Hersh K. Bhargava

Curriculum Vitae

Some information redacted
for security in public version
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Education

2015-2019 **University of California, Berkeley**, *B.A. Molecular and Cell Biology*.
Concentration in Biochemistry. Graduate-level coursework in bioengineering. Degree expected 2019.

2012-2015 **Phillips Exeter Academy**.
Academic focus in Molecular Biology and Mathematics. Awarded the Diploma in Classical Language. Captain of the Daniel Webster Debate Society.

Research Experience

2015–Present **University of California, Berkeley**, Hurley Lab.
Project lead investigating the structural and biochemical mechanisms of autophagosome-lysosome fusion in mammalian autophagy. Previously solved crystal structures of protein complexes relating to transcriptional regulation in eukaryotes.

2016–Present **University of Pennsylvania & Case Western Reserve University**, Madabhushi Lab (CCIPD), .
Project lead applying computer vision and machine learning algorithms to the quantitative analysis of digital pathology samples from prostate cancer patients. Our goal is to generate algorithms that significantly improve patient outcomes by improving use of data and specificity of diagnostic and prognostic models.

Summer 2017 **HHMI Janelia Research Campus**, Schreiter Lab.
Developed a novel small-molecule + protein hybrid calcium indicator for use in neuroscience research, fusing covalent capture technologies with the Lavis Lab's Janelia Fluor dyes.

2015 **Phillips Exeter Academy StanEx Research Program**.
Collaborated with the Seung Kim lab at the Stanford University School of Medicine to assess the effects of GPCR knockdowns on circulating insulin-like peptide levels in Drosophila.

Papers and Presentations

1. **Bhargava, H.K.**, Leo, P., Elliott, R., Janowcyzk, A., Whitney, J., Feldman, M.D., Lal, P., Madabhushi, A., (2017), Prediction of Prostate Cancer Recurrence across Racial Groups using Computer-Extracted Features from Stromal Regions of Radical Prostatectomy H&E Slides. Manuscript in preparation.
2. **Bhargava, H.K.**, Deo, C., Lavis, L.D., Schreiter, E.R., (2017), A Small Molecule + Protein Hybrid Calcium Indicator. Poster presented at HHMI Janelia Research Campus Undergraduate Scholars Poster Session.
3. **Bhargava, H.K.**, Schulze-Gahmen, U., Stjepanovic, G., Hurley, J.H. (2017), Structural and Biochemical Analysis of the Brd4:P-TEFb Complex. Poster presented at the NIH Structural Biology Related to HIV/AIDS Conference.

Work Experience

2010-Present **H2 Micro**, Co-Founder and Managing Partner.

Co-founded a software development and consulting firm specializing in client-server applications for a variety of industries. Responsible for management of development teams, financial asset management, and long-term planning.

Selected Projects at H2 Micro

Medical Crosscheck: conception, design, and development of a mobile application for the creation, implementation, and sharing of checklists in the medical community.
AddMeToo: Development of a fully-featured social media application for a private client.

2016-Present **The Berkeley Forum**, Moderator.

Responsible for the development of questions for speaker moderated sessions as well as carrying out the moderated session. The Berkeley Forum is a non-profit, non-partisan, student-run organization dedicated to fostering productive discourse in the Berkeley community.

Selected Conversations Moderated

- Michael Stevens, Founder and host of Vsauce
- Dr. Hartmut Neven, Director of the Google Quantum AI Lab
- Dr. Aubrey de Grey, Founder and Chief Science Officer at SENS Research
- Danielle Feinberg, Director of Photography at Pixar

Technical Abilities

Computational

Languages	Python, MATLAB, Java, Objective-C, Swift, Javascript, Perl, Wolfram Language
Techniques	Machine learning, deep learning, computer vision, process automation, full stack software development, image processing
Tools	NumPy/SciPy, Scikit Learn, Pandas, TensorFlow, Git, node.js, Jupyter, Vim

Laboratory

Struct. Bio.	X-ray crystallography, Small Angle X-Ray Scattering (SAXS), Proteomics (IP-MS), Hydrogen-Deuterium Exchange (HDX)
Bioengineering	Directed protein evolution, high-throughput protein library design and synthesis, robotic automation.
Biochemistry	Protein chromatography, ITC, MALS, Western blotting/SDS-PAGE, fluorescence anisotropy
Miscellaneous	Cell culture (bacterial, insect, mammalian), Complex molecular cloning, fluorescence microscopy, virus production, small-molecule NMR spectroscopy

Languages

English	**Fully Proficient**	*First Language*
Latin	**Fully Proficient**	*5 years of study*
Ancient Greek	**Fully Proficient**	*2 years of study*
French	**Working Proficiency**	*2 Years of Study*
Hindi	**Working Proficiency**	