Division Data Summary

RESEARCH AND TRAINING DETAILS
Number of Faculty 24
Number of Joint Appointment Faculty 23
Number of Research Fellows 9
Number of Research Students 1
Number of Support Personnel 79
Direct Annual Grant Support $2,304,049
Peer Reviewed Publications 45

CLINICAL ACTIVITIES AND TRAINING
Number of Clinical Staff 13
Number of Clinical Fellows 3
Number of Other Students 11
Inpatient Encounters 6,461
Outpatient Encounters 12,197

Significant Accomplishments

Projects Explore Intestinal Rehabilitation
Michael Helmrath, MD, Director of Surgical Research, focuses on the adaptive response of stem cells following surgical loss of the bowel. Multiple projects in the laboratory are studying the expansion of intestinal stem cells and the ability to culture and expand both murine and human intestinal epithelium. Clinically, Helmrath is the Surgical Director of the Intestinal Rehabilitation Center and is actively involved in establishing the intestinal failure registry and outcome trials in this patient population.

Virus Related to Biliary Atresia Replicates Better in Newborn Cells
Gregory Tiao, MD, continues to study the causes of biliary atresia in infants with the assistance of his research team, including Sujit Mohanty, PhD, research assistant Bryan Donnelly and research fellow Ashley Walther. Recently published data from Tiao’s lab illustrated that the temporal nature of biliary atresia may be in part due to the ability of virus to replicate better in newborn cholangiocytes compared to mature cholangiocytes through defects or down-regulation of the interferon alpha pathway. The team also has shown that a specific gene/protein on the rhesus rotavirus strain is necessary to induce obstruction in the murine model through activation of T cells and NK cells. Tiao and colleagues are looking for the epitopes in this protein responsible for the disease pathogenesis.

Trauma Collaborative Produces Results
Richard Falcone, MD, MPH, and Trauma Services have developed the Pediatric Trauma Transformation Collaborative (PTTC) to support trauma centers in providing the highest level of care and when appropriate, reduce the need to transfer these patients away from their families and support systems. The collaborative includes monthly performance improvement meetings, guideline development and support, pediatric trauma focused education, simulation training, phone consultation, support for trauma center verification, and shadowing opportunities for physicians, nurses and other providers. The PTTC currently supports three institutions: St. Mary’s, Evansville, IN; Parkview, Fort Wayne, IN; and Sanford, Fargo, ND. Each site is demonstrating improvements including reduced radiation exposure, shorter lengths of stay, fewer transfers, increased patient volumes and American College of Surgeons trauma verification. The results of this program will be presented at the Trauma Center Association of America conference as well as the Eastern Association for the Surgery of Trauma meeting. More partners also are being identified. Trauma Services also has been active in performance improvement. We now have more than 50 percent of our staff involved in a performance improvement initiative in their area. Falcone also has been intimately involved in forming the Comprehensive Children’s Injury Center (CCIC). This center brings together members of Emergency Medicine, Critical Care, Sports Medicine, Orthopedics, Physical Medicine and Rehabilitation, Pediatrics and others to more collaboratively work to improve pediatric injury outcomes.

**Research Highlights**

**Biology of Vascular Disease – Peter Dickie, PhD**

Dr. Dickie’s research laboratory was established to explore the underlying cellular defects associated with the development of lymphatic malformations in humans. Several unique lymphatic endothelial cell lines have been established from patient lesions. Indicative of disease-causing potential, these have displayed aberrant behavior in in vitro functional assays and continue to be studied.

**Trauma – Richard Falcone, MD**

Dr. Falcone received funding from the Ohio Department of Public Safety for his work in trauma epidemiology, education and prevention. Dr. Falcone is the Director of the Trauma and Injury Prevention Program.

**Solid Organ Cancers – Jason Frischer, MD**

Dr. Frischer is continuing his basic science research to study solid organ cancers by identifying, and then overcoming, the mechanisms by which they become resistant to current therapies. He intends on applying to the National Institute of Health for a K08 in the fall of 2012. Dr. Frischer is the Extracorporeal Membrane Oxygenation Program Director.

**Intestinal Rehabilitation – Michael Helmrath, MD**

Dr. Helmrath is the Director of Surgical Research. He has expertise in gastrointestinal diseases resulting in intestinal failure. His basic science research is focused on the adaptive response of stem cells following surgical loss of the bowel. Multiple projects in the laboratory are focusing on the expansion of intestinal stem cells and the ability to culture and expand both murine and human intestinal epithelium. These projects are support by the National Institutes of Health. Clinically, he is the surgical director of the intestinal rehabilitation center and is actively involved in establishment of the intestinal failure registry and outcome trials in this patient population.

**Bariatric Surgery – Thomas Inge, MD, PhD**

Dr. Inge and Dr. Jenkins together direct the Center for Bariatric Research and Innovation. In addition to participation in a long and growing list of collaborative studies, this Center partners with the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) to lead the national effort to prospectively gather data
and publish evidence-based recommendations for use of weight loss surgery in adolescents. The Teen LABS study continues to be funded by the NIDDK, the largest multicenter study to document outcomes of adolescents undergoing weight loss surgery. The Teen-LABS Competitive Renewal Grant was awarded another five years of funding in September 2011 to continue this important research. Dr. Inge is the Surgical Director of the Surgical Weight Loss Program for Teens.

Teen-LABS Data Coordinator Center (DCC) – Todd Jenkins, PhD
Dr. Jenkins and Dr. Buncher together direct the Teen-LABS Data Coordinator Center (DCC) that was awarded 5-year renewal funds in September 2011. The DCC provides data management and statistical expertise, as well as administrative support to the Teen-LABS consortium and ancillary investigations. Dr. Jenkins co-directs the Center for Bariatric Research and Innovation.

Molecular Fetal Therapy – Helen Jones, PhD
Dr. Jones’ research investigates placental function in cases of placental insufficiency with a focus on developing a nanoparticle delivery method for placental treatment. Furthermore, novel observations of placental micropathologies in tissue from HLHS cases has led to further research into the placentas from Hypoplastic Left Heart Syndrome. Her research is funded by a K99/R00 Pathway to Independence Award from the Eunice Kennedy Shriver National Institute of Child Health and Human Development.

Wound Care Services – Sundeep Keswani, MD
Dr. Keswani is focusing on the molecular mechanisms underlying the fetal regenerative wound healing phenotype. If the goals of the project are realized, his work may yield a wide range of therapeutics for diseases characterized by excessive fibroplasia. His basic science interests in fetal wound healing are closely paired with his clinical practice in fetal surgery, and he is the Surgical Director for the Pediatric Advanced Wound Care Service which opened in January, 2012. His research is funded by a K08 award from the National Institute of Health, and he intends on applying for a R01 in the fall of 2013.

Colorectal Center – Marc Levitt, MD
Dr. Levitt is actively engaged in a quality of life research project, (the FISH study) to assess how patients are doing following their participation in the Bowel Management Program to treat fecal incontinence. Dr. Levitt traveled to Africa to train pediatric surgeons in colorectal techniques. Dr. Levitt is the Director of the Colorectal Center.

Fetal Care Center – Foong-Yen Lim, MD
Dr. Lim has expertise in wound healing and fetal cellular and molecular therapeutics research. He is the Surgical Director of the Fetal Care Center.

Chronic Liver Disease – Jaimie Nathan, MD
Dr. Nathan continues to focus on elucidating the role of gut microbiota in the modulation of liver injury and cholangiopathies. His studies involve a novel mouse model of small bowel bacterial overgrowth, in which a small bowel self-filling blind loop is surgically created. With this model, he is studying the gut-liver axis as it relates to the pathogenesis of a number of cholangiopathies which can progress to end-stage liver disease. Dr. Nathan is Surgical Director of the Intestinal Transplant Program.

Biliary Atresia – Gregory Tiao, MD
Dr. Tiao continues to develop his research in Biliary Atresia through an ongoing R01 project funded by the National Institutes of Health. Dr. Tiao is the Surgical Director of Liver Transplantation and the Director of the Small Bowel Program.
Fetal Care Center – Aimen Shaaban, MD
Dr. Shaaban joined the Division of General Surgery and the Fetal Care Center in September 2012 from the University of Iowa Carver College of Medicine where he served as an associate professor of surgery with tenure and as director of the Laboratory for Fetal Cellular Therapy. He will continue his research interests in the mechanisms of immunologic tolerance to prenatally transplanted stem cells with the long term goal of treating congenital diseases such as immunodeficiency, sickle cell disease, thalassemia and metabolic disorders long before birth. His research is funded by an R01 award from the National Institute of Health which he transferred from the University of Iowa. He is the Director of the Center for Fetal Cellular and Molecular Therapy.

**Significant Publications**


This review goes through the evaluation and treatment of a Hirschsprungs patient who is suffering from fecal incontinence following a pull-through. This is a common postoperative problem and is a confounding clinical challenge. An organized approach is delineated, and great success is described with the implementation of either a laxative regimen, a bowel management program, or in certain cases re-operative surgery.


We reviewed our experience in the management of children who have undergone orthotopic liver transplant who experience portal vein thrombosis post-operatively. We found that some children require re-exploration for GI bleeding years after their transplant but can do well and maintain good graft function.


Adolescents with extreme obesity, who have undergone bariatric surgery, must adhere to many lifestyle and nutritional recommendations, including multivitamin therapy. Little is known about multivitamin adherence following adolescent bariatric surgery. This prospective study documented adherence to nutritional supplements in adolescents who underwent bariatric surgery, using state of the art electronic monitoring methodology as well as self-reported adherence. The mean adherence as derived from electronic monitoring for the 6-month study period was 30%. Self-reported adherence was significantly higher than electronically monitored adherence. Forgetting and difficulty swallowing pills were reported as the main barriers to adherence. These high rates of non-adherence to multivitamin therapy should be considered when devising treatment and family education pathways for adolescents considering weight loss surgery.


This multi-center project helped to better define key patient factors that will allow for the appropriate high acuity trauma team to be available for the right patients. By matching patients to the level of care they require care can be improved and life threatening injuries can be addressed without delay. Future work with emergency medical service providers will help to ensure the appropriate information is being provided so that trauma centers can be appropriately prepared to manage severely injured children.
Pressure ulcers cause considerable harm and are also as a benchmark of the quality of hospital care delivered. While more than 70 percent of pressure ulcers in adults occur due to pressure over bony body parts, in this manuscript we discovered that most pressure ulcers in children occur due to contact with medical devices. We then developed and implemented a quality improvement program to address this problem which resulted in a 50% reduction of pressure ulcers within one year.

**Division Publications**


Faculty, Staff, and Trainees

Faculty Members

Daniel von Allmen, MD, Professor
Leadership Division Director

Richard Azizkhan, MD, Professor
Leadership Surgeon-in-Chief

Maria H. Alonso, MD, Associate Professor
Leadership Surgical Director, Kidney Transplant Program; Co-Surgical Director, Intestinal Transplant Surgery

Andrea Bischoff, MD, Instructor
Leadership Instructor, Pediatric Surgery; Pediatric Surgeon, Colorectal Center

Rebecca L. Brown, MD, Associate Professor
Leadership Associate Director, Trauma Services

A. Roshni Dasgupta, MD, MPh, Assistant Professor

Peter Dickie, PhD, Assistant Professor

Richard A. Falcone, MD, MPh, Associate Professor
Leadership Director, Trauma Services

Jason S. Frischer, MD, Assistant Professor
Leadership Director, Extracorporeal Membrane Oxygenation Program

Victor F. Garcia, MD, Professor
Leadership Founding Director, Trauma Services

Mounira Habli, MD, Assistant Professor
Leadership Maternal Fetal Medicine Specialist, Fetal Care Center; Co-Director of Fetal Fellowships

Michael A. Helmrath, MD, MS, Professor
Leadership Director of Surgical Research; Surgical Director, Intestinal Rehabilitation Center

Belinda Hsieh, PhD, MD, Assistant Professor
Leadership Colorectal Center

Thomas H. Inge, MD, PhD, FACS, FAAP, Professor
Leadership Surgical Director, Surgical Weight Loss Program for Teens; Director, Center for Bariatric Research and Innovation

Todd M. Jenkins, PhD, MPh, Assistant Professor
Leadership Director, Data Coordinating Center

Helen Jones, PhD, Assistant Professor
Leadership Fetal Care Center

Sundeep G. Keswani, MD, Assistant Professor
Leadership Director, Pediatric Advanced Wound Care and Skin Service

Marc A. Levitt, MD, Professor
Leadership Director, Colorectal Center

Foong-Yen Lim, MD, Assistant Professor
Leadership Surgical Director, Fetal Care Center of Cincinnati

Jaimie D. Nathan, MD, Assistant Professor
Leadership Surgical Director, Intestinal Transplant Program

Alberto Pena, MD, Professor
Leadership Founding Director, Colorectal Center

Frederick C. Ryckman, MD, Professor
Leadership  Senior Vice President, Medical Operations; Professor of Surgery/Transplantation
Aimen Shaaban, MD, Professor
Leadership  Director, Center for Fetal Cellular and Molecular Therapy
Gregory M. Tiao, MD, Associate Professor
Leadership  Surgical Director, Liver Transplantation; Director, Small Bowel Program; Associate Director, Pediatric Surgery Training Program

Trainees
- Aaron Garrison, MD, PL-9, University of North Carolina, Chapel Hill, NC
- Alexander Bondoc, MD, PL-8, University of Cincinnati College of Medicine, Cincinnati, OH

Division Collaboration

Division of Pediatric Surgery - Michael Helmrat  Division of Developmental Biology - James Wells
Characterization of intestinal stem cells during intestinal adaptation and development of intestinal regenerative strategies.

Division of Pediatric Surgery - Michael Helmrat  Division of Gastroenterology, Hepatology and Nutrition - Noah Shroyer
Characterization of intestinal stem cells during intestinal adaptation and development of intestinal regenerative strategies.

Division of Pediatric Surgery - Jason Frischer  Division of Oncology - Timothy Cripe
Exploring the growth and development of blood vessels in a tumor environment to try to develop novel cancer therapies to overcome tumor resistance to the classic treatments.

Division of Pediatric Surgery - Jason Frischer  Division of Gastroenterology, Hepatology and Nutrition - Lee Denson
Treating well established murine models of colitis with antianiogenic agents to provide new treatments for the managing of Crohn's disease and ulcerative colitis.

Division of Pediatric Surgery - Thomas Inge/Todd Jenkins/Stavra Xanthakos  Division of Pathology - BioBank
Collection of biological specimens from obese patients and lean comparison patients seeking surgical care at Cincinnati Children's Hospital Medical Center. Provide a long-term repository of such biological specimens and collect sufficient demographic information, anthropometric information, past medical history, surgical information, and clinical test results to permit selection of specimens to be used in hypothesis-driven research studies. These specimens are available to qualified researchers at Cincinnati Children's, or other institutions with IRB approved studies aimed at better understanding the biology of pediatric obesity and related disorders.

Division of Pediatric Surgery - Thomas Inge  Division of Biomedical Informatics
Collaborative effort to design and maintain the website, and web registry site, for the International Registry for Hypothalamic Obesity Disorders.

Division of Pediatric Surgery - Thomas Inge  Division of Biomedical Informatics
Collaborative effort to design and maintain the secure web portal used for the adjudication process of the Teen-LABS study.

Division of Pediatric Surgery - Thomas Inge/Todd Jenkins  Division of Gastroenterology, Hepatology and Nutrition - Stavra Xanthakos
1. Explore biological determinants of Steatohepatitis after adolescent bariatric surgery. 2. Pilot project will expand upon preliminary data from pre-clinical animal studies that demonstrate a correlation of a novel serum biomarker, Coenzyme Q, with fibrosis progression in a murine nonalcoholic steatohepatitis (NASH) model. 3. Relationship of ultra-structural mitochondrial changes with histological severity and subtypes of pediatric NAFLD and NASH.

**Division of Pediatric Surgery - Thomas Inge**

- **Division of Gastroenterology, Hepatology and Nutrition - Senad Divanovic**
  
  Explore the role of IL-17 in NAFLD development and progression in obese adolescents to devise novel preventive and therapeutic strategies for NAFLD.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Gastroenterology, Hepatology and Nutrition - Rohit Kohli**
  
  Pilot study to correlate bile acid levels in serum to the reduction in weight in post-bariatric surgery in adolescents.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Heart Institute - Healthworks**
  
  Locating non-operative cohort of patients who have been out of the Surgical Weight Loss Program for Teens, as well as Healthworks for five or more years to recruit for a follow-up study to obtain height, weight, and blood samples for analysis.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Behavioral Medicine and Clinical Psychology - Meg Zeller**
  
  Teen View, Teen-View2, TeenView 3 looking at risk behaviors in the Teen-LABS cohort.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Social Services - Payal Sawhney**
  
  Support group effect in a weight-loss-surgery cohort. This study will help understand how a structured and well organized family support group improves the amount of weight loss achieved by patients who are undergoing weight-loss surgeries.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Nephrology - Nianzhou Xiu**
  
  The objective of the present study is to describe the prevalence of kidney abnormalities in severely obese children, and to evaluate risk factors for kidney abnormalities in severely obese children using the TEEN-LABS baseline status.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Endocrinology - Janet Chuang**
  
  Assessment of appetite regulatory peptides following gastric bypass surgery in adolescents.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of General & Community Pediatrics - Heidi Kalkwarf**
  
  Assessment of body composition via dual-energy X-ray absorptiometry (DEXA) in adolescents undergoing bariatric surgery.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Biostatistics & Epidemiology - Rachel Akers**
  
  Data collection and management collaboration for the Teen-LABS, FABS, and FABS 5+ studies.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Pulmonary Medicine - Narong Simakajoomboon**
  
  Effect of obesity duration on obstructive sleep apnea syndrome (OSAS) severity and sleep quality in morbidly obese patients with OSAS.

**Division of Pediatric Surgery - Thomas Inge/Todd Jenkins**

- **Division of Behavioral Medicine and Clinical**
Psychology - Avani Modi
Multi-method measurement of adherence to vitamin supplementation in adolescents undergoing bariatric surgery.

Division of Pediatric Surgery - Thomas Inge/Todd Jenkins » Clinical and Translational Research - Andrea Ferris
Clinical research coordinator support for the FABS 5+ study.

Division of Pediatric Surgery - Marc Levitt » Division of Pulmonary Medicine - Clinical - John Clancy
CFTR gene and its role in constipation in patients with CF. Specimens from colorectal cases are being analyzed for this funded project.

Division of Pediatric Surgery - Sean Barnett » Division of Adolescent Medicine - Jennifer Hillman
Awaiting results from a center wide survey in regards to work life balance.

Division of Pediatric Surgery - Jaimie Nathan » Division of Gastroenterology, Hepatology and Nutrition - Jorge Bezerra
Studying the role of the gut microbiome in the modulation of liver injury and cholangiopathies, which can progress to end-stage liver disease.

Division of Pediatric Surgery - Peter Dickie/Belinda Hsi Dickie » Division of Pediatric Otolaryngology - Alexander Osborn
Identify altered patterns of expression in lymphatic-determining transcription factors associated with lymphatic malformations.

Division of Pediatric Surgery - Peter Dickie/Belinda Hsi Dickie » Division of Pediatric Surgery - Jason Frischer
Explore lymphangiogenesis in the context of colitis.

Division of Pediatric Surgery - Peter Dickie & Belinda Hsi Dickie » Division of Human Genetics - Derek Neilson
Sequencing of somatic mutations in lymphatic malformations.

Division of Pediatric Surgery - Peter Dickie & Belinda Hsi Dickie » Department of Pathology - Anita Gupta
Histopathology of lymphatic malformations

Division of Pediatric Surgery - Peter Dickie & Belinda Hsi Dickie » Division of Developmental Biology - Saulius Sumanas
Zebra fish models of vascular malformation

Division of Pediatric Surgery - Peter Dickie & Belinda Hsi Dickie » Cancer and Blood Diseases Institute - Denise Adams
Medical management of vascular diseases.

Division of Pediatric Surgery - Helen Jones » The Heart Institute - Robert Hinton
Placental pathologies in Hypoplastic Left Heart Syndrome

Division of Pediatric Surgery - Aimen Shaaban » Division of Infectious Diseases - Sing Sing Way
Maternal Regulatory T cells in Fetal Tolerance

Grants, Contracts, and Industry Agreements

Grant and Contract Awards
HAAS, M
Ohio Trauma System Review by the American College of Surgeons
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