

Christopher R. Robles

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Summary

PhD student in Human Genetics at UCLA working under Dr. Sriram Sankararaman. Interests include computational genomics, population genetics, ancient DNA, machine learning, statistical modeling, complex traits. Currently working on projects that develop and utilize statistical methods to analyze large genomic datasets from modern humans and ancient homonids.

Work Experience

University of California Los Angeles

Los Angeles, California

GRADUATE STUDENT FELLOW - SRIRAM SANKARARAMAN LAB

2015 - PRESENT

- Used statistical modeling and machine learning methods to determine the impact of Neanderthal introgression on modern human phenotypes.
- Used statistical modeling to discover human specific variants and discover the impact of human specific mutations on phenotypes.
- Simulated forward in time population genetics models using SLiM software to determine types of selection acting on neanderthal introgressed regions in modern humans.

Mount Sinai School of Medicine

New York, NY

BIOINFORMATICS ANALYST

2014 - 2015

- Used Python, MySQL, CGI, and HTML to create tools and interactive web pages to view and analyze RNA-seq data from fruit bats infected with Ebola
- Provided bioinformatics support for other members of the lab through mRNA, whole exome, and CHIP seq analysis.

University of Otago

Dunedin, New Zealand

MHIRT RESEARCH ASSOCIATE

2013 - 2014

- Developed gene annotations from an assembly of the Tuatara genome by creating a pipeline that utilizes hidden Markov modeling programs (HMMer) in conjunction with multiple sequence alignments (ClustalW) to identify putative gene regions using the UNIX environment.

National Human Genome Research Institute (NHGRI)

Bethesda, MD

NIH ACADEMY RESEARCH FELLOW

2011 - 2013

- Worked toward developing an animal model for Vitamin B12 deficiency by using advanced statistical methods and machine learning techniques (implemented in R and python) to find relationships between metabolites in genetically modified mice.
- Performed specialized research with NHGRI's Genome Technology Branch, helping to design and implement a genetic association study to examine inherited variants for congenital heart defects using mass spectroscopy-based technology; performed data analysis and database management.
- One of 14 students selected to participate in the NIH Academy Fellows Program. Participated in journal clubs, guest lectures, and discussions about health disparities; performed community service work to address health disparities in the Greater Washington D.C. area.

Broad Institute of MIT and Harvard

Boston, MD

UNDERGRADUATE RESEARCH ASSISTANT

2010

- Developed a pipeline for profiling bacterial transcriptomes using high-throughput sequencing.
- Developed an automated data processing technology to aid in the selection of specific primers from a large data set for enriching mRNA transcriptome libraries using AWK and Bash scripting.

Skills

Programming Python (PyTorch), R, AWK, EIDOS, LaTeX, JAVA

Tools PLINK, SLiM, MS, Bowtie, Tophat, Cufflinks

Relevant Courses Machine Learning algorithms, statistical learning with sparsity, matrix optimization, theoretical statistics

Web CSS, HTML, Linux, Apache, MySQL, PHP, JS

Select Presentations

American Society for Human Genetics (ASHG)

San Diego, CA

PLATFORM TALK

2018

- **Christopher R. Robles**; Sriram Sankararaman. "The impact of modern human specific sites on human phenotypes"

Society for Molecular Biology and Evolution (SMBE)

Yokohama, Japan

WALTER M. FITCH AWARD TALK

2018

- **Christopher R. Robles**, Andrea Ganna, Alexander Gusev, David Reich, Sriram Sankararaman. "Impact of Neanderthal gene flow on human biology"

American Society for Human Genetics (ASHG)

Orlando, FL

PLATFORM TALK

2017

- **Christopher R. Robles**, Andrea Ganna, Alexander Gusev, David Reich, Sriram Sankararaman. "Impact of Neanderthal gene flow on human biology"

Human Evolution: Fossils, Ancient and Modern Genomes: Wellcome Genome Campus

Cambridge, UK

POSTER PRESENTATION

2017

- **Christopher R. Robles**, Andrea Ganna, Alexander Gusev, David Reich, Sriram Sankararaman. "The impact of modern human specific sites on human phenotypes"

Publications

- Charleston W. K. Chiang, Serghei Mangul, **Christopher R. Robles**, Sriram Sankararam. "A comprehensive map of genetic variation in the world's largest ethnic group - Han Chinese". *Molecular Biology and Evolution*, Volume 35, Issue 11, 1 November 2018, Pages 2736–2750, <https://doi.org/10.1093/molbev/msy170>
- **Christopher R. Robles**, Andrea Ganna, Alexander Gusev, David Reich, Sriram Sankararaman. "Impact of Neanderthal gene flow on human biology". *In preparation*.
- Kristina M. Garske, David Z. Pan, Zong Miao, Yash V. Bhagat, Caroline Comenho, **Christopher R. Robles**, Jihane N. Benhammou, Marcus Alvarez, Arthur Ko, Chun Jimmie Ye, Joseph R. Pisegna, Karen L. Mohlke, Janet S. Sinsheimer, Markku Laakso, Päivi Pajukanta. "Saturated fat changes promoter accessibility in human adipocytes: Towards illuminating molecular basis of gene-environment interactions". *In Submission*.

Education

University of California Los Angeles

Los Angeles, CA

PH.D IN HUMAN GENETICS (2020 Expected)

2015-Present

- Thesis Advisor - Sriram Sankararaman

University of California Santa Cruz

Santa Cruz, CA

B.S. IN BIOENGINEERING *cum laude honors*

2008-2011

- Minor - Bioinformatics

Honors & Awards

- 2018 **Finalist**, Society for Molecular Biology & Evolution (SMBE) - Walter Fitch Award Yokohama, Japan
- 2017 **Fellowship**, NIH T32 - Genome Analysis Training Grant Los Angeles, CA
- 2016 **Fellowship**, Eugene V. Cota-Robles Fellowship Los Angeles, CA
- 2015 **Fellowship**, NSF AGEP – Competitive Edge Fellowship Los Angeles, CA
- 2011-2013 **Fellowship**, NIH Academy, NHGRI - National Institutes of Health Bethesda, MD
- 2009-2011 **Fellowship**, Minority Access to Research Careers (MARC) Santa Cruz, CA
- 2009 **Scholarship**, David S. Lee Academic Scholarship Santa Cruz, CA
- 2009 **Scholarship**, Multicultural Engineering Program Scholarship Santa Cruz, CA
- 2009 **Fellowship**, NIH T32 Research Mentoring Institute Santa Cruz, CA

Extracurricular Activities

UCLA Association for Multi-Ethnic Bioscientist's Advancement (AMEBA)

Los Angeles, CA

FOUNDING BOARD MEMBER

2015 - PRESENT

- Help with the recruitment and retainment of underrepresented minorities in UCLA's Graduate Program in Biosciences.
- Perform outreach to encourage underrepresented minorities to pursue STEM degrees.
- Chair of diversity panel – Equity Inclusion and Diversity Day at UCLA, 2016-2018.

American Society for Human Genetics (ASHG)

Bethesda, MD

TRAINEE COMMITTEE LEADER

2017 - Present

- Serve as 1 of 10 committee member representing graduate student and postdoc trainee interests in the ASHG national organization.
- Helped plan and execute trainee events for the ASHG national conference and throughout the year.
- Head of the professional development workshop committee, social events, and trainee twitter for ASHG.

Society for Advancement of Chicanos and Native Americans in Science (SACNAS)

Santa Cruz, Bethesda, Los Angeles

MEMBER

2007 - Present

- Perform outreach to encourage underrepresented minorities to pursue STEM degrees.
- Coordinated tours of bioengineering labs for underrepresented high school students.
- Served on a pathway to bioengineering panel for underrepresented high school students.