Division Summary

RESEARCH AND TRAINING DETAILS

Number of Faculty: 18
Number of Joint Appointment Faculty: 3
Number of Support Personnel: 18
Direct Annual Grant Support: $1,737,085
Direct Annual Industry Support: $79,628
Peer Reviewed Publications: 28

CLINICAL ACTIVITIES AND TRAINING

Number of Clinical Staff: 52
Number of Clinical Fellows: 11
Inpatient Encounters: 3,529
Outpatient Encounters: 14,258

Significant Accomplishments

Disorders of Sex Development (DSD) Center Joins Translational Research Network

Meilan Rutter, MD, Endocrinology, and the Disorders of Sex Development (DSD) Center at Cincinnati Children’s have joined the national DSD Translational Research Network, the first network of its kind in North America. DSDs are congenital conditions in which development of chromosomal, gonadal or anatomic sex is atypical, resulting in severe consequences for behavioral health, fertility, cancer risk and quality of life. The new research network seeks to improve understanding of DSD, identify novel genetic mechanisms, deliver standardized clinical tools, and more. Our team already has started using the network’s standardized forms in clinic and will soon be enrolling patients into a DSD registry.

Septo-Optic Dysplasia (SOD) Clinic Launched

The clinical needs of those withSepto-Optic Dysplasia (SOD) involve many subspecialties including Endocrinology, Ophthalmology, Genetics, and Behavioral Medicine. Patients also depend on occupational, physical, and speech therapists as well as resources from the Cincinnati Association for the Blind and Visually Impaired. Our SOD clinic, started in December 2013, was designed to incorporate all subspecialty patient needs into a centralized location. The new clinic also provides a base for expanded research for this understudied population. Our team plans to work with colleagues at the University of Pennsylvania to identify genetic mutations associated with SOD.

Significant Publications

High density lipoproteins (HDL) are known to have potent anti-atherogenic, anti-inflammatory and anti-oxidative functions. However, these functions are not represented in the HDL cholesterol number. In this study, the Shah laboratory demonstrated a depletion of apoE enriched large HDL subclass in adolescents with type 2 diabetes that was associated with an increase in pulse wave velocity (PWV), a noninvasive measure of vascular stiffness and hence a surrogate of atherosclerosis. These results begin to provide new insights into the molecular heterogeneity of HDL and how dysfunctional HDL may contribute to early atherosclerosis in youth with type 2 diabetes.


This study is the culmination of two decades of IGF-I therapy for patients with severe IGF-I deficiency (growth hormone resistance). Dr. Backeljauw was a lead investigator for this study, which led to the FDA-approval of recombinant human IGF-1 for the therapy of this syndrome of growth hormone resistance leading to severe growth failure and short stature.


Dr. Backeljauw also published a key paper on the evaluation of idiopathic short stature. Together with his co-authors, the findings from a large retrospective study challenged the guidelines currently available to pediatricians for the evaluation of idiopathic short stature. They concluded that a history-based and physical exam-based approach is as efficient, and more cost-effective than a work-up based on a screening algorithm using laboratory testing.


The described quality improvement initiative to implement routine depression screening for adolescents with type 1 diabetes addresses a significant gap between national recommendations and widespread clinical practice. Nearly 20% of individuals screened endorsed moderate or high levels of depressive symptoms and 7% endorsed suicidal ideation. There was a positive correlation between higher depression scores and worse diabetes outcomes, supporting the hypothesis that depression screening provides an indication of youth at risk for suboptimal diabetes-specific health outcomes.


This article uses computational methods to study simulated flow through diseased aorta of patients with Turner syndrome. We find differences in clinically significant parameters of blood flow between normal and diseased aortae. These types of blood flow disturbances are known to lead to vessel wall pathology.

Division Publications


Faculty, Staff, and Trainees

Faculty Members

Lawrence M Dolan, MD, Professor
  Leadership Division Director, Robert and Mary Shoemaker Professor of Pediatrics
  Research Interests Diabetes mellitus; non-insulin dependent diabetes; sexual development disorders; growth disorders; disorders of the thyroid; goiters; hypoglycemia

Philippe Backeljauw, MD, Professor
  Leadership Director, Cincinnati Turner Syndrome Center
  Research Interests Growth disorders; disorders of bone and calcium metabolism; Turner Syndrome

Sarah Corathers, MD, Assistant Professor
  Research Interests Transition to adult care; Type 1 diabetes in adolescents and adults; Quality Improvement
Nancy Crimmins, MD, Assistant Professor
  Research Interests Diabetes; obesity

Deborah Elder, MD, Assistant Professor
  Research Interests Diabetes; growth disorders; precocious puberty; calcium disorders

Iris Gutmark-Little, MD, Assistant Professor
  Research Interests Airway and great vessel disorders in Turner syndrome

Stuart Handwerger, MD, Professor
  Leadership Professor of Cancer and Cell Biology
  Research Interests Growth and thyroid disorders; perinatal endocrinology

Jonathan Howell, MD, PhD, Assistant Professor
  Research Interests Using human stem cell derived intestinal tissue to understand human gut hormone development and function in order to facilitate new therapeutic options for diabetes

David J Klein, MD, PhD, Associate Professor
  Research Interests Diabetes mellitus; intensive diabetes management programs; early detection of renal disease; effects of diabetes mellitus on renal proteoglycan synthesis

Sarah Lawson, MD, Assistant Professor
  Research Interests Turner syndrome; Septo-optic dysplasia; endocrine abnormalities related to oncology and its treatments

Takahisa Nakamura, PhD, Assistant Professor
  Research Interests Focus on endogenous dsRNA pathways to address questions concerning why and how inflammatory responses are initiated and thus involved in the pathogenesis of obesity.

Susan Rose, MD, Professor
  Research Interests Hypothalamic pituitary function; thyroid disorders; disorders of growth or puberty; endocrine function in cancer survivors; endocrine function after head injury

Meilan Rutter, MD, Assistant Professor
  Research Interests Calcium disorders; endocrine function in childhood cancer survivors; endocrine function in muscular dystrophy

Amy Shah, MD, Assistant Professor
  Research Interests Type 2 diabetes; pre-diabetes; insulin resistance; obesity; lipid disorders

Peggy Stenger, DO, Assistant Professor
  Research Interests Disorders of bone and calcium metabolism; Growth disorders; disorders of sexual development; pubertal disorders; disorders of the thyroid; goiter

Nana-Hawa Yayah Jones, MD, Assistant Professor
  Research Interests Adherence/compliance in type 1 diabetes

Joint Appointment Faculty Members

Jonathan Katz, PhD, Professor (Immunobiology)
  Research Interests The immunology of type 1 diabetes mellitus

Jane Khoury, PhD, Associate Professor (Biostatistics & Epidemiology)
  Research Interests Diabetes in pregnancy and effect on offspring; stroke
Research Interests: Vertebrate gut development, stem cells, mammal

Trainees:
- Cassandra Brady, MD, PL-5, Vanderbilt University
- Marjorie Golekoh, MD, PL-5, Cincinnati Children’s Hospital Medical Center
- Pranati Jha, MBBS, PL-6, Albany Medical Center
- Jose Jimenez-Vega, MD, PL-4, University of Minnesota Medical School
- Christel Keefe, MD, PL-5, Cincinnati Children's Hospital Medical Center
- Manasa Mantravadi, MD, PL-4, Northwestern University McGaw Medical Center
- Arti Shah, MBBS, PL-6, University at Buffalo Program
- Nicole Sheanon, MD, PL-7, University of Massachusetts
- Allison Smego, MD, PL-4, Vanderbilt University
- Halley Wasserman, MD, PL-5, Cincinnati Children's Hospital Medical Center

Division Collaboration:

Clinical Collaboration - Disorders of Sex Development Clinic; DSD Center of CCHMC (Meilan Rutter, MD)
- Adolescent Gynecology » Lesley Breech, MD
- Pediatric Urology » Pramod Reddy, MD, Curtis Sheldon, MD, and Brian Vanderbrink, MD
- Human Genetics » Robert Hopkin, MD and Howard Saal, MD

Gender Dysphoria Clinical Team (Meilan Rutter, MD; Sarah Corathers, MD)
- Adolescent and Transition Medicine » Lee Ann Conard, MD

Depression screening in type 1 diabetes clinical care and research projects; Transition to adult care, clinical care and quality improvement (Sarah Corathers, MD)
- Behavioral Medicine and Clinical Psychology » Jessica Kichler, PhD

Comparative study of readiness to transition to adult care across 5 different patient populations (Sarah Corathers, MD)
- Behavioral Medicine and Psychology » Sarah Beal, PhD

Research - Microarray-based Gene Expression Analysis of Endocrine Systems: Principles of Experimental Design and Interpretation (Stuart Handwerger, MD)
- Biomedical Informatics » Bruce Aronow, PhD and Anil Jegga, MS, DVM

Clinical management protocol for cardiac disease in Turner syndrome (Philippe Backeljauw, MD; Sarah Lawson, MD; Iris Gutmark-Little, MD; Sarah Corathers, MD)
- Cardiology » Elaine Urbina, MD and Thomas Kimball, MD

The epidemiology of peripheral cardiovascular disease/central (heart) cardiovascular disease in youth with a specific emphasis on the role of obesity insulin resistance and diabetes (Lawrence Dolan, MD; Amy Shah, MD, MS)
- Cardiology » Elaine Urbina, MD and Thomas Kimball, MD
HDL Subspecies and Vascular Function (Amy Shah, MD, MS; Lawrence Dolan, MD)

**Cardiology** » Elaine Urbina, MD

Research - Trojectories of blood sugar control in adolescents with type 1 diabetes (Lawrence Dolan, MD)

**Center for Adherence and Self-Management** » Denny Drotar, PhD

Contribution of genetics to obesity in adolescents (Lawrence Dolan, MD)

**Human Genetics** » Lisa Martin, PhD

The effect of maternal type 1 diabetes on adolescents and young adult offspring with a focus on obesity and carbohydrate metabolism (Lawrence Dolan, MD)

**Biostatistics and Epidemiology** » Jane Khoury, PhD and Heidi Sucharew, PhD

**Human Genetics** » Lisa Martin, PhD

Creation of clinical database for the Comprehensive Weight Management Center (Nancy Crimmins, MD, MS)

**Biostatistics and Epidemiology** » Jessica Woo, PhD

Study of Clinical Efficacy of Three Month Depot GnRH Agonist in Suppression of Central Puberty (Susan Rose, MD; Deborah Elder, MD; Nana-Hawa Yayah Jones, MD; Mandi Cafasso, CNP)

**Biostatistics and Epidemiology** » Jane Khoury, PhD and Lindsey Hornung

Study of birth length, growth patterns and GH therapy in patients with Diamond Blackfan anemia (Susan Rose, MD; Jonathan Howell, MD, PhD)

**Biostatistics and Epidemiology** » Jane Khoury, PhD and Lindsey Hornung

Development of reference growth curves for Fanconi Anemia (Susan Rose, MD; Jonathan Howell, MD, PhD)

**Biostatistics and Epidemiology** » Jane Khoury, PhD and Lindsey Hornung

Analysis of Prospective Annual Adrenocorticotropin (ACTH) Stimulation Testing among Survivors of Intracranial Tumor, a retrospective study (Susan Rose, MD)

**Biostatistics and Epidemiology** » Jane Khoury, PhD and Lindsey Hornung

**Oncology** » Maryam Fouladi, MD and Karen C. Burns, MD, MS

**Bone Marrow Transplantation and Immune Deficiency** » Kasiani Myers, MD

Late Endocrine effects despite reduced intensity chemotherapy for bone marrow transplantation in children (Susan Rose, MD)

**Biostatistics and Epidemiology** » Adam Lang

Study of the effects of growth hormone on patients with Crohn's disease (David Klein, MD, PhD)

**Gastroenterology, Hepatology and Nutrition** » Lee Denson, MD

Phase 4 HOME study: Impact of PBDE & PFC exposures on internalizing behaviors and neuroimaging outcomes (Susan Rose, MD)

**General and Community Pediatrics** » Maria Britto, MD, MPH and Kimberly Yolton, PhD
Hereditary Cancer Predisposition Clinic (Susan Rose, MD)

**Human Genetics** » Nancy Leslie, PhD

Center for Better Health and Nutrition clinical collaboration (Nancy Crimmins, MD, MS)

**Healthworks; Preventive Cardiology; Gastroenterology** » Holly Ippisch, MD, Robert Siegel, MD, and Stavra Xanthakos, MD, MS

Research, database, and multicenter care of patients with Fanconi Anemia and other bone marrow failure syndromes (Susan Rose, MD)

**Bone Marrow Transplantation and Immune Deficiency** » Stella Davies, MD and Parinda Mehta, MD

Late endocrine effects despite reduced intensity chemotherapy for bone marrow transplantation in children (Susan Rose, MD)

**Bone Marrow Transplantation and Immune Deficiency** » Sonata Jodele, MD and Kasiangi Myers, MD

Study of endocrine effects after new treatment modality for high risk medulloblastoma (Susan Rose, MD)

**Oncology** » Maryam Fouladi, MD

Pediatric tectal plate gliomas: a review of clinical outcomes, endocrinopathies, and neuropsychiatric sequelae (Susan Rose, MD; Meilan Rutter, MD)

**Oncology** » Maryam Fouladi, MD and David Glass, MD

**Neuromuscular Center** » Mary Sutton, MD

**Physical Medicine and Rehabilitation** » David Pruitt, MD

Translational study of bariatric surgery and vagotomy in hypothalamic obesity (Susan Rose, MD)

**Pediatric General and Thoracic Surgery** » Thomas H. Inge, MD, PhD, FACS, FAAP

Preclinical Cerebrovascular Disease in Adolescents with Type 2 Diabetes (Lawrence Dolan, MD; Amy Shah, MD, MS)

**Neuroimaging Research Consortium** » Scott Holland, PhD, Jennifer Vannest, PhD, and Gregory Lee, PhD

IGF-1 therapy and muscle function in Duchenne Muscular Dystrophy research study (Meilan Rutter, MD; Philippe Backeljauw, MD)

**Comprehensive Neuromuscular Center** » Brenda Wong, MD, James Collins, MD, and Irina Rybalsky, MD

Studies of osteoporosis in Duchenne Muscular Dystrophy (Meilan Rutter, MD)

**Comprehensive Neuromuscular Center** » Brenda Wong, MD and Irina Rybalsky, MD

Studies of endocrine therapies (growth hormone, metformin, testosterone) in Duchenne Muscular Dystrophy (Meilan Rutter, MD)

**Comprehensive Neuromuscular Center** » Brenda Wong, MD and Irina Rybalsky, MD

Research, database and interdisciplinary team care of patients with Duchenne Muscular Dystrophy (Meilan Rutter, MD)

**Comprehensive Neuromuscular Center** » Brenda Wong, MD and James Collins, MD
**Biostatistics and Epidemiology** » Jane Khoury, PhD

Quantitative analysis of description factors in normal and pathologic placentas (Stuart Handwerger, MD)

**Pathology and Laboratory Medicine** » Jerzy Stanek, MD, PhD and Rachel Sheridan, PhD

Project to see if Metformin given at the initiation of anti-psychotic treatment can prevent weight acretion, which occurs commonly in children on these agents (David Klein, MD, PhD)

**Psychiatry** » Michael Sorter, MD and Mary Matias-Akhtar, MD

Impaired Fasting Glucose and Indeterminate Glucose Tolerance in a Cystic Fibrosis Population (Two and Four Year Clinical Outcomes) (Deborah Elder, MD)

**Pulmonary Medicine** » Gary McPhail, MD

Blood Glucose Monitoring in the hospitalized patient with Cystic Fibrosis - Validation of the expert opinion using Continuous Glucose Monitoring (Deborah Elder, MD)

**Pulmonary Medicine** » Gary McPhail, MD

NIH funded grant of Triptorelin therapy in lupus patients (Susan Rose, MD)

**Rheumatology** » Hermine Brunner, MD

Physical Fitness in Childhood and Longterm Cardiovascular Disease (Lawrence Dolan, MD)

**Sports Medicine** » Gregory Myer, PhD

Bariatric surgery in youth: safety, efficacy, and effect on carbohydrate and cardiovascular outcomes (Lawrence Dolan, MD; Susan Rose, MD)

**Pediatric General and Thoracic Surgery** » Thomas H. Inge, MD, PhD, FACS, FAAP

International Hypothalamic Obesity Registry (Susan Rose, MD)

**Pediatric General and Thoracic Surgery** » Thomas H. Inge, MD, PhD, FACS, FAAP

HDL subspecies and their changes post bariatric surgery (Amy Shah, MD; Lawrence Dolan, MD)

**Pediatric General and Thoracic Surgery** » Thomas H. Inge, MD, PhD, FACS, FAAP

Translational study of bariatric surgery and vagotomy in hypothalamic obesity (Susan Rose, MD)

**Pediatric General and Thoracic Surgery** » Thomas H. Inge, MD, PhD, FACS, FAAP

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**Grants, Contracts, and Industry Agreements**

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<tr>
<th>Grant and Contract Awards</th>
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<td><strong>BRADY, C</strong></td>
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<tr>
<td><strong>A Pilot Study to Assess Pre-clinical Cerebrovascular Disease in Youth with Type 2 Diabetes</strong></td>
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Endocrine Fellows Foundation

05/01/14-04/30/15

**DOLAN, L**
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<tr>
<th>Project Title</th>
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<td>National Institutes of Health(UUniversity of Maryland)</td>
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<td>SEARCH for Diabetes in Youth, Phase 3: Registry Study</td>
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<td>Assessment of Risk for Progression of Aortic Dilatation in Turner Syndrome Using Computational Fluid Dynamics</td>
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<td>Dynamic Computational Modeling of Obstructive Sleep Apnea in Down Syndrome</td>
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<td>Analysis of Pathogenic Double-Stranded RNA in Chronic Inflammatory Disease</td>
<td>Japan Science and Technology Corporation</td>
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<td>Functional Analysis of PKR, JNK, and RISC in Metabolic Inflammation and Homeostasis</td>
<td>American Heart Association</td>
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<td>Cerebrovascular Changes in Youth with Type 2 Diabetes</td>
<td>University of Cincinnati</td>
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<td>Understanding the Role of HDL Subspecies in Adolescents</td>
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Industry Contracts

BACKELJAUW, P
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<th>Company</th>
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<td>Eli Lilly and Company</td>
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<td>Novo Nordisk Pharmaceuticals</td>
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<td>Pfizer, Inc.</td>
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**Current Year Direct Receipts**  
$79,628

**Total**  
$1,816,713