

Approved by the
Regents
May 21, 2015

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PEDIATRICS AND COMMUNICABLE DISEASES

Mark W. Russell, M.D., associate professor of pediatrics and communicable diseases, with tenure, Department of Pediatrics and Communicable Diseases, Medical School, is recommended for promotion to professor of pediatrics and communicable diseases, with tenure, Department of Pediatrics and Communicable Diseases, Medical School.

Academic Degrees:

| | | |
|------|------|-----------------|
| M.D. | 1989 | Duke University |
|------|------|-----------------|

Professional Record:

| | |
|--------------|--|
| 2005-present | Associate Professor of Pediatrics and Communicable Diseases, University of Michigan |
| 1998-2005 | Assistant Professor of Pediatrics and Communicable Diseases, University of Michigan |
| 1996-1998 | Lecturer, Department of Pediatrics and Communicable Diseases, University of Michigan |

Summary of Evaluation:

Teaching: Dr. Russell is an accomplished educator and mentor at multiple academic levels. He is dedicated to the education of students from undergraduates through junior faculty. Dr. Russell educates undergraduates by serving as a mentor for the Undergraduate Research Opportunities Program (UROP) and serves graduate students by mentoring them in his laboratory and acting as a member of several thesis committees. Dr. Russell provides didactic lectures to medical students on topics of cardiac development as well as general instruction in pediatric cardiology. To residents, Dr. Russell provides clinical instruction in pediatric cardiology focusing on family centered care and evidence-based practices. To pediatric cardiology fellows, he provides didactic instruction on topics of cardiac development, cardiovascular genetics and hypertrophic cardiomyopathy and clinical instruction in general pediatric cardiology and pediatric echocardiography.

Research: Dr. Mark Russell serves as the Aaron Stern Professor of Pediatric Cardiology. He is an accomplished researcher who has been very active in a broad range of scholarly activities. His most significant investigation to date involves the cloning and characterization of obscurin. Dr. Russell's laboratory determined that obscurin had a central role in the radial organization of the cardiac myocytes and skeletal muscle using both *in vitro* (remodeling cardiac myocytes) and *in vivo* (zebrafish) models. He demonstrated that obscurin participates in the localization and nucleation of costameres, the dystrophin-dystroglycan containing cell-matrix adhesion domains, and in the organization of the sarcoplasmic reticulum, positioning these structures over specific

heart and skeletal muscle to injury and in preventing heart failure progression. Recently, he has transitioned toward more translational projects centered on the molecular determinants of congenital heart disease and the genetic factors influencing short- and long-term outcomes after neonatal cardiac surgery. In his studies, he has identified important genetic sarcomeric domains. It is anticipated that it is likely to have an important role in the adaptation of contributions to transplant-free survival and ventricular function after neonatal cardiac surgery. Specifically, he determined that common variants in genes associated with vascular and oxidative stress response were associated with a 12-fold increase in risk of death. Our goal is to identify biologic pathways, such as the vascular adaptation or oxidative stress management system that contribute to long term outcomes and target those pathways in order to improve outcomes in patients with critical congenital heart disease.

Recent and Significant Publications:

Raeker MO, Bieniek AN, Ryan AS, Tsai HJ, Zahn KM, Russell MW: Targeted deletion of the zebrafish obscurin A RhoGEF domain impairs heart, skeletal muscle and brain development. *Dev Biol* 337:432-443, 2010.

Carey A, Liang L, Edwards J, Brandt T, Mei H, Sharp AJ, Hsu D, Newburger JW, Ohye RG, Chung WK, Russell MW, Rosenfeld JA, Shaffer LG, Parides MK, Edelman LJ, Gelb BD: Impact of CNVs on clinical outcomes for infants with single ventricle heart defects. *Circulation: Cardiovascular Genetics* 6:441-451, 2013.

Raeker MO, Shavit, JA, Michele DE, Russell MW: Membrane-myofibril cross-talk in myofibrillogenesis and in muscular dystrophy pathogenesis: lessons from the zebrafish. *Frontiers in Striated Muscle Physiology* 5:14, 2014.

Schumacher KR, Stringer KA, Donohue JE, Yu S, Shaver A, Caruthers RL, Zikmund-Fisher BJ, Fifer C, Goldberg C, Russell MW: Facebook Fontans: Social media is a powerful new method to study rare diseases. *Pediatrics* 133:1345-1353, 2014.

Thorsson T, Russell WW, El-Kashlan N, Soemedi R, Levine J, Geisler SB, Ackley T, Tomita-Mitchell A, Rosenfeld JA, Töpf A, Tayeh M, Goodship J, Innis JW, Keavney B, Russell MW: Chromosomal rearrangements in patients with congenital cardiac defects: A meta-analysis reveals novel potential critical regions involved In heart development. *Congen Heart Dis* April 11, 2014.

Service: Dr. Russell is dedicated to the University of Michigan community as well as to the regional and national organizations of his field. Throughout his career, he has been a dedicated member of the Department of Pediatrics, serving multiple terms on the on the Appointments and Promotions Committee. Dr. Russell has been an active member of the Research Advisory Council and for three years, organized and directed the department's Research Day. More recent local service activities have included the dean's review committee of the Center for Arrhythmia Research and establishing and directing echocardiographic imaging for the Cardiovascular Center's Animal Phenotyping Core Facility. Dr. Russell also serves as a member of the Patient and Family Centered Care committee and the Executive Committee for the Michigan Congenital

Heart Outcomes Research and Discovery (M-CHORD) team for the Congenital Heart Center. Other leadership activities at the local and state level revolve around an effort to reduce the incidence of sudden death in the young. Dr. Russell serves as the co-director for Project ADAM for the University of Michigan (an organization to promote AEDs in schools) and serves on the Sudden Cardiac Death in the Young Committees for the Michigan Congenital Heart Center and the Michigan Department of Community Health. At the national level, he serves on the American Heart Association, Cardiovascular Disease in the Young, Congenital Cardiac Defects Committee and is the chair of the AHA Grant Review Committee CVD3 (Cardiovascular Development 3). Other national level service activities include serving on the Biospecimens Committee for the Pediatric Heart Network and serving as the director of the Biorepository for their clinical trials.

External Reviewers:

Reviewer A: “Dr. Russell has been an innovator in our discipline and has made significant contributions to the genetic and molecular underpinnings of pediatric heart disease. Dr. Russell’s approach is remarkably innovative in a discipline whose tradition is disease models based largely on biophysical principles.”

Reviewer B: “The field of cardiovascular genetics, especially for heritable disorders, is rapidly advancing, and Mark has been instrumental in leading and participating in these advances. Regarding national volunteerism, time spent as a [sic] unreimbursed reviewer for journals and national cardiac associations is formidable. His role in presentation at national and international meetings, advancing the field through education, is significant.”

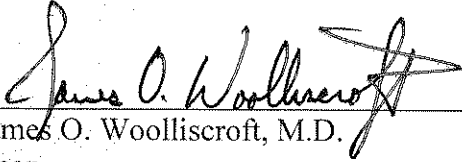
Reviewer C: “He is recognized as an international leader in the study of obscurins and their role in skeletal muscle, myocardial and brain development and homeostasis. He has been a driver in work studying copy number variation and chromosomal rearrangements in the etiology of congenital heart disease.”

Reviewer D: “In reviewing the overall impact of Dr. Russell’s career and trajectory, I think he is within the top 5-10% of pediatric cardiologists in his contributions to laboratory based and translational research....Our field is clinically intense which often distracts from career development, yet Dr. Russell has been a consistent contributor at a very high level.”

Reviewer E: “...Dr. Russell has been awarded multiple large research grants from the NIH and the American Heart Association. His service is highly sought after for important review committees and policy statements and to participate in peer review of manuscripts by top-tier journals.”

Summary of Recommendation:

Dr. Russell is an extremely valued, respected and admired member of the Division of Pediatric Cardiology and the Department of Pediatrics. He is a dedicated teacher and mentor who has developed a national presence through his translational studies. I am pleased to recommend Mark W. Russell, M.D. for promotion to professor of pediatrics and communicable diseases, with tenure, Department of Pediatrics and Communicable Diseases, Medical School.



James O. Woolliscroft, M.D.

Dean

Lyle C. Roll Professor of Medicine

May 2015