BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Terry E. Robinson, M.D.	Associate Professor of Pediatrics Stanford University Medical Center (Packard Children's Hospital at Stanford)
eRA COMMONS USER NAME ROBINSON, TERRY	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University of California, Santa Barbara, CA	BA	1975	Liberal Arts
San Diego State University, San Diego, CA	MA	1983	Exercise Physiology
Brown University, Providence, RI	MD	1990	Medicine
Stanford University, Stanford, CA	Residency	1990-93	Pediatrics
Stanford University, Stanford CA	Fellowship	1993-1997	Pediatric Pulmonary

A. Personal Statement

The primary aim of the proposed project is to determine if the Lung Clearance Index (LCI), a non-invasive measure of inhomogeneity of ventilation, has high specificity as a screening test to discriminate those cystic fibrosis (CF) infants/toddlers not needing chest CT scans to assess for early CF lung disease. The second aim of this project is to determine if LCI measurements in cross-sectional and longitudinal study designs are highly associated with quantitative CT air trapping (AT) and other CT indices (e.g. CF CT scoring) in 30 CF infants/toddlers followed over a 24-month period. The third aim of this project is to determine if initial quantitative CT AT predicts development of CT bronchiectasis 24-months later. By carefully evaluating the relationship between the LCI and quantitative CT air trapping, we will establish whether the LCI could be used as a meaningful early screening test for following young CF infants and toddlers. From this study appropriate sample-size calculations will be determined to further explore the relationship between the LCI and quantitative CT air trapping in a much larger follow-on study involving 2 major CF Centers in Northern and Southern California, having the goal of assessing the feasibility of using the LCI as a Statewide initial lung screening test for detecting early CF lung disease in CF children identified by the California Newborn Screening Program.

I will serve as the principal investigator for this proposed study overseeing all testing, and data acquisition and analysis for this E.W. "Al" Thrasher Grant proposal. I have the necessary expertise, leadership abilities, and previous experience to successfully direct and carry out the specific aspects of this proposal. I have been the principal investigator for the CF TDN Natural History Study in Children with Mild CF Lung Disease, a two-year dual sponsored project between Novartis Pharmaceutical Company and the Cystic Fibrosis TDN comparing quantitative CT measurements with CF CT scoring. In addition, through collaboration with Dr. Steven Stick (Perth, Australia), I have successfully developed a controlled ventilation infant CT (CViCT) scanning protocol at Packard Children's Hospital at Stanford, completing 60 CViCT cases without adverse events associated with this procedure over the past 2 years. My laboratory has focused on quantitative chest CT analysis over the last 13 years, initially focusing on regional air trapping in children and adults with cystic fibrosis, and subsequently developing quantitative airway measurement techniques to study CF airway disease. In addition, our laboratory has also developed a software application using lung densitometry to assess interstitial lung disease. I have successfully developed and administered several CT research projects involving CF children and adults leading to peer-review publications. My previous experience with the CF TDN Natural History Study in combination with my experience developing CViCT scanning and my laboratory focus provides a well tailored preparation for the proposed work. I anticipate from the results of this proposed project we will be able to effectively determine whether the LCI is a viable initial screening test, and will be able to determine an appropriate sample size determination for a much larger study comparing the LCI and quantitative CT air trapping as a follow-on study.

B. Positions and Honors

Positions and Employment

2009- **Associate Professor, Pediatrics,** Stanford University Medical Center
2001-2009 **Assistant Professor, Pediatrics,** Stanford University Medical Center
1998-2001 **Staff Physician,** Stanford University Medical Center
1997-1998 **Staff Physician/Research Associate**, Stanford University Medical Center
1996-1997 **Post Doctoral Research Associate**, Stanford University Medical Center
1993-1996 **Fellow**, Pediatric Pulmonology, Stanford University Medical Center
1990-1993 **Internship & Residency** in Pediatrics, Stanford University Medical Center

Other Experience and Professional Memberships

1994-	Member American Thoracic Society
1994-1995	Cystic Fibrosis Foundation Clinical Fellowship Award
1995	Certification; Pediatrics; Board Certified
1997	Member, Pulmonary Focus Group for HRCT Imaging; Imatron, Inc.,
1997	Member, HRCT Imaging Task Force for CF patients; North American CF Conference
2002	Certification: Pediatric Pulmonology
2002-2010	Member, HRCT Imaging Task Force for CF patients, Cystic Fibrosis Foundation Therapeutic Development Network 2002-2010
2007	NIH Program Project Grant Reviewer

Honors

2006	Provider of the Year, Cystic Fibrosis Foundation, Northern California Chapter
2007	Honorary Invited Participant, Leuven, Belgium, European Respiratory Society
2007	Honorary Invited Speaker Annual Scientific Meeting, Sydney, Australia, Auckland, New Zealand, The Thoracic Society of Australia & New Zealand

Intellectual Property

1. Dynamic Respiratory Control (Respiratory Function Valve), 10/14/03, Stanford Docket S97-121 **Patent # 6,631,716**.
2. Regular Patent, A Non-Tethered Macro-To-Micro Endoscope, 3/22/05, Stanford Docket S99-031PCT **Patent # 6,8,69,397**.
3. Automated Air Trapping Algorithm, Copyright, Stanford Docket S01-168, Submitted to OTL 2001; Provisional Patent submitted 2/3/04.
4. 3D Bronchial Morphology Analysis Package, Copyright, Stanford Docket S02-254, Submitted to OTL 2002, {Raghav/Venkatramin/Robinson disclosure to OTL. Stanford holds copyright to the material}.
5. Mirror Image Gausian Fit [MIGF] – A Method to Accurately Identify the True Inner and Outer Wall of Hollow Tubular Structures. Copyright, Stanford Docket S05-084. Submitted to OTL 3/2005.
6. 2D/3D Bronchial Airway Matching Algorithm to Assess Serial CT Scans, Copyright, Submitted to OTL 9/2007.

C. Selected Peer-reviewed Publications (Selected from 24 peer-reviewed publications)

Most relevant to the current application

1. **Robinson TE**, Leung AN, Moss RB, Blankenberg FG, Northway WH. Standardized high-resolution CT of the lung using a spirometer-triggered electron beam CT scanner. *AJR* 1999; 172:1636-8.
2. **Robinson TE,** Leung AN, Northway WH, Blankenberg FG, Bloch DA, Oehlert JW, Al-Dabbagh H, Hubli S, Moss RB. Spirometer-triggered high resolution CT and pulmonary function measurements during an acute exacerbation in patients with cystic fibrosis. *J Pediatr* 2001 Apr;138(4):553-9.
3. Goris ML, Zhu HJ, Blankenberg FG, Chan F, **Robinson TE.** An automated approach to quantitative air trapping measurements in mild CF lung disease. *Chest* 2003 May; 123:1655-1663.
4. Bonnel AS, Song SM, Kesavaraju,K , Newaskar M, Bloch DA, Paxton GJ, Moss RB, **Robinson TE**. Quantitative air trapping analysis in children with mild cystic fibrosis pulmonary disease. *Pediatr Pulmonol* 2004; 38:396-405.
5. **Robinson TE.** High-resolution CT scanning: Potential outcome measure. *Curr Opin Pulm Med* (Cystic Fibrosis Section). 2004; 10(6):537-41.
6. **Robinson TE**, Goris ML, Zhu HJ, Chen X, Bhise P, Sathi A, Sheikh F, Moss RB. Changes in quantitative air trapping, pulmonary function, and chest HRCT scores in CF children during a Pulmozyme intervention study. *Chest* 2005 October; 128:2327-2335.
7. Venkatraman R, Raman R, Raman B, Moss RB, Rubin GD, Mather LH, **Robinson TE**. Fully automated system for three-dimensional bronchial morphology analysis using volumetric multi-detector computed tomography of the chest. *J Digit Imaging* 2006 Jun;19(2):132-139.
8. **Robinson TE**. *Imaging of the Chest in Cystic Fibrosis*. Cystic Fibrosis. Editor: Laurie Whittaker. *Clin Chest Med* 2007;28:405-421, Saunders (An Imprint of Elsevier, Inc., May, 2007.

9. **Robinson TE**. Computed tomography scanning techniques for the evaluation of cystic fibrosis lung disease. *Proc Am Thorac Soc* 2007 Aug; 4:310-315.
10. Goris ML, **Robinson TE**. Sampling density for the quantitative evaluation of air trapping. *Pediatr Radiol* 2009 Mar;39(3):221-5.
11. **Robinson TE**, Leung A, Chen X, Moss RB, Emond MJ. Cystic fibrosis HRCT scores correlate strongly with pseudomonas infection. *Pediatr Pulmonol* 2009 Nov; 44:1107-1117.
12. **Robinson, TE,** Long FR, Raman P, Saha P, Emond MJ, Reinhardt JM, Raman R, Brody AS. An airway phantom to standardize CT acquisition in multicenter clinical trials. *Acad Radiol* 2009;16(9):1134-1141.
13. Newman B, Ganguly A, Kim J, **Robinson TE**. Comparison of different methods of calculating CT effective dose in children. AJR Am J Roentgenol 2012 Aug;199(2): W232-239.
14. Kongstad T, Lindblad A, Buchvald FF, Green K**, Robinson TE,** Nielsen KG. Improved air trapping evaluation in chest computed tomography in children with CF using real-time spirometric monitoring and biofeedback. J Cyst Fibros. 2013, Jun 26:S1569-1993(13)00103-3. [Epub ahead of print].
15. Newman B, Krane E, **Robinson T**. Chest CT in Children: Anesthesia and Atelectasis. Pediatr Radiol 2013. Accepted 9/12/13.

Additional previous publications of importance to the field (in chronological order)

1. Morgan T, Anderson J, Jorden M, Keller K, **Robinson T**, Hintz S. Pulmonary glial heterotopia in a monamniotic twin. *Pediatr Pulmonol* 2003;36:162-166.
2. Groman JD, Karczeski B, Sheridan M, **Robinson TE**, Fallin MD, Cutting GR. Phentotypic and genetic characterization of patients with features of "nonclassic" forms of cystic fibrosis. *J Pediatr* 2005;146(5):675-680.
3. **Robinson TE**, Trapnell BC, Goris ML, Quittell LM, Cornfield DN. Quantitative analysis of longitudinal response to aerosolized GM-CSF in 2 adolescents with autoimmune pulmonary alverolar proteinosis. *Chest* 2009 Mar;135(3):842-848.

D. Research Support

Ongoing Research Support

1) Packard Children's Hospital – Auxillary Grant; Project Title: Controlled ventilation CT imaging in infants & young children with chronic lung disease at LPCH; Role: PI. Development & implementation of controlled ventilation infant CT scanning at LPCH. P.I. for project. 10/01/07-11/31/13.

Grants – Pending

1) Thrasher Foundation Grant. Project Title: An innovative testing strategy for early lung disease surveillance in CF infants. Proposed Period: 1/3/2014 – 12/31/2016.