PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
UNIT FOR LABORATORY ANIMAL MEDICINE

Yongqun He, Ph.D., M.S., associate professor of laboratory animal medicine, with tenure, Unit for Laboratory Animal Medicine, Medical School, is recommended for promotion to professor of laboratory animal medicine, with tenure, Unit for Laboratory Animal Medicine, Medical School.

Academic Degrees:
M.S.	2002	Virginia Polytechnic Institute and State University, Blacksburg, VA
Ph.D.	2000	Virginia Polytechnic Institute and State University, Blacksburg, VA
M.S.	1996	Beijing Agricultural University, Beijing, China
B.S.	1991	Jiangxi Agricultural University, Nanchang, Jiangxi

Professional Record:
2011- present	Associate Professor (with tenure), Unit for Laboratory Animal Medicine, Medical School Administration, University of Michigan, Ann Arbor, MI
2011- 2019	Associate Professor (without tenure), Department of Microbiology and Immunology, University of Michigan, Ann Arbor, MI
2005- 2011	Assistant Professor, Department of Microbiology and Immunology, University of Michigan, Ann Arbor, MI
2005- 2011	Assistant Professor, Unit for Laboratory Animal Medicine, Medical School Administration, University of Michigan, Ann Arbor, MI

Summary of Evaluation:

Teaching: Dr. He is a dedicated and talented teacher through both research mentorship and didactic teaching. Leaners included post-doctoral fellows, medical students, graduate students, Ph.D. students, masters students, medical students, and visiting scholars. He also provides direct mentorship through the Undergraduate Research Opportunity Program (UROP). He has been a lecturer in several bioinformatic and microbiology courses, including Introduction to Microbiology (MICRBIOL301), and Responsitble Conduct of Research (PIBS503). Teaching evaluations were generally average. However, as a testament to his teaching, he was nominated for the Outstanding UROP Mentor award in 2022-2023.

Research: Dr. He's work is in the area of bioinformatics and ontology research focused on vaccinology, host-pathogen interactions, nephrology, and comparative medicine. Dr. He has developed a web-based vaccination database called VIOLIN consisting of over 4,400 vaccines for 216 pathogens. In addition, he has developed several tools in vaccine ontology. His research can be further divided by the significant contributions he has made in the four following areas: 1) vaccine informatics and host-pathogen interaction research, 2) development of community-based ontologies and ontology-based tools, 3) ontology-based kidney precision medicine project, and 4) modeling and analysis of biological interaction networks using ontology and informatics. His research has been continuously funded since 2009, largely through the National Institutes of Health (NIH) and institutional funding. He is currently the principal investigator on a large U24 NIH

grant, one subK industry award, and one institutional grant. He is the co-investigator of an NIH R01, an NIH U01, and an NIH U54 grant. He has authored 151 peer reviewed manuscripts in top journals in his field such as *Frontiers in Pharmacology*, *Journal of Biomedical Semantics*, and *Vaccine*. Additionally, he has published one book with another in publication and several book chapters. His work has been recognized through invitations to give 33 extramural invited presentations nationally and internationally including in China and Australia. In 2020, he was awarded the Top 5 Best Paper Presentations for his paper presentation "Development of the International Classification of Diseases Ontology and its Application for COVID-19 Diagnostic Data Analysis" at the 19th International Conference on Bioinformatics.

Recent and Significant Publications:

Ong E, Wang LL, Schaub J, O'Toole JF, Steck B, Rosenberg AZ, Dowd F, Hansen J, Barisoni L, Jain S, de Boer IH, Valerius MT, Waikar SS, Park C, Crawford DC, Alexandrov T, Anderton CR, Stoeckert C, Weng C, Diehl AD, Mungall CJ, Haendel M, Robinson PN, Himmelfarb J, Iyengar R, Kretzler M, Mooney S, He Y, Kidney Precision Medicine Project, "Modelling kidney disease using ontology: insights from the Kidney Precision Medicine Project," *Nat Rev Nephrol*. 2020 Nov;16(11):686-696. doi: 10.1038/s41581-020-00335-w. Epub 2020 Sep 16. PMID: 32939051; PMCID: PMC8012202.

Ong E, Wang H, Wong MU, Seetharaman M, Valdez N, He Y, "Vaxign-ML: supervised machine learning reverse vaccinology model for improved prediction of bacterial protective antigens," *Bioinformatics*. 36(10): 3185-3191, 05/2020. PMID: 32096826.

Ong E, Wong M, Huffman A, He Y, "COVID-19 coronavirus vaccine design using reverse vaccinology and machine learning," *Front Immunol*. 11:1581, 01/2020. PMID: 32719684.

Ong E, Xiang Z, Zhao B, Liu Y, Lin Y, Zheng J, Mungall C, Courtot M, Ruttenberg A, He Y, "Ontobee: A linked ontology data server to support ontology term dereferencing, linkage, query, and integration," *Nucleic Acids Res*. 45(D1): D347-D352, 01/2017. PMID: 27733503.

Sarntivijai S, Lin Y, Xiang Z, Meehan TF, Diehl AD, Vempati UD, Schürer TC, Pang C, Malone J, Parkinson H, Liu Y, Takatsuki T, Saijo K, Masuya H, Nakamura Y, Brush MH, Haendel MA, Zheng J, Stoeckert CJ, Peters B, Mungall CJ, Carey TE, States DJ, Athey BD, He Y, "CLO: The Cell Line Ontology," *J Biomed Semantics*. 5:37, 01/2014. PMID: 25852852.

Service: Dr. He has extensive service contributions as evidenced by his international role as the current president of the Overseas Chinese Society for Microbiology. He has served on numerous international committees with most being the organizer or chair of various international and national conferences. He has been an ad hoc grant reviewer for several international and national foundations and study sections. Nationally, he was the co-organizer for the Workshop on COVID-19 Ontologies. He has served as a standing member of the NIH study section "Microbiology and Infectious Diseases B subcommittee" from 2016-2022. Dr. He served as the editor-in-chief for *Immunome Research* from 2013-2015 and sits on five editorial boards for journals in Bioinformatics and Microbiology. He is an ad hoc reviewer for more than numerous journals including *PLoS One*, the *Journal of Bacteriology*, and *Frontiers in Immunology*. Institutionally, he has served on the President's and Provost's COVID-19 Faculty Council, and has served on six dissertation committees.

External Reviewers:

Reviewer A: "He has however also excelled in the areas of in-silico research including applied Bayesian network modeling and vaccine informatics. Further to this, he has been maintaining his wet-lab research interest in microbial pathogenesis and host-pathogen interaction. Altogether this is the sign of a gifted leader and [the] transformation of these insights into developing vaccines against intracellular pathogens is even more impressive. In my opinion, this shows significant determination, as a scientist, conducting relevant and timely research."

Reviewer B: "…it's evident that Dr. He has adeptly carved out a distinctive and valuable niche in ontology development. This is underscored by his successful collaborations and securing of NIH grants…While the current landscape might offer an abundance of omics data analysts, identifying a true authority in the intricacies of ontology development, like Dr. He remains a more elusive pursuit. His profound expertise has the potential to catalyze transformative shifts within a research domain, notably exemplified by the prospect of addressing gaps in ontology within the context of kidney diseases."

Reviewer C: "The fruits of Dr. He's efforts in project development are significant. Dr. He's publications appear in high-impact journals such as PNASS, Nucleic Acids Research, Briefings in Bioinformatics, and Frontiers in Microbiology. His papers are widely read, with several recent publications reaching hundreds of citations."
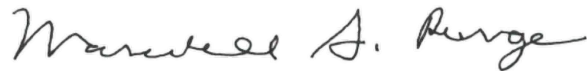
Reviewer D: "Dr. He has trained many graduate and undergraduate students, postdocs, and visiting scholars. Many of them have gone on to become independent investigators at Institutions around the world…I was very much impressed by the very long list of names of undergraduate[s] whose lives had been very positively touched by Dr. He…he went extra miles to recruit a large cohort of undergraduate students to perform bioinformatics research during the COVID-19 pandemic, which was highly beneficial to the students since it was difficult or even impossible for undergraduate students to find a laboratory for meaningful training during the pandemic. These efforts reflect Dr. He's keen interest not only in teaching the next generation of scientists but also in helping them in difficult times."

Reviewer E: "His research has been funded by a NIH R01 grant previously and more recently, by a NIH U24 grant. He has also been invited to lead the ontology development to support the NIH-funded kidney precision medicine project. He's leadership role in biomedical ontology research was also evidenced by invitation[s] to [sic] presentations and hosting several international or national conferences such as [the] 2022 International Conference on Biomedical Ontology (ICBO 2022)."

Reviewer F: "Dr. He has maintained a steady, respectable track record for internal and external funding since 2005. In addition, he has established an exceptional reputation through his expertise, as reflected in his publications, speaking engagements, internal and external service activities, teaching/mentoring, and research and clinical collaborations. According to Google Scholar, as of September 29, 2023, Dr. He has 9,182 citations and an h-index of 51, which is exceptional and well above the average range (i.e., an h-index of 15-20) for the post of professor."

Summary of Recommendations:
Dr. He is an exceptional scientist who has established a national and international reputation for his outstanding research program. He is an outstanding educator, and scholar who has made significant contributions to the education, research, and service missions. I am pleased to recommend Yongqun He, Ph.D., M.S. for promotion to professor of laboratory animal medicine, with tenure, Unit for Laboratory Animal Medicine, Medical School.

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

May 2024