

# Kaixiong (Calvin) YE

Assistant Professor

Department of Genetics | Institute of Bioinformatics

University of Georgia

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<http://yelab.genetics.uga.edu/>

## EDUCATION

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PhD, 2010 – 2015, Nutritional Genomics, Division of Nutritional Sciences, Cornell University, Ithaca, NY  
Committee: Zhenglong Gu (Chair), Kimberly O'Brien, Tom Brenna, James Booth, Jason Mezey

BS, 2004 – 2008, Biology, Wuhan University, Wuhan, China

## PROFESSIONAL & RESEARCH EXPERIENCE

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**Assistant Professor:** 2018 – present, Department of Genetics, University of Georgia

**Assistant Professor:** 2018 – present, Institute of Bioinformatics, University of Georgia

**Post-doctoral Associate:** 2015 – 2018, Department of Biological Statistics and Computational Biology, Cornell University (Advisor: Alon Keinan)

**Bioinformatician:** 2009 – 2010, Beijing Genomics Institute at Shenzhen, Shenzhen, China

**Research Assistant:** 2008 – 2009, Kunming Institute of Zoology, Chinese Academy of Sciences (Advisor: Bing Su)

**Research Assistant:** 2006 – 2007, Laboratory of Plant Systematics and Evolutionary Biology, Wuhan University (Advisor: Shuangquan Huang)

## PEER-REVIEWED PUBLICATIONS (\*co-first authors; ^co-corresponding authors)

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29. Sun Y, Zhou J, Ye K. Prioritizing Causal Risk Factors for Severe COVID-19: An Exhaustive Mendelian Randomization Study. (submitted)

28. Wang Y, Guo X, Ye K, Orth M, Gu Z. Expansion of pathogenic mitochondrial DNA heteroplasmies in Huntington's disease patients. (revised)

27. Sun Y, Zhou J, Ye K. White blood cells and severe COVID-19: a Mendelian randomization study. *Journal of Personalized Medicine*. (2021)

26. Zhou J, Liu C, Francis M, Sun Y, Ryu MS, Grider A, Ye K. Genetically predicted circulating levels of copper and zinc are associated with osteoarthritis but not with rheumatoid arthritis. *Osteoarthritis and Cartilage*. (2021)

25. Francis M, Li C, Sun Y, Zhou J, Li X, Brenna JT, Ye K. Genome-wide association study of fish oil supplementation on lipid traits in 81,246 individuals reveals new gene-diet interaction loci. *PLOS Genetics*. (2021)

24. Zhou J, Sun Y, Huang W, Ye K. Altered blood cell traits underlie a major genetic locus of severe COVID-19. *The Journals of Gerontology: Medical Sciences*. (2021)

23. Ma Y, ..., Ye K, Yin H, Cai H. Long chain fatty acyl-CoA synthetase 1 promotes prostate cancer progression by elevation of lipogenesis and fatty acid beta-oxidation. *Oncogene*. (2021)

22. Zhou J, Liu C, Sun Y, Huang W, Ye K. Cognitive disorders associated with hospitalization of COVID-19: Results from an observational cohort study. *Brain, Behavior, and Immunity*. (2020)

21. Zhou J, Liu C, Francis M, Sun Y, Ryu MS, Grider A, **Ye K**. The Causal Effects of Blood Iron and Copper on Lipid Metabolism Diseases: Evidence from Phenome-wide Mendelian Randomization Study. *Nutrients*. (2020)
20. Wang Z, Zhou J, Marshall B, Rekaya R, **Ye K**, Liu H. SARS-CoV-2 receptor ACE2 is enriched in a subpopulation of mouse tongue epithelial cells in non-gustatory papillae, but not in taste buds or embryonic oral epithelium. *ACS Pharmacology & Translational Science*. (2020)
19. Yuan M, ..., Sun Y, ..., **Ye K**, et al. zDHHC12-mediated Claudin-3 S-Palmitoylation Determines Ovarian Cancer Progression. *Acta Pharmaceutica Sinica B*. (2020)
18. Beach S, ..., **Ye K**. Childhood Adversity is Linked to Adult Health Among African Americans via Adolescent Weight Gain and Effects are Genetically Moderated. *Development and Psychopathology*. (2020)
17. Norris ET, Rishishwar L, Chande AT, Conley AB, **Ye K**, Valderrama-Aguirre A, Jordan IK. Admixture-enabled selection for rapid adaptive evolution in the Americas. *Genome Biology*. 21(1):29 (2020)
16. Huang L, **Ye K**, et al. IL-2 inducible T cell kinase (ITK) deficiency impairs early pulmonary protection against Mycobacterium tuberculosis infection. *Frontiers in Immunology*. (2020)
15. Fragoza R, ..., **Ye K**, et al. Extensive disruption of protein interactions by genetic variants across the allele frequency spectrum in human populations. *Nature Communication*. 10(1):4141 (2019)
14. Si Y, Liu X, **Ye K**, Bonfini A, Hu X, Buchon N, Gu Z. Glucomanan hydrolysate promotes gut proliferative homeostasis and extends lifespan in *Drosophila melanogaster*. *The Journals of Gerontology, Series A: Biological Sciences and Medical Sciences* doi:10.1093/gerona/gly189 (2018)
13. Zhang R, Wang Y, **Ye K**, Picard M, Gu Z. Independent impacts of aging on mitochondrial DNA quantity and quality in humans. *BMC Genomics* 18, 890 (2017)
12. **Ye K**, Gao F, Wang D, Bar-Yosef O, Keinan A. Dietary adaptation of *FADS* genes in Europe varied across time and geography. *Nature Ecology and Evolution* 1, 0167 (2017)
- Implemented in [a direct-to-consumer product](#) by Insite and Helix (a related [blog post](#))
  - Selected Media Reports: [Cornell Chronicle](#), [Medical News Today](#), [Nutrition Insight](#)
11. Kothapalli KSD\*, **Ye K\***, Gadgil MS, et al. Positive selection on a regulatory insertion–deletion polymorphism in *FADS2* influences apparent endogenous synthesis of arachidonic acid. *Molecular Biology and Evolution* 33 (7), 1726-1739 (2016).
- Highlighted by [Molecular Biology and Evolution](#)
  - Selected Media Reports: [The Washington Post](#), [CBS News](#), [The Metro](#), [The Hindu](#), [Le Monde](#), [The Independent](#), [National Post](#), [Motherboard](#), [Genomeweb](#), [Cornell Chronicle](#), [ScienceDaily](#), [ResearchGate](#)
10. Billing-Ross P, Germain A, **Ye K**, Keinan A, Gu Z, Hanson MR. Mitochondrial DNA variants correlate with symptoms in myalgic encephalomyelitis/chronic fatigue syndrome. *Journal of Translational Medicine* 14 (1), 19 (2016).
- Also: Hanson MR, Gu Z, Keinan A, **Ye K**, Germain A, Billing-Ross P. Association of mitochondrial DNA variants with myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) symptoms. *Journal of Translational Medicine* 14 (1), 342 (2016).
9. **Ye K\***, Cao C\*, Lin X, O'Brien KO, Gu Z. Natural selection on *HFE* in Asian populations contributes to enhanced non-heme iron absorption. *BMC Genetics* 16 (1), 61 (2015).
8. Lei R, **Ye K**, Gu Z, Sun X. Diminishing returns in next-generation sequencing (NGS) transcriptome data. *Gene*. 557 (1), 82-87 (2015).
7. **Ye K**, Lu J, Ma F, Keinan A, Gu Z. Extensive pathogenicity of mitochondrial heteroplasmy in healthy human individuals. *Proceedings of the National Academy of Sciences* 111 (29), 10654-10659 (2014).

Also: **Ye K**<sup>^</sup>, Lu J, Ma F, Keinan A, Gu Z<sup>^</sup>. Reply to Just *et al.*: Mitochondrial DNA heteroplasmy could be reliably detected with massively parallel sequencing technologies. *Proceedings of the National Academy of Sciences* 111 (43), E4548-4550 (2014).

- Highlighted by [Proceedings of the National Academy of Sciences](#), [American Journal of Human Genetics](#), [Faculty 1000](#)
- Selected Media Reports: [Los Angeles Times](#), [Spiegel Online](#), [TheScientist](#), [Cornell Chronicle](#)

6. **Ye K**<sup>^</sup>, Lu J, Raj SM, Gu Z<sup>^</sup>. Human expression QTLs are enriched in signals of environmental adaptation. *Genome Biology and Evolution* 5 (9), 1689-1701 (2013).
5. **Ye K** & Gu Z. Recent advances in understanding the role of nutrition in human genome evolution. *Advances in Nutrition* 2 (6), 486-496 (2011).
4. Xue Z, He Y, **Ye K**, Gu Z, Mao Y, Qi L. A conserved structural determinant located at the interdomain region of mammalian inositol-requiring enzyme 1alpha. *Journal of Biological Chemistry* 286 (35), 30859-30866 (2011).
3. Fang X, ..., **Ye K**, *et al.* Genome sequence and global sequence variation map with 5.5 million SNPs in Chinese rhesus macaque. *Genome Biology* 12, R63 (2011).
2. Lai J, ..., **Ye K**, *et al.* Genome-wide patterns of genetic variation among elite maize inbred lines. *Nature Genetics* 42 (11), 1027-1030 (2010).
1. **Ye K**, Liu K, Zhang L. The inductive effect of ultraviolet radiation on mycosporine-like amino acids (MAAs) in *Microcystis aeruginosa*. *Amino Acids and Biotic Resources* 30 (1), 25-28 (2008).

## INVITED REVIEWS, BOOKS & BOOK CHAPTERS

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5. **Yang S**, **Ye K**. Recent advances in understanding the adaptive evolution of metabolic genes and traits. *Current Opinion in Clinical Nutrition & Metabolic Care* (2021)
4. **Ye K** & Hu Z. *Who We Are and How We Got Here*. Originally by Reich D. Pantheon Books and Oxford University Press. (2018). Translation into Chinese. Cheers Publishing. (2019)
3. Fu H & **Ye K**. *Why We Get Sick: The New Science of Darwinian Medicine*. Originally by Nesse R & Williams G. Vintage. (1996). Translation into Chinese. Hunan Science & Technology Press. (2018)
2. Gu Z & **Ye K**. New strategies of health management in China. *CAIJING Annual Edition: Forecasts and Strategies*. (2017)
1. Gu Z, **Ye K**, Stover P. Nutritional genomics. In *Genomic Medicine: Principles and Practice, 2<sup>nd</sup> Edition*, Chapter 12, edited by Kumar D and Eng C, Oxford University Press. 180-209 (2014)

## AWARDS & GRANTS

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|-------------|--|
| 2021 – 2026 | NIH/NIGMS 1R35GM143060-01 (\$1,887,500; PI: Kaixiong Ye)   |
| 2020        | Scialog Fellow in Microbiome, Neurobiology and Disease   |
| 2017 – 2021 | NIH/NHGRI 2R01HG006849 (\$1,517,147; PI: Alon Keinan)  |
| 2017        | Travel Grant Award, The Center for Vertebrate Genomics, Cornell University (\$500)                                       |
| 2017        | Young Investigator Travel Award, Society for Molecular Biology and Evolution (\$1,500)                                   |
| 2014        | Chinese Government Award for Outstanding Self-Financed Students Abroad, China Scholarship Council (\$6,000)              |
| 2014        | Genomics Scholarship, The Center for Vertebrate Genomics, Cornell University (\$10,000)                                  |
| 2013        | Liu Memorial Award, Graduate School, Cornell University (\$2,750)  |
| 2012 – 2014 | Conference Travel Grant Awards, Graduate School, Cornell University  |
| 2012 – 2013 | Seed Grant Award, The Center for Vertebrate Genomics, Cornell University (\$15,000; PI: Zhenglong Gu & Kimberly O'Brien) |

- 2012 – 2013 Seed Grant Award, Division of Nutritional Science, Cornell University (\$2,000)  
 2012 Travel Grant Award, The Center for Vertebrate Genomics, Cornell University (\$500)  
 2004 – 2007 Outstanding Academic Performance Scholarship, Wuhan University (\$1,500)

## TEACHING EXPERIENCE

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### *University of Georgia:*

- Human Genetics (GENE 4500/6500), Instructor, Spring 2019, 2020, 2021
- Capstone Seminar in Genetics (GENE 4950), Instructor, Spring 2021
- Directed Study in Research Communication (GENE 8880), Instructor, Fall 2019
- Critical Reading of the Primary Scientific Literature (GRSC 8020), Instructor, Fall 2019, 2020

### *Cornell University:*

- Human Genomics, Guest Instructor, Fall 2017
- Topics in Population Genetics and Genomics, Co-organizer, Fall 2016, Summer 2017
- Statistical Genomics: Coalescent Theory and Human Population Genomics, Guest Instructor, Spring 2016
- Human Biology & Evolution, Guest Instructor, Fall 2015
- Integrative Health Studies II, Teaching Assistant, Spring 2014
- Human Biology & Evolution, Teaching Assistant & Guest Instructor, Fall 2013
- Human Anatomy & Physiology, Teaching Assistant, Spring 2013
- Integrative Health Studies I, Teaching Assistant, Fall 2012
- Nutritional Genomics – Evolution and Environment, Teaching Assistant, Spring 2012

## MENTORING EXPERIENCE

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### *University of Georgia*

Postdoctoral Researchers:

Jingqi Zhou (05/2019-11/2020)

Graduates:

Shuang Yang (08/2019-)

Michael Francis (06/2019-; 2020-21 and 2021-22 NIH Training Grant Fellowship; 2020 UGA Communication of Research and Scholarship Grant; 2019UGA Libraries Capturing Science Contest, 2nd place;)

Yitang Sun (09/2018-; 2021 the Mote Graduate Support Fund for Biomedical Genetics Research from UGA Genetics Department; 2021 the Mary Erlanger Graduate Fellowship from UGA Grad School; 2020 “Reviewers’ Choice” award at the ASHG meeting)

Undergraduates:

Julia Cazabon (08/2021-; UGA CURO Research Assistantship – 2021 Fall;)

Ayana Holland (Summer 2021, NSF REU program)

Isabelle Bowman (01/2021-; UGA CURO Research Assistantship – 2021 Fall;)

Aaron Geanas (01/2021-; UGA CURO Research Assistantship – 2021 Fall;)

Alexandra Chiang (01/2021-)

Claire Cheng (01/2021-)

Nitya Modulla (01/2021-)

Stephanie Neville (08/2020-; UGA CURO Research Assistantship – 2021 Spring)

Megan Hong (08/2020-; UGA CURO Research Assistantship – 2021 Spring)

Kris Porter (Summer 2020, NSF REU program)

Christina S Thomas (01/2020-05/2021; UGA CURO Research Assistantship – 2021 Spring)

Chang Liu (visiting 09/2019-05/2020)

Lingshu Liu (visiting 09/2019-05/2020)  
Radhika Chatterjee (08/2019-; UGA CURO Research Assistantship – 2019 Spring, 2021 Spring; 2020 CURO Summer Fellowship)  
Ayushi Vashishtha (08/2019- ; UGA CURO Research Assistantship – 2019 Spring, Summer)  
Jamie Ropelewski (08/2019-12/2019)  
Riya Gohil (lab technician, 07/2019-07/2020)  
Akash Ronanki (01/2019-; UGA CURO Research Assistantship – 2021 Summer)  
Haley Chishom (01/2019-05/2020; UGA CURO Research Assistantship – 2018 Fall)  
Briana Sellers (01/2019-05/2020; UGA CURO Research Assistantship – 2020 Spring)  
Emily Álvarez Toucet (Summer 2019)  
Kyndal Goss (08/2018-05/2019)

High-school students:

Aditya Prabhakar (Summer 2021, UGA Young Dawgs Program)  
William Fang (08/2020-05/2021)  
Nuno Carvalho (Summer 2020, UGA Young Dawgs Program)

Graduate students through their committees

Margot Popecki (03/2021-; PhD in Genetics; Co-chairs: John Ware and Kathrin Stanger-Hall;)  
Nan Yao (08/2020-; PhD in Genetics; Chair: Bob Schmitz;)  
Renjie Shang (08/2019-; PhD in Genetics; Chair: Pengpeng Bi;)  
Theresa Miorin (08/2019-; PhD in Genetics; Chair: Kelly Dyer;)  
Chynna Pollitt (2019; MS in Genetics; Chair: Nancy Manley;)

***Cornell University***

David Wang (undergraduate), 2016-2018  
Shiv Madireddy (undergraduate), 2014-2016  
Rex Lei (high school student), 2011-2014

**SERVICE**

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***University of Georgia***

- Executive Committee, Department of Genetics, University of Georgia (08/2020 - )
- Faculty Affairs Committee, Institute of Bioinformatics, University of Georgia (01/2020 -)
- Teaching Evaluation Committee, Department of Genetics, University of Georgia (12/2019 -)
- Undergraduate Affairs Committee, Department of Genetics, University of Georgia (09/2019 -)

**EDITORIAL RESPONSIBILITY & SCIENTIFIC SOCIETIES**

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Grant Reviewer:

NIH: 2021 Kidney, Nutrition, Obesity and Diabetes Study Section (KNOD);  
NSF: 2019, 2021 *ad hoc* reviewer;

Journal Reviewer:

*Human Molecular Genetics* (3); *Mitochondrion* (1); *Scientific Reports* (4); *BMC Genomics* (2); *PLOS ONE* (5); *Evolution* (1); *Gene* (6); *Mechanisms of Ageing and Development* (1); *Axios Review* (1); *International Journal of Genomics* (3); *Genomics, Proteomics & Bioinformatics* (1); *Critical Reviews in Clinical Laboratory Sciences* (1); *Communications Biology* (1); *Biomedical and Environmental Sciences* (1); *European Journal of Clinical Nutrition* (8); *Frontiers in Oncology* (2); *Frontiers in Genetics* (3); *biomedicines* (2); *Briefings in Bioinformatics* (2); *Psychoneuroendocrinology* (1); *Nutrients* (1); *Pharmacogenomics* (1); *Nature Communications* (1); *elife* (2); *International Journal of Epidemiology* (2); *Genome Biology and Evolution* (3); *npj Genomic Medicine* (1);

Conference Abstract Reviewer:

2019 ASHG; 2020 ASN; 2021 ASN;

Conference Session Moderator:

2019 ASHG;

Scientific Society Member:

The American Society of Human Genetics (ASHG); Society for Molecular Biology and Evolution (SMBE); American Society for Nutrition (ASN); International Society for Evolution, Medicine, and Public Health (ISEMPH);

## **CAREER DEVELOPMENT TRAINING**

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- Organizational Excellence through Diversity, University of Georgia (11/2020)
- Diversity at UGA-Beyond the Numbers, University of Georgia (10/2020)
- The TEAMS (Translational Education and Mentoring in Science) Program, Georgia Clinical and Translational Science Alliance, (08/2020 -)
- Junior Faculty Learning to Teach Community, University of Georgia (02/2020 -)
- NIH Regional Seminars on Program Funding and Grants Administration, Baltimore, MD (05/2019)
- Research Mentor Training, University of Georgia (01/2019)
- Graduate Student Mentoring Summit, Graduate School, University of Georgia (09/2018)
- University-wide Teaching Conference, Center for Teaching Innovation, Cornell University (03/2018)
- An Introduction to Evidence-Based Undergraduate STEM Teaching, Center for Integrated Research Teaching and Learning (2017)
- Building Mentoring Skills Certificate Program, Cornell University (2017)
- Intergroup Dialogue Project, Cornell University (2016)
- Postdoctoral Leadership Program, Cornell University (2015-2016)
- Graduate Student Leadership Program, Cornell University (2013)

## **INVITED TALKS**

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20. The Annual Meeting of the American Society for Nutrition, online, 2021 (Oral Presentation);
19. Genetic Epidemiology Journal Club, Emory University, zoom meeting, 2021;
18. Department of Genetics, University of Georgia, Athens, GA, 2021;
17. Nutrient-Gene Interactions in Complex Diseases: Perspectives of Early and Mid-career Level Researchers, American Society for Nutrition, webinar, 08/2020
16. 2019 Southeastern Population Ecology and Evolutionary Genetics (SEPEEG) Conference, Pendleton, SC, 10/2019 (Oral Presentation)
15. Department of Environmental Health Science, University of Georgia, Athens, GA, 03/2019 (Seminar)
14. Department of Foods and Nutrition, University of Georgia, Athens, GA, 01/2019 (Seminar)
13. School of Biological Sciences, Georgia Institute of Technology, Atlanta, GA, 11/2018 (Seminar)
12. Institute of Bioinformatics, University of Georgia, Athens, GA, 08/2018 (Adjunct Seminar: Mining Deep Sequencing Data for the Neglected Parts of the Genome -- mtDNA and chrX)
11. School of Life Sciences, Peking University, Beijing, China, 07/2018 (Seminar)
10. Beijing Genomics Institute, Tianjin, China, 07/2018 (Seminar)
9. School of Public Health, Shanghai Jiao Tong University, Shanghai, China, 07/2018 (Seminar)
8. School of Life Sciences, Central China Normal University, Wuhan, China, 04/2018 (Seminar)

7. Department of Genetics, Texas Biomedical Research Institute, San Antonio, TX, 02/2018 (Seminar: Genetic Adaptation to Diet during Human Evolution and the Future of Personalized Nutrition)
6. Nevada Institute of Personalized Medicine, University of Nevada, Las Vegas, NV, 02/2018 (Seminar: Genetic Adaptation to Diet during Human Evolution and the Future of Personalized Nutrition)
5. Department of Behavioral Health and Nutrition, University of Delaware, Newark, DE, 01/2018 (Seminar: Genetic Adaptation to Diet during Human Evolution and the Future of Personalized Nutrition)
4. Department of Genetics, University of Georgia, Athens, GA, 01/2018 (Seminar: Genetic Adaptation to Diet during Human Evolution and the Future of Personalized Nutrition)
3. Cornell University Chinese Postdoctoral Forum, Cornell University, 2016 (Oral Presentation: Dietary adaptation during human evolution and the discovery of “vegetarian allele”)
2. The Annual Meeting of the Society for Molecular Biology and Evolution, Chicago, IL, 2013 (Oral Presentation: Human expression QTLs are enriched in signals of environmental adaptation)
1. The 37<sup>th</sup> Annual Ecology & Evolutionary Biology Graduate Student Symposium, Cornell University, 2012 (Oral Presentation: Human expression QTLs are enriched in signals of environmental adaptation)

## CONFERENCE POSTERS

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15. The Annual Meeting of the American Society for Nutrition, online, 2021 (1 Poster);
14. The Annual Meeting of the American Society of Human Genetics, Online due to COVID, 2020 (4 Posters)
13. The 1<sup>st</sup> AsiaEvo Conference, Shenzhen, China, 04/2018 (Poster: Dietary adaptation of *FADS* genes in modern and ancient human populations)
12. Fossils and Ancient Genomics Symposium, China National GeneBank, Shenzhen, China, 04/2018 (Poster: Ancient DNA reveals changing genetic adaptation before and after the Agricultural Revolution in humans)
11. The Annual Meeting of the American Society of Human Genetics, Orlando, FL, 2017 (Poster: Recurrent adaptation of different haplotypes in *FADS* genes to plant-based and animal-based diets in a diverse worldwide set of extant and extinct human populations)
10. The Annual Meeting of the Society for Molecular Biology and Evolution, Austin, TX, 2017 (Poster: Adaptation of the *FADS* gene family in Europe: Variation across time, geography and subsistence)
9. The Experimental Biology Meeting, Chicago, IL, 2017 (Poster: Regional dietary adaptation of *FADS* genes in humans: molecular mechanism and functional consequences)
8. The Annual Meeting of the American Society of Human Genetics, Baltimore, MD, 2015 (Poster: Natural selection on *HFE* in Asian populations contributes to enhanced non-heme iron absorption)
7. The Annual Meeting of the Society for Molecular Biology and Evolution, San Juan, PR, 2014 (Poster: Extensive pathogenicity of mitochondrial heteroplasmy in healthy human individuals)
6. The Annual Meeting of the American Society of Human Genetics, Boston, MA, 2013
5. The Annual Meeting of the American Society of Human Genetics, San Francisco, CA, 2012 (Poster: Human expression QTLs are enriched in signals of environmental adaptation)
4. The 1<sup>st</sup> International Conference on Genomics in the Americas, Children's Hospital of Philadelphia, 2012
3. The 1<sup>st</sup> Annual Nutrition Research Symposium, Cornell University, 2012 (Poster: Metabolic Adaptation to Plant-based Diets in Asian Populations)
2. Workshop on Metabolomics by Metabolon, Inc, Bridgewater, NJ, 2011
1. The Annual Meeting of the American Society of Human Genetics, Washington D.C., 2010