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

Volume Seven - Summer 2017

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

THE GATTON ACADEMY of Mathematics and Science

Infinite Possibilities:
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The Gatton Academy of Mathematics and Science in Kentucky

Volume Seven - Summer 2017


CELEBRATION
150

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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 first eight years, the program has created 132 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. As examples, summer 2016 recipients of the Gatton Research Internship Grant were recognized by the Siemens Competition – the nation's premier research program for high school students – as national semi-finalists (Amber Carroll, Reese Danzer, Sherafghan Khan, and Olivia Urso) and the Barry M. Goldwater Scholarship (Ayush Prasad, Honorable Mention). Meanwhile, last summer's Gatton Research Internship Grants resulted in 17 student-delivered presentations at conferences across the state and nation and one peer-reviewed publication in the 2016-17 academic year.

The Gatton Research Internship Grant program funded 21 rising high school seniors during the summer of 2017. In addition, the WKU Sisterhood funded an additional two female students from underrepresented populations for their own Research Internship Grant program. The following pages feature these students.

Amber Carroll

Reese Danzer

Sherafghan Khan

Ayush Prasad

Olivia Urso

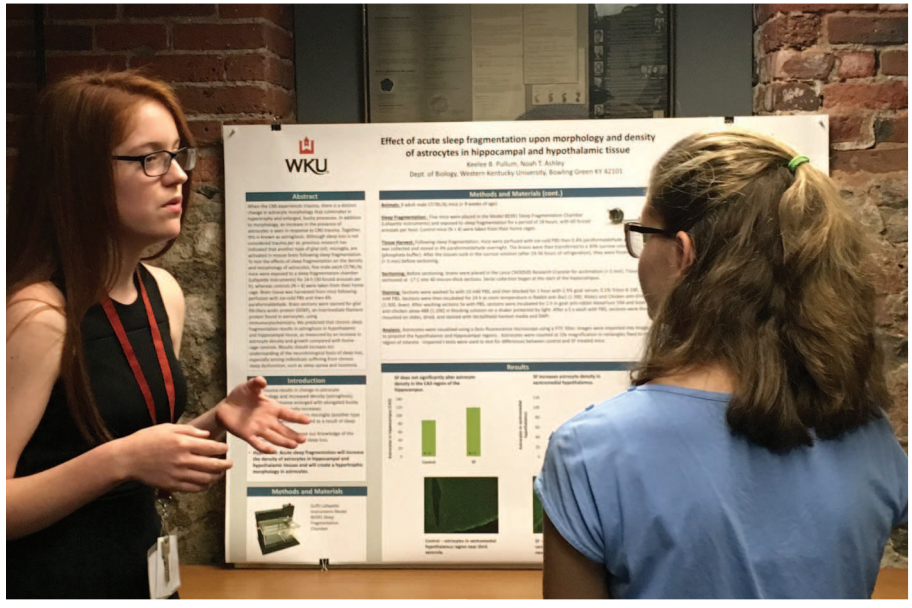
Dear Mr. Gatton,

Through your generosity, the Gatton Research Internship Grant program has thrived. Each year, approximately 20 students have been provided the opportunity to pursue in-depth research with university faculty and laboratory experts. This year, the RIG program's merit was recognized by the WKU Sisterhood, which awarded The Gatton Academy a grant to increase the number of students supported by RIG awards. The grant award would not have been possible without the important foundation you laid for the program.

Twenty-three Gatton Academy students participated in an incredible summer experience of scholarship and research. The RIG has provided important funding for materials needed in the laboratories as well as financial support for the students' daily living and housing expenses. Their experiences in biology, chemistry, mathematics, and oncology rival those provided through nationally funded undergraduate research experiences, positioning the students for even greater contributions in the future.

Students' opportunities to pursue mentored research, participate in study abroad programs, and live and learn within a diverse community of intellectual peers set Gatton Academy students on a path of infinite possibilities. Your stewardship has made this possible and serves as an incredible model for our students. As they continue to grow and develop as leaders and experts, they are sure to continue your legacy of contributing to Kentucky and beyond.

With deepest gratitude,
Lynette Breedlove, Ph.D.
Director


WKU
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Keelee B. Pullum, Noah T. Ashley
Dept. of Biology, Western Kentucky University, Bowling Green KY 42101
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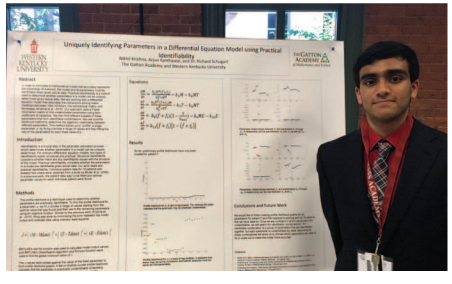
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Abstract
Introduction
Methods
Results
Conclusions and Future Work

Margaret Cook
Union, Kentucky (Boone County)

Dear Mr. Gatton,

I am truly grateful for the opportunity you have given me to engage in biochemistry research. This summer, I am working under Dr. Yan Cao of WKU to understand the mechanisms by which plants accumulate rare earth elements and toxic metals, as well as the interactions between them and their effect on the plant. This level of scientific inquiry is one that will prepare me for any future research-based career.

The Gatton Academy has long been a goal of mine, and I am beyond pleased with my decision to attend. One of the most attractive qualities of the school is the capacity for independent research and the ability to lead an autonomous lifestyle. Though the concept is not unrealized, it is easy to forget that we have already begun the next phase of our life. With the assistance of all the resources afforded by the Academy, it has been a much simpler transition. Rather than a stumble, it is a controlled leap. There are still a number of obstacles we must overcome, but the Gatton experience has given me the confidence to deal with them.

In my future endeavors, I will always remember the impact you have had on my life, and I thank you for your commitment to a higher standard of education and independence.

Sincerely,
Margaret Cook

Margaret Cook

Home High School:
Larry A. Ryle High School

Research Area:
Biochemistry

Career Goal:
Microbiologist

Research Mentor:
Dr. Yan Cao
WKU Department of Chemistry

Extracurricular Activities:
Gatton Academy Leaders in Education, Forensics, Society of Industrial and Applied Mathematics, and Community Band

"One of the biggest challenges in my research I have had to overcome has been creating my procedures. Performing biology research under a chemistry professor results in a large amount of freedom in deciding how to move forward. Given an end goal, I have to find a path to get there. I overcame it by communication, taking smaller steps, reaching out to other professors, and reading as many research papers as I could."

"My first year, the majority of my classes stemmed from high school requirements. Next year, I am most looking forward to branching out to encompass my other interests."

"My favorite Gatton Academy memory took place while sitting on the sand in the Goldring-Gund Turtle Hatchling Sanctuary in Costa Rica. It was just before midnight, and I had just spent the night catching eggs from a nesting Leatherback turtle. Dragging a hand quickly through the sand would produce a faint blink of bioluminescence, and looking upwards would reveal a sky with what seemed like more stars than should have existed. It felt truly isolated and surreal, an experience I will never forget."


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Caleb Curry
Louisa, Kentucky (Lawrence County)

Dear Mr. Gatton,

First of all, thank you! Thank you for making the Academy a possibility, thank you for funding my summer research internship, and thank you for all the other opportunities that you have made possible. Your generosity and selflessness are appreciated.

As a student from a rural Eastern Kentucky county, there were not many opportunities available to me. However, since coming to Gatton, they seem limitless. This summer I am completing my research internship at the Cleveland Clinic Lerner Research Institute. I am beyond excited and am extremely grateful for this experience. I am working with Dr. Oliver Wessely to optimize the differentiation of stem cells into podocytes and determine to what extent these cells resemble those of the adult, human kidney. Podocytes are cells that are responsible for the main filtration barrier in the kidney. These derived cells could be used to create artificial kidneys, to develop more potent dialysis with a biological component, or for clinical testing of drug tolerance.

I want to enter the medical field, specifically to become a surgeon. The Gatton Academy, as well as this internship, have been excellent stepping stones towards this goal. This internship means a lot to me in terms of furthering my academic, personal, and professional goals. This past year I participated in the Genome Discovery and Exploration Program, and through this program, I was able to isolate, characterize, and annotate a novel bacteriophage. As this was my first research experience, it provided me with an important background in the world of research, which has been very beneficial this summer.

Again, thank you for all you have helped make possible,
Caleb Curry

Caleb Curry

Home High School:
Lawrence County High School

Research Area:
Biology

Research Mentor:
Dr. Oliver Wessely
Department of Cellular and Molecular Medicine,
Cleveland Clinic Lerner Research Institute

Extracurricular Activities:
Student Y, Kentucky Youth Assembly (KYA), Kentucky United Nations Assembly, Gatton Academy Leaders in Education, Tennis Club, Future Healthcare Professionals, Gifted and Talented Education, National Honor Society, Job Shadowing, Community Service, and Research

"In my first year at Gatton, I participated in the Genome Discovery and Exploration Program. Through this experience, I learned that research isn't always successful and that research happens on its own schedule."

"I am looking forward to gaining additional experience in research with clinical relevance. It will be applicable to my future as a healthcare provider."

"The Gatton Academy provides highly motivated students with opportunities that are offered nowhere else in the Commonwealth of Kentucky. These opportunities provide us with additional tools that allow us to become successful adults who can give back to their communities."

Jeraan Fernando
Union, Kentucky (Boone County)

Dear Mr. Gatton,

My name is Jeraan Fernando, and I am a rising senior at The Gatton Academy. I am Sri Lankan, but I was born in Fort Wayne, Indiana. I moved to Union, Kentucky, when I was four and have lived there ever since. My parents moved to America in 1991 so that my dad could go to school at Purdue University to get his degree. My mom has gone through numerous nursing programs in Indiana and Kentucky and is working as a Registered Nurse.

Ever since I was little, I have excelled in mathematics and competed in numerous competitions throughout my educational career. My largest accomplishment was winning my Chapter Mathcounts Competition, earning me four-year full-tuition scholarships to both WKU and UK. I am not completely sure what I want to do career-wise, but I am interested in going into medicine to be either an anesthesiologist or radiologist.

For my summer research project, I will be using Electron Microscopy, Cryo-Electron Microscopy, and the WKU high-performance computing clusters (HPCC) in order to make the three-dimensional structure for the primary sequence of the protein capsid head and tail of Mycobacteriophage MooMoo, which has a rare head structure.

Attending The Gatton Academy has given me more opportunities than I could have ever imagined. The opportunity to gain college experience and meet people who are just as interested in math and science as I am is amazing. I have done biology research through the Genome Discovery and Exploration Program, gone to Greece during winter term, and conducted bioinformatics research during the spring semester. I will be going on the Harlaxton study abroad later this summer and hope to go to Costa Rica for study abroad in the winter.

Thank you for all the opportunities you have given me and all other Gatton students, past and present,
Jeraan Fernando

Jeraan Fernando

Home High School:
Larry A. Ryle High School

Research Area:
Biology/Bioinformatics

Career Goal:
Anesthesiology or Radiology

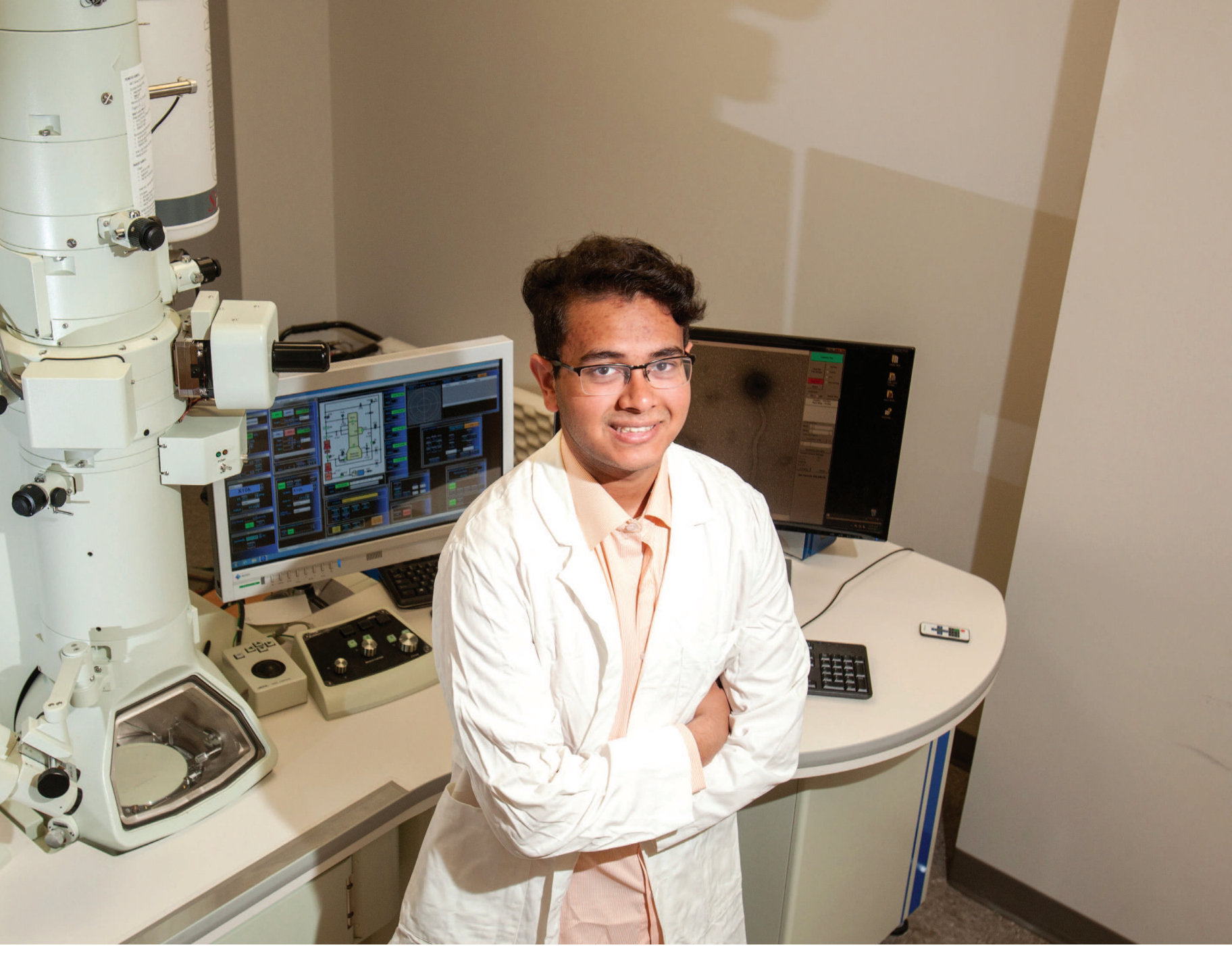
Research Mentor:
Dr. Claire Rinehart
WKU Department of Biology

Extracurricular Activities:
Future Business Leaders of America, Boy Scouts of America, Academic Team, Frisbee, Basketball, Gatton Academy Leaders in Education, Stock Market Club, Beta Club, and Key Club

"On my first day at Gatton, I remember feeling excited and eager to meet new people and to start my first semester as a college student. Now, I feel excited and eager to spend my summer doing research, working as a waiter, exploring Bowling Green, and preparing to go on the summer Harlaxton trip."

"In the next 10 years I aspire to finish my undergraduate degree majoring in Biology along with Chemistry, Mathematics, or Business. I also hope to have completed medical school and completed my residency in Anesthesiology or Radiology."

"What I am looking forward to the most about my second year at the Academy is being able to mentor the incoming juniors, as well as becoming close friends with them. Academically, I am looking forward to being able to learn two semesters of Elementary Arabic in one semester through a bi-term course."



Callie Freeman
Louisville, Kentucky (Jefferson County)

Dear Mr. Gatton,

During one evening reverie, I challenged myself to do what I saw as impossible. I challenged myself to summarize my time at The Gatton Academy in just a few short words. Simply summarizing an experience that has helped me discover and cultivate my innermost passions might dishonor something so worthy, not to mention prove Herculean in nature, and after an entire evening's thoughts, I was able to produce nothing more than a question: "Haven't I been lucky?"

After receiving the Gatton Research Internship Grant, I soon realized that The Gatton Academy's unparalleled opportunities are far from luck, but rather the passion, vision, and generosity of an extraordinary individual – Mr. Carol Martin Gatton.

This summer, your generosity has allowed me to not only discover my passions, but also put them into action in a meaningful, enlightening way. My love of medicine, biochemistry, and for others has finally been united in my research to find a cure for type-2 diabetes, a disease from which more than 29 million people in the United States alone suffer. Without the guidance of your exceptional school and the selflessness of your generous funding, my passions would still remain unexamined and my research skills undeveloped. The Gatton Research Internship Grant, a unique educational tool that has provided me with real-world experience, is the result of one compassionate man's genius, something very different from luck.

While an evening's thoughts may have come and gone, I now realize that The Gatton Academy is far too special to ever summarize into words. Words fail to represent the sheer brilliance behind a school that is truly one-of-a-kind. They also fail to represent the generosity of the man whose name it bears and the gratitude in my heart.

Thank you.

Sincerely,
Callie Freeman

"I would tell high school students to apply as soon as possible to Gatton. The Gatton Academy is nothing like traditional high school, which makes it all the more special. We are incredibly fortunate to experience the education and opportunities of a lifetime. We even get to do all this while living in a community with talented, unique individuals who become some of our very best friends. This kind of opportunity cannot be passed up."

"I was extremely excited my very first day at Gatton, but everything felt unfamiliar and foreign. Now, Gatton feels like home."

"Through the Genome Discovery and Exploration Program with Dr. Rodney King and Mrs. Naomi Rowland, I worked to isolate, purify, and sequence a bacteriophage. I learned I love discovering how biology works. In the lab, one constantly sees the 'behind the scenes' action of life itself. It's thrilling to see all that is learned in biology class take place in real time and in real life."

Callie Freeman

Home High School:
Sacred Heart Academy

Research Area:
Cellular Biology

Career Goal:
Doctor

Research Mentor:
Dr. Michael A. Menze
Department of Biology,
University of Louisville

Extracurricular Activities:
Speech and Debate, Freelance Harpist, Harp/Piano Instructor, Student Y, Future Business Leaders of America, and Orchestra

Grayson Fuller
Versailles, Kentucky (Woodford County)

Dear Mr. Gatton,

I have always been curious. When I was younger, I would explore all the rooms and closets and drawers in a new place. My mom would always chastise me for my nosiness. As I grew up, this nosiness matured; instead of exploring rooms, I wanted to explore the world and how it worked. I brought this "developed curiosity" with me when I was given admission to the Academy. When I discovered research and explored its process, I blossomed. Scientific investigation was the perfect outlet for my inquiring mind. After participating in biology research my junior year, I sought the opportunity to continue my work into the summer. This desire led me to apply for the Gatton Research Internship Grant. Through it, my research experience would be extended into a setting far more intensive than my research during the academic year and provide more challenges and rewards.

At this point in my research, I have learned a great deal about the toxicity of the gold nanomaterials I am studying, their effects on living systems, and at what levels these materials begin displaying toxicity. I have discovered that these gold nanomaterials severely affect the fitness and lifespan of my model organism, and that these materials induce some physiological deformations after prolonged exposure through multiple generations. Going forward, I will examine the effects of a biologically fabricated type of gold nanoparticle in comparison to those I have already studied. I eagerly anticipate the results of the forthcoming investigations and the many applications that may be derived from their interpretation.

When I was selected as a RIG recipient, I was elated. This opportunity means so much to me in respect to my academic and career goals. My recently developed passion for research has guided me toward a career in academic medicine or medical research. Not only would this summer internship give me the practical experience I would need for such a career, but it also allows me to invest my time in something I enjoy. I wholly anticipate this summer to be one of my most memorable Gatton experiences, and for that reason, in addition to the academic and professional benefits, I am incredibly grateful.

Tremendous thanks,
Grayson Fuller

Grayson Fuller

Home High School:
Woodford County High School

Research Area:
Biology

Career Goal:
Medical Researcher/Professor of Academic Medicine

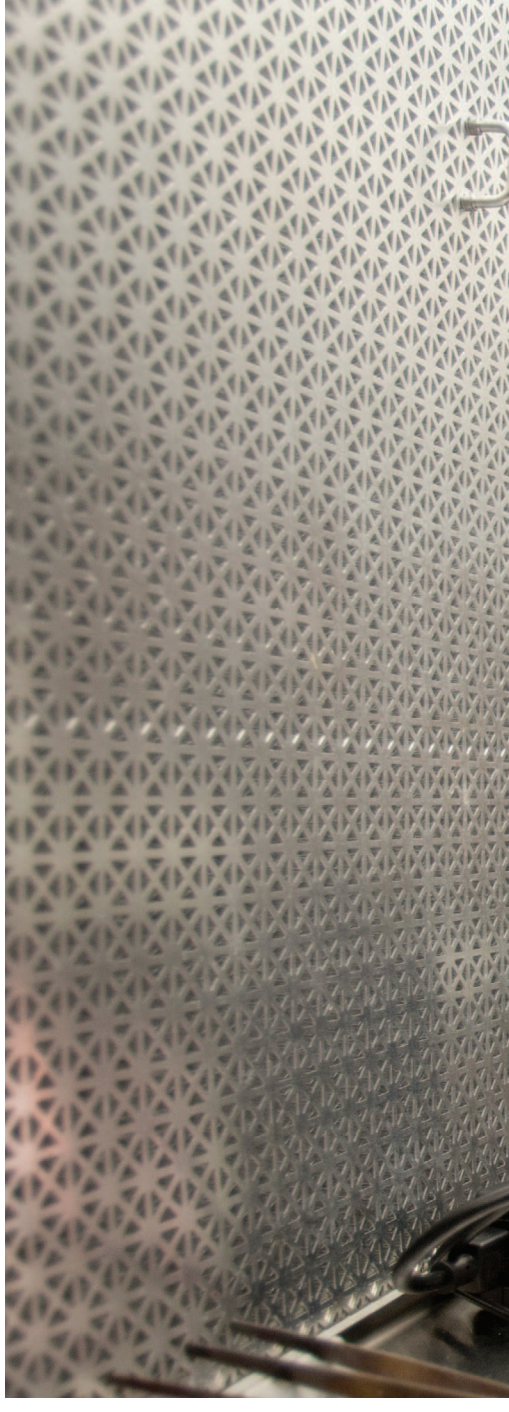
Research Mentor:
Dr. Nilesh Sharma
WKU Department of Biology

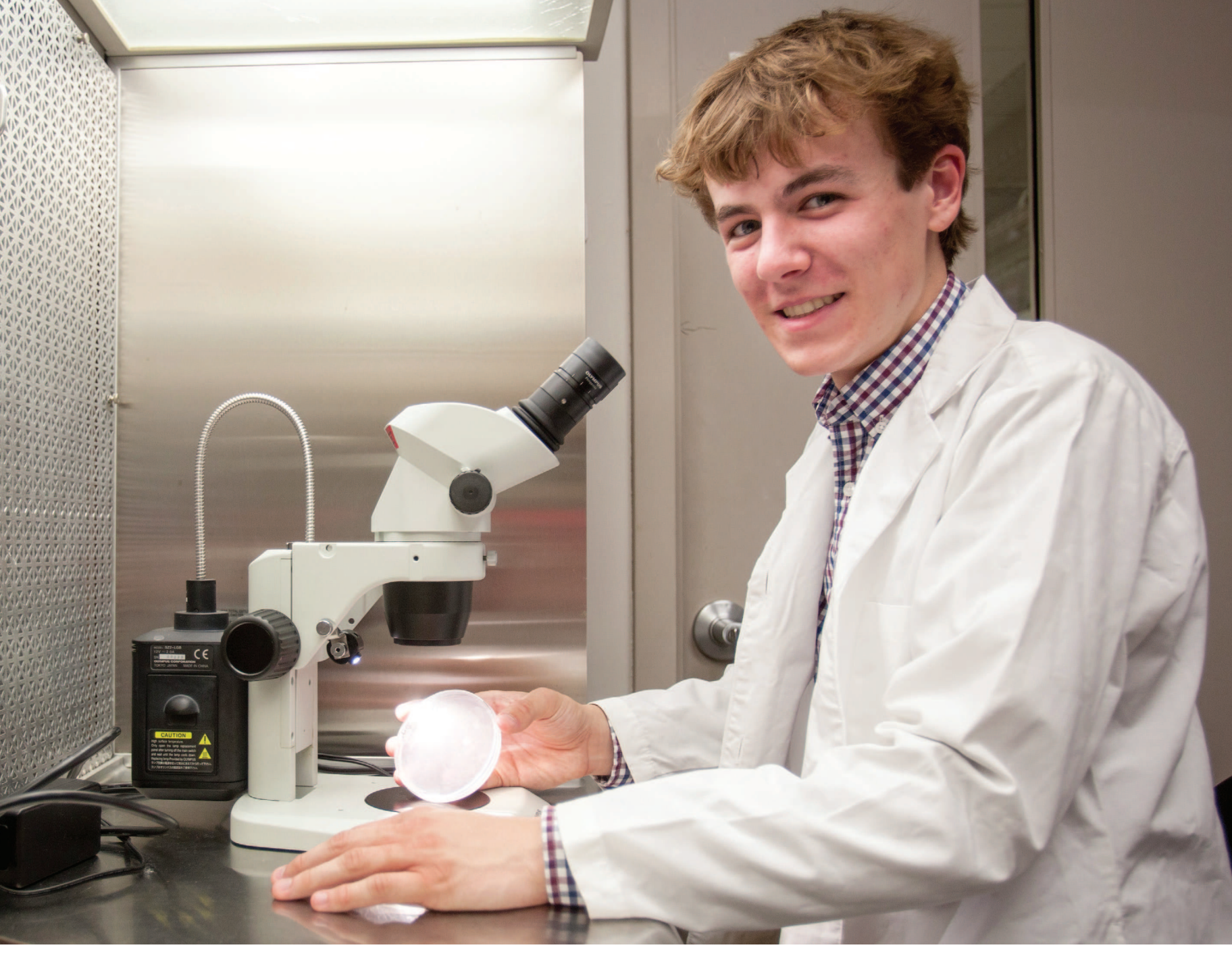
Extracurricular Activities:
Gatton Academy Leaders in Education, Gatton Academy Student Government Association, Beta Club, National Honors Society, *Sierpinski's Square* Literary Magazine, and WKU Study Abroad Student Representative

"I really look forward to practicing the independence I am being given this summer. My time at the Academy has allowed me to grow as an independent individual. I hope now to expand upon that growth this summer when I am truly governing myself without the support of a network of administrators and numerous peers."

"I hope this research will allow me to apply for several prestigious programs and scholarships. Beyond the Siemens Competition, I hope to apply for the Barry M. Goldwater Scholarship, the DAAD RISE internship program, and many scholarships during the college application process."

"When I came to the Academy, I intended to pursue research because I felt like everyone pursued research. After diving into it my second semester here, I fell in love. Research was an outlet for my curiosity and my passion for learning. I felt as though I was making meaningful contributions to the scientific community. My introduction to research also shaped my career path into what it is now: medical research. I cannot wait to continue exploring science."

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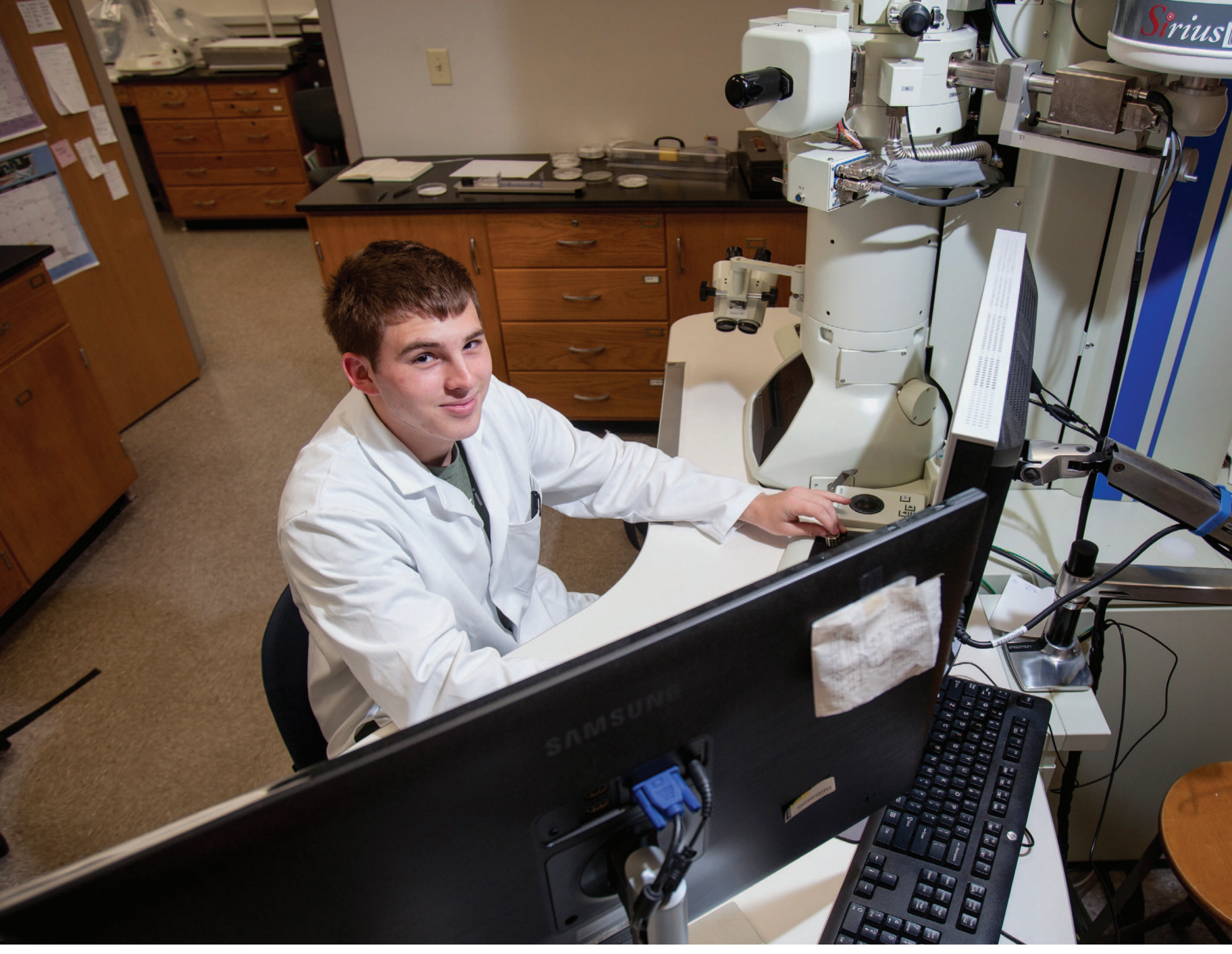
Marco Garcia
Paducah, Kentucky (McCracken County)

Dear Mr. Gatton,

Thank you for giving me the opportunity to pursue research this summer. I am working with Platinum-Cobalt nanoparticles, which can be used to turn carbon dioxide into marketable resources like ethanol. The idea is to create a new way to make them so that they are easier to store, require lower temperatures to synthesize, and are more accessible. If we can do that, then energy companies, especially ones that burn coal, will have more incentive to capture their carbon dioxide, offsetting the cost of capturing it with the profit they make from turning it into fuels like ethanol.

I have enjoyed my research because it's just really cool to work in an actual chemistry lab, and I realize how my research can help the world in the long-run. I also enjoy working on the Electron Microscope, especially since I'm only one of a handful of high school students who knows how to use one. I spend a lot of time on it, more than I should, if I'm being completely honest, but I enjoy every minute of it. Through working in the lab and talking with my mentor, I have also developed useful skills that will help me in my educational and personal life.

Thank you again,
Marco Garcia


SAMSUNG

"The biggest challenge in my research is refining the process of creating the Pt_3Co octopods. Nanoparticles are finicky, and if you don't do everything just right, you'll have to re-do the experiment."

"I plan to go into chemistry/chemical engineering, and the research I am doing with nanoparticles could help me get into colleges with good programs. It will also give me a good head start when it comes to understanding complex concepts in chemistry."

"Research is an opportunity for me to make a lasting difference in the world. By doing research, I can start helping the world at a young age and continue to do it for longer than I normally would."

Marco Garcia

Home High School:
Paducah Tilghman High School

Research Area:
Organic Chemistry

Career Goal:
Chemical Engineer/Chemist

Research Mentor:
Dr. Lawrence Hill
WKU Department of Chemistry

Extracurricular Activities:
Intramural Soccer, Intramural Softball, Origami Club, Quiz Bowl, Frisbee Club, and Robotics Club

Olivia Gilliam
Madisonville, Kentucky (Hopkins County)

Dear Mr. Gatton,

I originally wanted to come to Gatton because of the opportunities that were not available to me at my sending high school. Before I came to Gatton, I did not know that people in high school could do research, and now I have had the chance to work on two different research projects. Coming from Hopkins County, there was no large university nearby for us to take dual-credit classes. Gatton provided my first experience with high-level classes, and even though the work load is much larger than at home, I absolutely love it! My first two semesters showed me how amazing it can be to live and learn in a community where one is surrounded by people similar to you.

I have always wanted to be an OB/GYN, but I had never considered gynecologic oncology. I am currently pursuing research at the University of Kentucky this summer, where I am working in the Markey Cancer Center Department of Gynecological Oncology. I spend my days analyzing ultrasonic images of ovaries that have been deemed abnormal, and, using a computer program, I am deciding whether we can use a digital program to determine the severity of the growth on the ovary. I have the opportunity to view the immediate impact of cancer research on cancer patients because the Ovarian Cancer Screening Program, which my mentor oversees, gives women with a high risk of ovarian cancer the opportunity to catch their cancer in the early stages. Each week, all office interns get the chance to view a surgery and attend a seminar hosted by the Gynecological Oncology Department.

It is because of the Gatton Research Internship grant that I am able to have these experiences, and I am so grateful for it and all the opportunities that have opened up to me at the Academy.

Sincerely,
Olivia Gilliam

Olivia Gilliam

Home High School:
Madisonville North Hopkins High School

Research Area:
Ovarian Cancer Screening

Career Goal:
OB/GYN

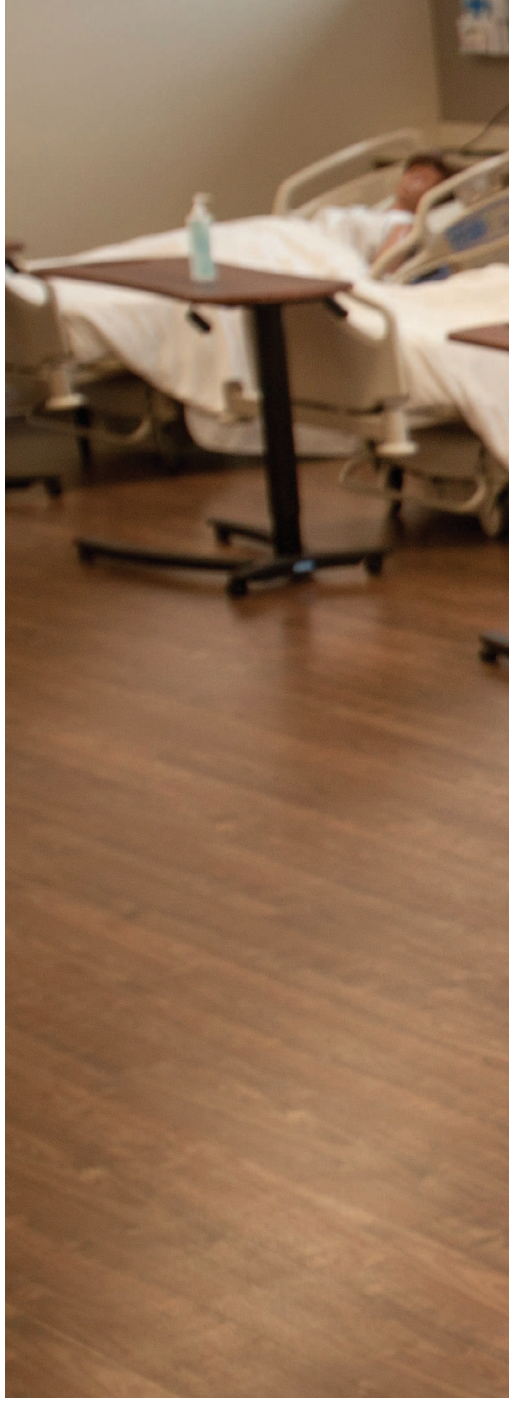
Research Mentor:
Dr. Edward J. Pavlik
Ovarian Screening Research Program, University of Kentucky College of Medicine

Extracurricular Activities:
Study Buddies, Yearbook, Student Y, and Future Business Leaders of America

"The coolest thing about summer research is the opportunity to actually have my work help other people and the knowledge that I will gain."

"My biggest accomplishment at Gatton has been learning to appreciate myself and have confidence, even when I do not get grades that I am used to or am surrounded by people who have done better. Not only does it help me to be more successful, but I am also learning the importance of celebrating the successes of those around me, even if I did not succeed in the same way."

"I believe that science and math are the most important tools that we have to make the world a better place. As a young person who is involved in STEM, I think it is crucial we identify problems and go after them with every asset we have. I feel honored to be able to help contribute to a future solution to ovarian cancer."



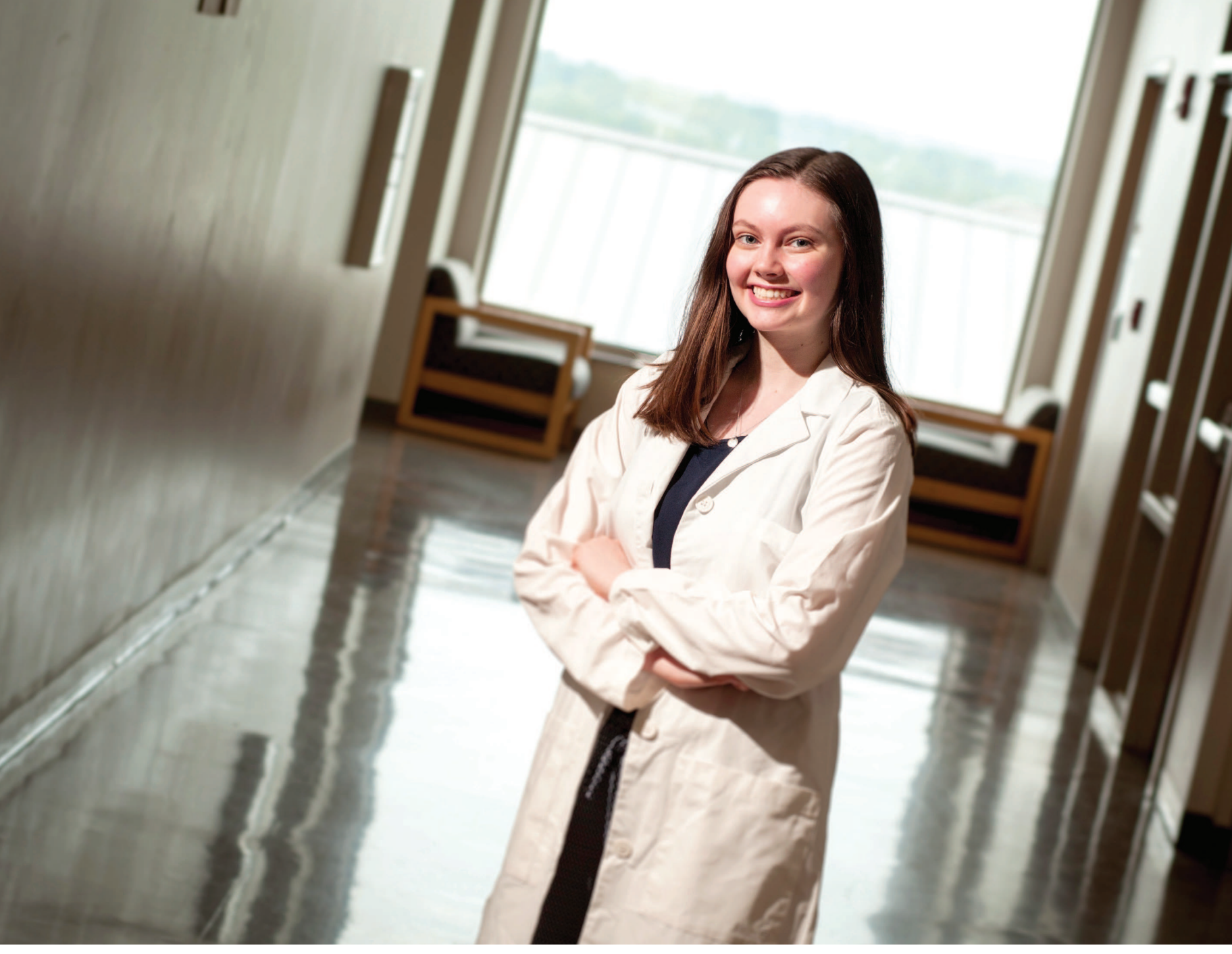
Emily Guernsey
Louisville, Kentucky (Oldham County)

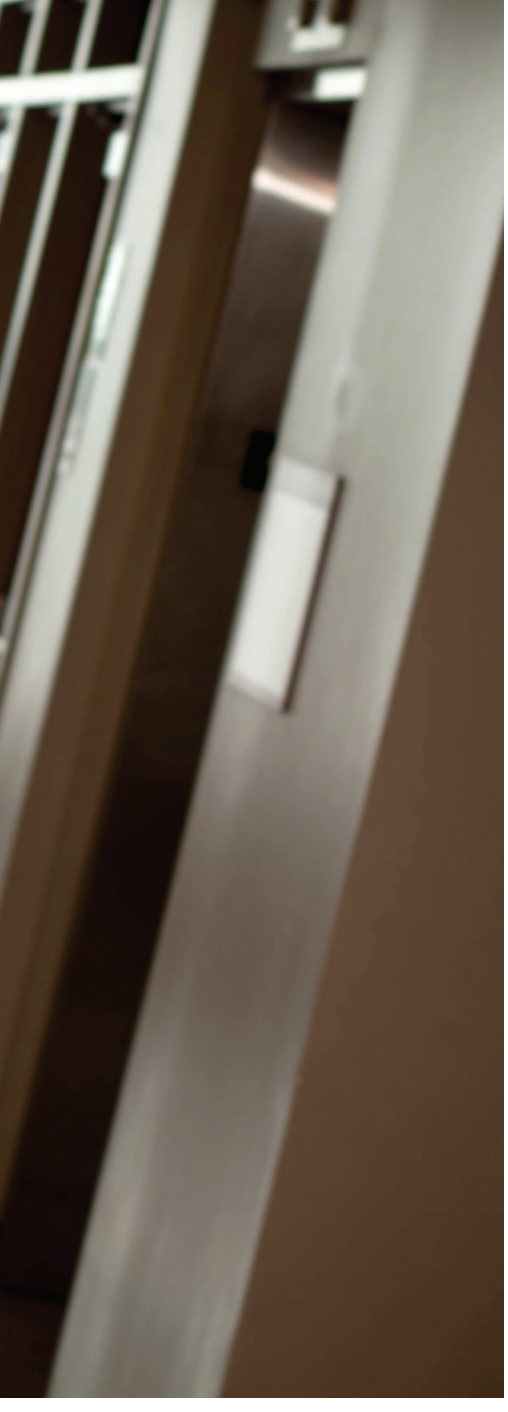
Dear Mr. Gatton,

My name is Emily Guernsey, and I am from Louisville. My first year at the Academy was one of my most memorable and rewarding. I began the year incredibly excited for all the Academy had to offer, but also filled with nervousness. The thought of leaving behind everything I had ever known was terrifying, but I was also strongly drawn to all the Academy had to offer. The opportunity to take challenging classes, conduct research, study abroad, and live with a community of passionate peers was too extraordinary to pass up. As the year flew by, I settled into my new home and my feelings of nervousness began to fade, but my initial excitement never waned. As soon as one wonderful experience ended, whether it be roaming the snowy streets of Greece or seeing images of the bacteriophage I discovered in the Genome Discovery and Exploration Program, another appeared before me. The latest in this series of opportunities is my summer research internship.

This summer, I am conducting research at the James Graham Brown Cancer Center under the mentorship of Dr. Sucheta Telang. My research focuses on the metabolism of cancer cells, specifically working to understand a family of enzymes that may be a potential therapeutic target in the treatment of cancer. This is my second summer interning in Dr. Telang's lab, and I am incredibly grateful for the opportunity to return for another summer. Being an active participant in science has helped me to become more inquisitive and develop my problem-solving skills. It has also allowed me to see what "real" science is like, with all of its ups and downs, from having an experiment completely fail to finally perfecting a tricky technique. My experiences have instilled in me a passion for research that I hope to carry into my future as a physician or biomedical researcher. Mr. Gatton, thank you so much for making these opportunities possible.

All the best,
Emily Guernsey





"I think the coolest thing about summer research is having the opportunity to make my own discoveries and contributions."

"To me, research means the opportunity to discover new things and learn to think in new ways. Completing research has allowed me to feel engaged in the scientific process and has solidified my desire to enter a science field in the future."

"I would say that the biggest challenge I have encountered in research thus far was simply learning to accept that there are questions that I cannot immediately know the answer to. I am so accustomed to being able to just look up any question I can't answer, but you definitely can't do that with research. It is a long process and it can take weeks, months, or even years to begin to answer questions."

Emily Guernsey

Home High School:
Sacred Heart Academy

Research Area:
Cancer

Career Goal:
Medicine and/or Biomedical Research

Research Mentor:
Dr. Sucheta Telang
James Graham Brown Cancer Center, University of Louisville

Extracurricular Activities:
Student Y, Gatton Academy Leaders in Education, Big Brothers Big Sisters, and Norton Children's Hospital Teen Board

Camuel Hart
Morehead, Kentucky (Rowan County)

Mr. Gatton,

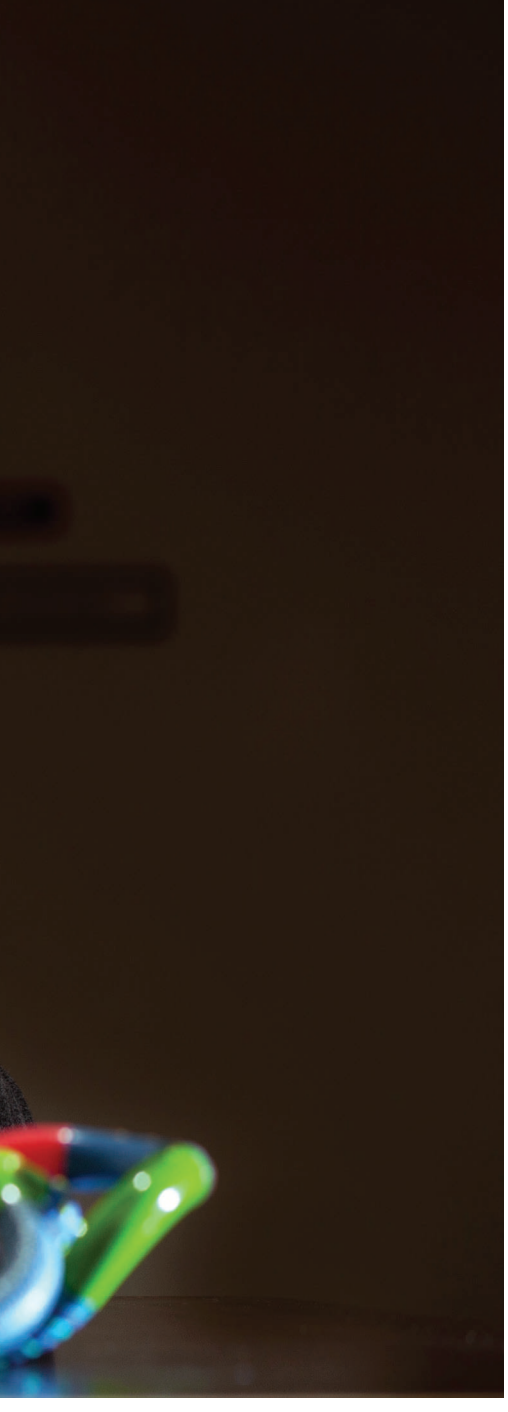
Both of my parents are educators. Coming from families of higher education, my mother and father both received degrees in education and took jobs as teachers in the quaint Appalachian town of Morehead, Kentucky, where they remain to this day. Consequently, school was a pervasive aspect of my life even before my birth. I do not mean school in the sense of the bleak and oppressive institution it is sometimes made to be, but rather school in the sense of the tools that, through internal motivation, can reveal the utility and beauty in knowledge.

My parents shared this outlook. While deeply invested in education, they never pressured me into any academic direction, instead electing to foster within me an internal desire to learn, encouraging me in pursuits that I enjoyed and supporting me in directions I took. There comes a point, however, when the direction points away from home. By the admittance of my parents, Morehead could not support my aspirations. Had it not been for the existence of The Gatton Academy and all that it entails, I may not have been given a chance to pursue my internal ideals, so I do not exaggerate when I say that despite having never met you in person, you are one of the most important figures in my life. And for that I thank you.

You have provided such a unique and personally meaningful opportunity to so many aspiring thinkers that the bounds of this document cannot do justice in any speedy fashion to the gratitude any one of us feels, let alone what we feel collectively. Our greatest thanks will come not in prose, but in practice, as the experiences provided to us build our characters and inspire us to contribute to society. This internship is just one of these experiences, and because of this, its value is strengthened.

Thank you.

Sincerely,
Camuel Hart



"The most attractive aspect of summer research is the perpetual academic atmosphere. Being in a constant state of deep thought about a subject and having the liberty to investigate it rigorously, make research a unique and personally significant opportunity."

"The value in having a mentor cannot be overstated. In the course of my research, I look forward to forming a strong mathematical and personal relationship with my professor. If all goes well, we will each challenge the other's mind as well as sharpen the other's wit."

"The possibility for research has always been at the core of my professional goals. Spending time chasing after my curiosities and expanding my understanding of the world are essentially my ideal life, not to mention my ideal career."

Camuel Hart

Home High School:
Rowan County Senior High School

Research Area:
Knot Theory (Mathematics)

Career Goal:
Mathematical or Computer Science Researcher

Research Mentor:
Dr. Claus Ernst
WKU Department of Mathematics

Extracurricular Activities:
Symphonic Band, Jazz Band, Marching Band, Film Club, and Stock Market Club

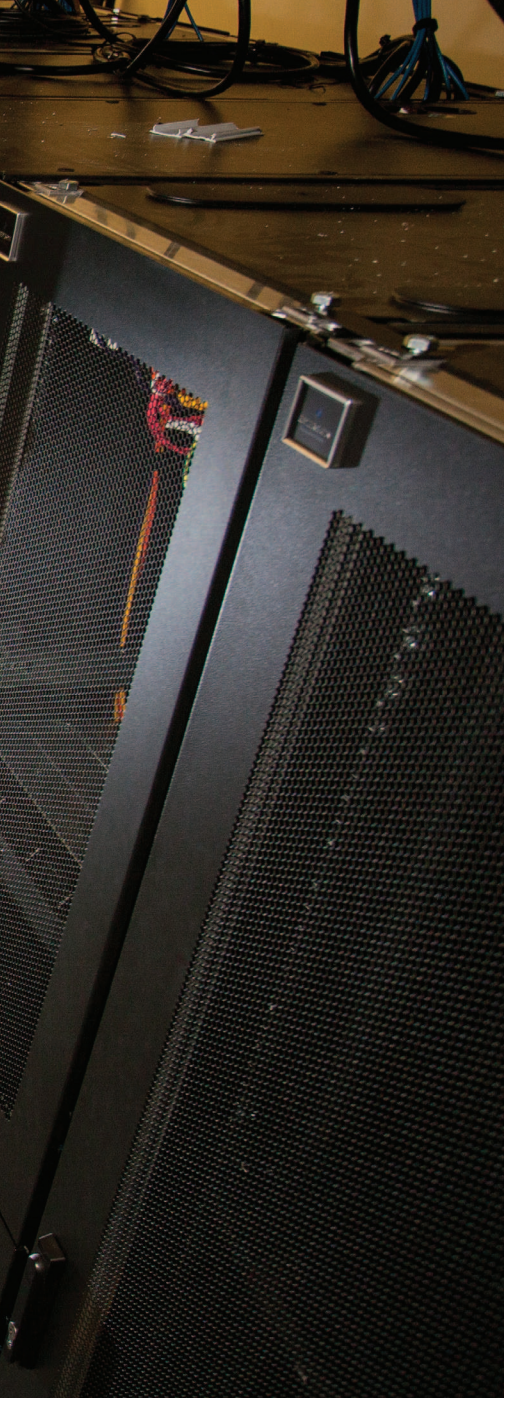
Skyler Hornback
Sonora, Kentucky (LaRue County)

Dear Mr. Gatton,

It is hard to put into words exactly what the Academy means to me. Coming from a rural area in LaRue County and being a first-generation college student, I have to say I did not know what to expect my first year here. Initially, I was drawn to apply because of the wonderful opportunities the Academy provides its students. From study abroad trips in Greece, to expanded course offerings, to being able to earn 60+ college credit hours, the rigorous curriculum offered me a challenging and fulfilling environment to help foster my educational and career goals. However, after my first year, I have found that what I value most are the lasting friendships I have made while here and how I have grown as a young person in this challenging environment.

As a result of your generosity, this summer I am able to continue to build upon these experiences by participating in a research project within the Department of Chemistry at WKU. Using different theories and models with my mentor Dr. Edwin D. Stevens, we are determining the structure and properties of a thyroid medication commonly known as MMI. Currently, we are comparing these calculations to experimental results obtained earlier to see if there are any discrepancies in some of the models. Being involved in this research has allowed me to gain invaluable work experience in a career field which I have an interest in potentially pursuing, and the hands-on approach gives me a greater insight into what the job is actually like day-in and day-out. It allows me to get my "feet wet" and will give me a leg-up when applying to colleges in the near future. I cannot thank you enough for making it possible for me and others to challenge ourselves in ways which simply were not available to us at home. I am forever grateful, for this experience means more to me than you may ever know.

With sincere thanks,
Skyler Hornback



"The biggest change I experienced in my first year at Gatton was just being away from home. I had never spent extended periods of time away from my family, so coming here proved to be quite the challenge. It has served as a great way to get myself adjusted to being gone, and it will make it easier on me when I do go off to college and am not able to come back as often."

"This summer I look forward to being able to focus solely on my research project. It will be similar to something I might pursue as a career one day and being able to see what it might actually be like to do this on a daily basis is a great way for me to decide if this is really what I want to do."

"Being named a Finalist for the Coolidge Scholarship has been my biggest accomplishment at The Gatton Academy so far. The Coolidge is a prestigious scholarship sponsored by the Calvin Coolidge Presidential Foundation, and I owe my successful application to the amazing dedication and support of the staff. It is just one of the many wonderful opportunities I have been able to take advantage of during my time here."

Skyler Hornback

Home High School:
LaRue County High School

Research Area:
Chemistry

Career Goal:
Biochemical Engineer

Research Mentor:
Dr. Edwin D. Stevens
WKU Department of Chemistry

Extracurricular Activities:
Gatton Academy Leaders in Education, Future Business Leaders of America, Stock Market Club, Y-Club, Beta Club, and Quiz Bowl

Arjun Kanthawar
London, Kentucky (Laurel County)

Dear Mr. Gatton,

Words cannot express how thankful I am to have received a Gatton Research Internship Grant. My research consists of trying to formulate a mathematical model that represents the wound-healing process. Just a year ago, I had no idea what research was, and I wouldn't have believed I would be doing something as cool as this. I became interested in The Gatton Academy because I was not challenged enough at my home high school. The Gatton Academy provides me with rigorous courses and a community that is very hardworking.

I come from a very small town, and the opportunities I received there were nothing compared to what Gatton has to offer. Gatton has exposed me to so many different things, and I feel like a completely different person after being here for just one year. The education I have received is incredible, and the support from students and faculty has been amazing. Fellow Gatton students are the ones who have motivated me to work hard to achieve my goals, one being summer research to help me explore my interests in math and science. Pursuing research with professors is something very few high school students are able to do, and for that opportunity, I am grateful.

Thank you for giving me this amazing experience.

Sincerely,
Arjun Kanthawar

Arjun Kanthawar

Home High School:
North Laurel High School

Research Area:
Mathematics

Career Goal:
Engineer

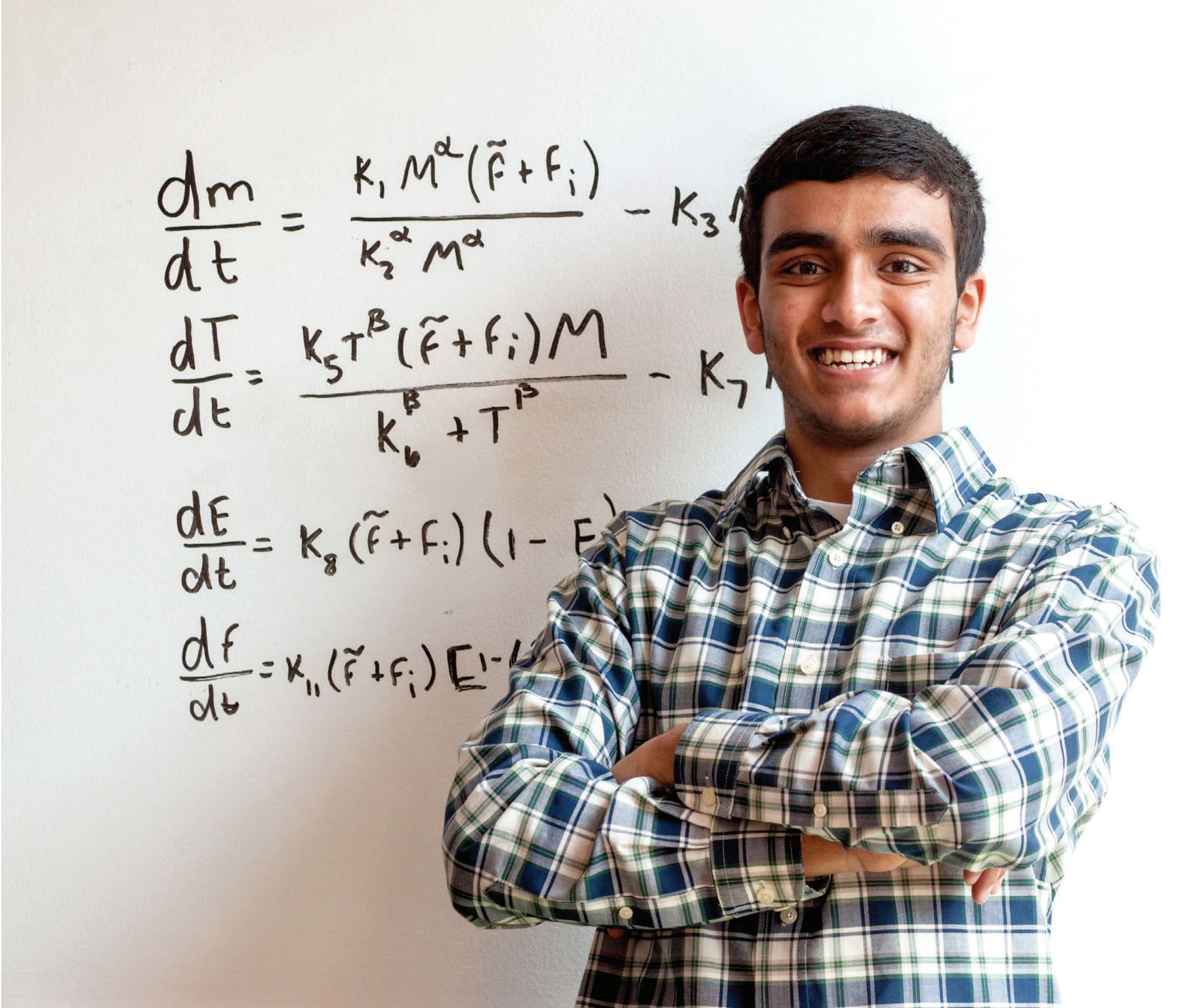
Research Mentor:
Dr. Richard Schugart
WKU Department of Mathematics

Extracurricular Activities:
Beta Club, Gatton Academy Leaders in Education, and Tennis Club

"On my first day, The Gatton Academy felt very weird to me. It almost felt like a camp, and it was really strange to be living here. Now, it feels like I have lived here my entire life."

"Over the next 10 years, I would like to pursue a career in applied mathematics or engineering and hopefully get a Ph.D."

"I am very interested in mathematics and computer modeling, so this research fits perfectly with my professional goals. I will be using this research experience to apply for the Siemens Competition and possibly the Goldwater Scholarship."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Benjamin Kash
Bowling Green, Kentucky (Warren County)

Dear Mr. Gatton,

No word-limited, page-constricted letter I could write would come close to capturing my gratitude to you for your gift to the Academy. The chance to live and learn with a group of people with whom I have so much in common is one of a lifetime. Previous to my enrollment at Gatton, I never could have imagined studying endangered sea turtles at 2:00 a.m. in Costa Rica or that I would be capable of writing code that would amass to 50 pages when printed out. It is experiences like these that have forever altered my life in ways a conventional schooling experience never could.

This summer I am participating in research with the Department of Chemistry at WKU, investigating the metabolic pathways of our bodies. Research is one reason why I love science. Chemistry, and all the sciences, provide a fuller understanding of our lives and also quenches a deep curiosity in me that has been growing throughout my life. I will always be grateful for the opportunities that have been provided for me because of your generosity and cannot imagine how much different my life would be if it were not for The Gatton Academy.

Thank you,
Benjamin Kash

Benjamin Kash

Home High School:
Greenwood High School

Research Area:
Chemistry

Career Goal:
Chemical Researcher

Research Mentor:
Dr. Rui Zhang
WKU Department of Chemistry

Extracurricular Activities:
Beta Club, Science Bowl, Circle K Club, Tennis Club, and National Honors Society

"To me, research represents the epitome of human ingenuity. It is the cutting edge of knowledge. Being interested in STEM research is an interest in solving the world's problems by discovering more about them."

"The coolest thing about summer research is looking at something that no one else has ever looked at before. The researcher is the first to observe the phenomenon."

"Honestly, I wasn't too nervous on my first day. I think I was so excited for that moment that I had no more room to be nervous. I knew that this was the place for me, and no matter what happened, it would all end up okay once I was here. Now I look back and know I was correct in my assumption. It turned out better than great. Every day here is a good one, and I am my happiest here."

Samuel Kessler
Campbellsville, Kentucky (Taylor County)

Mr. Gatton,

I write to sincerely thank you for both your continued support of the sciences and the funding of my Gatton Research Internship Grant. I am honored to receive this opportunity to conduct undergraduate research and have no doubt it will be an experience that will provide me with skills to propel me toward a successful scientific career.

Because of your contribution, this summer I am conducting aquaculture research at Kentucky State University, whose program is among the top at research institutions in this field. I will take part in a project to test a new, sustainable fish feed that has been developed in part from Black Soldier Fly Larvae fed by distillers' grain. We will be conducting multiple analyses of the fish to determine if this feed may be a successful and economic replacement for commercial fish feeds. In addition, we will estimate the feed's impact in reducing greenhouse gasses. I will also research the potential for developing a fly-larvae-based fish feed, fed by the byproducts from a biodigestor. This equipment, which is used by a local farmer from my county, digests waste with bacteria and then uses the sequestered methane to power a generator. Successful implementation of the Black Soldier Fly feed may prove to be a significant development for practical sustainability, which must occur in order to ensure continued development of the aquaculture industry.

Personally, my scientific interests—as they relate to my career aspirations—have always been in Aerospace Engineering. However, the Academy has expanded my horizons and allowed me to develop an interest in other areas of STEM. This RIG may define which course I will take to my future. Thank you for providing me with this experience.

With gratitude,
Samuel Kessler

"This research internship will further my professional goals by allowing me to develop greater research skills, in addition to the potential for a peer-reviewed publication. This internship will help to add tools to my scientific arsenal and sharpen the skills I have gained so far."

"As a young person interested in STEM, the opportunity to conduct and publish undergraduate research as a student in high school does have significant value, but the ability to gain, and perhaps discover, professional scientific knowledge in my area of research by personal experience is an even greater attribute, which can build my character as a person of science. That's why research is important to me."

"One of my favorite memories from the Academy is studying abroad in Costa Rica. It is difficult for me to pick a specific event from the trip. I have always believed in conservation; however, having exposure to the incredible biodiversity of that country, along with a level of integration with the local culture, provided an experience that developed a greater appreciation for and urgency to preserve nature than I had before."

Samuel Kessler

Home High School:
Campbellsville High School

Research Area:
Aquaculture

Career Goal:
Mechanical/Aerospace Engineer or Biomechanical Engineer

Research Mentor:
Dr. Vikas Kumar
Department of Aquaculture,
Kentucky State University

Extracurricular Activities:
Y-Club, Beta Club, Sierpinski Performing Arts Club, and National Honors Society

Nikhil Krishna
Corbin, Kentucky (Knox County)

Mr. Gatton,

Even at a young age I had an interest in STEM. Every school-related decision I have made in recent years has been so I could succeed in a career in science or mathematics. This includes coming to The Gatton Academy. I first heard about this amazing opportunity in the sixth grade when my brother was applying. It was then that I knew Gatton was going to be the perfect place for me. It was my dream school, a place where students are not only allowed, but encouraged, to take as many STEM classes as possible.

One of the best opportunities at Gatton is research. You made it possible for me and so many others to explore areas we love. I am currently pursuing mathematics research with Dr. Richard Schugart at WKU in order to perfect a model describing the interactions of proteins in a chronic wound while it heals. I am enjoying every minute of my summer in the lab, and it would not be possible without the Gatton Research Internship Grant you provided. You are the reason Gatton students will be successful in doing what they love. Thank you for all you have done for The Gatton Academy and its students.

Sincerely,
Nikhil Krishna

"If a student were to come up to me and ask me if they should apply to Gatton or not, I would tell them that they should because it is one of the best opportunities they will ever have. Coming to Gatton allows students to be introduced to an environment that will prepare them for their future and allow them to have experiences unmatched by any other place."

"My biggest accomplishment at The Gatton Academy is figuring out how to manage my time. After coming to Gatton, I feel that time management is a key factor to success. Now I know when I need to work and when I need breaks."

"The part of the summer experience I am looking most forward to is devoting several hours a day to a topic I am extremely interested in. Mathematics has interested me my whole life, and the fact that I can engage myself in what I love is an incredible opportunity I am looking forward to very much."

Nikhil Krishna

Home High School:
Corbin High School

Research Area:
Mathematics

Career Goal:
Undecided

Research Mentor:
Dr. Richard Schugart
WKU Department of Mathematics

Extracurricular Activities:
Stock Market Club and Gatton Academy Leaders in Education

Deeya Patel
Hopkinsville, Kentucky (Christian County)

Dear Mr. Gatton,

As someone who has dreamed of pursuing science all her life, I cannot accurately describe my gratitude for your contributions to the Gatton Research Internship Grant and The Gatton Academy. I first heard about The Gatton Academy when my brother applied, and as I listened to his stories and watched him grow, I knew I would flourish just as he did if I went.

The Academy is only an hour away from my home, but the two places are worlds apart in likeness. At Gatton I found myself in a community packed with diversity, intellectual stimulation, and unforgettable individuals. My classes are rich and in-depth and have trained me to exercise my logic and creativity.

Being exposed to a wide array of facets in the STEM field has allowed me to learn what truly excites me. I discovered I enjoy biology and am appreciative for the opportunity to take many classes that reflect that passion. I have explored many aspects of biology and have decided I want to pursue research in cell biology because of its enormous role in shaping us as humans. This summer I am observing heart muscle cells infected with dilated cardiomyopathy, a disease in which the heart becomes enlarged and dysfunctional.

Though I am still undecided about whether I would like to pursue medicine or research, I know being exposed to research and the weight of its significance at an early age will give me the perspective I need to become a skillful doctor or researcher in the future. Thank you for giving me and hundreds of students like me a chance to find our calling in such a safe and inspiring environment. The tools and opportunities you have provided us have been invaluable.

Sincerely,
Deeya Patel

Deeya Patel

Home High School:
University Heights Academy

Research Area:
Cellular and Developmental Biology

Career Goal:
M.D./Ph.D.

Research Mentor:
Dr. Dylan Burnette
Department of Cell and
Developmental Biology,
Vanderbilt University

Extracurricular Activities:
Editor of *Sierpinski's Square*, Tennis,
and Boy's & Girl's Club Mentor

"Currently, STEM is an exciting field that is gaining a lot of attention. As a young person interested in STEM, research is an opportunity that is readily available. I view my circumstances as a privilege, since I am able to both feed my curiosity and help progress the scientific community with relatively no limitations."

"In the next 10 years, I hope to earn an M.D. and Ph.D. I plan on continuing research in cellular and developmental biology and participating in Doctors Without Borders."

"On the morning of my first day at The Gatton Academy, my father texted me, 'This is your arena. Go conquer it.' The message reflected my desire to attend The Gatton Academy, since STEM was my arena, and I wanted nothing more than to fully immerse myself in it. Now, after completing almost one year at the Academy, my attitude has not changed. I still wake up every morning with the desire to conquer my arena and the gratitude that I have the opportunity to do so."


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Hasan Salim
London, Kentucky (Laurel County)

Dear Mr. Gatton,

I would like to thank you for being a key founder in the establishment of the Academy. Without you, this reality I live would be just a dream. Growing up in London, Kentucky, was great, despite the negative stigma that is placed on southeastern Kentucky. A person can find comfort in any location when they have good people around them. I am fortunate to have had amazing people around me in London and now at Gatton, making my transition into this lifestyle effortless. My homesickness for family, friends, and the beloved game of tennis was minimal because immediately after moving in, I knew Gatton was the right place for me. I quickly got over missing my family and friends as I was buried in schoolwork and focused on excelling academically. Deep down, however, I still missed the competitive nature of tennis.

It was not until I began pursuing research that this feeling faded away. Conducting research in WKU's Department of Biology with the mentorship of Dr. Srivastava is very similar to the hours I spent on the tennis court. In both, I labor for many hours with the goal of improvement, hoping that at the end of the day, I have something to show for it. In a way, researching the air sac primordia in fruit flies to better understand tumor invasion was what filled the "competitive void" I had been feeling that could not be filled by my classes. I want to thank you again for providing me with the resources to build a strong foundation to pursue a career in the surgical field.

Forever thankful,
Hasan Salim

Hasan Salim

Home High School:
North Laurel High School

Research Area:
Biology

Career Goal:
Cardiothoracic Surgery

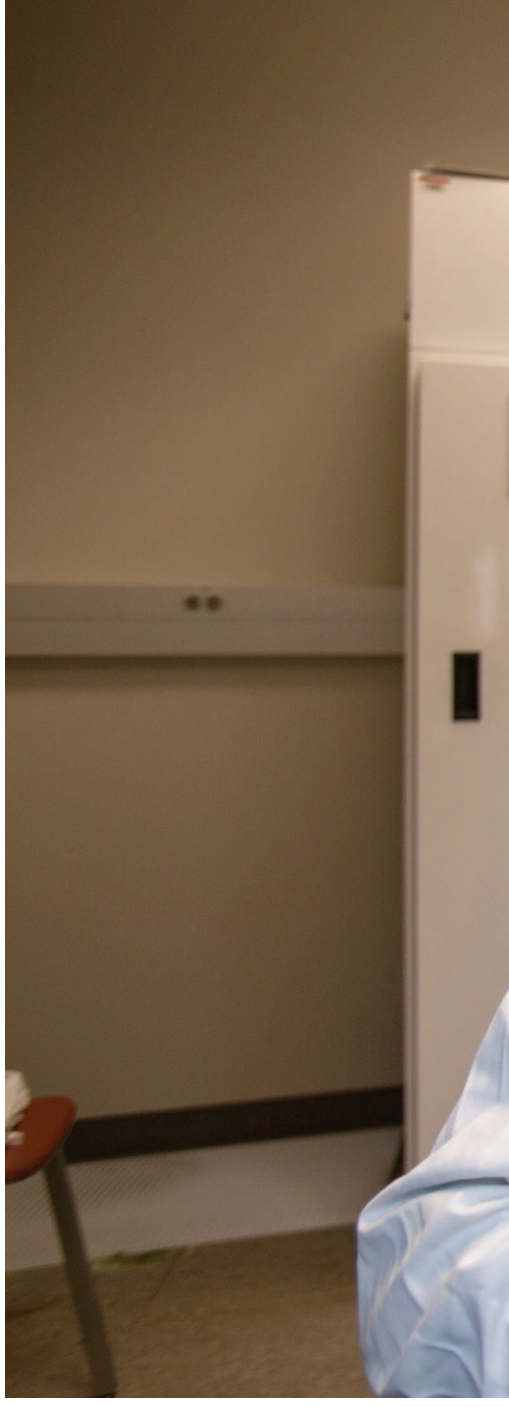
Research Mentor:
Dr. Ajay Srivastava
WKU Department of Biology

Extracurricular Activities:
Gatton Student Government Association and Gatton Academy Leaders in Education

"The best advice Dr. Srivastava has given me is to always remain patient. Initially, I found fly dissections very tedious. My hands shook often and my work was sloppy, leading me to feel frustrated. Dr. Srivastava's advice helped me improve my quality of work tremendously."

"The coolest thing about summer research is being able to devote all my time to research with little to no distractions."

"I don't think there is a word that can describe how I felt on the first day of Gatton. I guess you could say something along the lines of extremely ecstatic. I remember sitting in my first Gatton class and thinking how fortunate I was to have made it here. To be honest, that feeling hasn't died out yet. Every day is full of excitement."



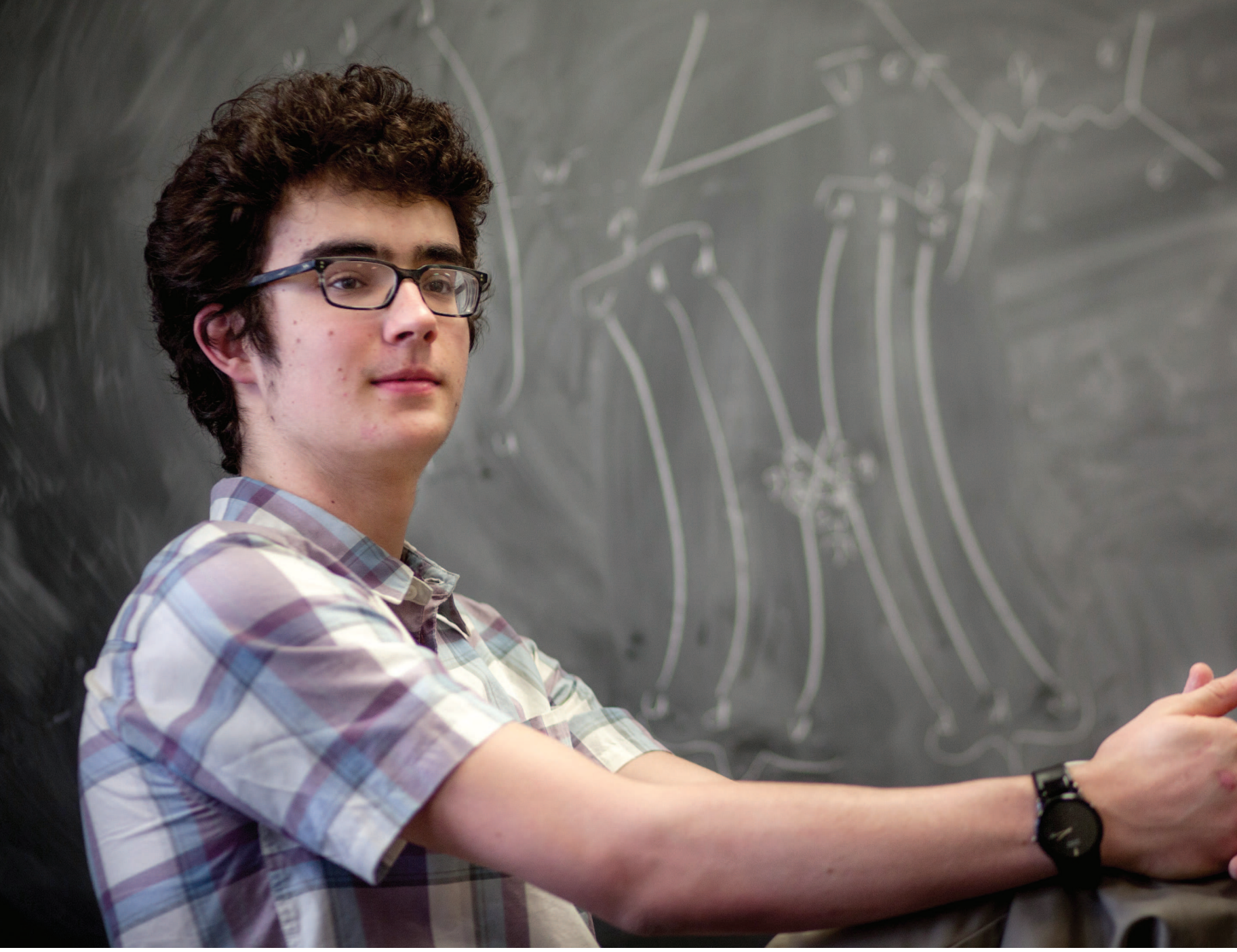
Harper Sewalls
Winchester, Kentucky (Clark County)

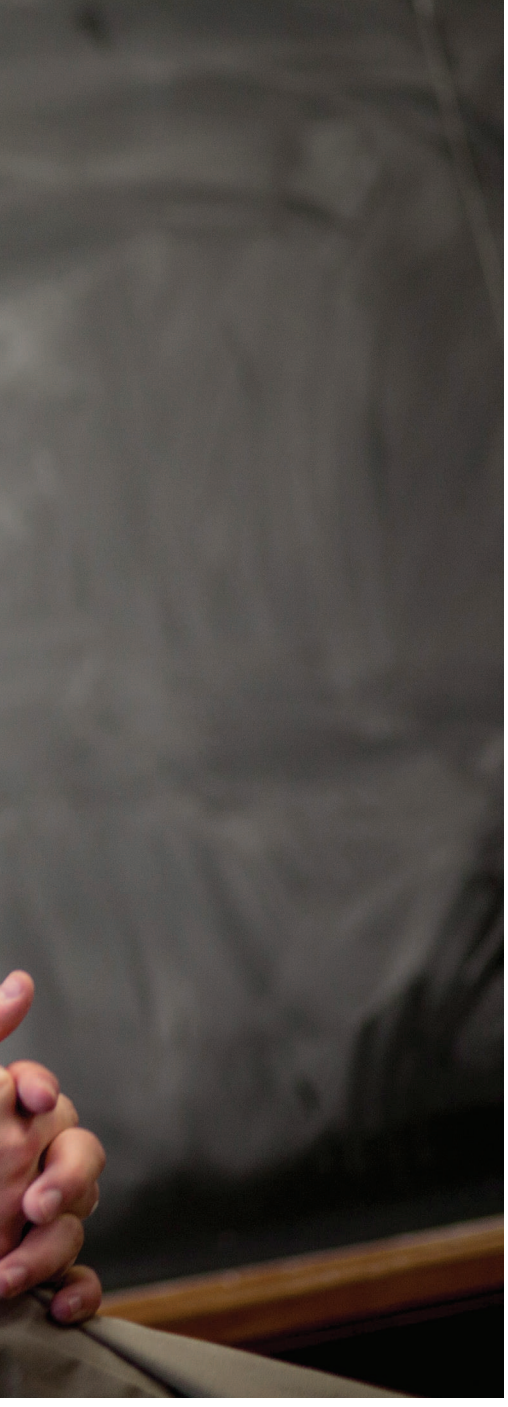
Dear Mr. Gatton,

I am very excited about my research position this summer. The project I am working on is at the frontier of human knowledge, and I am happy to make any contribution to it that I can. I am working at Fermi National Accelerator Laboratory and am helping with the Muon g-2 experiment (pronounced gee minus two). It will reveal whether there are more subatomic particles yet to be discovered. This type of experiment fascinates me and is the reason I want to go into physics as a career: to study and find the "why" of everything. I have always been fascinated with what makes things happen and the fundamental workings of the universe.

For this reason, I have benefitted greatly from my first year at The Gatton Academy. Previous schools I attended did not focus on math or science. I was forced to fit into the routine and got tired of school. An important distinction to make here is that I was not tired of learning, but I was growing disillusioned with the high school process. This all changed when I started at The Gatton Academy. I feel as though I had been tightly wound and now have the freedom to spring free and reach for my potential. I believe it completely when I say that The Gatton Academy changed my life for the better in ways I would not have imagined. In addition to getting college credit, I am now truly learning in my classes.

With sincere gratitude,
Harper Sewalls





"The part of my summer experience that I look forward to the most is meeting scientists who are researching in a field I aspire to join. I want to know what it is really like to have a career in physics."

"My favorite piece of advice from my research mentor is that no matter what you are trying to do, there will always be glassware to clean."

"The biggest challenge in my research that I overcame was when I spent Christmas break preparing protein data for RMSD analysis. After generating megabytes of data, I learned there was a flaw in the model I was using. Sifting back through each step to find the issue was tedious but rewarding."

Harper Sewalls

Home High School:
Model Lab School

Research Area:
Particle Physics

Career Goal:
Physicist

Research Mentor:
Dr. Chris Polly
Fermi National Accelerator Laboratory

Extracurricular Activities:
Stock Market Club and Chess Tutoring Club

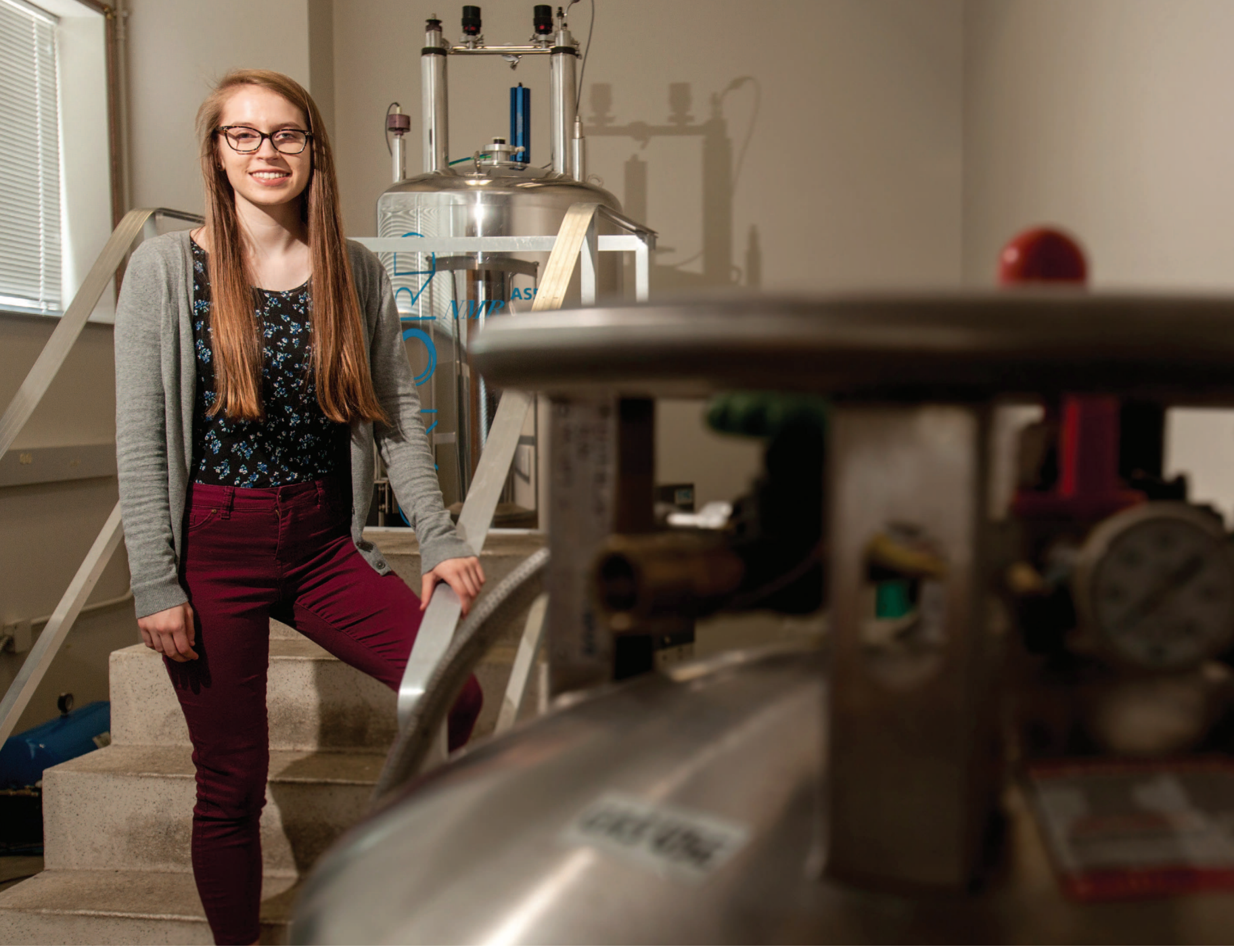
Carly Taylor
Cold Spring, Kentucky (Campbell County)

Dear Mr. Gatton,

This summer I have the privilege of conducting research at Wood Hudson Cancer Research Institute in Newport, Kentucky, on potential immunotherapy targets in stage-4 breast cancers. I first gained an interest in cancer-related research during my second semester at Gatton when I studied mechanochemical synthesis of platinum-based anticancer drugs with Dr. Kevin Williams. I knew I wanted to continue work in cancer biochemistry if I were to receive a Gatton Research Internship Grant, so I searched through Gatton's internship database and discovered a local cancer laboratory called Wood Hudson. It is only 15 minutes from my house, and I would never have known about it if I had not been applying for a RIG. Now I am part of Wood Hudson's Undergraduate Research Education Program, where I work on a project I design and direct, while also collaborating with other undergraduates working on similar projects. In my time here, I have already gained experience with many new lab techniques, learned how to write scientific publications, and become friends with some very talented and helpful fellow undergraduates.

Looking to the future, I am still not sure what STEM field I want to pursue as a career. A major motivation for me to come to Gatton was to have the chance to study many STEM subjects at the college level so that I can make a more informed decision about what field will fit me best. I enjoy the biochemical research I am doing in my RIG, but I also have interests in computer science and astronomy, which I plan to explore more deeply through Gatton's flexible curriculum. I am grateful my RIG has given me the opportunity to see what real research is like, explore my interests, and begin my journey on my path to becoming a scientist.

Sincerely,
Carly Taylor



"The biggest challenge I've had to overcome in my research was simply deciding what project to pursue. There is an enormous variety of fields to study at WKU, and it can be petrifying trying to make a decision. Even though my project sounded intimidating in the beginning, once I got into the work I realized I could do it, and with my mentor's guidance I have accomplished more than I thought possible over the semester. I have grown so much as a person and as a scientist from the experience."

"The coolest thing about summer research is getting to apply what I've learned in a way that may positively impact people's lives."

"In the coming year, I'm looking forward to taking higher level classes in subjects that interest me such as chemistry, computer science, and Spanish and exploring subjects I've never taken classes in before, like physics and philosophy. I'm eager to continue my research project with Dr. Williams and hopefully present the culmination of our work at the American Chemical Society meeting in 2018."

Carly Taylor

Home High School:
Campbell County High School

Research Area:
Biochemistry

Career Goal:
Computational Chemist

Research Mentor:
Dr. Julia Carter
Wood Hudson Cancer Research Institute

Extracurricular Activities:
Gatton Academy Community Leaders, Science Bowl, Beta Club, Hardin Planetarium Volunteer, and Dog-Spotting Club

Mason Tomko
Glasgow, Kentucky (Barren County)

Dear Mr. Gatton,

I would like to personally thank you for this incredible opportunity. Words cannot describe how honored I am to receive a Gatton Research Internship Grant. Ever since I was little, I was interested in being a scientist. However, I never thought it would turn into a reality like this.

My research this summer involves studying the absorption mechanisms in ferns. Certain metals called Rare Earth Elements, also known as Lanthanides, are used industrially for solar panels, modern televisions, microwaves, anti-cancer innovations, and renewable energy. Some plants–like my research plant, the Boston Fern–absorb these metals, treating them the same way as nutrients. These plants can then be harvested and combusted to collect the metals. My research aims to understand how/why these metals are absorbed and how we can genetically modify the plant into increasing these mechanisms. From this research, I have gained new perspectives on alternative forms of energy, as well as new insights about being a responsible researcher. These outcomes could not have happened without your funding, and I am incredibly thankful for everything you have done to help me get this far.

Best,
Mason Tomko

Mason Tomko

Home High School:
Barren County High School

Research Area:
Biology and Chemistry

Career Goal:
Something that combines environmentalism, climate change, sustainability, and film

Research Mentor:
Dr. Yan Cao
WKU Department of Chemistry

Extracurricular Activities:
Beta Club, Yearbook, Gatton Student Government Association, Gay-Straight Alliance, Dog-Spotting Club, and Vegetarian Club

"Doing research as a teenager interested in STEM is so critical to me. Although I have only been on this earth for 16 years, I have huge aspirations for making an impact. Knowing that this research can be used throughout our community and knowing it has the potential to open doors for other researchers is incredibly amazing."

"So much has changed from my perspective on Gatton from the first day to today. Moving in, I thought I would struggle, because I thought everyone here was super competitive, super smart, and not like me at all. After GROWeek, and up to today, it has not been what I expected. I've made friends here that I'll remember for the rest of my life. I've had opportunities that I would never pass up. Everyone here is just…so…AMAZING. Everyone here accepts me for who I am, which is something that wasn't so available at my home school."

"My biggest challenge in research was getting into it. My mentor wanted to combine his knowledge of chemistry and mechanical engineering with my knowledge of biology. Because he didn't specialize in biology, I had to create procedures and find readings myself. It was difficult to start out, but I quickly got the hang of conducting independent research."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Summer Wei
Ft. Mitchell, Kentucky (Kenton County)

Dear Mr. Gatton,

I would like to express my gratitude for this opportunity. The research made possible by your gift has given me many experiences and skills that will be necessary for my future. I have been able to explore the interconnections between photography and science, looking at the taxonomy of Leuctridae of Eastern North America. My summer research involves classifying different species of stoneflies by using the Scanning Electron Microscope (SEM) to take pictures of their anatomical traits. It has been an amazing summer being able to bring together my passions for biology and photography with Dr. Grubbs in the WKU Department of Biology. This experience will help me advance my skills as a scientist and give me an advantage in future research and scholarly opportunities.

To be specific about the skills I am gaining, I am learning how to use advanced electron microscopes, scientifically categorize insects, and write university-level scientific literature. Again, thank you so much for this opportunity. I know I will continue to grow and prosper from this experience.

Thank you,
Summer Wei

Summer Wei

Home High School:
Beechwood High School

Research Area:
Biology

Career Goal:
Undecided

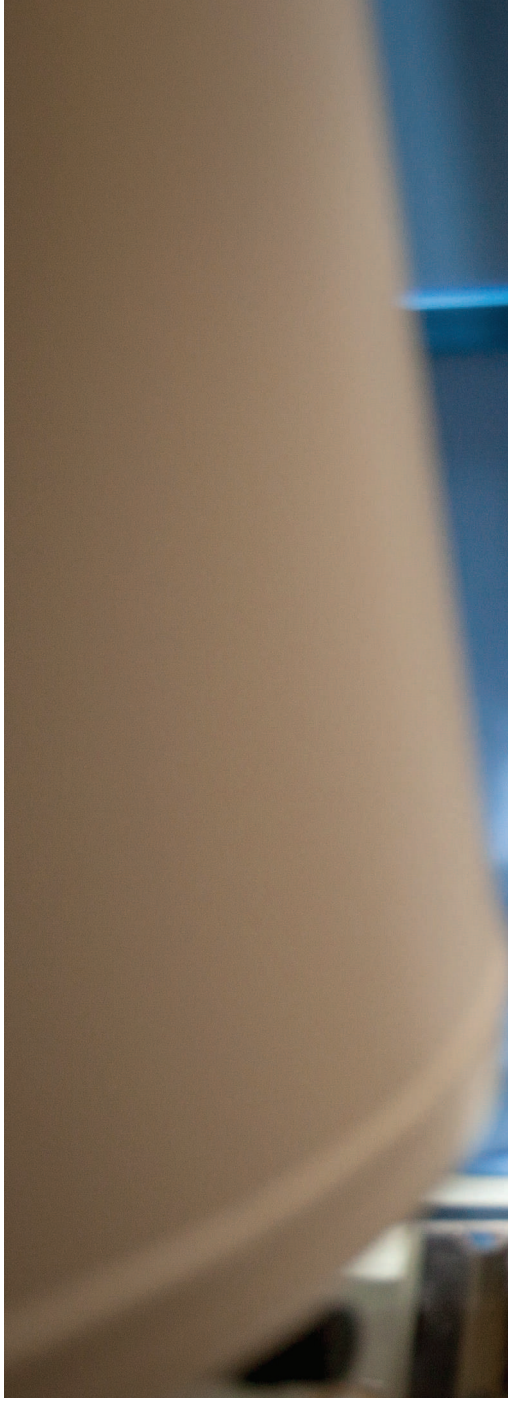
Research Mentor:
Dr. Scott Grubbs
WKU Department of Biology

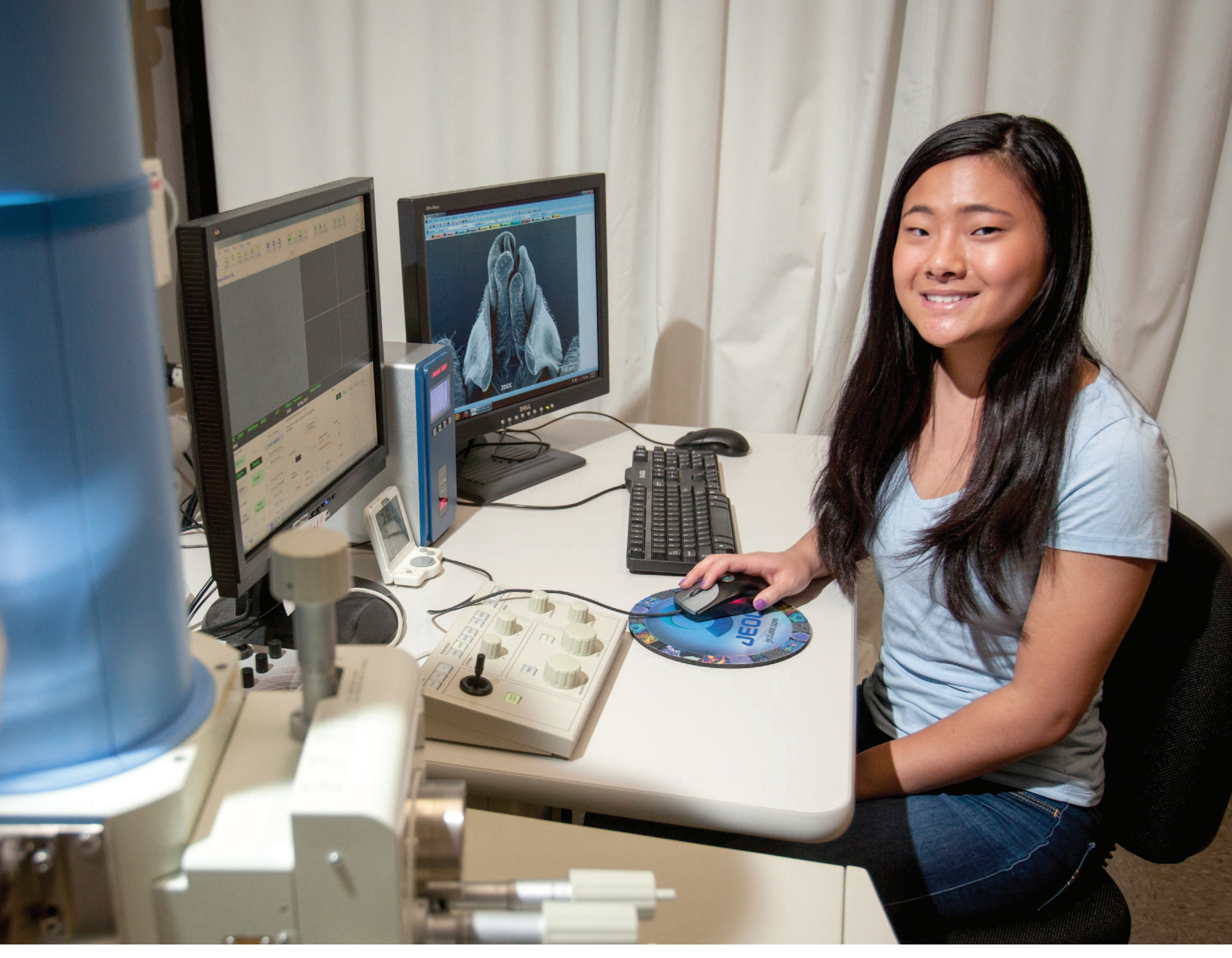
Extracurricular Activities:
Student Y, Yearbook, and Basketball

"The biggest change I have experienced in my first year of Gatton is maintaining my body as well as my mind. No one is here to tell you to eat a well-balanced meal or to go get your heart rate up every now and then, and keeping your body healthy is just as important as keeping your grades up."

"On my first day at The Gatton Academy, I was nervous to meet the people that I would be living with for the next two years. Now, I feel as though I have found a family in this school."

"I would tell other high school students that The Gatton Academy is one of the best opportunities for young adults to grow and develop. You will meet the best, kindest, and most unforgettable peers and be stimulated in your classrooms. Here at Gatton, you will never be bored."





Brian Zhu
Lexington, Kentucky (Fayette County)

Dear Mr. Gatton,

It was my counselor, a Gatton alum, who first told me about the Academy at a Center for Gifted Studies summer camp. The idea seemed very interesting and like a great opportunity. Attending Gatton fell to the back burner throughout my middle school years, but became renewed my freshman year of high school. I eventually applied and was accepted to the Academy, and the opportunities that have been offered to me since have been vast.

I recently attended a research conference for STEM-focused high schools, and it was amazing to see Kentucky represented. Someone asked me how I felt about the 10-year anniversary of The Gatton Academy, and I responded that seeing the commitment the Commonwealth of Kentucky had to gifted education was astounding and showed a willingness to help the state's young people succeed in all their pursuits of higher learning.

The opportunity to conduct research is one of the experiences I have been able to take advantage of at the Academy. This summer I will be developing a deep-learning model to detect the presence of breast cancer from a mammography image. My dad is a professor at the University of Kentucky, so even though I have been exposed to the word "research" my whole life, I never truly knew what the research process was. This opportunity is unparalleled, and I am enjoying every minute of the research experience.

Thank you,
Brian Zhu

Brian Zhu

Home High School:
Paul Laurence Dunbar High School

Research Area:
Computer Science

Career Goal:
Software Engineer

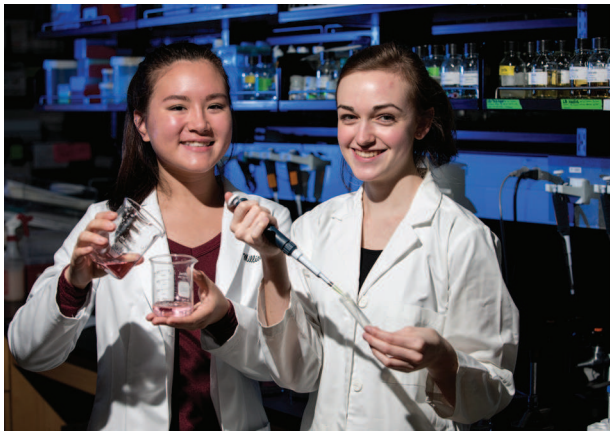
Research Mentor:
Dr. Jinze Liu
University of Kentucky,
Department of Computer Science

Extracurricular Activities:
Gatton Coders Club, Gatton Academy Student Government Association, Student Y, and Beta Club

"The coolest thing about summer research is that it isn't like research during the school year. You get to focus all your time and brain power on one project and have a great opportunity to contribute to the scientific community."

"In my second year at the Academy, I look forward to forming deeper relationships with my peers and mentoring the incoming class."

"The Gatton Academy benefits Kentucky because it allows students to explore all kinds of different fields. While the Academy is STEM focused, there are so many opportunities in the arts and humanities as well."



WKU Sisterhood Research Internship Grant

Made possible by a gift from the WKU Sisterhood in the fall of 2016, the WKU Sisterhood Research Internship Grant program offers internships for young women between their junior and senior years from the following underrepresented backgrounds:

- Young women who come from a Kentucky county in the Appalachian Region
- Young women with minority status as an African American/Black; Hispanic/Latina; American Indian/Alaskan Native; Two or more races
- Young women who are first-generation college students
- Young women with a registered disability
- Young women who identify as LGBTQIA+

These internships support summer research at WKU, across the Commonwealth, the USA, and the world.

The WKU Sisterhood is a group of women with shared values, who enjoy collaborating to advance the mission of WKU. Members pool their financial gifts and award funds to a limited number of university designations to maximize the impact of their philanthropy. Through their generous gift, the WKU Sisterhood has directly created research internships that otherwise would not have existed for this subset of young women. Recipients will use their internships as a springboard to later apply for prestigious awards such as the Siemens Competition, the Regeneron Science Talent Search, and the Goldwater Scholarship. Many recipients also submit their work for peer-reviewed publication and conference presentations.

Wendy Cecil
Bardstown, Kentucky (Nelson County)

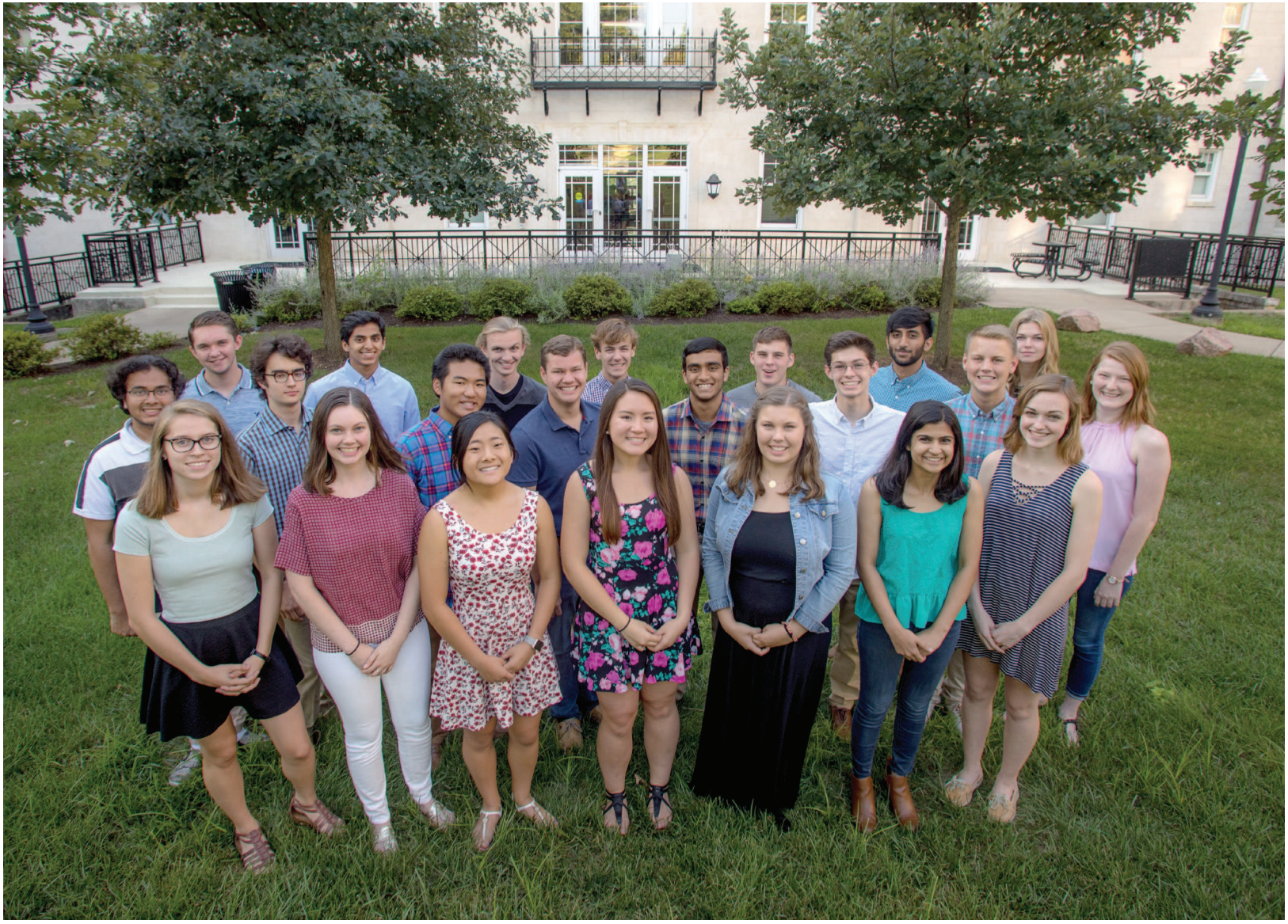
"For any prospective students wondering whether or not you should apply to The Gatton Academy, I offer the advice to do it. Put yourself out there. I was once in your shoes, and I went for it. Yes, I was just as nervous as any other applicant was. I completed my application, sent in my transcript, and hoped for the best with all of my heart. Here I am now, at The Gatton Academy with infinite possibilities ahead of me."

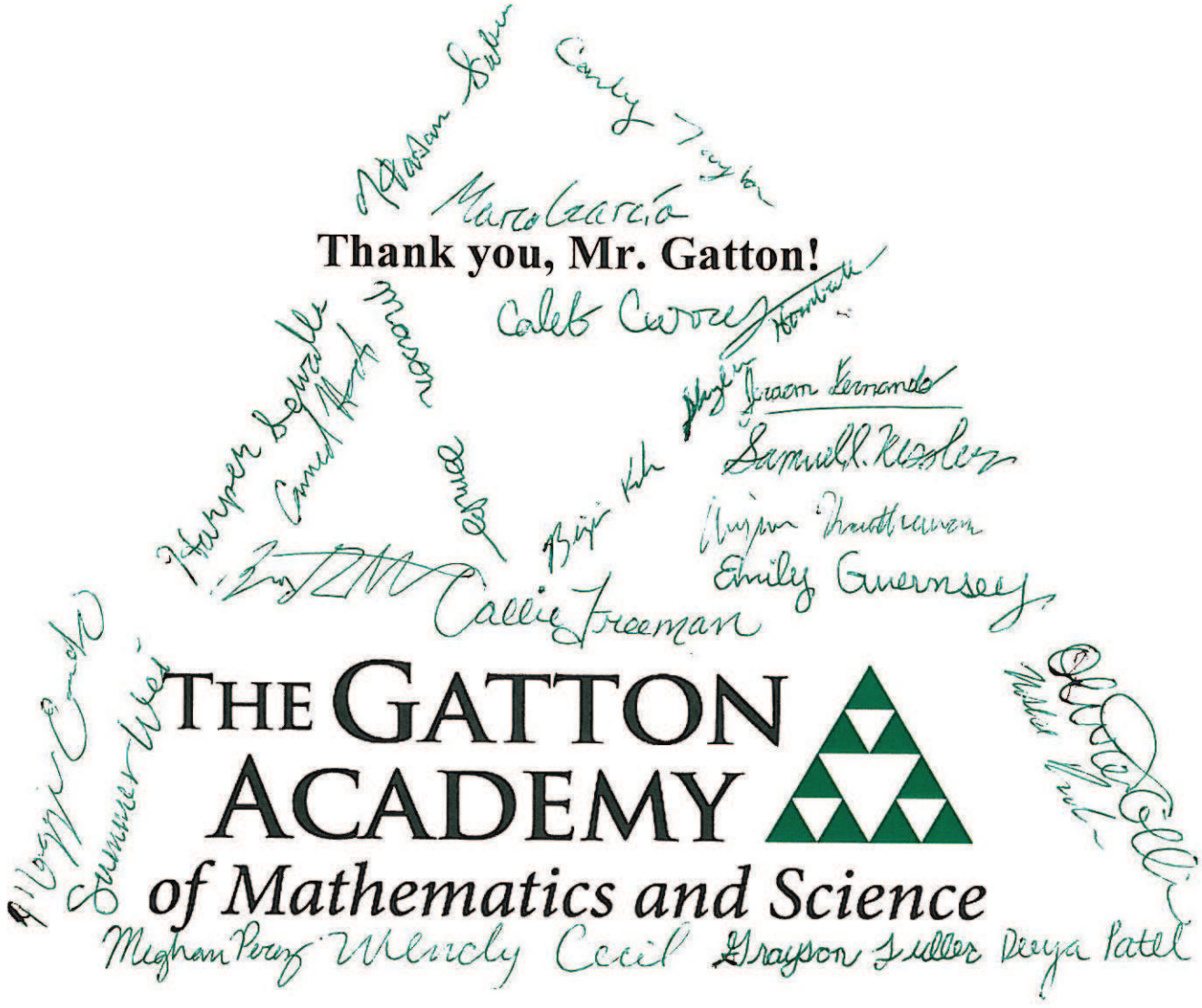
"My biggest Gatton Academy accomplishment pertains to research. I presented my environmental chemistry research at the 47th Annual WKU Student Research Conference, and I received first place in my session. I want to thank Mr. Gatton for making research opportunities possible; these opportunities make research achievements possible for students at The Gatton Academy."

"As a young person interested in STEM, I believe research is an amazing opportunity to explore specific topics in great detail. Participating in research can help me discover what I am most interested in and guide my future in the right direction."

"Participating in research this summer will allow me to experience what it might be like to become a professional researcher in the future. Recently, I have debated pursing a M.D./Ph.D. dual degree and this research experience will help me decide if that is truly something in which I am interested."

Meghan Perez
Bowling Green, Kentucky (Warren County)




Thank you, Mr. Gatton!
THE GATTON ACADEMY
of Mathematics and Science

"To me, research is the opportunity to join the scientific community and do one's part in helping humanity better understand the world. Research allows an individual to take everything they've learned in the classroom and see how it can be used in real life."

-Carly Taylor

"To me, research represents the epitome of human ingenuity. It is the cutting edge of knowledge. Being interested in STEM research is an interest in solving the world's problems by discovering more about them."

-Benjamin Kash

"Research is an opportunity for me to make a lasting difference in the world. By doing research, I can start helping the world at a young age and continue to do it for longer than I normally would."

-Marco Garcia

"Constantly being told we are too young to make a difference leaves a burning desire to prove everyone wrong. Independent research gives me the freedom to finally make an impact and to work with people who want to see me accomplish great things and push the limits in life."

-Margaret Cook


WKU