Vivak Soni – Curriculum Vitae

RESEARCH INTERESTS

Empirical and theoretical population genetics, evolution, statistical and computational methods for population genetic analyses.

CURRENT POSITION

University of Sussex, Brighton, UK
PhD, Biology, May 2017 – Present

Thesis title: "Patterns of diversity and divergence in the human genome."
Supervisors: Professor Adam Eyre-Walker, Dr Maria Clara Castellanos
Projects:

1. "Evidence of widespread low frequency balancing selection in humans."
2. "Does the age of a protein-coding gene constrain its evolution?"
3. "Gene-level and site-level factors affecting the rate of adaptive evolution in humans."
4. "Quantifying the variation in the effective population size across the human genome."

EDUCATION

Imperial College, London, UK
MSc, Bioinformatics, September 2015 – September 2016

Projects:

1. "Development of a pipeline to delimit species based on divergent selection"
   - Supervisor: Professor Tim Barraclough
   - Grade: distinction
2. "Analysis of the *Anopheles gambiae* complex"
   - Supervisor: Dr Caroline Colijn
   - Grade: distinction
3. "Identification of novel HERV-K retroviral elements in the human genome"
   - Supervisor: Dr Derek Huntley
   - Grade - distinction

The Open University, London, UK
BSc (Hons), Natural Science, September 2010 – May 2014

Dissertation: "Analysing the coevolutionary relationship between the purple throated carib hummingbird, *Eulampis jugularis* and the plant species, *Heliconia caribaea* and *bihai*."
Supervisor: Dr Mary Gruner
Grade: distinction

PAPERS IN PREPARATION

1. **Vivak Soni**, Michiel Vos, Adam Eyre-Walker, "Evidence of widespread low frequency balancing selection in humans."
2. Ana Filipa Moutinho, **Vivak Soni**, Julien Duthiel, Adam Eyre-Walker, "Does the age of a protein-coding gene constrain its evolution?"
3. **Vivak Soni** & Adam Eyre-Walker, "Estimation of rates of adaptive evolution across GO categories."

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TEACHING

Python for Biologists, BSc Course 2017–2020
Demonstrated in computer workshop sessions, worked individually with students and marked programs submitted as assignments.

Human Physiology, BSc Course 2017-2018
Led tutorial sessions and marked assignments.

Foundation Mathematics, BSc Course 2017–2018
Led tutorial sessions and marked assignments

SELECTED PRESENTATIONS

January 2020 – PopGroup, Leicester, UK (Talk).
"Evidence of widespread low frequency balancing selection in humans."

June 2019 – SMBE, Manchester, UK (Poster).
"Evidence of widespread low frequency balancing selection in humans."

January 2019 – PopGroup, Oxford, UK (Talk).
"A new method to detect balancing selection by comparing shared and private polymorphisms at neutral and putatively functional loci."

WORKSHOPS ATTENDED

June 2020 – "Python for data science, machine learning, and scientific computing", PRStatistics.
Workshop on applying machine learning methods to data science.

September 2019 – "SLiM Workshop", UAE, Norwich.
Workshop on SLiM simulation software.

June 2019 – "Phylogenomics and population genomics: Inference and applications", University of Barcelona.
Applying computational methods to population genomic and genetic datasets.

July 2018 – "SYSMIC Workshop 1", BBSRC, 8 months.
Course on statistical modelling.

May 2018 – "Machine Learning Workshop", Udemy, Self-paced.
Online machine learning course.

SKILLS AND INTERESTS

Proficient in Python, R and Julia. I have extensive experience with SLiM forward simulation software. Though I have not applied machine learning to my research it is a field I have great interest in. I am also experimenting with using GPU computing to optimise processes. Have worked in Linux, macOS, and Windows during my PhD.

I have been involved in our population genetics journal club throughout my PhD which has entailed presenting and leading discussion around chosen research papers.

Outside of population genetics I am involved in local politics, enjoy reading and keeping fit.