CURRICULUM VITAE

Charles Yin Kiu Cheung

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Biographical Information

Email: cykc@u.washington.edu
Address: University of Washington
Department of Biostatistics
Health Sciences Building F-646
Box 357232
Seattle, WA 98195, USA
Website: http://charlescheung-statgen.com/

Education

PhD, Biostatistics 2009 – 2013
Department of Biostatistics, University of Washington, Seattle, WA, USA
Advisor: Professor Ellen M. Wijsman
Dissertation Title: Using Inheritance Vectors to Impute Genotypes and Detect Genotyping Errors on Large Pedigrees

Master of Science, Biostatistics 2007 – 2009
Department of Biostatistics, University of Washington, Seattle, WA, USA
Academic GPA: 3.71/4

Bachelor of Science 2002 – 2007
Double major with 3 concentrations:
Combined Majors in (1) Computer Sciences and (2) Microbiology and Immunology;
(3) Major in Statistics, University of British Columbia, Vancouver, BC, Canada
Academic GPA: A=4.2/4.33 [Distinction]

Research Interests

Infectious Diseases (Influenza Virus, HIV/AIDS); Computational Biology; Genotype-Phenotype Mapping; Bayesian; MCMC; Statistical Learning;
Heritable Diseases (Complex Traits); Statistical Genetics; Genotype Imputation; Pedigree-based analyses; Genotype Error Detection; Design of Studies
Public Health; Biostatistics; Bioinformatics; Stochastic Processes; Statistical Modeling; Statistical Computing; Statistical Genomics

Awards and Scholarship

Winner of the Roger W. Williams award at the International Genetic Epidemiology Society
[Boston] October 2010

- Best platform presentation
- 1 of the top 3 abstracts from *pre*-doctoral researchers (selected from a total of 246 submitted abstracts)

Consideration for Other Competitive Award

Finalist of the James V. Neel Young Investigator award at the International Genetic Epidemiology Society [Chicago] Sept 2013

- 1 of the top 3 abstracts from young *post*-doctoral researchers (selected from a total of 156 submitted abstracts)

Other Scholarship

Biostatistics Entrance Scholarships: Pfizer Award 2007
NSERC Undergraduate Student Research Award, Department of Statistics UBC 2006, 2007
UBC Science Scholar (averaged an A+)/ Dean's Honour List 2004/ 2002-2004, 2006
UBC Undergraduate Scholar Program Scholarship 2002-2006
British Columbia Government Scholarship 2002

Publications

Peer-Reviewed

Cheung, CYK., Thompson, E.A., Wijsman, E.M. GIGI: An approach to effective imputation of dense genotypes on large pedigrees. American Journal of Human Genetics 2013; 92(4): 504-516.
Program: GIGI (Genotype Imputation Given Inheritance)

Marchani, EE, **Cheung, CYK**, Glazner, CG, Conomos, MP, Lewis, SM, Sverdlov, S, Thornton, T, Wijsman, EM. Identity-by-Descent Graphs Offer a Flexible Framework for Imputation and both Linkage and Association Analyses. [Accepted: BMC Proceedings]

Thornton, T., Conomos, M., Sverdlov, S., Marchani, EE, **Cheung, C.Y.K.**, Glazner, C., Lewis, S.,Wijsman, E.M. Estimating and Adjusting for Ancestry Admixture in Statistical Methods for Relatedness Inference, Heritability Estimation, and Association Testing. [Accepted: BMC Proceedings]

Marchani EE, Chapman NH, **Cheung CYK**, Ankenman K, Stanaway IB, Coon HH, Nickerson D, Bernier R, Brkanac Z, Wijsman EM. Identification of rare variants from exome sequence in a large pedigree with autism. Human Heredity 2013; 74:153-164.

Zhao W, Marchani EE, **Cheung CYK**, Steinbart EJ, Schellenberg GD, Bird TD, Wijsman EM. Genome scan in familial late-onset Alzheimer's disease: a locus on chromosome 6 contributes to age at onset. American Journal of Medical Genetics - Neuropsychiatric Genetics 2013; 162(2):201-212.

Marchani E, Di Y, Choi Y, **Cheung C**, Su M, Boehm F, Thompson EA, Wijsman E. Contrasting identity-by-descent estimators, association studies, and linkage analyses using the Framingham Heart Study data. BMC Proc. 2009; 3(Suppl 7): S102.

Droit A, **Cheung C,** Gottardo R. rMAT--an R/Bioconductor package for analyzing ChIP-chip experiments. Bioinformatics. 2010 Mar 1;26(5):678-9.

In Preparation

Cheung, CYK., Thompson, E.A., Wijsman, E.M. Detecting Mendelian Consistent Genotyping Errors
Computer Program: ask

Cheung, CYK., Thompson, E.A., Wijsman, E.M. Design Matters! A Statistical Framework to Guide Subject Selection in Pedigrees.
Computer Program: GIGI-Pick (beta-version soon available - ask)

Work

Statistician at Professor Ellen M. Wijsman's Statistical Genetics lab Summer 2013 – Current
Division of Medical Genetics, Department of Medicine, University of Washington, Seattle, WA, USA

Research Assistant at Professor Ellen M. Wijsman's Statistical Genetics laboratory 2007- 2013
Department of Biostatistics, University of Washington, Seattle, WA, USA
Project: Genotype Imputation and Error Detection in Large Pedigrees
Mentors: Professor Ellen M. Wijsman **and** Professor Elizabeth A. Thompson (Statistics)

Research Assistant with Dr. Mary Emond Summer 2010
Department of Biostatistics, University of Washington, Seattle, WA, USA
Project: Testing rare variants identified in exome sequences in population data

Summer research assistant at Dr. Raphael Gottardo's laboratory Summer 2006, Summer 2007
Department of Statistics, University of British Columbia
Project: Developing an R package for the analysis of tiling-arrays for ChIP-chip genomics data

Intern Statistician at Statistics Canada, Ottawa, Canada Sept-Dec 2005
Project: Investigating the confidentiality issue in the Canadian Cancer Registry

Bioinformatics Assistant at Dr. REW Hancock's laboratory May-Aug 2005
Department of Microbiology and Immunology, University of British Columbia
Project: Analyzing microarray data

Next Research Position
Postdoctoral Fellow at Trevor Bedford's computational biology research lab
starting January 2014
Fred Hutchinson Cancer Research Center (Vaccine and Infectious Disease Division), Seattle, WA

Teaching/Consulting Experience

Teaching Assistant in Biostatistics 536(Categorical Data Analysis in Epidemiology) Oct-Dec 2011
- led discussion sections, graded homework

Statistical Consultant for the Biostatistics Department Sept-Dec 2010
- experimental designs, statistical analyses, and interpretation of data

Statistics Tutor for the Biostatistics Department May-June 2010
- prepared a student for qualifying exam (Statistical theory)

Other teaching experience:
Private Tutor in Mathematics and Science 2005-2006
Internet Tutor for people across different age and culture 2001-2002

Presentations

International Genetics Epidemiology Society 2013 (IGES) (*selected* for Platform Presentation – will present in September)
American Society of Human Genetics 2012 (ASHG) (Poster)
International Genetics Epidemiology Society 2012 (IGES) (Poster)
International Congress of Human Genetics 2011 (ICHG) (Poster)
International Genetics Epidemiology Society 2010 (IGES) (*selected* for Platform Presentation)
UW Biostatistics Retreat in 2010 and 2011 (Poster)
UW Biostatistics Student Seminar on Oct 6, 2010 and Feb 22,2012 (Oral Presentation)
Multidisciplinary Undergraduate Research Conference in March 2007 (Poster)

Professional Affiliations

International Society for Infectious Diseases member 2013
American Society of Human Genetics member 2011,2012
International Genetics Epidemiology Society member 2010, 2012, 2013

Professional Service

Reviewer of the PLOS Genetics journal

Other Affiliations

Purple Toast Toastmasters Club member 2011
- gave public speeches

UW Foundation for International Understanding Through Students (FIUTs) 2011-2012
- volunteered as an event leader

Technical Skills

Statistics:
Courses: Biostatistics sequence, Statistical Genetics sequence (includes a project of writing grant proposal), Categorical Data Analysis, Stochastic Processes, Statistical Inferences (Master and PhD level sequences), Statistical Method sequence (e.g. regression, GEE, mixed model, Bayesian, etc.), Statistical Learning, Design and Analysis of Experiments, Sample Surveys, Applied Regression Analysis

Other courses: Cancer Epidemiology (a project working with the SEER cancer registry), Environmental Epidemiology and Occupational Health, Modeling of Infectious diseases, Clinical Trials, etc.

Computing:

Programming languages: C++,C, Java, Perl, R, STATA, SAS, database programming (SQL) , objected-oriented programming, UML diagram
Platform: Windows, UNIX/Linux (e.g. Ubuntu)
Courses: Programming, Software Engineering, Algorithms, Relational Databases, Computer Hardware and System, Bioinformatics, Numerical Computation

Background in Biology:
Courses: Cell biology, Microbiological Techniques with lab experience, Immunology, Microbial Ecology, Genetics, Biochemistry, Bioinformatics