



SPOTLIGHT ON STAR

Newsletter

**FY 21
July 2020 - June 2021**



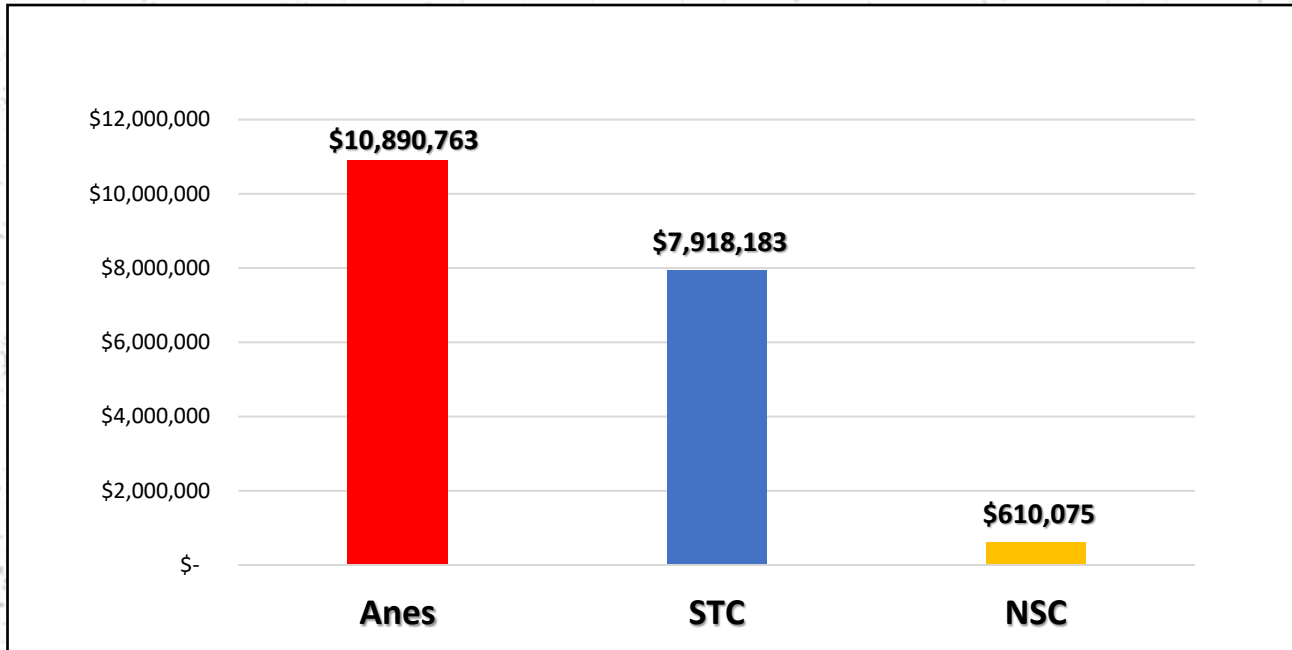
UNIVERSITY of MARYLAND
SCHOOL OF MEDICINE
SHOCK, TRAUMA AND ANESTHESIOLOGY
RESEARCH CENTER

STAR CENTER UPDATES

Introduction

Spotlight on STAR is a semi-annual distribution that serves to keep its members informed of research activities for the current academic year in the Department of Anesthesiology, the Program in Trauma and the National Study Center. The Spotlight on STAR includes current information about funding, grants submitted, new awards, top enrolling clinical studies and helpful contact information for the STAR administrative team.

FY21 Research Funding Year-to-Date



Total FY21 Funding \$19,419,021

Grant Submission Timeline

Reminder:

To improve the efficiency and quality of submission, please keep the following deadlines in mind during grant submissions.

1. Grant Submissions: Notify STAR Admin **as soon as you identify a potential grant submission**- *Minimum 1 month prior to deadline*
2. STAR as a subcontract: Notify STAR Admin- *3 weeks prior to deadline, or 2 weeks if this is a resubmission*

Exceptions must be approved by the STAR Administration (*Co-Directors and Director of Operations*)

UMB Grant Routing Timeline:

1. STAR approval: ~9 business days prior to deadline (Final budget/justification)
2. Dean's office: ~7 business days prior to deadline (Final budget/justification)
3. SPA: ~5 business days prior to deadline (All documents final)

Be mindful that STAR Admin requires time to review/upload documents into the routing system.

Upcoming Grant Deadlines

National Institute of Health (New):

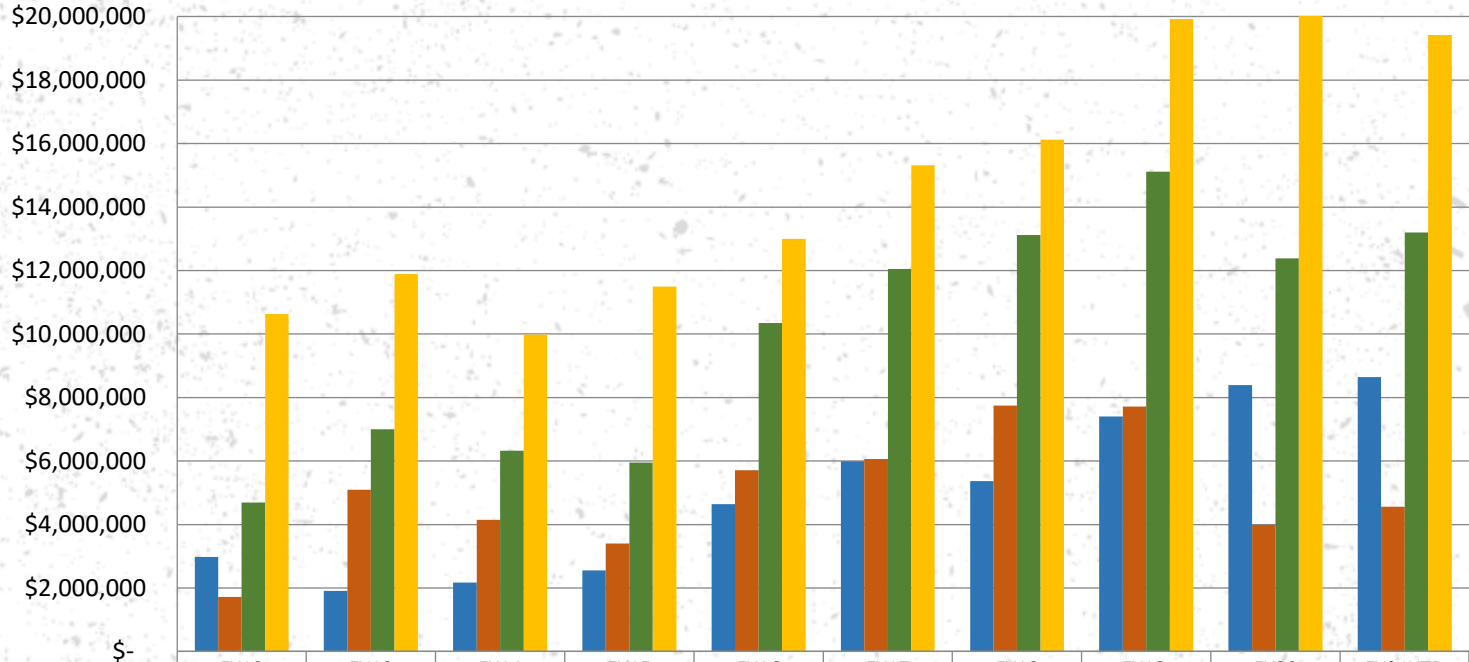
- R01 – October 5, 2021
- K Awards – October 12, 2021
- R21 – October 16, 2021

National Institute of Health (Resubmission):

- R01 – November 5, 2021
- K Awards – November 12, 2021
- R21 – November 16, 2021

STAR's Grant Funding - 10 years

Total Grant Funding from FY2012 - FY2021



| | FY12 | FY13 | FY14 | FY15 | FY16 | FY17 | FY18 | FY19 | FY20 | FY21YTD |
|-------------------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| NIH | \$2,974,583 | \$1,912,114 | \$2,175,530 | \$2,551,494 | \$4,637,061 | \$5,989,659 | \$5,370,672 | \$7,404,898 | \$8,388,021 | \$8,639,095 |
| Other Federal | \$1,711,937 | \$5,091,528 | \$4,148,527 | \$3,402,140 | \$5,705,964 | \$6,061,604 | \$7,747,912 | \$7,712,745 | \$3,990,140 | \$4,562,806 |
| TOTAL FEDERAL | \$4,686,520 | \$7,003,642 | \$6,324,057 | \$5,953,634 | \$10,343,025 | \$12,051,263 | \$13,118,584 | \$15,117,643 | \$12,378,161 | \$13,201,901 |
| TOTAL STAR (All Awards) | \$10,631,942 | \$11,890,133 | \$9,987,993 | \$11,494,842 | \$12,994,788 | \$15,320,354 | \$16,120,300 | \$19,918,750 | \$20,228,422 | \$19,419,021 |

Grant Submissions

Submissions for FY21:

A total of **121 submissions** were routed through UMB's Quali Research for Anesthesiology, Trauma, and the National Study Center; which include new grant proposals, grant continuations, NDA, DUA, and MTA.

| Grant Submissions- By Sponsor | |
|-------------------------------|-----------|
| NIH | 29 |
| DOD & Air Force | 21 |
| Industry/Commercial | 13 |
| Other | 21 |
| Total | 84 |

| Proposals Submitted | | | |
|---------------------|-----------|---------------|------------|
| | Sponsored | NDA, DUA, MTA | Total |
| Anes | 39 | 5 | 44 |
| STC | 37 | 30 | 67 |
| NSC | 8 | 2 | 10 |
| Total | 84 | 37 | 121 |

Anesthesiology

New Awards FY21:

| Principal Investigator | Study Title | Sponsor Name | Award Amount |
|------------------------|---|---|--------------------|
| Birukov, Konstantin | Control Of Lung Permeability By Oxidized Phospholipids | NIH-National Heart, Lung, & Blood Institute (R01) | \$2,298,003 |
| Chao, Wei | Extracellular miRNAs, Innate Immunity, And Critical Illness | NIH-National Institute of General Medical Sciences (R35) | \$1,931,250 |
| Fiskum, Gary | Effects Of Multiple Flights Following Impact-And Blast-Induced Traumatic Brain Injury On Long-Term Outcomes | AFOSR-Air Force Office of Scientific Research | \$678,088 |
| Henderson, Reney | ECOM VS TDCO and FLOTRAC Clinical Accuracy Study | ECOM Medical, Inc. | \$65,915 |
| Mazzeffi, Michael | SCA Mid-Career Grant | Society of Cardiovascular Anesthesiologists | \$100,000 |
| Polster, Brian | Reprogramming Proinflammatory Microglia By Restoring Mitochondrial Function | NIH-National Institute of Neurological Disorders & Stroke (R01) | \$2,891,532 |
| Sarkar, Chinmoy | Role And Function of Peroxisomal Ether Phospholipids In TBI | NIH-National Institute of Neurological Disorders & Stroke (R21) | \$424,875 |
| Williams, Brittney | Role Of miRNA-TLR7 Signaling In Platelet Activation And Dysfunction In Sepsis | NIH-National Heart, Lung, & Blood Institute (K08) | \$782,393 |

Anesthesiology Clinical Studies

Clinical Research Team

Top Enrolling Studies- FY21

| Principal Investigator | Study – Short Title | Total Enrolled | Enrollment Status | IRB Status |
|------------------------|---|----------------|-------------------|------------|
| Bharadwaj, Shobana | Liposomal Bupivacaine Infiltration vs Continuous | 33 | Closed | Active |
| Bigeleisen, Paul | Efficacy Of Pain Control In Post Renal Transplant | 35 | Closed | Active |
| Chao, Wei | Plasma miRNAs And Exosomes In Sepsis | 25 | Active | Active |
| Henderson, Reney | Hi-Flo | 271 | Closed | Active |
| Henderson, Reney | VA ECMO II | 30 | Closed | Active |
| Henderson, Reney | Intra-Abdominal Hypertension In Cardiac Surgery | 50 | Closed | Active |
| Henderson, Reney | Lung Pacer | 0 | Active | Active |
| Henderson, Reney | Hemosonics Healthy Subjects | 55 | Closed | Active |
| Henderson, Reney | Hemosonics Surgery | 35 | Closed | Active |
| Henderson, Reney | REFRESH I | 5 | Closed | Active |
| Henderson, Reney | HABIT | 58 | Active | Active |
| Henderson, Reney | OPSTAHT | 13 | Active | Active |
| Henderson, Reney | REFRESH II | 12 | Open | Active |
| Henderson, Reney | ROTEM: Art V Venous | 11 | Active | Active |
| Henderson, Reney | EAPH | 3 | Active | Active |
| Kodali, Bhavani | Coagulation Care In Pregnant Women | 15 | Active | Active |
| Malinow, Andrew | MMUC | 11 | Closed | Active |

Anesthesiology Clinical Studies

Clinical Research Team

Top Enrolling Studies- FY21 (cont.)

| Principal Investigator | Study – Short Title | Total Enrolled | Enrollment Status | IRB Status |
|------------------------|--|----------------|-------------------|------------|
| Rock, Peter | MPPS | 147 | Closed | Active |
| Rock, Peter | DEXLIRIUM | 28 | Closed | Active |
| Rock, Peter | GeneTICS | 114 | Closed | Active |
| Rock, Peter | ROMA 1 | 13 | Closed | Active |
| Rock, Peter | MINDUSA | 76 | Closed | Active |
| Rock, Peter | ROMA 2 | 9 | Closed | Active |
| Rock, Peter | TCMS | 29 | Closed | Active |
| Rock, Peter | IMPRESS | 7 | Closed | Active |
| Rock, Peter | C19BB Study- Employee/Non-patient | 8339 | Open | Active |
| Rock, Peter | C19BB Study- Inpatient | 93 | Open | Active |
| Rock, Peter | PBAS | 16 | Active | Active |
| Samet, Ron | Influence Of Patient Position On Ultrasound Visibility Of Sciatic Nerve In Popliteal Fossa | 40 | Closed | Active |
| Shanholtz, Carl | Severe ARDS Registry | 27 | Closed | Active |
| Strauss, Erik | TAPE | 42 | Active | Active |

Research coordinators in the Department of Anesthesiology are responsible for research coverage of patients undergoing procedures as well as enrolling patients from the ICUs at UMMC. The enrollment table shows the major clinical studies performed by Anesthesiology faculty this past year. Our clinical research teams are highly proficient in enrolling patients. Department enrollment consistently ranks second or third in enrollment for our multi-center trials.

Program in Trauma

New Awards FY21:

| Principal Investigator | Study Title | Sponsor Name | Award Amount |
|--|--|---|--------------------|
| Hu, Peter Badjatia, Neeraj William, Teeter | Interoperable Medical Automated Systems (iMAS) Technology And Gap Assessment | Advanced Technology International (MTEC Consortium Manager) | \$8,150,495 |
| Kozar, Rosemary | Plasma Resuscitation With Out Lung Injury (PROPOLIS) | National Trauma Institute/ DOD | \$179,540 |
| Kozar, Rosemary | Implementing Best-Practice, Patient-Centered Venous Thromboembolism (VTE) Prevention In Trauma Centers | National Trauma Institute | \$50,400 |
| Murthi, Sarah | Electronic Medical Record (EMR) Automation | Society of Critical Care Medicine | \$5,000 |
| Parikh, Gunjan | A Double-blind, Randomized, Placebo-controlled Study To Evaluate The Efficacy And Safety Of Intravenous Ganaxolone In Status Epilepticus | Marinus Pharmaceuticals | \$12,960 |
| Scalea, Thomas | The PROspective Observational Vascular Injury Trial (PROOVIT #2) | National Trauma Institute | \$55,000 |
| Tisherman, Samuel | DM190140 Medic Surgical Technical Assistance Tool (mSTAT) Development And Testing | DOD-US Department of Defense | \$998,133 |

Trauma Clinical Studies

Clinical Research Team

Top Enrolling Studies- FY21:

| Principal Investigator | Study - Short Title | Screened | Eligible | Enrolled | Failed | Months Active |
|------------------------|---------------------|----------|----------|----------|--------|---------------|
| PROSPECTIVE | | | | | | |
| Cain, Christian | SiVent | 3869 | 10 | 4 | 3859 | 9 |
| Chao, Wei | Excell | 3861 | 45 | 30 | 3816 | 9* |
| Fiskum, Gary | Genomics | 4221 | 32 | 24 | 4189 | 9 |
| Ghneim, Mira | GeriTrauma | 605 | 44 | 24 | 561 | 7 |
| Gullapali, Rao | Magnets | 4729 | 29 | 11 | 4700 | 10 |
| Kozar, Rosemary | Dunlap - COVID | 3813 | 1397 | 1394 | 2416 | 12 |
| Kozar, Rosemary | Endoshock | 3257 | 30 | 21 | 3227 | 12 |
| Kozar, Rosemary | VTE | 3317 | 77 | 35 | 3240 | 10 |
| Lauerman, Margaret | FAST NSTI | 85 | 58 | 24 | 34 | 5 |
| Lauerman, Margaret | CIREN | 5826 | 295 | 111 | 5589 | 12 |
| Morrison, Jonathan | Humacyte | 5272 | 3 | 6 | 0 | 10** |
| O'Toole, Robert | Precise | 1486 | 5 | 2 | 1481 | 9 |
| Rabin, Joseph | MARIPOSA - COVID | N/A | 12 | 10 | N/A | 1* |
| Rabin, Joseph | Remdacta | N/A | 17 | 15 | N/A | 6* |

* - Study ended during reporting cycle ** - Study on hold at time of report

Trauma Clinical Studies

Clinical Research Team

Top Enrolling Studies- FY21: (cont.)

| Principal Investigator | Study - Short Title | Screened | Eligible | Enrolled | Failed | Months Active |
|---------------------------|----------------------|----------|----------|----------|--------|---------------|
| PROSPECTIVE | | | | | | |
| Sethuraman, Kinjal | HOBIT | 3141 | 5 | 0 | 3136 | 6 |
| Schwartzbauer, Gary | ASTRAL | 2531 | 0 | 0 | 2531 | 9 |
| Schwartzbauer, Gary | ACU-SCI | 2855 | 17 | 4 | 2838 | 8 |
| Scalea, Thomas | PROOVIT | 15 | 15 | 15 | 0 | 2 |
| Tisherman, Samuel | EPR | 0 | 0 | 0 | 0 | 0** |
| PROSPECTIVE ALERTS | | | | | | |
| Badjatia, Neeraj | RAPID-TBI | | 309 | | | 4 |
| Cain, Christian | TBI-AAST | | 914 | | | 12 |
| Morris, Nicolas | Virtual Reality Pain | | 909 | | | 5 |
| Morrison, Jonathan | Aortic Injury | | 85 | | | 12 |
| Morrison, Jonathan | REBOA | | 38 | | | 12 |
| Morrison, Jonathan | Thoracotomy | | 65 | | | 12 |
| Morrison, Jonathan | Liver Blush-TWA | | 186 | | | 12 |

The Clinical Research Team (CRT) is responsible for 24/7 research coverage of the Shock Trauma Center, including Acute Care Emergency Surgery (ACES), Critical Care Resuscitation Unit (CCRU) and the Soft Tissue Service. The enrollment table shows major studies supported by the CRT this past year. The CRT can prospectively screen in excess of 6,000 patients per year for one study, depending on protocol criteria. The CRT leads the country in enrollment on two multi-center trials and is ranked second or third on five other trials.

* - Study ended during reporting cycle ** - Study on hold at time of report

National Study Center

New Awards FY21:

| Principal Investigator | Study Title | Sponsor Name | Award Amount |
|------------------------|--|--|------------------|
| Kaushik, Kartik | Combining Big Data In Transportation With Hospital Health Data To Build Realistic Flattening The Curves Models During The COVID19 Outbreak | University of Maryland, College Park | \$25,615 |
| Kaushik, Kartik | Pedestrian Safety And MTI Program FY21 | STMD-Maryland Motor Vehicle Administration | \$99,688 |
| Kaushik, Kartik | Traffic Records Program FY21 | STMD-Maryland Motor Vehicle Administration | \$293,012 |
| Kaushik, Kartik | A Data-Driven Safety Dashboard Assessing Maryland Statewide Density Exposure Of Pedestrians, Bicycles, And E-Scooters | University of Maryland, College Park | \$50,000 |
| Vesselinov, Roumen | Occupant Protection - Seatbelt FY21 | STMD-Maryland Motor Vehicle Administration | \$124,006 |
| Vesselinov, Roumen | Predictive Modeling FY21 | Impact Research, LLC | \$17,753 |

The National Study Center for Trauma and Emergency Medical Systems is dedicated to improving the delivery of trauma care and emergency medical services. Its mission is to prevent death and disability caused by injury and sudden illness. Research activities within the center are supported by a combination of funding sources, including the U.S. Department of Transportation, the National Institutes of Health, the Robert Wood Johnson Foundation, the Centers for Disease Control and Prevention, major corporations, foundations, and private individuals.

Restrospective Data Studies

Anesthesiology Data Studies

| Principal Investigator | Study Title |
|-------------------------------------|--|
| Anders, Megan | Sugammadex Practice Changes |
| Kahntroff, Stephanie | Steroids And Hypotension |
| Rock, Peter Anders, Megan | Continuous Vital Signs And Clinical Outcomes |
| Anders, Megan Grewal, Ashanpreet | Nasal ETT In Carotid Endarterectomy |
| Strauss, Erik | Amicar And Blood Loss In Cardiac Surgery |
| Jones, Stephanie | Postoperative Complications In Pediatric T&A |
| Grewal, Ashanpreet Lee, Khang | Disparities In Labor Epidurals |
| Anders, Megan Moeller, Shaun | Dexamethasone And Leukocytosis |
| Kodali, Bhavani | Super-Obesity In Obstetrics |



The Department of Anesthesiology and the Program in Trauma maintain clinical registries of their patients, which are routinely queried for retrospective clinical studies. Fiscal Year 2021 has continued to see a high volume of requests.

Restrospective Data Studies

Trauma Data Studies

| Principal Investigator | Study Title |
|------------------------|--|
| Aarabi, Bizhan* | Mortality Outcomes And Neurologic Recovery Analysis After Decompressive Craniectomy In Gunshot Wounds To The Head |
| Albrecht, Jennifer* | Serum Biomarkers for TBI |
| Bradley, Matthew* | Traumatic Lung Herniation Review |
| | Pelvic Binder Utilization Review |
| Buchanan, Laura | GSW Not Requiring Admission |
| Chao, Wei | ex-RNA In Trauma |
| Chiu, William | Primary Clamshell Thoracotomy And Anterolateral Thoracotomy In Penetrating Thoracic Trauma |
| Dezman, Zachary* | The Prevalence And Impact Of Fentanyl Use In University Of Maryland Medical System Hospitals |
| Dreizin, David* | Toward Fully-Autonomous Deep Learning Computer Vision Algorithms that Detect, Localize, Segment, Volumetrically Analyze And Predict Outcomes From CT After Acute Physical Trauma |
| | Development And Prospective Validation Of An MDCT-Based Decision Support And Outcome Prediction Tool For Bleeding Pelvic Fractures Using Semi-automated Volumetric Hematoma Analysis And Multivariate Predictive Analytics |
| | Cinematic Rendering And dDECT Marrow Imaging |
| DuBose, Joseph* | Low Grade Blunt Thoracic Aortic Injury: Surveillance Imaging And Duration Of Aspirin Therapy |
| Feliciano, David* | Urban Penetrating Abdominal Trauma In The Modern Era |
| Galvagno, Samuel | Evaluation Of Dialysis Trends In A Trauma Critical Care ICU |
| Ghneim, Mira | CT Evaluation For Abdominal Seatbelt Sign |

* Trauma registry studies conducted by non-STAR faculty

Restrospective Data Studies

Trauma Data Studies (Cont.)

| Principal Investigator | Study Title |
|------------------------|--|
| Harfouche, Melike* | Outcomes In Trauma Patients With Rib Fractures |
| Kozar, Rosemary | Defining Outcomes After Ultra-massive Transfusion In The Modern Era Of Balanced And Goal-directed Resuscitation |
| | Utilization Of Continuous Vital Signs To Predict Poor Short- And Long-term Outcomes Following Traumatic Injuries |
| | Optimal Duration Of Antibiotic Prophylaxis |
| Kundi, Rishi* | Contemporary Treatment Of Great Vessel Injuries |
| Lauerman, Margret | Soft Tissue Pathology Management |
| O'Connor, James* | Aerodigestive Injuries: Management And Outcomes |
| O'Toole, Robert* | Open Tibial Fractures - Can We Predict Infection |
| | XRT Ve Surgical Resection In Preventing Significant Heterotopic Ossification |
| | Pelvic Ring Injuries |
| | Heterotopic Ossification Prophylaxis |
| Pensy, Raymond* | Patient Reported Outcomes After Limb Threatening Injury |
| Richards, Justin* | Whole Blood For Transfusion |
| | Strong Ion Gap |
| | Diastolic Dysfunction |
| Schwartzbauer, Gary* | Cerebral Venous Sinus Thrombosis Skull Fracture Incidence |
| Strong, Bethany* | A History Of Violence: Outcomes And Interventions |
| Teeter, William* | Interoperable Medical Automation System |
| Tisherman, Samuel | Predicting Survival From Emergency Department Thoracotomy For Trauma |

* Trauma registry studies conducted by non-STAR faculty

Faculty Spotlight

Peter (Fu) Hu, PhD

Professor



Clinical Informatics and Analytical Research Group are composed of research faculty; Professor and Chairman of Anesthesiology, Peter Rock; [Professor, Peter \(Fu\) Hu](#); Assistant Professor, Shiming Yang; Professor Emeritus, Colin Mackenzie, 2-4 medical students, and residents; and 4-8 Ph.D. students in computer science and engineering in our lab. Our research is focused on developing machine learning-based predictive algorithms for near and long-

term patient outcomes based on the continuous vital signs from the field to in-hospital resuscitation, the intensive care unit bedside. Our research has been continuously funded by DoD (USAF, Naval Research, US Army, and Veterans Administration). In the past, we also were funded by NIH/NLM, NSF, NASA, AHRQ, and industry. Specifically, we have developed and tested a Bleeding Risk Index (BRI) Monitor for a minute-by-minute analysis of continuous photoplethysmograph (PPG) waveform (shown in the figure to the right). This monitor could be used for predicting future transfusion need in the field. We also developed an ICU Viewer, which takes real-time patient monitor data and provides an at-a-glance view for the units (SICU, NTCC, MTCC, TRU, OR, BCU and ED) or an individual bed view for up to 7 days (shown in the figure to the right). Currently, we have over 8 extramural funded projects with over \$6 million in funding. Currently, we have 5 active extramural funded projects with over \$12 million in funding. This includes a recently received 4-year, \$8 million Medical Technology Enterprise Consortium (MTEC) Grant from the Department of Defense for “Interoperable Medical Automated Systems (iMAS) Technology and Gap Assessment”. This project aims to help develop a research prototype for the ability to tele-monitor and capture research data for the following research areas: COVID-19 wards, emergency rooms/trauma rooms (ERs/TRs), and neurological patients. Due to the size of this project, it includes the following STAR-ORC faculties as PI, sub-task PI, and co-PI’s (Neeraj Badjatia, Samuel Galvagno, Peter Hu, Catriona Miller, Peter Rock, Thomas Scalea, and Shiming Yang). Along with getting new grants, on June 15, 2021, our lab has received US Patent approval, for “Method and Apparatus for Predicting a use for a Blood Transfusion”. This method is provided for predicting that a caregiver will order a blood transfusion during a treatment.

Grant Resources

The **Office of Research Career Development Program (RCD)** supports the research and professional development of SOM faculty by providing programs and resources to develop skills in effective grant writing, scientific communication, and scientific leadership. In addition, RCD offers one-on-one consultations in areas that are critical to academic research. To view the events and services offered by RCD, please visit: <http://medschool.umaryland.edu/career/>

Searchable Database for Grants

- [PIVOT](#)
- [Grants.gov Grant Opportunities](#)
- [The Foundation Center Funding Finder](#)
- [Duke University Funding Database](#)
- [Grants Forward Funding Database](#) (subscription required)
- [Research Portfolio Online Reporting Tools \(RePORT\)](#)
- [National Institutes of Health \(NIH\) Funding Database](#)
- [Agency for Healthcare Research and Quality \(AHRQ\) Funding Database](#)
- [National Science Foundation \(NSF\) Funding Database](#)
- [Department of Defense \(DOD\), Congressional Directed Medical Research Program Funding Opportunities](#)

FUNDING SOURCE CONSULTATIONS

Stacie Mendoza, Program Director for Research Career Development, can help faculty identify funding sources.

Email: smendoza@som.umaryland.edu

PI RESOURCES

STAR Admin Team

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