

Charleston Chiang

Curriculum Vitae
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Education

- Ph.D., Harvard University 2005 – present
Division of Medical Sciences, Program in Biological and Biomedical Science
Leder Medical Science Program Scholar
- B.S., University of California, Los Angeles 2000 – 2005
Major: Microbiology, Immunology, and Molecular Genetics
Minors: Mathematics, Statistics
Summa Cum Laude, College Honors Program Scholar
- Walnut High School, Walnut, California 1996 – 2000
Outstanding Senior Scholar; Valedictorian

Research Experience

- Graduate Student**, Harvard Medical School, Broad Institute 3/2007 – present
Advisor: Joel Hirschhorn, M.D. Ph.D., Department of Genetics. 1/2006 – 6/2006
- Construction of genome-wide copy number variation map in an African American cohort.
 - Genome-wide association study to identify loci associated with BMI in an African American cohort using the Affymetrix 6.0 platform.
 - Association study of highly conserved SNPs and phenotypes related to the long-term reproductive fitness.
 - Genome-wide association study using Jamaican DNA pools to identify loci associated with BMI.
 - Empirical evaluation of genome-wide allelotyping using pooled DNA sample.
 - Association study to evaluate *PSARL* as a possible risk factor for common-form of obesity.
- Graduate Rotation Student**, Harvard Medical School 9/2006 – 3/2007
Advisor: Chao-ting Wu, Ph.D., Department of Genetics.
- Characterization of human ultraconserved elements (UCEs): the origin of their dosage sensitivity, motifs, and genomic boundaries.
 - Mutagenesis screen to isolate suppressor of the lethal allelic genetic interaction between *Su(z)2-1* and *Su(z)2-s36* in *Drosophila melanogaster*.
- Graduate Rotation Student**, Harvard Medical School 10/2005 – 12/2005
Advisor: Cynthia Morton, Ph.D., Department of Pathology.
- Mapping of the chromosomal breakpoint in two DGAP (Developmental Genome Anatomy Project) cases exhibiting similar hearing loss phenotype.
- Undergraduate Research Assistant**, UCLA 4/2002 – 6/2005
Advisor: Eric Vilain, M.D. Ph.D., Department of Human Genetics
- The genetic effect of the male-determining gene *Sry* on tyrosine hydroxylase (TH)

expression in the substantia nigra.

- Localization of *Dby* gene expression in murine brain

Publications

Keating BJ, Tischfield, S, *et al.* “Concept, Design and Implementation of a Cardiovascular Gene-centric 50K SNP Array for Large-scale Genomic Association Studies.” PLoS ONE, *in press*.

Chiang CWK*, Derti A*, Schwartz D, Chou MF, Hirschhorn JN, Wu C-t. “Ultraconserved elements: Analyses of dosage sensitivity, motifs, and boundaries.” *Genetics*, *in press*.

Dewing P, **Chiang CWK**, Sinchak K, Sim H, Fernagut P, Kelly S, Chesselet M, Micevych P, Albrecht KH, Harley VR, Vilain E. “Direct regulation of adult brain function by the male-specific factor SRY.” *Curr Biol.* 2006, Feb 21;16(4): 415-420.

Abstracts and Presentations

Chiang CWK, Gajdos ZKZ, Kuruvilla FG, Korn JM, Butler JL, Hackett R, Guiducci C, Nguyen T, Lyon HN, Wilks R, Forrester T, Haiman C, Henderson KD, Le Marchand L, Henderson BE, Palmert MR, McKenzie CA, Cooper RS, Zhu X, Hirschhorn JN. Rapid assessment of genetic ancestry in populations of unknown origin by genome-wide genotyping of pooled samples. Gordon Research Confereneec (GRC), Biddeford, ME, Jul. 2009.

Chiang CWK, Gajdos ZKZ, Kuruvilla FG, Korn JM, Hackett R, Butler JL, Guiducci C, Lyon H, Henderson KD, Cooper R, Zhu X, Le Marchand L, Henderson BE, Palmert MR, Hirschhorn JN. “Empirical evaluation of genome-wide allelotyping on pooled DNA samples.” American Society of Human Genetics (ASHG), Philadelphia, PA, Nov. 2008.

Feng T, Lyon H, Tayo B, Kang SJ, **Chiang CWK**, Adeyemo A, Rotimi C, Cooper R, Hirschhorn J, Zhu X. “A Genome-wide survey of recent natural selection in African-origin samples.” American Society of Human Genetics (ASHG), Philadelphia, PA, Nov. 2008.

Kang SJ, Tayo B, **Chiang CWK**, Feng T, Adeyemo A, Rotimi C, Luke A, Cooper R, Hirschhorn J, Zhu X, Lyon H. “A Genome-wide association study of body mass index (BMI) in African-origin samples.” American Society of Human Genetics (ASHG), Philadelphia, PA, Nov. 2008.

Kang SJ, Lyon H, Tayo B, **Chiang CWK**, Feng T, Cooper R, Hirschhorn J, Zhu X. “Comparison of population structure inferred by whole genome vs. local region.” International Genetic Epidemiology Society (IGES), St. Louis, MO, Sep. 2008.

Chiang CWK, Derti A, Hirschhorn JN, Wu C-t. “Depletion Analysis of Ultraconserved Elements among Copy Number Variants.” American Society of Human Genetics (ASHG), San Diego, CA, Oct. 2007.

Chiang CWK, Dewing P, Vilain E. “The genetic effect of the male-determining gene Sry on brain sexual dimorphism and function.” Southern California Conference of Undergraduate Research (SCCUR), Whittier College, Whittier, CA, Nov. 2004.

Academic Awards and Recognitions

National Science Foundation Graduate Fellowship (<i>Awarded</i>)	2007 – 2009
(<i>Honorable Mention</i>)	2005, 2006
Director’s Fellowship, Yale University (<i>declined</i>)	2005

Phi Beta Kappa Society	2005
Ira J. and Shirley Spoon Honors Collegium Scholarship, UCLA	2004
Golden Key International Honour Society	2003
CRC Press Freshmen Chemistry Achievement Award	2001
The National Society of Collegiate Scholar	2001
Alpha Lambda Delta Honor Society	2001
Phi Eta Sigma Honor Society	2001
The National Dean's List	2001

Teaching Experiences / Significant Extracurricular Activities

Teaching Fellow / Assistant, Harvard University, Cambridge, MA

- LS 1B: Genetics, Genomics, and Evolution Spring 2009
- Genetics 228: Genetics in Medicine Fall 2007

Guest Lecturer, Harvard University, Cambridge, MA

- Genetics 228: Genetics in Medicine: "Using Genetic Databases" Fall 2008

Lecture Coordinator, Science in the News, Boston, MA

Science in the News, a free evening seminar series for the public aimed at explaining and discussing today's hottest scientific topics without the hype or exaggeration often introduced by media coverage.

- "Stem Cells: Hope or Hype?" lecture series. Fall 2005
- "Obesity and Diabetes" lecture series. Fall 2006

Coach and Volunteer, MATHCOUNTS, Suzanne Middle School, Walnut, CA

MATHCOUNTS, a nation-wide program for 6th to 8th grade students designed to elicit interest in mathematics through team work and competition. Via 3-hr meetings each week from September to March, we convey and explain problem solving strategies, various mathematical concepts, and solutions to practice problems in order to prepare students for annual Chapter and State Competitions.

Head Coach, Suzanne Middle School, Walnut, CA Fall 2003 – Spring 2005

- Led Suzanne Middle School MATHCOUNTS team to 1st place finish in East San Gabriel Valley Chapter Competition, 2004.
- Received Best First Year Coach Award, Southern California MATHCOUNTS State Competition, 2004.

Assistant Coach, Suzanne Middle School, Walnut, CA Fall 1999 – Spring 2003

- Team finished top 4 in ESGV Chapter all four years.

Volunteer, East San Gabriel Valley Chapter, CA February 2006, 2008

- Assisted as scorer, judge, and runner of the Chapter competitions.

Invited academic counselor and speaker, Walnut High School, Walnut, CA

- Spoke annually to selected classes in academic preparation and college admission. 12/2000 – 4/2005

Software and Programming Language

Statistical Software: EXCEL, R, STATA, and SAS.

Script Programming: PERL.

Genetics Software: PLINK, EIGENSTRAT.

Membership in Scientific, Professional, and Honorary Societies

American Society for Human Genetics

Phi Beta Kappa Society

Golden Key International Honour Society

The National Society of Collegiate Scholars

Alpha Lambda Delta Honor Society

Phi Eta Sigma Honor Society

Selected Math / Science Coursework

Graduate coursework

Harvard Medical School:

Genetics 201: Principles of Genetics

Genetics 228: Genetics in Medicine

Cell Biology 201: Molecular Biology of the Cell

BCMP 200: Molecular Biology

BCMP 207: Molecular Approaches to Drug Action, Discovery, and Design

Medical Science 220: Human Pathophysiology

Medical Science 300: Conduct in Science

Micro 230: Analysis of the Biological Literature

MR 700: Mentored Clinical Casebook Project – Ehlers-Danlos Syndrome

Massachusetts Institute of Technology:

HST 035: Principle and Practice of Human Pathology

Harvard School of Public Health:

EPI 201: Introduction to Epidemiology

IMI 227: Genetics and Genomics of Infectious Diseases – malaria, tuberculosis, HIV

Undergraduate coursework

UCLA:

MIMG 101: Introductory Microbiology

MIMG 102: Introductory Virology

MIMG CM156: Human Genetics

MIMG C159: Advanced Molecular Genetics

MIMG 185A: Immunology

Chem 153AH: Biochemistry: Introduction to Structure, Enzymes, and Metabolism

Chem 153BH: Biochemistry: DNA, RNA, and Protein Synthesis

EEB C135: Population Genetics

MCDB 138: Developmental Biology

Honors Collegiums 138: Disease and Human Condition

Honors Collegiums 20: What is This Thing Called Science?: Nature of Modern Science

MIMG 101L: Microbiology Laboratory

MIMG 102L: Virology Laboratory

MIMG C120: Advanced Techniques in Microbiology

MIMG 199A/B: Directed Research, Vilain Lab

STAT 100A: Introduction to Probability Theory
STAT 100B: Introduction to Mathematical Statistics
STAT 100C: Linear Model and Multivariate Analysis
STAT 180: Introduction to Bayesian Statistics
MATH 115A: Linear Algebra
MATH 135A/B: Ordinary Differential Equations
MATH 136: Partial Differential Equations
MATH 142: Mathematical Modeling