Salil Bhate, MA (Cantab.), MMath., MS, PhD

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EMPLOYMENT

Broad Institute of MIT and Harvard, 2021 - present:
Eric and Wendy Schmidt Center Postdoctoral Fellow
Mentors: Juan Caicedo and Caroline Uhler.

EDUCATION

Stanford University, 2015 - 2021: MS and PhD in Bioengineering:
MS in Bioengineering (synthetic biology, machine learning and statistics).
PhD Supervisor: Garry Nolan.
Thesis: *Towards semantic representations of tissue organization from high-parameter imaging data.*
University of Cambridge, 2014: MMath (with distinction):
Part III Mathematical Tripos. Thesis: *Statistical properties of geometric flows and equidistribution.* Supervisor: Prof. Vlad Markovic FRS.
University of Cambridge, 2013: BA Mathematics (first class honours):
Mathematical Tripos: top 10% in each year.

FIRST-AUTHOR PUBLICATIONS

biorxiv preprint, Aug. 2022*: Deciphering causal genomic templates of complex molecular phenotypes.*
S.S. Bhate* et al. (corresponding author)
Cell Systems, Oct. 2021*: Tissue schematics map the specialization of immune tissue motifs and their appropriation by tumors.*
S.S. Bhate*, G. L. Barlow* et al.
European Journal of Immunology, Jan. 2021*: Highly multiplexed tissue imaging using repeated oligonucleotide exchange reaction.*
J. Kennedy-Darling*, S.S. Bhate*, J. Hickey* et al.
Cell, Aug. 2020 *: Coordinated cellular neighborhoods orchestrate antitumoral immunity at the colorectal cancer invasive front.*
C. Schürch*, S.S. Bhate*, G. Barlow*, D. Phillips* et al.

OTHER PUBLICATIONS

Science Advances, in press*: Immunotherapy of glioblastoma explants induces interferon-γ responses and spatial immune cell rearrangements in tumor center, but not periphery*
T. Shekarian et al.
BMC Bioinformatics, Jan. 2022*: CellSeg: a robust, pre-trained nucleus segmentation and pixel quantification software for highly multiplexed fluorescence images*
M. Li et al.
Nature Communications, Nov. 2021*: Immune cell topography predicts response to PD-1 blockade in cutaneous T cell lymphoma.*
D. Phillips et al.
Nature Communications, June 2021*: Subcellular localization of drug distribution by super-resolution ion beam imaging.*
X. Rovira-Clave et al.
ResearchSquare preprint Feb. 2021*: A tissue atlas of ulcerative colitis to guide TNF inhibitor therapy*
A. Mayer et al.
Journal of Clinical Investigation, Jan. 2021*: Landscape of coordinated immune responses to H1N1 challenge in humans.* Z. Rahil et al.
Cell Stem Cell, Oct. 2018*: Systematic identification of factors driving cell-fate*

conversion using CRISPR activation screens. Y. Liu et al.
***Cell, Aug. 2018**: Deep profiling of mouse splenic architecture with CODEX multiplexed imaging.*
Y.Goltsev et al.
***BioBricks Foundation RFC 106, Mar 2015**: A Standard Type IIS Syntax for Plants.*
V. Rutten et al.

ACTIVITIES

Models, Inference and Algorithms, Broad Institute, Mar. 2022.
Invited talk.
Neural Information Processing Systems, Los Angeles, Dec. 2017
Poster in computational biology workshop:"Unsupervised representation learning to interrogate cellular behaviours in 46-parameter imaging data"
Poster in computational biology workshop:"A multi-modal neural network for learning cis and trans regulation of stress response in yeast"
Keystone Single Cell 'Omics, Stockholm, May 2017
Poster: "Single-cell reference maps of tissue architecture using multiparameter imaging and unsupervised representation learning with neural networks"
(SBSA Travel Award, $1000)
AACR-CIMT-EATI-CRI International Cancer Immunotherapy Conference, New York, Sep. 2016
Awarded short talk: "Automatic identification of cellular niches using multiparameter imaging and deep learning"
(SBSA Travel Award, $1000, BioX Oral Presentation travel award $500)
Plants Workshop, iGEM Giant Jamboree, Nov. 2014, Boston: Conducted technical session on *M. polymorpha* in the plants for iGEM workshop.
Gold Medal, iGEM Nov. 2014, Boston: competed as member of University of Cambridge-JIC team

AWARDS AND SCHOLARSHIPS

Bruce and Elizabeth Dunlevie Bio-X Stanford Interdisciplinary Graduate Fellowship, 2016: full tuition and stipend support at elevated rate, 3 years.
Clark Bioengineering Fellowship, 2015: full tuition and stipend support, 2 years.
Cambridge PMC Bursary, 2014: £2000 grant for interdisciplinary collaboration.
Senior Scholarship Prize, (2011, 2012, 2013, 2014) for excellent performance in Parts IA, IB, II and III of the Math Tripos.
Best A-Level Performance, King Edward VI Grammar School, 2010.

TEACHING

Ethics of Biotechniology, Stanford, Spring 2018: BioE131 teaching assistant. Hoefer award for mentorship of student writers.
Synthetic Biology lab, Stanford, Fall 2017: BioE44 teaching assistant

EXPERIENCE

Intern, Atum Technologies, April - June 2015
Protein engineering. Designed and performed high-throughput screen to optimize function of transposase variants in *S. cerevisiae*, finding several variants now in production.
Research assistant, Haseloff lab, Sep. 2014 - March 2015
Plant synthetic biology. Optimized constructs and protocols for electroporation of *M. polymorpha* spores.
Software engineering intern, FIS technologies, June - Sep. 2013
Implemented error logging tool for credit reporting software.

SKILLS AND INTERESTS

Programming: C++, Python, R, C#, (modelling/machine-learning/software development). Pytorch/Tensorflow. Basic: SQL, Java.
Language skills: Marathi (Fluent). German, Classical Greek, Latin, French (A-level)
Other: Hindustani classical singing. Cycling and the outdoors.