

Paul Lott

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Education

University of California, Davis, Davis, California, 2006 - 2013

Ph.D. in Genetics, Mentor: Professor Ian Korf,
Ph.D. Area of Specialization: Bioinformatics
Ph.D. Dissertation Title: StochHMM: A flexible hidden Markov model framework

University of Utah, Salt Lake City, Utah 1999-2004

B.S. in Biology, Area of Specialization: Human Genetics

Research Experience

Postdoctoral Research: Genome Center, University of California, Davis

August 2013-present (Research Advisor: Dr. Luis Carvajal-Carmona)

- Identification of novel risk variants important in gastric, colorectal, thyroid, and breast cancer using NGS
- Identification of driver mutations in gastric cancer using NGS
- Analysis of genetic risk factors for colorectal cancer in admixed Colombian population

Doctoral Research: Genetics Graduate Group, University of California, Davis

March 2007-August 2013 (Research Adviser: Dr. Ian Korf)

- Development of flexible hidden Markov Model application to extend HMMs
- Designed HMM models and investigated R-loop formation in the human genome
- Development of models to classify methylated regions in the human genome

Pre-graduate Research: Human Genetics, University of Utah, Utah

August 2005-August 2006 (Research Adviser: Dr. Victoria Lawson)

- Investigated functional roles of MFN2 mutations leading to CMT2A disease
- Analyzed confocal microscopy images of mitochondria to determine fission and fusion rates
- Screened new patients for multiple genetic mutations associated with neurological diseases

June 1999-August 2005 (Research Adviser: Jean-Marc Lalouel)

- Investigating genes linked to salt-sensitive hypertension in C57BL/6 mice on chromosome 4
- Cytological and expression studies in cell lines to determine genetic contribution of ADRP to salt sensitive hypertension in C57BL/6 mice

Teaching Experience

SPRING 2007 – Teaching Assistant MCB182 Genomics

Course content: Information theory, Sequence alignment, Hidden Markov Models, Motif Analysis, Sequencing Technologies including next-gen sequencing, proteomics, bioinformatics

Type of teaching: Lead discussion sections to review and expand students' knowledge on course subjects. Presented and lead in class discussion on issues of bioethics.

FALL 2010 – Teaching Assistant BIS101 Genes and Gene Expression

Course content: Basic genetics: central dogma, principles of heredity, linkage and recombination, DNA replication. Genetic analysis, Gene regulation,

Type of teaching: Lead 3 discussion sections to review and expand students' knowledge on course subjects.

SPRING 2013 – Teaching Assistant BIS180L Genomic Laboratory

Course content: Informatics, Transcriptomics, Sequence Analysis, RNA profiling and Clustering, Comparative genomics, Systems Biology, Network analysis, Proteomics

Type of teaching: Lead discussion sections and assist in computer laboratory. Develop lab tools for Galaxy Server

Papers

1. Porter MD, Dandekar R, Lott P, Comai L, Korf I. **Ploidomatic: A copy number variant detection hidden Markov model designed for diploid next-generation sequencing data.** Bioinformatics. 2013 Under Review.
2. Lott P, Korf I. **StochHMM: a flexible hidden Markov model tool and C++ Library.** Bioinformatics. 2013. Under Review.
3. Ginno PA, Lim YW, Lott P, Korf I, Chedin F. **GC skew at the 5' and 3' Ends of Human Genes Links R-loop Formation to Epigenetic Regulation and Transcription Termination.** Genome Res. 2013 Oct. 23(10):1590-1600.
4. Schroeder DI, Blair JD, Lott P, Yu HO, Hong D, Cray F, Ashwood P, Walker C, Korf I, Robinson WP, Lasalle JM. **The human placenta methylome.** Proc Natl Acad Sci. 2013 Apr. 110(15):6037-42.
5. Ginno PA, Lott P, Christensen HC, Korf I, Chedin F. **R-loop formation is a distinctive characteristic of unmethylated human CpG island promoters.** Molecular Cell. 2012 Mar 30;45(6):814-25. Epub 2012 Mar 1
6. Schroeder DI, Lott P, Korf I, LaSalle JM. **Large-scale methylation domains mark a functional subset of neuronally expressed genes.** Genome Res. 2011 Oct;21(10):1583-91.
7. Wang YZ, Yamagami T, Gan Q, Wang Y, Zhao T, Hamad S, Lott P, Schnittke N, Schwob JE, Zhou CJ. **Canonical Wnt signaling promotes the proliferation and neurogenesis of peripheral olfactory stem cells during postnatal development and adult regeneration.** J Cell Sci. 2011 May 1;124(Pt 9):1553-63.
8. Amiot EA, Lott P, Soto J, Kang PB, McCaffery JM, DiMauro S, Abel ED, Flanigan KM, Lawson VH, Shaw JM. **Mitochondrial fusion and function in Charcot-Marie-Tooth type 2A patient fibroblasts with mitofusin 2 mutations.** Exp Neurol. 2008 May;211(1):115-27.
9. Gociman B, Rohrwasser A, Hillas E, Cheng T, Hunter G, Hunter J, Lott P, Monson S, Ying J, Lalouel JM. **Response to genetic manipulations of liver angiotensinogen in the physiological range.** J Hum Genet. 2008;53(9):775-88.
10. Rohrwasser A, Lott P, Weiss RB, Lalouel JM. **From genetics to mechanism of disease liability.** Adv Genet. 2008;60:701-26. Review.
11. Gociman B, Rohrwasser A, Lantelme P, Cheng T, Hunter G, Monson S, Hunter J, Hillas E, Lott P, Ishigami T, Lalouel JM. **Expression of angiotensinogen in proximal tubule as a function of glomerular filtration rate.** Kidney Int. 2004 Jun;65(6):2153-60.

Conference

1. Lott P, Dunaway K, Yu K, Korf I. **StochHMM: A flexible Hidden Markov Model Framework for rapid development of HMMs.** Poster presented at Genome Informatics, Cambridge, England, UK. (2012 September)

Software

1. **StochHMM: A flexible hidden Markov Model library and application for rapid development of HMMs.**
<https://github.com/KorfLab/StochHMM>

Department/University Service

Genetics Graduate Group Admissions (2013)