Chia-Yen Chen, Sc.D., Sc.M., M.Sc.

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EDUCATION

Harvard School of Public Health, Boston, MA
Sc.D., Epidemiology 09/08-11/13
Sc.M., Biostatistics 09/11-03/12

National Taiwan University, Taipei, Taiwan
M.Sc., Epidemiology 09/04-06/06
Certification: Biological Statistics
B.Sc., Life Science 09/00-06/04

RESEARCH EXPERIENCE

Psychiatric and Neurodevelopmental Genetics Unit (PNGU)
Analytic and Translational Genetics Unit (ATGU)
Massachusetts General Hospital, Boston, MA 11/13-present
Supervisor: Jordan W. Smoller and Benjamin Neale **Research Fellow**

- Genome-wide association analyses of electrophysiological endophenotypes for schizophrenia and psychotic bipolar disorders (Hall MH, Chen CY, et al. 2015 Am J Med Genet B Neuropsychiatr Genet)
- Genome-wide association studies of Posttraumatic Stress Disorder (PTSD) and traumatic experience in US Army soldiers (Stein M, Chen CY, et al. in preparation, Chen CY et al. in preparation)
- Genome-wide analysis to identify genetic variants related to sub-phenotypes of bipolar disorder (e.g. psychosis, suicide ideation, age of onset, etc.) in the International Cohort Collection for Bipolar Disorder (ICCBD)
- Study design and statistical tests for detecting gene-environment interaction on environmental exposure-defined phenotypes (e.g. PTSD, alcohol dependence, etc.)

Department of Epidemiology, Harvard School of Public Health, Boston, MA 09/08-11/13
Dissertation advisor: Alkes Price

- Explicit modeling of genetic ancestry improves polygenic prediction accuracy (Chen CY et al. 2015 Genet Epi)
- Risk prediction models for rheumatoid arthritis by associated SNPs, family history, and gene-environmental interactions (Sparks JA*, Chen CY* et al. 2014 Ann Rheum Dis)
- Improved ancestry inference using SNP weights (Chen CY et al. 2013 Bioinformatics)
- Polygenic prediction for breast cancer and prostate cancer risk using genome-wide SNPs (Machiela MJ*, Chen CY* et al. 2011 Genet Epi)

Genomics Research Center, Academia Sinica, Taipei, Taiwan 09/06-06/08
Supervisor: Chien-Jen Chen **Research Assistant**

- Conducted a genetic Epidemiological Study of Lung Adenocarcinoma (GELAC)

Graduate Institute of Epidemiology, National Taiwan University, Taipei, Taiwan 09/04-06/06
Master Thesis Advisor: Chien-Jen Chen

- Investigated the association between Plasma Epstein-Barr Virus DNA Level and Breast Cancer in Taiwan: A Molecular Epidemiological Study
- Conducted a molecular epidemiological study on the associations between arsenic-induced major cancers and single nucleotide polymorphisms of enzymes involved in DNA repair and arsenic metabolism

TEACHING EXPERIENCE

Department of Epidemiology, Harvard School of Public Health, Boston, MA 08/10-06/11
Teaching assistant

- Fundamentals of Epidemiology instructed by Dr. Albert Hofman
- Introduction to Epidemiology (Methods I) instructed by Dr. Miguel Hernan
- Elements of Epidemiologic Research instructed by Dr. Murray Mittleman

Graduate Institute of Epidemiology, National Taiwan University, Taipei, Taiwan 09/04-06/06
Teaching assistant
- Molecular Biology of Cancer instructed by Dr. Chen-Yang Shen
- Case Study in Epidemiologic Research instructed by Dr. Wei-Jen Chen and Dr. Yu-Juen Cheng
- Principles of Epidemiology instructed by Dr. Yu-Juen Cheng
  - Led weekly lab sessions office hours; graded assignments and exams for master and doctoral level students

PUBLICATIONS

Chia-Yen Chen, Jiali Han, David J. Hunter, Peter Kraft, Alkes L. Price. *Explicit modeling of ancestry improves polygenic risk scores and BLUP prediction*. Genetic Epidemiology. 2015 in press.

Mei-Hua Hall, **Chia-Yen Chen**, Bruce M. Cohen, Kevin M. Spencer, Deborah L. Levy, Dost Öngür and Jordan W. Smoller. *Genomewide association analyses of electrophysiological endophenotypes for schizophrenia and psychotic bipolar disorders: A preliminary report*. American Journal of Medical Genetics Part B: Neuropsychiatric Genetics. 2015; 168: 151-161.

Jeffrey A Sparks*, **Chia-Yen Chen***, Xia Jiang, Johan Askling, Linda T Hiraki, Susan Malspeis, Lars Klareskog, Lars Alfredsson, Karen H Costenbader, Elizabeth W Karlson. *Improved performance of epidemiologic and genetic risk models for rheumatoid arthritis serologic phenotypes using family history*. Annals of the rheumatic diseases. doi:10.1136/annrheumdis-2013-205009 [Epub ahead of print](*contributed equally to this work)

Jeffrey A. Sparks, **Chia-Yen Chen**, Linda T. Hiraki, Susan Malspeis, Karen H. Costenbader and Elizabeth W. Karlson. *Contributions of familial rheumatoid arthritis or lupus and environmental factors to risk of rheumatoid arthritis in women: A prospective cohort study*. Arthritis Care & Research. 2014; 66: 1438-1446

Bing Lu, Linda T Hiraki, Jeffrey A Sparks, Susan Malspeis, **Chia-Yen Chen**, J Adebukola Awosogba, Elizabeth V Arkema, Karen H Costenbader and Elizabeth W Karlson. *Being overweight or obese and risk of developing rheumatoid arthritis among women: a prospective cohort study*. Annals of the rheumatic diseases. 2014; 73: 1914-1922

Chia-Yen Chen, Samuela Pollack, David J. Hunter, Joel N. Hirschhorn, Peter Kraft, Alkes L. Price. *Improved ancestry inference using weights from external reference panels*. Bioinformatics 2013; 29: 1399–1406.

Mitchell J. Machiela*, **Chia-Yen Chen***, Constance Chen, Stephen J. Chanock, David J. Hunter, Peter Kraft. *Evaluation of polygenic risk scores for predicting breast and prostate cancer risk*. Genetic Epidemiology 2011; 35: 506-14. (*contributed equally to this work)

Chien-Jen Chen, Lin-I Hsu, Wei-Liang Shih, Yi-Hsiang Hsu, Mei-Ping Tseng, Yu-Chun Lin, Wei-Lin Chou, **Chia-Yen Chen**, Cheng-Yeh Lee, Li-Hua Wang, Yu-Chin Cheng, Chi-Lin Chen, Shwu-Yuan Chen, Iuan-Horng Wang, Yu-Mei Hsueh, Hung-Yi Chiou, Meei-Maan Wu. *Biomarkers of Exposure, Effect and Susceptibility of Arsenic-induced Health Hazards in Taiwan*. Toxicology and Applied Pharmacology 2005; 206: 198-206.

PRESENTATIONS

Conference oral presentation
Chia-Yen Chen, Murray Stein, Jordan W. Smoller. *Genome-wide association study of PTSD in the Army Study To Assess Risk and Resilience in Service members (Army STARRS)*. The 2015 Anxiety and Depression Associaiton of America Annual Meeting, Miami, FL. (2015)

Jeffrey A. Sparks, **Chia-Yen Chen**, Xia Jiang, Linda T. Hiraki, Lars Klareskog, Lars Alfredsson, Karen H. Costenbader, Elizabeth W. Karlson. *Performance of prediction models for rheumatoid arthritis serologic phenotypes among women using family history, genetics and environmental factors*. The 2013 American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, San Diego, CA. (2013)

Jeffrey A. Sparks, **Chia-Yen Chen**, Linda T. Hiraki, Susan Malspeis, Karen H. Costenbader, Elizabeth W. Karlson. *The contribution of environmental factors to familial risk of rheumatoid arthritis by serologic phenotypes among women in a longitudinal cohort study*. The 2013 American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, San Diego, CA. (2013)

Conference posters

Chia-Yen Chen, Peter Kraft, Benjamin M. Neale, Jordan W. Smoller. *Study design and statistical tests for detecting gene-environment interaction on environmental exposure-defined phenotypes*. The 64th Annual Meeting of the American Society of Human Genetics, Boston, MA. (2014)

Mei-Hua Hall, **Chia-Yen Chen**, Bruce M. Cohen, Dost Öngür, Jordan W. Smoller. *Genomewide association analyses of eletrophysiological endophenotypes for schizophrenia and psychotic bipolar disorders*. XXIInd World Congress of Psychiatric Genetics, Copenhagen, Denmark. (2014)

Chia-Yen Chen, Jiali Han, David J. Hunter, Peter Kraft, Alkes L. Price. *Explicit modeling of genetic ancestry improves polygenic prediction accuracy*. The 63rd Annual Meeting of the American Society of Human Genetics, Boston, MA. (2013)

Jeffrey A. Sparks, **Chia-Yen Chen**, Xia Jiang, Linda T. Hiraki, Lars Klareskog, Lars Alfredsson, Karen H. Costenbader, Elizabeth W. Karlson. *Identifying Groups At Increased Risk Of Developing Rheumatoid Arthritis Using Family History and Genetic Risk Scores*. The 2013 American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, San Diego, CA. (2013)

Chia-Yen Chen, Seunggeun Lee, Samuela Pollack, David J. Hunter, Peter Kraft, Joel Hirschhorn, Alkes L. Price. *Inference of genetic ancestry using genotype data from a single individual*. Presented at the 62nd Annual Meeting of the American Society of Human Genetics, San Francisco, CA. (2012)

Chia-Yen Chen, Linda T. Hiraki, Susan Malspeis, Jing Cui, Bing Lu, Robert M. Plenge, Karen H. Costenbader, Elizabeth W. Karlson. *Effect of interactions between validated rheumatoid arthritis genetic factors and environmental factors on rheumatoid arthritis risk*. Presented at the 2012 American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, Washington, D.C. (2012)

Linda T. Hiraki, **Chia-Yen Chen**, Jing Cui, Susan Malspeis, Karen H. Costenbader and Elizabeth W. Karlson. *Joint effects of known genetic markers of rheumatoid arthritis risk and 25-Hydroxyvitamin D on rheumatoid arthritis risk*. Presented at the 2012 American College of Rheumatology/Association of Rheumatology Health Professionals Annual Meeting, Washington, D.C. (2012)

Chia-Yen Chen, Constance Chen, David J. Hunter, Peter Kraft. *Breast cancer genome-wide association study with SNP imputation based on 1000 Genomes Project*. Presented at the Fifth Annual Program in Quantitative Genomics Conference, Boston, MA. (2011)

Li-Hua Wang, **Chia-Yen Chen**, Cheng-Yeh Lee, Iuan-Horng Wang, Yu-Chin Cheng, Lin-I Hsu, Chi-Lin Chen, Yeong-Shiau Pu, Allen Wen-Hsiang Chiu, Chien-Jen Chen. *Comparison of loss of heterozygosity on chromosomes 15 and 16 in arsenic-induced and non-arsenic-induced transitional cell carcinoma*. Presented at the Fifth International Conference on Arsenic Exposure and Health Effects, San Diego, CA. (2002)

Invited presentations

Genome-wide association study of PTSD in the Army Study to Assess Risk and Resilience in Service Members (Army STARRS). HSPH Program in Genetic Epidemiology and Statistical Genetics Seminar Series. 2015

Genome-wide association study of PTSD in Army STARRS: methodological considerations and applications. HSPH Brain Health Colloquium. 2015

Improved ancestry inference using weights from external reference panels. MGH Center for Human Genetic Research Seminar Series. 2014

Polygenic prediction using genome-wide single nucleotide polymorphisms. Boston Taiwanese Biotechnology Association academic seminar series. 2013

REVIEWER ACTIVITY

Peer-reviewed Journals: PLoS Computational Biology, Human Mutation, Annals of Human Genetics, Bioinformatics, BMC Bioinformatics, American Journal of Medical Genetics Part B: Neuropsychiatric Genetics, Behavioral and Brain Functions, PLoS ONE

PROFESSIONAL SOCIETIES

2013- Member, American Society for Human Genetics
2013-14 Member, International Society of Psychiatric Genetics
2014- Member, Anxiety and Depression Association of America
2014- Organizing Committee, Boston Taiwanese Biotechnology Symposium

HONORS

Taiwanese Physicians Scholarship (2008-2013, Full scholarship with stipend for doctoral program at HSPH)
Program in Quantitative Genomics Student/Postdoc Travel Award (2012)
Honorary member, the Phi Tau Phi Scholastic Honor Society at National Taiwan University, Taiwan (2006)

COMPUTER SKILLS

Programming: Python, Shell scripting, R, SAS
Developed software SNPweights 2.1 (http://www.hsph.harvard.edu/alkes-price/software/)