

Ravi Radhakrishnan, PhD
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Qualifications for Chair of the BME Council of Chairs (CoC)

Professional Preparation and Leadership: I am a Chemical and Biological Engineer; I obtained my Bachelor's Degree from the Indian Institute of Technology in Madras, India, and a Doctoral Degree from Cornell University in Ithaca, NY. After postdoctoral training at the Massachusetts Institute of Technology, New York University, and the Howard Hughes Medical Institute, I joined the faculty of the University of Pennsylvania, where I am a tenured full Professor and the Chair of Bioengineering, as well as a Professor of Chemical and Biomolecular Engineering. I am also a member of Genomics and Computational Biology and Biochemistry and Molecular Biology graduate groups. In the past, I have served as the founding member and Director of the Penn Institute of Computational Sciences and the Graduate Group Chair of Bioengineering.

Research Experience, Leadership, Service: I direct a computational research laboratory with research interests at the interface of biophysics, chemical physics, and biomedical engineering with applications to cellular engineering in cancer and immunology. The goal of my computational molecular systems biology laboratory is to establish digital twin simulation platforms enabled by a combination of multiscale modeling and AI. The digital twin simulators enable multiscale and mechanistic characterization of complex systems and formulate accurate and predictive models for precision oncology and nanomedicine applications. Current research themes include computational structural biology and systems biology, targeted drug delivery and cancer mechanobiology, cancer systems biology, and cancer immunology. I have successful and funded collaborations with pharmacologists, cell biologists, biophysical chemists, anesthesiologists, and oncologists primarily through grants from the US National Science Foundation, US National Institutes of Health, and the European Commission. I have authored over 170 articles in leading peer-reviewed Journals, serve as a referee for over 45 leading journals, publishers, and federal funding agencies, and serve on the editorial board of five journals. I am a Fellow of the American Institute of Medical and Biological Engineers, BMES, and a Fellow of the Royal Society of Medicine and serve as the Working Group Leader for High-Performance Computing for the Inter-Governmental Panel titled interagency modeling and analysis group. I am the chair of the Bioengineering sub-group of the Biophysical society. I also serve as project leader of the NCI-funded Penn Physical Sciences in Oncology Center (U54) as well as a project (U01), and a member of the Cancer Systems Biology Consortium (U01) of the NCI.

Vision for the BME community: Foremost, I am truly grateful to be a member of the CoC and to be nominated for the office of Chair of the BME Council of Chairs. Our discipline is transforming in terms of research and education due to the promise of emerging technologies such as cell therapies, neural revolution, artificial intelligence in health, quantum biology, nanobiotechnology, systems, synthetic, and single-cell bioengineering, biomedical entrepreneurship, to name a few. We require *strategic vision* in the CoC to help guide our community to a place of strength through this fascinating period by engaging academia, industry, and national labs. We also face steep challenges that require long-term solutions to eradicate and overcome systemic deficiencies such as health care inequities and to make the BME community inclusive, diverse, and nurturing to every bioengineer without regard to gender, race, ethnicity, and nationality. We require strong *advocacy* and *representation* to ensure equity and racial/social justice in our community. The CoC can be an influential force to establish optimal policies and practices for a swift, radical, and sustainable change in approach. More importantly, the CoC can nucleate a cohesive and nurturing BME community which attracts talent, invests in its constituents (i.e., all biomedical engineers), and promotes the growth of the individual as much as the growth of the discipline. The more individuals are giving back to the community through service, the more complete our transformation through this exciting period will be, and the safer and stronger our future. You can count on my dedication to the above causes through my style of leadership, which is to balance service, representation, advocacy, and strategy, in my own efforts and contributions to the office of the Chair of the BME CoC to lead the BME community into the next decade.