The following research projects have been developed by Brown Emergency Medicine faculty members. All work will be conducted on the Rhode Island Hospital / Hasbro Children Hospital campus in Providence, RI; either in the adult or pediatric emergency departments, centers, or labs affiliated with the Brown Department of Emergency Medicine. Specific information regarding each project is detailed on the following pages.

Before selecting a project, please review the “SRA-EM Program Overview and Instructions” (located on the SRA-EM webpage). If you are ready to commit to this program and are interested in one of the projects listed below, please contact the faculty mentor as soon as possible. The faculty mentor must agree to sponsor you before you complete the SRA-EM application (due February 13, 2018).

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Faculty Mentor</th>
<th>Page #</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPACT: Text-Message-Based Cyberbullying Prevention for High-Risk Youth</td>
<td>Dr. Megan Ranney</td>
<td>Page 2</td>
</tr>
<tr>
<td>StoP STRoKE: Sex-Specific Prevention of Stroke Through Reproductive Risk Factors and Sex Hormone Effects</td>
<td>Dr. Tracy Madsen</td>
<td>Page 4</td>
</tr>
<tr>
<td>Friction Associated Catabolism of Articular Cartilage in the Absence PRG4</td>
<td>Dr. Gregory Jay</td>
<td>Page 5</td>
</tr>
<tr>
<td>Evaluation of High-Quality CPR on Patient Outcomes Among Emergency Department Patients</td>
<td>Drs. Nicholas Asselin &amp; Jonathan Thorndike</td>
<td>Page 6</td>
</tr>
<tr>
<td>Evaluation of Sexual Health and Gender Identity Screening in the Pediatric Emergency Department</td>
<td>Drs. Matthew Lecuyer &amp; Siraj Amanullah</td>
<td>Page 7</td>
</tr>
</tbody>
</table>
Faculty Mentor

Megan L Ranney, MD, MPH
Associate Professor, Department of Emergency Medicine; Director, Emergency Digital Health Innovation and Special Projects
Megan_ranney@brown.edu

Project Title

Project Title: iPACT: Text-Message-Based Cyberbullying Prevention for High-Risk Youth

Project Description

The student will join my research team (working on a larger study developing and testing a text-messaging program to prevent cyberbullying and related negative consequences among high-risk adolescents). The student will have the opportunity to screen patients in the clinic, interview patients, and contribute to our randomized controlled trial testing the acceptability and feasibility of this intervention. S/he will also have the opportunity to assist with big data approaches to assessing outcomes and to examining cyberbullying incidence.

S/he may also, as desired, have the opportunity to work on parallel digital health/mobile health clinical projects for vulnerable populations – possibly including research design, literature reviews, data gathering, and analysis.

The specific roles and responsibilities will depend partly on joint conversations between the student and the PI, prior to submitting the SRA-EM application.

Requirements/Restrictions

Required:
- Highly organized, outstanding attention to detail and ability to multi-task, self-motivated, ethical
- Able to think on feet
- Strong interpersonal skills: ability to interact well with patients in a clinical setting and quickly develop rapport
- Willingness to work weekend/evening hours as needed

Preferences:
- Coursework in public health and psychology
- Interest and/or prior experience with mental health, high-risk adolescents, informatics, and/or digital health
- Prior experience with qualitative methodology (strongly preferred)
- Comfort discussing sensitive topics, including histories of violence and mental health
- Familiarity with citation software (e.g., EndNote), Stata or similar statistical software, and/or NVivo

Mentoring Plan

The student will be part of my larger research 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 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 his or her 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 each summer – in conjunction with the Brown Center for Bio-Informatics - for SRA students, to teach basic research methodology, and will engage the student in this weekly event.

Research Location

- Rhode Island Hospital, Providence, RI
- Hasbro Children's Hospital, Providence, RI
- 55 Claverick St Office, Providence, RI
Faculty Mentor

**Tracy Madsen**
Assistant Professor of Emergency Medicine
Tracy_Madsen@brown.edu

Project Title

**StoP STRokE: Sex-Specific Prevention of Stroke Through Reproductive Risk Factors and Sex Hormone Effects**

Project Description

This is a study investigating sex differences in stroke risk and risk factors along with the potential association of sex hormone binding globulin with ischemic stroke. The study is a combination of analysis of observational data from existing datasets and a case-control study of women with stroke at Rhode Island Hospital. Under the guidance of the PI, the student will be expected to be involved in literature review, IRB applications, collecting data and maintaining a dataset of women with stroke at Rhode Island Hospital. The student will also have the opportunity to help with data analysis and writing.

Requirements/Restrictions

The student should have some prior research experience. Ideally, the student should be able to complete a literature review, help with IRB approval, and have experience in either excel or redcap as these will be used to collect and maintain data. Students with clinical experience (i.e. ability to approach and enroll patients and draw blood) are preferred but this is not required.

Mentoring Plan

Students will be trained at the beginning of the summer over approximately 2-3 weeks. After that, we will meet at least weekly (typically will be twice per week) to discuss study progress, identify any issues, and provide guidance.

Research Location

Where will the student be working?

- Rhode Island Hospital, Providence, RI; potentially also at Women’s Health Collaborative
- 55 Claverick St Office, Providence, RI
Faculty Mentor

**Gregory Jay, MD, PhD**
Department of Emergency Medicine, Vice Chair for Research
gregory_jay_md@brown.edu

Project Title

**Friction Associated Catabolism of Articular Cartilage in the Absence PRG4**

Project Description

This research project will build on a number of key publications showing that PRG4 not only lubricates articular cartilage but also prevents catabolic processes to the chondrocytes directly underneath the articular surface. We plan to continue this research with the help of a highly motivated student to understand more about the release of peroxynitrite, activation of caspase 3 and how nitrosylation of a key CYS residue in the active cleft of caspase 3 arrests apoptosis. We hypothesize that autophagy is the natural outcome of this catabolic process. This project involves the use of transgenic mice with their PRG4 expression under the control of Cre. It is important for the student to have a working understanding of Matlab who is also motivated to learn dissection skills to remove soft tissue from harvested hind limbs such that the knee joint serves as the fulcrum of a pendulum. In this manner, whole joint coefficient of friction is measured. Subsequently articular cartilage is harvested from the same joint for biochemical assays.

Requirements/Restrictions

The students’ academic qualifications and prior research experience should include: some familiarity with Matlab, dissection skills and attention to detail important in maintaining a laboratory notebook and performing biochemical assays.

Mentoring Plan

The student will be part of a small research team consisting of the PI Gregory Jay MD PhD and a research assistant Ling Zhang MD. This team will gather on an almost daily basis to ensure that mice are being bred appropriately, the correct genotypes are being studied and the data is acquired in a near GLP fashion. It is important for the student to maintain his or her own notebook which will accurately reflect the progress of this project which will ultimately result in publication.

Research Location

Where will the student be working?

- Coro Laboratory, One Hoppin St, Providence, RI
Faculty Mentor

Nick Asselin, DO
Assistant Professor of Emergency Medicine, Clinician Educator
Nicholas_Asselin@brown.edu

Co-Mentor

Jonathan Thorndike, MD
Emergency Medicine Resident PGY3
Jonathan.thorndike@lifespan.org

Project Title

Evaluation of High-Quality CPR on Patient Outcomes Among Emergency Department Patients

Project Description

In March 2017, the Rhode Island Department of Health implemented protocols requiring pre-hospital EMTs and Paramedics to administer 30-minutes of CPR to suspected cardiac arrest patients prior to transporting them to the hospital. Prior literature has shown improved outcomes with similar interventions, including survival to admission and discharge, though studies have been subject to a number of confounders and have been performed in predominantly large cities with unified medical direction and a single emergency medical service (EMS) agency.

Rhode Island is unique in that EMS is provided by many different departments - some urban, with large call volumes, and some rural with largely volunteer staff, and with a relatively small percentage of paramedic-level providers. It remains to be seen whether this protocol can improve outcomes among patients in our catchment area.

We aim to evaluate adult patients treated at Rhode Island, Miriam and Newport Hospitals, with a retrospective cohort study, to determine if 30-minutes of high-quality CPR is improving frequency with which patients are having the return of spontaneous circulation, surviving to admission, and surviving to discharge with good functional status.

Requirements/Restrictions
The student will be required to complete CITI research training and be allowed and able to access Lifespan EMR.

Mentoring Plan

The student will be part of a small research team composed of residents and faculty in the Department of Emergency Medicine, and working with the State of Rhode Island on abstracting data via chart review, analyzing and presentation this data. The student will meet with Jon Thorndike to train in chart review, and will meet at least weekly to discuss and review progress, and work on data analysis. Opportunities for presentation include at local and national academic conferences, hospital committees and state-level public health forums. The ultimate goal of this project is real-time evaluation, and guidance of a current public health intervention.

Research Location

Rhode Island Hospital (primary site), possible trips to the Department of Health, Newport Hospital and Miriam Hospital
Faculty Mentor

Matthew Lecuyer, MD
Pediatric Emergency Medicine Fellow, Department of Emergency Medicine
matt.lecuyer.md@gmail.com

Co-mentor

Siraj Amanullah, MD
Associate Professor of Emergency Medicine and Pediatrics, Department of Emergency Medicine
Siraj_Amanullah@brown.edu

Project Title

Evaluation of Sexual Health and Gender Identity Screening in the Pediatric Emergency Department

Project Description

Looking for a summer research assistant to work in the pediatric emergency department at Hasbro Children’s Hospital. The study involves sexual health screening in the pediatric emergency department, including sexual orientation and gender identity. Responsibilities would include being present in the pediatric emergency department, screening for and consenting participants for survey based research, and administering survey to adolescent and young adult patients, while gaining exposure to pediatric emergency medicine. The research assistant would gain experience in and knowledge of pediatric medicine and pediatric emergency medicine, exposure to the care of critically ill and injured child with mentoring by Pediatric Emergency Physicians.

Requirements/Restrictions

The student’s academic qualifications & prior research experience should include:
- Willing to learn RedCAP software
- No prior research experience required
- Free during days and/or evenings in the summer to spend time in the Pediatric Emergency Department at Hasbro Children’s Hospital, professional attire required

Mentoring Plan

Will discuss project with student weekly, in person or by phone/FaceTime.

Research Location

- Primary Site: Hasbro Children’s Hospital, Providence, RI
- Meeting Site: Office at 55 Claverick St, Providence, RI or Hasbro Children’s Hospital, Providence, RI (based on convenience for student and mentor)