Division Details

Division Data Summary

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Significant Accomplishments

Lung Transplant Program to Begin in Spring 2014

In collaboration with the Heart Institute, we are developing Cincinnati’s first Lung Transplant Program. We anticipate beginning lung transplants and lung-heart transplants by spring 2014.

Upper-Airway Center Established

Our newly established Upper-Airway Center is a multidisciplinary program that includes expertise from Pulmonology, Human Genetics, Plastic Surgery, Radiology, the ENT Outpatient Treatment Center and the Jane and Richard Thomas Center for Down Syndrome. The Center provides additional assessment and innovative care for patients with persistent upper-airway obstruction after receiving standard therapy.

No. 2 in the Nation

We were ranked No. 2 in the nation for Pulmonology by US News & World Report for the second year in a row, with an overall score of 96.8 out of 100. We received “superior” rankings in more than half of the categories judged, including asthma-management success, commitment to best practices and quality improvement, and efforts to involve families.

New faculty bring research, clinical strength

Jason Woods, PhD, has been appointed Director of the Center for Pulmonary Imaging Research, a
multidisciplinary research and training program between Pulmonary Medicine and Radiology. Woods is one of the world’s leading experts on using hyperpolarized-gas MRI to measure regional lung function, microstructure, and physiology. Woods is the academic principal investigator for an NIH-funded study entitled, “Single-session bronchial thermoplasty for severe asthmatics guided by HXe MRI.” This project will quantify regional ventilation abnormalities in patients with severe asthma and evaluate the outcomes of using image guidance to reduce risk to patients receiving bronchial thermoplasty.

Anjaparavanda Naren, PhD, has joined our faculty to continue his research of the structural and functional aspects of cystic fibrosis transmembrane conductance regulator (CFTR) ion-channel biology. His work includes developing and exploring the therapeutic potential of reagents used to augment the current activity of CFTR mutants, understanding the physical and functional coupling of the channel (CFTR) to the receptor (beta 2AR and LPA2) and its relevance to CFTR-dysfunction diseases, and defining a role for CFTR and t-SNARE (syntaxin 1A and SNAP23) interaction in vesicular translocation.

Satish Madala, PhD, was promoted to Assistant Professor. He also was awarded a Parker B. Francis Fellowship to initiate his independent research program entitled, “Molecular Mechanisms of TGFα-driven Pulmonary Fibrosis.” His other research interests include using transgenic and non-transgenic mouse models to identify cellular and molecular mechanisms of fibrotic diseases including idiopathic pulmonary fibrosis, cystic fibrosis and scleroderma.

Research Highlights

CHAT Study

The Childhood Adenotonsillectomy Trial (CHAT funded by the National Institutes of Health) was a multi-institutional, collaborative clinical research study designed to determine the effect of adenotonsillectomy surgery on obstructive sleep apnea syndrome (OSAS) in children. OSAS can cause health problems including poor growth, high blood pressure, diabetes, and behavioral and learning difficulties. Although adenotonsillectomy is the usual treatment for children with OSAS, it was not previously known with any certainty whether OSAS symptoms significantly improve after surgery or if earlier surgery would be more beneficial than watchful waiting with supportive care prior to surgery.

Raouf S. Amin, MD is one of the principal investigators for the CHAT study. Over 450 children with OSAS, five through nine years of age were randomly assigned to early adenotonsillectomy or watchful waiting and assessed for polysomnographic, cognitive, behavioral, and health outcomes. The findings of the study recently were reported in the New England Journal of Medicine paper, “A randomized trial of adenotonsillectomy for childhood sleep apnea”. It was determined that adenotonsillectomy reduces symptoms and improves secondary outcomes of behavior, quality of life, and polysomnographic measures, thus providing evidence of the beneficial effects of early surgical intervention for children with OSAS.

Drug Discovery in CF

Cystic fibrosis (CF) is a disorder affecting over 30,000 patients in the US and > 70,000 worldwide. Mutations in the CF gene lead to defects in the CFTR protein, which works as a regulator of salt and water movement throughout the body. CF patients develop problems with mucus in the lungs and abnormal food absorption that lead to lung infections, poor growth, and death in early adulthood. Although improvements have been made in CF patient care for several decades, all previous therapies have targeted downstream symptoms of CF rather than early steps in the disease cascade.
John P. Clancy, MD, is the director of the Cincinnati Children’s Cystic Fibrosis Center. Over the past 18 months, dramatic changes have occurred in CF care, starting with the FDA approval of kalydeco for the treatment of CF caused by the G551D CFTR mutation (found in about 5% of CF patients). Kalydeco is a ‘CFTR modulator’, which is a class of drugs that targets the root cause of CF on a mutation by mutation basis. Currently, Phase II and Phase III studies are underway testing kalydeco in combination with other drugs (‘correctors’ of the F508del CFTR mutation) that target the most-common CF-causing mutation. Also, studies are underway examining kalydeco as a monotherapy in new CF populations beyond those with the G551D CFTR mutation. It is hoped that within a few years, essentially all CF patients will be treated with medications that target the root cause of CF and restore activity to disease-causing CFTR mutations. Cincinnati Children’s is playing a critical role in these studies, and enthusiasm for these breakthrough therapies is at an all-time high in the global CF care and research communities.

**Summer Research Fellowship Training Program**

Our division was one of only two pediatric pulmonary centers in the United States to receive the National Institutes of Health Ruth L. Kirschstein National Research Service Award (NRSA) in 2012 for a Short-Term Institutional Training Grant program for Clinician Scientists in Pediatric Respiratory Medicine. The program provides funding for research training opportunities in basic or clinical research areas in pediatric pulmonary and sleep medicine for medical students in the summer between the first and second years of medical school.

William D. Hardie, MD is the director of this training program. Recruitment efforts for the second year resulted in an increase in applicants from 18 in 2012 from six institutions to 36 in 2013 from 17 institutions, including three from countries outside of the United States. The eight applicants accepted into the 2013 program were matched with mentors for research projects in a variety of pediatric respiratory research areas, including asthma, cystic fibrosis, lung cancer, and sleep apnea. The strengths of our research programs, combined with an enthusiastic faculty and a well-organized summer program, continue to provide an excellent opportunity to attract physician trainees at a critical stage in their careers and increase the likelihood they will want to further pursue research as physician-scientists.

**Significant Publications**


Although adenotonsillectomy is commonly performed in children with obstructive sleep apnea (OSA), its usefulness in reducing symptoms and improving cognition, behavior, quality of life, and polysomnographic findings has not been rigorously evaluated. As compared with a strategy of watchful waiting with supportive care, adenotonsillectomy was determined to reduce symptoms and improve secondary outcomes of behavior, quality of life, and polysomnographic findings, thus providing evidence of the beneficial effects of early surgical intervention for children with OSA.


Little is known about the clinical effectiveness of tobramycin on lung function (FEV₁) decline in cystic fibrosis
(CF) patients with chronic Pseudomonas aeruginosa infections outside of randomized and controlled trial settings; conventional analysis of existing registry data has heretofore been confounded by treatment-selection bias. To determine the effectiveness of inhaled tobramycin on FEV₁ decline, observational data from the Cystic Fibrosis Foundation Patient Registry were used. Center-specific prescription rates were chosen as an instrument to reduce treatment-by-condition bias. The instrumental variables analysis showed less FEV₁ decline for patients who received tobramycin when first eligible compared with those who did not receive tobramycin. This approach can correct for treatment-by-condition bias arising from observational studies.


Chronic pulmonary disease with progressive destruction of the pulmonary parenchyma is a major morbidity of cystic fibrosis (CF), but the relationship between clinical severity of CF and aortopulmonary collateral blood flow has not been assessed. Changes in aortopulmonary collateral blood flow were measured by phase-contrast magnetic resonance imaging (MRI) in children with CF across the spectrum of disease severity. The findings suggest that phase-contrast MRI can be performed reliably with consistent results and without interobserver variability and support that aortopulmonary collateral blood flow may serve as a novel and sensitive biomarker of early pulmonary disease in children with CF.


Religious coping has been associated with health outcomes in adolescents with chronic disease. The purpose of this study was to determine if associations exist between rate of change in pulmonary function and subsequent religious coping by adolescents with cystic fibrosis. More-severe lung function decline was associated with use of pleading or negative religious coping. Establishing an association between health outcomes and religious coping is a first step to understanding how to intervene, and suggests opportunities for chaplains to explore alternative religious coping options or to cognitively reframe negative religious coping.


A Collaborative Chronic Care Network (C3N) is a network-based production system that harnesses the collective intelligence of patients, clinicians, and researchers and distributes the production of knowledge, information, and know-how over large groups of people, dramatically accelerating the discovery process. A C3N is a platform of "operating systems" on which interconnected processes and interventions are designed, tested, and implemented. A fully realized C3N represents a discontinuous leap to a self-developing learning health system capable of producing a qualitatively different approach to improving health.

Division Publications


16. Grossoehme DH, Ragsdale JR, Snow A, Seid M. We were chosen as a family: parents' evolving use of religion when their child has cystic fibrosis. J Relig Health. 2012; 51:1347-58.


36. McPhail GL, Boesch RP, Chini BA, Fenchel M, VanDyke R, Clancy JP. Vitamin D Status Is Associated


Raouf Amin, MD, Professor

**Leadership** Director, Division of Pulmonary Medicine;; Endowed Chair, Hubert and Dorothy Campbell Professorship in Pediatric Pulmonology

**Research Interests** Cardiovascular morbidity of sleep apnea in children

Thomas Boat, MD, Professor

**Leadership** Executive Associate Dean, University of Cincinnati College of Medicine

Ronald Bokulic, DO, Associate Professor

Lisa Burns, MD, Assistant Professor

**Research Interests** CF Transition of Care; Pulmonary Vascular Disease

Barbara Chini, MD, D-ABSM, FAAP, Associate Professor

**Leadership** Director, Pulmonary Fellowship Program; Associate Director, Cystic Fibrosis Center; Medical Director, A7C1

**Research Interests** Sleep Disordered Breathing, Outcomes Research, Self-Management of Chronic diseases

John P. Clancy, MD, Professor

**Leadership** Thomas Boat Endowed Chair; Director, Clinical and Translational Research

**Research Interests** Airway and epithelial biology, examining novel targets to treat cystic fibrosis;

Joseph Crisalli, MD, Assistant Professor

**Research Interests** Pediatric Sleep, Exercise Physiology

Daniel Grossoehme, DMin, BCC, Assistant Professor

**Research Interests** Religion/ spirituality, adherence, coping, cystic fibrosis

William Hardie, MD, Professor

**Leadership** Director, Pulmonary Function Laboratory

**Research Interests** Molecular mechanism of pulmonary fibrosis, pediatric pulmonary function tests, pediatric pneumonia complications

Patricia Joseph, MD, Associate Professor

**Research Interests** Cystic fibrosis infections and quality improvement

Carolyn Kercsmar, MD, Professor

**Leadership** Co-Director, Division of Pulmonary Medicine; Director, Asthma Center

**Research Interests** Asthma, inner city asthma, clinical outcomes and clinical trials, airway inflammation

Satish Madala, PhD, Instructor

**Research Interests** Immunoregulatory Mechanisms in pulmonary inflammation and fibrosis; Stromal cell contribution in pulmonary fibrosis

Karen McDowell, MD, Associate Professor

**Leadership** Director, Infant Pulmonary Function Laboratory

**Research Interests** Asthma self management, utilization of technology for chronic disease management, bronchoscopy and wheezing/asthma, health care effectiveness, outcomes.

Gary McPhail, MD, Assistant Professor

**Leadership** Director, Cystic Fibrosis Center; Associate Director, Fellowship Training Program

**Research Interests** Cystic fibrosis, quality improvement, clinical outcomes, pulmonary vascular disease
Hemant Sawnani, MD, Assistant Professor
Research Interests Pulmonary Management of children with Neuromuscular diseases; sleep disordered breathing in Duchenne Muscular Dystrophy; Infant Apnea; Obstructive Sleep Apnea; Outcomes in Sleep Medicine

Marc Schecter, MD, Associate Professor
Leadership Medical Director, Pediatric Lung Transplant Program

Michael Seid, PhD, Professor
Leadership Director, Health Outcomes and Quality of Care Research
Research Interests Health outcomes for children with chronic health conditions, interventions to overcome barriers to care and adherence, clinical behavior and effects on self-management, quality improvement research

Abu Shamsuzzaman, MD, Assistant Professor
Research Interests Sleep and Cardiovascular Diseases

Narong Simakajornboon, MD, Professor
Leadership Director, Sleep Disorders Center; Director, Sleep Medicine Fellowship Program
Research Interests Sleep-disordered breathing in children, sleep apnea, restless legs syndrome, periodic limb movement disorders

Cherie Torres-Silva, MD, Assistant Professor
Research Interests Biomarkers in bronchoalveolar lavage and Pulmonary Outcomes in childhood cancer survivors

Robert Wood, PhD, MD, Professor
Leadership Director, Pulmonary Bronchology Program
Research Interests Airway abnormalities; pulmonary alveolar proteinosis

Jason Woods, Ph.D., Professor
Leadership Director, Pulmonary Imaging Research Center
Research Interests Pulmonary MRI, translational imaging, and image-guided pulmonary interventions

Joint Appointment Faculty Members

Kelly Byars, PsyD, Associate Professor (Psychology)
Research Interests Current research focuses on improving the assessment and treatment of pediatric insomnia and pediatric obstructive sleep apnea

Rhonda Szczesniak, PhD, Assistant Professor (Biostatistics & Epidemiology)
Research Interests Current areas of interest are Mixture Models and Functional Data Analysis with focus on Bayesian statistics, primarily using Markov Chain Monte Carlo. Content-specific areas include integration of fMRI and MEG modalities; developing statistical models to assess impact of OSA; CF outcomes research

Bruce Trapnell, MD, Professor (Neonatology and Pulmonary Biology)

Clinical Staff Members

Moutazz Abdulhadi, RPSGT,
PSG Tech/RRT III
Nick Allen, RN,
Nurse Coordinator
Rosalynn Allie, RRT,
RT I
Denetra Bamonte, RRT, RPSGT,
PSG Tech III
Sallie Bauer, RRT, RPSGT,
PSG Tech III
Emily Beech, RD,
RD
Marsha Blount, CNP,
Certified Nurse Practitioner
Walter Blower, RRT,
Resp Therapist III
Ginger Browning, RRT, BS,
Airway Clearance Specialist
Johnny Bryant, RRT, RPSGT,
PSG Tech
Carolyn Burrows, CNP,
Certified Nurse Practitioner
Monica Chapman, RN,
Care Manager
Jessica Co, CNP,
Certified Nurse Practitioner
Amy Cole, RRT, RPSGT,
Clinical Manager
Adrienne Conrad, RRT,
PSG Tech/RRT
Shannon Deidesheimer, RN,
Nurse Coordinator
Geri Dinkins, RN,
Care Manager
Melodie Dixon, RRT, RPSGT,
PSG Tech III
Amanda Dressman, CNP,
Certified Nurse Practitioner
Lori Duan, RN,
Clinical Manager
Rebekah Dunning, RRT,
RT II
Julie Feldstein, RRT, CPFT,
RT III
Karla Foster, MS,
Exercise Physiologist
Janice Gramke, RN,
Nurse Coordinator
Chuck Grone, RT,
RT
Neepa Gurbani, DO,
Staff Physician
Robin Hamilton, RN,
Clinical Director
Joann Harmeyer, RRT, RPSGT,
PSG Tech III
Amanda Hatfield, RRT,
PSG Tech III
Jami Johnson, CNP,
Certified Nurse Practitioner
Marion Johnson, RRT,
PSG Tech II
Robin Johnson, RRT,
PSG Tech I
Shannon Johnson, RN,
Clinical Manager
Sharon Kadon, RN,
Nurse Coordinator
Laura Kalb, RN,
Nurse Coordinator
Michelle Kaiser, RRT,
RRT III
Amanda Kelly, RRT,
PSG Tech
Michelle Kleinhenz, RRT,
PSG Tech II
Beth Koch, RRT, RPFT,
Clinical Manager
Margaret Landers, RRT, RPSGT,
PSG Tech III
Denise Leonard, RN,
Care Manager
Jean Luchini, RN,
Nurse Coordinator
Julie Malkin, CNP,
Nurse Practitioner
Janice MacBrair, CNP,
Certified Nurse Practitioner
Susan McCarthy, RRT, RPSGT,
PSG Tech III
Connie Meeks, RN,
Care Manager
Steven Moore, RN,
Clinical Coordinator
Mohr Alyssa, RN,
Nurse Coordinator
Karen Murphy, MSW, LSW-S,
Social Worker
Patricia Norton, RN,
Clinical Program Manager
Laura Ogilby, RRT,
RT II
Teresa O'Hara, RN,  
Care Manager  

John Pack, RRT,  
RT III (Bronch)  

Rebecca Quarles, RN,  
Care Manager  

Melissa Rice, CNP,  
Certified Nurse Practitioner  

Rachel Sackenheim, MSW, LSW,  
Social Worker  

Valerie Sackenheim, RN,  
Nurse Coordinator  

Kathy Santoro, RD, LD,  
RD III  

Joshua Shannon, RT,  
RT II  

Erika Skovmand, RT,  
PSG Tech II  

Dianne Stratton, RRT,  
RT II  

Jackie Taylor, RD, LD,  
RD III  

Jenetta Thomas, RN,  
Nurse Coordinator  

Sarah Thomas, CNP,  
Certified Nurse Practitioner  

Karin Tiemeyer, RN,  
Care Manager  

Aarthis Vemana, M.D.,  
Staff Physician  

Mark Washam, CNP,  
Certified Nurse Practitioner  

Debbie Webster, BA, RRT, RPSGT,  
RRT II  

Tonya Weddle, RRT,  
PSG Tech II  

Jeanne Weiland, CNP,  
Certified Nurse Practitioner  

Erin Wells, RN,  
Transplant Care Manager  

Patricia White,  
Health Unit Coordinator  

Kathy Witschger, RRT,  
RT II  

Lilianna Wooten, CNP,  
Certified Nurse Practitioner  

Brenda Young, RRT,  
PSG Tech  

Trainees
Division Collaboration

Pediatric Surgery; Pediatric Otolaryngology/Head and Neck Surgery; Gastroenterology, Hepatology and Nutrition; Interdisciplinary Feeding Clinic | Richard Azizkhan, MD, Robin Cotton, MD, Alessandro de Alarcon, MD, Thomas Inge, MD, Ajay Kaul, MD, Charles Myer, MD, Philip Putnam, MD, Michael Rutter, MD, Sally Shott, MD, and Paul Willging, MD

Aerodigestive and Sleep Center - Treatment of chronically ill children with complex airway, pulmonary, upper digestive tract, sleep and feeding disorders.

Anesthesia; Cardiology; Endocrinology; Developmental and Behavioral Pediatrics; Gastroenterology, Hepatology and Nutrition; Genetic Counseling; International Health; Neurology; Nutrition Therapy; Orthopaedics; Palliative Care; Pediatric Surgery; Physical Therapy; Rehabilitative Medicine; Social Work | Rebecca Brown, MD, Jim Collins, MD, Linda Cripe, MD, Thomas Inge, MD, Viral Jain, MD, Ajay Kaul, MD, Mary McMahon, MD, Mark Meyer, MD, Susan Rose, MD, Meilan Rutter, MD, Irena Rybalsky, MD, David Schonfield, MD, Robert Spicer, MD, Jeffrey Towbin, MD, Martha Walker, MD, Norbert Weidner, MD, and Brenda Wong, MD

Comprehensive Neuromuscular Center - Treatment of children with neuromuscular disorders.

Allergy and Immunology; General Pediatrics | Amal Assa'ad, MD, Gurjit Hershey, MD, Maria Britto, MD, Thomas DeWitt, MD, Keith Mandel, MD, Mona Mansour, MD, Marc Rothernberg, MD, and Jeffrey Simmons, MD

Asthma Center - Treatment of children and adolescents with asthma; development of an asthma repository.

Molecular Immunology; Pulmonary Biology | John P Clancy, MD, Jeff Whitsett, MD, and Bruce Trapnell, MD

Cystic Fibrosis Research - The Cystic Fibrosis Research Program examines the underlying causes of CF and novel treatment strategies.

Pulmonary Biology | Thomas Korfhagen, MD and Jeffrey Whitsett, MD

Pulmonary Fibrosis Research

Radiology; Pulmonary Biology; Rare Lung Disease Center - Diagnosis and management of children with rare lung diseases, including interstitial lung disease, surfactant mutations, lung development disorders, lymphatic disorders and chronic lung diseases associated with immunodeficiency/immune dysfunction, rheumatologic disorders and other systemic disorders.

Audiology; Human Genetics; Neurosurgery; Otolaryngology; Pediatric Dentistry; Orthodontics; Plastic Surgery; Behavioral Medicine and Clinical Psychology; Speech Pathology | David Billmire, MD, Richard Campbell, MD, Kerry Crone, MD, Christopher Gordan, MD, William Greenhill, DMD, Ann Kummer, PhD, Francesco Mangano, DO, Jane Middendorf, MA, Cynthia Prows, MSN, Gayle Riemer, MD, Howard Saal, MD, Iris Sageser, RDH, and J Paul Willging, MD

Craniofacial Team
Orthopaedics » Peter Sturm, MD, Viral Jain, MD, and Eric Wall, MD

Neurology; Imaging Research; Behavioral Medicine and Clinical Psychology;
Pediatric Otolaryngology/Head and Neck Surgery » Sejal Jain, MD, Kelly Byars, PsyD, DiFrancesco, Mark PhD, Dean Beebe, PhD, Shott, Sally MD, and Ishman, Stacey MD

Sleep Center

The Heart Institute » David Morales, MD

Lung Transplant

Pediatric Otolaryngology/Head and Neck Surgery; Plastic Surgery; Genetics; Developmental and Behavioral Pediatrics; Radiology » Sally Shott, MD, Stacey Ishman, MD, David Billmire, MD, Christopher Gordon, MD, Howard Saal, MD, Sonya Oppenheimer, MD, and Robert Fleck, MD

Upper Airway Center - A multidisciplinary approach to treat children with complex upper airway disorders resulting in sleep apnea.

Endocrinology; Behavioral Medicine and Clinical Psychology; Behavioral Medicine and Clinical Psychology » Deborah Elder, MD, Stepanie Filigno, PhD, and Lori Stark, PhD

Cystic Fibrosis Center

Cardiology » John Jeffries, MD

Cardiomyopathy Clinic

Cardiology » Russell Hirsch, MD

Pulmonary Hypertension Clinic

Grants, Contracts, and Industry Agreements

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Hoebe, K  
Pilot & Feasibility Study  $65,000

Szczesniak, R  
Pilot & Feasibility Study  $65,000

Hogan, S  
Pilot & Feasibility Study  $65,000

Whitsett, J  
Pilot & Feasibility Study  $50,000

**MR Predictors of Infection, Inflammation, and Structural Lung Damage in CF**
National Institutes of Health
R01 HL 116226  09/26/12-06/30/16  $402,128

**Translational Therapeutics Development Center**
Cystic Fibrosis Foundation Therapeutics
01/01/09-12/31/13  $113,665

**CFFT Biomarker Consortium**
Cystic Fibrosis Foundation Therapeutics
01/01/11-12/31/2013  $23,136

**GROSSOEHME, D**

**Adherence and Psychosocial Factors Related to Spirituality: Examining Causality to Inform an Intervention**
Cystic Fibrosis Fdn Therapeutics, Inc
12/01/12-11/30/13  $37,940

**Parental Adherence to CF Homecare: Research Chaplaincy Career Commitment**
National Institutes of Health
K23 HD 062642  08/13/10-05/31/15  $109,527

**HARDIE, W**

**Ruth L. Kirschstein National Research Service Award Short-Term Institutional Research Program**
National Institutes of Health
T35 HL 113229  05/01/12-04/30/16  $50,255

**Biomarkers of Immunologic Function and Preterm Respiratory Outcomes**
National Institutes of Health
U01 HL 101800  05/01/10-04/30/14  $55,739

**HEUBI, J**

**Baby Observational and Nutritional Supplement (BONUS) Study**
Cystic Fibrosis Foundation Therapeutics, Inc(Children’s Hospital and Regional Medical Center - Seattle)
12/01/10-04/30/15  $35,804

**KOTHA, K**

**CFRT Regulation Biomarkers Based on Nitric Oxide**
Cystic Fibrosis Foundation
07/01/12-06/30/13  $68,250
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<td>Children's Hospital &amp; Regional Medical Center-Seattle</td>
<td>$12,138</td>
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<tr>
<td>Cystic Fibrosis Foundation Therapeutics, Inc</td>
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<td>Gilead Sciences, Inc</td>
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<td>Kalobios Pharmaceuticals, Inc</td>
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<td>Synedgen</td>
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<td>Vertex Pharmaceutical Incorporated</td>
<td>$82,555</td>
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**SIMAKAJORNBOON, N**

<table>
<thead>
<tr>
<th>Company</th>
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<tr>
<td>UCB Pharma, Inc</td>
<td>$9,000</td>
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**TRAPNELL, B**

<table>
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<td>Gilead Sciences, Inc</td>
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<td>Mpex Pharmaceuticals, Inc</td>
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**Current Year Direct Receipts**  
$322,333

**Total**  
$2,979,094