BIOGRAPHICAL SKETCH

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NAME: R. Thomas Collins, II, MD

eRA COMMONS USER NAME (credential, e.g., agency login): TOMCOLLINS

POSITION TITLE: Associate Professor Pediatrics (Cardiology)

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Tennessee Technological University, Cookeville, TN	BS	05/1998	Chemistry
University of Tennessee College of Medicine, Memphis, TN	MD	06/2002	Medicine
University of Tennessee Health Science Center, Memphis, TN	Residency	06/2006	Internal Medicine/Pediatrics
Children's Hospital of Philadelphia, Philadelphia, PA	Fellowship	06/2009	Pediatric Cardiology
Children's Hospital of Philadelphia, Philadelphia, PA	Advanced Fellowship	06/2010	Adult Congenital Heart Disease and Non-invasive Imaging

A. Personal Statement

I am an Associate Professor of Pediatrics in the Division of Cardiology in the Stanford University School of Medicine, Director of the Cardiovascular Connective Tissue Disorders Program at Lucile Packard Children's Hospital Stanford, and a recognized expert in the fields of connective tissue disorders, congenital heart disease, cardiovascular genetics, and non-invasive imaging. My research has used a multidisciplinary approach to study congenital heart disease across the age spectrum, as well as define outcomes in populations with genetically mediated aortopathies and arteriopathies. I am a member of the Society for Pediatric Research and have published over 65 peer-reviewed papers. I have served on two American Heart Association Writing Committees.

I am particularly excited about the proposed project because in caring for hundreds of children, adolescents, and adults with Marfan syndrome and other aortopathies, I have found a reported history of learning problems and/or significant psychiatric symptoms in approximately 50%. I believe this project is vitally important to the quality of life of patients with Marfan syndrome and other aortopathies and can lead to improvements in their care that result in life-long improvements. This project is an extension of the work I have previously done in populations with aortopathies, and I am dedicated to seeing it be successful.

B. Positions and Honors

Positions and Employment

2002-2006 Residency in Internal Medicine and Pediatrics, Univ Tennessee Health Science Center
2006-2009 Fellowship in Pediatric Cardiology, The Children's Hospital of Philadelphia
2006-2010 Clinical Instructor in Pediatrics, University of Pennsylvania School of Medicine
2009-2010 Advanced Fellowship in Adult Congenital Heart Disease and Non-invasive Imaging, The Children's Hospital of Philadelphia
2009-2010 Staff Outpatient Cardiologist, The Children's Hospital of Philadelphia
2010-2015 Assistant Professor, Pediatrics and Internal Medicine, Univ Arkansas for Medical Sciences

2011-2017 Director, Adult Congenital Heart Disease Program, Univ Arkansas for Medical Sciences
2011-Present Williams Syndrome Association, Research Committee Member
2012-2017 Director, Connective Tissue Disorders Program, Arkansas Children's Hospital
2013-2017 Co-Director, Arkansas Vascular Biology Program, Arkansas Children's Research Institute
2013-Present Williams Syndrome Association, Professional Advisory Board
2015-2017 Associate Professor with Tenure, Pediatrics and Internal Medicine, Univ Arkansas for Medical Sciences
2017-Present Associate Professor of Pediatrics, Stanford University School of Medicine
2017-Present Director, Cardiovascular Connective Tissue Disorders Program, Lucile Packard Children's Hospital Stanford

Honors
1998 Bachelor of Science in Chemistry *cum laude*, Tennessee Technological University
2003 Golden Apple Teaching Award, Department of Pediatrics, Univ Tennessee Health Science Center
2014 Educator of the Year Award, Department of Pediatrics, Univ Arkansas for Medical Sciences
2017 The Eudice Fontenot Teaching Award

C. Contributions to Science

In the examples provided below, I acted as the primary PI in the scientific investigations. This role included conception of the project and associated methods, participating in the study implementation and conductance, and performing and overseeing the writing of the manuscripts.

My work has served to develop the large proportion of the significant literature on cardiovascular involvement in Williams syndrome over the last decade. I established the long-term outcome of cardiovascular abnormalities in Williams syndrome, including that supravalvar aortic stenosis does not worsen over time in most cases; identified that the corrected QT interval is prolonged in patients with Williams syndrome; and determined that the QTc prolongation in Williams syndrome is not due to ELN mutation or structural disease.

1. Collins RT, Kaplan P, Somes G, Rome JJ. Long-term outcomes of patients with cardiovascular abnormalities and Williams syndrome. *Am J Cardiol* 2010;105(6):874-8. PMID: 20211336
2. Collins RT, Kaplan P, Somes G, Rome JJ. Cardiovascular abnormalities, interventions, and long-term outcomes in infantile Williams syndrome. *J Pediatr* 2010;156(2):253-8. PMID: 19846117
3. Collins RT, Aziz PF, Gleason MM, Kaplan PB, Shah MJ. Abnormalities of cardiac repolarization in Williams syndrome. *Am J Cardiol* 2010;106(7):1029-33. PMID: 20854969
4. McCarty HM, Tang X, Swearingen CJ, Collins RT. Comparison of the electrocardiographic QTc duration in patients with supravalvar aortic stenosis with-vs-without Williams syndrome. *Am J Cardiol* 2013:111(10):1501-4. PMID: 23433766

My team was the first to identify aortic dilation as a significant finding in patients with 7q11.23 duplication syndrome. Studies of aortic dilation in pediatric patients have contributed significantly to our understanding of aortopathies and specific genetic syndromes, including Marfan syndrome.

1. Phomakay V, Huett WG, Gossett JM, Tang X, Bornemeier RA, Collins RT. β-blockers and angiotensin converting enzyme inhibitors: comparison of effects on aortic growth in pediatric patients with Marfan syndrome. *J Pediatr* 2014;165(5):951-5. PMID: 25109242
2. Collins RT, Phomakay V, Zarate YA, Tang X. Impact of aortic aneurysm on hospitalizations in patients with Marfan syndrome: a multi-institutional study. *Pediatr Cardiol* 2015;36(1):132-9. PMID: 25096902
3. Zarate YA, Lepard T, Sellars E, Kaylor JA, Alfaro MP, Sailey C, Schaefer GB, Collins RT. Cardiovascular and genitourinary anomalies in patients with duplications within the Williams syndrome critical region: phenotypic expansion and review of the literature. *Am J Med Genet* 2014;164A(8):1998-2002. PMID: 24844942
4. Zarate YA, Sellars E, Lepard T, Waldemar FC, Tang X, Collins RT. Aortic dilation in pediatric patients. Eur *J Pediatr* 2015;174(12):1585-92. PMID: 26070999
5. Zarate YA, Sellars E, Lepard T, Tang X, Collins RT. Aortic dilation, genetic testing and associated diagnoses. *Genet Med* 2016;18(4):356-63. PMID: 26133393

6. Braley KT, Tang X, Makil ES, Burroughs-Ray DC, Collins RT. The impact of body weight on the diagnosis of aortic dilation—misdiagnosis in overweight and underweight groups. *Echocardiogr* 2017;34(7):1029-1034. PMID: 28497541
7. Ward RM, Marsh JM, Gossett JM, Rettiganti MR, Collins RT. Impact of bicuspid aortic valve morphology on aortic valve disease and aortic dilation in pediatric patients. *Pediatr Cardiol* 2018;39(3):509-517. PMID: 29188316

Reporting on the largest cohort of patients ever with trisomy 18 and 13, I have also recently demonstrated that congenital heart surgery markedly improves survival in patients with trisomy 18 and 13.

1. Kosiv KA, Gossett JM, Bai S, Collins RT. Congenital heart surgery on in-hospital mortality in trisomy 13 and 18. *Pediatrics* 2017;140(5):e20170772 PMID: 29046387

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research Support

Centers for Disease Control and Prevention Hobbs (PI) 09/01/13-08/31/18
"Birth Defects Study to Evaluate Pregnancy Exposures"
The goals of the project are to identify maternal exposures, whether environmental, nutritional, genetic, or otherwise, that are associated with birth defects. As the congenital heart disease expert on the study, it is my role to make certain all cases involving congenital heart disease are appropriately codified.

Completed Research Support

ACHRI/Arkansas Biosciences Institute Collins and Richter (Co-PIs) 11/01/15-10/31/2017
"Arkansas Vascular Biology Program"
The goals of the project were to establish the foundation for a vascular biology research core at Arkansas Children's Hospital Research Institute. As co-principal investigator, I established a project using *ELN* knockout mouse to investigate the impact of pharmacologic mediators of elastin.

ACHRI Research Support Collins (PI) 07/01/12-06/01/17
"Genetic Sequence Analysis of Chromosome 7q11.23 in FISH Negative Williams syndrome and Non-syndromic Supravalvar Aortic Stenosis"
The goal of the project was to identify novel genetic variations, mutations, duplications, or deletions in patients with supravalvar aortic stenosis. As the Principal Investigator, I was involved in various aspects of the project from identification of potential subjects to maintenance of study samples and data. Analysis of the data is currently being finalized.

ACHRI/Arkansas Biosciences Institute Collins and Richter (Co-PIs) 11/1/2013-11/1/2015
"Arkansas Vascular Biology Program"
The goals of the project were to establish the foundation for a vascular biology research core at Arkansas Children's Hospital Research Institute. As co-principal investigator, I established a project using *ELN* knockout mouse to investigate the impact of pharmacologic mediators of elastin.

CUMG036125 Collins (PI) 12/14/11-06/15/14
"Comparison of Aortic Doppler Measurements to Carotid-Femoral Pulse Wave Velocity in Non-Invasive Arterial Stiffness Assessment"
The goal of the study was to compare the use of standard non-invasive assessment of pulse wave velocity (e.g. carotid-femoral pulse wave velocity) to a novel Doppler-based assessment of pulse wave velocity. As the Principal Investigator, I was responsible for all aspects of the study except for the study measurements themselves. The study was unsuccessful at obtaining accurate measurement and was eventually closed due to failure of the commercially procured carotid-femoral pulse wave velocity measurement device.

ACHRI/CUMG Competitive Grants Program Collins (Co-PI) 07/01/13-6/01/13
"Hospital Resource Utilization in Adolescents and Adults with Single Ventricle Congenital Heart Disease"
The goals of the project were to characterize hospital resource utilization and identify risk factors to increase the same, as well as to identify risk factors for mortality in adult patients with single ventricle congenital heart

disease. As Co-Principal Investigator, I participated in the design of the study, review of the data and analyses, and was the primary author of the manuscript currently under review.