GW Faculty Proposals for Medical Student Summer Research Projects

Please review this packet of faculty proposals for medical student 2021 summer research projects.

Email any faculty who list a program of interest. We encourage faculty to interview three students before selection.

Remember that you can also identify your own faculty research mentor and develop a project not in the packet.

Once a faculty member has selected you to work on the project, you can use that proposal, along with that research mentor, to apply for funding for the project.

You are encouraged to develop the proposal to apply to multiple funding sources. This increases the likelihood you will receive a competitive fellowship, since no single source is guaranteed.

Consider fellowship opportunities for medical students:

a. External national summer fellowships
b. External diversity-targeted national fellowships
c. Diversity Supplement to the mentor's NIH grant
d. External Medical student opportunities at other institutions
e. GW Gill fellowships - Apply here
f. GW Health Services Scholarship Program
g. External national year-out fellowships

Click here for steps for a student to apply for funding. Work with your faculty research mentor to develop their proposal into your joint fellowship application.
Faculty Proposal for MD Student Research by Amir A. Afkhami

* 1. Faculty Sponsor

* Name: Amir A. Afkhami
* Degrees: MD, Ph.D.
* Title: Associate Professor of Psychiatry, Global Health, History
* Organization: GWU-SMHS Dept of Psychiatry
* Address: 2150 L Street, NW
* Apt/Suite: 
* City: Washington
* State: DC
* Zipcode: 20009
* Office Phone: 202-741-2889
* Email Address: amiafkh@gwu.edu

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)
A Historic Demographic Study of Psychosurgery Patients 1935-1967

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
"A Modern Contagion: Imperialism and Public Health in Iran's Age of Cholera" (Baltimore: Johns Hopkins University Press, 2019).
5. Sponsor's Research Focus:  
Yes - Psychiatry

6. Sponsor's translational level  
* (Please select ONE)  
T4: Translation to Population Health

7. Hypotheses (200 word limit)  
Psychosurgery from 1935 to 1967 can be correlated with specific demographic profiles such as severity of diagnosis, gender, ethnicity, occupation, and veteran status.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).  
Discover the demographic profile of psychosurgery patients between 1935 and 1967. Discover whether psychosurgery was a preferred treatment approach for particular psychiatric illnesses, populations (sex, ethnicity), and professional groups including military status through the review of over 400 medical records in historic archives.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.  
Selection criteria include:  
- The project design makes it likely that the objectives will be achieved  
- The project is likely to result in a report of interest to other scholars  
- The project fulfills discovery/original research

This study will examine the published and unpublished/archival medical records of leading performers of psychosurgery in the Washington DC area between 1935 and 1967. This study’s goal is to better understand the demographic and professional profiles of the individuals that underwent psychosurgery during this period. This will give us an important window of understanding on whether certain populations, diagnoses, or professional groups were more likely to receive psychosurgery as treatment for psychiatric disorders.

10. Describe the student’s role in the project (200 word limit)  
Student will help in reviewing patient records in archives, database entry, and literature review.

11. Describe the mentor’s role in the project. (200 word limit)  
Mentor is the primary investigator

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)  
Has had Gill fellows in the Past (2017), I am the med school Ombudsperson and the psych lead in the MSII Brain and Behavior block. Other med students (MSII-III) already on team.

13. Do you have or will you obtain IRB approval for this project?  
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)

Selected No (Pending)
Selected No (Not Required)

Please specify why it is not required.
Currently under review for IRB exemption. Should have an answer in by 12/2020.
**1. Faculty Sponsor**

- **Name:** Madison Berl
- **Degrees:** PhD
- **Title:** Pediatric neuropsychologist
- **Organization:** Children's National Hospital
- **Address:** 111 Michigan Avenue NW
- **City:** Washington
- **State:** DC
- **Zipcode:** 20010
- **Office Phone:** 202-476-2545
- **Email Address:** mberl@childrensnational.org

**2. Daily Supervisor**

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

**3. Project Title (250 character limit)**

Secondary database analysis of neuropsychological functioning from children with medical and neurodevelopmental disorders

**4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.**


5. Sponsor's Research Focus:
Yes - Pediatrics
Yes - Psychiatry
Yes - Neurology

6. Sponsor's translational level
* (Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
We hypothesize that distinct data-driven cognitive profiles exist across domains (e.g. memory, language, executive functioning,). We also expect that different pediatric disorders are at risk for particular cognitive profiles.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
We plan to use graph theoretical approaches to identify cognitive profiles using a large clinical database with >5,000 patients. We will assess if there is different risk associated with each profile based on a number of possible factors: pediatric disorder/diagnosis, age at testing, age of onset, MRI abnormality, medications, etc. This analysis will be done using an existing database. Additional factors may be collected through medical record review as needed.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
• The project design makes it likely that the objectives will be achieved
• The project is likely to result in a report of interest to other scholars
• The project fulfills discovery/original research
This is a secondary analysis of a prospectively collected clinical database. The data is already entered which makes the likelihood of completion very high. Given our large sample size, the power to define a question of relevance to the literature is also high. Neuropsychological functioning in pediatric medical disorders is increasingly recognized as critical to a child's outcome. Although the data is already collected, it is unmined and thus several hypotheses remain untested and has not yet been conducted.

10. Describe the student's role in the project (200 word limit)
The student will conduct a literature review based on their interest. This will prepare them to develop hypotheses. It will be helpful to have some understanding of statistical analyses but we are able to teach more complex approaches such as graph theory. The student will verify the accuracy of the data and complete data entry for variables relevant to their project. The student will conduct analyses, interpret results, and provide a write up of the project suitable for publication. The student will be able to attend lab meetings and other didactic sessions. All activities can be completed virtually as needed.

11. Describe the mentor's role in the project. (200 word limit)
The mentor will provide guidance and relevant background as needed to develop the project. The mentor will advise on selecting a topic relevant to their future goals. Technical expertise will be provided by the lab. The mentor will provide input at all stages of the project including weekly meetings. Our team is multidisciplinary including neurology, neuropsychology, and computational science.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
We have had Gill Fellows for over 15 years as well as trainees and summer students from other disciplines and at various levels of training and experience.

* 13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
Selected Yes

Please provide IRB number and date
* IRB Number: 1320
* IRB Date: since 2014
Faculty Proposal for MD Student Research by Dorothy Bulas

* 1. Faculty Sponsor

* Name: Dorothy Bulas
* Degrees: MD
* Title: Chief Department of Diagnostic Imaging and Radiology
* Organization: Children's National
* Address: 111 Michigan Ave NW
* Apt/Suite: 
* City: Washington DC
* State: Washington DC
* Zipcode: 20010
* Office Phone: 202 476 4252
* Email Address: dbulas@childrensnational.org

* 2. Daily Supervisor

Name: Same
Degrees: 
Title: 
Organization: 
Address: 
Apt/Suite: 
City: 
State: 
Zipcode: 
Office Phone: 
Email Address:

* 3. Project Title (250 character limit)

The Department of Diagnostic Imaging and Radiology needs to update the web site as it expands to several Satellite Clinics and starts several innovative programs including neurointerventional and HIFU. This was would be an excellent experience in learning about innovative radiology advances, PR, marketing and administrative responsibilities

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor’s Research Focus:
Yes - Radiology

6. Sponsor’s translational level
* (Please select ONE)
T2: Translation to Patients

7. Hypotheses (200 word limit)
Radiology plays a critical role in the care of the pediatric patient. With multiple modalities and increasingly complex procedures, informing the community about potential studies that their child will undergo becomes important. The more informed the family is, the less need for sedation and the smoother the planning of studies.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
Update the Children's National Radiology web site Include information regarding MRI, CT, US, Nuclear medicine, Fetal Imaging, Fluoroscopy, HIFU procedures including preparation requirements and potential need for sedation.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
The Student will review the current web site information, meet with leads in each modality as well as PR and Marketing to design and create content. This project can be completed within 2-3 months

10. Describe the student's role in the project (200 word limit)
The Student will review the current web site information, meet with leads in each modality as well as PR and Marketing to design and create content. This project can be completed within 2-3 months. The student will spend time in the department learning about all the modalities. Time with child life specialists will also be scheduled to help explain procedures on the web site.

11. Describe the mentor's role in the project. (200 word limit)
The Mentor will review the work on a weekly basis and edit and guide as needed. The mentor will provide access to the modality leads and PR for interviews and time to collaborate.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Several medical students have worked on educational initiatives as well as patient information brochures.
* 13. Do you have or will you obtain IRB approval for this project?  
**Please note:** Students cannot begin a human subjects project without IRB approval.  
* (Please select ONE)  
**Selected No (Not Required)**

Please specify why it is not required.  
not required as for PR and Marketing
* 1. Faculty Sponsor

* Name: Randall S. Burd
* Degrees: MD, PhD
* Title: Chief, Division of Trauma and Burn Surgery
* Organization: Children's National Medical Center
* Address: 111 Michigan Ave NW
* Office Phone: 2024762151
* Email Address: RBurd@childrensnational.org

* 2. Daily Supervisor

Name: Randall S. Burd
Degrees: MD, PhD
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)
Assessment of the Timeliness and Quality of Hemorrhage Control During Pediatric Trauma Resuscitation

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
Hemorrhage is a leading cause of early mortality after pediatric injury. Although the impact of early recognition and management of hemorrhage on mortality has been observed, errors in management of hemorrhage are remain common after pediatric injury. Protocols, simulation, and leadership training improve team performance but have not fully addressed the mismatch between complex decision-making and human vulnerability to error. A computerized decision support system that displayed recommended actions was developed to address this performance gap during trauma resuscitation and was found to prevent errors and reduce morbidity. Despite establishing the feasibility of decision support in a fast-paced, high-risk setting, this system relied on manual data input and a designated team member for workflow tracking. This initial effort did not include strategies for (1) automatically capturing workflow in this fast-paced setting, or (2) real-time monitoring of workflow to ensure that recommendations are responsive to current decision-making needs. Given the potential for disability and death that can result from performance gaps, reducing the health impact of injury requires new approaches that support protocol compliance and reduce errors.

1. Identify timing and completeness of hemorrhage control during pediatric trauma resuscitation 2. Determine patient and resuscitation factors associated with appropriate hemorrhage control during pediatric trauma resuscitation 3. Evaluate the impact of checklist-based decision support on the timeliness of recognition and management of hemorrhage During this summer fellowship, the applicant will review up to 100 video recordings of pediatric trauma resuscitation to achieve these goals. The applicant will used established approaches in Dr. Burd's laboratory for obtaining and analyzing these data.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
The project is likely to result in a report of interest to other scholars
The project fulfills discovery/original research

Dr. Burd's multidisciplinary work is funded by the NIH and NSF. The laboratory is using video review as a main modality for analyzing time-critical work during pediatric trauma resuscitation. The applicant will use methods developed for performing granular analyses of compliance with standard protocols for ensuring timely and appropriate care after injury. This summer project will be aligned with ongoing work and will focus on hemorrhage control in this setting.

* 10. Describe the student's role in the project (200 word limit)
The student will join a large multidisciplinary team for this summer project. The student will have an independent project designed in collaboration with Dr. Burd. Activities will include video analysis, speech analysis, statistical analysis, and research presentation. The student will attend weekly research group meetings.

* 11. Describe the mentor's role in the project. (200 word limit)
Dr. Burd will collaborate with the student to develop a proposal for submission for summer funding. During the summer, he will meet at least weekly with the student to review project performance and goal accomplishment. Dr. Burd will assist the student with developing and presenting the work accomplished during the summer.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. Burd's laboratory has had Gill Fellows and other medical school fellow positions for >5 years, often two positions in the summer. His group has undergraduate and medical school students who participate in ongoing projects on a part-time basis throughout the year.

* 13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
Selected Yes

Please provide IRB number and date
* IRB Number: Pro00000343
* IRB Date: 03/06/2020
Faculty Proposal for MD Student Research by Joshua Campbell

* 1. Faculty Sponsor

* Name: Joshua Campbell
* Degrees: MD
* Title: Dr.
* Organization: MFA
* Address: 2300 M St
* Apt/Suite: 
* City: Washington
* State: DC
* Zipcode: 20037
* Office Phone: 2027413300
* Email Address: jocampbell@mfa.gwu.edu

* 2. Daily Supervisor

Name: Dr. Campbell
Degrees: 
Title: 
Organization: 
Address: 
Apt/Suite: 
City: 
State: 
Zipcode: 
Office Phone: 
Email Address: 

* 3. Project Title (250 character limit)
Effects of Vitamin D Deficiency on Surgical Outcomes in Total Hip Arthroplasty

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

Vitamin D deficiency is the most common nutritional deficiency worldwide and has long been implicated as a potential risk factor for poor bone healing and adverse outcomes following total joint arthroplasty. We hypothesize that individuals with vitamin D deficiency and vitamin D insufficiency experience inferior clinical outcomes, and higher rates of perioperative and near postoperative complications, as compared to those with normal levels of vitamin D.

* 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).

All data will be collected through the PearlDiver database, a national insurance claims database containing over 120 million patient records. Data are anonymized prior to collection and collection will occur prior to the student’s start date. Therefore, students are not expected to review individual patient records or contact patients for research purposes. The student’s primary goals are to conduct a thorough literature review, write a publishable manuscript, and coordinate submission of project deliverables.

* 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This is a retrospective, propensity-matched cohort study examining the association of serum vitamin D levels and outcomes after total hip arthroplasty. Upon starting the fellowship, the student will be provided with the data and expected to conduct a thorough review of the literature (2 weeks), write an abstract for submission to a national conference (2 weeks), and prepare a manuscript for submission to a peer-reviewed publication (4 weeks). Editing by members of the mentor team will be expected to take several more weeks, with submission planned for late Summer or early Fall. Vitamin D is an important marker of bone health, and deficiency of this essential vitamin is thought to be associated with poor bone healing. Total hip arthroplasty is one of the most commonly performed orthopaedic procedures each year, but rare and severe adverse outcomes represent a significant cost to both the patient and society. Much of the current research in total joint arthroplasty is focused on modifiable, preoperative patient risk factors, and this study has the potential to provide clinicians across the country with information that they can directly apply to their clinical practice.
10. Describe the student’s role in the project (200 word limit)
The student will be expected to conduct a thorough literature review for this project. They will be expected to draft abstracts for submission at national meetings and a manuscript fit for publication in a peer-reviewed orthopaedic journal. The student will also be encouraged to join Dr. Campbell in clinic and the operating room as their schedule permits.

11. Describe the mentor’s role in the project. (200 word limit)
You will be working with Dr. Joshua Campbell, an Adult Reconstruction fellowship trained orthopaedic surgeon at GW, who will serve as your primary point of contact for the period of the Fellowship. In addition to providing guidance in background research, writing, and editing, Dr. Campbell is seeking to establish a longitudinal relationship and support the student in their application to orthopaedic surgery residency.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
There are currently upwards of 10 medical students working on projects through our mentor team. While we have not had any Gill fellows to date, students have been extremely productive as part of our research group and we have seen sustained growth in the number of accepted abstracts and peer-reviewed publications.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)
Selected No (Not Required)

Please specify why it is not required.
Data is anonymized and no patient records will be reviewed.
Faculty Proposal for MD Student Research by Jillian Catalanotti

* 1. Faculty Sponsor

* Name: Jillian Catalanotti
* Degrees: MD, MPH
* Title: Associate Prof. of Medicine, Internal Med Residency Program Director
* Organization: GWU
* Address: 2150 Pennsylvania Ave, NW
* Apt/Suite: Suite 5-416
* City: Washington
* State: DC
* Zipcode: 20037
* Office Phone: 202-741-2621
* Email Address: jcatalanotti@mfa.gwu.edu

* 2. Daily Supervisor

Name: Jillian Catalanotti
Degrees: MD, MPH
Title: Associate Prof. of Medicine, Internal Med Residency Program Director
Organization: GWU
Address: 2150 Pennsylvania Ave, NW
Apt/Suite: Suite 5-416
City: Washington
State: DC
Zipcode: 20037
Office Phone: 202-741-2621
Email Address: jcatalanotti@mfa.gwu.edu

* 3. Project Title (250 character limit)
Characteristics of patients whose homeless status is correctly identified as compared to those whose homeless status is unidentified at an urban academic medical center

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
* 5. Sponsor's Research Focus:
Yes - Infectious Disease

* 6. Sponsor's translational level
* (Please select ONE)
T4: Translation to Population Health

* 7. Hypotheses (200 word limit)
We aim to evaluate how accurately physicians and case managers at the George Washington University Hospital (GWUH) identify patients as being homeless. We also aim to describe patient characteristics associated with correct versus incorrect identification of homeless status by the GWUH team.

* 8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
Although much has been written about care teams missing opportunities to identify their patients as homeless, the lack of a source of "known homeless status" to which to compare has made it difficult to quantify the degree to which homeless status goes unidentified. The Homeless Information Management System (HMIS) is the primary database for consumers of homeless services in Washington, DC. It is administered by The Community Partnership, a non-profit organization that administers DC’s Continuum of Care on behalf of DC. After obtaining HMIS data, we will identify whether adults who utilized homeless services during a six-month period were also seen as patients at GWUH, either in the emergency department or admitted as inpatients. For each HMIS-identified individual who was also seen as a GWUH patient, we will review his/her EHR chart and document: (1) whether physicians or case managers caring for the patient identified the patient as homeless in the record, and (2) patient characteristics (demographics, health insurance information, diagnoses, leaving against medical advice, hospital team caring for the patient). We will analyze our data to determine the rate of correct identification of homeless status, and to identify characteristics that may be associated with correct versus incorrect identification.

* 9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
In progress: Submitted Data Use Agreement to the Office of Research Integrity Jan-Feb 2021: Current research assistants will set up REDCap for data entry. TCP will securely transfer data from HMIS to the researchers. [All adults who utilized services in the HMIS system during a 6 month period (September 1 2019-February 29, 2020).] Feb-Aug 2021: The research assistants (students) will use this list to search Cerner (GWUH EHR) for "matches." The list will likely contain 5000-10,000 names. Any matches for individuals who were also seen as patients of GWUH from September 1 2019-February 29, 2020 are "participants" in the study. Those patients' charts will be reviewed by the research assistants, who will enter data obtained from charts into REDCap. This chart review will begin with the current MS2s I'm working with, but when they stop for the summer and step 1 studying, the Gill fellow will pick up the chart reviewing. Thus, this Gill fellow will be mostly data gathering throughout the summer. Fall 2021: statistical analysis of data (Gill fellow will not be involved in this step). Spring 2022: Write up and presentation of results: Gill fellow will be mentored to submit a poster to GW research day and/or to a professional society conference such as Society of Hospital Medicine about the work. (The Gill fellow would likely not be an author on a manuscript publication if it may come from this work, as there are multiple students who designed this project who are already interested in being the manuscript authors, and the timing for manuscript write up would likely be when the Gill fellow is super busy as an MS2. Authorship limitations by journals may limit me from offering that to you, but the chart review research experience and poster presentation can certainly "count" for you on your residency application! You can trust me on that part, I'm the IM residency program director and read 5000 applications per year!)

* 10. Describe the student's role in the project (200 word limit)
Chart review! This will give you experience using Cerner (EHR) and REDCap (chart review software). We will have lots of charts to review! I anticipate that the project will have received IRB approval and the Data Use agreement between The Community Partnership and GWU will have been approved already, such that the data transfer will have already occurred. I hope that some of the students I am currently working with will have already begun chart review, however since they are MS2s, they will not be available to complete all of the charts. We do not know until we receive the data exactly how many charts there will be. It may be a few thousand, so we need more research assistants to help this summer!

* 11. Describe the mentor's role in the project. (200 word limit)
Dr Catalanotti has been working closely with two MS2s and one MS4 on the design of this project. We have submitted for IRB approval as well as for approval of our Data Use Agreement. I am the point person for design and implementation. I will also be the recipient of the data from The Community Partnership. I intend to train the student research assistant in how to use REDCap and Cerner to perform chart reviews and expect that the student will then independently perform the chart reviews with me available to answer questions that come up along the way.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
I have never worked with a Gill Fellow. I'm currently working with Mario Pita and Matthew Tovar, both MS2s, who designed this project and need additional help this summer to carry out the chart reviews! I have worked in the past with Samantha Sobelman, MS4 on a separate homeless health project, and she has been a participant and advisor to us for the design of this project.

* 13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
Selected No (Pending)
Faculty Proposal for MD Student Research by Dr. Yves d’Udekelm

1. Faculty Sponsor

Name: Dr. Yves d’Udekelm
Degrees: MD, PhD
Title: Chief, Division of Cardiac Surgery
Organization: Children’s National Hospital
Address: 111 Michigan Ave., NW
Apt/Suite: Suite W3-402
City: Washington
State: District of Columbia
Zipcode: 20010
Office Phone: (202) 476-2811
Email Address: yves.dudekelm@childrensnational.org

2. Daily Supervisor

Name: Alyssia Venna
Degrees: MBS
Title: Program Lead
Organization: Children’s National Hospital
Address: 111 Michigan Ave., NW
Apt/Suite: Suite 400/500
City: Washington
State: District of Columbia
Zipcode: 20010
Office Phone: 
Email Address: avenna@childrensnational.org

3. Project Title (250 character limit)
Fontan Circulation in Patients with Pulmonary Atresia and Intact Interventricular Septum and Right Ventricle Dependent Coronary Circulation (PA IVS and RVDCC)

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor's Research Focus:
Yes - Cardiology
Yes - Surgery

6. Sponsor's translational level
(Please select ONE)
T2: Translation to Patients

7. Hypotheses (200 word limit)
Current interventional therapies for patients with PA IVS and RVDCC are not equivalent when protecting against sudden unexpected death following a Fontan Procedure.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
We are developing an International Registry of patients with congenital heart disease who have undergone a Fontan surgical procedure. The Fontan Registry is a longitudinal cohort study that aims to study the long-term effects and health outcomes of these patients. This registry will include a subset of patients 1) who were born with PA IVS and developed RVDCC and as a result 2) have undergone a Fontan Procedure as a palliative treatment for this condition. With access to thousands of Fontan Records from around the world, our objectives will be: • To Identify risk factors for sudden death in PA IVS and RVDCC, following a Fontan operation • To elucidate best treatment options for patients with this condition • To answer punctual questions related to performing operations in these patients

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

• The project design makes it likely that the objectives will be achieved
• The project is likely to result in a report of interest to other scholars
• The project fulfills discovery/original research

It has been identified for a long time that patients with PA IVS and RVDCC are at a risk of high mortality within the first years of life. It was generally agreed that once they undergo a Fontan operation, their risk of death would disappear and would be similar to other Fontan patients. It has been identified in Australia that these patients are actually at a very high risk of developing coronary ischemia in the first years after Fontan, putting them at risk of sudden, unexpected death. Although we know that these patients have an abnormal coronary circulation and very high pressures within the right ventricle, there is not much additional understanding of what is happening. Our retrospective and prospective observational study will collect clinical data from hospital records and incorporate them into a registry database. To begin assessing outcomes, an initial retrospective data pull will gather a list of patients who have had a Fontan procedure at one of the participating centers. Follow up data will be collected to evaluate outcomes in the subset of patients with PA IVS and RVDCC. The International Fontan Registry will be an ongoing project.
Our goal is to continue to gather and compare late outcomes on all Fontan patients, but we are first interested in looking at this subset of patients who are dying suddenly, so we can elucidate a possible cause and improve clinical management. We anticipate needing three months to develop a database, collect follow up data from medical records, and analyze results to develop a scientifically just article.

10. Describe the student's role in the project (200 word limit)
The student will work with the Mentor to develop a research database using RedCap. They will review patient electronic medical records and collect information to populate the database. The student will assist in statistical analysis, and will have the opportunity to further enhance their skills through scientific reports, posters and oral presentations. This project will also introduce the student to world renowned pediatric cardiac surgeons who are also participating in this research effort.

11. Describe the mentor's role in the project. (200 word limit)
The mentor will be responsible for overseeing the student’s progress through regular meetings and teaching sessions throughout the summer. The mentor will guide the student to produce high quality research questions and answers, and will aid in enhancing the student’s skills in the development scientific publication.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
A list of students mentored by Dr. Yves d’Udekem: Dr David Glineur, MD, PhD, Consultant Cardiac Surgeon, Cliniques Universitaires St-Luc, Belgium Dr Parla Astarci, MD, Consultant Cardiac Surgeon, Cliniques Universitaires St-Luc, Belgium Dr Nelson Alphonso, M.S., FRCS, FRCSI, Consultant Cardiac Surgeon, Head of the department of paediatric cardiac surgery, Alderhey Hospital, Liverpool, UK Dr Lyubomyr Bohuta, MD, Consultant Cardiac Surgeon, Head of department of paediatric cardiac surgery, Children’s Cardiac Centre, Kyiv, Ukraine Dr Ajay Iyengar, MBBS, PhD student, trainee in the cardio-thoracic surgery program of the RACS.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE
Selected No (Pending
**Faculty Proposal for MD Student Research by Danielle Davison**

* **1. Faculty Sponsor**

  * Name: Danielle Davison  
  * Degrees: MD  
  * Title: Associate Professor  
  * Organization: Department of Anesthesiology and Critical Care Medicine  
  * Address: 2300 M. St. NW  
  * Apt/Suite:  
  * City: Washington  
  * State: DC  
  * Zipcode: 20037  
  * Office Phone: (202) 715-4069  
  * Email Address: ddavison@mfa.gwu.edu

* **2. Daily Supervisor**

  Name: Ivy Benjenk  
  Degrees: RN, MPH  
  Title: Research Coordinator  
  Organization: GWU MFA  
  Address: 2300 M. St. NW  
  Apt/Suite: 7th Floor  
  City: Washington  
  State: DC  
  Zipcode: 20037  
  Office Phone: 917-697-6063  
  Email Address: ibenjenk@mfa.gwu.edu

* **3. Project Title (250 character limit)**

  Thromboelastography (TEG) tests the efficiency of blood coagulation and clot formation and breakdown in a sample of whole blood. It has been used to predict and guide the need for transfusion in liver transplant, trauma, and cardiac surgery patient. In the cardiac surgery and trauma populations, its use has demonstrated a decrease in the use of blood product utilization. The medical bleeding population is often different, with different comorbidities and demographics, and currently, there is not enough evidence in its utilization of TEG in patients with multiple medical comorbidities, especially the critically ill patient who presents with gastrointestinal bleeding. Our own investigatory retrospective analysis may have actually found that utilization of TEG leads to an increase in blood product utilization. The severity of illness scores was noted to be higher in the TEG group leading to an increase in the number of blood product transfusions. This project is a prospective study that aims to better understand the utility of thromboelastography in the medical gastrointestinal bleeding in the critically ill population. The aim of our study is to identify patients who present to GWU hospital with gastrointestinal bleed requiring admission to ICU and assign them to either arm study randomly where one follows the
normal standard of care, and the second follows TEG guided transfusion. We then plan on comparing these two groups of patients with the intent to show noninferiority of the utilization of TEG guided resuscitation.

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


* 5. Sponsor's Research Focus:

* 6. Sponsor's translational level

* (Please select ONE)

T3: Translation to Practice

* 7. Hypotheses (200 word limit)

Thromboelastography (TEG) is a relatively low cost way of analyzing coagulation profile, including clot formation and breakdown in whole blood, providing a more comprehensive global coagulation assessment than routine test (Platelet count, PT/INR, PTT, fibrinogen) [1]. It can help determine which component of whole blood is lacking for optimal blood clot formation. TEG-guided transfusion has been established in trauma, cardiac, abdominal surgery, and liver transplant patient as a more reliable test to assess coagulation[1], yet its use in medical bleeding resuscitation lacks at this time. The significance of this study is to determine the best treatment strategy for gastrointestinal bleeding patients who present to the ICU. Our hypothesis is to determine non-inferiority of TEG guided transfusion versus standard of care when resuscitating a patient who presents to the ICU with a diagnosis of gastrointestinal bleed. This clinical trial will be clustered randomly to TEG-guided resuscitation vs. standard of care.

* 8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).

The goal of the project is to enroll 300 patients. During the summer, we believe that we will be able to enroll 50 patients. The measurable objectives would be to enroll and collect data on 50 patients. Based on the findings, we hope that the student will be able to submit an abstract with preliminary findings.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Patients that present to GWU hospital with a diagnosis of gastrointestinal bleed requiring admission to the ICU will be identified and recruited into the study once deemed to meet the necessary inclusion and exclusion criteria (See below). A detailed patient history will assess the use of anticoagulant, antiplatelet medication, non-steroidal anti-inflammatory medications, or aspirin. All patients admitted to the study will receive coagulopathy laboratory workup evaluation including CBC, PT /INR, PTT, and fibrinogen levels. Based on an alternating month protocol patients will be either in the study arm (TEG directed resuscitation) vs Standard of care (SOC). In months where patients are to be designated for TEG-guided resuscitation, providers will be encouraged to obtain a thromboelastography on all Gastrointestinal bleed patients admitted to the ICU. on other months treatment can be determined as per standard of care. A TEG can be performed at the discretion of the treating attending physician. Patients in either arm will otherwise receive appropriate interventions for evaluation and cessation of bleeding which includes but is not limited to evaluation by gastroenterology for potential endoscopic gastroduodenoscopy and/or colonoscopy, interventional radiology for embolization, or general surgery for resection. For months where providers will be encouraged to perform a TEG, they will also be encouraged to guide resuscitation based on results of the TEG.

10. Describe the student’s role in the project (200 word limit)

During the TEG month, the student will work to screen patients, ensure that patients receive a TEG and are transfused based on the TEG guidelines, and collect data. During non-TEG months, the student will only collect data.

11. Describe the mentor’s role in the project. (200 word limit)

Introduce the student to the ICU team, teach them about the research process, educate them about how to collect the data, help them trouble shoot challenges, ensure they have access to necessary computer systems, help them interpret preliminary data and submit the abstract.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

Dr. Davison has worked with numerous students over the past years. She has worked on numerous abstracts and publications were students have served as authors and first authors. She Director of Critical Care and the department has had numerous Gill Fellows that have worked on successful projects in the past.

13. Do you have or will you obtain IRB approval for this project?

Please note: Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)

Selected No (Pending)
Faculty Proposal for MD Student Research by Teresa Doerre

1. Faculty Sponsor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Teresa Doerre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td>MD</td>
</tr>
<tr>
<td>Title:</td>
<td>Dr.</td>
</tr>
<tr>
<td>Organization:</td>
<td>MFA</td>
</tr>
<tr>
<td>Address:</td>
<td>2300 M St</td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td>Washington</td>
</tr>
<tr>
<td>State:</td>
<td>DC</td>
</tr>
<tr>
<td>Zipcode:</td>
<td>20037</td>
</tr>
<tr>
<td>Office Phone:</td>
<td>2027413300</td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:tdoerre@mfa.gwu.edu">tdoerre@mfa.gwu.edu</a></td>
</tr>
</tbody>
</table>

2. Daily Supervisor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Dr. Doerre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td></td>
</tr>
<tr>
<td>Title:</td>
<td></td>
</tr>
<tr>
<td>Organization:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td></td>
</tr>
<tr>
<td>State:</td>
<td></td>
</tr>
<tr>
<td>Zipcode:</td>
<td></td>
</tr>
<tr>
<td>Office Phone:</td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
</tr>
</tbody>
</table>

3. Project Title (250 character limit)

Meniscal Surgery After Successful Anterior Cruciate Ligament Reconstruction: A Propensity Matched Retrospective Case-Control Study

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor’s Research Focus:
Yes - Surgery

6. Sponsor’s translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Meniscal tears following reconstruction of the anterior cruciate ligament (ACL) of the knee are infrequent but serious sequelae. Recent evidence has emerged suggesting that risk factors for subsequent meniscal injury include baseline characteristics such as sex, age, and delay to index surgical procedure. The evidence supporting these claims, however, is primarily based on single institution studies and has not been substantiated in a large, national sample. We hypothesize that patient characteristics such as BMI, age, sex, and comorbidity burden influence the rate of subsequent meniscal injury after ACL reconstruction.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
Data will be gathered using the PearlDiver database, a national insurance claims database containing over 120 million patient records. These data are anonymized prior to collection, and as such no individual charts will need to be reviewed. The primary goals of this project are to analyze the data in the context of existing literature, produce a publishable abstract and manuscript, and submit these to the appropriate meetings and publications.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This is a retrospective, propensity-matched case-control study examining risk factors associated with proceeding to meniscal surgery after successful reconstruction of the ACL. Data will be gathered prior to the student starting the fellowship. The goals for the student will be to conduct a literature review (2 weeks), develop an abstract for submission to a national conference (2 weeks), and prepare a manuscript for submission (4 weeks). Editing by orthopaedic residents and faculty is expected to take another several weeks, and the student will coordinate submission of project deliverables by late Summer or early Fall. Prior evidence on this subject suggests that patient characteristics such as age, sex, and time between injury and index ACL surgery are risk factors for future meniscal surgery. These results have primarily been described in retrospective single institution studies, and many other potential risk factors for future meniscal surgery have not been analyzed. Return to the operating room is a serious event, and it is important that orthopaedic surgeons use known risk factors to guide appropriate patient selection. This study
has the potential to help guide practice in one of the most common orthopaedic procedures performed across the country.

10. Describe the student's role in the project (200 word limit)
Students will be expected to conduct a thorough literature review on knee pathology, specifically focusing on published work examining surgical outcomes after knee arthroscopy, ACL reconstruction, and, meniscus surgery. The student will be expected to write an abstract suitable for submission to a national meeting and a manuscript fit for publication in a peer-reviewed journal. The student will also be encouraged to spend time in clinic and the operating room with Dr. Doerre as their schedule allows.

11. Describe the mentor's role in the project. (200 word limit)
You will be working with Dr. Doerre, a Sports fellowship trained orthopaedic surgeon at GW. Dr. Doerre will serve as the primary point of contact for this study and will support the student in writing, editing, and submitting all project deliverables. Additionally, Dr. Doerre hopes to serve as a mentor for the student throughout their remaining years in medical school and in their efforts to match into an orthopaedic residency program.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Our mentor team has successfully incorporated student researchers into the team over the past year, resulting in several submitted abstracts and published manuscripts. We have not had a Gill Fellow in the past, but our structure is such that a student will be able to contribute to the research team from day 1.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE)

Selected No (Not Required)

Please specify why it is not required.
Data is anonymized and individual patient records will not be reviewed.
Faculty Proposal for MD Student Research by Melissa Dvorsky, PhD

1. Faculty Sponsor

Name: Melissa Dvorsky, PhD  
Degrees: PhD, MS, BA  
Title: Assistant Professor of Psychology and Behavioral Health  
Organization: Children's National Hospital  
Address: 111 Michigan Ave NW  
Apt/Suite: Center for Translational Science  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 614-323-800  
Email Address: mdvorsky@childrensnational.org

2. Daily Supervisor

Name: Melissa Dvorsky  
Degrees: PhD  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address: 

3. Project Title (250 character limit)

Development and Evaluation of a Technology-Enhanced Executive Functioning Skills Intervention for Adolescents with ADHD

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Pediatrics
Yes - Psychiatry

6. Sponsor's translational level
(Please select ONE)
T2: Translation to Patients

7. Hypotheses (200 word limit)
Aim 1: Design, build, and refine an online platform/mobile app for improving executive functioning skills engagement for adolescents with Attention-Deficit/Hyperactivity Disorder (ADHD) and their families. We will use an iterative user-centered design process whereby qualitative feedback will be obtained from potential end-users including adolescents, parents, and school providers. We will a) conduct focus groups with youth, parents, and providers before, during, and after development to guide and prioritize content and features; and b) conduct an open trial, extended formative usability testing, to inform a refined protocol for the tool during treatment. Hypothesis 1a: Youth with ADHD, their parents, and mental health providers will identify key content and themes for features of the digital health tool. Hypothesis 1b: Youth with ADHD, their parents, and mental health providers will rate the intervention as feasible, easy to use, acceptable, and responsive to their needs. Participants who receive the digital augmentation treatment will demonstrate significant improvements in skill utilization (primary treatment target) at post-treatment. We also hypothesize that the technology use will be associated with mechanisms of skill utilization (i.e., motivation/reward responsivity, executive functioning, social support) to skill utilization which is associated with subsequent skill utilization and improved outcomes.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
This project is part of an ongoing NIMH-funded study examining the feasibility, acceptability, usability and initial efficacy of a technology-enhanced executive functioning skills intervention designed to promote treatment engagement, skills use, and treatment response for adolescents with ADHD. The project is currently enrolling participants (enrollment began November, 2018). 45 participants (20 youth ages 6-17) with ADHD, 20 parents, and 5 providers) will complete three separate focus group/qualitative interview sessions. Participants will complete 90-minute focus group/qualitative interview sessions either in-person or via videoconference and provide ratings of the technology intervention usability. 5 additional adolescents with ADHD (ages 11-15) will participate in the open trial/extended usability testing of the technology-enhanced intervention and complete pre/post-treatment ratings. Assessments for the open trial are conducted pre-intervention, weekly during treatment, immediate post intervention, and 6-months follow-up. Skills utilization and treatment adherence is assessed by observed and self-report measures in addition to real-time data collected via the digital platform.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Despite evidence that treatments for adolescents with ADHD are effective, 41-60% of adolescents receiving these evidence-based behavioral treatments (EBTs) show little improvement, and skills rarely generalize beyond treatment sessions. Adolescents also demonstrate notoriously poor treatment utilization and up to 90% discontinue treatment regardless of its efficacy. Novel approaches are needed to empower adolescents’ skills utilization, address reward sensitivity, and support parents’ involvement to promote the transfer of skills into daily-life contexts, when it is most needed. Digital health (dHealth) strategies offer unprecedented opportunities for increasing adolescents’ skills utilization, boosting effectiveness of EBTs, and reducing time and cost of care. This project leverages dHealth to overcome the barriers specific to ADHD by: (1) providing frequent opportunities for immediate reinforcement at the point-of-performance and motivating adolescents with game mechanics; (2) using interactive tools to reinforce in-vivo skill use and compensate for inherent EF deficits (e.g., forgetting); and (3) promoting social support and parents’ consistent reinforcement. By engaging these intermediate targets, we hypothesize the dHealth tool will increase adolescents’ in vivo skill utilization. This study aims to develop, refine, and preliminarily test a scalable dHealth augmentation that promotes skills utilization during treatment for young adolescents with ADHD. This project emphasize training in: 1) interactive health technology, 2) adherence promotion, 3) methods and statistical approaches for ecologically valid, real time assessment and adaptive intervention designs, 4) mechanism-based refinement and evaluation, as well as grant writing skills and dissemination. Intervention content is delivered in clinic and school settings through the ADHD and Learning Differences program at Children’s National Hospital. We are currently recruiting 20 youth ages 6-17, 20 parents, and 5 providers to participate in focus groups/qualitative interview sessions and complete ratings of usability/feasibility on the digital tool over the next 6 months. We are simultaneously recruiting 5 adolescents with ADHD to participate in an open trial investigation of the digital platform tool and the executive functioning intervention to determine if the digital tool provides added benefits to treatment adherence, engagement, and overall response relative to pre/post comparison results with prior trials. For the open trial, we are targeting enrollment to adolescents with ADHD who have not previously participated in an executive functioning or organizational skills intervention. Screening and consenting will be conducted over the phone and with the use of REDCap, and assessments are conducted pre-treatment, during treatment (weekly), and postintervention and 6-months follow-up. This project is currently in the first year of participant enrollment and is funded by the National Institutes for Mental Health (NIMH) through at least 7/1/2024. We are actively enrolling participants, developing/refining intervention content, and conducting initial assessments. Assessments are conducted at study visits at Children’s National Hospital and via online surveys through REDCap.

10. Describe the student’s role in the project (200 word limit)

Specific roles for a research fellow on this project include co-facilitating focus groups and/or qualitative interviews and in-clinic data collection. The fellow also has the opportunity to complete data analyses with prior datasets from studies with adolescents with ADHD, including a large Randomized Controlled Trial of the executive functioning skills intervention and a longitudinal observational study of adolescents with ADHD, service utilization, and psychosocial functioning as well as substance use across the transition from high school to college. It is expected that the
fellow will prepare an abstract for national conference presentation and participation in manuscripts will be encouraged, depending on the fellow’s interests. The fellow will also work with our ADHD Learning Differences team to observe outpatient encounters with the executive functioning skills intervention program and contribute to clinical and community outreach initiatives in the ADHD Learning Differences Program.

11. Describe the mentor’s role in the project. (200 word limit)
The mentor will take primary responsibility for the day-to-day supervision of the Gill fellow and will directly support training for data collection and analyses. The mentor will actively engage the medical student mentee in all aspects of ongoing research in the ADHD Learning Differences program, including regular attendance at research team meetings, participant enrollment, data collection, developing abstracts for local and national conference submissions, and preparing manuscripts for publication. The mentor will also engage the Gill fellow in other training opportunities in Pediatrics, Psychiatry, Translational Research, and related areas as they come available at Children's National and locally.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. Dvorsky has worked with a number of medical students. Before starting her faculty position at Children’s National Hospital, Dr. Dvorsky mentored two medical students and four child/adolescent psychiatry fellows in ADHD research and clinical initiative as part of her role in the Hyperactivity, Attention, and Learning Problems program at the University of California, San Francisco. Dr. Dvorsky has not previously mentored any Gill Fellows, although she works closely with Dr. Randi Streisand (Co-Investigator on the proposed project) who has mentored multiple Fill fellows in behavioral diabetes/adherence research in recent years. Dr. Dvorsky will collaborate with Dr. Randi Streisand on this project and she will provide additional guidance to Dr. Dvorsky as needed in supporting the medical student training for the Gill Fellowship.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE
Selected Yes

Please provide IRB number and date
IRB Number: Pro00014877
IRB Date: 11/4/2020
Faculty Proposal for MD Student Research by Tatiana Efimova

1. Faculty Sponsor

Name: Tatiana Efimova  
Degrees: PhD  
Title: Assistant Professor  
Organization: Departments of Anatomy and Cell Biology, and Dermatology, SMHS, the GW Cancer Center  
Address: 800 22nd Street NW  
Apt/Suite: Room 8160  
City: Washington  
State: DC  
Zipcode: 20052  
Office Phone: 202-994-2753  
Email Address: tefimova@gwu.edu

2. Daily Supervisor

Name:  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address:

3. Project Title (250 character limit)
Evaluating ex-vivo responses to combining p38delta inhibition with immune checkpoint blockade for treatment of advanced cutaneous squamous cell carcinoma.

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Cancer

6. Sponsor's translational level
(Please select ONE)
T0/T1: Basic Science Discovery and Initial Translation to Humans

7. Hypotheses (200 word limit)
Our preclinical data using murine in vivo models of skin and head and neck squamous carcinogenesis led us to hypothesize that genetic or pharmacologic targeting of p38delta mitogen-activated protein kinase: (1) modulates tumor-host interactions, (2) stimulates anti-tumor immunity and (3) enhances the efficacy of ICB immunotherapy. Here we propose to employ a recently described sophisticated patient-derived ex-vivo organotypic tumor model that incorporates features of the native tumor immune microenvironment to test these hypotheses and determine the therapeutic efficacy of combining p38delta inhibition with ICB immunotherapy for treatment of advanced cutaneous squamous cell carcinoma.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
Immunotherapies have shown impressive clinical benefits in patients with several cancer types, including high-risk CSCC, the deadliest form of non-melanoma skin cancer. Programmed death receptor-1 (PD-1) inhibitors are currently standard-of-care for patients with metastatic or locally advanced CSCC. However, intrinsic resistance to immunotherapy remains a challenge for a majority of patients, while the molecular mechanisms leading to resistance remain largely unknown. Through a novel three-dimensional microfluidic ex vivo culture of patient-derived organotypic tumor spheroids (PDOTS), the dynamic interactions between explanted tumor and a patient’s autologous tumor-infiltrating immune cells can be examined, and sensitivity to immune checkpoint blockade (ICB) immunotherapy evaluated and quantified. Recently, ex vivo response to anti-PD-1 therapy with the PDOTS platform was described across several immunotherapy-responsive tumor types, such as melanoma and non-small-cell lung cancer. Our goal is to validate this emerging methodology for high-risk CSCC and set the foundation for interrogating the tumor microenvironment (TME) ex vivo with treatment combinations. We will test the hypothesis that complementary p38delta inhibition improves anti-tumor response to PD-1 blockade. This hypothesis is supported by novel findings from our laboratory that p38delta genetic deletion in the TME promotes anti-tumor immunity and delays tumor growth in mouse models of CSCC and oral SCC.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

We will test the abovementioned hypotheses and determine the therapeutic efficacy of combining p38delta inhibition with ICB immunotherapy for high-risk CSCC in the following Specific Aims: Aim 1. Validate the PDOTS ex vivo platform in modeling response to PD-1 blockade in advanced CSCC through immunophenotyping, cytokine profiling, and RNA-seq analyses. Immunophenotyping the various immune cell populations establishes the feasibility of profiling the patient-derived CSCC tumor samples. Analyzing cytokine release from PDOTS ± PD-1 blockade will show which cytokines are upregulated, and evaluating paired biopsy specimens for mRNA expression from patients before and after treatment with ICB would reinforce identified cytokines as potential markers for response or resistance to PD-1 blockade. Aim 2. Determine the therapeutic efficacy of combining p38delta inhibition with PD-1 blockade in an ex vivo patient-derived model of advanced CSCC. Our recent preclinical findings detailed above provide a strong rationale for combining p38delta inhibition with PD-1 blockade in an ex-vivo 3D microfluidic culture of patient-derived CSCC tumor samples. Increased acute cytokine production, increased mRNA expression for the corresponding cytokines, and increased T-cell activation would support the hypothesized complementary anti-tumor response of p38delta inhibition alongside PD-1 blockade. Methodology: We will prepare PDOTS as ex vivo model of CSCC that retains key features of the native immune TME, using published and validated protocols. Fresh tumor specimens are obtained following ablative surgery via an IRB-approved protocol (submitted for approval). Briefly, following physical and enzymatic dissociation of fresh tumor specimens, and filtering of the resulting heterogeneous mixture of tumor tissue fragments over a series of filters, several fractions of varying sizes are isolated. The S2 (40-100 uM) fraction is used for ex vivo culture, while the S1 (>100 uM) and S3 (<40 uM) fractions are banked or used for immune cell profiling. The S2 spheroid-collagen mixture is injected into a 3D microfluidic chamber (DAX-1 3D cell culture chip, AIM Biotech) and 250-300 ul of culture media is added containing either IgG or anti-PD-1 monoclonal antibodies at the desired concentration in the presence or absence of the desired concentration of p38delta inhibitor Compound 62 (the optimal concentration is determined following dose response experiments). The ex vivo culture is maintained in the sterile 37C incubator for 5-9 days. The terminal readouts include life/dead cell staining, immunofluorescence staining, secreted cytokine profiling, and RNA-Seq paired with the profiling of immune infiltrating cells with CIBERSORT computational platform. Immunophenotyping is performed to ascertain a consistent detection of a range of lymphoid and myeloid populations, validating retention of key autologous immune cells. When evaluating the response to PD-1 blockade in the PDOTS, we anticipate that acute cytokine production, corresponding to T-cell infiltration of the tumors, will increase with anti-PD-1 treatment and that mRNA expression of key cytokines will match the secreted cytokine profiling results. We anticipate that pharmacologic p38delta inhibition with specific inhibitor Compound 62 will enhance anti-tumor immune response to PD-1 blockade. Statistical analysis will be conducted using GraphPad Prism software, and student’s t-tests will be used to evaluate differences between groups with P<0.05 considered statistically significant.

10. Describe the student’s role in the project (200 word limit)
The student will design and perform the experiments outlined in this proposal, under the guidance and supervision provided by Dr. Efimova and Dr. Alexi Kiss, a Research Scientist in Dr. Efimova’s lab. The student will learn how to perform all the relevant techniques, including, but not limited to, preparation of PDOTS from fresh tumor specimens, the 3D microfluidics ex vivo culture methods, Live/Dead imaging, immunofluorescence staining using cell surface markers to delineate tumor cells and immune cells, secreted cytokine profiling using commercially available multiplexed bead-based kits, RNA extraction, etc., as needed for the assessment of the specified experimental readouts. The student will be trained how to carry out data analysis and preparation of the figures for presentation(s) and future manuscript, and participate in weekly group meetings and regular individual meeting with Drs. Efimova and Kiss to assess his/her progress. To further enhance the translational appreciation of the proposed work and broaden his/her medical training, the selected student will have the opportunity to attend relevant basic science and clinical didactics offered by the Dermatology Residency Training Program as well as rotate one half day every other week in the MFA dermatology practice with Dr. Adam Friedman.

11. Describe the mentor's role in the project. (200 word limit)
Dr. Efimova has the expertise, leadership, training, and enthusiasm necessary to successfully serve as the mentor in the proposed project. She has a broad background in mechanisms of skin neoplasia, and a long-standing interest in elucidating the cell type-specific roles of p38 isoforms in cutaneous carcinogenesis, using mouse models as well as human 3D organotypic models of skin cancer development. Dr. Efimova will provide guidance and supervision to the student in designing and performing the studies outlined in the proposal. She will present the student with the literature pertinent to the project and challenge him/her to search the literature independently. Dr. Kiss, a Research Scientist in Dr. Efimova's laboratory who is an expert in human skin and CSCC organotypic 3D culture technology and has an extensive experience with the methodologies to be employed in this project, will provide hands on training and directly oversee the student's performance. Dr. Efimova will involve the student in weekly group meeting and weekly individual meetings to assess his/her progress. Dr. Efimova has an open door policy and welcomes frequent informal interactions and discussions. Dr. Friedman and Dr. Patel will offer a valuable perspective regarding the potential translational and clinical relevance of the research findings.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Current: Chapman Wei, 07/2019 - present, Pre-Doctoral Dermatology Research Fellow MD expected May 2021), a recipient of the 2019 Washington DC Dermatologic Society Grant and of the 2020 La Fondation La Roche-Posay Grant to conduct research projects in my lab. Nagasai Adusumilli, 07/2020 – present, Pre-Doctoral Dermatology Research Fellow (MD expected May 2022) Previous: Ramsin Yadgar, summer of 2016 Stephanie Kao, summer of 2017, a 2017 Gill Fellow Rose Milano, summer of 2018, a 2018 Gill Fellow Emily Murphy, 07/2018 – 07/2019, Pre-Doctoral Dermatology Research Fellow, a recipient of the 2019 Washington DC Dermatologic Society Grant to conduct a research project in my lab Samuel Yeroushalmi, summer of 2019, a recipient of 2019 Health Services Scholarship Sarah Millan, summer of 2019, a recipient of the 2019 Dermatology Foundation Diversity Research Supplement Award Julia Weiner, summer 2020, a recipient of 2020 Health Services Scholarship

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE
Selected No (Pending)
Faculty Proposal for MD Student Research by Julia Finkel

1. Faculty Sponsor

Name: Julia Finkel
Degrees: MD
Title: Director of Pain Medicine Research and Development Professor of Anesthesiology, Pediatrics and Critical Care Medicine, George Washington University
Sheikh Zayed Institute for Pediatric Surgical Innovation, Children’s National Health Organization: System
Address: 111 Michigan Ave. NW
Apt/Suite:
City: Washington
State: DC
Zipcode: 20010
Office: 202-476-4867
Phone:
Email: jfinkel@childrensnational.org
Address:

2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email
Address:

3. Project Title (250 character limit)

Development of a Novel Device for Evaluation of Chemotherapy-Induced Peripheral Neuropathy

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Neurology

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Determine the correlation between the nPRD derived nociceptive index and the two assessment tools (ped-m TNS and TNS-PV) for chemotherapy-induced peripheral neuropathy (CIPN in pediatrics. Hypothesis 1a: The primary endpoint is the correlation between the nPRD derived nociceptive index, ped-m TNS and the TNS-PV. This endpoint was identified because these assessment tools have been found to be the most sensitive measures of CIPN in children, as such, it is the best tool to compare against this novel assessment of CIPN. The demonstration of a high correlation with the TNS-PV or ped-m TNS would provide intitial data to support the use of this novel approach for the assessment of CIPN.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
This pilot study utilizes pupillary reflexes to characterize pupillary responses to neuro-selective neurostimulation (nPRD) of the three major sensory nerve fibers (C, Ad, and Aβ). The characterization of the pupillary responses is used to generate a nociceptive index. This nociceptive index will allow us to determine a disease-specific phenotype among pediatric CIPN patients that can be monitored over time. Ultimately, we will synthesize the information about the effects of neuropathic disease-states on the nociceptive index into algorithms that detect the specific stages of disease and provide clinical decision support. The primary measurable endpoint for Aim 1 is the correlation of nPRD measures (5 Hz, 250 Hz, and 2000 Hz for C, Ad, and Aβ, respectively) and the standard of care CIPN diagnostic and assessment measures (ped-m TNS and TNS-PV). The correlation is calculated by comparing the serial measurements over time from before the start of the chemotherapeutic intervention to a year after the end of the chemotherapeutic intervention.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
• The project design makes it likely that the objectives will be achieved
• The project is likely to result in a report of interest to other scholars
• The project fulfills discovery/original research
This is a single site study that aims to develop a novel device to evaluate and characterize chemotherapy-induced neuropathic pain. Subjects can be enrolled before chemotherapy and at any subsequent point. This enables the study of the onset of neuropathic symptoms as well as the characterization of the disease over time. There is no randomization or blindness in the present study. For Aim 1, the AlgometRx device will be used to assess the neurostimulus induced pupillary reflex dilation (nPRD). We will apply the electrodes to an index finger, not in an area of spontaneous pain. Each of the three fiber types will be assessed. Each measurement takes only 10 seconds with only 1 second of stimulus. We will use standardized innocuous intensities for each fiber derived from our preliminary studies (1.5mA for C and Ad and 3.0mA for Aβ). There will be a wait of 1 minute between each assessment. The nPRD testing procedure requires a maximum of 5 minutes. These measurements will be combined into a composite measure to form a nociceptive index for each measurement. This index will be compared to the other assessments (ped-m TNS and TNS-PV). After the baseline nPRD and other assessments, the patient will be monitored throughout the course of their treatment and follow-up. As this is an observational study, there will be no change to the treatment for any patient due to research activities. For each participant, following informed consent, initial measurements will be taken according to the aforementioned procedures. These measurements will then be repeated at each subsequent treatment or clinic visit for a period of one year. Depending on the chemotherapeutic agent the patient is receiving, they will undergo assessment by either the ped-m TNS or the TNS-PV.

10. Describe the student's role in the project (200 word limit)
The student would be directly involved in the recruitment, enrollment and data collection for this project. The student would be trained in the use of the devices associated with the protocol and be given the responsibility of recruiting participants from the patient population at Children's National. This would maximize the student’s contact with patients as well as their time spent working with other staff and physicians to identify potential participants. The student would work directly with study participants for the duration of the study and serve as their main point of contact with the research team. The student will also be involved in the processing and analyzing of data generated from this study and be a major contributor to this method that could change the standard of care for many patients.

11. Describe the mentor's role in the project. (200 word limit)
The mentor will facilitate and oversee the involvement of the student in the project. The mentor will ensure that the student is able to conduct research and interact with patients with some independence. This will not only serve to benefit the student but will also greatly benefit the development of this technology. In addition, the mentor will provide lectures on material pertinent to the technology which will serve as supplemental education for the student.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
In the past couple of years, this team has mentored medical students from GW and other schools. The students have participated in various capacities on numerous research projects. After conducting the research and analyzing the data, many have gone on to present their research. More specifically, this team has hosted two Gill Fellows (David Strum and Tess Whiteside) who have gone on to present their research at GW Research Days.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE)

Selected No (Pending)
Faculty Proposal for MD Student Research by Gurwinder Gill

* 1. Faculty Sponsor

* Name: Gurwinder Gill
* Degrees: MD
* Title: Assistant Professor of Anesthesiology and Critical Care Medicine
* Organization: GWU MFA
* Address: 2300 M St. NW
* Apt/Suite: 7th Floor
* City: Washington
* State: DC
* Zipcode: 20009
* Office Phone: 202-715-4753
* Email Address: ggil@mfa.gwu.edu

* 2. Daily Supervisor

Name: Ivy Benjenk
Degrees: RN, MPH
Title: Research Coordinator
Organization: GWU MFA
Address: 2300 M St. NW
Apt/Suite: 7th Floor
City: Washington
State: DC
Zipcode: 20009
Office Phone: 9176976063
Email Address: ibenjenk@mfa.gwu.edu

* 3. Project Title (250 character limit)
Prospective, randomized, dose-response study of Angiotensin II for anesthesia-induced hypotension in patients on ACE inhibitors or ARBs

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor’s Research Focus:
Yes - Anesthesiology

6. Sponsor’s translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Anesthesia induced hypotension is one of the most common complications of anesthesia induction. This drop in blood pressure is due to drugs which are used as part of a standard induction. The standard of treatment for correcting this hypotension is to administer a drug to increase the blood pressure back to normal, the most commonly used drug being phenylephrine. Angiotensin converting enzyme inhibitors (ACEi) or angiotensin II receptor blockers (ARB) are medications taken at home, commonly used to treat chronic hypertension (high blood pressure). These drugs can increase the risk that a patient will have have anesthesia-induced hypotension and for this hypotension to persist even when correctly treated. ATII has been shown as an effective treatment of anesthesia induced hypotension in patients that take ACEi and ARBs in two previous studies, however these studies did not focus on the best dosage for ATII (they focused on general efficacy). There is no literature on establishing a dose-response curve for ATII. Since the appropriate dose of ATII is dependent on the patient's weight, the amount given to each patient is different. A dose response curve will enable physicians to quickly determine

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
The goal of this project is to consent approximately 1000 patients and enroll approximately 100 patients (the trial will begin prior to the student's summer involvement and will continue after the summer) who are scheduled for elective surgeries and take ACEi or ARB medications in the community. We only intend to enroll 100 patients in this study, but the incidence of anesthesia-induced hypotension in this group is about 10%.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
Patients will be randomly allocated into 4 groups: standard-of-care (G0), 2.5ng/kg/min (G2.5), 5ng/kg/min (G5), 10ng/kg/min (G10). Standard-of-care (G0) will receive normal saline infusing at 0.1ml/min. T After randomization, the research team member will set the rate of the infusion pump. The infusion rate will be weight-adjusted for the patients group (G2.5, G5, or G10). If the patient is in the G0 group, the rate of infusion of NS will be 0.1ml/min. The pump screen will be covered (piece of paper taped over the screen) so the provider will not know the rate of infusion. The anesthesiology team members, surgical team, OR nursing, and patient will remain blinded to study group assignment. In the case of emergency, the anesthesia provider may remove the tape over the IV pump and view the infusion rate setting. Blood pressure readings will cycle every 2
If patient becomes hypotensive, the anesthesiology provider will press the Start button on the study drug IV pump and continue monitoring SBP response as well as patient's other vital signs. For the duration of the study period, the anesthesiology provider is also at liberty to continue his/her routine practice with respect to patient management, including the provision of hypotension treatment, such as reduction of anesthetic gases, delivery of intravenous fluids, or administration of vasopressor medications. If the patient should become hypertensive after the drug infusion is started, the anesthesiology provider will turn off the infusion and allow the blood pressure to return to normal. The study drug may be restarted if the patient becomes hypotensive again. If the study drug must be stopped 3 times due to hypertension, it is to remain off after the third incident, the study terminated, with the continuation of standard of care management. At the end of the study period the ATII infusion will be weaned under direction of the research team. Weaning will occur in the following manner: at the end of the study period, the dose of the infusion will be halved every 2.5mins, until the infusion rate reaches 1.25ng/kg/min. As this weaning will occur at the end of the study period, it will not affect blinding of the anesthesiology provider.

* 10. Describe the student's role in the project (200 word limit)
The student will be responsible for screening for potential patients each week and calling eligible patients to participate in the study. Students would the consent interested patients in-person in the pre-admission testing area or in the pre-operative area. After consent is obtained, the student would be responsible for randomization, going to the operating room with the patient, and setting up the IV infusion pump to the correct rate (based on randomization assignment). If the patient ultimately has anesthesia-induced hypotension and is given ATII or placebo, the student will be responsible for collecting data on blood pressure response, safety events, and use of other vasopressors and entering the data into RedCap. The student will also be responsible for assistance with weaning as the clinical team will be blinded to the ATII dose.

* 11. Describe the mentor's role in the project. (200 word limit)
Dr. Gill will help ensure that the student meets all members of the anesthesia faculty and that the faculty is aware of the study. Dr. Gill will also introduce the student to the pre-admission testing, PACU, and OR staff, so that every understands the study and the student's role. Dr. Gill will ensure that the student is competent to calculate dosing rates, program the pump, and follow the weaning procedure. Ivy Benjenk will ensure that the student has CITI training, IRIS account, Redcap account, scrub access, and Cerner access.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
While both Dr. Gill has not previously had Gill Fellows, Dr. Gill loves working with students and is excited to have a student on board for this innovative clinical trial. Student involvement in research in the Department of Anesthesia has grown tremendously over the last year. Currently, one medical student is playing a significant role consenting, enrolling, and collecting data for a randomized controlled trial of trigger point injections in anterior cervical surgery. The department also led a student-run COVID-19 registry which led to numerous student-led conference abstracts.

* 13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
Selected Yes

Please provide IRB number and date

* IRB Number: NCR202213
* IRB Date: 09/25/2020
Faculty Proposal for MD Student Research by Monika Goyal

1. Faculty Sponsor

Name: Monika Goyal
Degrees: MD, MSCE
Title: Associate Division Chief, Director of Academic Affairs & Research; Associate Professor of Pediatrics & Emergency Medicine
Organization: Children's National Hospital
Address: 111 Michigan Ave NW

2. Daily Supervisor

Name: Meleah Boyle
Degrees: MPH
Title: Lead Clinical Research Coordinator
Organization: Children's National Hospital
Address: 111 Michigan Ave NW

3. Project Title (250 character limit)
Sexually transmitted infections (STIs) and medication adherence in the ED: Development of a mHealth intervention

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor’s Research Focus:
Yes - Pediatrics
Yes - Emergency Medicine

6. Sponsor’s translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
This is a pilot study to test the impact of a text messaging intervention, including reminders and support, to improve medication adherence following an STI diagnosis in the emergency department (ED). We hypothesize that compared to historic data, STI treatment adherence will be at least 20% higher among patients who receive the two-way text messaging intervention.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
The overarching goal of this research study is to increase prescription fill rates and medication adherence through a text message-based (mHealth) intervention for adolescents diagnosed with an STI and prescribed antibiotic treatment in the ED. The objective is to pilot test an mHealth intervention for the delivery of medication reminders, support, and sexual health information for adolescents.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
• The project design makes it likely that the objectives will be achieved
• The project is likely to result in a report of interest to other scholars
• The project fulfills discovery/original research

Although adolescents and young adults represent only 25% of the sexually active population, they account for nearly 50% of all new diagnosed STIs annually. [1,2] Failure to diagnose and treat STIs in a timely manner can lead to pelvic inflammatory disease, ectopic pregnancy, infertility, and facilitation of human immunodeficiency virus (HIV) transmission. We recently found that less than 40% of our patients had filled their prescriptions for treatment of STIs. [3] In addition, interviews with almost 20 adolescents who were diagnosed with STIs in our ED elicited the following barriers to treatment adherence: forgetfulness (88%), transportation (88%), cost (94%), and lack of insurance card (94%). (unpublished data) Given our recent findings, we propose using mHealth technology to address this issue as nearly all teens have a smartphone and one-third send more than 100 text messages daily. [4,5] We have developed a text messaging intervention with feedback from adolescents, and the next step is to conduct a pilot test of the intervention. The activities related to the pilot study include enrollment of eligible patients, monitor and communicate with adolescents through the text messaging platform, connect patients to resources to address barriers, extract data from the electronic health record, data cleaning/entry,

10. **Describe the student's role in the project (200 word limit)**

The student will participate in all the activities associated with this research study, including enrollment of eligible patients from the emergency department, monitor and communicate with adolescents through the text messaging platform, connect patients to resources to address barriers, extract data from the electronic health record, data cleaning/entry, and analysis.

11. **Describe the mentor's role in the project. (200 word limit)**

Dr. Goyal and her team will oversee and lead all the research activities.

12. **Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)**

Since 2012 our mentoring team has had over 10 medical students participate in research, of those 4 students were Gill Fellows. The medical students engaged in a myriad of activities including medical record reviews, data entry using REDCap, phone interviews, literature reviews, in person surveys, and interviews. Three of our students have presented their research at national conferences and two of our students completed their projects including publications in JAMA Pediatrics, Journal of Adolescent Health and Pediatric Emergency Care.

13. **Do you have or will you obtain IRB approval for this project?**

Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE)

Selected Yes

**Please provide IRB number and date**

IRB Number: Pro00013795

IRB Date: 9/2/2020
# Faculty Proposal for MD Student Research by Rana F Hamdy

## 1. Faculty Sponsor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Rana F Hamdy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td>MD, MPH, MSCE</td>
</tr>
<tr>
<td>Title:</td>
<td>Assistant Professor of Pediatrics</td>
</tr>
<tr>
<td>Organization:</td>
<td>Children's National Hospital</td>
</tr>
<tr>
<td>Address:</td>
<td>111 Michigan Ave NW</td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td>West Wing 3.5, Suite 100</td>
</tr>
<tr>
<td>City:</td>
<td>Washington</td>
</tr>
<tr>
<td>State:</td>
<td>DC</td>
</tr>
<tr>
<td>Zipcode:</td>
<td>20010</td>
</tr>
<tr>
<td>Office Phone:</td>
<td>2024765051</td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:rhamdy2@childrensnational.org">rhamdy2@childrensnational.org</a></td>
</tr>
</tbody>
</table>

## 2. Daily Supervisor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Rana F. Hamdy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td>Same as above</td>
</tr>
<tr>
<td>Title:</td>
<td></td>
</tr>
<tr>
<td>Organization:</td>
<td></td>
</tr>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td></td>
</tr>
<tr>
<td>City:</td>
<td></td>
</tr>
<tr>
<td>State:</td>
<td></td>
</tr>
<tr>
<td>Zipcode:</td>
<td></td>
</tr>
<tr>
<td>Office Phone:</td>
<td></td>
</tr>
<tr>
<td>Email Address:</td>
<td></td>
</tr>
</tbody>
</table>

## 3. Project Title (250 character limit)
Clinical Epidemiology and Outcomes of Candidemia in Hospitalized Children

## 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor's Research Focus:
Yes - Pediatrics
Yes - Infectious Disease

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
We hypothesize that there will be a shifting trend over the course of the past ten years in species of Candida and in antifungal resistance patterns seen in hospitalized children with Candidemia. In particular, we hypothesize that C. albicans will remain the most common species among neonates, but that non-albicans Candida species will be more prevalent among children with hematologic malignancies and short bowel syndrome.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed (200 word limit).
Through this project, the student will receive training and learn skills in clinical research and apply them to this clinical epidemiologic research study. Measurable objectives include: 1 Completion of research ethics curriculum (CITI training; 1-2 days) 2) Completion of database training (REDCap training 1-2 days) 3) Completion of training on review of the medical literature (with PI and/or medical librarian; half-day ) 4) Completion of a literature review on the subject (3-4 days) 5) Completion of training for using the electronic health record system at Children’s National 1-2 days) 6) Data collection through chart reviews (approximately 100 charts; 4-5 weeks) 7) Data analysis of completed charts reviewed (1 week) 8) Presentation of project to research team at conclusion of fellowship

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Background: Candidemia is the most common invasive fungal infection in hospitalized children. Worldwide, candidemia is the fourth most common nosocomial bloodstream infection. The pediatric patient populations most at risk for Candidemia include premature neonates, children with hematologic malignancies, and children with short bowel syndrome. In critically ill children with hematologic malignancies, Candidemia is associated with a 20% mortality rate. The species of Candida causing bloodstream infections in hospitalized children have shifted over time as have the resistance patterns to antifungal drugs. While Candida albicans had long been the most common Candida species causing infections in children, the past twenty years have experienced a shift with greater incidence of non-albicans Candida species. More recent and local data describing these trends are lacking. Study Design: This is a single-center retrospective cohort study of hospitalized children with Candidemia. The primary objective of the study is to describe the epidemiology and clinical outcomes of children with Candidemia, including the patient
populations affected, the species of Candida isolated, antifungal susceptibility patterns of the Candida species, and the clinical outcomes associated with these infections. We are particularly interested in evaluating temporal trends of the Candida species and antifungal resistance patterns. The student’s role in the study and timeline will be as follows: 1) Completion of research ethics curriculum (CITI training; 1-2 days) 2) Completion of database training (REDCap training 1-2 days) 3) Completion of training on review of the medical literature (with PI and/or medical librarian; half-day) 4) Completion of a literature review on the subject (3-4 days) 5) Completion of training for using the electronic health record system at Children’s National (1-2 days 6) Data collection through chart reviews (approximately 100 charts; 4-5 weeks) 7) Data analysis of completed charts reviewed (1 week) 8) Presentation of project to research team at conclusion of fellowship

10. Describe the student’s role in the project (200 word limit)
The student will meet with the principal investigator (PI) to design a curriculum covering basic concepts of clinical research throughout the summer, including research ethics, literature review, database development and management, data collection, and data analysis. The student’s primary role in this study will be data collection, data management, and data analysis. Greater involvement in different roles would be considered given the student’s time and interest. The student will be expected to present his or her work to the multidisciplinary research team at the conclusion of the summer. Additional structured training to be included in the summer curriculum includes: a) training in research ethics through the CITI training course, b) training in database development using REDCap, and c) training in literature review with a medical librarian and/or the PI.

11. Describe the mentor’s role in the project. (200 word limit)
The PI will meet with the student for approximately 1 hour per day during the first week to develop a schedule for the next eight weeks, to discuss the study and clarify the student’s role and expectations. During the remaining 7 weeks, the PI will meet with the student during scheduled times approximately 2-3 hours per week, and will be available to answer any questions that arise in the interim. The PI will be accessible during times that she is not on clinical service and will be available to answer any questions that arise.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
13. Do you have or will you obtain IRB approval for this project?

*Please note:* Students cannot begin a human subjects project without IRB approval.

(Please select ONE

**Selected** Yes

**Please provide IRB number and date**

- IRB Number: Pro00015225
- IRB Date: 10/28/2020
Faculty Proposal for MD Student Research by Eric Heinz

1. Faculty Sponsor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Eric Heinz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td>MD, PhD</td>
</tr>
<tr>
<td>Title:</td>
<td>Assistant Professor of Anesthesiology and Critical Care Medicine</td>
</tr>
<tr>
<td>Organization:</td>
<td>GWU MFA</td>
</tr>
<tr>
<td>Address:</td>
<td>2300 M St. NW</td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td>7th Floor</td>
</tr>
<tr>
<td>City:</td>
<td>Washington</td>
</tr>
<tr>
<td>State:</td>
<td>DC</td>
</tr>
<tr>
<td>Zipcode:</td>
<td>20009</td>
</tr>
<tr>
<td>Office Phone:</td>
<td>202-715-4753</td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:heinz.md.phd@gmail.com">heinz.md.phd@gmail.com</a></td>
</tr>
</tbody>
</table>

2. Daily Supervisor

<table>
<thead>
<tr>
<th>Name:</th>
<th>Ivy Benjenk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees:</td>
<td>RN, MPH</td>
</tr>
<tr>
<td>Title:</td>
<td>Research Coordinator</td>
</tr>
<tr>
<td>Organization:</td>
<td>GWU MFA</td>
</tr>
<tr>
<td>Address:</td>
<td>2300 M St. NW</td>
</tr>
<tr>
<td>Apt/Suite:</td>
<td>7th Floor</td>
</tr>
<tr>
<td>City:</td>
<td>Washington</td>
</tr>
<tr>
<td>State:</td>
<td>DC</td>
</tr>
<tr>
<td>Zipcode:</td>
<td>20009</td>
</tr>
<tr>
<td>Office Phone:</td>
<td>9176976063</td>
</tr>
<tr>
<td>Email Address:</td>
<td><a href="mailto:ibenjenk@mfa.gwu.edu">ibenjenk@mfa.gwu.edu</a></td>
</tr>
</tbody>
</table>

3. Project Title (250 character limit)

Perioperative Utilization of Sonography for Enhanced Airway Management

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Anesthesiology

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
This project aims to determine if neck ultrasound is as good or better at predicting difficult intubation than the current assessment tools being utilized by anesthesiologists. Our hypothesis is the neck ultrasound is a more accurate tool for predicting difficult intubation.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
To recruit and consent 400 elective surgical patients for participation in the study (recruitment will take place in the pre-operative unit prior to surgery for elective surgical patients who will be receiving general anesthesia). To prospectively collect the following data elements on these 400 patients in the PACU (student will conduct the following assessments): 1. Neck ultrasound 2) Mallampati score 3) Thyromental distance 4) Head and neck movement range 5) Severity of buck teeth 6) Inter-incisor gap 8 Neck circumference The student will then go to the OR to measure subjective (rating of difficulty made by the anesthesiologist) and objective assessments number of attempts, intubation time) of intubation difficult. The student will then enter data into Redcap.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
This is a observational study looking at whether neck ultrasounds are able to predict intubation difficulty. Although rare, difficult or failed intubation can cause severe morbidity and mortality. If those patients who are difficult to intubate could be identified in advance, it could be arranged that a senior anesthesiologist could be assigned to do the intubation. This study will also compare the predictive value of neck ultrasonography to other commonly utilized intubation difficulty assessments. The current strategies for assessing intubation difficulty (the Mallampati classification, thyromental distance, upper lip bite test, interincisor distance, BMI) have shown low sensitivity and specificity with a limited predictive value, especially if only a single assessment method is used. During the last few years, ultrasound has been increasingly used in the perioperative area. The modern ultrasound machine is more portable with better resolution and enhanced tissue penetration, provide better imaging in tissues like epiglottis, vocal cords, ring-shaped membrane. Ultrasound is a quick, noninvasive, inexpensive tool and can provide accurate information in airway assessment. If ultrasound proves to be a better predictor to one of the existing assessments in use, it could change standard of care. The IRB was submitted on 12/8/2020. We anticipate IRB approval by February. Departmental research staff will then enroll 10 patients in March to ensure that the enrollment, study procedures, and data collection processes are as streamlined as possible before the student comes on board over the summer. We anticipate that the student will be able to enroll about 10 patients per day and work 5 days per
week for 8 weeks. At the end of the 8 weeks, we would export the data from Redcap and conduct the data analysis. The student would then be able to work with Dr. Heinz on writing and submitting the manuscript.

10. **Describe the student’s role in the project (200 word limit)**
The student will be responsible for recruiting and consenting patients, performing the intubation difficulty assessments, observing and collecting data regarding the intubation, and entering data into Redcap.

11. **Describe the mentor's role in the project. (200 word limit)**
The mentor (Dr. Eric Heinz) will train the student on neck ultrasound and the other intubation difficulty assessments. The mentor will introduce the student to all PACU staff and anesthesiologists and explain the study to those groups, so that staff and faculty understand why the student is in the PACU and is observing intubations/asking anesthesiologists questions about intubation difficulty. The mentor will design all the data collection tools. Mentor will ensure IRB has been approved prior to the start of the summer (application has already been submitted). Mentor will set up weekly phone calls with student to identify opportunities for improvement in research process. Ivy Benjenk is the research coordinator for the department and will ensure that the student has a GW Hospital badge, citi training/IRIS account, and a redcap account for data entry.

12. **Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)**
The Department of Anesthesiology has not had any Gill Fellows in recent years. The research infrastructure in the department has recently had a major reorganization. The department hired a full time research coordinator and two full time research assistants. In the last year, the department has supported a number of students through research projects, including one health science scholarship (which resulted in manuscript submission in the Journal of Wellness- student first author and the student-led COVID-19 registry (which resulted in 1 manuscript and numerous abstracts where students were able to serve as co-authors as well as manuscripts were students have served as second and third authors). We have a number of other student-led projects in the department (including an evaluation of communication devices for improved PAPR communication and a retrospective evaluation of trigger point injections for post-operative pain).

13. **Do you have or will you obtain IRB approval for this project?**
*Please note: Students cannot begin a human subjects project without IRB approval.*

(Please select ONE)

**Selected** No (Pending...
Faculty Proposal for MD Student Research by Galadriel Hovel-Miner

1. Faculty Sponsor

Name: Galadriel Hovel-Miner  
Degrees: PhD  
Title: Assistant Professor  
Organization: MITM Dept, GWU  
Address: 2200 Eye St. NW  
Apt/Suite: Ross 516  
City: Washington  
State: DC  
Zipcode: 20037  
Office Phone: 202)994-2634  
Email Address: ghovel_miner@gwu.edu

2. Daily Supervisor

Name: Galadriel Hovel-Miner  
Degrees: Same as above  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address: 

3. Project Title (250 character limit)

Anti-parasite drug resistance and mitochondrial redox Dr. Hovel-Miner’s laboratory investigates the genetic bases of parasitic diseases arising from trypanosomatid infections, which include African trypanosomes, American trypanosomes and Leishmania species. The current project will focus on the role of novel mitochondrial proteins in promoting resistance to anti-parasitic drugs using novel fluorescent redox biosensors. The candidate should have fundamental experience working in a microbiology or molecular biology lab. The trainee will prepare plasmid DNA for Trypanosoma brucei transfection, generated cell lines transfected with fluorescent biosensors, and will conduct 96-well plate experiments to measure redox states based on biosensor fluorescence. Preference will be given to candidates with high quality sterile technique and experience in DNA extractions and other fundamental molecular biology approaches.

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Genomics
Yes - Biochemistry
Yes - Cancer
Yes - Infectious Disease

6. Sponsor's translational level
(Please select ONE)
T0/T1: Basic Science Discovery and Initial Translation to Humans

7. Hypotheses (200 word limit)
Anti-parasitic drugs result in redox stress that can be alleviated by the expression of mitochondrial proteins that promote drug resistance.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
- Propagate and extract plasmids containing established fluorescent redox biosensors. - Transfect parasites with plasmids, select, and screen transfectants. - Conduct 96-well plate-based fluorescence experiments measure redox responses in the cytosol and mitochondrion.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Redox biosensors report changes in cytosolic or mitochondrial redox states. Biosensors encoded on plasmids will be propagated in E. coli bacteria in preparation for parasite transfections. Transfected parasites will be screened for functionality of the genetically encoded redox biosensors in preparation for experiments. Initial experiments will investigate how anti-parasitic drug treatments affect cellular redox in both the cytosol and mitochondrion. We have also identified novel mitochondrial proteins that promote drug resistance. The biosensors will be used to determine if the expression of these proteins increases tolerance to redox stress to determine if this is their mechanism of drug resistance.
10. Describe the student's role in the project (200 word limit)
The student will have the opportunity to participate in all stages of project development and
execution. Preparation of plasmid DNA for transfection, transfection of parasites, and preliminary
screening of redox biosensor are within the immediate scope of the described project.

11. Describe the mentor's role in the project. (200 word limit)
The mentor will have a hands-on role in training and all technical steps in the laboratory. In
addition, the mentor will provide the knowledge and context for the project.

12. Describe the current and previous medical student training by your mentor team.
Indicate any Gill Fellows. (200 word limit)
None

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE
Selected No (Not Required

Please specify why it is not required.
No human subjects.
Faculty Proposal for MD Student Research by David M Huebner

1. Faculty Sponsor

Name: David M Huebner
Degrees: PhD, MPH
Title: Associate Professor
Organization: George Washington University
Address: 2715 36th PL NW
Apt/Suite:
City: Washington
State: DC
Zipcode: 20007
Office Phone: NA
Email Address: davidhuebner@gwu.edu

2. Daily Supervisor

Name: David Huebner
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

3. Project Title (250 character limit)
Extesting parent usage of an online toolkit to promote parent-adolescent communication about HIV and sexuality

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor's Research Focus:
Yes - Pediatrics
Yes - Psychiatry

6. Sponsor's translational level
(Please select ONE)
T2: Translation to Patients

7. Hypotheses (200 word limit)
Parents who engage more deeply in the content of our online intervention will report more favorable intervention outcomes, as measured by parent and child reports of parent communication about HIV, condoms, and HIV-testing.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
1. To quantify the degree to which parents of gay/bisexual young men engage in an online intervention designed to support them in communicating with their sons about sexuality and HIV. (n=30). 2. To quantify the degree to which parents of gay/bisexual young men engage in an online film-based intervention to provide generic support for parenting an LGB child. (n=30). 3. To determine how engagement in each intervention is associated with parent and child reported outcomes.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Gay and bisexual teenagers make up 80-90% of all HIV infections among youth, and yet there is not a single evidence based preventive intervention proven to reduce these risks. With funding from NIMH, we developed an online intervention designed to support parents of gay/bisexual teens in communicating more frequently and effectively with their sons about sexuality and HIV. We recently completed a pilot RCT of the intervention in which 30 parent-child dyads were randomized to receive our intervention and 30 were randomized to control. Parents and sons were followed for 3 months following completion of the intervention. Preliminary results of the trial indicate favorable effects of the intervention on parent and child reported outcomes. Every time a parent logged onto the online intervention platform, their movements through the intervention were electronically tracked (e.g., the specific pages they visited, the amount of time they spent on each page). We now have a large dataset that contains information about these visits, and we are eager to examine (a) how parents used the intervention, and (b) how their usage relates to the degree to which they improved their communication as a result of the intervention.
10. Describe the student's role in the project (200 word limit)
The student will be responsible for working with the large user dataset to find meaningful ways to quantify parent engagement with the intervention. The student will then conduct analyses examining how intervention engagement is related to parent and child outcomes.

11. Describe the mentor's role in the project. (200 word limit)
Dr. Huebner will provide supervision to the student in organizing the data and conducting analyses. He anticipates meeting weekly with the student (likely virtually) during the period in which the student is working on the project.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. Huebner has mentored 5 PhD students through the completion of their degrees in clinical psychology. Two of those 5 students obtained NIH or NSF funding for their training/research. Four of those 5 students now hold academic positions at research universities. He has also mentored numerous junior faculty and postdoctoral fellows. He has not previously mentored medical students, but was on the faculty of medicine at UCSF where he instructed first-year students in their Foundations of Patient Care course.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE
Selected Yes

Please provide IRB number and date
IRB Number: NCR180718
IRB Date: 2/22/19
Faculty Proposal for MD Student Research by Nobuyuki Ishibashi

1. Faculty Sponsor

Name: Nobuyuki Ishibashi  
Degrees: MD  
Title: Foglia-Hills Professor of Pediatric Cardiac Research  
Organization: Children’s National Hospital  
Address: 111 Michigan Avenue, NW  
Apt/Suite:  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 202-476-2388  
Email Address: nishibas@childrensnational.org

2. Daily Supervisor

Name:  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address: 

3. Project Title (250 character limit)
Cell Therapy for Neuroprotection in Congenital Heart Disease  CHD)

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
5. Sponsor's Research Focus:
Yes - Pediatrics
Yes - Cardiology
Yes - Neurology
Yes - Surgery

6. Sponsor's translational level
(Please select ONE)
T0/T1: Basic Science Discovery and Initial Translation to Humans

7. Hypotheses (200 word limit)
Our studies show that potential cell-based interventions for improvement of CHD-induced brain damage include: 1) promoting white matter (WM) regeneration through endogenous oligodendrocyte progenitors; 2) restoring the neurogenic potential of subventricular zone (SVZ) neural stem/progenitors; and 3) controlling CPB-induced prolonged microglia activation. Mesenchymal stem/stromal cells (MSCs) are multipotent, non-hematopoietic cells that possess both immunomodulatory and regenerative properties, and can treat a wide range of diseases including hypoxic brain injury. Various rodent studies have shown that in the brain MSCs: 1) accelerate WM remyelination through the activation of endogenous oligodendrocyte progenitors; 2) promote neurogenesis from SVZ neural stem/progenitors; and 3) regulate microglia activation after hypoxic-ischemic brain insults. Multiple clinical trials have also established the safety of MSC-based therapy. These findings have led to our principal hypothesis that: MSC delivery to the early postnatal brain at the time of corrective cardiac surgery promotes endogenous regeneration of damaged neuronal and glia cells in children with CHD.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
Neonatal cardiac surgery provides a unique opportunity to control cerebral perfusion though CPB. We are proposing for the first time the use of CPB itself as a novel MSC delivery system in the CHD population. In order to design optimal MSC-based therapies in the CHD population, overall goal of our studies is to determine the behavior of three specific stem/progenitor cell lines: i) delivered MSCs; ii) WM oligodendrocyte progenitors; and iii) SVZ neural stem/progenitors by using our unique piglet of neonatal cardiac surgery. Measurable objective for Gill summer fellow is to determine the effect of MSC treatment on CPB-induced microglia activation and maturation of neuronal and glia cells using immunohistochemistry (IHC).

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
**The project fulfills discovery/original research**

Based on student’s interest and discussion with mentor team, the student will participate in one of three projects and perform two studies using IHC assays based on following time frame. Time frame is designed based on our previous experience with Gill fellows to complete the small projects from the beginning. Population of interest in summer 2021 will be discussed and selected according to our progress of ongoing studies. Week 1: Preparation: cryostat training for the large animal brain section and antibody optimization Week 2: Immunohistochemistry of the first cell population and image acquisition with a direct mentor Week 3: Data quantification using imaging software Week 4: Data analysis using statistical software and optimization for 2nd study Week 5: Immunohistochemistry of the second population based on the results of the first studies Week 6: Data quantification using imaging software Week 7: Data analysis using statistical software Week 8: Presentation at the lab meeting and development of poster draft for presentation at meetings

**Project 1:** Determine the effect of MSC delivery on CPB-induced microglia activation. Microglia plays a central role in neural immune function in reacting to a wide variety of brain insults. MSCs regulate microglia activation after hypoxic-ischemic brain damage. The student will define the effects of MSC delivery on microglia expansion/activation. As we performed previously, microglia marker Iba-1 will be used to define CPB-induced microglia expansion. Antibody for CD11b will be used to determine the activation state. A density of antibody-positive cells will be assessed in various regions (4 cortex, 7 WM, 2 SVZ). **Project 2:** Determine effects of MSC treatment on differentiation/maturation of oligodendrocyte (OL) progenitor cells. To determine the effects of MSC treatment on OL differentiation/maturation, we will assess gyrencephalic WM. OL maturation and differentiation will be defined using established cell-specific markers for OL lineage (Olig2), OPCs (PDGFRa , , and mature OLs (CC1 , as we have regularly performed. Cell density in 7 WM regions will be quantified. MBP (myelin basic protein) expression is a measure of myelin level. For MBP staining, confocal epifluorescence images will be sequentially acquired. **Project 3:** Determine the effects of MSC treatment on SVZ neural stem/progenitors (NSPCs). To account for regional differences in the human-like porcine SVZ, we will divide the SVZ into 4 rostrocaudal domains as performed previously. The SVZ will be further subdivided into lateral and dorsolateral regions based on our studies (Total 7 SVZ areas). The proliferation and apoptosis of SVZ NSPCs will be identified by specific marker, Ki67, cleaved-caspase3, Sox2. Dcx+ neuroblast number will be assessed between tested groups to define effects of MSC treatment on SVZ neurogenesis. he proposed studies have the potential to identify and assess novel strategies to treat brain immaturity and brain injury, and define new standards of perinatal care in the patient with CHD.

**10. Describe the student’s role in the project (200 word limit)**

The program is intended to provide the highest quality experience for medical school students with a strong interest in pursuing careers as physician-scientists. To define hypoxia-induced alterations on the gyrencephalic brain and the effect of MSC delivery through CPB during CHD surgery, the student’s role will be focused on IHC assay of the developing brain in our clinically relevant experimental models. We offer students the opportunity to: 1) learn uniquely integrated research field in developmental neuroscience and pediatric cardiology/cardiac surgery; 2) gain experience in hands-on laboratory research; 3) interact with faculty, postdoctoral fellows, and other summer interns; 4) attend weekly luncheon/seminar presentations by members on specific research projects and cutting-edge research tools; and 5) improve presentation, writing, and communication skills. In partnership with Children’s National Heart Institute, students can participate in weekly surgery case discussions and daily Cardiac ICU rounds to learn more about congenital heart disease. Our pediatric cardiac surgery team performs hundreds of cardiac surgeries. World-renowned, pediatric cardiac surgeon Yves d’Udekem, MD, is the co-director of the Heart Institute.
11. Describe the mentor's role in the project. (200 word limit)
The nature of Dr. Ishibashi’s training plan will entail multiple sessions, so that he/she can overcome the technical obstacles that are intrinsic to the study in the piglet brain. Daily supervisor - Drs. Leonetti, Kobayashi, Li, Saric, Shepard, Strauss (Post-doc research associates in my lab) - and he/she will meet one-on-one before each experiment in order to establish the best experimental approach to be used and to determine how to avoid any difficulties that may naturally arise with the use of different samples. The training will be provided through multiple hands-on sessions at the time of actual analysis of samples and imaging data. Once he/she has acquired data, meetings with Dr. Ishibashi will be focused on data interpretation and building hypotheses relevant to our future study.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

13. Do you have or will you obtain IRB approval for this project?  
Please note: Students cannot begin a human subjects project without IRB approval.  
(Please select ONE  
Selected No (Not Required)

Please specify why it is not required.
this is preclinical studies
Faculty Proposal for MD Student Research by Mikhail Kogan

1. Faculty Sponsor

Name: Mikhail Kogan
Degrees: MD
Title: Medical Director, GW Center for Integrative Medicine
Organization: George Washington University
Address: 908 New Hampshire Ave, Suite 200
Apt/Suite: NW
City: Washington
State: DC
Zipcode: 20037
Office Phone: 2028335055
Email Address: MKOGAN@MFA.GWU.EDU

2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

3. Project Title (250 character limit)

Previously, several reports have suggested possible link between mercury toxicity and increased risk of hormonal cancers including prostate and breast. Mercury has no biologic role in human body and with prolonged exposure to either organic form from consuming seafood or inorganic from dental amalgam fillings or accidental exposures from other environmental sources known to cause gradual accumulation in fatty tissues and other organs including breast and prostate. While case reports have been documented linking these 2 cancers and elevated mercury levels to our knowledge this issue has not been systematically study. This is thought to be in part due to lack of good testing strategy. This has changed several years ago with introduction of QuickSilver Scientific Tri Test that assess mercury in urine, blood, and hair at the same time. The Tri Test is the only currently available test on the market that allows to test for both organic and inorganic mercury. This study proposes to assess frequency of elevated mercury levels in patients with prostate and breast Cancer.
4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor's Research Focus:
Yes - Cancer
Yes - Neurology

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
In this non-randomized, not-controlled pilot assessment we will evaluate frequency of elevated inorganic and organic mercury levels in patients with breast and prostate cancer. We hypothesis that in this patient population average level of mercury is higher compared to expected CDC recommended average.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
This study is not designed to establish causative relationship or assess possible mercury toxicity treatment impact on outcomes on breast and prostate cancer. However, if hypothesis turns true this pilot will set a ground for larger trial methodologically designed to assess possible causative relationship.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
• The project design makes it likely that the objectives will be achieved
• The project is likely to result in a report of interest to other scholars
• The project fulfills discovery/original research
We intent to recruit 20-40 patients with any stage of breast or prostate cancer who are interested in getting free mercury assessment. We will compare results of mercury tests in this study with national CDC average and with QuickSilver Scientific Tri Test average. We will also analyze levels divided into percentiles between lowest to highest mercury content. For the statistical analysis we will analyze mercury as a continuous variable as primary outcome. This will allow us to assess linear regression. We will also conduct a secondary analysis in bins, which could be defined by knots in
the regression, quartiles, etc. The exact level of detail of statistical analysis will be determined at a later date with the assistance of a student biostatistician who will join the study after it’s IRB approval.

10. Describe the student's role in the project (200 word limit)
We hope that involved student will assist with all aspects of the trial including screening prospective patients, coordinating data collection, joining research meetings, etc.

11. Describe the mentor's role in the project. (200 word limit)
Dr Kogan will provide ongoing supervision for the student. Additionally student will be working closely with Dr Deirdre Orceyre from GWCIM and Dr Leigh Frame from GWOIMH.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Too long to list. Dr Kogan and GWCIM team has been offering Integrative Medicine training for GWIM track program and other students for over 10 years.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE

Selected Yes

Please provide IRB number and date
IRB Number: NCR203067
IRB Date: pending
Faculty Proposal for MD Student Research by Wei Li

* 1. Faculty Sponsor

* Name: Wei Li
* Degrees: Ph.D.
* Title: Assistant Professor
* Organization: Children's National Hospital
* Address: 111 Michigan Ave NW
* Apt/Suite: 
* City: Washington
* State: DC
* Zipcode: 20010
* Office Phone: 2024764986
* Email Address: wli2@childrensnational.org

* 2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

* 3. Project Title (250 character limit)
Modeling Functional Genes using CRISPR/Cas9 Screening

* 4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


* 5. Sponsor's Research Focus:
Yes - Genomics
Yes - Cancer

6. Sponsor’s translational level
* (Please select ONE)
T0/T1: Basic Science Discovery and Initial Translation to Humans

7. Hypotheses (200 word limit)
The overall goal of this project is to identify novel drug targets in the public data from CRISPR/Cas9 functional screening. We hypothesize that we are able to systematically investigate critical genes for various cancer types from the mining of large-scale functional gene.c screening. Screening technology is a high-throughput functional assay based on the latest CRISPR/Cas9 genome engineering system, and has been widely used to study various cancer types. By collecting and analyzing public available screening data on over hundreds of cell lines, genes that are essential for tumor growth, and genes that suppresses tumor growth can be systematically identified. These findings have the potential to discover (1) potential biomarkers that are indicative of patient survival, and (2) possible drug targets to treat certain types of pediatric cancer. Our group has the track record for the design, modeling, visualization and interpretation of genome-wide CRISPR/Cas9 screens. We already developed eight algorithms and webservers, including MAGeCK algorithm that has >3600 citations and >80,000 downloads. Using these softwares, we identified possible mechanisms and potential drug targets for endocrine resistance in ER+ breast cancer, ER- mutant breast cancer, primary and castration-resistant prostate cancer, and HIV latency reversal, published in PNAS and Cancer Cell.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
This pure computational biology project will process and analyze the screening data of over hundreds of cancer cells. The objectives are to (1) collect public available datasets and evaluate the quality of these datasets in the public domain, (2) identify consensus signals that exist between different screening technologies, (3) identify the functions of top genes that are biologically meaningful, and (4) if possible, develop a program or pipeline to standardize and visualize the results above.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Aim 1. Collect and evaluate the quality of existing screening datasets. Many screening datasets are available from the public domain, including RNA interference (RNAi) screens, CRISPR screens of different libraries and types (knockout, inhibition or activation). Furthermore, the Achilles project (and other similar projects) includes screens over hundreds of cell lines, providing opportuni.es to study the gene.c landscape of different tumors. We will use the established MAGeCK-VISPR/MAGECKFlute pipeline we developed for data processing (e.g., normalization, copy number correction, batch removal, and score calculation). Aim 2. Make genome-wide screens from different technologies/libraries comparable using canonical correlation analysis
(CCA). It is a common task in genomics analysis to integrate measurements from multiple platforms on the same set of samples. Heterogeneous data from different platforms cannot be combined directly or using batch removal approaches, as the laPer assumes an equal impact of batch on both datasets. Canonical correlation analysis (CCA) is a way of identifying the consistent patterns of two related datasets, by finding the linear combinations of features that maximize the correlation between the two. CCA has been used to identify consistent patterns between gene expression and DNA copy number variations, and most recently, to integrate single-cell RNA-seq data generated from different platforms and technologies. We will use CCA to combine datasets from screens of two different technologies. The outcome of CCA is the weights of individual cell lines (or genes), and the corresponding linear transformation of the other hand, variances that are specific to one dataset (e.g., library biases demonstrated in preliminary results) will be assigned a lower weight and are filtered out after transformation. CCA also provides a projection from high-dimension raw data into a low- dimension transformed data, enabling us to perform integrated downstream analysis and visualization.

* 10. Describe the student's role in the project (200 word limit)
The student is responsible for (1) getting familiar with the computational tools our group previously developed, (2) collecting and processing public screening data, and (3) performing additional analysis based on the proposed research aims. In addition, the student will interact frequently with the PI (1-3 meetings/week), collaborators across the country, and other members of the lab/department.

* 11. Describe the mentor's role in the project. (200 word limit)
The PI (Wei Li) will oversee the whole project: he will provide instructions for all the resources needed to perform the aims, and guide the student in all aspects (data collection, programming, biological interpretation, etc.). Furthermore, the PI will create a vibrant, interactive environment to support the career development of the student, including but not limited to (1) sharing experience on research, skill development, communication, presentation, etc.; (2) encouraging discussion with other faculties and members of the department that has a variety of scientists working on different disease problems; (3) providing opportunities to connect to collaborator laboratories and industrial partners.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
The PI has joined CNMC since 2018 and supervised 1 medical student, 1 pre-med student and several GWU master and Ph.D. students. 1 medical student received Gill Fellowship in 2019.

* 13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
Selected No (Not Required)

Please specify why it is not required.
This is an informatics project that involves only public data and does not require IRB.
Faculty Proposal for MD Student Research by Maureen E. Lyon

1. Faculty Sponsor

Name: Maureen E. Lyon
Degrees: Ph.D.
Title: Professor of Pediatrics, Clinical Health Psychologist
Organization: Children's National Hospital
Address: 111 Michigan Avenue, NW
Apt/Suite: Room M7658
City: Washington
State: DC
Zipcode: 20010
Office Phone: 7033462873
Email Address: mlyon@childrensnational.org

2. Daily Supervisor

Name: Maureen E Lyon
Degrees: PhD
Title: Professor of Pediatrics
Organization: Children's National Hospital
Address: 111 Michigan Avenue, NW
Apt/Suite: Room M7658
City: Washington
State: DC
Zipcode: 20010
Office Phone: 7033462873
Email Address: mlyon@childrensnational.org

3. Project Title (250 character limit)

The objectives of this study are (1) to close a gap in our knowledge by assessing families’ needs for support in a heterogeneous group of children with serious, advanced, ultra-rare diseases with and without comorbidities, who are unable to participate in shared medical decision-making; and (2) to test one such pediatric Advance Care Planning (pACP) intervention which may empower families by providing some control in a low control situation and increase families’ capacity to participate in EOL decision making. The FAmy CEnered (FACE) pACP intervention, proven successful with cancer and HIV, 5-12 is adapted to children with ultra-rare diseases. Our consultation with families of children with rare diseases and the National Organization for Rare Disorders (NORD) revealed that basic pPCEOL needs should be addressed first, prior to a pACP intervention. For the study to be able to meet families where they are, prior to randomization, all families will complete the Carer Support Needs Assessment Tool (CSNAT),©46-51 adapted for use in pediatrics in our preliminary research through collaboration with NORD and affected families. In The CSNAT Approach, facilitators assess the prioritized pPCEOL needs and developed Shared Actions Plans for decision-making support. We propose...
pilot testing the three weekly sessions of FACE-Rare: CSNAT plus Respecting Choices, using a rigorous intent-to-treat, single-blinded, randomized controlled trial (RCT) design with 30 family/child dyads with 3-month post-intervention assessments. AIM 1. To evaluate the initial efficacy of FACE-Rare in a pilot RCT on family quality of life (QoL) at 3-months post-intervention.

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor’s Research Focus:
Yes - Pediatrics
Yes - Psychiatry

6. Sponsor’s translational level
(Please select ONE)
T2: Translation to Patients

7. Hypotheses (200 word limit)
AIM 1. To evaluate the initial efficacy of FACE-Rare in a pilot RCT on primary outcome: family quality of life (QoL) at 3-months post-intervention, controlling for co-variates (age, sex/gender, race of family caregiver) to seek an effect size for a future R01. Hypotheses (H) 1a: FACE-Rare families will report significantly better QoL (emotional, spiritual compared to controls. H1b: Family caregiving appraisals will moderate effect of FACE-Rare on QoL outcomes. H2c: Religiousness will moderate the effect of FACE Rare on QoL outcomes. AIM 2. To evaluate process outcomes with respect to satisfaction with study participation. H 2: FACE-Rare families will report significantly greater satisfaction, compared to controls. AIM 3. To evaluate the initial efficacy of FACE-Rare on secondary outcomes: plans and actions: completion of and documentation of advance care plans in the electronic health record at 3-months post-intervention. H3a: FACE-Rare families will have a significant higher probability of completing pACP documents for their child, compared to controls; H3b: FACE-Rare families will have a significant higher probability of having pACP documents locatable in the electronic health record, compared to controls.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
See abstract above.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Pilot testing using randomized clinical trial design. Will result in a report of interest to others. Fulfills original research criteria.

10. Describe the student's role in the project (200 word limit)
Student will help to determine role, which can range from direct patient contact in terms of collecting data, to analyzing data, to writing own study based on data collected to date.

11. Describe the mentor's role in the project. (200 word limit)
One hour a week supervision and attendance at weekly staff meeting, plus additional review of outcomes, such as posters and oral presentations, or manuscripts.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
All three references above were conducted by GW mentees, including Kate Schreiner who was a Gill Fellow.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE

Selected Yes

Please provide IRB number and date
IRB Number: 8999
IRB Date: September 2020 Continuing Review
1. Faculty Sponsor

Name: Sarah Mulkey  
Degrees: MD, PhD  
Title: Fetal-Neonatal Neurology  
Organization: Children's National Hospital  
Address: 111 Michigan Ave. NW  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 202-476-5815  
Email Address: sbmulkey@childrensnational.org

2. Daily Supervisor

Name: Sarah Mulkey  
Degrees: MD, PhD  
Title:  
Organization:  
Address:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address:

3. Project Title (250 character limit)
Congenital Infections- fetal diagnosis and postnatal outcome

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
5. Sponsor's Research Focus:  
Yes - Pediatrics  
Yes - Infectious Disease  
Yes - Neurology  

6. Sponsor's translational level  
(Please select ONE)  
T3: Translation to Practice  

7. Hypotheses (200 word limit)  
In the Prenatal Pediatrics Institute at Children’s National Hospital we see prenatal referrals for suspected congenital infections including cytomegalovirus (CMV), toxoplasmosis, parvovirus B19, Zika virus, and others. The fetal neuroimaging presentation of these congenital infections and the contribution of fetal MRI in making the diagnosis has not been well explored since fetal MRI has increased in clinical use over the past decade. We hypothesize that fetal MRI adds substantial information to the fetal diagnosis of congenital infection, improves prenatal counseling, and correlates with postnatal infant outcome.  

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).  
Project goals: The objective of the study is to describe the spectrum of neurologic injury, infectious etiologies, and postnatal outcome for congenital infections diagnosed in our region over the past 8 years and that had fetal MRI. Given the number of cases we have seen over the past 8 years, we have a unique opportunity to describe the fetal condition in a large number of cases and report the spectrum of outcomes. Number of patient records: 70 Goals: Describe cases of congenital infection, diagnosis, infectious etiology, pregnancy outcome, and child neurodevelopmental outcome.  

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.  
Selection criteria include:  
- The project design makes it likely that the objectives will be achieved  
- The project is likely to result in a report of interest to other scholars  
- The project fulfills discovery/original research  
This is a retrospective chart review. All cases referred to the Prenatal Pediatrics Institute for a concern of congenital infection in the past 8 years will be included. All types of congenital infections will be included: Zika, CMV, Toxoplasmosis, Parvovirus, and others. We will review the referral records and prenatal diagnostic evaluations, fetal imaging including US and MRI, any additional diagnostic workup including for congenital infections and genetics as performed by or recommended after consultation by neurology at the Fetal Medicine Institute. The findings, severity, and etiologies will be described and tabulated. Pregnancy outcome will be determined for each case. Postnatal evaluation and imaging will be reviewed. Any data on patient outcome will
be recorded. Cases will be identified through an established clinical patient database in the Prenatal Pediatrics Institute and data will be abstracted through chart review using the Children’s National Electronic Medical Record. We have found that this type of project is do-able during a summer for a student, provides a significant amount of learning in neurology and brain development, infectious disease, and will result in a quality finished project by the end of the summer that will be able to be presented and prepared for publication.

10. Describe the student’s role in the project (200 word limit)
The student will be provided with a list of cases and a database to complete through performing the detailed chart review. The student will have the opportunity to review brain MRI findings with the neurologist and with the neuroradiologist. The student will present findings to the research team during our research meetings.

11. Describe the mentor’s role in the project. (200 word limit)
The mentor will be available throughout the project to teach the student about congenital infections, guide the student in learning how to abstract the data and the importance of the different elements of the data. The mentor will review medical records and neuroimaging with the student. The mentor will be available for the student and questions as the data is reviewed. The mentor will help teach the student how to organize and present the data in an abstract and for presentation.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
The Prenatal Pediatrics Institute had three summer students in 2019 and typically has 2-3 students per summer. In 2019, Dr. Mulkey mentored a Gill Student who completed a project on Autonomic Nervous System development in high risk newborns that has been submitted for publication. In 2020, Dr. Mulkey mentored two summer GW students, one was a Gill student. Despite, the limitations of COVID-19, both students completed research projects on prenatal neurology topics, presented the results to our team at the end of the summer, and submitted their abstracts to GW’s journal Fusion. Their projects will be submitted to the Pediatric Academic Society 2021 annual meeting and as manuscripts.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE
Selected No (Pending
Faculty Proposal for MD Student Research by Karen O'Connell

1. Faculty Sponsor

Name: Karen O'Connell  
Degrees: MD, MEd  
Title: Director of Patient Safety and Resuscitation, Emergency Medicine and Trauma Center  
Organization: Children's National Hospital  
Address: 111 Michigan Ave, NW  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 202-476-4177  
Email Address: koconnel@childrensnational.org

2. Daily Supervisor

Name: karen oconnell  
Degrees: MD, MEd  
Title: Director of Patient Safety and Resuscitation, Emergency Medicine and Trauma Center  
Organization: Children's National Hospital  
Address: 111 Michigan Ave, NW  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 202-476-4177  
Email Address: koconnel@childrensnational.org

3. Project Title (250 character limit)
Videography In Pediatric Emergency Research (VIPER : A Multicenter Collaborative for the Improvement of Pediatric Resuscitative Care

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
5. Sponsor's Research Focus:
Yes - Emergency Medicine

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Background: More than 10,000 children per year in the United States present to an ED with respiratory failure or cardiac arrest. Care of these patients depends on dynamic team-based function as well as individual psychomotor skill and knowledge. Important findings from our preliminary work have identified suboptimal performance during critical procedures. We have demonstrated that quality improvement through review of videorecorded resuscitations can improve procedural safety and reduce the incidence of adverse events during TI. Our long term goal is to improve the safety and effectiveness of resuscitative care in the pediatric ED. Building on our preliminary work, we will achieve the first steps of this goal through the proposed study, in which we will create, implement, and assess the reliability of a data registry based on video review of pediatric resuscitations in three tertiary centers. Data fields will focus on basic assessments and interventions, tracheal intubation, CPR, and crisis resource management. We hypothesize that videorecording during pediatric resuscitation in pediatric EDs will yield unbiased reliable data on clinical performance which will inform the subsequent creation of training interventions in crisis resource management, tracheal intubation, and CPR which will improve care delivery and outcomes during pediatric resuscitation.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
Specific Aim 1: To describe tracheal intubation (TI) and CPR performance during actual videorecorded pediatric resuscitations at three tertiary children’s hospitals Working hypothesis for Aim 2: Procedural performance during TI and CPR will show opportunities for improved patient safety and care delivery in a manner similar to our preliminary studies, as shown by: a. First attempt success at TI will be less than 70% across all centers b. Oxyhemoglobin desaturation during TI will occur in >30% of patients c. High-quality CPR will be achieved during less than 50% of all cardiac arrest events Specific Aim 2: To identify a scoring instrument for crisis resource management during medical simulation that exhibits favorable psychometric performance when used in retrospective video review of actual pediatric resuscitations. Working hypothesis for Aim 3: The Behavioral Assessment Tool (BAT), Team Emergency Assessment Measure (TEAM), and/or Nontechnical Skills Scale for Trauma (NOTECHS) will exhibit good interrater agreement and minimal variance in scores attributable to raters.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Time frame: this is an ongoing project that a student can join at any time. Data collection: retrospective video review; project is on-going and prospective in nature with live capture of medical and trauma resuscitations. Sample size: patients are enrolled in an ongoing basis at 4 sites (Children's National Hospital; Children's Hospital of Philadelphia; Children's Hospital Medical Center Cincinnati; and Children's Hospital of Colorado). Students will only have access to site-specific data and will enter de-identified video abstracted data into a secure, RedCap database. Discovery/original research: the VIPER collaborative is the first pediatric resuscitation database that uses validated and reliable video data. Our team has presented at numerous international, national and regional conferences and has published our findings in numerous peer-reviewed journals. Our research findings have been incorporated into CPR and intubation guidelines that have been disseminated nationally and internationally.

10. Describe the student's role in the project (200 word limit)

Student's Role: Our team is excited to offer the experience of being part of a large, multi-institutional research collaborative. He/she will serve mostly in the role of a research coordinator and will help with data collection via video review, data entry, and analysis for a specific proposed question generated by the student if feasible. The data collected involves clinical resuscitation, which has a multitude of areas to explore. The student will be involved with a group of research interns who currently work in the ED and will be an active participant in weekly research meetings and lectures. He/she will be invited to shadow me and other PEM physicians on clinical shifts. Lastly, we offer mentorship with a clinical case write-up or self-directed research question/project for publication if applicable. Being involved in this research project will give our student a solid introduction to clinical research in the ED.

11. Describe the mentor's role in the project. (200 word limit)

As the senior mentor, I will responsible for the coordination and training of our research team and new Gill student. The emergency medicine and trauma research teams are robust and each has a designated research coordinator who will assist with student oversight, data integrity, and data collection. Our research teams meet weekly to review study status- these meetings are led by the mentor and the RC for the studies.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

I have 15 years of medical student mentorship at Children's National Hospital. I have mentored medical and undergraduate students from GWU, Georgetown University, University of Maryland, Rutgers University, and Eastern Virginia Medical School. Each student has had the opportunity to generate their own research question, write and present an abstract regionally, nationally or internationally (or all of the above) and many have completed their projects with manuscript publication. I have been the mentor of one Gill Fellow awardee in 2017. This student was successful in his research involvement and had the opportunity to present his study findings at national research conferences and completed study publication: Sumner BD, Grimsley EA, Cochrane NH, Keane RR, Mullan PC, O'Connell KJ. “Videographic assessment of the quality of
13. Do you have or will you obtain IRB approval for this project?

**Please note:** Students cannot begin a human subjects project without IRB approval.

(Please select ONE

**Selected** Yes

**Please provide IRB number and date**

IRB Number: 7980  
IRB Date: 7/8/2020
Faculty Proposal for MD Student Research by Christina Prather

*1. Faculty Sponsor*

* Name: Christina Prather  
* Degrees: MD  
* Title: Assistant Professor, Geriatrics and Palliative Med; Clinical Director Institute for Brain Health and Dementia  
* Organization: GW SMHS  
* Address: 2300 M St, NW  
* Apt/Suite: Suite 3-335  
* City: Washington  
* State: DC  
* Zipcode: 20037  
* Office Phone: 2027412192  
* Email Address: cprather@mfa.gwu.edu

*2. Daily Supervisor*

Name: Drs Christina Prather, Hana Akselrod, Nicholas Puente  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address: 

*3. Project Title (250 character limit)*
Cognitive and psychological findings in covid-19 survivors

*4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.*


* **5. Sponsor's Research Focus:**
  Yes - Geriatrics
  Yes - Neurology

* **6. Sponsor's translational level**
  *(Please select ONE)*
  T3: Translation to Practice

  Neuropsychiatric symptoms experienced by covid-19 survivors are associated with clinical symptoms at time of and immediately following diagnosis.

* **8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**
  1. Describe neuropsychiatric symptom syndrome in COVID-19 survivors - Accomplished through review of cognitive testing database from covid recovery clinic 2. Describe association between neuropsychiatric symptom syndrome and clinical course of COVID-19 in survivors - Accomplished through retrospective chart review of individuals seen in covid recovery clinic 3. Identify implication of neuropsychiatric symptom burden on function and quality of life - Accomplished through retrospective chart review of individuals seen in covid recovery clinic

* **9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

  **Selection criteria include:**
  - The project design makes it likely that the objectives will be achieved
  - The project is likely to result in a report of interest to other scholars
  - The project fulfills discovery/original research

  1. Students will spend time completing chart review for goals 2 and 3. 2. Students will perform data analysis on chart review and already collected cognitive testing dataset. 3. Students will write up results and methodology. 4. Students will perform literature review and write introduction for pending publication. Impact: Anticipated to be one of the first cohort studies from a covid recovery clinic focusing on neuropsychiatric symptoms and contribute to needed literature on long haul covid-19 manifestations.

* **10. Describe the student's role in the project (200 word limit)**
  Students will participate in: - Chart review - Data analysis - Literature review - Manuscript preparation
* 11. Describe the mentor's role in the project. (200 word limit)
Mentors will ensure adequate support, guidance, and project leadership.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
1. Grant funded completion of a DC Health project with the GW Institute for Brain Health and Dementia resulting in production of a resource guide for individuals living with dementia in DC and first ever report of state of dementia in the District. Data collection completed by two MS1 students in summer prior to MS2 year. (Prather) 2. Cognitive symptoms as a presence of OSA - poster presentation at national conference by one MS3 on research elective. (Prather) 3. Care transitions in hospitalized older adults - poster presentation at national conference and subsequent QI project by two MS4s. (Prather) 4. QI Project on hospital associated falls - resulted in institutional change at GWUH ongoing 3 years later, project by one MS4. (Prather) 5. Supervised GILL Fellow, Summer 2018-2019 (Akselrod) 6. Supervised METEOR student (Akselrod)

* 13. Do you have or will you obtain IRB approval for this project?
**Please note:** Students cannot begin a human subjects project without IRB approval.
* (Please select ONE)
  Selected Yes

Please provide IRB number and date
* IRB Number: NCR202883
* IRB Date: 09/01/20
Faculty Proposal for MD Student Research by Brian K. Reilly

1. Faculty Sponsor

* Name: Brian K. Reilly
* Degrees: MD
* Title: Associate Professor
* Organization: Children's National
* Address: 111 Michigan Ave
* Apt/Suite: Washington
* City: DC
* State: Zipcode: 20010
* Office Phone: 202-476-2159
* Email Address: breilly@cnmc.org

2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

3. Project Title (250 character limit)
Cochlear Implant Symmetry Device

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
**Sponsor's translational level**
* (Please select ONE)
T2: Translation to Patients

**Hypotheses (200 word limit)**
Cochlear implant symmetry is a poorly defined problem. We could not find an article in the literature describing this surgical technical difficulty other than one that I wrote. We have created a tool to improve the symmetry of the cochlear implant and this prototype allows for optimal symmetric placement of the R/S in bilateral cochlear implantation and improve surgical times and aesthetic appearance.

**Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**
The goal of this project is to enroll 30 patients and complete a manuscript

**Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

The student will attend cochlear implant conferences and cochlear implant surgeries as well as shadow in clinic. This will provide ample time for patient engagement and enrollment. This project has the backing of the Sheikh Zayed Research Institute and prototypes have been created.

**Describe the student's role in the project (200 word limit)**
The student will work with me clinically along with the cochlear implant coordinator and research coordinator for the Division of Otolaryngology to meet study objectives.

**Describe the mentor's role in the project. (200 word limit)**
I will supervise all aspects of the project

**Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)**
I have worked with several Gill Fellows over the past 10 years and all have publications with me on pubmed

**Do you have or will you obtain IRB approval for this project?**
*Please note: Students cannot begin a human subjects project without IRB approval.*
* (Please select ONE)
Selected No (Pending)
Faculty Proposal for MD Student Research by Zeina Saliba

1. Faculty Sponsor

Name: Zeina Saliba
Degrees: MD
Title: Assistant Professor, Inpatient Medical Director
Organization: GW MFA
Address: 2120 L St NW Unit 600
Apt/Suite: 
City: Washington
State: DC
Zipcode: 20037
Office Phone: 2027413433
Email Address: zsaliba@gwu.edu

2. Daily Supervisor

Name: 
 Degrees: 
 Title: 
 Organization: 
 Address: 
 Apt/Suite: 
 City: 
 State: 
 Zipcode: 
 Office Phone: 
 Email Address: 

3. Project Title (250 character limit)
Family Planning (Contraceptive and Preconception Care in Inpatient Psychiatric Setting-Prospective Study

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
Goldstein N, Davis C, Saliba Z. Reproductive Health in an Inpatient Psychiatric Unit: A Retrospective Chart Review. Human Psychopharmacology: Clinical and Experimental. 2020, accepted for publication.
5. Sponsor's Research Focus:
Yes - Psychiatry
Yes - Obstetrics/Gynecology

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
1. Women admitted with psychiatric illness who do not desire pregnancy in the next two years and have sex with men are unlikely to be using contraception. 2. Preconception care and reproductive options counseling is limited in women with psychiatric illness. 3. College students admitted to the psychiatric unit are more likely than those who are unemployed to have received reproductive counseling.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed) (200 word limit).
Estimated number of participants: 10 patient interviews weekly x 4 weeks for total of 40. Primary goals: Identify opportunities for improvement in preconception and contraceptive care in women admitted to psychiatric units. Identify barriers to contraception and attitudes about different forms of contraception. Present work at conference (oral presentation or poster) and write and publish manuscript. Future secondary goals: Create educational tool for inpatient providers to use with patients to discuss contraceptive options and teratogenic risks of psychotropic medications as well as one for PCPs and OB/GYNs to use with women who have severe mental illness.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

An exploratory analysis of family planning needs on a voluntary urban psychiatric unit will be conducted by interviewing all women of reproductive age who are admitted using mixed methods. Exclusion criteria for those who do not have sex with men, transwomen and those who have had a hysterectomy or other conditions that exclude pregnancy. Patients will be asked about their desire to have a pregnancy within the subsequent two years, their use or not of contraception, attitudes towards different forms and barriers to obtaining. We will ask about their recent visits to PCP and OB/GYN as well as inquire about practitioners' discussions about reproduction and family planning. We will collect demographic information as well as information about severity of illness and see if outcomes vary by patient characteristics. We will analyze data with chi-square tests and perform multivariate logistic regression as well as collect qualitative data.
10. Describe the student's role in the project (200 word limit)
The student will be responsible for consenting patients, conducting interviews, collecting data and, with faculty oversight, analyzing it. It is expected that the student will both produce a poster for research day as well as draft a manuscript (with help from faculty). The student will have the option to be involved in future projects that arise from this study. The student can also participate in other ongoing studies, currently related to intersection of mental illness and pandemic, or work on health equity initiatives, such as working toward health literate service line.

11. Describe the mentor's role in the project. (200 word limit)
The mentor takes responsibility for the overall organization of the project, including working with the hospital for EMR access and creation of research database. The mentor will closely oversee the student, available on-site daily. The mentor will model patient interview and observe student prior to student doing this independently. After data collection, the mentor will work with the student to analyze it and will also serve as a link with other faculty from departments of OB/GYN and school of public health who want to collaborate on this project. The mentor will make time to meet with the student to discuss future plans, career counseling and highlight opportunities for shadowing, including at the 5 Trimesters clinic.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Mentor is involved in both preclinical and clinical UME, as well as advising and served as the GW mentor for the nationwide Choosing Wisely STARS (Students and Trainees Advocating for Resource Stewardship) program, a value-based care education and practice initiative. Worked with health services scholarship student last summer, resulting in publication. A 3rd year clinical student worked with mentor on clinical rotation and produced poster that won 3rd place at an international conference. Another 3rd year student used research elective to work with mentor on preparing retrospective chart review that was precursor to current prospective study.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE

Selected No (Pending
Faculty Proposal for MD Student Research by Roopa Kanakatti Shankar

1. Faculty Sponsor

Name: Roopa Kanakatti Shankar  
Degrees: MBBS, MS  
Title: Endocrinologist, Assistant Professor of Pediatrics  
Organization: Children's National Hospital, The George Washington University School of Medicine  
Address: Division of Endocrinology, 111 Michigan Ave NW  
Apt/Suite: Suite 200, WW 3.5  
City: Washington  
State: District of Columbia  
Zipcode: 20010  
Office Phone: 202-476-2121  
Email Address: roopa.shankar@childrensnational.org

2. Daily Supervisor

Name: Roopa Kanakatti Shankar  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address: 

3. Project Title (250 character limit)

Growth hormone dosing patterns and IGF-1 in patients with Turner syndrome

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor’s Research Focus:
Yes - Pediatrics
Yes - Endocrinology

6. Sponsor’s translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Turner syndrome (TS) is characterized by a partial or complete absence of the X-chromosome in a phenotypic female. Short stature is common in TS and is managed with growth hormone (GH) therapy. The dose of GH is adjusted based on body weight, response to therapy, and serum insulin-like growth factor 1 (IGF-1). International guidelines recommend targeting the IGF-1 to a normal range and decreasing the dose if the IGF one is more than +3 SD, with the use of clinical judgment for values between +2 to +3 SD. A recent study showed that the attainment of adult height is slightly lower in patients whose GH therapy is dictated by IGF-1 compared to fixed dose treatment. The objective of this study is to assess the pattern of GH dosing and IGF-1 in TS patients on GH therapy presenting to their first Turner syndrome multidisciplinary clinic visit. We expect that in the real-world, the GH dosing is suboptimal compared with guidelines. Aim: Examine the GH dose and IGF-1 levels in TS patients on GH therapy referred to a newly established multidisciplinary clinic. Hypothesis 1: Median GH dose is lower than recommended by guidelines. Hypothesis 2: IGF-1 is variable and correlated to karyotype

8. Project goals and measurable objectives (e.g. number of patient records, assays completed (200 word limit).
The aim of this study is to assess the real-world GH dosing and IGF-1 levels in TS patients and the parameters that affect it. We have an IRB approved TS registry that includes the extended clinical phenotype of all consented patients with TS seen in the program at Children's National Hospital (CNH). Clinical, laboratory, radiological data, and biospecimens are collected on these patients and maintained in a RedCap database and biorepository respectively. This specific project will involve retrospective review of the variables and outcomes of interest in the Redcap database, supplemented with electronic medical chart review. Since inception, 70 unique patients have been seen in the TS clinic and will be consented for inclusion in the database. We expect 50% of these patients to be on growth hormone therapy at the initial clinic visit. Clinical data will be abstracted including but not limited to the karyotype, age of patient, dose of GH therapy at the initial TS visit, height, weight, growth velocity and IGF-1 levels obtained closest to the visit along with details on pubertal staging and estrogen therapy. Descriptive statistics will be used to assess the GH dose, IGF-1 and correlations between the growth, karyotype and other clinical parameters.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

The Turner Syndrome (TS) multidisciplinary clinic was established in 2019 at Children's National Hospital (CNH) with over 70 patients evaluated by the team this far. We have an IRB approved TS registry that includes the extended clinical phenotype of all consented patients with TS seen in the program at CNH. Clinical, laboratory, radiological data, and biospecimens are collected on these patients and maintained in a RedCap database and biorepository respectively. We will complete a retrospective analysis of patients seen in the multidisciplinary TS clinic who have consented to participate in the TS registry. Data will be abstracted from the RedCap database as well as supplemented with chart review including but not limited to the karyotype, age of patient, dose of GH therapy at the initial TS visit, height, weight, growth velocity and IGF-1 levels obtained closest to the visit along with details on pubertal staging and estrogen therapy. Statistical analysis will be primarily descriptive with correlation of GH dose with IGF-1, adjusted for estrogen therapy and will be analyzed by karyotype (45,X vs. others). Consented recruitment of patients to the TS Registry is ongoing, and a waiver of consent for retrospective medical chart review of all these patients has been approved by the IRB. Data on variables of interest will be abstracted by the student from the medical record and will be input into the RedCap database (June 2021). Analysis of the data will follow and will be completed by July 2021. We expect to report the findings at endocrine national conferences, and the student will take the lead in manuscript development for a subsequent publication. There is scope to extend the study or review other variables in the database as well, depending on the student's interest.

10. Describe the student's role in the project (200 word limit)

The research student will complete the electronic medical record review, data abstraction and queries in the RedCap database, and data analysis with supervision using descriptive statistics. We expect to have other ongoing research protocols in the TS Registry that the student can also observe or participate. It is expected that the student will prepare an abstract for presentation at a national conference and take the lead in manuscript preparation for this project. The student will also participate in the monthly multidisciplinary TS clinic, present on relevant topics at the pre-clinic case conference, and interact with multiple specialists at the clinic to formulate a comprehensive care plan. This will encourage the student to gain interdisciplinary clinical knowledge on management of congenital heart disease, growth hormone therapy, primary ovarian insufficiency and hormonal induction of puberty, and counseling on fertility preservation, genetics and behavioral health screening. The student is also invited to participate in the endocrine didactic sessions, and case presentations in the division of endocrinology at CNH. The student is also expected to present their work to the faculty and fellows in the division of endocrinology at the end of summer.

11. Describe the mentor's role in the project. (200 word limit)
The faculty mentor (Dr. Kanakatti Shankar) will take primary responsibility for the day to day supervision within the Division of Endocrinology and Diabetes. The faculty mentor will directly provide guidance and supervision for chart review, data abstraction and input into RedCap, and data analysis. The mentor will encourage and supervise the development of an abstract for conference submission and manuscript preparation. The mentor will also engage the student in all ongoing aspects of research and foster understanding of the research process, ethical and responsible conduct of research, and help them work with the study coordinator to observe the process of consent/enrollment and data collection. The mentor will also facilitate clinical learning on the multi-system pathology and management of Turner syndrome in the multidisciplinary clinic and foster interdisciplinary interactions with other specialists.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. Kanakatti Shankar has previously mentored several medical students, residents and pediatric endocrine fellows in both a clinical and research capacity. She has guided and supported several trainees to submit and present abstracts at national conferences. She is Director of the Turner Syndrome program at Children's National and the Principal Investigator on the TS Registry. She has mentored a GW student in the summer of 2020 who was awarded the Health Services Research Fellowship for her role on the project studying the neuropsychological and self-reported behavioral outcomes in Turner syndrome. This work resulted in an abstract that has been submitted to the Endocrine society meeting in 2021 and a manuscript in progress. The multidisciplinary team also includes specialists from other disciplines such as cardiology, genetics, gynecology, and psychology who will serve as mentors for the student in learning the inter-disciplinary aspects of care for Turner syndrome. The student will also have the opportunity to participate in other clinics and didactic conferences to enhance learning.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE)
Selected Yes

Please provide IRB number and date
IRB Number: Pro00013336
IRB Date: 07/15/2020
1. Faculty Sponsor

* Name: Neal Sikka
* Degrees: MD
* Title: Co-Chief, Section of Innovative Practice. Professor of Emergency Medicine
* Organization: GW MFA
* Address: 2120 L St NW
* Apt/Suite: 530
* City: Washington DC
* State: DC
* Zipcode: 20037
* Office Phone: 202-741-2911
* Email Address: nsikka@mfa.gwu.edu

2. Daily Supervisor

Name: Carine C G Galvao
Degrees: MS
Title: Research Coordinator
Organization: GW MFA
Address: 2120 L St NW
Apt/Suite:
City: Washington DC
State: DC
Zipcode: 20037
Office Phone: 2028030030
Email Address: cgalvao@mfa.gwu.edu

3. Project Title (250 character limit)

Augmenting Remote Medical Procedure Training and Assistance with Spatial Computing and Volumetric Capture

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Emergency Medicine

6. Sponsor's translational level
* (Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
This project seeks to augment the way medical personnel communicate and collaborate across the distance by allowing for real-time exchange of three-dimensional information that is missing in current videoconferencing telehealth. The project hopes to identify technology and educational principles for remote mentoring that result in more equitable access to healthcare; improved success for medical procedures that require the assistance of a remote expert; more cost-effective distribution of healthcare skills and training; and higher quality expert medical advice from a distance. We are building and testing a mixed reality head set system to aid the remote provider perform US guided Central Line placement.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).
   i) developing an understanding of the communication needs for medical staff in distant training, mentoring and procedural assistance, ii) gaining insights into the application of mixed-reality volumetric representation and transmission in remote healthcare settings; iii) designing guidelines for a mixed-reality volumetric communication system that simulates the physical presence of the patient at the location of the remote expert; iv) evaluating the utility of 3D spatial information in remote medical procedures assistance; and v) performing user studies examining the efficacy of spatially-enhanced communication in remote medical training and guidance.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

On the first phase of our study (Elicitation study) we plan to recruit instructors (faculty with experience in US-CVC and medical education) and trainees (medical and allied health professionals and trainees including students on clinical rotations) to participate. Instructors/trainees will do pre-session training via videoconferencing or in the CLASS Center or MFA buildings. Prior to the start of the training subjects will have the opportunity to ask questions and will be consented. Demographic data about prior experience will be collected prior to training start. Hands on training will be performed in the GWU CLASS Center (if available due to COVID restrictions), or in adequately sized MFA rooms. 1:1 instructor/trainee pairs will be placed in individual rooms with a cleaned US machine and US-CVC mannequin. Subjects will be
videotaped during a standard training session for US-CVC and the following debriefing. At the end of the session, instructor/trainee will be asked to complete questionnaires about their experience with the training process, specifically related to workload and types of communications/teaching techniques used, and will be interviewed by the study team to further understand how specific conflicts were resolved. Sessions will be transcribed for qualitative analysis to identify themes in the use of verbal communication, and debriefing will be transcribed to identify themes in communications patterns. Videos of the training sessions will be observed by the study team to identify gestural and nonverbal communications used during training. We plan to identify common gestures, as well as identify nonverbal cues that are used to understand learner behaviors, to better understand how nonverbal communications could impact future Augmented Reality training. Once a closed set of gestures is identified, we will reconvene instructors/trainees (virtually) and review the types of communications with them and solicit feedback. This may be done as a group or individually. Finally, we will recruit experts and solicit feedback about the gestures.

* 10. Describe the student's role in the project (200 word limit)

The student will serve as the research assistant for this project. She/he will assist with recruitment, consent, questionnaire application, data analysis and preparing a publication. We will draft the next phases of the study as well. The student will also participate / exposed to the other health technology projects in the Department and other telehealth related educational activities such as journal club, shadowing, and learning about activities in the department. The student will be immersed in an interdisciplinary environment containing physicians, software engineers and educators from GW and American University.

* 11. Describe the mentor's role in the project. (200 word limit)

Dr. Sikka, leads telehealth and Innovation efforts at MFA. He will mentor the student on health innovation, technology implementation, operations, and telehealth. He is also the leader PI on this NSF funded study and will mentor the student in all aspects of the recruitment and interviews. We will work with MFA statistician to complete the date analysis. Carine Galvao is the Research Coordinator for the study and works on the day to day operations of the project from a workflow perspective.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

The mentor team has enjoyed working with numerous Gill and HSP students in the last few years. Each student has had significant hands on exposure to telehealth or technology related project and mentoring. Student with interest in technology, health disparities, health access, telehealth, virtual reality and other innovative solutions at the cross of clinical care and population health will enjoy working with our team and have a high likelihood of having an abstract selected for a regional or national meeting as well as peer reviewed publications. Some recent Gill Fellows include Lucy Galvin and Charles Hartley.

* 13. Do you have or will you obtain IRB approval for this project?

**Please note:** Students cannot begin a human subjects project without IRB approval.

* (Please select ONE)

**Selected** Yes

Please provide IRB number and date
Faculty Proposal for MD Student Research by Laura L Tosi

1. Faculty Sponsor

Name: Laura L Tosi  
Degrees: MD  
Title: Orthopaedic Surgeon, Associate Professor Pediatrics & Orthopaedics  
Organization: Children's National  
Address: 111 Michigan Ave NW  
Apt/Suite: Suite 400 West Wing Floor 1.5  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 2024764063  
Email Address: lutosi@childrensnational.org

2. Daily Supervisor

Name: Susan Knoblach  
Degrees: PhD  
Title: Associate Professor Pediatrics, Integrative Systems Biology  
Organization: Children's National  
Address: 111 Michigan Ave NW  
Apt/Suite: Suite 400 West Wing Floor 1.5  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 2024766094  
Email Address: SKnoblach@childrensnational.org

3. Project Title (250 character limit)

Exploration of Genetic Variation in the LRP5 Gene and Their Association with Musculoskeletal Phenotypes in Young Adults

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Genomics
Yes - Pediatrics
Yes - Surgery

6. Sponsor's translational level
(Please select ONE)
T0/T1: Basic Science Discovery and Initial Translation to Humans

7. Hypotheses (200 word limit)
This is a validation study and not a hypothesis-driven study. A recent study by Wang et al. in Frontiers of Endocrinology "Associations of LRP5 Gene with Bone Mineral Density, Bone Turnover Markers, and Fractures in the Elderly With Osteoporosis" highlighted the association of single nucleotide polymorphisms (SNPs) in LRP5 (part of the Wnt/beta-catenin signaling pathway) on bone mineral density (BMD), bone turnover markers, and fracture risk in the elderly. Our project will perform genotyping of two cohorts of healthy young adults for LRP5 variants identified by Wang and others, and then use statistical methods to assess whether study variants are associated with other markers of musculoskeletal health, particularly those associated with peak bone mass. Our cohorts have phenotypic data related to muscle strength and size, as well as bone parameters including cortical marrow and total bone volume. We predict that variants in LRP5 will also be associated with these additional phenotypes and demonstrate sexually dimorphic results. Osteoporosis (and fragility fractures) are thought to be part of a continuum that begins early in life. Our study seeks to identify predictors of musculoskeletal health across the lifespan.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
The goal of this project is to determine whether the genetic variants identified by Wang et al. in the study “Associations of LRP5 Gene With Bone Mineral Density, Bone Turnover Markers, and Fractures in the Elderly With Osteoporosis” are also associated with variation in bone quality and muscle strength phenotypes in our 2 study cohorts of young adults. The project’s research goals are to: 1) genotype the DNA samples for the two cohorts the Bone Health Program maintains at Children’s National and 2) conduct statistical analyses to test for associations with various phenotypes that were collected for these cohorts, and then 3) to translate these findings into an abstract for submission to George Washington University Research Day, Children’s National Research Week and the Orthopaedic Research Society. Genotype/phenotype associations for the study variants will be identified using Applied Biosystems Taqman Allelic Discrimination Assays and the Applied Biosystems QuantStudio 7 Flex Real-Time PCR System under the supervision of Dr. Susan Knoblach. The student who undertakes this project will be expected to set up and run DNA assays for the approximately 600 de-identified participants in our study cohorts. Once completed, results will be analyzed in partnership with our statistician, Heather Gordish-Dressman PhD.
9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.

Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This research project is designed to be a guided exploration of the genetic underpinnings of musculoskeletal growth and development, and is intended to cover a wide variety of musculoskeletal health topics ranging from basic bench science to clinical expertise and surgical management. Training will include hands-on instruction from the lab team about proper lab practices, the best ways to handle DNA for optimal results, and general guidelines for bench research. After completing our orientation program, the student’s time will be divided equally between 1) performing DNA genotyping, organizing and doing back end research on the genes we are interested in, and 2) shadowing Dr. Tosi, her Bone Health team, and her orthopaedic colleagues in the clinic and operating room, as allowed by COVID restrictions, and at the very least via telemedicine. The student will be expected to attend all genetic research conferences held over the summer at Children’s. The current system we use for PCR analysis only allows for one plate to be run at a time and involves significant prep and scheduling. These lab tasks will require the student to be organized and diligent about their lab work to make sure all samples can be run during our 8-week program. A smaller portion of time will be devoted to organizing and analyzing the resulting data. There will also be time set aside for the student to perform database searches to look for relevant work relating to his/her genes of interest. Additional time will be devoted to shadowing in the Children’s National Orthopaedic Clinic and operating room, so the student can interact with patients followed in our Bone Health Program as well as other orthopaedic specialties. This clinical and OR exposure is designed to assist the student in making a well thought out career decision about whether to pursue orthopaedics. The student will be expected to attend all Orthopaedic teaching conferences as well as the weekly case conference. The student is required to write an abstract summarizing their work for the Orthopaedic Research Society annual meeting, GW Research Week, and Children’s National Research Week.

10. Describe the student’s role in the project (200 word limit)

As described throughout this proposal, the student will receive significant guidance and mentoring throughout the project, however the student is expected to take charge of the project and make sure that he/she completes all necessary steps. The student will learn the basics of performing genotyping. The student will perform genotyping with Realtime PCR and then work with our statistician to explore Hardy-Weinberg Equilibrium, data stratification, and analysis of covariance (ANCOVA) as part of the data analysis plan. The student will attend all research conferences held in the Research Center for Genetic Medicine. Dr. Susan Knoblach, PhD will oversee supervision and training in the laboratory. The student will be required to attend Dr. Tosi’s weekly Orthopaedic Bone Health Clinic so that he/she can develop a better appreciation of the clinical impact of genetic variation on skeletal health and disease. The student may have the opportunity to observe in the Orthopaedic Operating Room, depending on COVID regulations next summer. The student will be required to submit an abstract to the Orthopaedic Research Society, GW Research Day and Children’s National Research Week and prepare a poster or podium presentation if accepted. This project is supported by the Bone Health Program Research Fund.

11. Describe the mentor’s role in the project. (200 word limit)
During the course of the project, Dr. Tosi and Dr. Knoblach will be available to guide the student and answer questions regarding the purpose of the research and proper conduct of laboratory work. Dr. Tosi will guide the brainstorming and initial planning phases of the investigation and Dr. Knoblach and her laboratory staff will provide hands on training and guidance on the use of the sequencing technologies and other equipment used. Dr. Heather Gordish-Dressman (Statistics) maintains the phenotype data for our study cohorts and will assist in data analysis. Dr. Tosi and Dr. Knoblach, as well as their research teams, will assist in drafting the project abstract, poster, and hopefully manuscript for publication. For the clinical and OR shadowing component of the program, Dr. Tosi’s Bone Health team will ensure that the student is introduced to experiences that emphasize the role of genetic variation and bone metabolism on musculoskeletal health.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
The summer of 2021 will mark the 17th anniversary of our Children’s National Bone Health Summer Research Program. We have hosted at least one Gill Fellow every year, as well as numerous Health Service Scholars. We have provided an intensive lab experience focused on exploring genetic markers of musculoskeletal health, while also providing exposure to orthopaedic clinical and surgical practice, particularly in the areas of rare bone disease and metabolic bone disease. In 2020, we continued to provide a summer research program for students by switching to a virtual program, involving additional lectures, conferences, and trainings in genetics and orthopaedics. Students participated in TeleECHO programs along with daily genetics lectures, exploring the crossover of genetics and orthopaedics through osteoporosis, skeletal dysplasias, and genetic testing. While we were not able to provide in-person lab and clinical shadowing experience, students were able to observe the lab process, listen in to morning rounds, and shadow doctors for telemedicine clinic. Our 17 years of experience make our program flexible and adaptable to the challenges of medical education in 2020, and we will continue to provide opportunities for young medical students eager to participate in research and to try on an orthopaedic surgeon’s shoes.

13. Do you have or will you obtain IRB approval for this project? Please note: Students cannot begin a human subjects project without IRB approval.
(Please select ONE)
Selected Yes

Please provide IRB number and date
IRB Number: Pro00003972
IRB Date: 7/15/2019
1. Faculty Sponsor

Name: Lisa Tuchman  
Degrees: MD, MPH  
Title: Chief, Division of Adolescent Medicine  
Organization: Children's National Hospital  
Address: 111 Michigan Ave. NW  
Apt/Suite:  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 202-476-6481  
Email Address: ltuchman@childrensnational.org

2. Daily Supervisor

Name:  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address:  

3. Project Title (250 character limit)

Retrospective Review of Psychiatric Readmissions

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Psychiatry

6. Sponsor's translational level
(Please select ONE
T3: Translation to Practice

7. Hypotheses (200 word limit)
Psychiatric hospitalization readmissions are common and costly to patients, families, and the health system. The time after discharge carries increased risk for suicide, violence, homelessness, decreased medication adherence, and ultimately poorly managed conditions and hospital readmission. Even with constrained resources, it is crucial that the health system coordinate appropriate outpatient services for patients with psychiatric illnesses discharged from an inpatient setting to prevent further hospitalization. This presents a challenge as there are a multitude of patient and provider level factors directly associated with readmission rates that require further investigation. This data analysis aims to provide a preliminary description of the demographic and socioeconomic characteristics of a population of children and adolescent patients who were admitted multiple times to an inpatient psychiatry unit at an urban children's hospital.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
1. Conduct a comprehensive and systematic review of psychiatric readmission data 2. Synthesize data and present to colleagues in Adolescent Medicine, Psychiatry, and Children's National 3. Produce a scholarly product

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This study uses a retrospective chart review study design.

10. Describe the student's role in the project (200 word limit)
The student will play an integral role in study design and implementation. They will help design the study tool using RedCap and/or Excel and conduct chart review. They will also assist in data cleaning and analysis and scholarly product creation.

11. Describe the mentor's role in the project. (200 word limit)
The mentor will assist in all roles assigned to the student and meet regularly to ensure timely deliverables. They will provide guidance on data analysis and scholarly product submissions.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. Tuchman has mentored several Gill Fellows previously.

13. Do you have or will you obtain IRB approval for this project?  
**Please note:** Students cannot begin a human subjects project without IRB approval.  
(Please select ONE)  
**Selected** Yes

Please provide IRB number and date

<table>
<thead>
<tr>
<th>IRB Number:</th>
<th>Pro 9588</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRB Date:</td>
<td>10/2021</td>
</tr>
</tbody>
</table>
Faculty Proposal for MD Student Research by Briony Varda

1. Faculty Sponsor

Name: Briony Varda
Degrees: MD, MPH
Title: Pediatric Urology Attending
Organization: Children's National Medical Center
Address: 111 Michigan Ave NW
Apt/Suite:
City: Washington
State: DC
Zipcode: 20010
Office Phone: 2024765000
Email Address: bvarda@childrensnational.org

2. Daily Supervisor

Name:
Degrees:
Title:
Organization:
Address:
Apt/Suite:
City:
State:
Zipcode:
Office Phone:
Email Address:

3. Project Title (250 character limit)
Low-value utilization of medical services among patients with special healthcare needs: a focus on Spina Bifida and Colorectal Malformations in the DMV area.

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
5. Sponsor’s Research Focus:
Yes - Pediatrics
Yes - Surgery

6. Sponsor’s translational level
(Please select ONE)
T4: Translation to Population Health

7. Hypotheses (200 word limit)
Patients with special healthcare needs, including those with Spina Bifida and Colorectal anomalies require multidisciplinary, life-long coordinated care. When support systems are lacking, the use of "low-value" services, such as preventable emergency room visits and inappropriate diagnostic testing, is utilized more frequently. We hypothesize that children with these conditions who regularly attending multidisciplinary clinics are less likely to engage "low-value" healthcare services.

8. Project goals and measureable objectives (e.g. number of patient records, assays completed (200 word limit).
1) Compare low-value utilization before and after the implementation of a two new, coordinated multidisciplinary programs for patients with Spina bifida and colorectal malformations. 2) Identify patient, demographic, geographic, hospital and clinical factors associated with recurrent "low-value" service utilization. 3  Elucidate, from the patient and family perspective, why "low-value" utilization may be occurring 4  Design and implement strategies to reduce low-value utilization in our setting

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

Project protocol, research design and aims are actively being written. IRB to be submitted this winter. Study instruments and char review forms will be designed this spring. Participants will join the study in time for data collections and analysis. This would include chart review and/or family interviews.

10. Describe the student's role in the project (200 word limit)
Data collection Patient / family interviews Analysis and interpretation of both quantitative and qualitative data

11. Describe the mentor's role in the project. (200 word limit)
I will guide the student through basic data collection and organization for both quantitative research and qualitative research (namely interview-based research). If they are interested, I will also teach them how to analyze the data and present in written and visual formats. I will work them on abstract writing, manuscript writing, and research presentation. I can also teach them broadly about concepts in Health Services Research and hopefully spark interest in developing their own research ideas or designing projects that spin off or extend our current work.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

I started at CNMC in August and have not mentored students here. That being said, I mentored two residents and two medical students during my 3 year fellowship. This resulted in several publications and a recent manuscript submission, as well as national conference presentations for all of them. I personally have completed the Harvard-wide Pediatric Health Services Research Fellowship & received my MPH from the Harvard School of Public Health. I have experience with both qualitative and quantitative research methodology. Overall, I aim to create meaningful and impactful projects. I love to teach and think that research success is attainable if you find what motivates you and have the right support. I would guide a medical student working with me towards a concrete research product and hopefully also provide him or her with a new skill set surrounding the design and execution of health services research.

13. Do you have or will you obtain IRB approval for this project?
Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE

Selected No (Pending
Faculty Proposal for MD Student Research by Michael Whalen

1. Faculty Sponsor

Name: Michael Whalen
Degrees: MD
Title: Assistant Professor of Urology/Urologic Oncology
Organization: GW Medical Faculty Associates
Address: 2150 Pennsylvania Ave NW
Apt/Suite: Suite 3-417
City: Washington
State: DC
Zipcode: 20037
Office Phone: 202-741-3121
Email Address: mwhalen@mfa.gwu.edu

2. Daily Supervisor

Name: Michael Whalen
Degrees: MD
Title: Assistant Professor of Urology/Urologic Oncology
Organization: GW Medical Faculty Associates
Address: 2150 Pennsylvania Ave NW
Apt/Suite: Suite 3-417
City: Washington
State: DISTRICT OF COLUMBIA
Zipcode: 20037
Office Phone: 2027413121
Email Address: mwhalen@mfa.gwu.edu

3. Project Title (250 character limit)
Clinical Outcomes Research in Urologic Oncology: Prostate Cancer and Bladder Cancer

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.
Trends in treatment strategies and comparisons of outcomes in lymph node positive bladder cancer: An Analysis of the National Cancer Database. Christina Darwish, Andrew Sparks, Richard Amdur, Michael Whalen. (accepted for publication to Urology 6/2020
https://app.tessello.co.uk/CourseStore/clients/BJUI/101085-Perioperativevenoust-201772512038/launch.html
5. Sponsor's Research Focus:
Yes - Cancer
Yes - Surgery

6. Sponsor's translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Prostate cancer is the most common non-skin malignancy in men and is the second leading cause of cancer mortality in the US. To minimize the risk of side effects, most slow-growing prostate cancers are currently managed with close monitoring, called “active surveillance.” Although the risk of developing metastatic disease is very low during active surveillance, there is indeed a risk of developing adverse pathologic features that, despite eventual treatment with surgery or radiation, may predispose patient's to developing cancer recurrence later on. Such recurrence then prompts further "salvage" treatments such as radiation or hormonal manipulation (i.e. androgen deprivation therapy), which themselves can have substantial side effects. Although the trend in the US has been to pursue Active Surveillance as the preferred approach for most low- and intermediate-risk prostate cancers, this research project will look at a large national cancer database to determine if this delay in primary treatment will actually increase the rate of salvage treatments. This project will utilize the National Cancer Database (NCDB) to investigate men with low- and favorable-intermediate risk prostate cancer, assess treatment patterns (active surveillance, radiation, surgery, androgen deprivation therapy), observe rates of surgery and salvage treatment from 2006-2016.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed (200 word limit).
The NCDB will be queried for low- and intermediate-risk prostate cancer patients to assess treatment patterns (active surveillance, radiation, surgery, androgen deprivation therapy), observe rates of surgery (radical prostatectomy) and rates of salvage radiation and androgen deprivation therapy from 2006-2016. The outcomes of interest will be receipt of salvage or multi-modal treatment, as well as examining trends over time and correlation with the rates of adoption of active surveillance. A second project involves populating the muscle-invasive bladder cancer database (n=492) to investigate the influence of markers of nutritional deficiency (i.e. hypoalbuminemia, low BMI, sarcopenia) with outcomes after radical cystectomy. Since the principle risk factor for bladder cancer is tobacco history, many bladder cancer patients suffer from comorbid nutritional deficiencies. Given the need for potentially morbid treatments of systemic chemotherapy and major extirpative surgery to remove the bladder and construct an intestinal urinary diversion, these nutritional deficiencies may have a profound impact on patient fitness for and recovery after these treatments. This project will query the GW Cancer Center experience with radical cystectomy for bladder cancer and assess correlations between preoperative nutritional deficiency and perioperative oncolgic outcomes. Goal: 1-2 abstracts for submission to national conferences publication in peer-reviewed journal.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
This research project is designed to provide exposure to clinical outcomes research within the field of Urology and Urologic Oncology. The student will engage in critical reading/analysis of published journal articles in the domains of prostate cancer and testicular cancer. These will serve as a model for subsequent design and implementation of a retrospective research project utilizing our single-institutional prostate MRI database. The research experience will teach the student how patient clinico-pathologic variables can be assessed with basic statistical methods to derive correlations with multiple clinically relevant study endpoints. The student will gain exposure to these statistical methods as well as work closely the Medical Faculty Associates biostatisticians, Andrew Sparks and Richard Amdur. There will also be opportunity and expectation to contribute to the growing IRB-approved Retrospective and Longitudinal Database of Genitourinary Cancer, as well as the Nutritional Deficiency and Bladder Cancer database based on the clinical and surgical experience of the GW Urology physicians. It is a specific aim of this research project to contribute to our Bladder Cancer nutritional deficiencies and outcomes database and begin to answer these very important clinical questions. There will also be opportunity to conduct outcomes research using a large national clinical database: the National Cancer Database (NCDB). The specific research project will be catered to the student’s interests. The student will work closely with a resident mentor to provide clinical context and relevance for the research hypotheses. Further projects using these databases will be possible based on the student’s own intellectual curiosity and motivation to develop original ideas/hypotheses for investigation. Based on the Hypotheses above, this project will utilize the National Cancer Database to investigate men with low- and favorable-intermediate risk prostate cancer, assess treatment patterns (active surveillance, radiation, surgery, androgen deprivation therapy), observe rates of surgery radical prostatectomy and rates of salvage radiation and androgen deprivation therapy from 2006-2016. Depending on the student’s interests, time will be spent performing literature review and drafting the introduction and discussion of the manuscript. He/She will also spend time with data entry to input information from the electronic medical record into the database. This work will be supplemented by weekly meetings for troubleshooting and discussion of interesting aspects of prostate cancer diagnosis and treatment. The expectation will be that one or more abstracts are generated to be submitted to our national Urologic Oncology meetings (Society of Urologic Oncology, Genitourinary American Society of Clinical Oncology, American Urological Association). The deadline for the initial submission is late summer 2021. The project will last for the summer, with opportunity to extend participation during the academic year.

10. Describe the student’s role in the project (200 word limit)
The student will take the lead with literature search and drafting the project manuscript with the guidance of the Urology residents and attending supervisor. He/She will be responsible for coordination with the biostatistician and assist with interpretation of the statistical results. The goal of the project is for the student not only to learn about outcomes research, but to make a meaningful contribution to the field of Urologic Oncology. He/She will also be responsible for populating the growing Bladder Cancer database using the REDCap interface. There will be opportunity for statistical analysis of the data alongside the MFA professional statisticians as well. The student will work closely with the biostatisticians to understand the NCDB dataset, including organization, statistical analysis, analysis of outcomes of interest (i.e. surgical complications and success rates) and presentation of data in a clear, concise, and meaningful format. There will be ample opportunity for shadowing experiences in the outpatient clinic and the operating room to gain further exposure to clinical Urology. The student will also participate in weekly Urology Grand Rounds and resident didactic sessions to supplement their growing Urologic fund of knowledge.

11. Describe the mentor’s role in the project. (200 word limit)
The mentor will provide ample opportunity for discussion of the rationale for the project and the potential ideas for publication arising from the database. The mentor will schedule regular weekly research meetings to assess the student’s progress and troubleshoot any questions. The mentor will also invite the student to participate in clinical patient care. One half-day per week will be spent shadowing in the Urology clinic and another day will be spent in the operating room. These mentorship experiences will provide student exposure to the field of Urology and to provide clinical context for the database work. The mentor will also attend regular meetings between the student and the statisticians. The mentor has significant experience in outcomes research as well as basic statistical methods, so is well-equipped to be able to guide the student’s interest and success with the project.
12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)

I have worked with many medical students and Urology residents. Medical students have been involved with published manuscripts in peer-reviewed journals, as well as authorship of review articles and book chapters. I worked with several students over Summer 2020, including Michael Wynne, who was awarded a Summer Research Fellowship award. Additional students include Cyrus Adams-Mardi, MS, current 2nd year GW medical student and recipient of Jean L. Fourcroy Research Award 8/2020; Melinda Fu, current 3rd year GW medical student, whose project was selected to be presented at the annual Society of Urologic Oncology conference 12/2020; Joyce Chen, ScM; Summer Outcomes Research student from California Northstate University College of Medicine; Recipient of Jean L. Fourcroy Research Award 8/2020: MRI and Biomarker Screening of Prostate Cancer. Other Gill fellows include Akshay Reddy (2019), who presented at GU ASCO conference and was awarded the William Beaumont Research Award, and Christina Darwish (2018), whose manuscript has been published in Urology. I am currently the Research Coordinator for the Urology Department. I was awarded the “Outstanding Clinical Instruction” award (“Teacher of the Year”) by the Urology Residents in June, 2019. I have served as a medical student mentor in the Clinical Apprenticeship Program since 2017.

13. Do you have or will you obtain IRB approval for this project?

Please note: Students cannot begin a human subjects project without IRB approval.

(Please select ONE

Selected Yes

Please provide IRB number and date

IRB Number: 041723
IRB Date: exp 7/19/2021
* 1. Faculty Sponsor

* Name: David Yamane  
* Degrees: MD  
* Title: Assistant Professor  
* Organization: GWU Department of Emergency Medicine; Department of Anesthesiology and Critical Care Medicine  
* Address: 2300 M. St. NW  
* Apt/Suite:  
* City: Washington  
* State: DC  
* Zipcode: 20037  
* Office Phone: (202) 741-2948  
* Email Address: dayamane@mfa.gwu.edu

* 2. Daily Supervisor

Name: Ivy Benjenk  
Degrees: RN, MPH  
Title: Research Coordinator  
Organization: GWU Department of Anesthesiology and Critical Care  
Address: 2300 M. St. NW  
Apt/Suite: 7th Floor  
City: Washington  
State: DC  
Zipcode: 20037  
Office Phone: 9176976063  
Email Address: ibenjenk@mfa.gwu.edu

* 3. Project Title (250 character limit)

Patients with respiratory failure in the intensive care unit (ICU) setting often require intubation and ventilator management during the course of their illness. There are many complications associated with endotracheal intubation and mechanical ventilation, among which are problems related to tube placement. Endotracheal tubes (ETTs) may migrate toward bronchi, become dislodged, and up to 1 in 10 ventilator-days has been shown to be associated with tube migration. These incidents have been associated with bronchial injury, vocal cord injury, ventilator associated pneumonia, and other complications. To mitigate this effect, ICU teams utilize regular chest x-rays to monitor the positioning of endotracheal tubes while patients are receiving mechanical ventilation. These x-rays are associated with cost (due to the requirement for equipment and trained staff), as well as adverse effects related to patient repositioning and ionizing radiation. As a result, the use of daily chest x-rays in the ICU setting is controversial. Point of care ultrasound (POCUS) is a clinical technology with increasing application in the critical
POCUS has been shown to be useful in confirming endotracheal placement of ETTs, and in a small study identifying depth of ETTs in certain patients. The objective of this study is to determine whether transtracheal ultrasound predicts malpositioning of endotracheal tubes, and whether POCUS surveillance reduces malpositioning-related complications in comparison to CXR surveillance.

4. **Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.**


5. **Sponsor’s Research Focus:**

Yes - Emergency Medicine

6. **Sponsor’s translational level**

*(Please select ONE)*

T3: Translation to Practice

7. **Hypotheses (200 word limit)**

Given the demonstrated accuracy of POCUS to confirm endotracheal placement, and the frequency with which ETT malpositioning occurs, we hypothesize that a simple method of transtracheal POCUS will correctly predict tube malpositioning in the ICU setting, and that daily use of an ultrasound-guided repositioning protocol will reduce the rate of complications from tube malpositioning in the ICU setting. If validated, the study would support the use of ultrasound surveillance (rather than chest x-rays and the associated ionizing radiation exposure to patients and technologists) in the critical care setting.

8. **Project goals and measureable objectives (e.g. number of patient records, assays completed) (200 word limit).**

1. To enroll, randomize, and collect data for 150 patient days 2. To present findings at a conference 3. To work with research team to develop a manuscript to publish the findings

9. **Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.**

**Selection criteria include:**

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
Patients (counted by ventilator-days) will be randomized 1:1 to receive transtracheal ultrasound with subsequent repositioning parameters vs patients receiving radiographic surveillance-guided repositioning. Arm 1 (Intervention): Patients in this arm will undergo standard of care daily CXR for performance comparison. Following the CXR, a sonographer (who has been trained on landmarks) will perform transtracheal ultrasound with a linear probe (10-5 MHz) in the transverse axis, which represents the technically simplest method. • If the superior border of the cuff (identified by a transition from the “O” sign to the “Bullet” sign) terminates between the cricoid cartilage and the sternal notch, the depth is deemed appropriate by the sonographer and no adjustment is recommended. • If the cuff is not visible (only the “O” sign indicating intratracheal placement), the tube is deemed low and the sonographer estimates withdrawal; if in agreement by the primary team to confirm safety (who are not blinded to the daily CXR), the cuff is withdrawn with RT and a follow-on CXR ordered for confirmation. • If the “O” sign is absent intratracheally and a bullet sign noted at or above the cricoid, the ETT is deemed high and the sonographer estimates advancement; if in agreement by the primary team to confirm safety (who are not blinded by the daily CXR), the cuff is advanced with RT and a follow-on CXR is ordered for confirmation. Arm 2 (Control/Usual Care): Patients undergo daily portable chest radiographs, and endotracheal tube depth relative to the inferior base of the carina is measured. If the distal tip of the endotracheal tube is positioned 5 cm +/- 2 cm above the carinal base, no intervention is made. If the endotracheal tube terminates superior or inferior to this range, it is advanced or withdrawn respectively, with confirmation by a follow-on chest radiograph. The null hypothesis is that POCUS criteria (superior border of ETT cuff between the third tracheal ring and above the sternal notch) will predict correct tube placement by radiographic criteria (tip terminating 5 cm +/- 2 cm above carinal base) in 50% of instances, and that use of an ultrasound-guided repositioning protocol will reduce the incidence of repositioning maneuvers, bronchial migration, vocal cord herniation, ETT balloon rupture, and accidental extubation during repositioning. Assuming ETT malposition incidence of 10% (1 event per 10 ventilator-days) based on previous surveys of endotracheal tube malposition in stable ICU patients [3,4], a sample size of 146 ventilator-days (73 in each arm) has 80% power to detect an absolute 10% difference in malpositioning rates.

* 10. Describe the student's role in the project (200 word limit)
The student will be responsible for: 1. Screening for potential patients 2. Randomization 3. Ensuring that patients have CXR scheduled 4. Coordinating with the sonographers to ensure that a trained sonographer is available to perform the ultrasound 5. Collecting data and entering data into RedCAP 6. Putting together an abstract for a national meeting 7. Contributing to the manuscript

* 11. Describe the mentor's role in the project. (200 word limit)
The educate the student about the research process, introduce the student to all members of the ICU staff, ensure that the student has access to IRIS, Redcap, and Cerner, and ensure that the student has completed all citi-training. Mentor will teach student how to capture necessary data elements. Mentor will help student interpret the data and compose an abstract for presentation at a national meeting.

* 12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
Dr. David Yamane will be the mentor for this project. Dr. Yamane is the Director of Research for GW ICU. He works tirelessly to connect students with research mentors in the department and staff students to projects. He was the PI on an institutional COVID registry this past spring with 60 student contributors. Over 25 student-led or student-involved abstracts have been accepted at conferences. He works nights and weekends to help students interpret data and improve their writing. One abstract won an award from the SCCM for her work (Stephanie Rodriguez). Dr. Yamane has published prolifically over the last few years and nearly all of his publications include students in high authorship positions. He has had two previous Gill Fellows. The previous Gill Fellows were Shannon Tillery and Bridget Marcinowski. Shannon's work was presented at the 2020 SCCM conference.

* 13. Do you have or will you obtain IRB approval for this project? 
Please note: Students cannot begin a human subjects project without IRB approval. 
* (Please select ONE) 
Selected No (Pending)
Faculty Proposal for MD Student Research by Can Yerebakan

1. Faculty Sponsor

Name: Can Yerebakan  
Degrees: MD  
Title: Associate Prof  
Organization: Children's National Hospital/GWU  
Address: 111 Michigan Ave NW  
Apt/Suite:  
City: Washington  
State: DC  
Zipcode: 20010  
Office Phone: 2024766291  
Email Address: cyerebakan@childrensnational.org

2. Daily Supervisor

Name:  
Degrees:  
Title:  
Organization:  
Address:  
Apt/Suite:  
City:  
State:  
Zipcode:  
Office Phone:  
Email Address:  

3. Project Title (250 character limit)
Long-term outcome of patients following surgical repair of Truncus arteriosus communis

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.


5. Sponsor's Research Focus:
Yes - Surgery

6. Sponsor's translational level
(Please select ONE
T3: Translation to Practice

7. Hypotheses (200 word limit)
The repair of Truncus arteriosus reveals excellent long-term outcome with limited morbidity

8. Project goals and measurable objectives (e.g. number of patient records, assays completed (200 word limit).
Objectives in 50-70 patients over 15 years retrospective data review. 1 Determine long-term survival rates 2) Determine long-term morbidity of patients regarding - Cardiac function - Pulmonary conduit patency - Pulmonary artery patency - Aortic valve function 3 Determine rate of re-interventions 4) Determine standard of life at long-term

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:
- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research
1. Retrospective data analysis with review of pre-, intra- and postoperative data of patients about 4 weeks 2. Statistical analysis (about 2-4 weeks) 3. Manuscript preparation (2-4 months overlapping with statistical analysis)

10. Describe the student's role in the project (200 word limit)
The student will be assigned to review and retrieve all desired data from patient records under guidance, perform a literature review, analyze the data with the help of the statistician and write an abstract and/or manuscript under my mentorship for the presentation of the results.

11. Describe the mentor's role in the project. (200 word limit)
Provide continuous mentorship for the student during entire project, help to design the project, analyze the data and results, provide guidance for successful publication.

12. Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)
We have had numerous medical students working on many research projects in the department of Cardiac Surgery at the Children's National Hospital, Washington, DC so that we can provide sufficient experience in mentoring different types of research projects from clinical spectrum to experimental setting. The last student we have worked with was Nicolle Ceneri who has completed her research projects with successful scientific publication.

13. Do you have or will you obtain IRB approval for this project?  
Please note: Students cannot begin a human subjects project without IRB approval.  
(Please select ONE)  
Selected No (Pending
Faculty Proposal for MD Student Research by Zachary Zimmer

1. Faculty Sponsor

Name: Zachary Zimmer
Degrees: MD
Title: Dr.
Organization: MFA
Address: 2300 M St
Apt/Suite: 
City: Washington
State: DC
Zipcode: 20037
Office Phone: 2027413300
Email Address: zzimmer@mfa.gwu.edu

2. Daily Supervisor

Name: Dr. Zimmer

3. Project Title (250 character limit)
Association of Urinary Tract Infections and Periprosthetic Infection Following Revision Total Shoulder Arthroplasty

4. Up to three faculty publications (within the last three years). Projects without recent publications are unlikely to be filled.

5. Sponsor’s Research Focus:
Yes - Surgery

6. Sponsor’s translational level
(Please select ONE)
T3: Translation to Practice

7. Hypotheses (200 word limit)
Prior research suggests that bacteremia secondary to urinary tract infection (UTI) may be a modifiable risk factor for poor outcomes following total joint arthroplasty. We hypothesize that individuals with urinary tract infections in the 2 weeks prior to reverse total shoulder arthroplasty (rTSA) experience higher rates of post-operative complications and inferior surgical outcomes as compared to those without UTI.

8. Project goals and measurable objectives (e.g. number of patient records, assays completed (200 word limit).
Data will be gathered using the PearlDiver database, a national insurance claims database containing over 120 million patient records. Data will then be analyzed using univariate and multivariate regression to characterize any associations between the presence of UTI and patient outcomes. This database provides anonymized patient data and collection will occur prior to the student’s start date. As such, the student will not be responsible for analyzing individual patient records.

9. Overall design of the research project (500 word limit). Please describe time frame and breakdown of activities.
Selection criteria include:

- The project design makes it likely that the objectives will be achieved
- The project is likely to result in a report of interest to other scholars
- The project fulfills discovery/original research

This is a retrospective, propensity-matched cohort study examining the perioperative and postoperative risks posed by preoperative UTI. Data will be gathered and preliminarily analyzed prior to the student starting the fellowship. Upon starting, the student will be expected to expeditiously conduct a literature review (1-2 weeks), write an abstract for submission to a national conference (2 week), and prepare a manuscript for submission to a peer-reviewed publication (2 weeks). Editing by orthopaedic residents and attendings is expected to take several more weeks, and the student will coordinate submission of these deliverables by the late Summer/early Fall. While the risk of UTI has not been shown to be a risk factor for poor outcomes following rTSA, associations between UTI and adverse outcomes after arthroplasty in other joints have been described in the literature. Periprosthetic joint infections and implant failure are devastating complications following rTSA and identifying risk factors associated with these complications are of great interest to orthopaedic surgeons everywhere.
10. **Describe the student's role in the project (200 word limit)**
The student will be expected to conduct a thorough literature review on this subject and write abstracts and a manuscript for this project as determined by the study team. The student will also be encouraged to join Dr. Zimmer in clinic and the operating room as their schedule permits.

11. **Describe the mentor's role in the project. (200 word limit)**
You will be working with Dr. Zachary Zimmer, a Shoulder and Elbow fellowship trained orthopaedic surgeon at GW. Dr. Zimmer will serve as your primary point of contact for this study, and will oversee writing, editing, and submission of project deliverables by the student. In addition, Dr. Zimmer intends to establish a longitudinal mentor-mentee relationship with the student and support their efforts to match into an orthopaedic residency.

12. **Describe the current and previous medical student training by your mentor team. Indicate any Gill Fellows. (200 word limit)**
In concert with the orthopaedics department, we have a number of medical students working with our mentor team, several of whom have published multiple original research articles in the past year. While we have not had any Gill Fellows, our research program has been successful in connecting students with the team and allowing them to be productive immediately.

13. **Do you have or will you obtain IRB approval for this project?**
**Please note:** Students cannot begin a human subjects project without IRB approval.

(Please select ONE)

**Selected** No (Not Required)

**Please specify why it is not required.**
Data is anonymized prior to collection and no individual patient charts will be reviewed