

## 2020 SRA Biomed Research Opportunities

Summer Research Assistantships (SRAs) are available to students in Brown University's Program in Liberal Medical Education (PLME) annually on a competitive basis. PLME students who are awarded a SRA receive a stipend of \$3,500, and the opportunity to become engaged in a summer research project under the supervision and mentorship of a Brown faculty member.

A faculty mentor must be a faculty member in the Division of Biology and Medicine, School of Public Health, or on clinical faculty to mentor a student for the PLME SRA.

PLME students may secure research opportunities in the following ways:

- Identifying an area of research that is of interest to you, and finding a Brown faculty member conducting research in that field who would be willing to serve as your faculty mentor
- Identifying a Brown faculty member who would be willing to sponsor your own research project
- Reviewing the list of research opportunities in this packet to see if any projects are of interest to you.

All the faculty mentors in this packet have indicated that they would be interested in mentoring a PLME student for a SRA from June to August 2020.

For additional information on the SRA, please visit the PLME SRA website:

<https://www.brown.edu/academics/medical/plme/current-students/enrichment-activities/research-opportunities/plme-summer-research-assistantship-soc>

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## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Halit Pinar, MD

**Department:** Perinatal Pathology, Women and Infants Hospital

**Email:** hpinar@brown.edu

**Description of Project:**

Need to build a website to host the collection of placental pathology images and categorize the images according to their respective abnormalities. May require 2 students

**Research Subject Area:** Medical Education/Patient Education

**Desired Student Qualifications:** Should be able to build a suitable website

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

I expect to be working with the student (s) one on one, all throughout their involvement

**Other Comments:**

I have funding to purchase any software that is going to be needed

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Barbara Stonestreet, MD

**Department:** Pediatrics

**Email:** bstonestreet@wihri.org

### **Description of Project:**

Hypoxia-ischemia (HI) is the leading cause of long-term neurodevelopmental morbidities in preterm and full term infants. Therapeutic strategies do not exist for preterm infants exposed to HI except for supportive care, and hypothermia treatment for full term infants with HI brain injury is only partially protective. Numerous promising neuroprotective agents and strategies have been developed for pediatric and adult strokes in preclinical studies, however, they failed later in clinical trials. Based upon the Stroke Therapy Academic Industry Roundtable (STAIR) criteria, insufficient dose-response and therapeutic time window studies, inappropriate histological and behavioral outcome assessments, and unclear mechanism(s) targeted by the neuroprotectants in the preclinical stage of the stroke drug development are the major reasons for this unsuccessful translation of neuroprotective therapies from animal to human. Therefore, improvement of methodological quality and understanding the mechanisms of HI injury in the developing brain and the molecular targeting of neuroprotectants (peripheral and/or central actions) are essential to develop efficacious therapeutic approaches for use in both preterm and full term human neonates. The impetus of this proposal is the recent identification of novel immunomodulatory proteins, inter-alpha inhibitor proteins (IAIPs), which are currently being developed as effective therapeutic agents in systemic inflammation/shock syndrome, since they function as anti-inflammatory molecules inhibiting destructive serine proteases, down-regulating pro-inflammatory cytokines, augmenting anti-inflammatory cytokine production, and blocking complement activation. Our preliminary studies with blood-derived IAIPs suggest that this agent is remarkably neuroprotective in HI neonatal rats, fetal sheep after ischemic injury, and in adult rats after stroke. However, information regarding the working mechanisms and an efficacious neuroprotective strategy of IAIPs on HI-related brain injury in immature subjects are not available. This proposal is designed to fill this gap of knowledge: (1) To determine the optimal dose-response and therapeutic time window of i.p. administered IAIPs in neonatal rats; (2) To assess short and long term neurobehavioral outcomes, and then to establish the greatest neuroprotective efficacy with optimal dose and time window of IAIP administration with in neonates; (3) To examine molecular mechanisms (especially neuroinflammation and apoptosis) and targeting (especially pro-inflammatory cytokines and MMPs) of IAIP on brain HI injury. A well-characterized Rice-Vannucci neonatal HI model will be used for this proposal. The neuroprotective efficacy with different doses (15, 30, 60, 90 mg/kg) and time window (6, 12, 24 h, and then every 24 h until 2 weeks after HI) of IAIP treatment will be determined by comparing brain injury scored by Luxol fast blue/H&E staining, quantification of apoptotic cells, neuronal injury by Fluoro Jade B staining, and brain inflammation including brain cytokine production, astrocytosis, and microglia activation cell injury. Short and long-term behavioral outcomes will also be assessed by righting reflex (P5–P8), small open field (P12–P17), wire hang (P17), large open field (P21–25), and Morris water maze at different stages of brain development. Using brain plasma and tissues, and primary neuron/glia cell

co-culture with and without OGD exposure, action mechanism(s) and molecular target of IAIPs will be examined. Mechanism(s) will be examined by determining neuroinflammation and apoptosis, in which interaction among neuron, microglia, and astrocyte probably is important. Specific pro-inflammatory cytokines and MMPs, who play a key role in the neonatal HI brain injury and are targeted by IAIP, will be first determined by Multiplex screening, and then confirmed by Western-blot and/or ELISA. The current proposal will establish a potential drug efficacy with optimal dose-response and therapeutic time window, with which IAIP attenuates brain ischemia, reduces neuronal and glial cell death, and improves short and long term learning/memory/behavioral performance in a neonatal rat model of HI; and reveal novel mechanism(s) underlying HI injury in developing brain, which could lead to a successful neuroprotective strategy for clinically relevant treatment for human premature and full term infants exposed to HI.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** Some background in Neuroscience and or Immunology

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

weekly

**Other Comments:**

I have mentored more than 200 students and enjoy it.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Elizabeth Goldberg, MD

**Department:** Emergency Medicine

**Email:** elizabeth\_goldberg@brown.edu

**Description of Project:**

Primary responsibilities will be related to the K76 investigation “GAPcare II: The Geriatric Acute and Post-Acute Fall Prevention Intervention.” The research involves developing and refining a novel iPhone-based app, examining the usability of this app, and recruiting participants into qualitative interviews and a clinical trial during their medical emergency department visit following a traumatic event. Fitness, gait, and function are assessed using the Apple Watch which allows capture of an individual's activity level and fall events. Follow-up assessments include semi-structured interviews as well as surveys and the collection of data from devices. Results of this investigation will inform a number of intervention approaches including an emergency department-initiated fall prevention intervention.

**Research Subject Area:** Clinical Research, Epidemiology

**Desired Student Qualifications:** Responsibilities may include:

- Preparation and maintenance of study records
- Completion of study procedures, older adult and caregiver training (and setup)
- Scheduling of follow-up assessments
- Conducting home visits and supervised interviews
- Coding of semi-structured interview transcripts.
- Extraction and inputting of data into REDCap
- Basic statistical analyses of data and preparation of data for presentations
- Assisting with programming and refining the Apple Watch app

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Weekly lab meetings, 1:1 mentoring, working in collaboration with other RA on the project

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Philip Gruppuso, MD

**Department:** Pediatrics (Endocrinology)

**Email:** philip\_gruppuso@brown.edu

**Description of Project:**

Contribution to an ongoing research project in the laboratory. Current areas of emphasis include liver ischemia-reperfusion injury (relevant to the damage that occurs in livers that are donors for liver transplantation), and cell-based therapy for liver failure (transplantation of fetal cells into injured adult liver in the laboratory rat). The principal researcher in the lab is Dr. Jennifer Sanders. My involvement is that of a semi-retired, part-time co-investigator/co-PI.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** No basic laboratory research experience necessary.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

At minimum, I am in the lab one day per week. We have weekly lab meetings. Direct supervision will be daily and uninterrupted. The student will be based in a lab with other laboratory members.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Audrey Tyrka, Md, PhD

**Department:** Psychiatry and Human Behavior

**Email:** Audrey\_Tyrka@Brown.edu

**Description of Project:**

I study biological and psychosocial risk and protective mechanisms for psychiatric and other health conditions associated with childhood trauma. I have a summer camp study of impoverished 10 year-old children and their families, 1/2 of whom have experienced neglect or abuse. The camp is from August 2nd-August 7th. The student would help to prepare for, carry out, and process data from the camp, and could take on an independent study related to the camp or related to my similar study of adults with and without childhood trauma.

**Research Subject Area:** Clinical Research, translational research

**Desired Student Qualifications:** organized, detail-oriented, motivated, takes direction well, good independent learning when appropriate, past summer camp experience a plus

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

I will meet weekly with the student in my office, except when I am away on vacation for two weeks in the summer, in which case the student will meet with one of our research staff.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Noah Philip, MD

**Department:** Psychiatry/Providence VA

**Email:** noah\_philip@brown.edu

**Description of Project:**

We conduct transcranial magnetic stimulation research work at the Providence VA; this involves maintaining databases of clinical response to stimulation. This project will help characterize these effects and guide evidence-based implementation of non-invasive brain stimulation.

**Research Subject Area:** Clinical Research

**Desired Student Qualifications:** Eager to learn, and basic database experience. Redcap experience is a plus.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Weekly meetings with myself and staff, incorporation into a larger team, senior research staff including residents and fellows will be involved.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Michael Reznik, MD

**Department:** Neurology

**Email:** michael\_reznik@brown.edu

**Description of Project:**

I have two ongoing areas of research which may be suitable for students. First, I am the PI of the Brown Intracerebral Hemorrhage Registry, which prospectively collects clinical and outcome data on consecutive patients with hemorrhagic stroke admitted to Rhode Island Hospital and which currently has 500+ patients. There is already a wealth of untapped data that can be used for new projects, as well as an opportunity for additional retrospective data acquisition for further analyses if so desired. Second, I am the PI of a growing research program aimed at determining the influence of delirium in patients with stroke. Current projects include bedside delirium screening tool development/validation, advanced analyses of patient activity data (measured using wearable actigraph sensors) and its associations with delirium, and mediation analyses of the independent effects of delirium on patient outcomes. Future projects include analyses of clinical neuroimaging and EEG associated with delirium.

**Research Subject Area:** Clinical Research, Chart Review

**Desired Student Qualifications:** Depending on the area of interest, desirable qualifications include: familiarity with data management (REDCap is our current database of choice), electronic health records (i.e. Epic), and statistics. Experience with computer programming and scientific software like MATLAB and/or Python a definite plus.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

I am available to meet with the student weekly (or as needed) in my office to provide mentorship and guidance on research progress. I am also readily available for interfacing on Slack and other web-based applications.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Harrison Bai, MD

**Department:** Diagnostic Imaging

**Email:** Harrison\_Bai@brown.edu

**Description of Project:**

My lab focuses on Artificial Intelligence/deep learning/machine learning and its application to Radiology. We use different imaging modalities (radiograph, ultrasound, CT, MRI and PET) to predict molecular biomarkers in patients with cancer, assess response to treatment, and select the appropriate candidates for different therapies. The student will work on a specific organ system and can be involved in data collection, annotation, data analysis, manuscript writing or all of the above. My goal is to have the student work on an independent project over the summer that can result in oral presentation at a national conference and/or first-author manuscript(s) published in medical journal.

**Research Subject Area:** Clinical Research, Chart Review

**Desired Student Qualifications:** Interest in artificial intelligence, machine learning and deep learning

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

The entire lab group will get together regularly to compare notes, communicate findings and do all-hands on work and presentations, which will improve group communication and cross-disciplinary communication skills. Such soft skills are key to effective group work and I intend to emphasize these along with technical skills and provide opportunities for students to practice those and give them feedback. I will organize regular check-ins as well as readings and mini-workshops to get the students up to speed on deep learning, computer vision and diagnostic imaging, as well as relevant disease domains. All these activities will be designed to establish a multi-disciplinary, collaborative cohort culture and maximize peer interactions and learnings.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Shibin Cheng, MD, PhD

**Department:** Pediatrics

**Email:** Shibin\_Cheng@brown.edu

**Description of Project:**

The role of sterile inflammation in pre-eclampsia

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** He/She should have high motivation and strong interest in cellular biological experiments.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

At least twice a week at the lab or office.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Nicholas Asselin, DO

**Department:** Emergency Medicine

**Email:** nicholas\_asselin@brown.edu

**Description of Project:**

The RI Prehospital Cardiac arrest Outcomes Registry Database (RIPCARD) is the only existing registry of out of hospital cardiac arrest in RI. RAs will work with the PI team (attending, fellow, resident) to perform chart review, data analysis and assist with preparation of abstracts/manuscripts. Specific focus for the summer of 2020 will be evaluating airway utilization as well as the impact of 2020 protocol changes. Both prior RAs for this project have accepted abstracts at national EMS meetings.

**Research Subject Area:** Clinical Research, Chart Review

**Desired Student Qualifications:** EMS experience preferred but not required

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Once per week in person, other times by phone/text

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Syed Rizvi, MD

**Department:** BROWN Neurology

**Email:** srizvi@lifespan.org

**Description of Project:**

The project will be based on our MS patients database. Retrospective chart review to answer important research questions regarding aging in MS. Students will have the opportunity to shadow the mentor in clinic

**Research Subject Area:** Clinical Research, Chart Review

**Desired Student Qualifications:** None required

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Frequently.. the project will be on site

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Joseph Bliss, MD, PhD

**Department:** Pediatrics

**Email:** jbliss@wihri.org

**Description of Project:**

We have an ongoing project investigating the capacity of various clinical isolates of the yeast, *Candida*, to successfully colonize the GI tract of mice. This organism is an important pathogen in premature infants, and its ability to colonize the host is a key virulence determinant. This project serves to validate adhesion properties observed in vitro.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** Knowledge of anatomy is helpful. Previous laboratory based experience preferred and requires handling mice.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

The student will work primarily with the laboratory manager to learn the techniques related to the project. I am available daily and physically present in the lab at least weekly.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Raj Dipak, PhD

**Department:** Pathology & Laboratory Medicine

**Email:** dipak\_raj@brown.edu

**Description of Project:**

Malaria caused by Plasmodium falciparum is a leading cause of childhood death in sub-Saharan Africa and one of the major causes of morbidity and mortality in over 96 countries around the world. The student will be part of our new vaccine discovery effort against falciparum malaria. Currently, our vaccine targets are the antigens responsible for entry (MSP4 and MSP7), intracellular development (PfGARP), and the exit (PfCDPK5) of the parasite from erythrocytes. By inhibiting all three processes central to the asexual life cycle, we will enhance the already encouraging vaccine efficacy achieved by new antigens discovered in our lab.

**Research Subject Area:** Basic Science Research, Clinical Research, Epidemiology

**Desired Student Qualifications:** Basic knowledge of handling lab equipment's are required

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Currently, most of my time dedicated to research. Depending on the project requirement's I will be available to meet the student on a daily basis.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Alexandra Deaconescu, B. E., PhD

**Department:** Molecular Biology, Cell Biology and Biochemistry

**Email:** alexandra\_deaconescu@brown.edu

**Description of Project:**

Projects area available in the area of stress-induced transcriptional regulation and structural biology (Xray crystallography). Projects would involve a combination or one or more: cloning, protein purification and biochemical characterization (DNA/protein binding assays, enzymatic assays, circular dichroism etc), protein crystallization , genetic screens.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** at least one year of previous experience in a research laboratory

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

usually a weekly formal individual meeting, plus daily informal discussions; lab meeting once a week

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Jennifer Sanders, PhD

**Department:** Pediatrics & Pathology & Laboratory Medicine

**Email:** Jennifer\_Sanders@brown.edu

**Description of Project:**

We are interested in understanding the molecular mechanisms underlying liver ischemia-reperfusion injury in order to develop novel therapeutic strategies. We utilize in vivo and in vitro rodent models as well as human samples to profile changes in cell signaling and RNA expression related to ischemia-reperfusion. Student projects may involve surgical models, analysis of protein expression and bio-computational analysis of large datasets.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** Strong motivation, ability to work as part of a team and independently after appropriate training, ability to multi-task, strong verbal and written skills. Fluency with Excel, Graphpad Prism and R are ideal, but not required. Specific laboratory training will be provided.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

The student will meet with the PI at least once a week to discuss relevant literature, design experiments and discuss progress. The student will also participate in weekly laboratory meetings where all ongoing projects are discussed. The PI is present in the lab daily and will be available to meet informally to address any questions or concerns and aid in troubleshooting.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Richard J. Bennett, PhD

**Department:** Molecular Micro and Immuno

**Email:** Richard\_Bennett@brown.edu

**Description of Project:**

We have projects that use genetic and genomic approaches to study the biology of the opportunistic fungal pathogen *Candida albicans*. This species is a prevalent component of the human microbiome as well as a prevalent cause of disseminated infection. Putative projects include the analysis of genome dynamics, transcriptional regulation of important cell networks, epigenetic regulation of phenotypic switching and the roles of these process in commensal and pathogenic interactions with the host.

**Research Subject Area:** Basic Science Research

**Desired Student Qualifications:** Student should have prior experience in basic molecular biology skills or in the computational analysis of genomic data.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

I formally meet with students on a weekly or biweekly basis, as well as interacting with students informally in the lab on a day-to-day basis. I generally expect to be around for the summer period.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Selim Suner, MD

**Department:** Emergency Medicine

**Email:** [ssuner@brown.edu](mailto:ssuner@brown.edu)

**Description of Project:**

We are developing a iphone camera based APP to non-invasively determine hemoglobin concentration and screen for anemia. The project is on-going and has IRB approval. We are enrolling patients who are in the emergency department for any reason who are getting a blood draw for hemoglobin as part of their routine care. We are taking images of their conjunctiva using an iphone and recording their blood derived hemoglobin. We are developing machine learning algorithms and regression models on images and metadata to estimate hemoglobin concentration.

**Research Subject Area:** Basic Science Research, Clinical Research, Medical Technology and Entrepreneurship

**Desired Student Qualifications:** Knowledge in programming/app design preferred but not necessary. Able to enroll patients using informed consent in the Rhode Island Hospital Emergency Department.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Our team has regular meetings which the student will attend. We will meet with the student at least weekly and likely more frequently to discuss project, review literature and evaluate enrolled patient data. The meetings will occur at Rhode Island Hospital, in the Coro Building and at 55 Claverick street.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Megan Ranney, MD, MPH

**Department:** Emergency Medicine

**Email:** megan\_ranney@brown.edu

### **Description of Project:**

Our larger team develops digital health interventions for vulnerable/at-risk populations. For the SRA/SA, the student will join my research teams working on iDOVE2 and IMPACT, studies conducting RCTs of a text-message intervention to prevent violence and cyberbullying and related negative consequences among high-risk adolescents. They may also, as desired, have the opportunity to work on parallel digital health and violence-prevention clinical projects, including social media based gun violence research.

**Research Subject Area:** Clinical Research

### **Desired Student Qualifications:**

- Highly organized, self-motivated, outstanding attention to detail, and ability to multi-task
- Excellent verbal communication, written communication, and interpersonal skills to effectively interact with patients, families and Hospital staff
- Ability to think on your feet
- Excellent analytical and computer skills (e.g., Microsoft suite)

### **What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

The student will be part of my larger team, including my Emergency Digital Health Innovation program staff. As such, my student will benefit from extensive mentorship from not only myself, but also from my senior program manager and my graduate-level students and research assistants. Personally, I will meet with the student in person on at least a weekly basis (more frequently at the start of the summer) to discuss their questions and progress with the project. I will provide the student with tailored readings to enhance their own academic development. I will review weekly reflection papers and offer the student the opportunity to complete an independent sub-project as well. Finally, I organize a summer journal club, in conjunction with the Brown Center for Bioinformatics, for SRA/SA students, to teach basic research methodology, and will engage the student in this weekly event.

### **Other Comments:**

I require 40 hours/week. They will be expected to work evenings and weekends on a rotating basis. Experience with computer science, public health, violence prevention, or psychology are also appreciated.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Andrew Musits, MD, MS

**Department:** Emergency Medicine

**Email:** andrew.musits@brownphysicians.org

**Description of Project:**

Simulation based medical education. Specifically, organizing and formatting simulation materials into an existing curricular framework for emergency medicine education. Performing literature review to find clinical practice guidelines to support simulation cases. Build DIY task training models from examples published in the simulation literature. Examples include models for chest tubes, pericardiocentesis, and peri-mortum c-section.

**Research Subject Area:** Medical Education/Patient Education, Simulation

**Desired Student Qualifications:** Interest in simulation and education. Good organizational skills. Proficient with microsoft office products.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

I would plan to meet weekly at the Lifespan Simulation Center.

**Other Comments:**

Please note, there is not a specific publishable deliverable associated with this opportunity. It would provide exposure and experience with medical simulation, curricular design/development, application of published literature, task trainer development, and exposure to clinical practice guidelines.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Philip R Rizzuto, MD

**Department:** Surgery (Ophthalmology)

**Email:** philip\_rizzuto@brown.edu

**Description of Project:**

New biotechnological innovations are important to society, as breakthroughs in this space have the potential to help patients live longer, healthier lives. This research proposal seeks to provide future physicians with the opportunity to

better understand some of the key drivers of success in this process, and hopefully, demystify the manner in which new drugs become available to those in need. Over the course of the summer, each research assistant will work with the research sponsor and his team to identify an area of clinical need and proceed to construct a market map detailing the pipeline of current and future therapeutic treatments. Attention will be given, but not limited, to Phase of Development, Industry Sponsor, Mechanism of Action, and Research Findings observed thus far in clinical trials and scientific

literature. The result will be a visual deliverable that the research assistant can use to communicate a thorough understanding of the current standard-of-care for a given indication, as well as the direction that care for the selected indication might take in the years to come. The student will then spend the last 3-4 weeks of the summer creating a “high-impact” deliverable of their choice that leverages the pipeline they have created. These might range from a stock pitch, a proposal for the development of a novel therapeutic, or a review of best practices for clinical trial design highlighting the idiosyncrasies of designing for their selected indication.

**Research Subject Area:** Biotechnology development

**Desired Student Qualifications:** Student should have had some background in biology/medicine(completion of coursework at Brown or research experience) with experience in consulting or finance, helpful but not necessary

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Weekly, biweekly, office based conversations, with ongoing email, and telephone.

**Other Comments:**

Looking forward to it!

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Tracy Madsen, MD

**Department:** Emergency Medicine

**Email:** Tracy\_Madsen@brown.edu

**Description of Project:**

Pulmonary embolism (PE) is a rare but deadly diagnosis, for which patients are frequently evaluated in the Emergency Department (ED). To date, however, biological sex has not been deemed to be an independent risk factor for developing a PE. This project is broadly examining differences in the epidemiology, workup, and management of pulmonary embolism by sex. Specifically, there is some data that women and men may undergo workup in acute care settings at different rates, despite well validated clinical decision tools that do not take into account biological sex.

**Research Subject Area:** Clinical Research, Epidemiology, Chart Review

**Desired Student Qualifications:** Prior research experience is recommended but not required. We can provide all the project-specific training required but are looking for highly motivated students interested in participating in clinical research. Other valuable characteristics include: efficient, detail-oriented, experience with RedCap (or other database software), statistical experience not required.

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

The proposed project is a collaborative effort between two faculty members in the Department of Emergency Medicine and as such one or both of us are most often available by phone/email during work hours. We anticipate several meetings/training sessions early in the students tenure and weekly meetings throughout the course of the session. Students may also have the opportunity to engage with collaborators at institutions across the country via phone conference.

**Other Comments:**

This project is currently a retrospective clinical research study that involves chart review of patients that presented to the ED with symptoms suggestive of PE (chest pain, shortness of breath, etc). There are a number of secondary analyses that the student may be able to be involved with as well, depending on their start date and the patient's specific interest.

## 2020 SRA Biomed Research Opportunities

**Faculty Mentor:** Joshua Honeyman, MD

**Department:** Surgery

**Email:** joshua\_honeyman@brown.edu

**Description of Project:**

I do basic science research into the genomics of pediatric solid tumors. I also have active clinical projects focused on applications of 3D printing and outcomes in trauma and surgical oncology.

**Research Subject Area:** Basic Science Research, Clinical Research, Chart Review

**Desired Student Qualifications:** All experience levels

**What is your plan for mentoring a student researcher (i.e., how often you will meet with the student, when, where)?:**

Depends on the project, but in-person meetings every 1-2 weeks with interim updates