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**Division of Nutritional Sciences**  
Cornell University  
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## **Education**

PhD, 2003, Ecology & Evolution, University of Chicago, Chicago, IL

Thesis Advisor: Dr. Wen-Hsiung Li

BS, 1998, Biochemistry and Molecular Biology, Peking University, Beijing, China

## **Postdoctoral Training**

Stanford Genome Technology Center, Stanford University, Palo Alto, CA, 2004-2006

Advisor: Dr. Ronald W. Davis

## **Appointment**

Assistant Professor, Division of Nutritional Sciences, Cornell University, 2006-2012

Associate Professor, Division of Nutritional Sciences, Cornell University, 2012-2018

Professor, Division of Nutritional Sciences, Cornell University, 2018-present

## **Graduate Field Appointments, Cornell University**

Genomics (minor field), 2009-present

Genetics & Development, 2008- present

[Computational Biology](#), 2008-present

Nutritional Sciences, 2006-present

## **Scientific Societies**

Society for Molecular Biology and Evolution (SMBE)

American Society of Nutrition (ASN)

## **Awards**

International Life Sciences Institute "*Future Leader in Nutrition*", 2011

Graduate with honor, 1998

Novo Nordisk fellowship, 1998

Excellent Student Award, 1995 – 1998

## **Professional Development**

CCTE (Cornell Center for Teaching Excellence) Teaching Certificate, 2011

CALS Teaching Experience, 2010

Time Management for Junior Faculty, 2008

Grantsmanship Development, 2007

## **Academic Committees/Organization**

### **Cornell Departmental Committees (DNS)**

DNS External Advisory Board, 2011-2016

Division Curriculum Committee, 2010-2015 (Committee Chair, 2012-2015)

Faculty Search Committee for Molecular Nutrition (Biomarker), Chair, 2011-2012

Division Strategic Planning Committee, 2011

Lab Safety Committee Chair, 2006-2011

### **Cornell Graduate Field Committees (Nutrition)**

Academic Affair Committee, 2011-present

Seminar Committee, Field of Nutrition, 2007-2010 (Committee Chair, 2009-2010)

### **Cornell Academic Organization**

Cornell Center for Comparative and Population Genomics (3CpG)

Cornell Center for Vertebrate Genomics (VERGE)

Executive Committee (Seed Funding and Shared Resources), VERGE, 2011-2014

## **Student Organization/Advising**

Cornell Freshman Reading Project, Discussion Leader, 2008-2011  
College of Human Ecology "*Peer Partnership Program*" Faculty Advisor, 2010-2013  
Nutrition Graduate Students Organization (NGSO), DNS, Faculty Advisor, 2011-2015

## **Courses Taught**

NS2750 Human Biology & Evolution, 3 credits, Fall, 2007-present (135 enrolled in 2017)  
NS6320, Macronutrient Metabolism, team teaching, three lectures, Spring, 2015-present  
NS7030, Seminar in Nutritional Sciences, team teaching, 1 credit, Spring, 2013-2015  
NS4130 (former NS6130/NS660) Nutritional Genomics, 2 credits, Spring, 2008-2013  
NS6050 Molecular & Human Nutrition, Organizer, 1 credit, Fall & Spring, 2007-2009

## **External Support**

### **Ongoing**

1U54NS105541, National Institutes of Health (NIH) "*Cornell ME/CFS Collaborative Research Center*", Co-investigator (PI: Dr. Maureen Hanson), 09/2017-08/2022  
1R01GM117190, National Institutes of Health (NIH) Evolution of gene regulation through overlapping regulatory mechanisms, 09/2017-08/2021 (sole PI)  
Simons Foundation Mitochondrial DNA Mutations in Autism Spectrum Disorder, 09/2017-08/2019 (sole PI)  
ENN Science and Technology Development "*Mitochondrial DNA Mutations and Diseases*" 02/01/16-1/31/20 (sole PI)

### **Completed**

CHDI Foundation "*Comparative analysis of mitochondrial genomes in HD*"  
03/01/16-2/28/18 (sole PI)  
National Science Foundation (NSF) "*Evolution of Metabolic Innovation: Aerobic Fermentation in Yeasts as an Example*" MCB-1243588 02/15/13-1/31/17, (sole PI)  
National Institutes of Health (NIH) "*Genetic and Evolutionary Basis of Fungal Drug Resistance*" 1R01AI085286-01, 05/01/10-04/30/16, (sole PI)  
National Science Foundation (NSF) "*Asynchronous Regulation of Backup Circuits as a Strategy for Survival in Fluctuating Environments*" DEB-0949556, 9/01/09-8/31/11, (sole PI)  
ILSI (International Life Science Institute) Future Leader in Nutrition Award "*Population Divergence of Metabolic Genes in Human*" 5/1/11-4/30/2013, (sole PI)

## **Editorial/Review**

### **Journals (ad hoc reviewer)**

Genetics, Journal of Molecular Evolution, Proceedings of the Royal Society of London Series B, PLoS Biology, PLoS Genetics, PLoS Computational Biology, PLoS ONE, Molecular Biology and Evolution, Molecular Phylogenetics and Evolution, Nature Genetics, Trends in Genetics, Journal of Molecular Biology, JEZ Part B: Molecular and Developmental Evolution, BMC Evolutionary Biology, PNAS, Genome Research, EMBO Reports, Genome Biology, Genome Biology and Evolution, Bioinformatics, HFSP Journal, Molecular Systems Biology, Biological Psychiatry, BMC Evolutionary Biology

### **Journals (editor)**

*Frontier in Genetics*

*Frontiers in Nutrigenomics*

*Journal of Computational Systems Biology*

### **Journals (ad hoc editor)**

*PLoS Computational Biology*

*PLoS Genetics*

### **Granting Agency (mail reviewer)**

NSF, Division of Molecular and Cellular Biosciences

NSF, Division of Environmental Biology

NSFC (National Natural Science Foundation of China), Division of Life Sciences

## **Scientific Meetings/Workshop Organization**

The Asian Evolutionary Research Conference, Section organizer, 2018

“Evolutionary Genomics” summer course in Kunming Institute of Zoology, Chinese Academy of Science, Kunming, China, Co-organizer, 2009, 2011

## **Invited Talks/Conference Presentations**

Department of Nutrition, T. H. Chan School of Public Health, Harvard University 2017

Department of Ecology and Evolution, University of Michigan, 2017

Department of Neurology, Columbia University, 2017

Division of Nutritional Sciences, Cornell University, 2016, 2017

Beijing Institute of Genomics, 2016  
Chinese Agricultural University, 2016  
China Nutrition Science Congress, 2015  
Department of Biology, University of Ottawa, 2014  
Kunming Institute of Zoology, Chinese Academy of Sciences 2014  
The Dalian First Hospital, Dalian Medical University, 2014  
Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, 2014  
Bio2000, Chinese Academy of Sciences/Peking University, 2013  
College of Agriculture Sciences, Zhejiang University, 2013  
SMBE annual meeting, University of Chicago, Chicago, IL, 2013  
Department of Molecular Medicine, Cornell University, 2013  
Bio2000, Chinese Academy of Sciences/Tsinghua University, 2013  
College of Life Sciences, Fudan University, 2013  
2nd symposium on "Evolutionary Genomics and Bioinformatics", Taipei, Taiwan, 2012  
13th International Congress on Yeasts, University of Wisconsin, Madison, 2012  
Mathematical Biosciences Institute (MBI) Workshop-Robustness in Biological Systems, Ohio State University, 2012  
College of Life Sciences, Peking University, 2012  
Institute for Nutritional Sciences, Chinese Academy of Science, 2012  
Bio2000, Chinese Academy of Sciences/Tsinghua University, 2012  
Patton Symposium, Cornell University, 2011  
Center for Genomics and Systems Biology, New York University, 2011  
Department of Biology, Duke University, 2011  
"From Networks to Pattern Formation - Evolution of Biological Function" Rice University, Houston, Texas, 2010  
Experimental Approaches to Evolution and Ecology using Yeast, EMBL, Heidelberg, Germany, 2010  
Evolution annual meeting, Portland State University, Portland, Oregon, [2010](#)  
The 100<sup>th</sup> International Titisee Conferences "Genome evolution and the origin of novel gene functions", Titisee, Germany, 2009  
"Evolutionary Genomics" summer course in Kunming Institute of Zoology, Chinese Academy of Science, Kunming, China, 2009  
The Science and Engineering Challenges to the Development of Sustainable Biobased Industries, Cornell, 2008  
"Evolutionary and Environmental Genomics of Yeasts", EMBL, Heidelberg, Germany, 2008  
Evolution annual meeting, University of [Minnesota](#), Minneapolis, Minnesota [2008](#)  
[Banting and Best Department of Medical Research](#), University of Toronto, Toronto, Canada, 2008

International Conference on Yeast Genetics and Molecular Biology, Melbourne, Australia, 2007  
School of Natural Sciences, University of California, Merced, CA 2006  
Department of Genome Sciences, University of Washington, WA 2005  
Department of Molecular and Cellular Biology, University of Arizona, AZ 2005  
Department of Biological Sciences, Carnegie Mellon, PA 2005  
Department of Biology Emory University, GA 2005  
Division of Nutritional Science, Cornell, NY 2005  
Department of Biology, University of Rochester, NY 2005  
Department of Biological Sciences, University at Buffalo, NY 2005  
Center for Computational Biology and Bioinformatics, University of Texas at Austin, TX 2005  
Department of Ecology, Evolution and Behavior University of Minnesota, MN 2004  
Department of Biology and Biochemistry, University of Houston, TX 2004  
Department of Biology, University of Texas at Arlington, TX 2004  
Department of Ecology and Evolutionary Biology, Michigan University, Ann Arbor, MI, 2004  
Cornell Genomics Seminar, Ithaca, NY, 2003  
Stanford Genome Technology Center, Palo Alto, CA, 2003  
SMBE annual meeting, University of California, Irvine, CA, 2003  
Evolution annual meeting, University of Illinois at Urbana-Champaign, Urbana, IL, 2002  
SMBE annual meeting, the University of Georgia, Athens, GA, 2001  
SMBE annual meeting, Yale University, New Haven, CT, 2000

## Bibliography

1. Guo, X., Zhang, R., Li, Y., Ishchuk, O.P., Ahmad, K.M., Wee, J., Piskur, J., Shapiro, J.A., **Gu, Z.** Genomic Diversity and Evolution of Fungal Pathogen *Candida glabrata*. 2017, in revision
2. Wang, Z., Sun, X., Wee, J., Guo, X., **Gu, Z.** Novel Insights into Global Translational Regulation through Puf3p Revealed by Ribosomal Profiling. 2017, in revision
3. Zhang, R., Wang, Y., Ye, K., Picard, M., **Gu, Z.** Aging is Independently Associated with Mitochondrial DNA Quality and Quantity in Humans. 2017, *BMC Genomics*. 18(1):890.
4. Cheng, J., Guo, X., Cai, P., Cheng, X., Piskur, J., Ma, Y., Jiang, H. & **Gu, Z.** Parallel Evolution of Chromatin Structure Underlying Metabolic Adaptation. *Molecular Biology and Evolution*, 2017, 34(11):2870-2878.

5. Wang J, Zou H, Chen L, Long X, Lan J, Liu W, Ma L, Wang C, Xu X, Ren L, **Gu Z**, Li N, Hu X, Zhao Y, Zhao Y. Convergent and divergent genetic changes in the genome of Chinese and European pigs. *Sci Rep*. 2017 Aug 17;7(1):8662.
6. 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. *J Transl Med*. 2016 Dec 20;14(1):342.
7. Wang Y, Picard M, & **Gu Z**. Genetic Evidence for Elevated Pathogenicity of Mitochondrial DNA Heteroplasmy in Autism Spectrum Disorder. *PLoS Genetics*. 2016; 12(10):e1006391. PMID: 27792786 PMCID: PMC5085253.
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9. Zhang R, Nakahira K, Guo X, Choi AM, & **Gu Z**. Very Short Mitochondrial DNA Fragments and Heteroplasmy in Human Plasma. *Scientific Reports*. 2016; 6:36097. PMID: 27811968 PMCID: PMC5095883.
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11. Sun, X., Wang, Z., Guo, X., Li, H. & **Gu, Z.** Coordinated Evolution of Transcriptional and Post-Transcriptional Regulation for Mitochondrial Functions in Yeast Strains. *PLoS ONE*. 11(4):e0153523 (2016). PMCID: PMC4831757
12. Barker B, Xu L, **Gu Z**. Dynamic Epistasis under Varying Environmental Perturbations. *PLoS ONE*. 2015 Jan 27;10(1):e0114911.
13. 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. 2015 *BMC Genetics* 16 (1), 61.
14. Lei R, Ye K, **Gu Z**, Sun X. Diminishing returns in next-generation sequencing (NGS) transcriptome data. *Gene*. 2015 Feb 15;557(1):82-7.
15. Jiang H, Xu L, Wang Z, Keene J, **Gu Z**. Coordinating expression of RNA binding proteins with their mRNA targets. *Sci Rep*. 2014 Nov 24;4:7175.
16. Ye K, Lu J, Ma F, Keinan A, **Gu Z**. Reply to Just et al.: Mitochondrial DNA heteroplasmy could be reliably detected with massively parallel sequencing technologies. *Proc Natl Acad Sci U S A*. 2014 Oct 28;111(43):E4548-50.
17. Ye K, Lu J, Ma F, Keinan A, **Gu Z**. Extensive pathogenicity of mitochondrial heteroplasmy in healthy human individuals. *Proc Natl Acad Sci U S A*. 2014 Jul 22;111(29):10654-9

18. Ahmad KM, Kokošar J, Guo X, **Gu Z**, Ishchuk OP, Piškur J. Genome structure and dynamics of the yeast pathogen *Candida glabrata*. *FEMS Yeast Res.* 2014 Jun;14(4):529-35.
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