

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF RADIOLOGY

Nicholas S. Burris, M.D., assistant professor of radiology, Department of Radiology, Medical School, is recommended for promotion to associate professor of radiology, with tenure, Department of Radiology, Medical School.

Academic Degrees:

M.D. 2010 University of Maryland School of Medicine Baltimore, Maryland

Professional Record:

2016-present Assistant Professor, Department of Radiology, University of Michigan
2015-2016 Clinical Instructor, Department of Radiology and Biomedical Imaging,
University of California

Summary of Evaluation:

Teaching: Dr. Burris has a well-rounded range of mentees that includes residents, fellows, graduate students, undergraduates, post-doctoral students, and visiting Ph.D. scholars. He contributes significant effort to teaching clinical fellows, graduate students, undergraduates, medical students, residents, post-doctoral fellows, and visiting scholars. Dr. Burris conducts hour-long educational readout sessions, works station didactics, zoom-based hour-long sessions with M3/M4 students, daily three-hour one-on-one teaching with residents, and has mentored several University of Michigan students. He is a faculty mentor reviewing presentation materials and suggesting revisions/edits. He was awarded the Faculty Teaching Award in Cardiothoracic Radiology in 2019.

Research: Dr. Burris' work has centered around imaging, image analysis, and computer modeling of aortopathies. For a junior faculty member, his work is quite impressive with three current grants, one from the Michigan Institute for Clinical and Health Research (MICHHR) as a co-investigator with effort, a radiology seed grant as the principal investigator, and a Small Business Innovation Research (SBIR) grant as a co-principal investigator. He also has two National Institutes of Health grants submitted with a high probability of success, as well as participation in eight past grants from very reputable sources, such as the National Institutes of Health, the American Heart Association (AHA), and Radiological Society of North America (RSNA). Dr. Burris has 49 peer-reviewed publications, two submitted publications, three book chapters, and 69 abstracts with oral presentations at annual meetings such as the Society of Cardiovascular Computed Tomography (SCCT) 2022 Annual Scientific Meeting, Summer Biomechanics, Bioengineering, and Biotransport Conference, 36th Annual Meeting of the European Association for Cardio-Thoracic Surgery and Association for Clinical and Translational Science. His patent, "Techniques of Deformation Analysis for Quantification of Vascular Enlargement in Aneurysmal Disease" was granted in 2021.

Recent Significant Publications:

- Burris NS, Bian Z, Dominic J, Zhong J, Houben IB, van Bakel TMJ, Patel HJ, Ross BD, Christensen GE, Hatt CR, "Vascular Deformation Mapping for CT Surveillance of Thoracic Aortic Aneurysm Growth," *Radiology* 302(1): 218-225, 2022. PM34665030
- Bian Z, Zhong J, Dominic J, Christensen GE, Hatt CR, Burris NS, "Validation of a Robust Method for Quantification of Three-Dimensional Growth of the Thoracic Aorta Using Deformable Image Registration," *Medical Physics*. 49(4): 2514-2530, 2022. PM35106769
- Marlevi D, Sotelo JA, Grogan-Kaylor R, Ahmed Y, Uribe S, Patel HJ, Edelman ER, Nordsletten DA, Burris NS, "False lumen pressure estimation in type B aortic dissection using 4D flow cardiovascular magnetic resonance: comparisons with aortic growth," *J Cardiovasc Magn Reson* 23(1): 51, 2021. PM33980249/PMC8117268
- Houben IB, Nama N, Moll FL, van Herwaarden JA, Nordsletten DA, Williams DM, Patel HJ, Figueroa CA, Burris NS, "Mapping pre-dissection aortic wall abnormalities: a multiparametric assessment," *Eur J Cardiothorac Surg* 57(6): 1061-1067, 2020. PM31995165/PMC7239598
- Burris NS, Nordsletten DA, Sotelo JA, Grogan-Kaylor R, Houben IB, Figueroa CA, Uribe S, Patel HJ, "False lumen ejection fraction predicts growth in type B aortic dissection: preliminary results," *Eur J Cardiothorac Surg* 57(5): 896-903, 2020. PM31821480

Service: Dr. Burris is a widely recognized expert in cardiovascular imaging in 4D flow MRI and CT angiography of aortopathies. He oversees all CT and MRI imaging for aortic and structural heart disease, and currently acts as the lead radiology liaison for the multidisciplinary Transcatheter Aortic Valve Replacement (TAVR) and MATRIx (Mitral/Tricuspid valve) programs at the Frankel Cardiovascular Center. Dr. Burris serves on multiple institutional committees including the Multidisciplinary Aorta Conference, TAVR (Transcatheter Aortic Valve Replacement) Conference, and the Multidisciplinary MATRIx (Mitral/Tricuspid valve) Program as the Lead Radiologist, as well as serves on the Faculty Compensation Committee as a faculty participant. He is also a journal reviewer for 12 publications including the *European Heart Journal of Cardiovascular Imaging*, the *International Journal of Cardiovascular Imaging*, the *Journal of Magnetic Resonance Imaging*, *Radiology: Cardiothoracic Imaging*, and the *American Heart Journal*. Dr. Burris has been invited to present on ten separate occasions both nationally and internationally regarding his 4D Flow Application and topics of his work. He has also been on the dissertation committee for one student from Biomedical Engineering.

External Reviewers:

Reviewer A: "Dr. Burris's [sic] accomplishments for his current academic rank are commensurate with the best of those at a similar rank. His grant funding and publications are outstanding. The innovation and significance of his work are also outstanding. ... I can offer that his work is equal to or exceeding in quality and impact relative to investigators I know at various institutes. Based on my observations, I feel quite confident that his promotion would be secure at [at other top institutions]."

Reviewer B: "He is an excellent speaker and has compiled an outstanding array of contributions to the field of vascular imaging particularly with regard to evaluating the false lumen and assessing aortic aneurysm growth using cutting edge technologies that are beyond what most radiologists are able to master. His approach ... is highly innovative. He is [sic] has a national presence with the numerous invitation to speak on his innovations and many national and international awards."

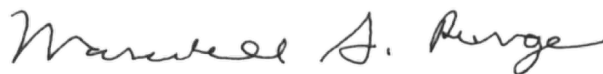
Reviewer C: "... he is a highly accomplished and prolific. ...He is already widely recognized as an expert cardiovascular imager in 4D flow MRI and CT angiography of aortopathies, and this is nicely summarized in his extensive list of publications. ...I am already familiar with most of these papers as they are well known to most cardiovascular imagers, particularly his work on the false lumen ejection fraction. This is a highly innovative metric that he has shown can predict the progression of dilatation of aortic dissection. ...it is my prediction that this work will lead to significant and widespread impact in the management of patients with chronic aortic dissection. Dr. Burris is an international leader, if not the world leading expert in this particular area."

Reviewer D: "Two of his research projects stand out to me as particularly remarkable: ...His research career trajectory is excellent and makes him a very strong candidate to independently lead a successful program that attracts talented students and scientists and secures extramural funding. ...he is already leading projects that span from identification of a clinical problem to inception of novel approaches to solve them, systematic development and validation, and steps towards commercialization, all together leading to high impact activities that will directly benefit patient care."

Reviewer E: "Dr. Burris' has distinguished himself through advanced imaging research of diseases of the aorta. Specifically, Dr. Burris researches the use of advanced MRI and CT techniques to improve risk assessment of patients with aortic dissection, aortic aneurysm and aortic valve disease. He has [sic] is co-PI on an NIH R44 (R44HL145953) on Vascular Deformation Mapping (VMD) for Automated, 3D Assessment of Thoracic Aortic Aneurysm, through consortium with Imbio. This work on vascular deformation mapping is highly significant with potential strong impact upon patient outcomes if it could prove predictive of rupture."

Summary of Recommendations:

Dr. Burris is a well-respected clinical scientist in the cardiovascular imaging community. His work with 4D flow MRI, particularly with aortic valve disease, has earned him recognition as a premier expert in this area. He is an excellent mentor and clinician. I am very pleased to recommend Nicholas S. Burris, M.D. for promotion to associate professor of radiology, with tenure, Department of Radiology, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President for Medical Affairs
Dean, Medical School