

Approved by the Regents
May 19, 2011

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY

Alexey I. Nesvizhskii, Ph.D., assistant professor of pathology, Department of Pathology, Medical School, is recommended for promotion to associate professor of pathology, with tenure, Department of Pathology, Medical School [also being promoted to research associate professor, Center for Computational Medicine and Bioinformatics].

Academic Degrees:

Ph.D.	2001	University of Washington, Seattle
M.S.	1995	St. Petersburg State Technical University, Russia

Professional Record:

2007-present	Research Assistant Professor, Center for Computational Medicine and Bioinformatics, University of Michigan
2005-present	Assistant Professor of Pathology, University of Michigan
2003-2005	Research Scientist, Institute for Systems Biology, Seattle, Washington

Summary of Evaluation:

Teaching: Dr. Nesvizhskii has taught formal courses in bioinformatics and biostatistics and he has been the course master and primary instructor in a protein informatics course. For these formal courses, the evaluations from the students were uniformly high. He also has had graduate students and post-doctoral fellows in his laboratory constantly since his appointment in November 2005. He has also been a member of several thesis committees. Thus, he has made a strong commitment to the educational activities of the Department of Pathology. He has also taught national and international workshops.

Research: Dr. Nesvizhskii works in the areas of quantitative proteomics, specializing in the development of computational methods for processing and extracting information from complex proteomic data sets. His work has had international impact, and includes development of advanced computational models for protein identification, statistical models for modeling label-free protein quantification data and new computational approaches for the analysis of protein-protein interaction data. He is now the principal investigator on a R01 from the NIH for the analysis and statistical validation of proteomic data sets. He is also a co-investigator on six additional grants, studies for which require his unusual expertise. He has been invited to present his work 28 times since his appointment at national and international venues including Ghent University in Belgium, the University of Colorado, the University of Iowa, Case Western

Reserve University, and the University of Zurich. Also included are numerous invitations to present at national symposia. His work has been published in high-quality peer-reviewed journals including *Molecular and Cellular Proteomics*, *Journal of Proteome Research*, *Nature Methods*, *PNAS*, *Blood*, *Bioinformatics* and *Science*.

Recent and Significant Publications:

Breitkreutz A, Choi H, Sharom J, Boucher L, Neduva V, Larsen B, Lin, ZY, Breitkreutz B, Stark C, Liu G, Ahn J, Dewar-Darch D, Qin ZS, Pawson T, Gingras AC, Nesvizhskii AI, Tyers M: Global architecture of the yeast kinome interaction network, *Science* in press.

Choi H, Fermin D, Nesvizhskii AI: Significance analysis of spectral count data in label-free shotgun proteomics. *Mol Cell Proteomics* 7:2373-2385, 2008.

Choi H, Ghosh D, Nesvizhskii AI: Statistical validation of peptide identifications in large scale proteomics using target-decoy database search strategy and flexible mixture modeling. *J Proteome Res* 7:286-292, 2008.

Ulintz PJ, Bodenmiller B, Aebersold R, Andrews PC, Nesvizhskii AI: Investigating MS2-MS3 matching statistics: A model for coupling consecutive stage mass spectrometry data for increased peptide identification confidence. *Mol Cell Proteomics* 7: 71-87, 2008.

Nesvizhskii AI, Vitek O, Aebersold R: Analysis and validation of proteomic data generated by tandem mass spectrometry. *Nature Methods* 4:787-797, 2007.

Service: Dr. Nesvizhskii has made great contributions locally and nationally. At the University of Michigan, he has been a member of the Curriculum Development Committee and Admissions Committee for the Bioinformatics Program, a member of the Research Incentive Compensation Committee of the Department of Pathology, an interviewer for candidates for Pathology and CCMG faculty positions and a grant reviewer for pilot research projects for the Center for Computational Biology and Medicine. Nationally, he has been a grant reviewer for the NIH, the Engineering Research Council of Canada, and the Dutch Cancer Society. He has been a member of several important committees, including the Proteome Informatics Research Group of the Association of Biomolecular Research Facilities and the Organizing Committee for the Critical Assessment of Mass Spectrometry-based Peptide Identification Methods. He is member of the editorial board of *Practical Proteomics*, senior editor of the *Journal of Proteomics* and a section editor for the journal *Amino Acid*. Thus, it is clear that Dr. Nesvizhskii has made a significant number of time and effort contributions to his institution and to his profession.

External Review:

Reviewer A: "I would have no problem as an outsider supporting a proposal for promotion directly to Professor, particularly considering his growing international reputation and the long-term value to your institution of investing in this...leader....He really should be considered a key faculty member at your institution, insofar as he enables colleagues to pursue proteomics at the highest levels....Certainly, Alexey could have a transformative impact on our campus....Alexey is a very impressive and powerful scientist, with strengths as an innovator, teacher and collaborator."

Reviewer B: “Alexey Nesvizhskii has established himself as one of the most influential investigators in his field. He is a ‘thought leader’ in the literal sense of the term and is internationally recognized for his contributions to proteomics and bioinformatics. He has been successful both as an individual innovator and as a productive collaborator.”

Reviewer C: “He’s an excellent scientist, doing top-notch work in a difficult area, and is really at the forefront of his field. His impact on the field of proteomics has been large, and he’s managed to carve out a very unique niche for himself, with his major focus on computational proteomics and the theoretical interpretation of mass spectrometry data, a focus critical to the broader practical application of proteomics methods in biology and medicine.”

Reviewer D: “Alexey is one of the most recognizable names in computational proteomics, and arguably the most well-known. I would place him in the top five researcher of his rank (or any rank)...Any institute seeking to build a computational proteomics group would certainly place Alexey on a short-list of someone who would have the talent to build one and the influence to recruit talent and research grants.”

Reviewer E: “Alexey has a very strong record of service to national and international organizations. He is a prolific reviewer for many journals and grant review committees. As an indication of his stature, he has been invited to serve on several international committees to establish standards and procedures for data analysis and publication...His contributions to these initiatives have been substantial and his opinions and contributions highly respected by his peers.”

Summary of Recommendation:

Dr. Alexey Nesvizhskii is an established scientist whose work has had significant national and international impact in the field of quantitative proteomics, including the development of computational methods for processing and extracting information from complex proteomic datasets. His work has been well funded from external sources. He is regarded as an excellent educator whose teaching efforts have achieved high marks from students. I am pleased to recommend Alexey I. Nesvizhskii, Ph.D. for promotion to associate professor of pathology, with tenure, Department of Pathology.



James O. Woolliscroft, M.D.

Dean

Lyle C. Roll Professor of Medicine

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