

PROMOTION RECOMMENDATION  
THE UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL AND COLLEGE OF ENGINEERING  
DEPARTMENT OF BIOMEDICAL ENGINEERING  
MEDICAL SCHOOL  
DEPARTMENT OF CARDIAC SURGERY

David A. Nordsletten, Ph.D., D.Phil., associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, Medical School and College of Engineering, and associate professor of cardiac surgery, without tenure, Department of Cardiac Surgery, Medical School, is recommended for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, Medical School and College of Engineering, and professor of cardiac surgery, without tenure, Department of Cardiac Surgery, Medical School.

Academic Degrees:

Ph.D./D.Phil.	2010	University of Oxford, Oxford, United Kingdom
B.S.	2004	University of Minnesota, Minneapolis, MN

Professional Record:

2023 – Present	Visiting Professor, School of Biomedical Engineering and Imaging Sciences, King's College London, London, England
2019 – Present	Associate Professor (with tenure), Department of Biomedical Engineering, University of Michigan, Ann Arbor, MI
2019 – Present	Associate Professor (without tenure), Department of Cardiac Surgery, University of Michigan, Ann Arbor, MI
2018 – 2023	Reader (tenured) in Cardiovascular Biomechanics, School of Biomedical Engineering and Imaging Sciences, King's College London, London, England
2015 – 2018	Senior Lecturer, School of Biomedical Engineering and Imaging Sciences, King's College London, London, England
2010 – 2015	Lecturer, School of Biomedical Engineering and Imaging Sciences, King's College London, London, England

Summary of Evaluation:

Teaching: Dr. Nordsletten instructs learners through both research mentorship and didactic teaching. His learners include postdoctoral fellows and graduate students. Didactically, he has solely led Biotransport (BIOMEDE479) and organized and led the departmental seminar series (BIOMEDE 500), a required one-credit course for all BME graduate students. He has also been a guest lecturer for Electrical Biophysics (BIOMEDE 417). Teaching evaluations are very good to excellent. Internationally, he has been a guest lecturer for the University of Linz and Graz University.

Research: Dr. Nordsletten's research focus is on the heart, integrating concepts of mathematics and biomechanics to advance clinical practice by improving treatment, diagnosis, and planning of treatment. Speaking to his international reputation, he has collaborated with researchers across five continents and attained funding from the Australia Research Council, the European Union,

and the United Kingdom Research, and Innovation Agency. He has been very successful in obtaining extramural funding support from the National Institutes of Health (NIH), the National Science Foundation (NSF), and foundations along with previous support by funding from ten separate grant awards. He has one patent pending through Europe, China, and the US. He has authored 94 peer-reviewed publications in outstanding journals such as *The Journal of Thoracic and Cardiovascular Surgery*, *Frontiers in Cardiovascular Medicine*, and *Computer Methods in Applied Mechanics and Engineering*. He has been invited to present his work on more than twenty invitations nationally and internationally including in Dublin, Taiwan, Germany, Spain, Austria, Greece, Israel, Scotland, Italy, England, France, Sweden, and Switzerland. He was bestowed the Healthcare Technology Award Fellow, Engineering and Physical Sciences Research Council (EPSRC), United Kingdom (2018-2023).

#### Recent and Significant Publications:

- Zhang W, Jilberto J, Sommer G, Sacks MS, Holzapfel GA, Nordsletten DA, “Simulating hyperelasticity and fractional viscoelasticity in the human heart,” *Computer Methods in Applied Mechanics and Engineering*. 2023 Jun 1;411:116048.
- 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,” *Journal of Cardiovascular Magnetic Resonance*. 2021 Dec;23(1):1-3.
- Babaei B, Fovargue D, Lloyd RA, Miller R, Jugé L, Kaplan M, Sinkus R, Nordsletten DA\*, Bilston LE\*, “Magnetic resonance elastography reconstruction for anisotropic tissues,” *Medical Image Analysis*. 2021 Dec 1;74:102212.
- Nordsletten D, Capilnasiu A, Zhang W, Wittgenstein A, Hadjicharalambous M, Sommer G, Sinkus R, Holzapfel GA, “A viscoelastic model for human myocardium,” *Acta Biomaterialia*. 2021 Nov 1;135:441-57.
- Miller R, Kerfoot E, Mauger C, Ismail TF, Young AA, Nordsletten DA, “An implementation of patient-specific biventricular mechanics simulation with a deep learning and computational pipeline,” *Frontiers in Physiology*. 2021 Sep 16;12:716597.

Service: Dr. Nordsletten has contributed to service at the international, national, and institutional levels. He actively participates in the organization of national and international conferences in his area of specialization. Internationally, he has reviewed for study sections including the European Union, the Austrian Science Fund, and the British Heart Foundation. Nationally, Dr. Nordsletten is the editor-in-chief of *Biomechanics and Modeling in Mechanobiology* and is a reviewer for more than 25 journals including *Heart*, *IEEE Transactions on Biomedical Engineering*, and *Scientific Reports*. His service to the Department of Biomedical Engineering (BME) has been significant including a complete overhaul of the process for recruitment of Ph.D. faculty via a very systematic, data-driven, and transparent approach. He has also served as the department’s graduate admissions chair, DEI chair, and wellness representative. His efforts on the admissions committee led to an increase in the overall cohort from an average of 26 students to 40 students in 2023. He has served on numerous dissertation committees. As the DEI chair, he created the Graduate Application Assistance Program to address inequities in the application preparation process and inclusive teaching in STEM which paired interested graduate applicants with a BME mentor who provided application advice and guidance. The Inclusive Teaching in BME (IT-

BME), a joint initiative with the Center for Research on Learning and Teaching, was created by Dr. Nordsletten in 2022 to integrate inclusive teaching practices into BME curricula.

External Reviewers:

Reviewer A: “David’s publications span some of the most revered journals in the field and consistently exhibit methodological rigor, innovation, and pursuit of exemplary scientific excellence. His papers are well-cited and highly collaborative. The significance of Dr. Nordsletten’s research is also demonstrated through a highly competitive R01 grant from the NIH. Dr. Nordsletten is the recipient of the prestigious Healthcare Technology Award Fellow, Engineering and Physical Sciences Research Council (EPSRC), United Kingdom.”

Reviewer B: “Let me assure you that David is a premier expert in the field of continuum and computational biomechanics...Based on his outstanding track record of achievements in the field of biomechanics, and in consideration of the major advance he has recently demonstrated in his research efforts as summarized above, it is with great enthusiasm that I support the promotion of David A. Nordsletten.”

Reviewer C: “...Dr. Nordsletten’s list of refereed journal publications includes 87 published or accepted, with three more manuscripts under review. Approximately 30 of his journal publications appear to originate from his time as an associate professor at Michigan (post-tenure), and on a large fraction of the recent papers he is [a] senior author with his trainees as co-author. His papers have now been cited over 4000 times (Google Scholar), and his current h-index is 36. Dr. Nordsletten has been the primary supervisor of a half-dozen or so successful PhD students and has served as [an] advisor for multiple MS and undergraduate researchers. Taken together, these accomplishments represent a solid track record of productivity and impact for a faculty member at a strong research university.”

Reviewer D: “Dr. Nordsletten’s extensive body of work is both prolific and impactful...[his] work not only contributes significantly to the field but also holds practical promise for improving patient care, making him a notable figure in cardiovascular biomechanics.”

Reviewer E: “He has given a number of invited talks and keynotes at international conferences [and] workshops and I am aware of his keynotes at the following two major conferences WCB 2018 and WCB 2022. He is Editor-in-Chief of Biomechanics and Modeling in Mechanobiology which is the main journal [in] the field of Mechanobiology and he collaborates with a number of international researchers including collaborative projects and grants at Paris (Sinkus), Graz (Holzapfel), Stockholm (Marlevi), London (Young) and Sydney (Bilston).”

Reviewer F: “Compared to several investigators in his field that I have reviewed for promotion to tenured Professor at top institutions including Michigan, Minnesota, and University of Virginia, David would rank near the top in peer-reviewed full-length papers (89), citations (3981 on Google Scholar), and h-index (37) at the same career stage.”

Reviewer G: “Dr. Nordsletten is an expert in the area of multi-scale cardiac mechanics, ranging from mathematical models of fluid dynamics to new medical imaging methods for aortic and cardiac dysfunction...Dr. Nordsletten has established himself both in the UK and now at U.

Michigan as a leader of combined computational-experimental approaches for solid-fluid cardiovascular mechanics...It is worth noting that he is succeeding in an interdisciplinary area that is very challenging.”

Summary of Recommendation:

Dr. Nordsletten has established a national and international reputation for his outstanding research program. He is an outstanding teacher and mentor who provides substantial professional and institutional service. We are pleased to recommend David A. Nordsletten, Ph.D., D.Phil. for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, Medical School and College of Engineering, and professor of cardiac surgery, without tenure, Department of Cardiac Surgery, Medical School.



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



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Steven L. Ceccio, Ph.D.  
Interim Dean  
Vincent T. and Gloria M. Gorguze Professor  
of Engineering  
College of Engineering

May 2024