



# Student Trauma and Resuscitation Research Program

Trauma · Orthopedics · Anesthesia · Emergency Medicine  
Obstetrics · ACS · Global Health · Public Health

- 2019 -

*Program Directors*

Dr. Mara Schenker, MD

Dr. Randi Smith, MD, MPH





## 2019 STaR Faculty Mentors

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Marshall Fleurant, MD, MPH (Internal Medicine)	Jonathan Nguyen, DO (Trauma)
Rondi Gelbard, MD (Trauma)	Mara Schenker, MD (Orthopedics)
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McKenzie Hollon, MD (Anesthesiology)	Randi Smith, MD, MPH (Trauma)
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Michael Maceroli, MD (Orthopedics)	Alaina Steck, MD (Emergency Medicine)
Rachel Mather, MD (Hospital Medicine)	Brett Tracy, MD (Trauma)

## 2019 STaR Students

Mata Alexi Adams	Amanda Liew
Zainab Agboola	Nick Major
Cody Blanchard	Michael Nwiloh
Quinton Blount	Meet Patel
Kay Bush	Syed Nasser Rizvi
Brandon Chiedo	Robert Roach
Joel De Rosa	Ryan Sanders
James Gregory Howell, Jr.	Kristin Sheaffer
Grace Kim	James Tyson
David Jin	Melissa Victor

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## Letter from the Editors

Research is difficult to understand until you go and do. This summer, our hands-on experience with clinical research at Grady Hospital has served as an irreplaceable teacher. We've learned that the more data you collect, the more questions you have. The more you know, the less you understand. And if you want to run your own statistics, all you need is YouTube. We have learned more about research and scientific inquiry this summer than in any classroom.

We are thankful to the STaR program directors for advocating for us, providing us with the tools we needed like badge access, EPIC access, and project mentors. But the greatest gift of this program was our freedom within the framework. We were trusted with responsibility to use our time wisely. We were encouraged to be as creative as we wanted. Multiple students on our team have picked up "side projects" during our time here after discovering how simple it can be to utilize available data in order to fill a gap in the literature. Many of us have ideas for the future that we will carry out after this program has ended. This summer has been about discovering our own interests and having the tools we need to blaze our own trail.

In our first team meeting, Dr. Smith advised us to choose FINER projects: Feasible, Interesting, Novel, Ethical, and Relevant. We hope that our work reflects these criteria. No matter what our projects' focus, we aim to advance clinical understanding and improve patient care. To all of the mentors and faculty who have played a part in this program: Thank you for your trust in us. You have given us the gift of experience. We hope to continue the pursuit of knowledge in clinical research no matter what paths lie ahead. Because of you, we will be better physicians and members of society in the years to come. We are now better equipped with the tools, knowledge, and network to tackle the FINER things in life.

Kay Bush and Kristin Sheaffer

## Foreword: Mara Schenker, MD and Randi N. Smith, MD, MPH

*“Knowledge has a beginning but no end.”*

— Geeta S. Iyengar

Welcome to the inaugural Student Trauma and Resuscitation (STaR) research program at Grady Memorial Hospital. As a premier Level 1 Trauma center, Grady is responsible for the care of over 7,000 trauma patients each year. Grady, Emory University, and Morehouse School of Medicine are committed to advancing trauma care and educating future physicians. The STaR research program is an example of this commitment.

The aim of the STaR Research Program is to provide interested medical and public health students the opportunity to participate in ongoing trauma research, nurture their academic development, and provide them with tools to successfully bring a research project to completion. We envisioned a program with the following attributes: (1) pairing of students with research mentors across disciplines; (2) exchange of ideas during structured lectures and small group series and; (3) collaboration between students with shared interests.

This symposium represents the culmination of the summer program. It is a display of the hard work, perseverance and innovation of the involved students, research coordinators and physician mentors. This summer 19 students worked with 16 mentors on nearly 30 research projects in the fields of trauma, orthopedics, anesthesia and geriatric medicine.

To our STaR students, good luck on your journey to becoming a physician and/or public health leader. We believe you all are exceptional and we look forward to your future. To our STaR mentors, we are so thankful for the time, energy and guidance you provided to your students; the STaR program could not exist without you.

Until next year,

Randi and Mara

## Mata Alexi Adams

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**Faculty Advisors:** Mara Schenker, MD, Brett Tracy, M.D., Rondi Gelbard, M.D.



I was born in April of 1994 in Rockdale, Georgia, where I would live until high school. I obtained my BS in Biology and minor in Global Health at The University of Georgia, graduating in 2012. After college, I worked as a medical scribe for a retina surgeon in Atlanta and learned what it meant to work twelve-hour days on your feet. Then I moved to Macon, Georgia where I obtained my MS in Preclinical Sciences from Mercer University School of Medicine. Currently, I am a second-year medical student at Mercer University School of Medicine in Savannah, Georgia. I try to remain as active in my extracurriculars as I can during any free time I may have from studying. I have been persistently practicing yoga for five years now and am in the process of obtaining my teacher certification.

I would like to thank Dr. Brett Tracy and Dr. Rondi Gelbard for their constant guidance to a student that had no previous background in clinical research and knew next to nothing on how to run proper statistics. To Dr. Mara Schenker and the rest of the research team, I greatly appreciate you organizing such a big group of students this summer to be able to participate in this amazing learning opportunity. This was the most well-spent summer I could imagine, and it was great to get my head out the books for the first time in a year and be reminded why I chose this field in the first place!

### **The 5- and 11-Factor Modified Frailty Indices are Equally Effective at Adverse Outcome Prediction Using American College of Surgeons TQIP Data**

Frailty is associated with adverse surgical outcomes and many models seek to qualify the degree of frailty, such as the 11-factor index (mFI-11) and the 5-factor index (mFI-5). These two indices have previously been shown to be comparably efficacious in predicting outcomes using the NSQIP database. We hypothesize that the mFI-5 and mFI-11 can similarly predict in- hospital complications and discharge dispositions using TQIP data.

While neither the mFI-5 nor mFI-11 were associated with death in this study, they are still robust tools for predicting any complication and discharge outcomes in trauma. Because these two indices are exceptionally correlated for nearly all patient cohorts, the mFI-5 may offer a simpler yet equally effective method of triaging medically complex trauma patients.





## **Zainab Agboola**

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**Faculty Mentors:** Randi Smith, MD, MPH

I was born on July 23, 1996 in Lagos, Nigeria. When I was three years old, my family and I moved to the United States. We moved around a lot but finally settled in Lawrenceville, GA and that has been my home for the past 16 years. I graduated from the Gwinnett School of Mathematics, Science, and Technology in 2014. During my time there, I had my first research experience investigating the metal content of the Georgia Gwinnet College environment. I gained wet lab experience and knowledge in chemistry. I decided to stay in Georgia and attended the

University of Georgia where I received my Bachelor of Science in Chemistry with a minor in Human Development and Family Consumer Science in 2018.

I am currently a rising second year medical student in the class of 2022 at Morehouse School of Medicine. I spent this summer investigating the interactions between social determinants of health and trauma. I also studied the psychological and social effects of retained bullets in individuals from a unique and in my opinion the most accurate perspective which is from the individuals themselves. This was my first clinical research experience and I gained knowledge about the steps and processes involved in research and qualitative data collection. I would like to thank Dr. Smith and Dr. Schenker for the opportunity to work with them on these projects. I would also like to thank all the research assistants and the other students in the program for making the summer productive and fun.

### **Understanding the Impact of Retained Bullets From the Perspective of the Injured Patient**

Gun violence is a major public health issue in most major cities in the United States. The Centers for Disease Control and Prevention stated in 2017 that there are almost 40,000 reported firearm-related deaths annually with almost three times as many firearm-related injuries. The state of Georgia experiences even higher rates of gun violence. Although retained bullets are very common in non-fatal firearm injuries, these metal objects are rarely removed. While many physicians believe the physical consequences of a retained bullet on an individual are minor, retained bullets may impact the psychological well-being of the victim. The purpose of this study is to qualitatively determine the psychosocial impact of retained bullets directly from the individuals themselves. This is accomplished by conducting semi-structured interviews with selected individuals with retained bullets and administering surveys to assess symptoms of depression, anxiety, PTSD, and quality of life. Our hope is that this information will be used in the development of new practices and guidelines for removing retained bullets and effectively caring for this vulnerable population.



## **Cody Blanchard**

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**Primary Mentors:** Mara Schenker, M.D. and Thomas Moore, Jr.  
M.D.

I was born on September 6, 1995 in Augusta, GA, and I lived there for my entire childhood. I graduated from Evans High School in 2014, and then graduated from the University of Georgia in 2018 with a Bachelor of Science in Psychology. While in high school and in my undergraduate years, I was an avid tennis player. I also was active in the community, volunteering at the Athens Senior Center, Athens Regional Hospice Unit, and with the Be the Match UGA chapter, where I told my story of stem cell donation with the hopes of adding others to the National Marrow Donor Program registry. Currently, I am a rising 2<sup>nd</sup> year at Mercer School of Medicine.

The STAR Program was my first experience with research of any kind, which made me apprehensive at the beginning of the summer. However, the physicians and staff in the Orthopedics department were extremely knowledgeable and willing to help in any way. I learned about forming a proper research question, quality patient interactions, the struggles of clinical research, and how to effectively analyze and present data. I would specifically like to thank Dr. Schenker, Dr. Moore, Dr. Smith, Dr. Lunati, Erika, and Chris for pulling this program together and answering my endless questions, getting through red tape on my behalf, and leaving me with valuable skills and lessons that I will use in my medical career for years to come.

### **The Role of Physician's Emotional Intelligence on Patient Satisfaction**

My project this summer looked at whether emotional intelligence in healthcare providers was associated with higher patient satisfaction scores. We found that it was, and this information could help clinicians better serve their patients and ensure a high quality interaction for everyone involved. This has implications for medical education as well, as it could provide another characteristic that admissions committees should consider when choosing who will be a future physician.



## Quinton Blount

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**Faculty Mentor:** Randi N. Smith MD, MPH

It has been a privilege to participate in public health research in the city I've called home since birth. I received my BS in Biochemistry & Molecular Biology from the University of Georgia. It was there that I discovered my passion for service and advocacy specifically within marginalized communities: a large percentage of Grady's patient population. I am a second-year medical student at Mercer University School of Medicine, an institution that focuses on educating physicians who aspire to work in underserved communities. I am interested in clinical and public health research with an emphasis on global health, LGBTQ+, and racial disparities. Upon graduation, I would like to pursue a

surgical residency that offers ample opportunity to also pursue these areas of interest. Outside of medicine, I love travel, weight training, swimming and rock climbing.

I would like to thank Dr. Smith for taking me under her wing as a mentor for the coming years. Dr. Smith is exactly the type of parent, public health expert, mentor and surgeon that I hope to be soon, and her guidance is invaluable to my success. Thank you to all the Grady/Emory faculty and staff for making this the ideal summer research experience and giving me so much to look forward to during my career in medicine.

### **Critically Ill Obstetrics and Gynecology Patients Requiring ICU Management**

Maternal critical illness is a topic that has mounted considerable attention in recent decades and with sound reason; 1 in 20 critically ill mothers dies, almost half of these deaths are preventable, and almost 40% of pregnancy related deaths are possibly preventable, yet it is a field of research that remains largely enigmatic. This study aims to examine patterns of critical illness and in doing so, we will describe the clinical and management patterns associated with critically ill obstetric patients admitted to the medical or surgical ICU; evaluate functional and quality outcomes and identify factors associated with poor outcome measures; at a university associated urban safety-net hospital.

Current projects:

- 1) Critically Ill Obstetrics and Gynecology Patients Requiring ICU Management
- 2) Social Determinants of Health in Gun Shot Trauma vs General Trauma
- 3) Maintaining the Chain of Custody: An Evaluation of Retained Bullets after Civilian Gunshot Wound



## **Kay Bush**

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**Faculty Mentor:** Mara Schenker, M.D.

I was born and raised in Bainbridge, Georgia. Early in life, I gravitated towards challenging projects with my dad like building and flying remote control airplanes and learning to play chess. As I grew older, I fell in love with competing and coaching gymnastics. As a Mercer University undergraduate, I served in several leadership roles on campus and also enjoyed cheering for Mercer. In the summer of 2017, I joined a team of Mercer students and faculty in Vietnam in the fitting prosthetic legs onto amputees. Here, I discovered my passion for serving the underserved through medicine. This summer, I am a rising second year at Mercer University School of Medicine.

I am grateful for the opportunity to serve as a Grady STAR Research Assistant this summer with an outstanding team. Thank you to Dr. Mara Schenker for her vision for this program. Thank you to Erika Ortega for coordinating our team. Thank you to Dr. Smith for sharing her time and knowledge with us while also welcoming a new human into this world. Thank you to Dr. Brett Tracy for helping me best utilize my time while at Grady. Thank you to the SDOH student team who has helped me collect data for my project. Together, we have spoken to many more patients than I could have ever reached alone.

### **Social Determinants of Health in Orthopedic Patients; Preliminary Data Analysis**

Social risk factors are known to influence patient health outcomes, but this area is vastly underappreciated in trauma literature. The first goal of this study is to build a survey that can accurately assess how social indicators influence trauma patient health outcomes, cost of care, and quality of care. The ultimate goal is to be able to identify High-Need, High-Cost patients earlier in order to provide better coordinated care and decrease total cost of trauma. The data collected from patients enrolled this summer will be used to assess correlations between subsets of data and specific outcomes such as the role that health literacy plays in missed follow-up appointments; how prior substance use and exercise fitness affect hospital length of stay after a trauma; and the roles of food scarcity, adverse childhood events, and community stability in medical complications and functional outcomes. So far, 81 patients have been enrolled over the course of 5 weeks. As more data is collected, correlations between social determinants and health outcomes will uncover novel ways to predict the High-Need, High-Cost trauma patients.



## **Brandon Chiedo**

**Morehouse School of Medicine**

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**Faculty Mentors:** Mara Schenker, M.D. & Rachel Mather, M.D.

I was born on January 31, 1997 in Jacksonville, FL to my wonderful parents, Mark and Emilia Chiedo. I lived in Jacksonville for the first 18 years of my life, attending Bartram Trail H.S. in St. Johns County. After graduating from high school in 2015, I left Jacksonville for the first time and enrolled at the University of South Florida in Tampa. In 3 years, I earned my Bachelor's in Biomedical Sciences with minors in Public Health and Biomedical Physics. After graduation, I spent 2 weeks in Argentina learning about various aspects of the culture and lifestyle of the people of Buenos Aires. I had the opportunity to tour one of the largest pharmaceutical plants in the country and learn about various health insurance options available to the citizens of BA. Upon returning from this Study Abroad experience, I began my medical education at the Morehouse School of Medicine here in Atlanta, GA.

When I am not studying, you will likely find me at the gym or at a local court as I am a workout-a-holic. I enjoy weightlifting, participating in team sports like basketball and flag football, and any other activity that allows me to work up a good sweat. In high school, I fractured my tibia trying out for my school's basketball team. As I progressed through surgery and the entire rehabilitative process, I became involuntarily immersed in the field of Orthopaedics and Sports Medicine. Although this experience was devastating at the time, I look back on it now as a blessing because it marked the beginning of my journey towards a career in medicine. Upon completion of my medical education, I aspire to become an Orthopaedic surgeon, specializing in Sports Medicine. I also intend to earn my MBA with a concentration in Finance either via a dual degree MD/MBA program or after I complete medical school.

### **The Role of Hospitalist Co-Management and Frailty Triage in Orthopaedic Trauma Outcomes**

Over the last 20 years, Hospital medicine has become an integral component of the health care landscape in the US, resulting in an increase in the number of practicing Hospitalists from a few hundred to over 50,000. As a byproduct of this surge, the shared management of surgical patients between surgeons and hospitalists has become increasingly more common in medical institutions across the country. Studies analyzing hospitalist co-management of vascular and colorectal surgery patients have shown that managed care results in significant decreases in post-operative complications, patient length of stay, readmission rates, and overall cost of care. Studies of this nature have yet to be performed in the realm of orthopaedic trauma surgery. Thus, the focus of this study is to evaluate the role of Hospitalist co-management in orthopaedic trauma outcomes, specifically what impact this intervention has on patient care efficiency and effectiveness. The goal of this study is to determine whether the implementation of a hospitalist for orthopaedic trauma surgical patients will result in positive outcomes similar to those observed in the aforementioned studies. It is our hope that the information collected from this study will further support the value of surgical co-management in our health care system.

## Joel De Rosa

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**Faculty Mentor:** Mara Schenker, M.D.



I was born on April 9th, 1990 in Cincinnati, Ohio, the youngest child of Chris and Sue De Rosa. The majority of my formative years were spent in Acworth, GA about 40 minutes northwest of Atlanta. I graduated from the University of Georgia in 2013 with a degree in Exercise and Sports Science. Now, I find myself at The Medical College of Georgia Athens Campus.

My career aspirations have varied greatly over the years, from professional soccer and zookeeping as a youngster, to physical therapy during my undergraduate years. After a few semesters in physical therapy school I realized my real interest lay in a different area of medicine, so I left PT school and applied to medical school. During this transition and application period I tried my hand at a few different trades: from a lumber associate at Home Depot to a forklift driver in a brewery to a medical assistant at a cardiology practice.

I have greatly enjoyed getting to know and working with my fellow research interns. If you are not a large online search engine or a social media platform, gathering data on individuals takes vast amounts of time and coordination. However, our fabulous teamwork and communication has made this process fairly smooth! Also, thank you to Dr. Schenker and Erika Ortega for making this summer possible and ensuring the success of our research projects.

### **Social Determinants of Health: One-Year Post-Trauma**

Trauma accounts for a large portion of total healthcare expenditures. With this large cost comes a great opportunity for savings, which is one of our objectives. Being able to identify the High-Need High-Cost (HNHC), population, 5% of patients who account for 50% of healthcare expenditures, will be vital to achieve this goal. Our hope is to develop a survey of social determinants of health that can be used to identify this population. If this HNHC population can be identified early, cost effective resources can be directed to them to not only reduce costs but also improve outcomes. The next step in this process is following up with patients one year post-trauma and re-administering the social determinants of health survey. Those that have had a change in circumstances will be identified. Then, the surveys taken at the time of the trauma will be analyzed for correlations between a change in circumstance and initial risk factors. I am eager to see what type of trends arise and about the possibility of producing data to inform future healthcare practices and policies.



## **James Gregory Howell, Jr.**

**Morehouse School of Medicine**

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**Faculty Mentor:** Dr. Jonathan Nguyen, DO

Following graduation from Emory University, Goizueta Business School in 2007 with a degree in finance, management, and Mandarin Chinese, I worked as a business management consultant, an international production planner, and a law clerk. Despite finding success, I longed for more purposeful and meaningful work. Motivated to focus on medicine, I completed a post-baccalaureate premedical program at Georgia State University in 2015. Afterwards, I trained as an emergency room scribe and an advanced emergency medical technician (AEMT). I have been a student at Morehouse School of Medicine since 2017. While I have prior experience in legal research, this is my first opportunity to serve as a researcher in the medical field. I would like to thank Dr. Jonathan Nguyen for his willingness to having me work with him, and for his time and patience in his guidance and teachings throughout the summer.

### **Reducing Unnecessary Medical Imaging Costs in Traumatic Brain Injury Patients**

According to *Unnecessary Imaging*, the costs of unnecessary medical imaging in the United States is between \$7.47 billion and \$11.95 billion annually. The prime contributing factor in unnecessary imaging, as reported by 90% of hospital physician leadership, was defensive medicine. In the setting of traumatic brain injury (TBI), the guidelines of when a patient requires a period of observation, repeat head computed tomography (RHCT), or neurological consultation (NCS) can easily become muddled and physicians can find themselves reverting to previously acknowledged defensive medicine. This study is aimed at the possibility of designing more cost-effective treatment practices with the goal of reducing unnecessary medical imaging costs, while at no time decreasing the quality of care patients receive, so that these freed up resources might be utilized more effectively elsewhere. A retrospective cohort analysis of 500+ isolated head injuries from 2014 to 2018 with a GCS  $\geq 13$  will be conducted to determine if, and when, RHCT are medically beneficial to TBI patients. Our hope is that this information will be valuable in future treatment of TBI patients.



## **Grace Kim**

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**Faculty Advisor:** Mara Schenker, M.D.

**Mentors:** Alaina Steck, M.D., Matt Wham M.D.

I was born on October 23, 1995 in Queens, New York, though I grew up mostly in Georgia. I graduated from Georgia Tech in December 2017 with a B.S. in Biology and minor in Modern Languages (Mandarin Chinese).

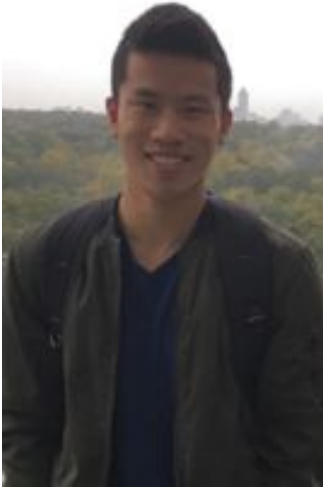
During college, I worked part-time at GA Tech's Center for Academic Success and spent a lot of my time volunteering at Grady in the Marcus Trauma Center. I also got to serve as a teaching assistant for two courses – Organismal Biology Lab and Cancer Bio/Tech – during my last year as an undergrad. For my senior intern experience, I got to conduct a surveillance research project on certain fungal species at the CDC. I spent the majority of my free time going to the gym, which has since become one of my biggest hobbies. After graduating from GA Tech, I joined the class of 2022 at the Medical College of GA, with an interest in orthopedic surgery.

I would like to thank Dr. Mara Schenker and Dr. Alaina Steck for guiding me throughout the entire process, providing great resources, and encouraging me to set timely goals to meet. I would also like to thank Erika Ortega, for always being of assistance and answering all of the technical questions we had, and Dr. Matt Wham for teaching me how to collect the data I needed and for being an overall great resource. Lastly, I would like to thank all of the other faculty & residents for being so patient with us and the other members of the STAR team for encouraging teamwork and always helping each other out.

### **Opioid Prescriber Variability in the Emergency Department**

The abuse of opioids remains one of the leading causes of accidental death today in the U.S., with many cases of opioid dependence beginning after initial exposure to physician-prescribed opioids (as pain medication). Previous studies show that prescribing behavior in the ED can vary drastically among providers even within the same hospital. The purpose of this study is to analyze opioid prescription sizes given in the ED to orthopedic trauma patients and to assess correlations between those and prescribing intensity of the providers (ED attendings and orthopedic residents) involved. Results will be significant in providing a better understanding of the spectrum of provider variability in the amount of opioids given for pain management. This information can then be used to educate providers on decreasing opioid use, all with the hope of decreasing provider variability and overall opioid use throughout the entire ED patient encounter – from pre-hospital consult to post-op care.





## **David Jin**

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I was born and raised in the suburbs, about 90 minutes south of Chicago. I majored in biology at Illinois with the intention of becoming an eventual science teacher. During my undergraduate years, I obtained my EMT-B certification and worked on an ambulance during my summers. After graduation, I decided to pursue a Masters of Public Health at Rollins, in Epidemiology, in the hopes of contributing to the small world of EMS research.

My interests revolve around mental health and statistical modeling. I am a part of the Frailty team, and my specific project pairs me with another member of the Frailty cohort, Brandon Chiedo, in investigating the role of a hospitalist in improving healthcare efficiency and outcomes for orthopedic patients at Grady. My secondary role pertains to statistical support for the members of the Frailty team. Rollins repeatedly stresses the importance of collaboration between researchers and clinicians. The STaR research project has given me an awesome, firsthand experience with this dynamic.

## **Amanda Liew**

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I was born and raised in the suburbs, about 45 minutes north of Atlanta. I majored in biology at Georgia Tech, and spent time in a research lab at Zoo Atlanta, studying lizard cognition. My research experiences then led me to a biomedical engineering lab in the joint Georgia Tech/Emory biomedical engineering department, where I worked on clinical and animal models of traumatic brain injury. After graduation, I decided to pursue a Master of Public Health degree at Rollins, in Global Environmental Health, with a concentration in infectious disease ecology.

### **Inpatient Morphine Equivalents and Post-Discharge Opioid Utilization**

My interests revolve around mental health and substance abuse. I am a part of the social determinants of health team, and my specific project investigates inpatient morphine equivalents and post-discharge opioid utilization, along with the implications for substance abuse. I am grateful for the opportunity to work with the orthopedics/trauma team this summer, because it has been a valuable experience to see the importance of translational research, where the clinical practice guides the scientific process.



## **Nick Major**

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**Faculty Mentors:** April Grant, M.D.

After attending the University of Georgia for my undergraduate education, I then spent 3 years in a community emergency department as a medical scribe. I also completed the EMT course here at Grady Memorial Hospital prior to my matriculation to medical school at Mercer University in Savannah. In my time prior to medical school and throughout my days in the anatomy lab, I fell in love with cutting and the idea of following in the footsteps of Halstead, Feliciano, and so many others to become a great surgeon. My plan after medical school is to

complete a residency in general surgery followed by a fellowship in acute care surgery in order to sharpen my surgical skills in trauma, surgical intensive care, and emergency general surgery.

I would also like to thank my mentor for this summer, Dr. April Grant. There is a stereotype in medicine about the abhorrent trauma surgeon. Dr. Grant is the antithesis of that stereotype. She is not only a great leader and teacher but a compassionate doctor as well. It has been a privilege for me to be able to work on our project this summer.

### **Long-Term Outcomes After Lower Extremity Vascular Trauma**

The primary aim of this study is to determine the long-term patency rates of repaired vessels and to identify persistent neurovascular and musculoskeletal sequelae in individuals who have endured lower extremity vascular trauma. We will also assess the quality of life of this population as well as their rates of follow-up and recidivism. Currently, we are performing a retrospective review of patients who presented to Grady Memorial Hospital after sustaining lower extremity vascular trauma requiring surgical intervention over a 7-year period (January 2009 to December 2015). Once complete, we will ask the identified patients to return for a follow-up encounter which will include a detailed history and physical exam, vascular duplex, and a quality of life questionnaire. With this data, we hope to further elucidate the outcomes of these individuals and to improve the care provided to those who suffer vascular trauma in the future.



## **Michael Nwiloh**

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**Faculty Mentors:** McKenzie Hollon, M.D. and Rachel Mather M.D.

I was born on November 10, 1990 in Hackensack, NJ. After bouncing around between Michigan, West Virginia, and other parts of Georgia; my family and I settled in Conyers, GA in 1999. I graduated high school from George Walton Academy in 2009 and began college at the University of Central Florida on a soccer scholarship. After one year, I transferred to Georgia State University, where I also played soccer and graduated with a degree in Chemistry in December 2013.

As a collegiate athlete, a large amount of my time was spent training and traveling across the country for games. During the 2011 season, I was part of the first GSU men's soccer team in school history to qualify for the NCAA National Tournament (unfortunately, we weren't a "Cinderella Story" and lost in the 1<sup>st</sup>Round to Duke). As hectic as being a student-athlete was at times, I truly enjoyed these years because I met some of my closest friends and it ultimately gave me a platform to showcase my ability to professional teams. In January 2014, I became the first GSU men's soccer player in school history to be selected in the Major League Soccer (MLS) SuperDraft when I was chosen by Chivas USA based out of Carson, CA (20 short miles, but with traffic, about 5 hours south of downtown Los Angeles). After my rookie season, my team was bought by a new ownership group and shut down in order to rebrand and build a new stadium (they began play again in January 2018 as LAFC). Rather than looking for another team, I retired after this one season to pursue medical school, but I still play today in local adult leagues. I am now an upcoming 2<sup>nd</sup> year medical student at Mercer University and I am interested in orthopaedic surgery, due to witnessing several injuries throughout my soccer career as well as having arthroscopic knee surgery myself.

I would like to say a big thank you to Dr. Mara Schenker for organizing this summer research program. I have enjoyed working with you as well as the other faculty members and students, and I hope to work with many of you again later down the road.

### **Defining a Protocol for Pre-operative Echocardiograms in Orthopaedic Trauma Patients**

Although it is known that severe valvular heart disease and LV dysfunction are amongst several conditions associated with an increased risk of perioperative complications, there have been minimal studies conducted to define a protocol for when it is objectively necessary to perform a pre-operative echocardiogram to screen for such conditions in elective surgical patients, and even fewer studies in the non-elective population. Therefore, this summer I have been working with my fantastic advisors Dr. Hollon and Dr. Mather to define a protocol for pre-operative echocardiograms in orthopaedic trauma patients. We are currently in the retrospective portion of this project, but once we have completed chart review of the patients in the trauma database, we plan to pilot a prospective study here at Grady that will stratify each patient based on risk of complication and objectively determine who should receive a focused echocardiogram with the end goal to reduce perioperative adverse events and the time to the OR.



## Meet Patel

**Mercer University School of Medicine**

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**Faculty Mentors:** Mara Schenker, M.D., Adam Singer, M.D.

I was born on December 13, 1995 within the developing city of Kalol, Gujarat, India. In the August of 1999 my family and I immigrated to the US where we lived in Citrus County, Florida. In 2003 we moved to Georgia, where we have lived in the small town of Calhoun ever since. After graduating from Calhoun High School in 2014, I pursued a degree in biochemistry and molecular biology from the finest university in the land, the University of Georgia. I graduated from UGA in the spring of 2018 and began my medical journey at Mercer University School of Medicine that subsequent Fall.

My passion for research sprouted out of my time in a biochemical yeast lab in undergrad. Even though it might not sound like the most exciting place to be it gave me an appreciation for the time, patience, knowledge and drive it takes to see a project through and contribute to the evolving field of science.

My interests outside of academics include learning about cars, golf, and watching movies. I maintain my interest in engineering by delving into the mechanics and innovations made in the automotive field. Golf is more of a recent hobby I picked up but as of now my goal is to be able to hit the ball straight with all the various clubs.

I would like to thank Dr. Schenker for providing me with the opportunity to experience the clinical facet of research and providing exposure to the world of trauma and surgery. I would also like to thank Dr. Singer for providing me with my first experience in radiology and the knowledge to understand and appreciate the value of a quality CT radiograph with minimal noise or various artifacts disturbing the image.

### **Defining Radiographic Measures to Determine Frailty in Trauma Patients**

As of now, frailty status is largely determined by age and MFI 5/11/15 scales but there is reason to believe that radiographic measures of the L1 vertebra and core muscle fatty atrophy could also predict the likelihood of complications in trauma patients. Previous retrospective data has shown an association between psoas myosteatosis and frailty in an orthopedic trauma population (DeVos, M., et al. 2019). This prospective study will apply similar methods to a broader patient sample which will include general and orthopedic trauma patients. The methods include utilizing abdominal CTs to obtain psoas cross-sectional area and radiodensity and L1 vertebra radiodensity to measure psoas sarcopenia, myosteatosis, and L1 attenuation, respectively. The objective of this study is to clarify the association between radiographic measures and frailty in order to define a radiographic tool that can aid in risk stratification of trauma patients.



## **Syed Nasser Rizvi**

### **Mercer University School of Medicine**

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**Principal Investigator:** Rondi Gelbard, MD and Abraham Matar, MD

I was born on August 20th, 1995 in New Haven, Connecticut. When I was three, my family moved to Albany, Georgia where my Dad practiced as a nephrologist. I graduated from Deerfield-Windsor Academy in 2013, the University of Georgia in 2017, and I am a rising second year at Mercer University School of Medicine in Savannah, Georgia.

I am not sure which specialty of medicine I want to practice, but I have always taken an interest in surgery. Something about being a surgeon—physically fixing things with your own hands— is super attractive to me. Whichever path I choose, I have several individuals to thank for getting me to where I am. First, I have to thank my parents for always supporting me and encouraging me to follow my dreams. I would also like to thank Dr. Mendenhall for teaching me what it means to be a genuinely caring physician. I am grateful for Dr. Rizvi in New Jersey for providing me with an invaluable opportunity to interact first hand with patients. There are many, many others that have helped me along the way. I would lastly like to thank Dr. Schenker for putting together this research program at Grady for us.

### **Impact of Blood Transfusions on Outcomes in Traumatic Brain Injury**

It is established that blood transfusion is associated with worse outcomes in patients with TBI, including increased mortality, decreased functional outcomes, increased ICU length of stay, and pulmonary complications. However, few studies have evaluated the impact of non-blood transfusions—namely, platelet transfusions and fresh frozen plasma— to determine if the same impact is observed in TBI patients. The focus of our study is to analyze outcomes of patients with TBI who receive a platelet or fresh frozen plasma transfusion within the first 72 hours at a level one trauma center. These outcomes will be compared to TBI patients who do not receive a transfusion. Our hope is that this information will be valuable in informing neurosurgical guidelines for prevention of intracranial bleed progression, which as of now are arbitrary and their impact unevaluated.



## **Robert Roach**

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**Faculty Mentor:** Randi Smith, M.D., MPH

Born January 8, 1996 in Sydney Australia, I moved to the states later that year and grew up in the Atlanta suburb of Roswell, GA. I am the middle child with an older identical twin working for NASA in California and a younger sister studying public health at UGA. In high school I spent more time on athletics (like rowing and football) than academics, but still managed to discover a passion for biology and the natural world. That interest served me well in undergrad at Mercer University

where I majored in Biology with minors in chemistry and history.

In that relatively small college setting I matured as a student and an individual. My desire to pursue medicine as a vocation was confirmed on a Medical mission trip to Cambodia with Mercer's Medical school the summer after my sophomore year. I nurtured an interest in teaching and physical science working as a supplemental instructor in general and organic chemistry for three years. Disturbed by the harm I saw some of my close friends endure, I started my school's chapter of One in Four; a group which advocated for the victims of sexual assault.

I am currently a rising second year medical student at Mercer University School of Medicine in Savannah Georgia. I am interested in the fields of internal and emergency medicine. I would like to thank Dr. Smith and Dr. Schenker for giving me the opportunity to study the relationship between structural violence and gun violence in Atlanta with such an amazing and dedicated group of individuals.

### **Using Measures of Structural Violence to Predict the Burden of Gunshot Injuries in Atlanta**

My project examines the relationship between structural violence and gunshot injuries in Atlanta. The concept of structural violence explains how social arrangements put some populations in harm's way over others. We will quantify zip-code level exposure to structural violence with measures of economic, health care access, nutritional, and life expectancy inequality. We hypothesize these measures can be used to create a composite structural violence score that will be independently predictive of Atlanta's gunshot wound burden. We hope to use this score to target funding for a hospital based violence intervention program.



## Ryan Sanders

**Mercer University School of Medicine**

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**Faculty Mentors:** Michael Maceroli, MD and Richard Johnson, MD

I was born on July 26, 1993 in Lawrenceville, GA and spent my adolescent years in northeast Georgia. I graduated from Mill Creek High School in 2011 before attending the University of Georgia – the birthplace of public higher education. I come from a long line of Bulldogs, including my father who played football for the great Vince Dooley in the late 80s, and thus was destined to continue the tradition. I graduated from UGA in 2015 with a degree in Biochemistry and Molecular Biology.

During my undergraduate career, I investigated vaccine targets for Respiratory Syncytial Virus and novel biochemical pathways for biofuel production and DJ'd at local music venues on the weekend. But my most impactful experiences were the relationships I built with the patients at Children's Healthcare of Atlanta through UGA Miracle. It was this experience that solidified a lifelong desire to pursue a career in medicine. After graduating, I completed my Wilderness First Responder certification in the Colorado Rockies with the University of Colorado School of Medicine. Then, I spent a gap-year in Charlotte, NC where I worked as a scribe in the ED of Carolinas Medical Center and developed a passion for BBQ while working in the kitchen of Charlotte's top BBQ restaurant. I graduated with my Masters in Preclinical Sciences from Mercer University in 2017 before joining a pharmaceutical start up – Metaclipse in Atlanta, GA – focused on developing personalized immunotherapy for patients with triple negative breast cancer. In 2018, I began medical school at Mercer University in Macon, GA where I am set to begin my second year this Fall.

### **Thomboelastography in Pelvic and Acetabular Trauma**

This summer, I worked with Dr. Richard Johnson and Dr. Michael Maceroli investigating the use of thromboelastography in pelvic and acetabular fractures. Uncontrolled hemorrhage is the leading cause of preventable trauma-related death, accounting for up to 40% of deaths in severely injured hospitalized patients. In the setting of acute hemorrhagic shock, massive transfusion protocols that alter blood product ratios offer a proven mortality benefit. In recent years, thromboelastography (TEG) has been introduced as a means of real-time calculation of blood product needs based on a patient specific assessment of clot dynamics, including clot development, stabilization, and dissolution. The information supplied by TEG allows real-time assessment and reaction to thrombosis and fibrinolysis. While this has been well described in the acute hemorrhagic shock setting, little research has focused on guided resuscitation in the clinically stable coagulopathic patient undergoing surgical treatment of pelvic and acetabular trauma.





## **Kristin Sheaffer**

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**Faculty Mentors:** Mara Schenker, MD, Marshall Fleurant, MD, MPH,  
and Stan Sonu MD, MPH

I was born in Marietta, Georgia on August 25<sup>th</sup>, 1996. I lived in Marietta until I was seven years old and then moved out West to Black Canyon City, Arizona. After living there for seven additional years I returned back to Marietta to attend Alan C. Pope High School. In 2018, I graduated from the University of Georgia with a degree in Nutritional Sciences. In college, raised a service dog through the

Guide Dog Foundation for the Blind, which I consider to be my biggest accomplishment to this day. Additionally, I served Athens, GA through volunteering at St. Mary's Hospice House and Inspire UGA. Currently, I am a rising second year at Mercer University School of Medicine in Savannah, GA. Outside of school, my interests are graphic design, social justice and politics, and my dog, Lucky.

I would like to thank each and every faculty and staff member that has worked with me through my summer here at the STAR program. You have each inspired me in your own way to be both a better researcher and future physician. Dr. Schenker, thank you for answering my endless questions, your positivity, and for spearheading this program. Dr. Sonu and Dr. Fleurant, I'm incredibly grateful that you both have shed light onto the importance of both adverse childhood experiences and trauma informed care so early in my medical career. I want to pass along what I have learned here, both through future research and through developing a culture of systemic empathy in other physicians.

### **Adverse Childhood Experiences in Orthopedic Trauma Patients**

Thirty years ago, the effects of childhood adverse events on poor long-term health outcomes was brought into the spotlight by the groundbreaking Adverse Childhood Experiences (ACEs) study. Since then, a higher burden of ACEs has been highly correlated with poorer self-reported health, chronic disease, and premature mortality. The focus of our study is to explore the burden of ACEs in an orthopedic trauma population. From this data, multiple avenues of research will be explored to examine the impact of adverse childhood events on primary care access, interpersonal violence, and healthcare utilization.



## James Tyson

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**Faculty Mentors:** Rondi Gelbard, M.D. and Brett Tracy M.D.

My name is Jay Tyson and I am a second year medical student from Mercer University School of Medicine. Originally from Cumming Georgia, I went to Mount Pisgah Christian High School. In high school I was very interested in sports; playing football, basketball, and golf. After finishing high school, I attended the University of Georgia where I majored in Exercise Science in the department of Kinesiology. I spent time during my college summers shadowing physicians from many specialties including cardiothoracic surgery, otorhinolaryngology, cardiology, and vascular surgery. These experiences instilled a love of medicine into me that put me on my journey to where I am today. After graduation from UGA, I took a job as an emergency technician in an ER in Atlanta, Georgia. There, I was thrilled to have so much hands on experience with patients ranging from the common flu to patients in very critical situations. I loved my job and took great pride being there on someone's worst day and working on a team that did some amazing work. After a year and a half, I left my job to realize my dream of attending medical school. I moved down to Macon Georgia where I just finished my first year at Mercer University School of Medicine.

### **MFI-11 as a Tool to Predict Outcomes in Traumatic Brain Injuries**

This summer I am thankful to be interning at Grady Hospital on the STAR research team under Dr. Schenker. I will be using a frailty index to research its application in patients who have suffered a traumatic brain injury and other polytrauma patients. Frailty, a multifactorial state of weakness, is a relatively new study in medicine and has been generally used in the geriatric population with some new studies observing its effect on multiple patient populations. My goal is to show this index's utility in a larger patient population to include trauma patients whose biological age does not represent their chronological age. Specifically, I will be using the index to study frail patient's length of stay in the hospital/ICU, unplanned events during their time in the hospital, and their discharge disposition. This study will hopefully be useful in providing insights into future patient management in patients with traumatic injuries and other polytrauma patients whose biological age is not represented by their chronological age.



## **Melissa Victor**

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**Faculty Mentors:** Mara Schenker, M.D., Randi Smith, M.D., MPH,  
and Brett Tracy M.D

I'm a Master's of Public Health student at Emory University. I was born and raised in Los Angeles, CA and moved to Boston, MA to attend Wheaton College. I received my Bachelor's degree in Psychology and Sociology in 2015. After finishing school, I worked at the in-patient, adolescent psychiatric unit at Mclean Hospital and subsequently worked for two years at Brown University on research in addiction studies.

I would like to thank Dr. Schenker, Dr. Smith, and Dr. Tracy for their help and guidance this summer!

### **Do "6 Clicks" AM-PAC Scores Predict Health Outcomes in Trauma Care?**

This summer, I am doing a retrospective analysis of patients with traumatic brain injury. I will determine if AM-PAC "6 Clicks" scores, a standardized measure used to assess patient mobility, are associated with negative health outcomes in this population. I hope that study results can be used to guide clinical decisions and connect disciplines in trauma care.