Tiffany Moon	Anesthesia and Pain Management	The VivaSight Double Lumen Tube versus Conventional Double Lumen Tube in Thoracic Surgical Patients	Primary Hypothesis: Cases utilizing the VivaSight will need fiberoptic bronchoscopy in 20% of cases versus 100% of cases with a conventional DLT. Secondary Hypothesis: The VivaSight DLT will take significantly less time to place compared with the conventional DLT. Additionally, the incidence of malposition will be significantly less with the VivaSight. Tertiary Hypothesis: Use of the VivaSight DLT will reduce the cost of fiberoptic bronchoscopy purchasing and maintenance by 50%.
Tiffany Moon	Anesthesiology	A Prospective, Randomized, PACU Blinded Study to Compare ANI-guided Analgesic Administration versus Standard Care in Surgical Patients Receiving Balanced Sevoflurane-Fentanyl Anesthesia	Hypothesis: We aim to determine whether intraoperative opioid administration guided by ANI will decrease patients' pain scores in the PACU compared to standard practice in patients undergoing general anesthesia with balanced sevoflurane fentanyl. We hypothesize that patients who have intraoperative opioid administration guided by the ANI will have at least a 40% reduction in severe pain (VAS>=7) in the PACU compared to patients in the standard practice group.
Kemp Kernstine	Cardiothoracic Surgery	Utility of PET-CT in Determining the Presence of Malignant Mediastinal Lymph Nodes	Objectives: (1) Determine if SUVmax is a reliable objective measure to determine the presence of malignancy in the mediastinal lymph node stations compared to visual acuity (VA), (2) Identify the SUVmax value that provides the greatest sensitivity, specificity, negative predictive value, positive predictive value, and accuracy for nodal stations overall and for each nodal station 4R, 4L, and 7 of the American Thoracic Society Nodal Stations (8th Edition, 2017); (3) Determine if there is additional clinical and radiological information that might improve the sensitivity, specificity, negative predictive value, positive predictive value, and accuracy for nodal stations overall and for each nodal station 4R, 4L, and 7 of the American Thoracic Society Nodal Stations (8th Edition, 2017)
Kemp Kernstine	Cardiovascular & Thoracic Surgery	An Evidence-Based Algorithm for Maximizing Outcomes for Patients with Parapneumonic	Hypothesis: Using available data, standardization of the clinical decision pathway for management of CPE/EMP can be achieved by weighing criteria predictive of either poor or ideal outcomes for patients. If most patients presenting with CPE/EMP are

		Pleural Effusions and Empyema Thoracis	provided a first-line treatment combination of tissue plasminogen activator (tPA) and DNase intrapleurally twice a day, they will be more likely to experience markedly better radiological outcome, less of a need for surgical referral, and a shorter hospital stay compared to any other first-line treatment. If patients presenting with CPE/EMP do not receive any infected fluid-drainage benefit due to a first-line IPFT treatment, then a surgery treatment option entailing a higher cost, longer hospital stay, and higher mortality rate will be more likely deemed necessary
Lynn Huffman	Cardiovascular and Thoracic Surgery	BMI on Heart & Lung Transplant Listing Versus Actual BMI on Day of Transplant and its Effects on Post-Transplant on Outcome	Background: It is well documented that malnourished and/or obese surgical patients have an increased morbidity and mortality after heart and lung transplantation. There is a strict BMI cutoff for selection for listing for heart and/or lung transplant. How closely the cutoff limit is followed after selection for transplant listing is not known. Actual BMI at the time of transplant may have increased significantly by the time of transplant. Whether this affects post-transplant morbidity and mortality is not known. Hypothesis: Actual BMI for obese and/or malnourished patients at the time of transplant will not meet criteria for transplant listing and result in greater post-transplant morbidity/mortality.
Ralph DeBerardinis	Children's Research Institute	Metabolic interactions between cancer cells and immune cells in the tumor microenvironment	Hypothesis: The PI3K-Akt-mTOR signaling pathway has previously been demonstrated to be necessary for metabolic reprogramming during T-cell activation (Wang et al., 2011). Through upregulation of a number of metabolic intermediate transport proteins, a relationship emerges between the metabolic usage of tumor cells and the nutrient availabilities for an efficient immune response. We hypothesize that tumor cells inhibit the activity of local immune cells by starving them of necessary metabolites, such as amino acids, nucleotide bases, and fatty acids.
Heidi Jacobe	Dermatology	Evaluating T cell activation and polarization impact in the	Hypothesis: The development and progression of sclerosis in morphea results from early dysregulation of the Th1 immune

		development and progression of morphea	axis in the tissue microenvironment which triggers and/or maintains an inflammatory cytokine environment.
Tamia Harris-Tryon	Dermatology	CHARACTERIZING THE SPATIAL DISTRIBUTION OF BACTERIA IN WILD-TYPE, SPRR2A, RELMALPHA, AND SCD-1 KNOCKOUT MICE	Hypothesis: The spatial distribution of microbiota in wild-type mouse skin will be more superficial than in SPPR2A, RELMalpha, and SCD-1 knockout mice. In order to capture the location of bacteria in mice skin, Fluorescent in situ hybridization techniques will be used. The skin will be fixed in formalin solution and then embedded in paraffin at the UT Southwestern histology core.
Benjamin Chong	Dermatology	Delays in diagnosis in patients with cutaneous lupus erythematosus	Hypothesis: 1) We hypothesize the average time from onset of rash to diagnosis of CLE will be more than one year. 2) We postulate that the most common reason for delays in CLE diagnosis is related to access to specialty care. 3) We postulate that minority patients will more likely experience delays in their CLE diagnosis
Mandy Pascual	Emergency Medicine	Point-of-care Ultrasonography by Novice Medical Students for Detecting Bladder Volume in Pediatric Patients Requiring Urethral Catheterization	Hypothesis: Medical students with minimal training in POCUS will be able to measure bladder volumes before and after catheterization with 85% accuracy when reviewed by fellowship trained emergency ultrasound faculty and compared to the urine output measured during catheterization by nursing staff. Summary of Project: This is a prospective observational study of pediatric patients presenting to the emergency department (ED) at Children's Medical Center (CMC) requiring urethral catheterization.
Jodi Jones	Emergency Medicine	Point-of-care Ultrasonography by Novice Medical Students for Detecting Fractures in Pediatric Patients with Traumatic Extremity Pain	Specific Hypothesis: Medical students with minimal training in POCUS will be able to identify distal forearm fractures with 85% accuracy when reviewed by fellowship trained emergency ultrasound faculty and compared to the gold standard of plain film imaging.
Anand Rohatgi	IM - Cardiology	Elucidating the Link Between Alcohol, HDL Metabolism, and Cardiovascular Disease in a Multiethnic Population	Hypothesis: Moderate drinkers will have a higher cholesterol efflux and a decreased CVD risk than non-drinkers. Furthermore, since heavy drinking is associated with more comorbidities than non-drinking or moderate drinking, we expect the cholesterol efflux to be lower and CVD risk to be higher in heavy drinkers than non-drinkers and moderate drinkers.

Oksana Hamidi	IM- Endocrinology	The effects of traumatic brain injury on hypothalamopituitary function: Systematic review and meta-analysis	Hypothesis: A correlation exists between specific clinical symptoms and the presence of hypothalamo-pituitary dysfunction in traumatic brain injury patients. A model based on such findings will allow for earlier evaluations and better prognosis of these patients.
Ian J. Neeland MD	IM-Cardiology	Discordant Visceral Adipose Tissue and Ectopic Liver Fat Phenotypes and Cardiometabolic Outcomes: the Dallas Heart Study	Hypothesis: Participants with high VAT- low liver fat phenotypes will be more closely associated with the development of cardiometabolic disease as compared to low VAT-high liver fat phenotypes. Study Design: Data collected as part of the Dallas Heart Study will be used to analyze the development of cardiometabolic disease in adults free from cardiovascular disease and diabetes mellitus with discordant phenotypes of visceral adipose tissue and ectopic liver fat.
Justin L. Grodin	IM-Cardiology	Circulating Galectin-3 Levels in the General Population: from the Dallas Heart Study	Background and Hypothesis: Galectin-3 (Gal-3) is a β-galactoside-binding lectin implicated in the pathophysiology of myocardial fibrosis in heart failure. As a result it has been studied extensively in individuals with symptomatic heart failure with mixed attempts to associate it with prognosis. While it's prognostic role in individuals with heart failure remains uncertain, circulating levels of Gal-3 may represent adverse pathophysiological processes in the myocardium. However, whether Gal-3 levels represent early sub-clinical myocardial changes in the general population remains uncertain. We, therefore, hypothesize that Gal-3 will be associated with subclinical phenotypic changes in myocardial structure and function in the Dallas Heart Study - a general population-based cohort study. We additionally aim to determine the clinical and serological determinants of Gal-3 and clarify the prognostic role of Gal-3 in the general population.
David Greenberg	Infectious Disease	Determining Synergy of Alternating Magnetic Fields and Antibiotics	Background: The gold standard in the US for treating prosthetic joint infections is a two-stage revision arthroplasty. In this procedure, the infected implant is removed in a first surgery, the patient is placed on antibiotics for weeks to months to ensure complete eradication of bacteria, then a new prosthesis is

			implanted via a second surgery. Although this two-stage approach has a cure rate of 90%, it is highly invasive with a significant negative impact on a patient's quality of life, and is very expensive (Greenberg et al., 2017) The presence of biofilms presents as a major impediment to the effective treatment of PJI. A novel, non-invasive thermal technique to destroy biofilm on the metal surfaces of prosthetic joints using alternating magnetic fields (AMF) has been developed. Our goal is to use this AMF technique to further investigate the synergistic effects between AMF and antibiotics. Hypothesis: When antibiotics are used in conjunction with heat treatments, there will be a synergistic bactericidal effect.
David Gerber	Internal Medicine	Mediators of immunotherapy efficacy and toxicity	Hypothesis: Certain biologic events following immune therapy are associated with beneficial effect, some with adverse events, and some with both. I propose an analysis of cases to determine these categories, with the hopes of eventually tailoring immunotherapy to achieve optimal benefit without excessive toxicity.
Ezra Burstein	Internal Medicine	Genetics of Early Onset and Familial Inflammatory Bowel Disease	Hypothesis/Specific Aims: The underlying hypothesis is that extreme presentations of IBD (early onset or significant familial clustering) likely represent cases where a single gene defect is responsible for disease etiology. The main objective of the project is to enroll such patients into a registry and biorepository for the purpose of genome sequencing and genetic discovery.
Amit Banga	Internal Medicine	A study to evaluate the prevalence, risk factors and outcomes after wound dehiscence necessitating surgical intervention after lung transplantation.	Hypothesis: Pre-transplant characteristics predict development of post lung transplant wound healing issues and development of wound healing issues is associated with worse post-transplant morbidity.
Don Gammon	Microbiology	Using Genetic Screening in the Gypsy Moth to Uncover Conserved Antiviral Defenses	The outcome of the interplay between viral immune evasion factors and host antiviral responses can determine the course of viral disease. Human beings have been battling viral infections throughout our evolutionary history. Arboviruses, such as Zika

			virus and dengue fever virus continue to significantly impact human health, yet we still lack therapeutics for the majority of arboviral infections. The Gammon lab seeks to identify conserved mechanisms used by eukaryotic organisms to restrict arboviral replication. While virus-host interaction studies are typically conducted between viruses and their natural hosts, viral adaptation to natural hosts' defenses can make it challenging to identify host antiviral mechanisms that are effectively inhibited by viruses. Therefore, our lab is taking the unique approach of studying interactions between arboviruses and unnatural lepidopteran (moth and butterfly) hosts.
Carlos Bagley	Neurological Surgery	Retrospective Analysis of Tranexamic Acid Use in Spinal Deformity Surgery	Aim 1: Assess the safety of TXA use in the general population undergoing spinal deformity surgery. We will accomplish this by analyzing the above-mentioned variables in a retrospective, single institution, 10-year cohort of patients. We will use statistical analyses to ascertain whether TXA use is associated with significant improvement in outcomes. Aim 2: Delineate whether TXA is safe for more specific populations of patients to build a predictive model. We will perform a multivariate regression analysis to elucidate whether hypercoagulable states (i.e. high platelet counts before surgery) are predictive of perioperative deep vein thromboses. Depending on the patients enrolled, we may subdivide patients based on demographic and other comorbidities as sample size allows and assess outcomes between groups.
Toral Patel	Neurological Surgery	Gamma Knife radiosurgery for brain metastases: comparison of clinical outcomes with frameless vs. frame-based treatments	Background: Air pollution (Ozone levels and Particulate Matter) are a known health concern. Recently several Coal Plants known to produce high levels of pollutants near Dallas have closed. Measuring pollutant levels and determining if this has an impact on the health of people living in Dallas is of importance to many residents. Ozone and particulate matter are known to be hazardous to human health. Hypothesis: Ozone levels will be decreased, and if decreased will be due to the closing of these plants.

Bradley Lega	Neurological Surgery	Dynamic Modeling of Mathematical Cognition	Human number sense is a fundamental cognitive process that is not yet fully understood. To better understand the electrophysiological underpinnings of mathematical processing in humans, I will create a brief math task that will be administered to patients implanted with SEEG. These patients are being monitored for seizure onset localization in the Epilepsy Monitoring Unit and are participating in episodic memory research.
Deborah Friedman	Neurology	The Migraine Disability Assessment (MIDAS) as an Indicator of Resilience in Patients with Headaches	Hypothesis: Through the MIDAS scale, one can hypothesize that resilience, the ability to mitigate pain through coping mechanisms, can also be assessed in addition to its current role as a disability assessor. The primary goal of the investigation is to determine how headache severity and disability are changed by resilience. If resilience does mitigate the degree of disability in patients, then potential treatments for headaches could also include resilience training. Moreover, patients who do not have resilience could be identified as more at risk populations for disability or depression and anxiety and more preventative measures could be undertaken.
Deborah Friedman	Neurology	Comparison of Concurrent CT Myelography and MRI Myelography Using Intrathecal Gadolinium for the Detection of Abnormalities Associated with Spinal CSF Leaks	Hypothesis: We propose a retrospective study of cases at our site where patients with confirmed SIH received both CTM and MRM-GE, performed on the same day, to compare the efficacy of the two methods. Specific Aims Aim 1: Compare the frequency of CSF leak localization by MRM-GE and CTM. We will do this by comparing the rates of success in demonstrating CSF leaks in the two techniques in the cohort of patients who received both images on the same day. We will determine how often CTM and MRM-GE images presented leaks in the same location versus one presenting a leak that the other did not detect. Aim 2: Compare the usefulness of MRM-GE versus CTM for demonstrating other abnormalities associated with CSF leaks in the absence of a demonstrated leak. A leak cannot be identified in a large proportion of patients in whom it is suspected. However, imaging may show other abnormalities, such as large and

			irregular cysts and nerve sheath diverticula, calcified disks and osteophytes penetrating the dura that are potential leak sites. We will compare CTM and MRM-GE to determine whether either technique is more sensitive for demonstrating these abnormalities.
Peter Tsai	Neurology and Neurotherapeutics	Exploring The Role of Nitrogen Permease Regulator-Like-2 in Focal Epilepsy	In this study, we will focus on the role of NRPL2 in causing epilepsy and examine potential therapeutics to restore function when NRPL2 is mutated. We hypothesize that the NRPL2 mutation will be sufficient to cause an increased seizure susceptibility, and we will test this hypothesis by examining two aims.
Danielle Robertson and William Waldrop	Ophthalmology	Acanthamoeba Keratitis	Hypothesis: Despite recent reports suggesting that the incidence and severity of Acanthamoeba keratitis is increasing, we hypothesize that disease severity and clinical outcomes have remained unchanged over the past 10 years. Keratoplasty for Visual Rehabilitation After Acanthamoeba Keratitis, to obtain long term follow up of grafts.
Matthew Petroll	Ophthalmology	Changes in Corneal Cell Patterning during Stromal Repopulation following UV-Cross linking	Hypothesis: Normal cell patterning and mechanical differentiation during intra-stromal repopulation can be altered by changing stromal collagen stiffness and/or the structural organization of the lamellae.
Danielle Robertson	Ophthalmology	Evaluation of the LacryDiag Ocular Surface Analyser for the Diagnosis of Dry Eye Disease	Background: Dry Eye Disease (DED) is a condition characterized by insufficient tear production and/or rapid tear evaporation leading to ocular symptoms such as dryness, itching, photosensitivity, and foreign body sensation. Not only is this condition uncomfortable, it can also lead to permanent ocular damage, a decrease in visual acuity, and significantly impacts quality of life. Hypothesis: We hypothesize that the new LacryDiag will be superior to conventional methodologies in its 4 diagnostic tests by improving sensitivity, specificity, and inter/intra-observer reliability and repeatability for the diagnosis of Dry Eye.

Michael Huo	Orthopaedic Surgery	Total Hip Arthroplasty and Femoral Stem Fixation after Acute Femoral Neck Fractures	**Hypothesis:** We hypothesize that there will be no difference in major complications between the cemented and cementless hip arthroplasties used to treat trauma patients with femoral neck fractures with the cementless cohort. Method: The study design is a retrospective review of all trauma patients who underwent a hip arthroplasty from 2004-2014 at our institution as a treatment for a femoral neck fracture. The patients will be evaluated for pre-operative medical comorbidities, intra-operative findings, and postoperative complications. A major complication is defined as an unexpected return to the operating room. A secondary aim will look at implant longevity and Harris Hip Scores pre- and post-operatively.
Harry Kim	Orthopaedic Surgery	Advancement of Intraosseous Saline Wash and Mesenchymal Stem Cell Injection Technique for Treatment of Osteonecrosis	The PURPOSE of this study is to determine the efficacy of saline bone washing and local distribution of MSCs using three inter-needle distances, an increased number of needles, and fenestrated needles. Hypothesis: We hypothesize that increasing inter-needle distance, increasing injection sites, and altering needle tip design (adding fenestrations) will improve washing efficacy, increase protein removed, and maximize microbead distribution. We hypothesize that increasing inter-needle distance will decrease flow rate but increase injection pressure, and that use of fenestrated needles will increase flow rate while decreasing the injection pressure.
Henry Ellis	Orthopaedic Surgery	Healing Potential of Weightbearing vs. Non-Weightbearing Juvenile Osteochondritis Dissecans Lesions of the Lateral Femoral Condyle	Hypothesis: It is hypothesized that OCD lesions in weightbearing regions are associated with different clinical and radiographic outcomes than those in non-weightbearing regions of the LFC, and that localization of LFC lesions may be a useful prognostic indicator for OCD.
Christopher McCrum	Orthopaedic surgery	ANTEROLATERAL COMPLEX OF THE KNEE 3D MRI STUDY AND COMPARISON: HEALTHY KNEE VS. KNEE POST ACL INJURY	Hypothesis: We hypothesize that anterolateral ligament will be noted reliably on all healthy specimens, and that there will be significant difference in the anterolateral ligament (ALL) structure in a healthy knee compared to a knee with an Anterior Cruciate Ligament (ACL) injury.

Michael Van Hal	Orthopaedic Surgery	Examining outcomes of lumbar radiculopathy from a multidisciplinary spine center: A retrospective review.	Hypothesis: A more integrated approach with a conclusive algorithm to the treatment of lumbar radiculopathy should lead to better objective outcomes for the patient.
Christine Ho	Orthopaedic Surgery - Pediatric Orthopaedics	Effect of radiation limiting protocol on pediatric forearm fracture reduction	Hypothesis: We hypothesize that patients treated after implementation of the radiation-limiting protocol will have had less radiation exposure compared to patients treated prior to the new protocol and that radiographs taken after implementation of the new protocol will not exhibit a significant decrease in informational quality and patient will not have an increase in complications, outcomes, or failure of cast treatment.
Paula Hernandez	Orthopaedics	Response of Htra1 to abnormal loading in progression of osteoarthritis	Data from our lab shows in increase in cells expressing Htra1 protein, correlating with cartilage damage. A subpopulation of Htra1 co-localizes with focal adhesions and F-actin in primary chondrocytes from OA patients. Overexpression of Htra1-GFP protects chondrocytes from collapse after F-actin disruption in a way that resembles focal adhesion stabilization. Htra1 also co-localizes with integrin α5β1 and integrin αv in OA chondrocytes, which are involved in TGFβ activation and fibronectin binding. We observed that patients with OA derived from hip dysplasia show a much higher percentage of cells expressing Htra1 even when cartilage is not damaged. Since cartilage in hip dysplasia is exposed to abnormal stress distribution and HtrA1 associates to the mechanosensors of the cells (focal adhesions), we hypothesize that Htra1 responds to abnormal mechanical loading in cartilage.
Michael Huo	Orthopedic Surgery	Biomechanical Evaluation of a Novel Device for Cannulated, Percutaneous, Locking Posterior Pelvic Ring Fixation	Hypothesis: A novel trans-sacral threaded interlocking bolt with male-female components with or without the addition of Nord Lock washers on the outer ilium cortices will provide equivalent or better load to failure values than standard fixation techniques for VS pelvic fractures. The novel device will prove an effective minimally invasive and maximally stable fixation technique.
Jay Shah	Orthopedic Surgery	A retrospective chart analysis of the post-operative	It is our hypothesis that the outcomes will be improved if the nerve block is performed at an anatomically distal location.

		outcomes of ACL reconstruction surgery depending on location of pre-operative nerve blocks	These outcome categories will include but not be limited to: time to quadriceps reactivation, strength of dynamometer readings in PT, and return to subjective function of the operative knee joint. In addition, we will examine a multitude of other factors that could play into the dependent variables related to anesthesia, patient variables, and medications. Through a chart review and associated research, it is our hypothesis that the use of donor bone allografts to replace the tissue lost from the bone plugs will significantly decrease these comorbidities and open up a new graft choice for a big subset of the population that was previously unable to receive patellar graft ACL reconstruction.
Ron Mitchell	Otolaryngology	Obstructive Sleep Apnea in Underweight Children	Hypothesis: We propose that underweight children of preschool age are more likely to have severe OSA due to tonsillar hypertrophy, which is defined as tonsil size of 3 to 4 on the Brodsky scale. Furthermore, we predict that children with pediatric OSA will also have comorbidities, specific neurological disorders.
Walter Kutz	Otolaryngology	Role of Diffusion Weighted Magnetic Resonance Imaging in the Evaluation for Recurrent and Residual Disease for Cholesteatoma	Hypothesis: We hypothesize there will be no difference in recurrence rates or hearing outcomes for cholesteatoma patients treated with planned 2nd look procedure vs those that that undergo DW-MRI
Jacob Hunter	Otolaryngology - Head & Neck Surgery	Exploring the Role of Medications with Cochlear Implant Outcomes	Given the data, along with understanding that the brain needs to adapt to cochlear implants, we hypothesize that cochlear implant patients who are taking neuroplastic medications should either more quickly reach their plateau, or reach a higher plateau, as compared to patients who were not taking the same medications.
Jacob Hunter	Otolaryngology-Head and Neck Surgery	Motivations of qualifying patients who did not pursue cochlear implantation.	Hypothesis: We hypothesize that concerns regarding "cost" is the most common reason patients fail to pursue cochlear implantation.
Ralph Deberardinins	Pediatric Genetics and Metabolism	Investigating the Effects of an EARS2 Gene Mutation on	We hypothesize that the fibroblasts with homozygous mutations in EARS2 will show decreased metabolic activity and increased lactate production as a result of the inability to perform normal

		Metabolism in Reconstituted Fibroblasts	protein synthesis in the mitochondria. If the WT fibroblasts are shown to have the predicted metabolic activity, these results may suggest detailed mechanisms for the development of the neurological symptoms in this patient, and may suggest other clinical manifestations of this mutation. Better understanding of the EARS2 gene will allow for improved clinical care and potential genetic interventions for future patients with this mutation.
Romaine Johnson	Pediatric Otolaryngology	Deafness and Hearing Loss Among Pediatric Tracheostomy Patients	Background: Tracheotomy in children is a commonly done procedure. The reasons for tracheotomy include chronic lung disease, need for prolonged mechanical ventilation, severe acute and/or chronic airway obstruction, and recurrent pneumonia secondary to poor pulmonary hygiene. Since this procedure occurs among severely ill infants the risk of hearing loss is elevated. The methods of diagnosis hearing among these patients include sedated hearing assessments which means additional risk to the neurodevelopmental risk to the infant from general anesthesia. This dilemma leads to a question whether definitive assessment of hearing loss is necessary, particularly for infants that passed their newborn hearing test. This study will examine the risk of hearing loss and deafness among this vulnerable population to help determine guide future practice recommendation for hearing assessment among these children.
Romaine Johnson	Pediatric Otolaryngology	Long Term Outcomes of Children with Tracheotomy	This study will ask what happens to people over time who require tracheotomy. What conditions portend a short duration of tracheotomy and what conditions realistically require lifelong tracheotomy. And over time what are the problems with tracheotomy? How often do they require medical treatment? What steps are typically done to aid in decannulation? How often are sleep studies done and so forth. Hypothesis: If patients experience an extended length of tracheotomy based on indication, in particularly, comparing need for prolonged mechanical ventilation versus severe upper airway obstruction, then they will have worse outcomes and their families will experience added stress.

Dai Chung	Pediatric Surgery	PI3K/AKT Signaling in Therapeutic Resistance in Neuroblastoma	Therefore, our hypothesis is that PI3K/AKT signaling is the central axis responsible for therapeutic resistance in human NBs. Thus, we plan on evaluating the role of PI3K/AKT signaling in recurrent and refractory NB. Our specific aims are to examine the effects of activated AKT on extravasation and colonization of tumor cells by using in vitro co-culture systems and analyze the AKT activity in NB tumor sections from patients harvested at the time of tumor resection and/or biopsy individuals with recurrent or refractory diseases.
May Lau	Pediatrics	Transition of Care for Transgender Youth	Hypothesis: We hypothesize that transgender adolescents, their parents, and healthcare providers will provide valuable perspectives into existing strengths, barriers to longitudinal care, and unmet needs for transgender pediatric-to-adult transition of care, offering insights unique from current transition processes to improve future healthcare transition and develop provider EMR templates.
Michael Cooper	Peds Emergency Medicine	Point-of-care Ultrasonography by Novice Medical Students for Detecting Inferior Vena Cava Diameter and Collapsibility, Aorta Diameter and Overall Left Ventricular Function in Pediatric Patients Suspected of Having Dehydration	Specific Hypothesis: Medical students with minimal training in POCUS will be able to identify and measure the diameter of both the inferior vena cava and the aorta and can estimate left ventricular activity in hemodynamically stable euvolemic pediatric patients with 80% accuracy when reviewed by fellowship trained emergency ultrasound faculty.
Sumeet Teotia	Plastic Surgery	Epidemiological spectrum and analysis of infections in patients undergoing breast reconstruction following cancer treatment: Developing an algorithm for prevention, treatment, and salvage	Hypothesis: Given that a functioning immune system is an important factor in endogenously combatting infection, cancer treatment would likely be delayed in the situation of a post-operative infection because both chemotherapy and radiation weaken a patient's immune system. We hypothesize that post-mastectomy, post-tissue expander placement infections will delay adjuvant chemotherapy and radiation for this reason. Additionally, we hypothesize that more severe infections, such as those that require IV antibiotics or those caused by multi-drug resistant organisms, will delay cancer treatment to a more

			significant degree than less severe infections. Lastly, we will analyze the infectious agent(s) in each case to determine if specific organisms are more likely to cause infection after this specific operation. We will also analyze patient characteristics, such as age, BMI, and co-morbidities, to determine if certain organisms are more likely to cause infections in certain populations.
Sumeet S. Teotia	Plastic Surgery	Preoperative Comorbidities as Risk Factors for the Delay of Adjuvant Cancer Therapy in Patients Undergoing Immediate Breast Reconstruction	Hypothesis: It is known that patients who present with comorbidities affecting vascular supply may be at higher risk for complications following immediate breast reconstruction. Since postoperative complications may necessitate further intervention, we hypothesize that patients with a history of obesity, diabetes, hypertension, smoking, and abdominal surgery experience longer delays before beginning adjuvant cancer therapy. We also predict that more serious complications such as flap failure and systemic infection, which require intensive treatment, are significantly more likely to be associated with prolonged delays. Finally, we predict that patients with multiple comorbidities will have significantly higher rates of flap failure since each additional comorbidity will compromise vascular integrity.
Christopher Derderian	Plastic Surgery	3D morphometric and volumetric analysis of patients with lambdoid craniosynostosis	Hypothesis: Comparing 3D images from patients' initial consultations with images taken at later timepoints, both before and after surgery, will allow us to identify landmarks of skull morphology that are predictive of patient prognosis. These landmarks will anticipate the both the extent of continued compensatory growth prior to surgery, as well as the degree of head shape normality achieved after surgery
James Seaward	Plastic Surgery	Dynamic facial asymmetry in patients with repaired cleft lip using 4D video stereophotogrammetry	We hypothesize that this study will demonstrate a significant difference in dynamic asymmetry between the participants with repaired cleft lips and the control participants during smiling and puckering. This project can provide a highly detailed, quantitative analysis of post-operative cleft lips, and help improve outcomes of future cleft lip repair surgeries.

Todd Aguilera	Radiation Oncology	The Role of DDR and TGFb/Smad4 Mutations in Pancreatic Cancer Prognosis	**We hypothesize that TGFb/Smad4 and DDR pathway dysregulatio**n in PC will provide prognostic value towards patterns of failure in patients, both predictive of overall survival (OS) and degree of metastasis.
Kiran Kumar	Radiation Oncology	Combined Modality Low-dose Radiation Therapy (2 Gy x 2) and Single-agent Rituximab Immunotherapy in the Treatment of Indolent Non-Hodgkin Lymphoma	Hypothesis**:** Based on the previously described clinical data of low-dose ISRT (2 Gy x 2) alone and Rituximab alone7-8, as well as in-vitro evidence demonstrating that rituximab can enhance radiation-induced apoptosis in lymphoma cells suggesting a synergistic effect , we hypothesize that the combination of low-dose ISRT (2 Gy x 2) and rituximab is a safe and effective treatment modality for indolent NHL that results in the optimal balance of local and systemic disease control with minimal toxicity.
Nathan Kim	Radiation Oncology	Examining the Effects of Aspirin/Anticoagulant Use, and other parameters pertinent to modern day therapy on prognosis, in Patients with Inflammatory Breast Cancer	Rationale: Previous work from our group, and others, have demonstrated that patients with high risk breast cancer, and high risk prostate cancer, who were on aspirin/anticoagulant therapy portended a better outcome. In particular, patients taking aspirin tended to have reduced risk of metastatic disease recurrence in the high risk locally advanced breast and prostate cancer patients, while patients with lower stage disease had no significant benefit with aspirin use. Therefore, we hypothesize that aspirin/anticoagulant use can also reduce risk of distant metastases in patients with inflammatory breast cancer. In addition, we hypothesize that there are other clinicopathologic parameters particularly pertinent to modern day therapy, including use of improved technology for imaging and radiation that may impact patient's outcome.
Kenneth Westover	Radiation Oncology and Biochemistry	Screening for TAK1 Inhibitors Using the PKIS Library	Hypothesis: The PKIS library was designed to have broad coverage of the kinome. We predict that the PKIS library will provide a handful of TAK1 inhibitors that can serve as a starting point for discovering lead compounds. Methods: TAK1 will be expressed in insect cells and purified. From my previous lab experience, I already have extensive knowledge of protein expression and purification techniques that are required.

Robert Mattrey	Radiology	Lymphatic Targeting of Tumors for Theranostic Applications	Hypothesis: Our hypothesis is that tumor cells in lymph nodes are directly exposed to lymph providing a myriad of receptors on the cancer cell surface that can directly interact with targeted agents administered subcutaneously (SQ). If this hypothesis is true, it will provide easy access to cancer cells to diagnose and treat lymph node metastases, rather than rely on the IV route, where the endothelial barrier limits access of agents >40 kDa, such as antibodies or nanoparticles to the tumor interior. This is particularly true when small deposits have not yet developed an angiogenic response. Since small molecules inject SQ have equal access to blood and lymph and larger molecules such as antibodies preferentially enter the lymph [1, 2], we would accept our hypothesis if targeted antibodies preferentially accumulate on the surface of metastatic cancer cells when given SQ than when given IV at 30 - 60 minutes after administration.
Linda Dultz and Michael Cripps	Surgery	Feasibility of Erector Spinae Plane Blocks in Patients on Enoxaparin after Chest Wall Trauma	The goal of this project is to perform a retrospective review to determine the safety and efficacy of erector spinae plane blocks in patients on enoxaparin after chest wall trauma. Current guidelines recommend epidural, paravertebral and intercostal blocks for severe fractures refractory to oral and intravenous medications. Thus far, due to its novelty, there is a lack of literature demonstrating the use of this block and its effectiveness, especially in patients with chest wall trauma. With this study, we hypothesize that the erector spinae plane blocks effectively decrease pain in rib fracture patients and can be co-administered with enoxaparin without adverse effects. This study can significantly impact current and future guidelines regarding the analgesia management of rib fracture patients.
Qun Sophia Zang	Surgery	Beclin-1 in the regulation of cardiac mitochondria-associated membranes (MAMs)	Background: Mitochondria-associated membranes (MAMs), a subcellular entity of mitochondria-ER contacts, regulate mitochondrial physiology and the signaling transport between the two cellular organelles. In particular, MAMs facilitates mitochondria-ER communication in the transport of Ca2+ and lipids. MAMs also function as a signaling hub harboring key

			molecules in events of protein sorting, ER stress, apoptosis, inflammation, and autophagy. Hypothesis: Beclin-1 prevents LPS-induced damage in cardiac MAMs.
Patricio Polanco	Surgery- Surgical Oncology	Treatment Utilization and Oncologic Outcomes of Colorectal Cancer in the Texas-Mexico Border Population	Background: Colorectal cancer (CRC) is the second leading cause of cancer-related deaths in the USA. Early diagnosis and treatment has been associated with improved outcomes, with a 5-year survival rate that varies from 90% in early stage cases to 14% for those with distant metastatic disease. Previous studies have reported potential healthcare disparities in the Texas-Mexico border population. Potential factors associated with this are: low-income, limited access to colon cancer screening, lack of health insurance and Hispanic ethnicity among others. We hypothesize that there are several demographic, racial, geographic, and hospital-related factors associated with worse survival in the Texas-Mexico border patients with CRC.
Philippe Zimmern	Urology	Role of D-mannose in prevention of recurrent urinary tract infections	We hypothesize (1) high levels of D-mannose are protective against UTIs and (2) women with low levels can be targeted to reach higher protective levels when they are prone to RUTIs. The overarching goal of this study is to evaluate the efficacy of D-mannose in preventing UTI. This study aims to collect large urine samples to measure D-mannosuria in three groups of women: (1) women who claim never had a UTI, (2) those with a history RUTIs, and (3) those with an acute episode of UTI. Second, we would like to establish the extent to which levels of D-mannosuria fluctuate or are stable over time. Finally, we would like to see if levels of D-mannosuria can be raised by oral supplementation, and if they are, whether the artificially raised D-mannosuria decreases the rate of UTIs over time in those prone to RUTIs.
Allen Morey	Urology	Age as a predictor of anastomotic urethroplasty and succesful repair of bulbar urethral strictures	Hypothesis, Specific Aims, and Study Design: Our goal is to assess stricture characteristics, repair type, and treatment success in younger versus older patient groups. We will focus on age as it relates to the success of bulbar urethral stricture repair using excision and anastomotic urethroplasty.

Allen Morey	Urology	Evaluation of Outcomes in a Long-term Implementation of High Submuscular Placement of Prostatic Balloons in Inflatable Penile Prosthesis	Hypothesis, specific aims, and experimental design: Our goals are to evaluate the placement of the UPBR in the high submuscular space in the implantation of an IPP through a single-surgeon experience at a tertiary referral center. We hypothesize that the type of prosthetic (AUS vs. IPP) is not a confounding factor and that these study outcomes will hold true in an isolated analysis of IPP implantation. We believe that the establishment and refinement of this technique over the past seven years at this practice has improved the outcomes of this procedure both in the rate and severity of complications.
Linda Baker	Urology	Molecular Characterization of Prune Belly Syndrome	The two aims of my project are: 1) Goal: To screen PBS probands for causal variants in known genes that mediate congenital myopathies (CM)/muscular dystrophies (MD). Hypothesis: PBS is caused by mutations in genes associated with congenital myopathies/muscular dystrophies. 2) Goal: To characterize distinct stromal cell populations in the PBS urinary bladder. Using single-cell RNAseq, Dr. Iqbal (postdoc in Dr. Baker's lab) has identified specific markers in the normal adult human bladder for three independent stromal cell populations. Hypothesis: PBS urinary bladders exhibit a unique distribution of stromal cells distinct from normal bladders that may elucidate the pathophysiology behind the disease.