

**Mengyuan Kan, Ph.D.****Research Associate****Biomedical Informatics, University of Pennsylvania**

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[mengykan@pennmedicine.upenn.edu](mailto:mengykan@pennmedicine.upenn.edu); [mengyuankan@gmail.com](mailto:mengyuankan@gmail.com)Website: <https://mengyuankan.github.io/>**Research Interests**

Bioinformatics, genomics, pharmacogenomics, genetics, multiomics integration, respiratory diseases, open-source tool development

**Education**

2009-2015 Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, Shanghai, China

Ph.D. in Genetics

Mentor: Dr. Lin He

2011-2013 Center for Statistical Genetics, Baylor College of Medicine

Visiting Ph.D. Student in Statistical Genetics

Mentor: Dr. Suzanne M Leal

2005-2009 East China University of Science and Technology, Shanghai, China

B.S in Biological Science

**Employment**

2021-present Department of Biostatistics, Epidemiology, and Informatics,

Institutes of Biomedical Informatics, University of Pennsylvania

Research Associate

Supervisor: Dr. Blanca E Himes

2016-2021 Department of Biostatistics, Epidemiology, and Informatics,

Institutes of Biomedical Informatics, University of Pennsylvania

Postdoctoral Researcher in Biomedical Informatics

Mentor: Dr. Blanca E Himes

**Selected Peer-reviewed Publications**

\* indicates co-first authored papers

***Multiomics Integration***

1. **Kan M**, Diwadkar AR, Shuai H, Joo J, Wang AL, Ong MS, Sordillo JE, et al. Multiomics analysis identifies BIRC3 as a novel glucocorticoid response-associated gene. *J Allergy Clin Immunol.* 2022

Jun;149(6):1981-1991.

2. **Kan M**, Sun M, Jiang X, Diwadkar AR, Parikh V, Cao G, GebSKI E, Jester W, Lan B, Panettieri RA Jr, Koziol-White C, Lu Q, Himes BE. CEBPD modulates the airway smooth muscle transcriptomic response to glucocorticoids. *Respir Res.* 2022 Jul 28;23(1):193.
3. **Kan M**, Koziol-White C, Shumyatcher M, Johnson M, Jester W, Panettieri RA Jr, Himes BE. Airway Smooth Muscle-Specific Transcriptomic Signatures of Glucocorticoid Exposure. *Am J Respir Cell Mol Biol.* 2019 61(1):110-120.

#### ***Open-source tools and their applications***

4. **Kan M**, Diwadkar AR, Saxena S, Shuai H, Joo J, Himes BE. REALGAR: a web app of integrated respiratory omics data. *Bioinformatics.* 2022 Sep 15;38(18):4442-4445.
5. **Kan M**, Shumyatcher M, Diwadkar AR, Soliman G, Himes BE. Integration of Transcriptomic Data Identifies Global and Cell-Specific Asthma-Related Gene Expression Signatures. *AMIA Annu Symp Proc.* 2018 Dec 5;2018:1338-1347. **Finalist of AMIA 2018 Student Paper Award.**
6. Diwadkar AR, **Kan M**, Himes BE. Facilitating Analysis of Publicly Available ChIP-Seq Data for Integrative Studies. *AMIA Annu Symp Proc.* 2020 Mar 4;2019:371-379. **Received AMIA 2019 Distinguished Paper Award**
7. Xu Y, Zhang Y, García-Cañaveras JC, Guo L, **Kan M**, Yu S, Blair IA, Rabinowitz JD, Yang X. Chaperone-mediated autophagy regulates the pluripotency of embryonic stem cells. *Science.* 2020 Jul 24;369(6502):397-403.
8. Balamuth F, Alpern ER, **Kan M**, Shumyatcher M, Hayes K, Lautenbach E, Himes BE. Gene Expression Profiles Differentiate Viral from Bacterial Source Pathogen in Children with Suspected Sepsis in the Emergency Department. *Ann Emerg Med.* 2020 Jun;75(6):744-754.

#### ***Asthma genetics and pharmacogenetics***

9. Joo J, Mak ACY Mak, Xiao S, Sleiman PM, Hu D, Huntsman S, Eng C, **Kan M**, Diwakar AR, et al. Genome-wide association study in minority children with asthma implicates DNAH5 in bronchodilator responsiveness. *Sci Rep.* 2022 Jul 22;12(1):12514.
10. Panganiban R, Sun M, Dahlin A, Park H, **Kan M**, Himes BE, et al. A functional splicing variant associated with decreased asthma risk abolishes the ability of gasdermin B (GSMD5) to induce epithelial cell pyroptosis. *J Allergy Clin Immunol.* 2018 142(5):1469-1478.
11. Dahlin A, Sordillo JE, Ziniti J, Iribarren C, Lu M, Weiss ST, Tantisira KG, Lu Q, **Kan M**, Himes BE, et al. Large-scale, multiethnic genome-wide association study identifies novel loci contributing to asthma susceptibility in adults. *J Allergy Clin Immunol* 2019 143(4):1633-1635.

#### ***NHLBI Exome Sequencing Project (ESP)***

12. **Kan M**, Auer PL, Wang GT, Bucayas KL, Hooker S, Rodriguez A, Li B, Ellis J, Cupples LA, Chen YD, et al. Rare variant associations with waist-to-hip ratio in European-American and African-American women from the NHLBI-Exome Sequencing Project. *Eur J Hum Genet.* 2016 24(8):1181-7.
13. He Z, O'Roak BJ, Smith JD, Wang G, Hooker S, Santos-Cortez RL, Li B, **Kan M**, Krumm N, Nickerson DA, et al. Rare-variant extensions of the transmission disequilibrium test: application to autism exome sequence data. *Am J Hum Genet.* 2014 94:33-46.

#### ***Cancer genomics and epigenomics***

14. Zhang L, **Kan M\***, Zhang M, Yu S, Xie H, Gu Z, Wang H, Zhao S, Zhou G, Song H, Zheng C. Multiregion sequencing reveals intratumor heterogeneity of driver mutations in TP53-driven non-small

cell lung cancer. *Int J Cancer*. 2017 140(1):103-10.

15. Liu F, Zhou Y, Zhou D, **Kan M**, Niu X, Zhang Z, Zhang D, Tao L, He L, Zhang L, Liu Y. Whole DNA methylome profiling in lung cancer cells before and after epithelial-to-mesenchymal transition. *Diagnosis Pathology*. 2014 9:66.

### ***De novo genome sequencing***

16. Wu C, Zhang D, **Kan M\***, Lv Z, Zhu A, et al. The draft genome of the large yellow croaker reveals well-developed innate immunity. *Nat Commun*. 2014 5:5227.

### ***Genetic and epigenetic association studies***

17. Weng X, Zhang H, **Kan M\***, Ye J, Liu F, et al. Leukocyte telomere length is associated with advanced age-related macular degeneration in the Han Chinese population. 2015. *Exp Gerontol* 69:36-40.
18. **Kan M**, Weng X, Wang T, Liu F, Ye J, et al. No evidence of association between variant rs2075650 in lipid metabolism-related locus APOE/TOMM40 and advanced age-related macular degeneration in Han Chinese population. *Exp Biol Med (Maywood)*. 2015 240:230-234.
19. **Kan M**, Liu F, Weng X, Ye J, Wang T, et al. Association study of newly identified age-related macular degeneration susceptible loci SOD2, MBP, and C8orf42 in Han Chinese population. *Diagn Pathol*. 2014 9:73.
20. Qian D, **Kan M\***, Weng X, Huang Y, Zhou C, et al. Common variant rs10033900 near the complement factor I gene is associated with age-related macular degeneration risk in Han Chinese population. *Eur J Hum Genet*. 2014 22:1417-1419.
21. Zheng Y, **Kan M\***, Yu L, Niu X, Zhou D, He L, Lu S, Liu Y. GPC5 rs2352028 polymorphism and risk of lung cancer in Han Chinese. 2012 *Cancer Invest* 30:13-19.
22. **Kan MY**, Zhou DZ, Zhang D, Zhang Z, Chen Z, et al. Two susceptible diabetogenic variants near/in MTNR1B are associated with fasting plasma glucose in a Han Chinese cohort. *Diabet Med*. 2010 27:598-602.

### ***Review***

23. **Kan M**, Himes BE. Insights into Glucocorticoid Responses Derived from Omics Studies. *Pharmacol Ther*. 2021 Feb;218:107674.
24. **Kan M**, Shumyatcher M, Himes B. Using omics approaches to understand pulmonary diseases. *Respir Res*. 2017 18(1):149.

### **Book Chapter**

**Kan M**, Himes BE. Genetics and Pharmacogenetics of Asthma. *Precision Therapy in Pulmonary, Critical Care and Sleep Medicine*. Gomez JL, Himes BE, Kaminski N (eds). 1st ed. Springer, New York, NY. 2020. Chapter 3: 25-37p.

### **Complete List of Published Work in MyBibliography**

<https://www.ncbi.nlm.nih.gov/sites/myncbi/1NEHhRomJXK5j/bibliography/48466198/public/?sortby=pubDate&sdirection=descending>

### **Invited Talks**

2021 American Thoracic Society, Mini Symposium: Omics in Asthma and COPD (Virtual)

*Multi-Omics Analysis Identifies a Novel Glucocorticoid Response-Associated Locus Near BIRC3*

2020 American Thoracic Society, Newman Stephens Memorial Mini Symposium: a Legacy of Science and Success (Virtual)  
*CEBPD Influences the Airway Smooth Muscle Transcriptomic Response to TNF $\alpha$  and Budesonide Exposure*

2018 American Medical Informatics Association Annual Symposia, San Francisco, CA  
*Integration of Transcriptomic Data Identifies Global and Cell-Specific Asthma-Related Gene Expression Signatures* (Finalist of Student Paper Award)

## **Conference Abstracts**

2022 American Society of Human Genetics Annual Meeting, San Francisco, CA  
*Genome-Wide Analysis of SARS-CoV-2 Variants in the United States*

2021 American Society of Human Genetics Annual Meeting (Virtual)  
*Multi-omics analysis identifies a novel glucocorticoid response-associated locus near BIRC3*

*ACE2 and TMPRSS2 gene expression changes are not associated with cigarette smoke and glucocorticoid exposure*

2020 American Thoracic Society Annual Meeting (Virtual)  
*CEBPD Influences the Airway Smooth Muscle Transcriptomic Response to TNF $\alpha$  and Budesonide*

2019 American Thoracic Society Annual Meeting, Dallas, TX  
*Airway Smooth Muscle-Specific Transcriptomic Signatures of Glucocorticoid Exposure in Asthma and Non-Asthma Donors*

2013 American Society of Human Genetics Annual Meeting, San Francisco, CA  
*Detecting rare variant associations with waist-to-hip ratio in NHLBI-ESP female cohorts.*

## **Open-Source Tools**

RAVED (<https://github.com/HimesGroup/raved>) - Reproducible Analysis and Validation of Expression Data  
Brocade (<https://github.com/HimesGroup/brocade>) - Reproducible Analysis of ChIP-Seq Data  
REALGAR (<http://realgar.org/>) - Reducing Associations by Linking Genes And omics Results

## **Teaching**

2018-2021 Guest Lecturer. Data Science for Biomedical Informatics (BMIN503), University of Pennsylvania, Philadelphia  
Lecture(s): 1) Gene expression data analysis: microarray and RNA-Seq and 2) Functional enrichment analysis.

2020-2022 Guest Lecturer. Introduction to Biomedical Informatics (BMIN 501), University of Pennsylvania, Philadelphia

Lecture(s): Introduction to bioinformatics

2021-2023 Guest Lecturer. Genetic Epidemiology (EPID 575), University of Pennsylvania, Philadelphia

Lecture(s): Community Resources for Genetic Studies

### **Lectures by Invitation**

2021 Instructor. A Practical, Hands-on Introduction to Genomic Analysis in Pulmonary Medicine (Postgraduate Course 7), American Thoracic Society (Virtual)

Lecture(s): RNA-Seq: Alignment, QC, and Analysis

### **Memberships**

American Medical Informatics Association (AMIA)

American Society of Human Genetics (ASHG)

American Thoracic Society (ATS)

### **Journal and Conference Reviewer**

AMIA Annual Symposium Proceedings

AMIA Joint Summits on Translational Science

Scientific Reports

Pediatric Pulmonology