

DePaul University
Department of Mathematical Sciences
2320 N. Kenmore Ave.
Chicago, IL 60614-3210

Phone: (773) 325-1347
Email: hku4@depaul.edu

Education

2012 May Ph.D. in Statistics, Oklahoma State University, Stillwater, OK.
2007 M.S. in Statistics, Oklahoma State University, Stillwater, OK.
2002 M.S. in Mathematics, Pittsburg State University, Pittsburg, KS.
1997 B.S. in Chemical Engineering, Feng Chia University, Taiwan.

Academic Appointments

2015 - present DePaul University, Department of Mathematical Sciences
 Assistant Professor
2012 - 2015 University of Texas Southwestern Medical Center
 Postdoctoral Fellow

Teaching Experience

- DePaul University
 - MAT 137 - Business Statistics
 - MAT 421 - Basic Biostatistics
 - MAT 424 - Advanced Biostatistics
 - MAT 448 - Statistical Methods Using SAS
 - MAT 451 - Probability and Statistics I
 - MAT 456 - Applied Regression Analysis
 - MAT 528 - Applied Time Series and Forecasting
- Oklahoma State University
 - STAT 2013 - Elementary Statistics
 - STAT 2023 - Elementary Statistics for Business & Economics
 - STAT 4013 - Statistical Method I
 - STAT 4033 - Engineering Statistics
 - STAT 4053 - Statistical Method I for the Social Sciences

Research Interests

Mathematical statistics, biostatistics, statistical genetics, genome-wide association study in high-dimensional data, and statistical data analysis and its applications.

Publications

- Zhou, Z., Ku, H.-C., Xing, G, and Xing, C. (2018). Decomposing Pearson's χ^2 test: a linear regression and departure from linearity. *Annals of Human Genetics*, 82, 318-

324.

- Zhou, Z., Ku, H.-C., Huang, Z., Xing, G., and Xing, C. (2017). Differentiating the Cochran-Armitage Trend Test and Pearson's χ^2 Test: Location and Dispersion. *Annals of Human Genetics*, 81, 184-189.
- Vaisnav, M., Xing, C., Ku, H.-C., Hwang, D., Stojadinovic, S., Pertsemlidis, A., and Abrams, J. M. (2014). Genome-wide Association Analysis of Radiation Resistance in *Drosophila melanogaster*. *PLoS One*, 9, e104858.
- Lin, C.-Y., Xing, G., Ku, H.-C., Elston, R. C., and Xing, C. (2014). Enhancing the Power to Detect Low-Frequency Variants in Genome-wide Screens. *Genetics*, 196, 1293-1302.
- Mootha, V., Gong, X., Ku, H.-C., and Xing, C. (2014). Association and familial segregation of TCF4 polymorphisms CTG18.1 and rs613872 in Fuchs' endothelial corneal dystrophy. *Investigative Ophthalmology and Visual Science*, 55, 33-42.
- Xing, G., Ku, H.-C., and Xing, C. (2013). A comparison of the likelihood ratio test and the variance-stabilising transformation-based tests for detecting association of rare variants. *Annals of Human Genetics*, 77, 333-335.
- Li, Y., Xing, C., Tian, Z., and Ku, H.-C. (2012). Genetic variant I148M in PNPLA3 is associated with the ultrasonography-determined steatosis degree in a Chinese population. *BMC Medical Genetics*, 13, 113.
- Zhu, L., Chen, S., Jiang, Z., Zhang, Z., Ku, H.-C., Li, X., McCann, M., Harris, S., Lust, G., Jones, P., and Todhunter, R. (2012). Identification of quantitative trait loci for canine hip dysplasia by two sequential multipoint linkage analyses. *Journal of Applied Statistics*, 39, 1719-1731.
- Ku, H.-C. and Zhu, L. (2011). Bayesian regression analysis of quantitative traits with correlated phenotypic data. *JSM Proceedings*, Section on Bayesian Statistical Science. Alexandria, VA: American Statistical Association, pp. 4909-4920.

Scholarly Presentations

Invited Research Presentations

- A linear mixed model framework to study gene-environment interactions. The 11th ICSA International Conference, Hangzhou, China. December 2019.
- Detecting gene-environment interaction by linear mixed effects models. Mississippi State University. February 2015.
- A novel statistical method for detecting quantitative trait loci associated with canine hip dysplasia. Session of Statistical Developments and Applications in Veterinary Medicine. International Chinese Statistical Association, Boston, MA. June 2012.

Contributed Research Presentations

- Testing nonlinear gene-environment interaction through varying coefficient and linear mixed model. Joint Statistical Meetings, Vancouver, Canada. July 2018.
- A procedure to control for population stratification in genome-wide association studies with rare variants. Joint Statistical Meetings, Baltimore, MD. July 2017.
- Simulation studies for comparison of gene-based association tests. Joint Statistical Meetings, Chicago, IL. July 2016.

- Simulated data for SNP set association tests in family samples. International Chinese Statistical Association Symposium, Atlanta, GA. June 2016.
- Bayesian regression approaches for quantitative trait loci mapping. The 23rd Annual Research Symposium. Oklahoma State University, Stillwater, OK. February 2012.
- Bayesian regression approaches for quantitative trait loci mapping. Departmental Seminar. Department of Statistics, Oklahoma State University, Stillwater, OK. February 2012.
- Bayesian regression analysis of quantitative traits with correlated phenotypic data. Joint Statistical Meetings, Miami Beach, FL. August 2011.
- Using variance component linkage analysis to detect quantitative trait loci for canine hip dysplasia in a crossbred pedigree. The 21st Annual Research Symposium. Oklahoma State University, Stillwater, OK. February 2010.

Posters

- A non-parametric alternative to the Cochran-Armitage trend test in genetic case-control association studies: the two-sided Jonchheere's test. Research Appreciation Day, University of North Texas Health Science Center, Fort Worth, TX. March 2021.
- Decomposing Pearson's χ^2 test: a linear regression and departure from linearity. Joint Statistical Meetings, Vancouver, Canada. July 2018.
- Detecting association for low-frequency variants by the standardized linkage disequilibrium in case-control genome-wide screens. American Society of Human Genetics, Boston, MA. October 2013.
- A powerful multivariate model for multiple-trait genome-wide association mapping. Joint Statistical Meetings, San Diego, CA. July 2012.
- Bayesian regression analysis of quantitative traits with correlated phenotypic data. Oklahoma Research Day. Cameron University. Lawton, OK. November 2011.
- A weighted PCA-based mixed linear model for detecting QTL in a crossbred canine pedigree. Oklahoma Research Day. Cameron University. Lawton, OK. November 2010.
- An analysis of variance on proportions with unequal sample sizes. The 19th Annual Research Symposium. Oklahoma State University. Stillwater, OK. February 2008.

Departmental/College Service at DePaul

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| • Adjunct Personnel Committee | 2016, 2018, 2020 |
| • Master of Science Committee (Applied Math/Applied Stat) | 2015 – current |
| • Search Committee/Statistics | 2015 – 2016 |
| • College of Science and Health's Pre-Health Advising Committee | 2017 – current |

External Service Activities

- Reviewer of Journal of Advanced Research. February 2020, June 2020.
- Reviewer of book chapter for International Chinese Statistical Association Book Series: Contemporary Biostatistics with Biopharmaceutical Application. April 2018.
- Session chair at the Joint Statistical Meetings, Baltimore, MD. July 2017.

Grants and Awards

- CSH Faculty Summer Research Grant, DePaul University 2016
- Department of Statistics Travel Grant, Oklahoma State University 2012
- GPSGA Student Travel Grant, Oklahoma State University 2011
- Research Symposium Award, Oklahoma State University 2008

Professional Affiliations

- American Statistical Association
- International Chinese Statistical Association