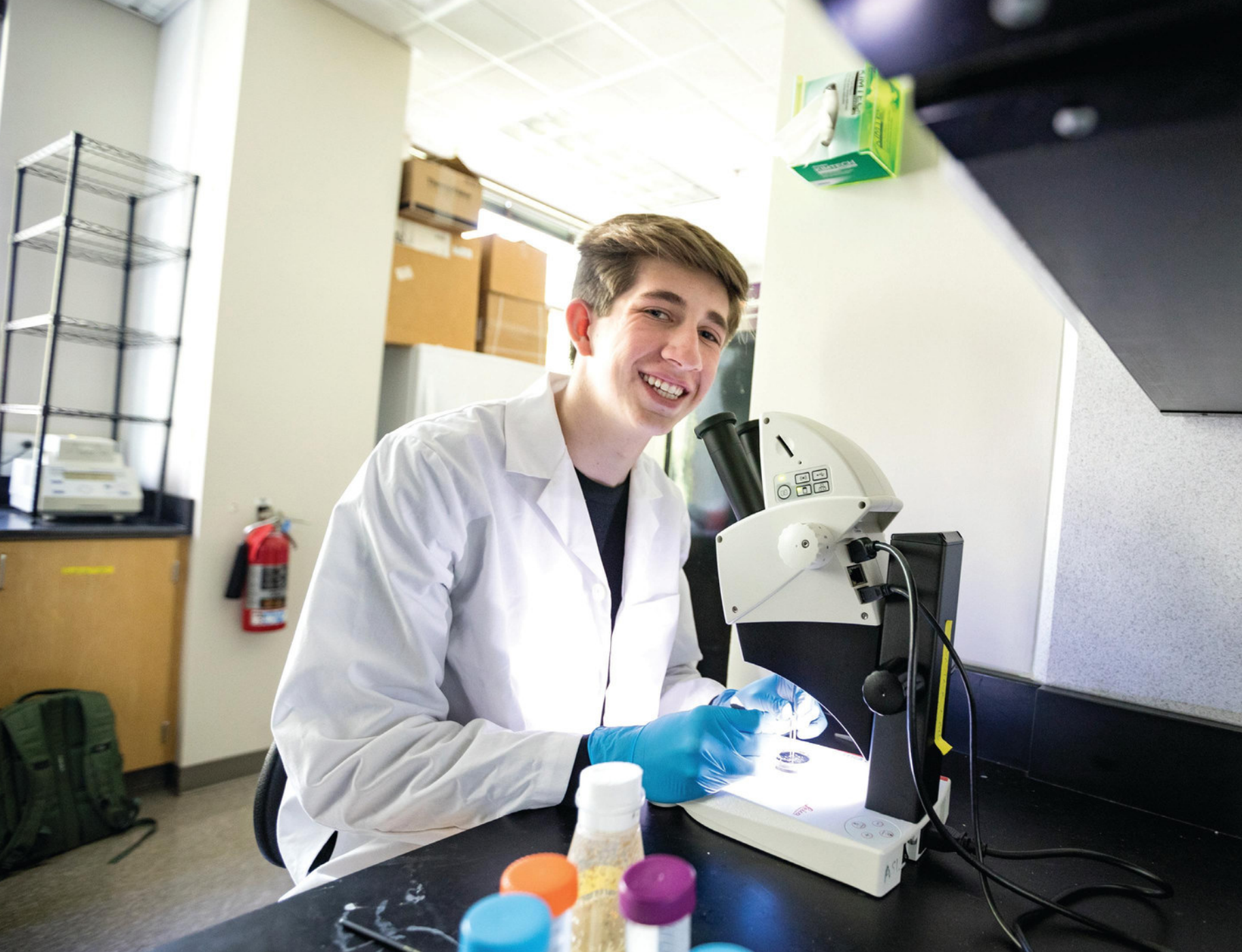
Dear Gatton Supporter,

You have placed the intangible in my hands.

Entering Gatton, I anticipated an environment of eager learners like myself. However, I soon discovered additional aspects that were foreign to me. Many fellow students hailed from college-educated families and well-funded districts. Some even had faculty parents. As a first-generation student from Appalachia, I felt undeserving and anxious, struggling in comparison. But I persevered and found my footing, facing the same challenges as those who once intimidated me. Then research came into view, an idea previously unexplored and never discussed at my previous school. I mustered the courage to email a professor, and he chose me. I joined the lab, applied to RIG, and was selected to begin my current project, which utilizes the fruit fly to explore developmental biological concepts. This unexpected path allowed me to pursue a novel and invigorating passion worry-free, as the financial burden on my family was absent because of the grant.

Without Gatton and opportunities like RIG, my hands would be empty, and the intangible dreams would remain distant. For that, I am forever appreciative of your generosity.

Gratefully,
Landon Carlton





“Research as a young person in STEM is very important to me. It has allowed me to make connections, identify resources, and build confidence in my field of interest.”

“The biggest change I have experienced in my first year of Gatton has without doubt been my work ethic. I have had to totally transition the way I think about learning and intelligence.”

“This research internship fits into my educational and career goals perfectly! I plan to pursue a degree in molecular biology, and I hope to continue research like this. The biggest challenge I will have to overcome is ensuring that failures do not set me back mentally.”

Landon Carlton

Home High School:

Rockcastle County High School

Research Area:

Biology

Research Topic:

Landon Carlton will be exploring the role of V-Type ATPase in *Drosophila* wing development.

Career Goal:

Clinical Researcher

Research Mentor:

Dr. Ajay Srivastava,
Department of Biology,
Western Kentucky University

Extracurricular Activities:

Co-President of Health Occupation Students of America, WKU Co-ed Intramural Volleyball, Gatton Volleyball Club, Gatton Biology Club, Gatton Chemistry Club, Gatton Caucus and Debate Club, WKU Association of Undergraduate Geneticists



Tyler Clifton
Corbin, Kentucky (Knox County)

Dear Gatton Supporter,

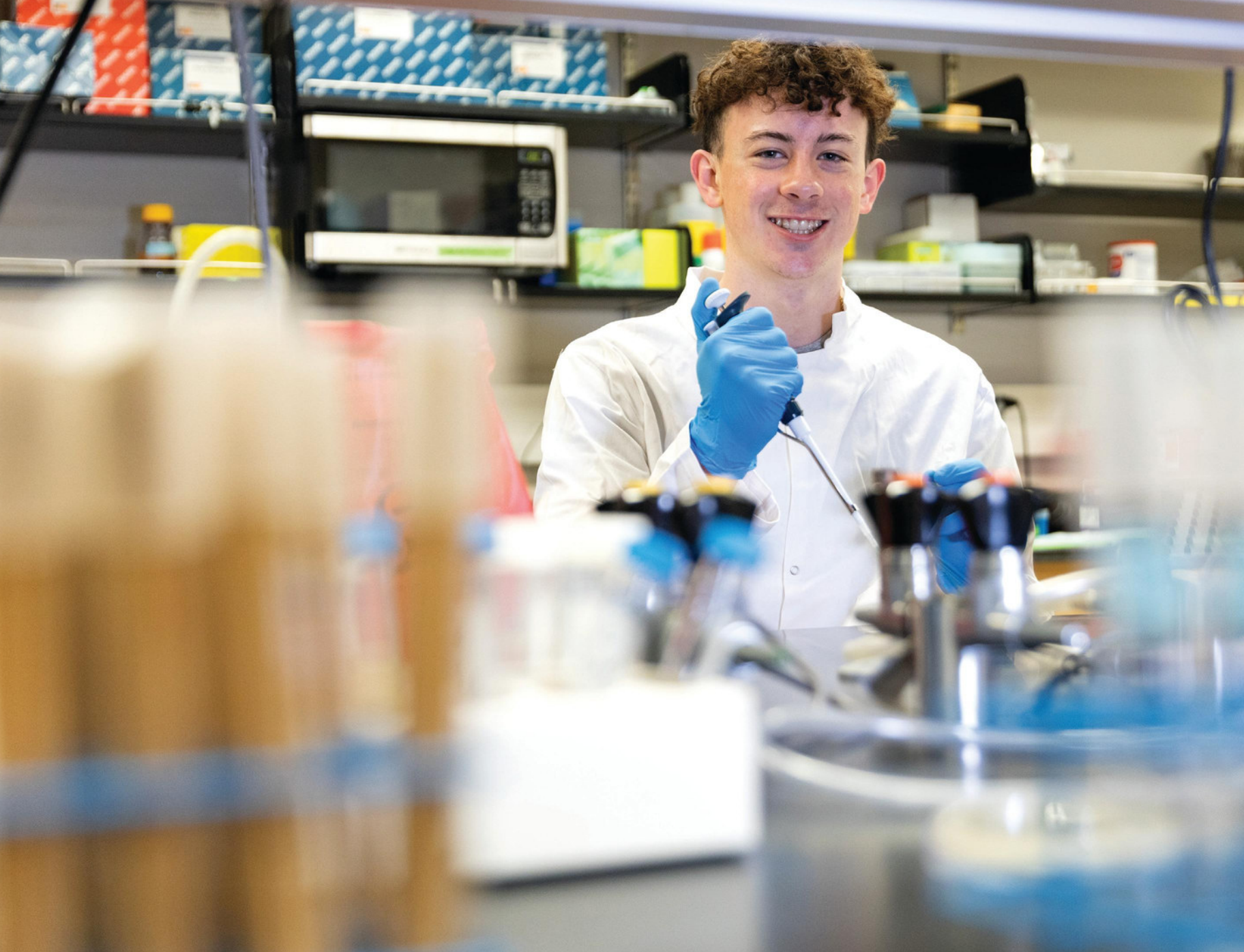
I want to extend my sincerest gratitude to you for your kind and generous support to The Gatton Academy. This summer, I had unprecedented exposure and access to world class research facilities that perpetuated and catalyzed my continued love for learning and immersion into biology and neuroscience. However, none of this access would be possible without kind supporters like you.

As someone who grew up in a small, rural town in Eastern Kentucky, I had never had such an outsize exposure to research. My status as a student at The Gatton Academy provided me with a new charter to further my interests in biology and neuroscience. In addition to research this summer, being a student at The Gatton Academy gave me experience in STEM and demonstrated to me the importance of conducting research. Both opportunities, during the school year and summer, have reaffirmed my passion for learning and revealed so much about who I am as a person.

In the future, I plan on pursuing a career in medicine as a physician. Throughout my summer research, I was given the opportunity to work alongside many people who work closely with medicine. The knowledge I gained from this experience is something I will forever cherish. I conducted my RIG at the University of Kentucky on the characterization of Microglia in a Novel APP-SAA KI model using the QUIVER technique as a result of your support.

Thank you for your continued commitment to The Gatton Academy and its students.

Sincerely,
Tyler Clifton





“The coolest thing about summer research is getting to work with many scientists and doctors who are also passionate about neuroscience. Through their guidance, I hope to learn more about the field, while also discovering how I want to pursue my career.”

“The moment when I realized STEM was my passion was when I made a volcano at my 5th grade Science Camp. Watching the chemical reaction that made my volcano blow up made me realize I wanted to do more experiments in science in the future.”

“The biggest challenge in my research I will have to overcome is learning about new concepts and equipment I am unfamiliar with, as well as working through any setbacks. Research can be both a frustrating and rewarding process, and I am excited to take part in it. I will also probably have to overcome my fear of mice.”

Tyler Clifton

Home High School:
Corbin High School

Research Area:
Biology

Research Topic:
Tyler Clifton will be investigating how neuron-glia interaction is disrupted following a mild traumatic brain injury.

Career Goal:
Anesthesiologist

Research Mentor:
Dr. Adam Bachstetter,
UK College of Medicine,
University of Kentucky

Extracurricular Activities:
Biology Club, Soccer Club, Volleyball Club, Gattton Academy Medical Association, Y-Club, Bible Study



Kal-El Cline
Smiths Grove, Kentucky (Warren County)

Dear Gatton Supporter,

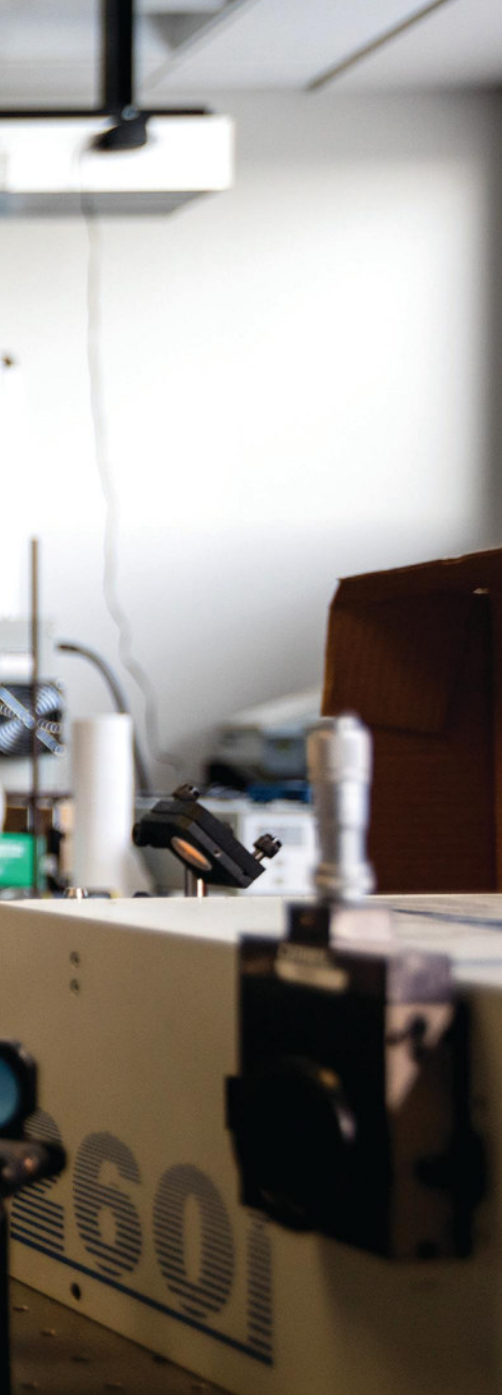
I was not Gatton's first, second, or even third choice. My Gatton acceptance letter came when I was in my second week of my junior year, on the day everyone else was moving in at Gatton. Even though it was only the second week at my sending school, everything already felt like it was moving at a snail's pace. The classes slogged on, and any opportunity outside of sports was mundane. However, that all changed when I got my acceptance letter.

Coming to Gatton this way made me see the true value of every opportunity now available, and I have set myself up to make the most of them. One of those opportunities that sparked my interest was the RIG program. Participating in something like this was a dream come true. No longer were scholarships and opportunities locked behind being a high-level athlete, but instead were wide open and within my grasp. These last eight weeks have been a fever dream of fun, experience, and development. I have learned advanced organic chemistry, used microscopes powerful enough to see on a micrometer scale, and met incredibly smart lab assistants and professors. I have been fortunate enough to learn under a great professor, Dr. Matthew Nee, and have fine-tuned skills that will help me in my future career.

While I may not have been the first pick on the team, that does not mean I will not strive to be an MVP. These opportunities are only available because of your continued support of the program, and for that you have my deepest thanks. You are my first supporter, and I hope you continue to cheer this program on so everyone can hit the major leagues.

With deep appreciation,
Kal-El Cline





“Doing this research gives me hands-on experience in a field I am interested in, but not yet fully devoted to. This allows me to see if this is something I want to do in the future or not.”

“The biggest challenge I have experienced has been the workload. Coming in, I thought this would be like normal high school. However, taking WKU courses has given me an idea of what college is like and the amount of work it takes to do well.”

“Research to me means delving into the unknown. There is so much to learn, and it’s up to the people who do research to make the unknown known. I have nothing but respect for researchers.”

Kal-El Cline

Home High School:

Warren East High School

Research Area:

Chemistry

Research Topic:

Kal-El Cline will be developing novel, high-porosity polymer substrates to which photocatalyst compounds can be attached.

Career Goal:

Lawyer

Research Mentor:

Dr. Matthew Nee,
Department of Chemistry,
Western Kentucky University

Extracurricular Activities:

Model United Nations, Film Club,
Philosophy Club, Yearbook



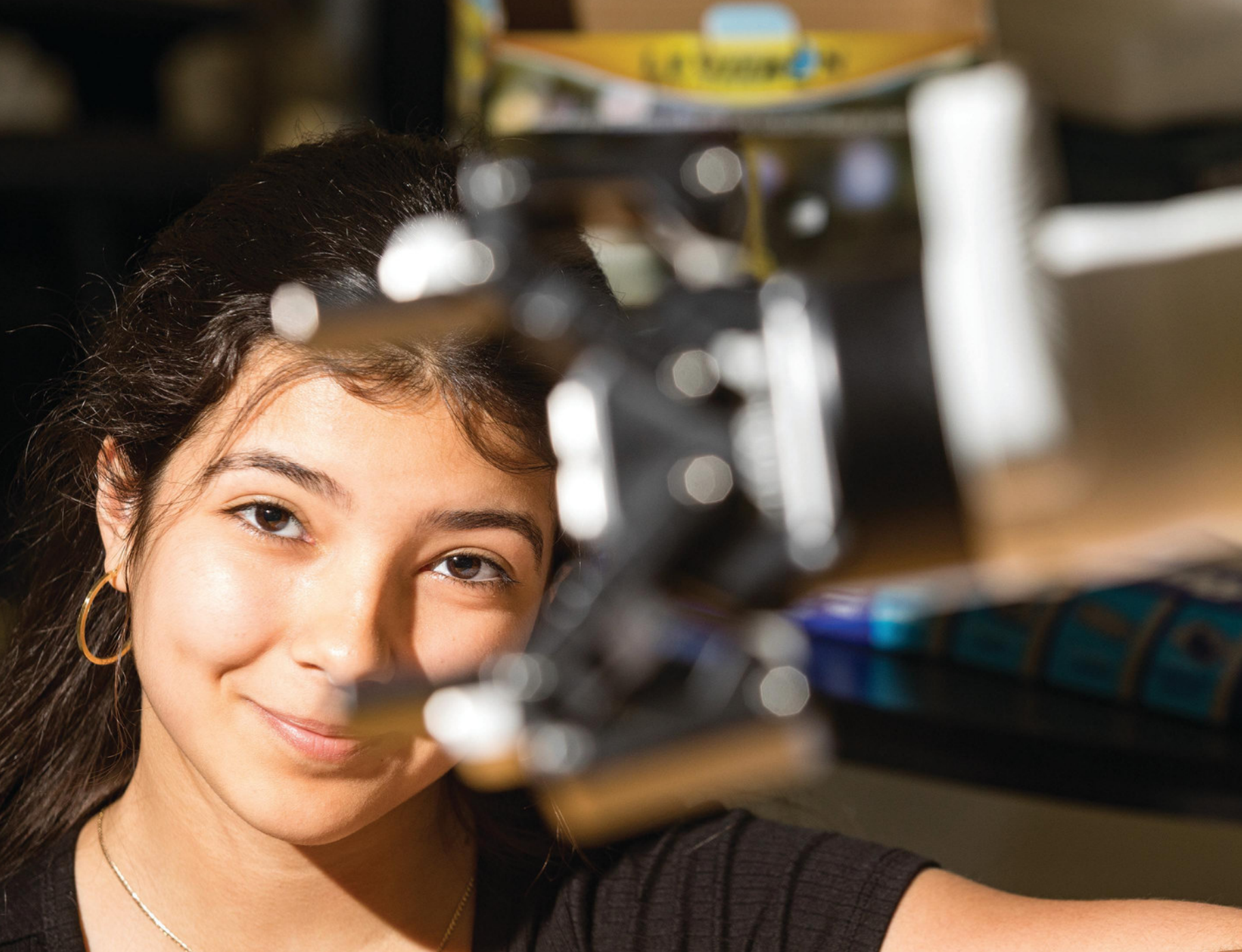
Amelie Fuentes
Louisville, Kentucky (Jefferson County)

Dear Gatton Supporter,

Being a part of undergraduate research as a high schooler is one of the many opportunities The Gatton Academy makes possible. Ever since I was in elementary school, I knew I wanted to go into the engineering field. The Gatton Academy has given me the opportunity to explore electrical engineering through WKU courses and research. This summer the RIG has allowed me to work on a force cell for an autonomous robotic arm. This experience has been invaluable. I was able to collaborate with other researchers, learn multiple programming languages, and experiment with the “communication” between sensors and a robotic system with languages like Python and LabVIEW. I will be able to take these skills with me while I continue to learn and grow in my academic career.

Your support has allowed me to discover my love for research and has encouraged me to want to continue my studies further in a graduate degree program. Without you this would not have been made possible, and for that I cannot thank you enough. Through The Gatton Academy, I have grown as a student, researcher, and person. These experiences are something I will forever be grateful for. Thank you for supporting our infinite possibilities.

Sincerely,
Amelie Fuentes





“To me, research means exploration. It gives me the opportunity to learn and gain experiences I normally would not have access to. It is these experiences that will stick with me, fueling my curiosity and reminding me of my passion for STEM.”

“The part of my research I am most looking forward to is collaborating with other researchers, as well as getting the opportunity to work in the grant writing process. I am very excited to learn more about the software and hardware systems that go into the development of machines and robots.”

“The biggest challenge I will have to overcome with my research is learning from my mistakes quickly. With so little time, I will need to keep up with the pace of the researchers I will be working with.”

Amelie Fuentes

Home High School:

Atherton High School

Research Area:

Energy Systems/Electrical
Engineering

Research Topic:

Amelie Fuentes will be developing a pressure sensor for autonomous robotic grip applications.

Career Goal:

Engineering Research

Research Mentor:

Dr. Farhad Ashrafzadeh,
Center for Energy Systems,
Western Kentucky University

Extracurricular Activities:

Science Minded Kids, Envirothon,
Girls Who Code



Nikhil Kumar
Prospect, Kentucky (Jefferson County)

Dear Gatton Supporter,

Hello, my name is Nikhil Kumar, and I am a junior at The Gatton Academy interested in Biology, Chemistry, and Computer Science. This summer, I participated in the Research Internship Grant offered by The Gatton Academy, which provided me with the opportunity to get involved in the microbiology laboratory at Western Kentucky University with Dr. Joseph Marquardt. A year ago, I couldn't even fathom having such an opportunity, and it is one of the reasons why I decided to apply for The Gatton Academy. Before Gatton, I attended duPont Manual High School in downtown Louisville, which is arguably a good school, but I always felt frustrated with the limited opportunities offered there. Something was missing. It wasn't until I saw what Gatton had to offer that I realized what was missing; the ability to conduct research. Since the beginning of our scholarly career, we sit around in lectures cramming in massive amounts of knowledge that at first seem sort of arbitrary. We rarely get to involve ourselves physically with the content, but rather only mentally.

However, when doing research, you become fully immersed in the material, working not only to fully understand what we already know about the subject being researched, but also trying to expand the boundaries of our ignorance. Over the summer I did just this, attempting to discover the unknown downstream factors of a paramount protein in yeasts with potential applications to humans. The ability to work towards discovering and expanding our knowledge as a human civilization is a breathtaking feat and one I would never have been able to do if it weren't for The Gatton Academy. They have provided me with access to these opportunities and helped guide me through the process. That is one of the greatest reasons why I love studying at The Gatton Academy.

Best Regards,
Nikhil Kumar

Nikhil Kumar

Home High School:

duPont Manual High School

Research Area:

Biology

Research Topic:

Nikhil Kumar will be exploring the impact of BEM1 and BOI1 proteins on cellular morphology and polarity and their implications for human physiology.

Career Goal:

Cardiologist

Research Mentor:

Dr. Joseph Marquardt,
Department of Biology,
Western Kentucky University

Extracurricular Activities:

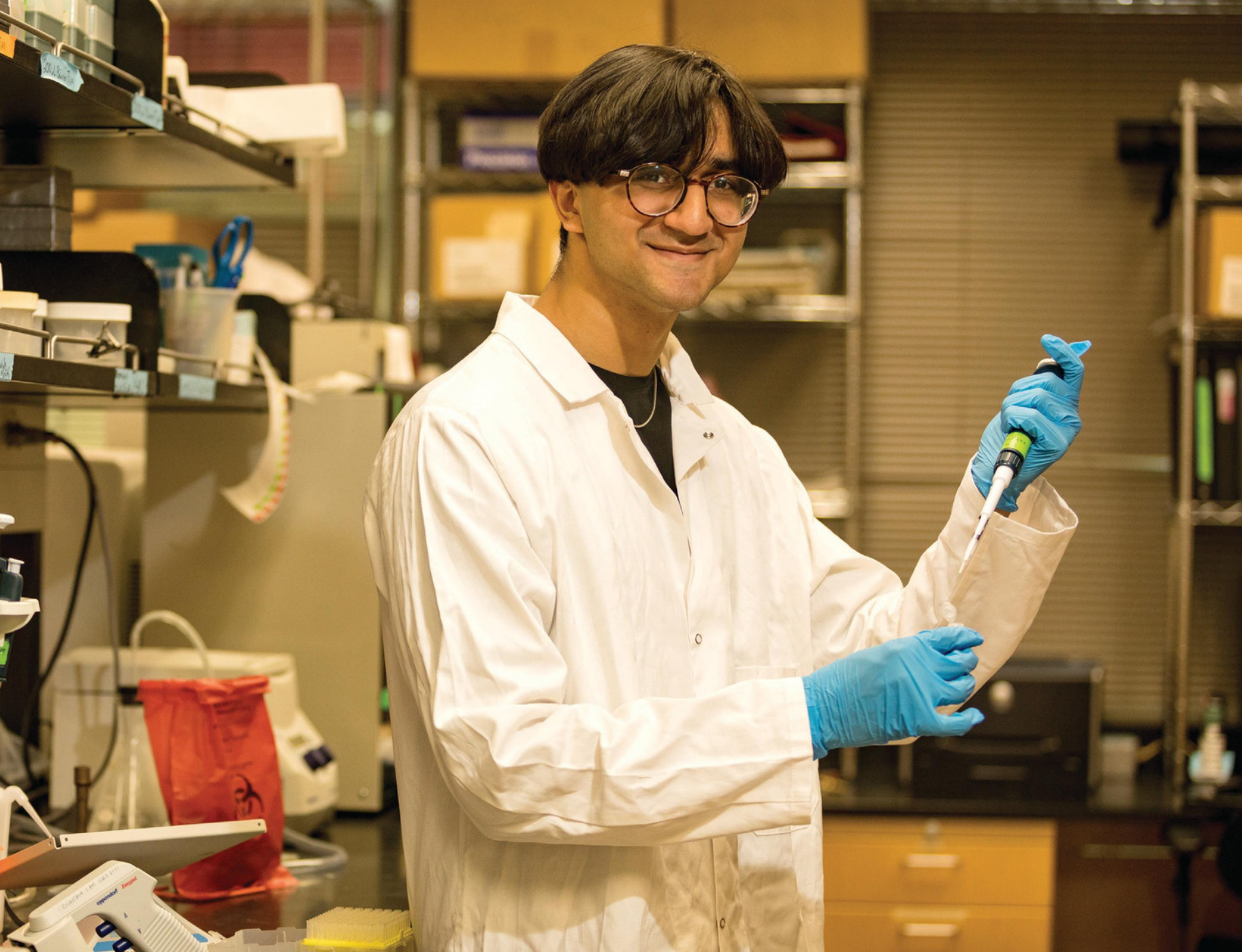
Science Bowl, Mu Alpha Theta,
Science Technology Engineering
Math for the Youth (STEMY),
Educational Justice, Math Club,
Chinese Music Club, Society for
Industrial and Applied Mathematics,
Association for Computing
Machinery

“Research is a collaborative endeavor that requires patience, perseverance, and a willingness to learn from failure. It is a tool that enables us to explore the unknown and move the bounds of science further. Research is the key to unlocking the mysteries of the universe, and as an aspiring young person interested in STEM, it is my gateway to a world of infinite possibilities.”

“One of the biggest challenges I will face in my research is dealing with the unpredictability of working with live cultures. With only two months to complete the project, any setbacks caused by these unpredictable cultures could significantly affect the project’s success. I recognize that the fear of having to repeat experiments multiple times to obtain reliable results could be overwhelming, but maintaining a level head and working through setbacks is essential for overcoming this challenge.”

“I realized I wanted to follow STEM was when I began to tutor a wide array of subjects for a nonprofit called Educational Justice. I followed this love of teaching and started volunteering at Kumon and working for another nonprofit called STEMY. Through these experiences teaching, I gained a fuller comprehension of STEM concepts, sparking my passion for the field.”







Jacob Ladwig
Owensboro, Kentucky (Daviness County)

Dear Gatton Supporter,

Coming from the rather large city of Owensboro, I did have the opportunity to take courses at the undergraduate level. However, I was only able to take courses in the sequence offered, meaning only one math and one science course per semester. This lack of freedom to choose what I wanted to learn was always a hindrance for me, as I have been solely interested in STEM all my life. The major benefit I gained from Gatton has been the ability to take multiple STEM courses and explore multiple subjects at once.

Research through my RIG has given me the opportunity to explore chemistry, which I have always wanted to learn more about, and it has also allowed me to learn about other branches of STEM. I still get the hands-on experience I want, but I also get to challenge myself academically with harder courses. My main goal for my time at Gatton has been to find what I would really like to study moving forward, and my RIG has helped point me in a new direction regarding my education. I will never forget the practices I have learned from my mentor in the field of chemistry, and I will always remember that this was only possible due to support from people like you.

Sincerely,
Jacob Ladwig

Jacob Ladwig

Home High School:

Owensboro High School

Research Area:

Inorganic Chemistry

Research Topic:

Jacob Ladwig will be synthesizing and analyzing 3d metal-organic coordination polymers.

Career Goal:

Undecided

Research Mentor:

Dr. Bangbo Yan,
Department of Chemistry,
Western Kentucky University

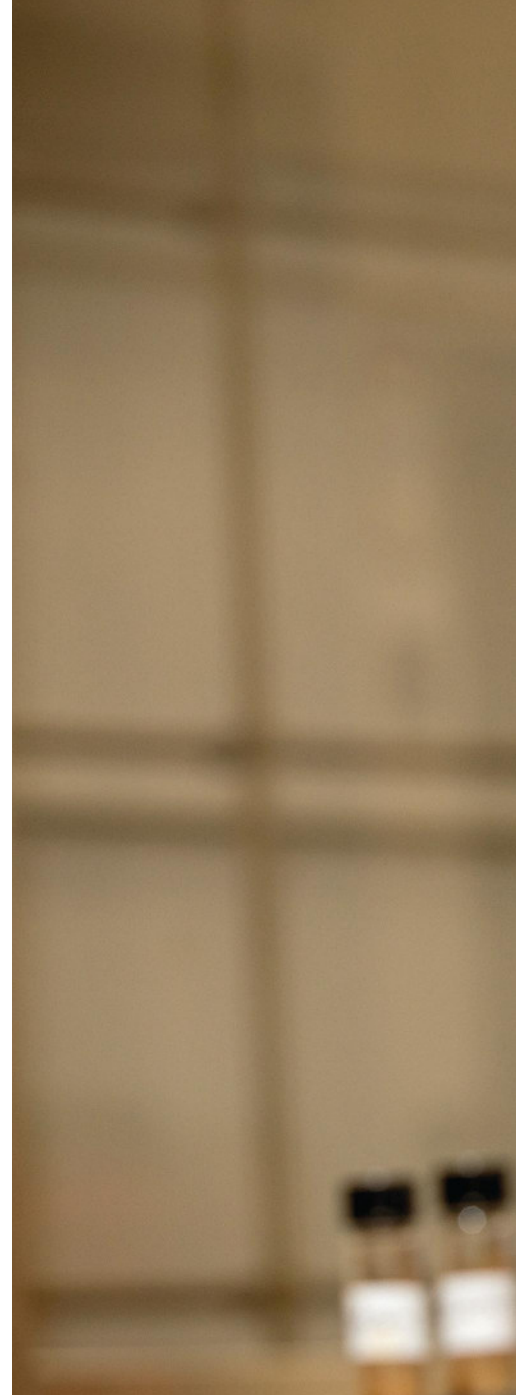
Extracurricular Activities:

Math Club, Chemistry Club, National Honor Society, Academic Team, Science Bowl with Owensboro High School

“I see research as the connection between the educational setting we currently find ourselves in and the professional world we’re headed towards. Research allows me to peek into the future and experience what my future work could be like after I make it through school.”

“The best advice my mentor has given me so far was to stay patient. When I asked to join his lab, he specifically told me I could do hundreds of reactions and still never get the compound we want. That really emphasized the importance of staying patient throughout my research.”

“I think the largest change I’ve experienced in my first year with Gatton has been the ability to have a schedule for what I spend my time on. Life was very chaotic at my other school, and I just tried to get things done whenever I had spare time. At Gatton, I have been able to budget my time for a better balance between everything I do.”







Albert-Presley Mbanfu
Bowling Green, Kentucky (Warren County)

Dear Gatton Supporter,

My name is Albert-Presley Mbanfu, and I am a first-generation American born of parents of Cameroonian descent. I was always considered a smart kid, and being the first-born son, my mom took a lot of time to encourage my learning. I even skipped the second grade. Early stressors came from adults, who saw this gifted and talented 9-year-old and asked him what he wanted to do with the rest of his life. For young Black children, these questions become an ever-expanding balloon getting ready to pop. High expectations from others, combined with the low significance society places on Black men, made me feel lost and like I didn't quite fit in, but I didn't know why.

I was surprised when I got accepted into Gatton, because I believed I was only filling a quota or helping maintain an image of an accepting and diverse school. I was even more surprised when I learned my school mates thought the same thing. Still, I was hopeful Gatton would give me an idea about what I could be in the future. Research was a way to discover this.

Since I was unable to secure a research project during the school year, I set up lamprey research with Dr. Hilary Katz in the Biology Department for my summer RIG. When I began, I felt nervous, like I was walking back into that elementary school where I did not belong. But through support from the Gatton staff, Dr. Katz, and my friends, I kept going and started to see the different roads STEM can take me on. I realized I can create my own path, be successful, and maybe even be a guide for others looking for that “right” path.

I am grateful for the experience. It was fun, confusing, but weirdly fulfilling. As I got deeper into my project, I finally felt like I was doing something for me instead of the people around me. Through the RIG grant, I have been given opportunity and possibility. I deeply appreciate your involvement and hand in my life and other Gatton students' lives.

Sincerely,

Albert-Presley Mbanfu

Albert-Presley Mbanfu

Home High School:

Greenwood High School

Research Area:

Biology

Research Topic:

Albert-Presley Mbanfu will be using the sea lamprey as a model for studying molecular mechanisms of successful spinal cord regeneration in vertebrates.

Career Goal:

Being featured on a renowned podcast, interview, or show discussing research

Research Mentor:

Dr. Hilary Katz,
Department of Biology,
Western Kentucky University

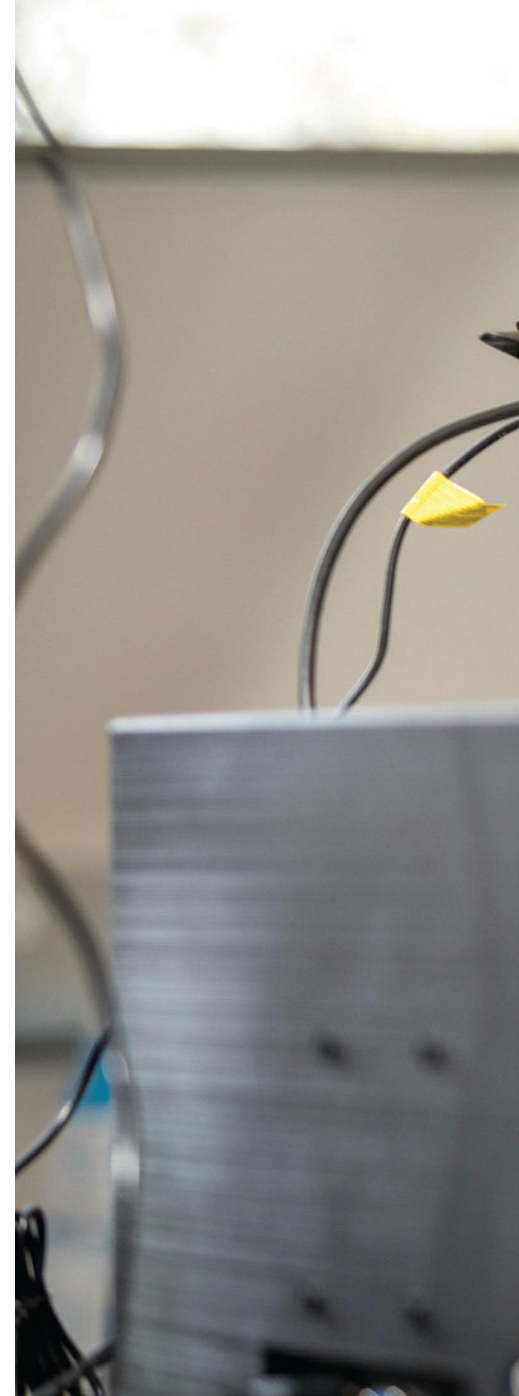
Extracurricular Activities:

Intramural Football, Volleyball Club, Gatton Academy Medical Association, Gatton Y-Club, Why Knot Us (Black Male Initiative), Soccer Club

“This summer I am looking forward to creating my very own tangible project. I really appreciate the opportunity of producing my own research and then being able to share it with everyone. The increased independence is a challenge, but it is also a motivation.”

“One of the biggest challenges for my RIG research is that I chose to delve into something I was passionate about but did not have complete knowledge of. Part of the project will be researching topics, reading papers, and comparing methods. I prefer this because I will leave with more than I came in with.”

“Research means a lot to me as a young person interested in STEM. Being one of the youngest in my class, (I skipped the second grade), I always felt behind except when it came to STEM. Research allows me to explore topics I feel passionate about and lets me delve into different fields. For me and many others, it’s an outlet, an escape, an experience.”







Sara Nath
Union, Kentucky (Boone County)

Dear Gatton Supporter,

I am a creature of habit. The cookie-cutter suburbs of Union, a small residential town perched at the northern tip of Kentucky, are often described as “monotonous.” But to me, they have only ever been familiar and comfortable. Idyllic. And so, leaving home behind for a quieter school in a larger city, where, as I once swore to my mother over a phone call, “even the water tastes different,” was hard.

However, life at Gatton has been transformative for me, with each day’s challenges and opportunities constantly pushing the boundaries of my comfort zone. I have dived deeper into subjects that interest me, met and learned from inspiring professors, and discovered more about myself and my capabilities than ever before.

This past summer, I got to research at Brown University’s Center for Computational Molecular Biology under the guidance of Dr. Ritambhara Singh, where I’ve gotten the chance to work on the project of my dreams. Combining my passion for Alzheimer’s disease research and computer science, I have been developing machine learning models that can predict Alzheimer’s disease using single cell datasets.

Through this project, I have learned how to design experiments, preprocess data, code models, and quantify performance. I have gained conceptual understanding of machine learning fundamentals that I had never understood before and have learned how to systematically approach problems in my code. I have grown beyond words.

My family’s initial hesitation to send me away from home so early was eventually won over by Gatton’s promise of infinite possibilities. Thank you for substantializing these promises, for allowing me this opportunity to grow, and for supporting me through a dream I could never even have imagined before.

Thank you,
Sara Nath

Sara Nath

Home High School:

Larry A. Ryle High School

Research Area:

Computer Science

Research Topic:

Sara Nath will be developing deep learning models to predict Alzheimer's disease diagnosis accurately.

Career Goal:

AI Engineer

Research Mentor:

Dr. Ritambhara Singh,
Department of Computer Science,
Brown University

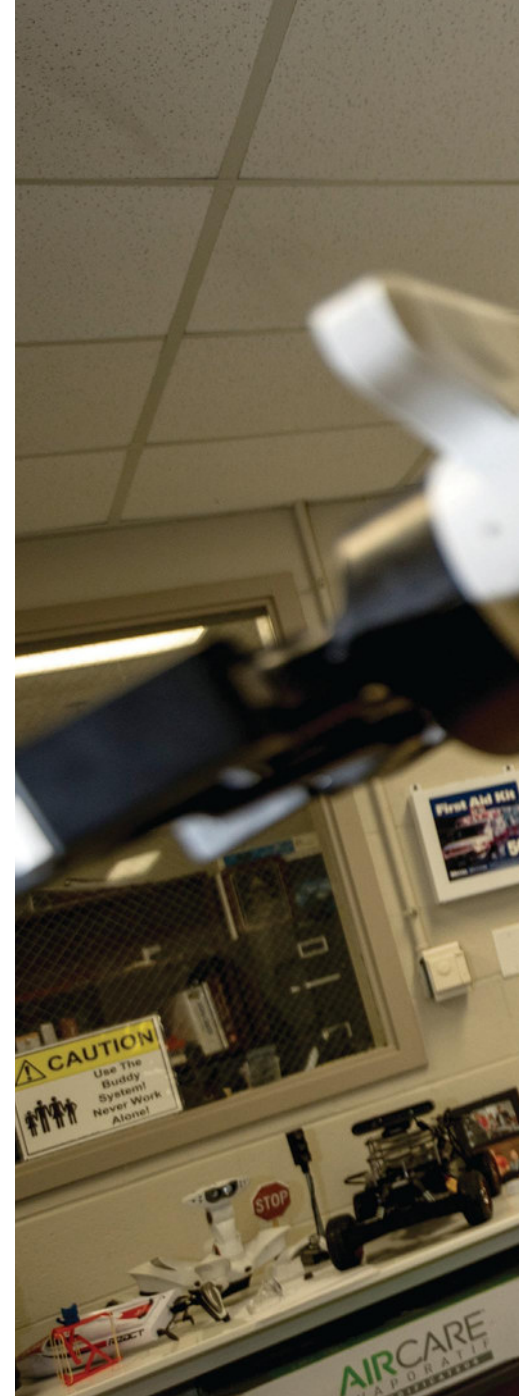
Extracurricular Activities:

Computer Science Club, WKU
Association for Computing
Machinery, Gatton Women in STEM
Club

“During this internship, I will be conducting machine learning research on aging and aging-related diseases. This fits perfectly with my educational and professional goals, as I hope to pursue a degree in computer science and apply it to a career in developing machine learning technology for improving healthcare.”

“Since I don't have a lot of background in biology, one challenge I'll have to overcome will be to familiarize myself with the context behind my research project. However, this is a field I'm already interested in, so I'm excited to start building my foundation in it.”

“One of the biggest changes I've experienced at Gatton so far would be the dramatic change in school size. My sending high school had nearly 3,000 students, so at first, Gatton's total of 200 students felt 'too quiet.' However, I've really grown to love and appreciate the sense of community that this school fosters.”







Mara Neace
McKee, Kentucky (Jackson County)

Dear Gatton Supporter,

Thank you so much for this amazing opportunity!

When I began my first semester at Gatton, I was unsure of what I wanted to pursue in life. Every STEM field had elements that intrigued me, but I was not truly passionate about any of them. My first chemistry class at Gatton changed that, and I began looking for research opportunities. I reached out to Dr. Jason Polk, Professor of Geoscience at WKU, and he assisted me in joining a research project. My research involves studying the hydrochemical composition and habitat of eleven sites across Warren County. I work with a team to collect and analyze water samples and habitat survey data from each site. The outcome will be the development of a Watershed Based Plan (WSP) for the Jennings Creek watershed and Lost River springshed that will address nonpoint source pollution. This plan could serve as a model for future water quality policies addressing groundwater and karst topographic regions.

Having this opportunity has been invaluable to me. Through research, I have built critical thinking and problem-solving skills, learned how to use software such as Excel and OriginPro, performed common water quality analyses, and grown closer with my team. This project has also given me a passion for environmental chemistry that I am excited to explore further. Additionally, I have had the opportunity this summer to live independently on a college campus and spend time with my friends. These experiences are ones I will never forget.

Thank you again for your support! It means the world to students like me.

Sincerely,
Mara Neace

Mara Neace

Home High School:

Model Laboratory High School

Research Area:

Chemistry/Hydrology/Water Quality

Research Topic:

Mara Neace will be developing a water quality and quantity profile for Jennings Creek in Bowling Green, Ky.

Career Goal:

Chemist

Research Mentor:

Dr. Jason Polk,
Department of Earth, Environmental
and Atmospheric Sciences,
Western Kentucky University

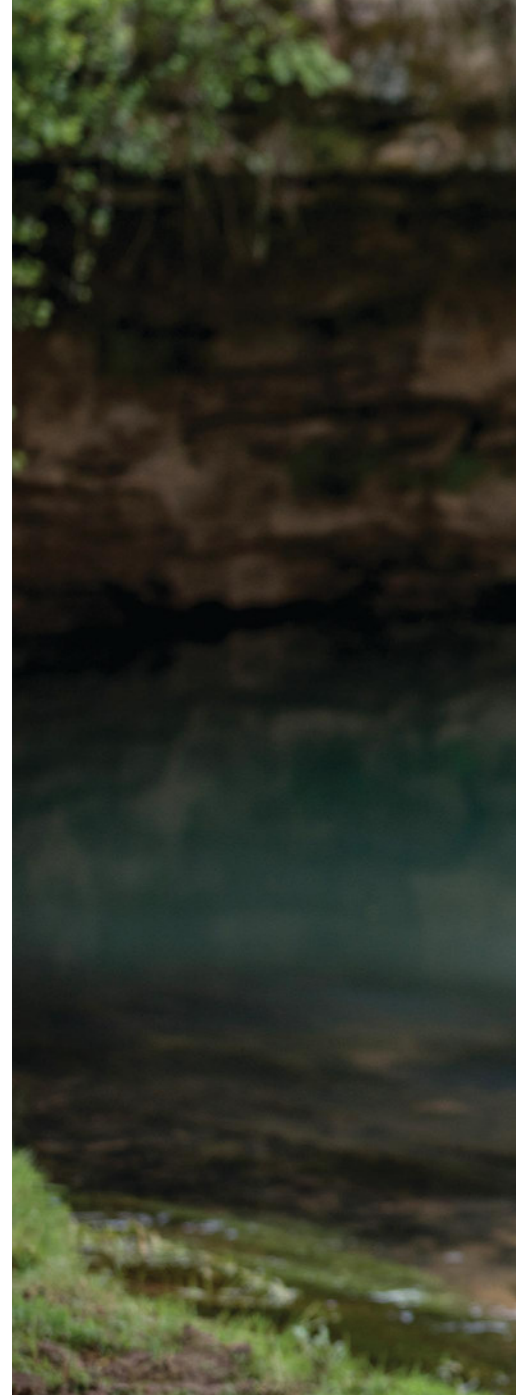
Extracurricular Activities:

Project Unite, Band, Model
Laboratory Kentucky United Nations
Assembly

“I realized STEM was my passion when I took a marine ecology tour while on vacation to Tybee Island, Ga. At the end of the tour, we went to North Beach, where I found a 300+ year old beach fossil. I was so excited that I couldn’t stop talking about it on the way home. This moment sparked my curiosity about the world around me and my interest in learning about the environment.”

“The best part of summer research is getting to focus wholly on my interests without having to worry about classes and grades. Having the opportunity to learn about subjects I am passionate about from accomplished mentors and students is something that fuels my excitement.”

“To me, research means I can learn and apply new skills in a way that helps better the lives of other people. A primary goal of mine has been to utilize my interest in STEM to give back to my community. Research has equipped me with the knowledge, logical thinking, and adaptability I need to accomplish that goal and achieve success in the future. It’s an opportunity that has been invaluable to me.”







Amy Pan
Bowling Green, Kentucky (Warren County)

Dear Gatton Supporter,

I grew up in Bowling Green, which means I have always heard about the numerous opportunities The Gatton Academy offered. I remember the first time I visited Gatton in third grade, where I counted the triangles on the floors and learned about the different projects that students from all over Kentucky were doing. From then on, my interest in The Academy grew until my sophomore year, when I applied and was accepted. Being at Gatton has allowed me to be challenged academically in ways I had not experienced before. From taking advanced computer science courses to doing research, I would have never been able to participate in these opportunities without your support.

When I first came to Gatton, I knew The Academy offered research. Doing research, especially doing it during the summer, is a very special experience. To me, it meant I was able to immerse myself in my research without the academic pressure of grades or deadlines. This summer, I have had the amazing opportunity to create a project that combined my interests in theater and computer science. My project involved taking augmented reality elements and applying them to a live experience to combine traditional theater elements with augmented reality.

Without your support, I would not be where I am today, and I would not have had the opportunity to perform research in a lab that combines all of my interests into one project. I cannot thank you enough for your support in my studies, and I am forever grateful for the opportunities you have given me.

Sincerely,
Amy Pan





“I am most looking forward to being able to work with people who are also interested in the same topics as me. My research is a mixture of both of my creative interests, acting and theater, as well as my interest in computer science. I am looking forward to combining these passions and seeing exactly what will happen when I do.”

“The coolest thing about summer research is that I can spend entire days working on something I love and am curious about. I don’t have to worry about having other classes or commitments, but instead, I can focus on my research. I get to learn so many things I wouldn’t be able to learn in a traditional academic setting.”

“The best piece of advice my mentor has given me is to challenge myself. She has told me to face the challenge head-on and to never back away from things that may seem too difficult or that I may think are out of my reach. She encourages me to break down the problem into smaller parts and work through them to the best of my ability.”

Amy Pan

Home High School:
Bowling Green High School

Research Area:
Augmented Reality (AR) Theatre
Production

Research Topic:
Amy Pan will be developing an AR project that pairs live performance with AR elements in a traditional theatre space.

Career Goal:
Business

Research Mentor:
Dr. Kristina Arnold,
Department of Art and Design,
Western Kentucky University

Extracurricular Activities:
Speech and Debate Club, Warren
County Public Library Teen Advisory
Board, STEMThink Volunteer



Om Patel
Irvington, Kentucky (Breckinridge County)

Dear Gatton Supporter,

My name is Om Patel, and I am a rising senior from Breckinridge County. I am writing to thank you for your support of The Gatton Academy and to share some of my experiences.

I applied to The Gatton Academy because I knew it was the perfect place for me to pursue my academic goals. I wanted to be surrounded by peers who shared my passion for learning and challenged me to grow intellectually. My transition to The Gatton Academy has been remarkably smooth. Initially, I was nervous about being away from home, but the supportive community has made me feel right at home. I have also noticed a significant increase in freedom compared to my home school experiences, which has allowed me to take charge of my education and explore my interests more deeply.

This summer, I participated in a research opportunity that is incredibly important to me. I am working on developing a VR American Sign Language (ASL) training application. As someone who is deeply interested in technology, this project aligns perfectly with my academic and personal interests. Working on this project has allowed me to exercise my creative thinking skills, as I am given the freedom to explore innovative solutions to improve the application. This experience has fueled my determination to continue this project during the upcoming semester, contributing to the broader accessibility of ASL training.

In conclusion, I cannot thank you enough for supporting The Gatton Academy, which has provided me with an enriching educational experience. I am excited about what lies ahead and eager to make the most of every chance The Gatton Academy offers.

Thank you,
Om Patel





“As a young person interested in STEM, this research opportunity means a lot to me. The Gatton Academy has provided me with an opportunity to further enhance my interest in software development that would not be available at my sending school.”

“The biggest challenge in my research I will have to overcome is learning the programming language needed to develop this training model. I have never done a project like this, so I will have to learn fast.”

“This internship fits into my professional goals because it will allow me to create and develop my own software. The part of the summer experience I am most looking forward to is learning American Sign Language. I am also looking forward to networking and meeting experts in the field.”

Om Patel

Home High School:

Breckinridge County High School

Research Area:

Computer Science

Research Topic:

Om Patel will be creating a fully functional and immersive game-like learning tool for American Sign Language that has a virtual reality application.

Career Goal:

Software Developer

Research Mentor:

Dr. Kristina Arnold,
Department of Art and Design,
Western Kentucky University

Extracurricular Activities:

Gatton Academy Leaders in Education, WKU Pool Club, Computer Science Club, Soccer Club, WKU Association for Computing Machinery, Badminton Club, Volleyball Club, Y-Club, Prom Team, Student Council, Academic Team



Braeden Patrick
Somerset, Kentucky (Pulaski County)

Dear Gatton Supporter,

Gatton has changed and challenged me in a multitude of ways. Due to your donation, Gatton continues to have access to funds that allow them to give us even more opportunities than I can imagine. I grew up mostly in Eastern Kentucky, but we moved around quite a bit. While we struggled sometimes, once I was old enough my parents made sure I had access to something I really think put me where I am today. ABC Mouse shaped my love for learning, and it gave me a craving for it that the normal public schools I went to couldn't satiate. When I got accepted to Gatton, that craving was finally met with a substantial challenge. Your support allowed for that.

My research this summer at Indiana University-Bloomington involved processing and studying the metal concentration in plants harvested from Bismark Mine in Montana. Along with Gatton granting the RIG, I was also awarded a full scholarship this summer to travel to Harlaxton for a study abroad opportunity. This summer has been the wildest adventure of my life. I lived on my own performing research, I flew on my first plane, and I saw some of the most beautiful sights of my life with my friends. I have continuously thanked Gatton staff, but supporters like you mostly go unpraised because you are in the background. So, thank you. Thank you for your continuous support, because it is your support that truly fuels our dreams.

Sincerely,

Braeden Patrick

Braeden Patrick

Home High School:

Southwest High School

Research Area:

Earth and Atmospheric Sciences

Research Topic:

Braeden Patrick will be processing and studying the metal concentration in plants harvested from the Bismark Mine in Montana.

Career Goal:

Biologist

Research Mentor:

Dr. Shelby Rader,
Department of Earth and
Atmospheric Sciences,
Indiana University

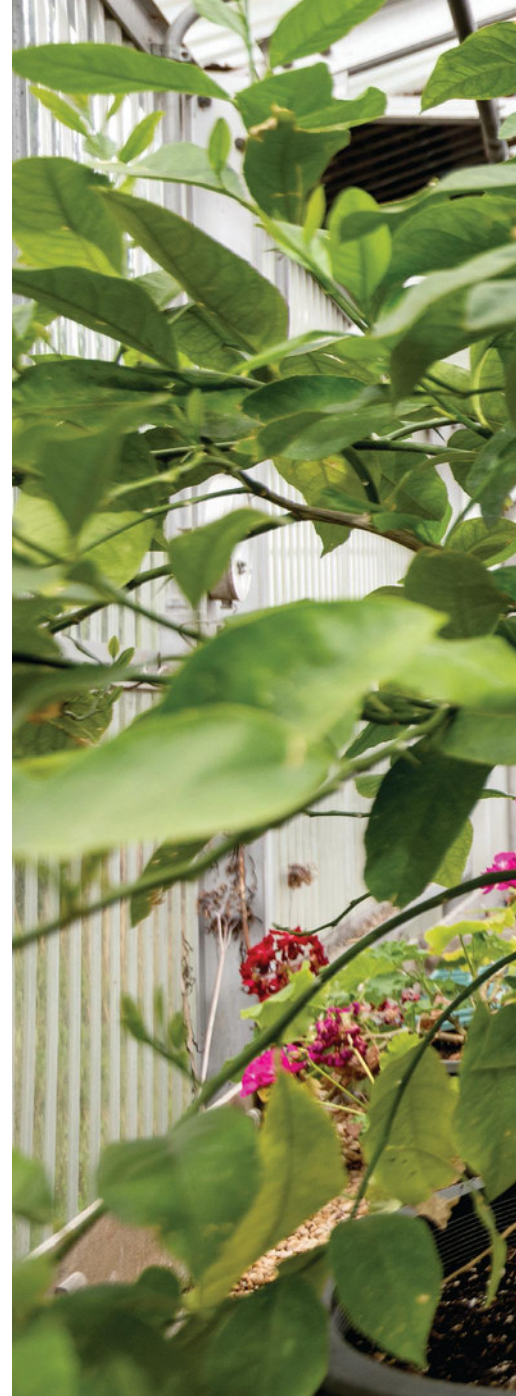
Extracurricular Activities:

Choir Member, Beta Club, Education
Talent Search, Film Club

“As a young person in STEM, research means experience. I have a passion for science, but often feel scared about pursuing it or feel lacking in my abilities. Research allows me to gain that experience and confidence in this field.”

“My favorite memory at Gatton is one I don’t even remember happening. I got really sick for a few days, and the community came to my rescue. I had friends who gave me their notes when I missed class, and friends who brought me food. I felt totally supported.”

“This research will benefit me educationally by giving me much-needed lab training, and professionally, I hope it will help me further outline my career. I know the general area I want to head into, but my specific career is still a mystery.”







Laurel Patterson
Goshen, Kentucky (Oldham County)

Dear Gatton Supporter,


Hello! I am Laurel Patterson, a rising senior at Gatton. I'm from Goshen, Ky., where I have lived now for three years, but before that, I lived in Owensboro. Before Gatton, I was very interested in engineering, but could not find a way to learn more in the area outside of math. Now that I have been at Gatton, I have had a variety of opportunities to explore my passions. Through Gatton, I have been able to take upper-level math classes, do relevant research, and gain first-hand experience as an engineer through internships. One of these opportunities offered to me was Gatton's Research Internship Grant.

This summer with the help of Gatton, I worked at Purdue University's Biomedical Engineering Department creating computational models to measure neurite outgrowth. My time at Purdue has been valuable for learning computer science, physics, math, and engineering principles, as well as getting to interact with engineers and learn from them. Meeting current engineers and engineering students has been the highlight of my internship. I was able to gain the experience I wanted while interacting with and learning from people in the field. Thank you for supporting Gatton and its students by providing us with these meaningful opportunities. They have not only helped me but will help students for years to come.

Sincerely,

Laurel Patterson





“This research experience fits my professional goals because I want to go into the neurological side of biomedical engineering. I want to work with prosthetics, and a big part of that discipline is how neurons interact with one another. This research focuses on expanding our knowledge of these communications, and this will help me pursue my future academic goals of neurology.”

“I’m most looking forward to meeting people in the biomedical engineering field, as I have not had prior experience working with engineers. It will be a first for me to work with people who have similar passions, and I can’t wait to get experience with those who actively work in the field.”

“The biggest change I have experienced so far at Gatton is being away from home. Small moments such as watching TV together or my cat sleeping on my bed never meant as much to me as they do now since I have been gone. I’ve been able to appreciate my family and my home a lot more since I have moved away.”

Laurel Patterson

Home High School:

North Oldham High School

Research Area:

Biomedical Engineering

Research Topic:

Laurel Patterson will be performing a computational investigation of dendritic spines.

Career Goal:

Biomedical Engineering

Research Mentor:

Dr. Taeyoon Kim,
Weldon School of Biomedical
Engineering,
Purdue University

Extracurricular Activities:

Russian Culture Club, Chinese Music Club, Green River Grotto, National Beta Club, Kentucky YMCA Youth Association



Sofia Sileo
Shelbyville, Kentucky (Henry County)

Dear Gatton Supporter,

Over the past few semesters, my journey at The Gatton Academy of Mathematics and Science has been nothing short of transformative. The opportunities I have at my disposal - participating in real, critical research, living on a college campus, studying abroad as a high schooler, and developing relationships with professors and peers that have similar interests to me - are ones I cannot find anywhere else.

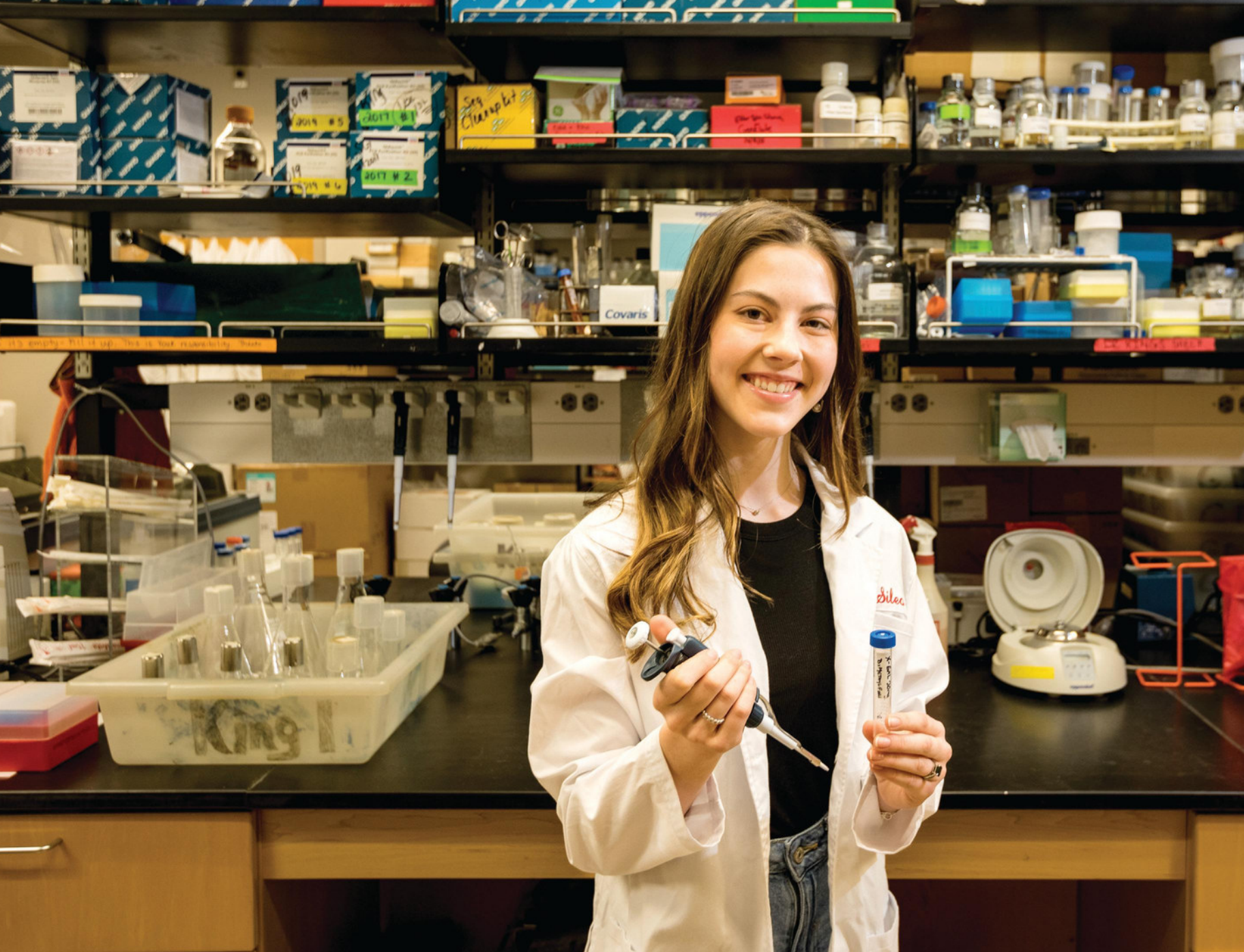
I was in fifth grade the first time I learned about Gatton. My parents had heard about it through a chain of school families. They were excited about the promised engaging environment and vibrant community. I was excited to find a place where I could be surrounded by people as passionate about their niche as I am about mine. From that day forward, Gatton became my goal. I understood that attending Gatton would provide me with a great foundation for my future in STEM.

During my time at Gatton, I have constantly been inspired and challenged. I have made great friends and developed meaningful relationships with my professors. The diverse student body exposes me to various perspectives, cultures, and ideas, enriching my understanding of the world. The passionate professors never fail to encourage me to learn more and learn deeper.

This past summer, I worked with Dr. Rodney King at WKU characterizing a cytotoxic gene of the unique bacteriophage MooMoo. Through the RIG, I have been able to investigate the complex relationship bacteriophages have with their host bacterium. Additionally, I've learned novel laboratory techniques and have been able to ask as many questions to my mentor as I desire. These memories and experiences I have gathered through Gatton will forever be cherished.

Thank you for your commitment to empowering students like me by giving us the opportunities to explore.

Sincerely,
Sofia Sileo





“I have always gravitated toward STEM. It’s hard for me to imagine a time when my favorite subject in primary school wasn’t math. The first experience I can think of that truly made me fall in love with STEM was when I enrolled in the Russian School of Mathematics. I started in 3rd grade, and as my Dad put it, I ‘gobbled up’ any math concept that came my way. Since then, I have continued to enjoy various STEM concepts (particularly mathematics and microbiology) and recently realized my passion for chemistry. There is something so natural about wanting to wonder and to explore. STEM has always let me do just that.”

“I am most looking forward to being able to focus solely on my project. I won’t have the stress of balancing six classes, being active in my extracurriculars, and finding enough time to devote to research. I will be able to simply conduct research I care about.”

“Thus far, the best advice my mentor has given me is to never stop asking questions. I took his genome course my first semester at Gatton. Throughout the course, I isolated a bacteriophage I named after my mom. Dr. King quickly learned I love to ask questions. I would ask him at least one question a day. He used to joke whenever he saw me in the halls, ‘Sofia, do you have any questions?’ I am grateful to have such a caring and knowledgeable mentor.”

Sofia Sileo

Home High School:

iLEAD/Henry County High School

Research Area:

Biology

Research Topic:

Sofia Sileo will be identifying and characterizing bacteriophage proteins.

Career Goal:

Medical Doctor or a Doctorate in Chemistry

Research Mentor:

Dr. Rodney King,
Department of Biology,
Western Kentucky University

Extracurricular Activities:

Chemistry Club, Biology Club,
Gatton Academy Medical
Association, National Society of
Leadership and Success, Math Club



Hunter Smith
Nicholasville, Kentucky (Jessamine County)

Dear Gatton Supporter,

I have always highly valued education, and since 6th grade, I have dreamt of pursuing medicine and medical research. Although I had to leave behind an amazing home life in Jessamine County, choosing The Gatton Academy was an obvious choice. I knew it was the fastest and best way to achieve my medical dreams.

The Gatton Academy has challenged me in many ways I never expected, especially computer science classes, which used to be my nemesis. I have slowly learned to tolerate and even appreciate them, a huge accomplishment for me. I have also been challenged/fascinated by medical research since I first arrived. To test my limits, I have completed five research projects, which include statistics, cardiology, virology, bioinformatics, and cancer. Thanks to you, I had the rare privilege of working at Boston University's Biomedical Research Center, investigating the effects of Empagliflozin on Hypertrophic Cardiomyopathies. Although this experience was short, it was nothing short of amazing, and I am even continuing my research project from 1,000 miles away.

Thank you for being a vital part of my journey. Your support has had a profound impact on my academic goals and passion for research. I cherish every moment at Gatton, and I promise to give back by contributing to research throughout the school year.

I am sincerely grateful for the opportunities you have provided, and I hope to make you proud in all my future endeavors.

Sincerely,
Hunter Smith

Hunter Smith

Home High School:

West Jessamine High School

Research Area:

Biology

Research Topic:

Hunter Smith will be studying the role of impaired myocardial energetics in development of hypertrophic cardiomyopathy.

Career Goal:

Cardiothoracic Surgeon

Research Mentor:

Dr. Ivan Luptak,
Chobanian & Avedisian School of
Medicine,
Boston University

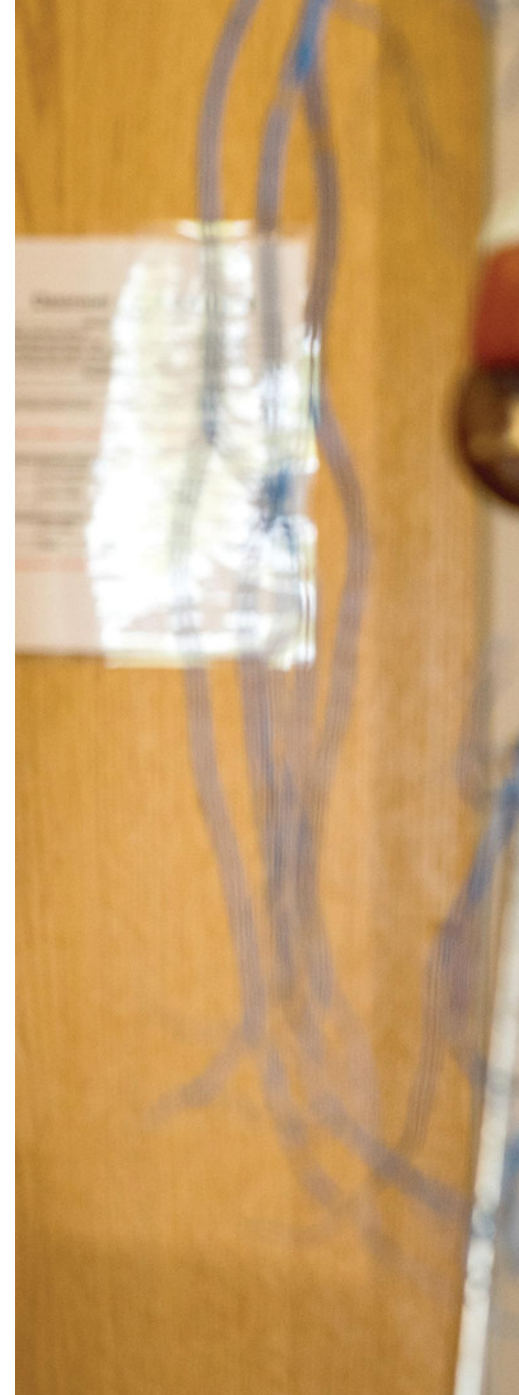
Extracurricular Activities:

Weightlifting, Volleyball, Tutoring
Calculus and Biology, Baseball,
Gatton Academy Medical Association

“My research focuses on a specific condition called ‘hypertrophic cardiomyopathy.’ This condition goes unnoticed by most of its patients. My uncle was diagnosed with this condition, so I am super excited to be able to work on a condition that has such a personal meaning to me.”

“I plan on becoming a cardiothoracic surgeon, and this internship allows me to work on a condition that impacts countless Americans. If I become a cardiothoracic surgeon, I will be repairing hearts damaged by this condition, but it’s amazing that at 16 I am helping these individuals now through my research.”

“Since middle school, I have always claimed I wanted to be a surgeon, but this wasn’t set in stone until I got to perform my first dissection. I remember walking into my freshman biomedical science class and seeing dissection/puppy pads spread across the classroom. On that day, I was allowed to dissect a sheep heart, and I realized I truly did want to become a surgeon.”







Jacob Thomas
Louisville, Kentucky (Jefferson County)

Dear Gatton Supporter,

I am writing to extend my gratitude for your continuous support that has allowed students like me to participate in the Gatton Research Internship Grant (RIG) program. The opportunity to conduct research and live independently during the summer has been transformative, equipping me with essential life skills that will undoubtedly shape my future. Working in Dr. Ajay Srivastava's lab, I had the privilege of using *Drosophila melanogaster* as a powerful model organism to investigate metastatic properties. My primary focus was on analyzing the downregulation phenotype of V-Type ATPase in the Air Sac Primordium, a crucial organ similar to the human lung. This organ serves as an exceptional model for studying the behavior of invasive cells, providing valuable insights into the mechanisms underlying metastasis in human cancers. Though challenging initially, I learned the significance of asking questions and delving into scientific literature, skills I am determined to further develop as my research journey continues.

This summer research experience directly aligns with my aspirations of pursuing a career in medicine, particularly in Orthopedic Surgery. Conducting delicate dissections on fruit flies demanded precision and patience, much like the skillset required in the field of surgery. The proficiency I gained during my time in the research program will undoubtedly contribute to my preparedness for the future.

I want to express my deepest gratitude once again for granting me the opportunity to participate in research that has the potential to impact the world of cancer study. As a first-generation immigrant, the values of perseverance and hard work have been ingrained in me from a young age. My time at The Gatton Academy has truly opened up "Infinite Possibilities," and I am grateful for this exceptional opportunity. With great enthusiasm and determination, I look forward to continuing my academic and research journey, aspiring to make a positive difference in the field of medicine and beyond.

Sincerely,
Jacob Thomas

Jacob Thomas

Home High School:

Saint Xavier High School

Research Area:

Biology

Research Topic:

Jacob Thomas will be investigating the characterization of V-Type ATPase downregulation phenotype in the air sac primordium in *Drosophila melanogaster*.

Career Goal:

Surgeon

Research Mentor:

Dr. Ajay Srivastava,
Department of Biology,
Western Kentucky University

Extracurricular Activities:

Gatton Academy Medical
Association, Biology Club, Math
Club, Gatton Academy Leaders in
Education, Intramural Basketball

“As a young person interested in STEM, research is an opportunity I wouldn’t have at my sending school. Coming to Gatton has given me the chance to explore the field and further deepen my love for STEM.”

“I have always wanted to be a surgeon, and by conducting this research, I will be able to further understand development in the human body and the connections humans have with other species.”

“I am excited to learn new techniques regarding cell analysis. The biggest challenge in my research will be dissecting the air sac primordium in fruit flies. Given the small size of the fly, it will be hard to locate and dissect a particular region.”





Gracie Veith
Bowling Green, Kentucky (Warren County)

Dear Gatton Supporter,

I want to start by saying I really appreciate all you do to support the students and academic community of The Gatton Academy. The support and opportunities that Gatton provides are nothing short of life changing.

I have known for almost my entire life that I have wanted to be an educator of some kind. Only recently have I discovered my passion for chemistry and my wish to teach at a university level. Gatton has allowed me to have exposure to so many new career paths and interests and is such a positive atmosphere to pursue new things. The ability to participate in research, developing polymer substrates to improve water remediation tactics, has been eye-opening to how much I enjoy research. This summer has reinforced my future interests, while also being a great educational experience.

I have grown up in Bowling Green and have been blessed with encouraging teachers my entire life. However, Gatton has furthered educational opportunities by immersing me in STEM interests, such as computer science, engineering, and chemistry. Although the social and athletic aspects of Gatton were extremely difficult to transition to at first, I have met some of my closest friends and am almost more involved in sports now than ever. Even though the high-achieving atmosphere of Gatton can be difficult sometimes, I would not trade this community and opportunity. This program has offered me the ability to truly know what I want out of my future education and has inspired me to pursue a graduate degree, turning my passion for research and teaching into a career.

Sincerely,

Gracie Veith



“As a young person who is interested in a STEM field, I think research is an eye-opening experience and amazing opportunity that uses my natural curiosity to learn and create new things.”

“This research experience focuses largely on the chemical synthesis of materials that could have environmentally beneficial uses. This fits well into what I would like to eventually be doing as a chemical engineer, focusing on research with environmental impacts.”

“I have had so many good memories at Gatton so far that it can be difficult to choose a favorite. However, I think late nights in the common areas laughing with friends has made every difficulty I’ve faced here more than worth it.”

Gracie Veith

Home High School:

South Warren High School

Research Area:

Chemistry

Research Topic:

Gracie Veith will be developing novel, high-porosity polymer substrates to which photocatalyst compounds can be attached.

Career Goal:

Chemical Engineering

Research Mentor:

Dr. Matthew Nee,
Department of Chemistry,
Western Kentucky University

Extracurricular Activities:

Health Occupations Students of America, Beta Club, Future Problem Solvers, Volleyball Club, Chemistry Club



Vivianna Weaver
Berea, Kentucky (Garrard County)

Dear Gatton Supporter,

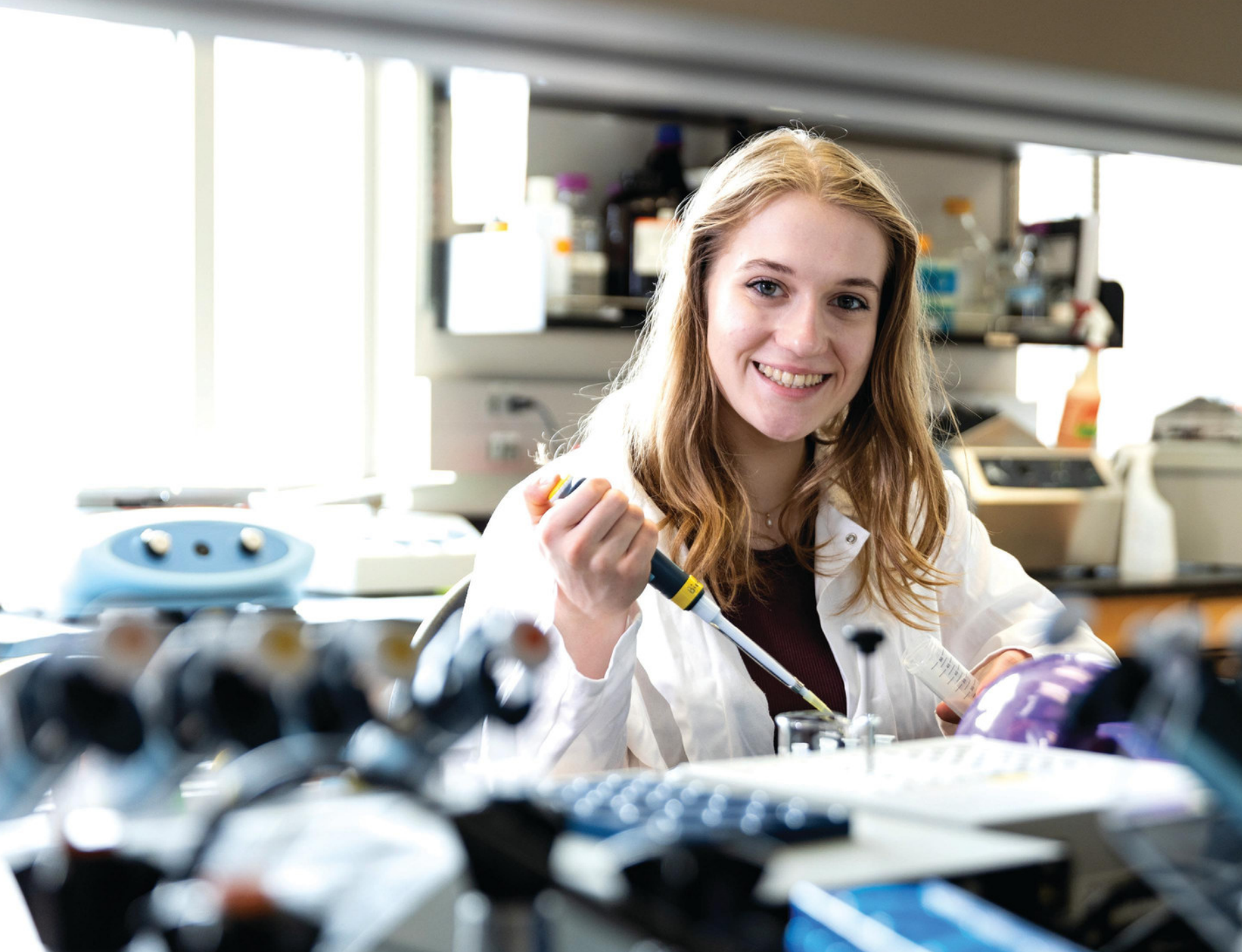
I want to thank you for your support and treasure this opportunity to do so. Your contributions have not only allowed me to attend The Gatton Academy, where I have accumulated endless amounts of knowledge, but to research through the Gatton Research Internship Grant (RIG) program at Brown University this past summer. I studied zebrafish vasculature, which provides a strong foundation for advancements in human health, and I could not have done so without your support.

The opportunity I have been provided with this summer has had innumerable effects on every part of my academic career. I have learned so much about laboratory procedures and advancements, which will help in every aspect of my future work as a neurosurgeon. Through the research program at Brown, I have even gotten to participate in clinical shadowing, cementing surgery as my current passion.

I have also learned a lot about myself through this process. Attending The Gatton Academy taught me self-sufficiency, from planning my mealtimes to attending all classes without any reminders. This research opportunity has provided a similar experience to a higher degree. I have learned to complete all the tasks that living by myself requires, and it has significantly contributed to my development as a person, student, and scientist.

This opportunity has been incredible, and I could not have done it without you.

Thank you,
Vivianna Weaver





“I knew STEM (and specifically surgical science) was my passion when I got to attend my dog’s surgery as a child! My family found it incredibly odd, but I found it so interesting, and I knew it was what I wanted to do.”

“The biggest challenge I will have to overcome will probably be my minimal knowledge of the lab equipment specializing in neuroscience. I have not spent a lot of time utilizing equipment specific to neurology, and while I hope to learn more about it, I see it as a challenge to overcome.”

“Research means a lot to me because I love all things STEM, but I’ve never really had a chance to explore MY thing. I’m excited to spend the summer learning about something I really care about.”

Vivianna Weaver

Home High School:

Garrard County High School

Research Area:

Biology

Research Topic:

Vivianna Weaver will be using zebrafish to examine how exposure to per and polyfluoroalkyl substances affects brain development and seizure susceptibility.

Career Goal:

Neurosurgeon

Research Mentor:

Dr. Jessica Plavicki,
Department of Pathology,
Brown University

Extracurricular Activities:

Y-Club President, Model United Nations, Gattton Academy Leaders in Education, Academic Team



Mara Neave
 Tyler Clifton
 Amya Parn
 Jacob Lashway
 Broneden Patrick
 Albert M
 Hunter Smith
 Mal-wl Cline
 Weaver
 Vивиanna
 Jacob Thomas
 Tobi Akanbe
 Em Yall
 Sara Watta
 Laneel Pallas
 Grace Vaiter
 Amel Fuentes
 Sofia Silvio
 Jordan Carlton

Thank you, Gatton RIG Supporters!

THE GATTON
ACADEMY 
of Mathematics and Science



“The coolest thing about summer research is learning something new every day.”
- Tobi Akangbe with Zim Hasan and her mentor, Dr. Noah Ashley



“The coolest thing about summer research is being able to devote an entire summer to something you’re passionate about. During the semester I can’t spend all my time underground like I can during my summer internship.”
- Mykah Carden with her mentor, Dr. Patricia Kambesis



“The wackiest piece of advice my research mentor has given me is if the flies are still wiggling, just give them more gas.”
- Landon Carlton with his mentor, Dr. Ajay Srivastava

“The coolest thing about summer research is getting to work with many scientists and doctors who are also passionate about neuroscience. Through their guidance, I hope to learn more about the field, while also discovering how I want to pursue my career in the future.”

- Tyler Clifton with his mentor, Dr. Adam Bachstetter



“Coolest thing about summer research is getting to work with compounds and chemicals to create something that is my own.”

- Kal-El Cline with his mentor, Dr. Matthew Nee



“The coolest thing about summer research is gaining experience! It is amazing to have the opportunity to learn from other people in an area you’re passionate about.”

- Amelie Fuentes with her mentor, Dr. Farhad Ashrafzadeh





“The coolest thing about summer research is taking a more prominent role in my summer research project and being able to spend an ample amount of time to ultimately create a research project I can be proud of.”

- Nikhil Kumar with his mentor, Dr. Joseph Marquardt, and Callie Stempa, Julie Allen and Fletcher Johnson



“The best advice my mentor has given me so far was to stay patient. When I asked to join his lab, he specifically told me I could do hundreds of reactions and still never get the compound we want. That really emphasized the importance of staying patient throughout my research.”

- Jacob Ladwig with his mentor, Dr. Bangbo Yan



“The coolest thing about summer research is connecting and fitting in with people who share my research and STEM goals and aspirations.”

- Albert-Presley Mbanfu with his mentor, Dr. Hilary Katz

“The coolest thing about summer research is the opportunity to learn and grow!”

- Sara Nath with her mentor, Dr. Ritambhara Singh



“The coolest thing about summer research is visiting and exploring new sites across Bowling Green.”

- Mara Neace with her mentor, Dr. Jason Polk



“The best piece of advice my mentor has given me is to challenge myself. She has told me to face the challenge head-on and to never back away from things that may seem too difficult or that I may think are out of my reach. She encourages me to break down the problem into smaller parts and work through them to the best of my ability.”

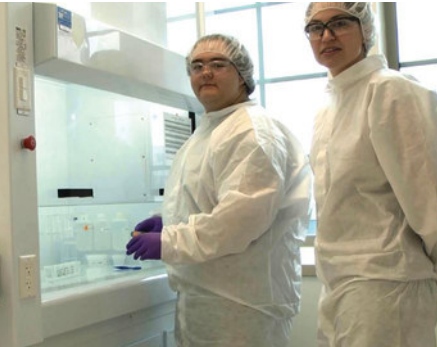
- Amy Pan with her mentors, Dr. Alan White and Dr. Kristina Arnold





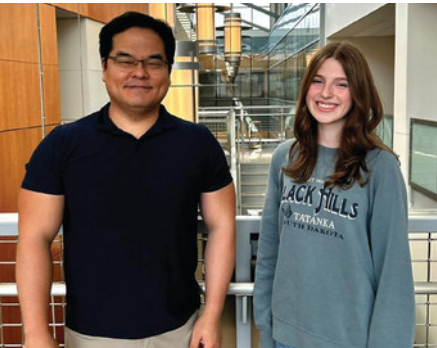
“The best piece of advice my mentor has given me is to embrace collaboration. She said that this project will require a lot of communication and teamwork, so I must prepare for that.”

- Om Patel with his mentor, Dr. Kristina Arnold



“The best advice my mentor has given me is to think outside of the box and to not try to be over-prepared. We have to learn new things every day, and that’s okay.”

- Braeden Patrick with his mentor, Dr. Shelby Rader

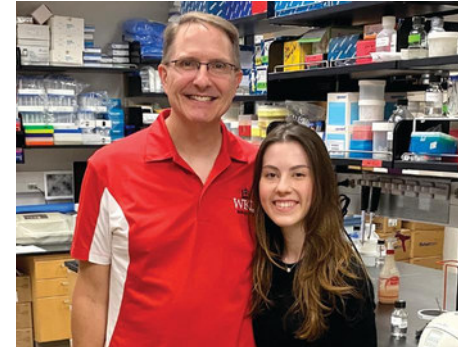


“The best piece of advice I have gotten from my mentor so far is that I should make sure I’m doing something I like. He told me I shouldn’t do something for the reward or the name, but rather because it is something I like and something I want to do.”

- Laurel Patterson with her mentor, Dr. Taeyoon Kim

“Thus far, the best advice my mentor has given me is to never stop asking questions. I took his genome course my first semester at Gatton, and Dr. King quickly learned I love to ask questions. I would ask him at least one question a day. He used to joke whenever he saw me in the halls, ‘Sofia, do you have any questions?’ I am grateful to have such a caring and knowledgeable mentor.”

- Sofia Sileo with her mentor, Dr. Rodney King



“My research focuses on a specific condition called ‘hypertrophic cardiomyopathy.’ This condition goes unnoticed by most of its patients. My uncle was diagnosed with this condition, so I am super excited to be able to work on a condition that has such a personal meaning to me.”

- Hunter Smith with his mentor, Dr. Ivan Luptak



“The best advice my mentor has given me is to not waste my time. He says that if I want to succeed, I must be willing to work hard.”

- Jacob Thomas with his mentor, Dr. Ajay Srivastava





“Even though my mentor, Dr. Nee, says many helpful things, I think the best piece of advice I have gotten so far is that if you want to be successful in something, it is really important to enjoy it.”

- Gracie Veith with her mentor, Dr. Matthew Nee



“I am super excited to learn more about zebrafish and practice my lab skills. I’m also excited to meet people who are also interested in neurological science.”

- Vivianna Weaver with her mentor, Dr. Jessica Plavicki

WKU[®]

