

# Pulmonary Medicine

## Division Details

### RESEARCH AND TRAINING DETAILS

Faculty	31
Joint Appointment Faculty	4
Research Fellows and Post Docs	9
Research Graduate Students	16
Total Annual Grant Award Dollars	\$6,729,882
Total Annual Industry Award Dollars	\$379,360

### CLINICAL ACTIVITIES AND TRAINING

Clinical Fellows	11
Inpatient Encounters	652
Outpatient Encounters	11,639



Row 1: T Guilbert, B Chini, C Kercksmar, R Amin, N Simakajornboon

Row 2: K McDowell, C Siracusa, C Towe, G McPhail, L Burns, E Kramer

Row 3: A Naren, T Boat, J Clancy, A Ziady, D Grosseehme, S Madala

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## Division Highlights

### Phenotype of Rapid Cystic Fibrosis Lung Disease Progression During Adolescence and Young Adulthood

Cystic fibrosis (CF) causes progressive lung damage through chronic mucus obstruction, infection and inflammation. This pathologic cycle leads to lung function decline that typically is manifest during adolescence. Understanding the factors that predict those at highest risk of lung function decline would help treating physicians identify, and target, those patients most likely to benefit from available interventions. In the July 2017 issue of the *American Journal of Respiratory and Critical Care Medicine*, [Dr. Rhonda Szczesniak, PhD](#), in the [Division of Biostatistics and Epidemiology](#), and [Dr. J.P. Clancy, MD](#), in the Division of Pulmonary Medicine, teamed up to examine this question using the Cystic Fibrosis Foundation Patient Registry (CFFPR). This database includes longitudinal clinical information from ~30,000 patients in the U.S. Using novel statistical modeling tools, the team identified critical determinants of lung function decline. First, patients tended to cluster into three groups consisting of early, middle and late onset of lung function decline, spanning early to late adolescence. They did not differ substantially by the rate of lung function loss, but rather the timing of onset. Second, those with a childhood history of frequent pulmonary exacerbations, and low initial lung function, were at highest risk of early decline. Highlighted impact of this work in an accompanying editorial stated, "Ultimately further understanding of the biologic and social determinants underpinning divergent CF lung disease phenotypes is needed if the full potential of precision medicine for treatment of CF is to be realized."

Szczesniak RD, Li D, Su W, Brokamp C, Pestian J, Seid M, Clancy JP. [Phenotypes of Rapid Cystic Fibrosis Lung Disease Progression during Adolescence and Young Adulthood](#). *Am J Respir Crit Care Med*. 2017 Aug 15;196(4):471-478.

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## Division Publications

1. Almoguera B; Vazquez L; Mentch F; Connolly J; Pacheco JA; Sundaresan AS; Peissig PL; Linneman JG; McCarty CA; Crosslin D. **Identification of Four Novel Loci in Asthma in European American and African American Populations.** *American journal of respiratory and critical care medicine.* 2017; 195:456-463.
2. Yang IV; Pedersen BS; Liu AH; O'Connor GT; Pillai D; Kattan M; Misiak RT; Gruchalla R; Szeffler SJ; Khurana Hershey GK. **The nasal methylome and childhood atopic asthma.** *Journal of Allergy and Clinical Immunology.* 2017; 139:1478-1488.
3. Trivedi A; Hall C; Hoffman EA; Woods JC; Gierada DS; Castro M. **Using imaging as a biomarker for asthma.** *Journal of Allergy and Clinical Immunology.* 2017; 139:1-10.
4. Hysinger EB; Roizen JD; Mentch FD; Vazquez L; Connolly JJ; Bradfield JP; Almoguera B; Sleiman PM; Allen JL; Levine MA. **Mendelian randomization analysis demonstrates that low vitamin D is unlikely causative for pediatric asthma.** *Journal of Allergy and Clinical Immunology.* 2016; 138:1747-1749.e4.
5. Pongracic JA; Krouse RZ; Babineau DC; Zoratti EM; Cohen RT; Wood RA; Khurana Hershey GK; Kercksmar CM; Gruchalla RS; Kattan M. **Distinguishing characteristics of difficult-to-control asthma in inner-city children and adolescents.** *Journal of Allergy and Clinical Immunology.* 2016; 138:1030-1041.
6. Liu AH; Babineau DC; Krouse RZ; Zoratti EM; Pongracic JA; O'Connor GT; Wood RA; Khurana Hershey GK; Kercksmar CM; Gruchalla RS. **Pathways through which asthma risk factors contribute to asthma severity in inner-city children.** *Journal of Allergy and Clinical Immunology.* 2016; 138:1042-1050.
7. Zoratti EM; Krouse RZ; Babineau DC; Pongracic JA; O'Connor GT; Wood RA; Khurana Hershey GK; Kercksmar CM; Gruchalla RS; Kattan M. **Asthma phenotypes in inner-city children.** *Journal of Allergy and Clinical Immunology.* 2016; 138:1016-1029.
8. Perrin EC; Leslie LK; Boat T. **Parenting as Primary Prevention.** *JAMA Pediatrics.* 2016; 170:637-638.
9. Spielberg DR; Clancy JP. **Cystic Fibrosis and Its Management Through Established and Emerging Therapies.** *Annual Review of Genomics and Human Genetics.* 2016; 17:155-175.
10. Xu X; Abdalla T; Bratcher PE; Jackson PL; Sabbatini G; Wells JM; Lou XY; Quinn R; Blalock JE; Clancy JP. **Doxycycline improves clinical outcomes during cystic fibrosis exacerbations.** *The European respiratory journal : official journal of the European Society for Clinical Respiratory Physiology.* 2017; 49:1601102.
11. Muhlebach MS; Beckett V; Popowitch E; Miller MB; Baines A; Mayer-Hamblett N; Zemanick ET; Hoover WC; Vandalfsen JM; Campbell P. **Microbiological efficacy of early MRSA treatment in cystic fibrosis in a randomised controlled trial.** *Thorax.* 2017; 72:318-326.
12. Kimura N; Khan MS; Schecter M; Rizwan R; III BR; Wells E; Towe C; Zafar F; Morales DLS. **Changing demographics and outcomes of lung transplantation recipients with cystic fibrosis.** *Journal of Heart and Lung Transplantation.* 2016; 35:1237-1244.
13. Campo I; Luisetti M; Griese M; Trapnell BC; Bonella F; Grutters JC; Nakata K; Van Moorsel CHM; Costabel U; Cottin V. **A Global Survey on Whole Lung Lavage in Pulmonary Alveolar Proteinosis.** *Chest.* 2016; 150:251-253.
14. Taylor HG; Bowen SR; Beebe DW; Hodges E; Amin R; Arens R; Chervin RD; Garetz SL; Katz ES; Moore RH. **Cognitive Effects of Adenotonsillectomy for Obstructive Sleep Apnea.** *Pediatrics.* 2016; 138:e20154458.
15. Batalden M; Batalden P; Margolis P; Seid M; Armstrong G; Opiari-Arrigan L; Hartung H. **Coproduction of healthcare service.** *BMJ Quality and Safety.* 2016; 25:509-517.
16. Giridhar PV; Bell SM; Sridharan A; Rajavelu P; Kitzmiller JA; Na CL; Kofron M; Brandt EB; Ericksen M; Naren AP. **Airway Epithelial KIF3A Regulates Th2 Responses to Aeroallergens.** *Journal of immunology (Baltimore, Md. : 1950).* 2016; 197:4228-4239.

17. Downes KJ; Dong M; Fukuda T; Clancy JP; Haffner C; Bennett MR; Vinks AA; Goldstein SL. **Urinary kidney injury biomarkers and tobramycin clearance among children and young adults with cystic fibrosis: a population pharmacokinetic analysis.** *Journal of Antimicrobial Chemotherapy.* 2017; 72:254-260.
18. Smith DF; Hossain MM; Hura A; Huang G; McConnell K; Ishman SL; Amin RS. **Inflammatory Milieu and Cardiovascular Homeostasis in Children With Obstructive Sleep Apnea.** *Sleep.* 2017; 40.
19. Ehsan Z; Ishman SL; Kimball TR; Zhang N; Zou Y; Amin RS. **Longitudinal Cardiovascular Outcomes of Sleep Disordered Breathing in Children: A Meta-Analysis and Systematic Review.** *Sleep.* 2017; 40.
20. Cleveland ZI; Zhou YM; Akinyi TG; Dunn RS; Davidson CR; Guo J; Woods JC; Hardie WD. **Magnetic resonance imaging of disease progression and resolution in a transgenic mouse model of pulmonary fibrosis.** *American journal of physiology. Lung cellular and molecular physiology.* 2017; 312:L488-L499.
21. Arora K; Yarlagadda S; Zhang W; Moon C; Bouquet E; Srinivasan S; Li C; Stokes DC; Naren AP. **Personalized medicine in cystic fibrosis: genistein supplementation as a treatment option for patients with a rare S1045Y-CFTR mutation.** *American journal of physiology. Lung cellular and molecular physiology.* 2016; 311:ajplung.00134.2016-ajplung.00134.2016.
22. Leslie LK; Mehus CJ; Hawkins JD; Boat T; McCabe MA; Barkin S; Perrin EC; Metzler CW; Prado G; Tait VF. **Primary Health Care Potential Home for Family-Focused Preventive Interventions.** *American Journal of Preventive Medicine.* 2016; 51:S106-S118.
23. Madala SK; Sontake V; Edukulla R; Davidson CR; Schmidt S; Hardie WD. **Unique and Redundant Functions of p70 Ribosomal S6 Kinase Isoforms Regulate Mesenchymal Cell Proliferation and Migration in Pulmonary Fibrosis.** *American journal of respiratory cell and molecular biology.* 2016; 55:792-803.
24. Wong BL; Rybalsky I; Shellenbarger KC; Tian C; McMahon MA; Rutter MM; Sawnani H; Jefferies JL. **Long-Term Outcome of Interdisciplinary Management of Patients with Duchenne Muscular Dystrophy Receiving Daily Glucocorticoid Treatment.** *The Journal of Pediatrics.* 2017; 182:296-303.e1.
25. Clancy JP; Benitez DS; Fajac I; Jain M; Rowe SM; Sawicki G. **Applying recent advances in the science of CFTR-based therapeutics to improve outcomes in patients with cystic fibrosis.** *Journal of Cystic Fibrosis.* 2017; 16:e9-e10.

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## Grants, Contracts, and Industry Agreements

### Annual Grant Award Dollars

Investigator	Title	Sponsor	ID	Dates	Amount
John Paul Clancy, MD	CFF-TDN site	Cystic Fibrosis Fdn Therapeutics, Inc	AMIN09Y0/CLANCY14Y0	01/01/2013 - 12/31/2017	\$112,468
Jason C Woods, PhD	Severe Asthma Research Program	National Institutes of Health (Washington University)	U10 HL109257	02/01/2013 - 05/31/2017	\$8,547
Michael Seid, PhD	FL3X: An Adaptive Intervention to Improve Outcomes for Youth with Type 1 Diabetes	National Institutes of Health (University of North Carolina)	UC4 DK101132	09/15/2013 - 06/30/2018	\$600,736
Anjaparavanda Naren, PhD	Inhibition of an Apical cAMP/cGMP Transporter (MRP4) in the Gut Induces Diarrhea	National Institutes of Health	R01 DK080834	09/18/2013 - 03/31/2018	\$333,313

Anjaparavanda Naren, PhD	Characterization of an Inhibitory Protein Complex for Cystic Fibrosis Therapy	National Institutes of Health (Univ of Tennessee Health Science Center)	R01 HL123535	08/15/2014 - 06/30/2019	\$17,539
Gary McPhail, MD	Cystic Fibrosis Center Program Accreditation And Funding	Cystic Fibrosis Foundation	CC160-130	07/01/2013 - 06/30/2018	\$150,270
Michael Seid, PhD	Measures of Hypoglycemia and Glycemic Variability Using Continuous Glucose Monitoring in the FL3X Intervention for Youth With Type 1 Diabetes	The Leona M & Harry B Helmsley Charitabl (University of North Carolina)	2014PG-T1D030	01/01/2014 - 12/31/2017	\$8,100
John Paul Clancy, MD	Pilot Development of Translational Primary Human Airway Model Systems to Advance CF Care	Cystic Fibrosis Foundation	CLANCY14XX0	07/01/2014 - 06/30/2018	\$95,794
Anjaparavanda Naren, PhD	CF-Patient Specific Enteroids from Small Intestine and Colon	Cystic Fibrosis Fdn Therapeutics, Inc	NAREN14XX0	07/01/2014 - 06/30/2018	\$226,708
Jason C Woods, PhD	Molecular Pathogenesis and Treatment of Pulmonary Alveolar Microlithiasis	National Institutes of Health (University of Cincinnati)	R01 HL127455	04/01/2015 - 03/31/2020	\$36,075
John Paul Clancy, MD	PROSPECT	Cystic Fibrosis Fdn Therapeutics, Inc	CLANCY14K1	07/01/2014 - 06/30/2019	\$37,047
Anjaparavanda Naren, PhD	LPA2 Receptor-containing Complexes in Regulating Secretory Diarrhea	National Institutes of Health	R01 DK093045	07/01/2015 - 06/30/2020	\$351,000
Sara M Zak, MD	First/Second Year Clinical Fellowship Grant Application	Cystic Fibrosis Foundation	ZAK15B0	07/01/2015 - 06/30/2017	\$66,250
Raouf Samy Amin, MD	Impact of Treatment of Mild Sleep-Disordered Breathing on Children's Health-CCC	National Institutes of Health (Children's Hospital of Philadelphia)	U01 HL125295	09/04/2015 - 10/31/2016	\$239,150
John Paul Clancy, MD	TDC ARC Award	Cystic Fibrosis Fdn Therapeutics, Inc	CLANCY14Y4	12/01/2014 - 11/30/2018	\$32,694

Zackary Cleveland, PhD	Time-Resolved 129Xe Ventilation-Perfusion MRI in Models of Acute Lung Injury	National Institutes of Health	R00 HL111217	08/15/2015 - 07/31/2018	\$242,816
William Hardie, MD John Paul Clancy, MD	Cincinnati Children's Summer Medical Student Respiratory Research Fellowship	National Institutes of Health	T35 HL113229	05/01/2016 - 04/30/2021	\$68,526
John Paul Clancy, MD	Personalizing Cystic Fibrosis Research Translation	Cystic Fibrosis Foundation	CLANCY15R0	07/01/2015 - 06/30/2019	\$470,000
Gary McPhail, MD	A Two-Part Multicenter Prospective Longitudinal Study of CFTR-Dependent Disease Profiling in Cystic Fibrosis	Cystic Fibrosis Fdn Therapeutics, Inc (Children's Hosp & Reg Med Ct-Seattle)	PROSPECT-OB-14	02/23/2015 - 02/22/2018	\$83,492
John Paul Clancy, MD	SHIP (Saline Hypertonic in Preschoolers) Study - Planning Grant	Cystic Fibrosis Fdn Therapeutics, Inc (Children's Hosp & Reg Med Ct-Seattle)	SHIP14K0	11/01/2014 - 10/31/2018	\$34,625
Daniel Grossoehme, D.Min.	Training Research-Literate Chaplains as Ambassadors for Spirituality and Health: Phase I	John Templeton Foundation (Rush Medical University Center)	51996	07/01/2015 - 06/30/2019	\$8,826
Jason C Woods, PhD John Paul Clancy, MD	UTE MRI to Monitor CF Lung Disease and Response to CFTR Modulation in Young Children	National Institutes of Health	R01 HL131012	05/01/2016 - 03/31/2021	\$745,633
Anjaparavanda Naren, PhD	Human Small Intestinal Model from CF-Patients using Pluripotent Stem Cells	Cystic Fibrosis Foundation	NAREN16I0	04/01/2016 - 03/31/2018	\$54,000
John J Brewington, MD	Sensitivity of Corrected F508del CFTR to Chronic beta-agonist Therapy	Cystic Fibrosis Foundation	BREW16A0	07/01/2016 - 06/30/2019	\$130,000
Zackary Cleveland, PhD	Regional Biomarkers of Peripheral Lung Disease in Cystic Fibrosis	Cystic Fibrosis Fdn Therapeutics, Inc	CLEVEL16A0	04/01/2016 - 03/31/2019	\$108,000
Anjaparavanda Naren, PhD	Transporters and Hematopoietic Toxicity	National Institutes of Health (St Jude's Children's Hospital)	R01 CA194206	07/01/2016 - 06/30/2021	\$23,595

Satish K Madala, PhD Anil Goud Jegga, DVM	Integrative Analysis of Multi-omics Data to Target Fibroblast Activation in IPF	National Institutes of Health	R21 HL133539	07/05/2016 - 06/30/2018	\$63,929.50
Michael Seid, PhD	A CF C3N Care Model of the Future: Proposal for Piloting a Learning Health System	Cystic Fibrosis Fdn Therapeutics, Inc	SEID15A0	01/01/2016 - 12/31/2018	\$1,542,986
Satish K Madala, PhD	WT1 Regulation of Pulmonary Fibrosis	National Institutes of Health	R01 HL134801	05/22/2017 - 04/30/2022	\$409,242
John Paul Clancy, MD	CFFT Biomarker Consortium	Cystic Fibrosis Fdn Therapeutics, Inc	CLANCY11CS0	01/01/2016 - 12/31/2017	\$23,230
Assem Ziady, PhD	Manipulating Vector Interactome to Enhance Gene Transfer in Cystic Fibrosis	Cystic Fibrosis Foundation	ZIADY1610	11/01/2016 - 10/31/2018	\$54,000
Christopher Siracusa, MD	CFF Success with Therapies Research Consortium	Cystic Fibrosis Fdn Therapeutics, Inc	SIRACU15PE0	08/01/2016 - 07/31/2018	\$27,000
Geoffrey Walter Rulong, MD	Custom 3-D Printed Non- invasive Ventilation Mask	American Sleep Medicine Foundation	160-FP-17	02/14/2017 - 02/13/2018	\$19,377
Raouf Samy Amin, MD	Impact of Treatment of Mild Sleep-Disordered Breathing on Children's Health-CCC	National Institutes of Health (Children's Hospital of Philadelphia)	U01 HL125295	07/01/2016 - 06/30/2020	\$250,723
Christopher Siracusa, MD	DESIGN CF: Developing e-Health Systems to Improve Growth and Nutrition in CF	Cystic Fibrosis Fdn Therapeutics, Inc (Children's Hospital Boston)	CHB - Siracusa,Chris	01/01/2017 - 12/31/2017	\$4,190
Theresa Guilbert, MD, MS	Controlling and Preventing Asthma Progression and Severity in Kids (CASK)	National Institutes of Health (Children's Hospital Boston)	U01 AI126614	04/01/2017 - 06/30/2017	\$50,000
<b>Total Annual Grant Award Dollars</b>					<b>\$6,729,881.50</b>

## Annual Industry Award Dollars

Investigator	Industry Sponsor	Amount
Anjaparavanda Naren, PhD	Ironwood Pharmaceuticals, Inc.	\$200,000
Gary McPhail, MD	Vertex Pharmaceutical Incorporated	\$94,211

John Paul Clancy, MD	Concert Pharmaceuticals, Inc	\$70,149
Raouf Samy Amin, MD	Vertex Pharmaceutical Incorporated	\$15,000
<b>Total Annual Industry Award Dollars</b>		<b>\$379,360</b>

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