PROMOTION RECOMMENDATION
The University of Michigan
School of Public Health
Department of Biostatistics

Jian Kang, assistant professor of biostatistics, Department of Biostatistics, School of Public Health, is recommended for promotion to associate professor of biostatistics, with tenure, Department of Biostatistics, School of Public Health.

Academic Degree:

Ph.D. (Biostatistics)	2011	University of Michigan
M.Sc. (Mathematics)	2007	Tsinghua University
B.Sc. (Statistics)	2005	Beijing Normal University

Professional Record:

2015 - Present   Assistant Professor, Department of Biostatistics, Kidney Epidemiology and Cost Center, University of Michigan

2011 – 2015   Assistant Professor, Department of Biostatistics and Bioinformatics, Department of Radiology and Imaging Sciences, Center for Biomedical Imaging Statistics, Emory University

Summary of Evaluation:

Teaching: Professor Kang is an accomplished teacher. At Emory, he taught three different courses BIOS 516 (Applied Biostatistics), BIOS 707 (Advanced Linear Models), BIOS 723 (Stochastic Processes) and BIOS 731 (Advanced Statistical Computing). While teaching evaluations are notoriously hard to compare across institutions with different cultures and norms, we note that Professor Kang's scores were consistently encouraging in absolute terms (averaging ~4.3 – 4.4 out of 5.0) and that Professor Kang earned a biostatistics department teaching award honorable mention in 2013.

At Michigan, Professor Kang taught BIOSTAT 615 (Statistical Computing, 69 registered students), one of our largest Masters level elective classes and scored 4.26 (Q1) and 4.42 (Q2) on a first attempt. He is also very active in doctoral student advising. Three of his doctoral students have graduated and one is now an assistant professor at Weill Cornell Medical Center in New York. Professor Kang has co-authored papers with doctoral students and is a sought-after member for doctoral thesis committees, where he contributes knowledge of Bayesian statistics, computation and imaging.

Research: Professor Kang has a truly outstanding research record. His papers often combine statistical innovations and ideas with computational innovations that allow rich modeling frameworks to be applied to large and interesting datasets. He is a world leader in the application of Bayesian models to big data problems, with a focus on brain imaging. Methods developed by Professor Kang enable high-quality and easier to interpret meta-analyses that combine brain-imaging data across multiple laboratories or experiments, enable researchers to describe connectivity between different areas of the brain, and allow researchers to combine

brain-imaging data with other types of high dimensional data as might result from modern genetic studies. Professor Kang's methodological contributions have helped move analyses of brain imaging data beyond traditional pixel-by-pixel analyses to more sophisticated analyses that describe and explore more sophisticated spatial patterns. Beyond the analyses of imaging data, Professor Kang has contributed to a variety of other statistical methods ranging from modeling of the spatial distribution of drug resistant infections, to DNA methylation states, to HIV testing rates.

Professor Kang has 50 published articles (including 11 as first or last author; and eight where a doctoral student is first author – a generous practice that we typically encourage). Among methodological publications, 13 are in top journals – whether for biostatistics in general (*Journal of the American Statistical Association*, *Biometrics*, *Annals of Applied Statistics*, *Statistics in Medicine*) or for his chosen application areas (*NeuroImage*, *Human Brain Mapping*, *Bioinformatics)*. His most cited manuscripts include methodological work on meta-analysis on functional neuro-imaging data (Kang et al, *Journal of the American Statistical Association*, 2011; 21 citations tracked by *Scopus*) and an application of these methods to characterize emotion perception and experience in schizophrenia patients (Taylor et al, *Biological Psychiatry,* 2012; 78 citations tracked by *Scopus*).

As a measure of the quality of these contributions, it is noteworthy that Professor Kang is not only a sought after contribution for a variety of externally funded researcher projects but that he also co-leads, through the Multiple Principal Investigator (MPI) mechanism, an NIH R01 research grant focused on the development of new statistical methods.

Recent and Significant Publications:

Kang J, Johnson TD, Nichols TE, Wager TD. (2011) Meta analysis of functional neuroimaging data via Bayesian spatial point processes. *Journal of the American Statistical Association*, 106(493):124-134.

Kang J, Nichols TE, Wager TD, Johnson TD. (2014) A Bayesian hierarchical spatial point process model for multi-type neuroimaging meta-analysis. *Annals of Applied Statistics*, 8(3): 1800-1824.

Kang J, Zhang N, Shi R. (2014) A Bayesian nonparametric model for multivariate spatial binary data with application to a multidrug-resistant tuberculosis (MDR-TB) study. *Biometrics*, 70(4):981-992.

Zhao Y*#, Kang J†#, Yu T† (2014) A Bayesian nonparametric mixture model for selecting gene and gene-sub network, *Annals of Applied Statistics*, 8(2):999-1021.

An Q*, Kang J†, Song R, Hall HI. (2016) A Bayesian hierarchical model with novel prior specifications for estimating HIV testing rates. *Statistics in Medicine*, 35(9):1471-1487.

Service: Professor Kang has served on a variety of key departmental committees. At Michigan, he is serving as a member of our admissions committee and previously served as a member of our faculty search committee. Both committees have a substantial workload and play a key role in the success of the department. Previously, he served on the qualifying exam, faculty search and admissions committees at Emory.

Professor Kang has been a key contributor to the profession, particularly through his extensive service as a reviewer for top statistical journals and through contributions to the Section on Statistics and Imaging of the American Statistical Association. He was elected by the Section on Statistics in Imaging of the American Statistical Association as a program chair for its 2016 and 2017 annual meetings, an important role that demonstrates the esteem other colleagues have for his vision and broad understanding of the field. Professor Kang's regular service as a reviewer for top journals (averaging ~10 manuscript reviews per year) demonstrates both breadth of expertise and clarity of vision, two qualities that are much sought after by journal editors.

External Reviewers:

Reviewer A: "I would place his record as among the strongest of his cohort. Dr. Kang's pursuit of funding (collaborative and PI) has been exemplary, and there appears to be no concern whatsoever of his ability to raise funds for his research efforts"

Reviewer B: "Dr. Kang is an example of how Statistical research should be conducted. [He] is a respected researcher in his field because of his promising work, interest in scientific applications and good productivity. He also has a genuine interest in mentoring students."

Reviewer C: "The quality of his work is outstanding…the quantity of his work is also exceptional. I hold appointments at two academic institutions. At either institution someone with Dr. Kang's record of research productivity, funding, teaching, and service would be eligible for promotion to associate professor with tenure."

Reviewer D: "One thing that stands out to me in Dr. Kang's record to date is his ability to publish strong methodological papers in leading statistics, neuroimaging, and computational biology journals. There are emerging and consistent themes in Dr. Kang's statistical methods work, which should provide him with many interesting projects in the years to come."

Reviewer E: "I am most familiar with Dr. Kang's work in developing new statistical methods for analyzing neuroimaging meta-analysis data, which I think is terrific. [His] service to the profession is off to a strong start. In addition, he is clearly a strong mentor, as several of his PhD students have recently won students awards."

Reviewer F: "I can say that Prof. Kang's achievements at this point in terms of publication and external funding are in line with faculty who have recently earned tenure and promotion at my institution. Overall, I find that Prof. Kang, while still quite early in his career, has shown himself to be a productive scholar, a capable mentor, and a responsible citizen."

Reviewer G: "I would consider him among the top in his cohort of statisticians in the area of neuro-statistics and also within the broader community of statisticians working on high dimensional models. He is on a strong trajectory towards even having a stronger presence not only in neuro-statistics but also in other areas involving high dimensional models and statistical learning."

Reviewer H: "Professor Kang is among the very best in his cohort in terms of the quality and quantity of his work. I have no doubt that he would be promoted to the rank of Associate Professor at [my institution]."

Reviewer I: "The quality and quantity of Dr. Kang's work place him among the top statisticians with expertise on neuroimaging data analysis in his cohort. He enjoys a significant international profile.   Clearly, Dr. Kang is one of [the] leading figures in neuroimaging data analysis."

Summary of Recommendation:
Professor Kang is an outstanding biostatistician and a key asset to the university and the department. He has made creative and important contributions to methodology for analysis of high-dimensional data, with a focus on brain-imaging but extending to diverse areas ranging from genomics to the modeling of infectious disease. He is also an excellent teacher and active in service to the profession. It is with the support of the School of Public Health Executive Committee that I recommend Jian Kang for promotion to associate professor of biostatistics, with tenure, Department of Biostatistics, School of Public Health.
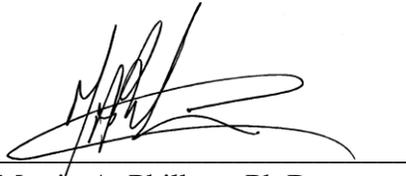
Martin A. Philbert, Ph.D.
Dean, School of Public Health

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