Krishna Shrinivas

NSF-Simons Independent Fellow, Harvard

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Research Interests: I am broadly interested in cellular physiology, with a focus on investigating the collective processes that underlie gene regulation, nuclear organization, and developmental processes. To this end, I develop models that integrate approaches from theory, simulation, and informatics, which are tested and refined in synergy with experimentalists. The focus of my PhD at the Chakraborty Lab has been to explore a role for phase separation in regulation of gene expression, in close collaboration with the Sharp and Young Labs.

Education

2014 - 2020 PhD in Chemical Engineering, MIT
Masters in Chemical Engineering Practice, MIT

2010 - 2014 B.Tech (Honors) in Chemical Engineering IIT-Madras, India

Fellowships and Awards

2020 - 2021 **NSF-Simons Independent Fellowship**, *Harvard*
2019 ELBE fellowship *(declined)*
2019 Dow Travel Award for Professional Development
2018 **Edward W. Merill Outstanding Teaching Assistant Award**, *MIT*
2014 - 2015 MITSCEP 1936 Course Xa Fellowship, *MIT*
2014 **Institute silver medal for excellence**, *IIT-Madras*
2014 Reliance Heat Transfer prize, *IIT-Madras*

Publications

Refer Scholar for up-to-date list

Highlighted papers

Cell 2020 J.E. Henninger[=], O. Oksuz[=], **K. Shrinivas**[=], et al.,
in press RNA-mediated feedback control of transcriptional condensates

Mol. Cell 2019 **K. Shrinivas**[=], B.R. Sabari[=], E.L. Coffey, et al.,
Enhancer features that drive formation of transcriptional condensates

PNAS 2018 A. Gao[=], **K. Shrinivas**[=], et al.,
Evolution of weak cooperative interactions for biological specificity

Science 2018 B.R. Sabari[=], A. Dall'Agnese[=], A. Boija, I.A. Klein, E.L. Coffey, **K. Shrinivas**, et al.,
Coactivator condensation at super-enhancers links phase separation and gene control

Cell 2017 D. Hnisz[=], **K. Shrinivas**[=], R.A. Young[c], A.K. Chakraborty[c], P.A. Sharp[c],
A phase separation model for transcriptional control

[=] Equal contributions, [c] Corresponding author

Other papers

Science 2020 — **I.A. Klein**[=], A. Boija [=], et al.,
Partitioning of cancer therapeutics in nuclear condensates

Nature 2019 — Y.E. Guo[=], J.C. Manteiga[=], ..., **K. Shrinivas** et al.,
Pol II phosphorylation regulates a switch between transcriptional and splicing condensates

Cell 2018 — A. Boija[=] , I.A. Klein[=] , B.R. Sabari, A. Dall'Agnese, ... , **K. Shrinivas** et al.,
Transcription factors activate genes through the phase separation capacity of their activation domains

IJCRE 2016 — **K. Shrinivas**[=], R.P. Kulkarni[=], S. Shaikh[=], et al.,,
Prediction of reactivity ratios in free radical copolymerization from monomer resonance–polarity (Q–e) parameters: Genetic programming-based models

J. Macro Sci B — **K. Shrinivas**, U. Natarajan[c],
A self-consistent lattice formulation for thermodynamic properties of multi-component polymer mixtures adsorbed at solid interfaces

PLOS One 2014 — S. Roy, **K. Shrinivas**, & B. Bagchi[c],
A stochastic chemical dynamic approach to correlate autoimmunity and optimal vitamin-D range

Patents

2020 — **Methods and assays for modulating gene transcription by modulating condensates** *Co-inventor*
PCT/US2019/023694, *Patent Pending*

Selected presentations

2020 — **Kavli Seminar** *Harvard, USA*
Invited talk

NSF-Simons Center *Harvard, USA*
Qbio Colloquia, Invited talk

2019 — **MPI-PKS and MPI-CBG** *Dresden, Germany*
ELBE Colloquia, Invited talk

Lewis-Sigler Institute *Princeton, NJ*
Seminar, Invited talk

Center for Systems Biology *Dresden, Germany*
Department Colloquia, Invited talk

Keystone Symposia on Biomolecular Condensates *Snowbird UT*
Plenary talk, poster

APS March Meeting *Boston MA*
Contributed talk

IMES Research Seminar Series *MIT*
Seminar talk

2018 — **Biophysics retreat, MIT** *Cape Cod*
Poster prize

Greater Boston Area Stat Mech Meeting *Brandeis University*
Table talk

Liquid-liquid phase separation in cells, conference *EMBL, Heidelberg*
Poster

2017 **Weekly seminar series** *Brandeis University, MA*
Invited talk

Biophysics retreat, MIT *Cape Cod*
Contributed talk

Phase separation and RNA processing in disease, conference *San Diego*
Plenary Talk

Sixth Annual P01 Meeting on T-cell signaling *UC,San Francisco*

Teaching and mentorship

2019 Kaufman Teaching Certificate Program, MIT

2017 - Now Mentored 1 PhD and 3 M.S. students, MIT

Fall 2017 Teaching assistant for U.G. Transport Class, MIT
Received student-nominated outstanding TA prize

Service

Peer review Reviewer for *Cell*, *Science*, and *PNAS* (along with PI)

Sci-comm MIT ChemE Communication Lab

Open science Organized workshops, mentored >5 UROPS, and developed open-access resources

eLife Community Ambassador 2019-2020

Journal club Lead monthly meetings on phase separation in biology

Industrial Experience

Mar - Apr 2016 **Visting Scientist, Merck** *(Ballydine, Ireland)*
Pharmaceutical manufacturing strategies

Jan - Feb 2016 **Visting Scientist, Cenovus Energy** *(Calgary, Canada)*
Improving the efficiency of oil extraction from oil sands