

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF INTERNAL MEDICINE
DEPARTMENT OF RADIOLOGY

Venkatesh L. Murthy, M.D., Ph.D., associate of internal medicine, with tenure, Department of Internal Medicine, and associate professor of radiology, without tenure, Department of Radiology, Medical School, is recommended for promotion to professor of internal medicine, with tenure, Department of Internal Medicine, and professor of radiology, without tenure, Department of Radiology, Medical School.

Academic Degrees:

M.D.	2004	Johns Hopkins School of Medicine
Ph.D.	2001	Johns Hopkins School of Medicine
M.S.	1996	Massachusetts Institute of Technology
B.S.	1996	Massachusetts Institute of Technology

Professional Record:

2019-present	Associate Professor of Internal Medicine, with tenure, University of Michigan
2019-present	Associate Professor of Radiology, without tenure, University of Michigan
2017-2019	Clinical Associate Professor of Internal Medicine, University of Michigan
2017-2019	Clinical Associate Professor of Radiology, University of Michigan
2012-2017	Clinical Assistant Professor Internal Medicine, University of Michigan
2012-2017	Clinical Assistant Professor of Radiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Murthy is deeply involved in the teaching and mentorship of undergraduate students, graduate students, medical students, residents, fellows, and junior faculty. In addition to clinical teaching during cardiology medicine and consult services, Dr. Murthy regularly gives didactic lectures in cardiac imaging to both cardiovascular medicine fellows and radiology residents. In his laboratory, Dr. Murthy has mentored and trained individuals from varying backgrounds in clinical medicine, physiology, biostatics, genetics, and cell and molecular biology. Many of these trainees have secured academic junior faculty roles, with two mentees now independently funded investigators, and several others have won junior investigator prizes. Dr. Murthy enjoys sharing the work of his laboratory in understandable terms with other scientists, clinicians, and patients, and especially clinically focused trainees with an interest in cardiovascular genetics.

Dr. Murthy participates in peer education through CME programs sponsored by the University of Michigan Cardiovascular Center, and lectures extensively at regional and national meetings (American Heart Association, Scientific Sessions, American College of Cardiology, etc.). Moreover, Dr. Murthy has led and participated in manuscript writing groups for scientific statements designed to educate physicians on the application of genetics to clinical practice.

Research: Utilizing his Ph.D. training in biophysics and biophysical chemistry, Dr. Murthy's research focuses on the application of quantitative methods to improve the quantification of cardiometabolic risk and understanding its underlying mechanisms. He led the development of technical methods to improve variability and the clinical translation of quantification of myocardial blood flow to routine practice and has conducted patient studies, numerical simulations, phantom studies, and the development of software tools, all of which are now widely employed at the University of Michigan. Using data from large prospective clinical cohorts such as the Framingham Heart Study, the Multi-Ethnic Study of Atherosclerosis (MESA), the Health ABC Study, and the Coronary Artery Risk Development in Young Adults (CARDIA) study, Dr. Murthy has also dedicated tremendous effort to better understanding the mechanisms of excess cardiometabolic risk using advanced imaging and novel molecular biomarkers. Using metabolomics, his team has identified distinct patterns of myocardial and vascular health. These proteomics are being used to improve the understanding of diabetes and cardiovascular disease.

Dr. Murthy's work has been published in premier journals, including *JAMA: Internal Medicine*, *JAMA: Cardiology*, *Circulation*, and the *Journal of the American College of Cardiology* and has won awards from prominent national organizations. Notably, Dr. Murthy has coauthored society statements and national/international consensus guidelines for the management of Fibromuscular Dysplasia (FMD) and Spontaneous Coronary Artery Dissection (SCAD, where he contributed clinical and genetic expertise. He has published 162 peer-reviewed articles, with many published in premier journals. Dr. Murthy has a phenomenal track record of funding and has been the co-investigator and principal investigator on multiple grants. This research has been funded by numerous sources, including the National Institutes of Health, the American Heart Association, the National Institute of Diabetes and Digestive Kidney Disease, and the National Institute on Aging.

Recent and Significant Publications:

- Murthy VL, Naylor M, Carnethon M, Reis JP, Lloyd-Jones D, Allen NB, Kitchen R, Piaggi P, Steffen LM, Vasan RS, Freedman JE, Clish CB, and Shah RV, "Circulating metabolite profile in young adulthood identifies long-term diabetes susceptibility: the Coronary Artery Risk Development in Young Adults (CARDIA) study," *Diabetologia* 2022 PM35041022/PMC8969893
- Speers C, Murthy VL (*co-first author), Walker EM, Glide-Hurst CK, Marsh R, Tang M, Morris EL, Schipper MJ, Weinberg RL, Gits HC, Hayman J, Feng M, Balter J, Moran J, Jagsi R, Pierce LJ, "Cardiac Magnetic Resonance Imaging and Blood Biomarkers for Evaluation of Radiation-Induced Cardiotoxicity in Patients With Breast Cancer: Results of a Phase 2 Clinical Trial," *Int J Radiat Oncol Biol Phys* 2022 112:417-25 PMID:34509552
- Murthy VL, Reis JP, Pico AR, Kitchen R, Lima JAC, Lloyd-Jones D, Allen NB, Carnethon M, Lewis GD, Naylor M, Vasan RS, Freedman JE, Clish CB, and Shah RV, "Comprehensive Metabolic Phenotyping Refines Cardiovascular Risk in Young Adults," *Circulation* 2020 142:2110-27 PMID:33073606
- Murthy VL, Xia R, Baldrige AS, Carnethon MR, Sidney S, Bouchard C, Sarzynski MA, Lima JAC, Lewis GD, Shah SJ, Fornage M, and Shah RV, "Polygenic Risk, Fitness, and Obesity in the Coronary Artery Risk Development in Young Adults (CARDIA) Study," *JAMA Cardiol* 2020 5:40-8 PMID:31913407/31913407

Konerman MC, Lazarus JJ, Weinberg RL, Shah RV, Ghannam M, Hummel SL, Corbett JR, Ficaro EP, Aaronson KD, Colvin MM, Koelling TM, and Murthy VL, “Reduced Myocardial Flow Reserve by Positron Emission Tomography Predicts Cardiovascular Events After Cardiac Transplantation,” *Circ Heart Fail* 2018 11:e004473 PMID:29891737/PMC6003671

Service: Dr. Murthy is an exceptional clinician, with his clinical effort dedicated to both clinical cardiovascular medicine and cardiovascular imaging. He rounds on several cardiovascular medicine services at the University of Michigan, including the general cardiology consultation service and the cardiovascular medicine step-down services. As a specialist in cardiac imaging, Dr. Murthy also staffs the nuclear cardiology laboratory. He has been incredibly active in service both institutionally and beyond. Dr. Murthy is the director of Cardiac Positron Emission Tomography (PET) Research at the University of Michigan Cardiovascular Center, a role he has had since 2016. Nationally, Dr. Murthy serves on numerous committees with the American Society of Nuclear Cardiology (ASNC) and the Society of Nuclear Medicine and Molecular Imaging. He served as the president of the Cardiovascular Council of the Society of Nuclear Medicine and Molecular Imaging (SNMMI).

Dr. Murthy’s national reputation as a leader in the field is further evidenced by his service as a member of several other writing groups including for scientific statements on the use of positron emission tomography (PET) for diagnosis and staging of cardiac sarcoidosis, appropriate use criteria for cardiac PET imaging, and multiple statements related to COVID-19 and cardiac imaging, among several others. Perhaps most notably, he led the development of a comprehensive scientific position paper, co-sponsored by the American Society of Nuclear Cardiology (ASNC), on the clinical translation of PET measures of myocardial blood flow and flow reserve. He serves as a member of the Leadership Committee of the Cardiovascular Radiology and Imaging Council of the American Heart Association. Dr. Murthy has also served as an associate editor and digital media strategy editor for *Circulation: Cardiovascular Imaging* and on several editorial boards including *Circulation Research*, *Nutrition*, *Metabolism*, *Cardiovascular Diseases*, and the *Journal of Nuclear Cardiology*.

External Reviewers:

Reviewer A: “Dr. Murthy is an internationally acclaimed cardiovascular scientist. His published work is considered excellent by all standards...Dr. Murthy is very well respected among his peers. His contributions consistently trigger reactions on social media and inform high-level discussions. This is true for cardiac as well as cardiac imaging topics...He is a critical voice in the cardiovascular imaging community, a brilliant clinician-scientist, and an accomplished human.”

Reviewer B: “His accomplishments are duly recognized by his awards and honors, membership in national and international societies, membership in several editorial boards, speaking engagements at national and international meetings and academic grand-rounds, citations of his work, role in writing guidelines and position papers, level of funding, and involvement in leadership positions in many societies. His presentations are scholarly, balanced, thoughtful, and effective...I would estimate that he is in the top 5 percent based on quality, quantity, depth of knowledge, experience, honesty, integrity, commitments, professionalism, and willingness to encourage and promote those who collaborate with him.”

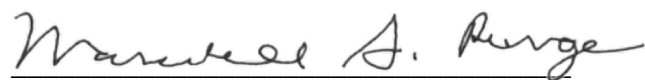
Reviewer C: “He is a prolific lecturer with multiple international and national lectures. To comment that Dr. Murthy is an outstanding cardiologist would be a gross understatement. He is a leader in his field and easily exceeds most top cardiologists in the field of non-invasive imaging. Over his career, he has mentored numerous physicians, many have gone on to fulltime positions focused on non-invasive cardiac imaging.”

Reviewer D: “Dr. Murthy has tirelessly provided a large amount of clinical, institutional and academic service throughout his career at the University of Michigan, and has served on multiple committees at the departmental and university level...Nationally, he has served on multiple committees and councils of the American Society of Nuclear Cardiology and the Society of Nuclear Medicine and Molecular Imaging, including serving as President of the Cardiovascular Council Board of Directors in 2019-2020, Co-Chair of the Scientific Statement on Myocardial Blood Flow Quantification with PET and the Nuts and Bolts of Cardiac PET Imaging. In addition to his duties as an editorial board member described above, he has served as a manuscript reviewer for several high-impact cardiovascular journals.”

Reviewer E: “This is an easy recommendation to make given Dr. Murthy’s extraordinary scientific contributions, his stature in the field and, his service and mentorship accomplishments...Over the years, I have come to regard him as one among the most thoughtful, insightful and talented academicians of our field. Venk’s CV is ample testament to his research contributions and considerable impact on the field...He is one of the most committed scientists of his generation. The quality that I most admire in him is his pursuit of science ‘without fear or favor.’ I find this an extremely rare quality and a highly admirable characteristic.”

Summary of Recommendation:

Dr. Murthy is an outstanding physician-scientist who has made substantive and meaningful contributions to the application of quantitative methods to improve the quantification of cardiometabolic risk and the understanding of its underlying mechanisms. He has been highly productive in the areas of research, teaching, service, and presentation of his work. I am pleased to recommend Venkatesh L. Murthy, M.D., Ph.D, for promotion to professor of internal medicine, with tenure, Department of Internal Medicine, and professor of radiology, without tenure, Department of Radiology, Medical School.



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

May 2023