

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

Jens-Christian D. Meiners, associate professor of physics, with tenure, and associate professor of biophysics, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of physics, with tenure, and professor of biophysics, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	1997	Universität Konstanz
M.S.	1994	University of Delaware
B.S.	1991	Universität Konstanz

Professional Record:

2007 – present	Director, Program in Biophysics, University of Michigan
2006 – present	Associate Professor, Department of Physics and Program in Biophysics, University of Michigan
2000 – 2006	Assistant Professor, Department of Physics, and Assistant Research Scientist, Biophysics Research Division, University of Michigan
1997 – 2000	Postdoctoral Scholar in Biophysics, California Technology Institute

Summary of Evaluation:

Teaching – Professor Meiners’ teaching contributions to both units, especially of undergraduates, is highly valued and student evaluations are very good. He has been successful with both science concentrators in biophysics and the science-averse audience in the “Everyday Physics” course. His commitment to undergraduate teaching is apparent. Professor Meiners played a critical role in developing the undergraduate degree program in Biophysics, including the construction of the curriculum for this program. He also took the lead role in obtaining a three-year Research Experience for Undergraduates National Science Foundation grant for the Program in Biophysics allowing the Program to bring talented undergraduate students from across the country to do research during the summer and provided an exceptional recruiting opportunity for Biophysics graduate students, especially those coming from underrepresented groups. His research group is consistently large and currently includes four undergraduate and three graduate students and one postdoctoral fellow. He has already produced five Ph.D.s with three more in process and four Master’s degree recipients.

Research – Professor Meiners’ research focuses on a critical problem of contemporary biology: the mechanisms that control the expression of genomic information. His most important research accomplishments are related to his work on the use of biophysical approaches to study the mechanics of DNA structure and function, especially in DNA/protein interactions, with force measurements on the nanoscale. His studies on protein-mediated-DNA-looping bridge the fields of physics and molecular biology. Many physicists are interested in using physical approaches to solve biological problems. The uniqueness of Professor Meiners’ research is that he really impacts a biological problem: protein DNA interactions during transcription. He answers some of the questions that physicists and biologists alone cannot answer. This ability to develop skills

in different fields has made him a unique resource for investigators in several departments at the University.

Recent and Significant Publications:

“Protein-mediated DNA loop formation and breakdown in a fluctuating environment,” with Y. F. Chen and J. N. Milstein, *Physical Review Letters*, 104, 2010, 258103.

“A generalized theory of DNA looping and cyclization,” with D. P. Wilson and A. Tkachenko, *Europhysics Letters*, 89, 2010, 58005.

“Femtonewton entropic forces can control the formation of protein-mediated DNA loops,” with Y. F. Chen and J. N. Milstein, *Physical Review Letters*, 104, 2010, 048301.

“Entropic boundary effects on the eElasticity of short DNA molecules,” with Y.F. Chen, et al., *Physical Review E*, 80, 2009, 020903.

Service – Professor Meiners’ efforts in reorganizing the Program in Biophysics after the transition from the Office of the Vice President for Research to the College of Literature, Science, and the Arts are impressive. Creating a new undergraduate major is something almost no one on campus has done and requires both a deep understanding of the structure of the undergraduate experience and substantial thought about what students need to prepare themselves for a variety of futures. This was a huge task that rested mostly on his shoulders, and the success of the effort is evidenced by the relatively rapid growth in the number of Biophysics concentrators. He has also served as director of the Program since 2007.

External Reviews:

Reviewer (A)

“Professor Meiners’ work is very clever and creative from an experimental point of view and his careful theoretical analysis is impressive. It demonstrates the intellectual clarity, depth, and maturity that are expected of a full professor. ...[he] has demonstrated important and significant advances in this well-funded research program in biological physics. He is also clearly engaged in the teaching and service missions... ..I strongly recommend that he be promoted...”

Reviewer (B)

“...Meiners is an internationally recognized leader in single-molecule biophysics... I also am impressed by the leadership role Jens-Christian has shouldered in Michigan’s reorganized and revitalized Department of Biophysics. ... Considering his record of research accomplishments, international reputation, funding, training of students and service to the University, Jens-Christian appears to be an outstanding colleague.”

Reviewer (C)

“...Meiners is a highly effective and insightful scientist and...his research is of significant importance. He has been recognized nationally and internationally... In my institute...a faculty member with Meiners’ qualifications would certainly be accepted for promotion to Professor with Tenure.”

Reviewer (D)

“If I were to write a review article on the DNA dynamics and its interaction with proteins, I would definitely include the two *Physical Review Letters* that Meiners published this year. ... His research style involves high quantitative measurements backed up by rigorous theoretical

analysis. ... Based on his scientific achievements since he achieved tenure at the University of Michigan, I believe he would easily qualify for promotion to Professor in my own department.”

Reviewer (E)

“Jens-Christian Meiners is one of a small hand full of colleagues developing and applying quantitative physical techniques to Biology. Chris is, in fact, one of the key people worldwide... Chris is an outstanding biophysicist at the cutting edge of his field. ... Were Chris to come up for a similar promotion in my current department, I have no doubt that he would get the promotion.”

Reviewer (F)

“Professor Meiners is a particularly outstanding example of the type of researcher that a modern physics department should have... After considering Professor Meiners’ excellent record of research accomplishment, combined with his superb fundraising record...plus his distinguished teaching and mentoring record, I have no doubt that he would receive promotion to full professor of physics at my institution...”

Reviewer (G)

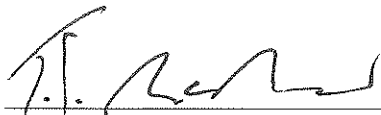
“Since promotion to tenure Meiners has among other things invented a truly significant new experimental apparatus... ...I was particularly impressed with his recent work [PRL 2010]. ... Now we understand how regulation via looping can work in the presence of large stochastic forces, a question to my knowledge not even framed before Meiners’ work. Meiners’ other research is similarly important... Meiners has had a truly remarkable number of undergraduate advisees.”

Reviewer (H)

“These experiments once again served as a wake-up call for me to think about ways that we might perform more subtle manipulations of macromolecules of biological interest. ...I enthusiastically support Chris’ promotion to full professor.”

Summary of Recommendation:

Professor Meiners is an outstanding biophysicist at the cutting edge of his field. He is a highly effective teacher and citizen. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Jens-Christian D. Meiners be promoted to the rank of professor of physics, with tenure, and professor of biophysics, with tenure, College of Literature, Science, and the Arts.



Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

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