

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Materials Science and Engineering

Geeta Mehta, assistant professor of materials science and engineering, Department of Materials Science and Engineering, assistant professor of macromolecular science and engineering, Macromolecular Science and Engineering Program, College of Engineering, and assistant professor of biomedical engineering, Department of Biomedical Engineering, Medical School and College of Engineering, is recommended for promotion to associate professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, associate professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.

Academic Degrees:

Ph.D.	2008	University of Michigan, Biomedical Engineering, Ann Arbor, MI
M.S.	2004	Michigan State University, Chemical Engineering and Materials Science and Engineering, East Lansing, MI
B.E.	2001	Panjab University, Chemical Engineering, Chandigarh, India

Professional Record:

2017 – 2019	Dow Corning Assistant Professor of Materials Science and Engineering, University of Michigan
2014 – present	Assistant Professor, Comprehensive Cancer Center, and Center for Organogenesis, University of Michigan
2014 – present	Assistant Professor, Macromolecular Science and Engineering, University of Michigan
2013 – present	Assistant Professor, Materials Science and Engineering, and Biomedical Engineering, University of Michigan
2010 – 2013	Assistant Research Scientist, Biomedical Engineering, University of Michigan
2008 – 2010	Post-doctoral Research Associate, Biological Engineering, Massachusetts Institute of Technology, Cambridge, MA

Summary of Evaluation:

Teaching: Professor Mehta has been the primary instructor in BIOMEDE/MATSCIE 410, Design and Application of Biomaterials. This course is required by a large fraction of biomedical engineering students and is an elective for materials science/engineering students. The enrollment is typically 60-80 students per year, and she has taught this class each fall term since 2014. In winter 2018, Professor Mehta piloted a new 3-credit graduate-level class titled Engineering Approaches to Cancer Biology. The course draws on Professor Mehta's expertise in materials-based models for studying cancer, and the instructor rating was very high (4.7). Professor Mehta has graduated two Ph.D. students to date, one as sole advisor and one as co-chair. She currently advises another four Ph.D. students with one expected to graduate this year. Professor Mehta is also active in advising M.S. and undergraduate students.

Research: Professor Mehta and her group work on generating 3D organ models for developing therapeutics and drug delivery methods. Her research focuses on exploring models that represent

chemo resistance of various cancers *ex-vivo*, with the objective of gaining a better understanding for the development and testing of personalized therapeutics. The hallmark of Professor Mehta's research identity is her ability to apply engineering principles to bio-medical problem-solving strategies. This is particularly apparent in the bio-reactors she developed and allow her to better account for the environmental effects on cancer evolution. She has published in engineering journals and clinical journals as well as specialized journals. She has over 40 publications in archival journals, over 30 refereed conference summaries, and three book chapters. Her papers have been cited over 2,000 times and her *h*-index is 20, according to Google Scholar. As an independent lead PI, she has published more than 20 articles, many of which are co-authored by students she advises. Her funding history includes nine past and 11 current grants from diverse sources, most as PI. Four of her lead-PI grants are of substantial size, including the prestigious American Cancer Society Research Scholar award. Over time, she has obtained \$3.18M in total (with her personal share of \$2.2M) from external sources.

Recent and Significant Publications:

C Novak, E Horst, C Taylor, C Liu, G Mehta, "Fluid shear stress stimulates breast cancer cells to display invasive and chemoresistant phenotypes while upregulating PLAU in a 3D bioreactor," *Biotechnology and Bioengineering*, 116, 3084-3097, 2019.

M Ward Rashidi, P Mehta, M Bregenzner, S Raghavan, V Ravikumar, S Brady, A Bild, A Rao, R Buckanovich, G Mehta, "Engineered 3D Model of Cancer Stem Cell Enrichment and Chemoresistance," *Neoplasia*, 21, 822-836, 2019.

S Raghavan, P Mehta, Y Xie, Y Lei, G Mehta, "Ovarian Cancer Stem Cells and Macrophages Reciprocally Interact Through the WNT Pathway to Promote Pro-tumoral and Malignant Phenotypes in 3D Engineered Microenvironments," *Journal for ImmunoTherapy of Cancer*, 7, 190, 2019.

Shreya Raghavan, Pooja Mehta, Maria R Ward, Michael E Bregenzner, Elyse M A Fleck, Lijun Tan, Karen McLean, Ronald J Buckanovich, Geeta Mehta, "Personalized Medicine-Based Approach to Model Patterns of Chemoresistance and Tumor Recurrence Using Ovarian Cancer Stem Cell Spheroids," *Clin Cancer Res.*, 2017;23(22):6934-6945.

S. Raghavan, P Mehta, EN Horst, MR Ward, KR Rowley, G Mehta, "Comparative Analysis of Tumor Spheroid Generation Techniques for Differential in Vitro Drug Toxicity," *Oncotarget*, 7, 16948, 2016.

Service: Professor Mehta has served on the MSE Graduate and Admission committees since 2013, and on the BME Graduate Admission Committee since 2016. As a Rackham faculty ally for diversity in graduate education in MSE and Macro, she is committed to diversity issues that challenge our graduate students. She works on issues related to recruitment, admissions, climate, retention, and completion, in order to promote diversity and excellence. She has identified the diversity issues most relevant in MSE and Macro students and has devised action steps to address them. In fact, Professor Mehta has been awarded the Rackham Faculty Ally grants and Student Ally grants for both MSE and Macro for the last two years. As part of these grants, she has developed programs on peer-to-peer mentoring, K-12 outreach, professional development career panels, career fairs, and workshops on networking, interviewing, and etiquettes. In terms of external service, Professor Mehta has been active as a proposal reviewer, a session chair at annual conferences, a symposium organizer and organizational planning committee member, and a reviewer for a host of journals.

External Reviewers:

Reviewer A: “Dr. Mehta appears to have a strong record in research with metrics (external grant funding and publications in her independent career) that would meet excellence in research at my institution.”

Reviewer B: “Based on her multiple accomplishments and contributions to research, teaching, and service to the University of Michigan and nationally, in addition to her efforts to promote cultural diversity and a supportive climate, Dr. Mehta clearly deserves tenure.”

Reviewer C: “Her accomplishments thus far place her at the top of her field, and she will be a significant asset to any department and university that she is a part of.”

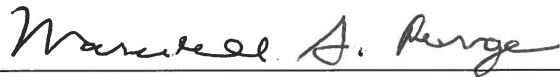
Reviewer D: “She has built a solid research portfolio with which she can expand and grow during the next stage of her career and appears to be an important contributor to Michigan’s teaching, service, and outreach missions.”

Reviewer E: “Dr. Geeta Mehta is a well-respected emerging national leader in the area of translationally relevant ovarian cancer model systems.”

Summary of Recommendation: Professor Mehta is an accomplished leader in the field of cancer bioengineering research at the convergence of materials and biomedical sciences. It is with the support of the College of Engineering Executive Committee that I recommend Geeta Mehta for promotion to associate professor of materials science and engineering, with tenure, Department of Materials Science and Engineering, associate professor of macromolecular science and engineering, without tenure, Macromolecular Science and Engineering Program, College of Engineering, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.



Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering



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

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