Approved by the Regents
May 19, 2022

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Sarah Veatch, associate professor of biophysics, with tenure, and associate professor of physics, without tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of biophysics, with tenure, and professor of physics, without tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2004	University of Washington
B.S.	1998	Massachusetts Institute of Technology

Professional Record:

2018–present	Associate Director of Biophysics, University of Michigan
2017–present	Associate Professor of Biophysics and Physics, University of Michigan
2010–2017	Assistant Professor of Biophysics and Physics, University of Michigan

Summary of Evaluation:

Teaching: Professor Veatch has contributed very significantly to establishing a strong undergraduate curriculum in biophysics, with specific focus on introducing new courses, BIOP 117 (Introduction to Programming in the Sciences) and BIOP 130 (DNA Origami). The former course has grown significantly under her guidance from a small course offered one semester a year to being offered every semester and occasionally in the Spring/Summer term. Moreover, she has played a significant role in helping to shape the collaboration with Physics to introduce the revised Physics for the Life Sciences (BIOP/PHY 150/250) curriculum, in which Biophysics now co-shares the teaching responsibilities. Her teaching is assessed as being excellent as judged in part by her strong student evaluations. Professor Veatch has also been very active in mentoring undergraduates within the context of research. She has mentored ten undergraduate students during their time at UM, with numerous papers published with undergraduate co-authors, and mentored them onto the next stages of their career development following their undergraduate studies.

Research: Professor Veatch's research domains encompass the interfaces of physics, biology, and biomedicine, with her laboratory's focus on understanding the role cellular membranes play in establishing and controlling the organization of cellular components associated with immune signaling involving B cells. She is a recognized leader in applying super-resolution imaging methods to quantitatively understand the role of membrane compositional fluctuations in driving and controlling the structural organization and function of B cells and their antigens involved in the signaling cascade of immune response triggering in live cells. It is anticipated that her research efforts will continue to be rewarded by peer recognition and continued funding, and that she will only grow in the leadership roles she plays within her research community and in the university community.

Recent and Significant Publications:

Shaw, T.R., Ghosh, S., & Veatch, S.L. (2021). Critical phenomena in plasma membrane organization and function. *Annual Review of Physical Chemistry*, *72*(1), 51-72.

Ray P., Raghunathan, K., Ahsan, K, A., Allam, U.S., Shukla, S., Basrur, V., Veatch, S. L., Lawrence, T.S., Nyati, M.K., & Ray, D. (2021). Ubiquitin ligase SMURF2 enhances epidermal growth factor receptor stability and tyrosine-kinase inhibitor resistance. *Journal of Biological Chemistry*, *295*(36), 12661-12673.

Shaw, T.R. & Veatch, S.L. (2020). The membrane "pull" that balances metabolism's "push" in lipid homeostasis. *Biophysical Journal*, *119*(5), 887-889.

Karslake J.D., Donarski, E.D., Shelby, S.A., Demey, L.M., DiRita, V.J., Veatch, S.L., & Biteen, J.S. (2021). SMAUG: Analyzing single-molecule tracks with nonparametric Bayesian statistics, *Methods*, *193*:16-21.

Service: Professor Veatch has provided exceptional service to Biophysics in her role as the associate director and director of graduate studies, as well as taking a key role in the Curriculum Committee. Through her contributions Biophysics has revised the graduate program and candidacy process and seen the enhancement of their undergraduate curriculum through the introduction of new entry-level courses and a collaborative effort with Physics in teaching introductory physics for life science students. Beyond Professor Veatch's transformative unit-level efforts, she has served the UM community through participation in panels for oSTEM and the Provost's Advisory Committee. She is also highly engaged with the research community as a regular member of an NIH study section (BBM), as an editorial board member for *Biophysical Journal*, and as the chair of the Membrane Structure and Function Subgroup of the Biophysical Society.

External Reviewers:

Reviewer (A): "Dr. Veatch has been punching above her weight class since her graduate studies. Throughout her career, I would not put ahead of her anyone of her growing group of peers who works in the area of membrane biophysics. Her prominence amongst an even broader group of outstanding scientists will increase as she perseveres and further demonstrates the centrality of fundamental physical properties to biological function of cell membranes."

Reviewer (B): "Prof. Veatch is an early adopter of technologies that drive the field forward. She has been one of the first researchers to couple lipidomics data with biophysical explanations of what changes in lipid composition could mean for phase separation. Because of this, she was sought out for the 'Lipid Trends' committee of Lipid Maps (www.lipidmaps.org), which performs a service to researchers by providing mass spectrometry information and data."

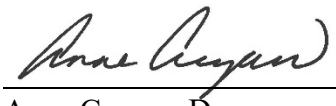
Reviewer (C): "Overall, Sarah Veatch's important scientific contributions have given her a high and well-respected standing in the biophysical community, which has been recognized by a large number of invited talks on important conferences, a number of review articles, as well as an impressive number of awards."

Reviewer (D): "Veatch has continued to evolve technical approaches to explore compositional variations in membranes, finding and observing them at small length scales not previously explored. The observations are informative, and they have been used to frame conceptual links between pure lipid systems, isolated membranes, cultured cells and cells from organisms, a remarkable feat of vertical integration."

Reviewer (E): "I have followed [Professor Veatch's] career since its beginning with her now legendary papers as a graduate student with Prof. Sarah Keller at U. Washington on lipid miscibility phase separation in giant unilamellar vesicles. During her postdoc period, [Professor Veatch] went on to publish what is in my view an extremely important paper in the field examining critical fluctuations in lipid membranes derived from living cells."

Reviewer (F): "The recognition of Professor Veatch's prominence in the field of membrane phase transitions is exemplified by her 2021 review on this field in the Annual Review of Physical Chemistry, arguably the highest profile review journal in this area."

Summary of Recommendation:
Professor Veatch's efforts in research, teaching, and service provide strong evidence of an excellent and dedicated teacher, researcher, and community citizen. She has contributed immensely to the successful operations and growth of the Program in Biophysics on all levels and is highly recognized for her research excellence and leadership within her research community. We anticipate that she will continue to excel in each of these roles in the future. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Sarah Veatch be promoted to the rank of professor of biophysics, with tenure, and professor of physics, without tenure, College of Literature, Science, and the Arts.



Anne Curzan, Dean
Geneva Smitherman Collegiate Professor of
English Language and Literature, Linguistics,
and Education
Arthur F. Thurnau Professor
College of Literature, Science, and the Arts

May 2022