CURRICULUM VITAE

JAYAJIT DAS, Ph.D.

PRESENT TITLE AND AFFILIATION

DUAL/JOINT APPOINTMENT:

Associate Professor of Pediatrics
College of Medicine
The Ohio State University
Principal Investigator, Battelle Center for Mathematical Medicine
The Research Institute at Nationwide Children's Hospital

CITIZENSHIP AND VISA STATUS

Permanent Resident
Citizenship India

OFFICE ADDRESS

Battelle Center for Mathematical Medicine
The Research Institute III, Nationwide Children's Hospital
575 Children's Crossroad
Columbus, Ohio 43215
P: 614-355-5632
F: 614-355-5895
jayajit.das@nationwidechildrens.org

EDUCATION

UNDERGRADUATE EDUCATION

1994	Presidency College, Calcutta University India	Bachelor Science

GRADUATE EDUCATION

2000	Statistical Physics, Inst. of Math. Sci. & Raman Res. Inst. India	Ph.D.

POST-GRADUATE EDUCATION & TRAINING

2005-2008	Massachusetts Institute of Technology Massachusetts	Postdoc
2002-2005	University of California Berkeley	Postdoc

California

2000-2002	Virginia Tech Virginia	Postdoc

ACADEMIC APPOINTMENTS

2016-	Associate Professor of Pediatrics The Wexner medical Center at The Ohio State University Columbus, Ohio
2008-2016	Assistant Professor of Pediatrics The Wexner medical Center at The Ohio State University Columbus, Ohio
2008	Assistant Professor of Battelle Center for Mathematical Medicine The Research Institute, Nationwide Children's Hospital Columbus, Ohio
2008	Assistant Professor of Physics (Adjunct Faculty) The Ohio State University Columbus, Ohio

SERVICE

ACADEMIC ADMINISTRATIVE RESPONSIBILITIES

2008-	Faculty Search Committee, Battelle Center for Mathematical Medicine The Research Institute, Nationwide Children's Hospital Columbus, Ohio
05/2012-06/2012	Ad Hoc Grant Reviewer NIH Study Section MABS (Modeling and Analysis of Biological Systems)
08/2013-09/2013	Reviewer (Phase I) NIH Special Study Section (ZAI1ZL-I1-IMVC Workgroup)
2013-	Member PhD thesis committee Physics Department The Ohio State University
09/2014-10/2014	Ad Hoc Grant Reviewer NIH Study Section MABS (Modeling and Analysis of Biological Systems)
09/2015-10/2015	Ad Hoc Grant Reviewer

	NIH Study Section MABS (Modeling and Analysis of Biological Systems)
11/2016-11/2016	Ad Hoc Grant Reviewer Human Frontier Science Program (HFSP)
05/2018-06/2018	Ad Hoc Grant Reviewer NIH CSR Anonymization Study (BST IRG)
01/2019-02/2019	Ad Hoc Grant Reviewer NIH CSR Anonymization Study (BST IRG)
09/2019-09/2019	Ad Hoc Grant Reviewer Vici grants, The Netherlands
09/2019-11/2019	Ad Hoc Grant Reviewer Computational Models of Immunity for RFA-AI-19-011 (NIAID)
01/2020	Ad Hoc Grant Reviewer Italian Medicines Agency (AIFA)
01/2020	Ad Hoc Grant Reviewer HLA and KIR Region Genomics in Immune-Mediated Diseases RFA-AI-19-041 (NIAID)

INSTITUTIONAL/LOCAL ACTIVITIES

2009	Member Website Development Committee Research Institute at Nationwide Children's Hospital Columbus, Ohio
2009	Organizer Visit for a seminar speaker for the Immunology Seminar Program The Ohio State University Columbus, Ohio
2010	Member of Graduate Faculty Representative College PhD Committee The Ohio State University Columbus, Ohio
2010	Organizer Visit for a seminar speaker for the Biophysics Program

The Ohio State University
Columbus, Ohio

2011 Organizer
Visit for a seminar speaker for the Immunology Seminar Program
The Ohio State University
Columbus, Ohio

2012 Member of Graduate Faculty Representative
College PhD Committee
The Ohio State University
Columbus, Ohio

2012 Organizer
Visits for seminar speakers for the Research Institute Seminar Program
Nationwide Children's Hospital
Columbus, Ohio

2013 Poster Judge
The Wexner Medical Center Research Day
The Ohio State University
Columbus, Ohio

2013 Poster Judge
Research retreat at the Research Institute
Nationwide Children's Hospital
Columbus, Ohio

2013 Organizer
Visit for a colloquium speaker for the Physics Department
The Ohio State University
Columbus, Ohio

2014 Poster Judge
Denman Undergraduate Research Forum
The Ohio State University
Columbus, Ohio

2018 Poster Judge
The Wexner Medical Center Research Day
The Ohio State University

2018 Poster Judge
Research retreat at the Research Institute
Nationwide Children's Hospital
Columbus, Ohio

REGIONAL ACTIVITES

2009 Session Chair
Annual Meeting of American Physical Society
Pittsburgh, Pennsylvania

2013 Session Chair
International Conference on Computational Cell Biology, From the Past to the Future
Virginia Tech
Blacksburg, Virginia

2014 Session Co-Chair
Invited session in the Annual APS meeting
Denver, Colorado

INTERNATIONAL/NATIONAL ACTIVITES

2014 Co-Organizer
2nd Zing conference on Mathematical and Computational Medicine
Cancun, Mexico

2015 Session Chair
Annual March Meeting, American Physical Society
San Antonio, Texas

2016 Co-organizer
Current topic workshop on Modeling and Inference from Single molecules to cells at Mathematical Biosciences Institute
Columbus, Ohio.

2016 Co-organizer
3rd International conference on Mathematical and Computational Medicine
Columbus, Ohio.

2017 Co-organizer
1st Meeting on Physical Concepts and Computational Models in Immunology
MIT, Cambridge, Massachusetts.

2018 Co-organizer
4th International conference on Mathematical and Computational Medicine
Cancun, Mexico.

2020 Co-organizer
5th International conference on Mathematical and Computational Medicine
Telluride, Colorado.

HONORS AND AWARDS

2013 Outstanding Principal Investigator – Basic Science
The Research Institute
Nationwide Children's Hospital
Columbus, Ohio

RESEARCH SUPPORT

ONGOING RESEARCH

R01AI143740-01 **Jayajit Das (PI)** 9/1/2019 – 8/31/2023

Title: Developing a predictive in silico toolkit for modeling NK cell responses against RNA virus infections
Co-I: Salim I. Khakoo, University of Southampton, UK, William Stewart (BCMM)

R56AI146581-01 **Jayajit Das (PI)** 9/1/2019 – 8/31/2020

Modeling Antibody-induced Immune Responses by NK cells in Mice and Humans
Co-I: Lewis L. Lanier, UCSF , William Stewart (BCMM)

W. M. Keck Foundation **Jayajit Das (Co-I)** 2015-2019
Measuring the Evidence in Evidence-Based Medical Research
PI: Veronica Vieland, BCMM.

PENDNG APPLICTIONS

1. R01 AI146581-01A1 **Jayajit Das (PI)** 2020-2025
Modeling Antibody-induced Immune Responses by NK cells in Mice and Humans
Co-Is: Lewis L. Lanier, UCSF, William Stewart (BCMM)
Status: Scored 12 percentile. Reviewed in October 2019.

2. R01 AI1536338-01 Jayajit Das and Lauren O. Bakaletz (NCH) (dual-PI) 2020-2025
Modeling formation and disruption of polymicrobial biofilms in otitis media
Co-Is: William Stewart (BCMM), Will Ray (BCMM), Alok Sutradhar(OSU)

COMPLETED RESEARCH

NIGMS 5R01GM103612-02 **Jayajit Das (PI)** 2014-2017
Quantitative determination of ecological niches for polymicrobial colonization in Otitis Media
Co-Is: W. Ed Swords (Wake Forest), Lauren Bakaletz, Veronica Vieland, Will C. Ray, and Ciriyam Jayaprakash.

NIAID R56AI108880-01 **Jayajit Das (PI)** 2014-2016
Uncovering basic signaling mechanisms in NK cells in mice and humans
Co-Is: Lewis Lanier (UCSF), William Stewart (BCMM)

The Ohio Supercomputer Center **Jayajit Das (PI)** 2014
Quantification of 3D Polymicrobial Biofilm Structure and Time Evolution

Bridge Fund **Jayajit Das (PI)** 2014-2015
Nationwide Children's Hospital, The Research Institute

NIAID Program for Research on Immune Modeling and Experimentation
Jayajit Das (Consultant) 2013-2015
PI: Stuart Sealfon (Mt. Sinai Medical Center)

NIAID R56AI090115-01A1 **Jayajit Das (PI)** 2012-2014
A computational model to uncover basic signaling mechanisms of NK cell activation
CoI: Lewis Lanier (UCSF)

Start-up Grant **Jayajit Das (PI)** 2008-2013
Nationwide Children's Hospital, The Research Institute

PUBLICATIONS

BOOKS, BOOK CHAPTERS

1. *Systems Immunology. An Introduction to Modeling and Methods for Scientists*
Edited by **Jayajit Das** and Ciriyam Jayaprakash
CRC Press (Taylor and Francis Group), Boca Raton, USA (2019). ISBN-10: 1498717403

2. **Das J.*** (2019) Physical Models in Immune Signaling.
Chapter in *Systems Immunology. An Introduction to Modeling and Methods for Scientists*
Edited by **Jayajit Das** and Ciriyam Jayaprakash. CRC Press (Taylor and Francis Group) ISBN-10: 1498717403

ARTICLES IN PEER REVIEWED JOURNALS

1. **Das, J.** & Rao, M. (1998). Dynamics of ordering of Heisenberg spins with torque – nonconserved case.
   Physical Review E. 57, 5069.

2. **Das, J.** & Rao, M. (1999). Dynamics of ordering of isotropic magnets.
   Physica A. 270, 253.

3. **Das, J.** & Rao, M. (2000). Ordering dynamics of Heisenberg spins with torque: Crossover, spin waves and defects.
   Physical Review E. 62, 1601.
4. **Das, J.,** Rao, M., & Ramaswamy, S. (2002) Nonequilibrium criticality, spatiotemporal chaos and control.
   Europhysics Letters. 60, 418.

5. **Das, J.,** Bullard, T.J., & Tauber, U.C. (2003) Vortex transport and voltage noise in disordered superconductors.
   Physica A. 318, 48.

6. Bullard, T.J., **Das, J.,** & Tauber, U.C. (2004) Dynamics of magnetic flux lines in the presence of correlated disorder.
   Trends in Superconductivity Research. 67-76.

7. Hahn, H., Chakraborty, A.K., **Das, J.,** Pople, J., & Balsara. N.P. (2005) Order-Disorder transitions in cross-linked block copolymer solids.
   Macromolecules. 38, 1277-1285.

8. **Das, J.,** Yoshida, M., Fresco, Z., Choi, T.L., Frechet, J.M.J., & Chakraborty. (2005) A Dendronized polymer is a single molecule glass.
   Journal of Physical Chemistry B. 109, 6535-6543.

9. Gomez, E.D., **Das, J.,** Chakraborty, A. K., Pople, J.A., & Balsara, N.P. (2006) Effect of crosslinking on the structure and thermodynamics of lamellar block copolymers.
   Macromolecules. 39, 4848-4859.

10. Cemerski, S., **Das, J.,** Locasale, J., Arnold, P., Giurisato, E., Markiewicz, M.A., Fremont, D., Allen, P.M., Chakraborty, A.K., & Shaw, A.S. (2007) The stimulatory potency of T cell antigens is influenced by the formation of the immunological synapse.
    Immunity. 26, 345-355.

11. Wylie, D., **Das, J.,** & Chakrabory, A.K. (2007) Sensitivity of T cells to antigen and antagonism emerges from differential regulation of the same signaling module.
    Proceedings of National Academy of Sciences USA. 104. 5533-5538.

12. Artyomov, M., **Das, J.,** Kardar, M., & Chakraborty, A., K. (2007) Purely stochastic binary decision in cell signaling models without underlying deterministic bistabilities. *Proceedings of National Academy of Sciences.* 104, 18958-18963.

13. Bullard, T.J., **Das, J.,** Daquila, G.L., & Tauber, U.C., (2008) Vortex washboard voltage noise in type II superconductors. *European Physical Jornal B.* 65, 464.

14. Cemerski, S., **Das, J.,** Giurisato, E., Markiewicz, M.A., Allen, P.M., Chakraborty, A.K., & Shaw, A.S. (2008) The balance between T cell receptor signaling and degradation at the center of the immunological synapse is determined by antigen quality. *Immunity.* 29, 414-422.

15. Prasad, A., Zikherman, J., **Das, J.,** Roose, J., Weiss, A.,& Chakraborty, A.K., (2009) Origin of the sharp boundary that discriminates positive and negative selection of thymocytes. *Proceedkings of National Academy of Sciences USA.* 106, 528-533.

16. **Das, J.,** Ho, M., Zikherman, J., Govern, C., Ming, Y., Weiss, A., Chakraborty, A.K., & Roose, J. (2009) Digital signaling and hysteresis characterize Ras activation in lymphocytes. *Cell.* 136, 337-351.

17. Chakraborty, A.K., **Das, J.,** Zikerman, J., Ming, Y., Govern, C., Ho, M., Weiss, A., Chakraborty, A.K., & Roose, J. (2009) Molecular origin and functional consequences of digital signaling and hysteresis during Ras activation in lymphocytes. *Science Signaling.* 2, pt2.

18. **Das, J.,** Kardar, M., & Chakraborty, A.K. (2009) Positive feedback regulation results in spatial clustering and fast spreading of active signaling molecules on a cell membrane. *Journal of Chemical Physics.* 130, 245102.

19. **Das, J.*,** Frechet, J.M.J., & Chakraborty, A.K. (2009) Self-Assembly of dendronized polymers. *Journal of Physical Chemistry.* 130, 13768-13775.

20. Chakraborty, A.K. & **Das, J.** (2010) Pairing computation with experimentation: A powerful coupling for studying T cell signaling. *Nature Reviews Immunology.* 10, 59-71.

21. **Das, J.*** (2010) Activation or tolerance on Naural Killer cells is modulated by ligand quality in a non-monotonic manner. *Biophysical Journal.* 99, 2028-2037.

22. Riese, M.J., Grewal, J., **Das, J.,** Zou, T., Patil, V., Chakaborty, A.K., & Koretzky, G. (2011) Decreased DAG metabolism enhances Erk activation and augments CD8+ T cell function *responses.*
Journal of Biological Chemistry. 286,5254-5265.

23. Dworkin, M.*****, Mukherjee, S., Jayapakash, C., & **Das, J.*** (2012) Dramatic reduction of dimensionality in large biochemical networks owing to strong pair correlations.
Journal of the Royal Society Interface. 9, 1824-1835.

24. Vieland, V.J., **Das, J.,** Hodge, S., & Seok, S.C. (2013) Measurement of statistical evidence on an absolute scale following theromodynamics principles.
Theory in Biosciences. 132, 181-194.

25. Mukherjee, S., Zhu, J., Zikherman, J., Parameswaran, R., Kadlecek, T.A., Wang, Q., Au-Yeung, B., Ploegh, H., Kuriyan, H., **Das, J.*,** & Weiss, A*****. (2013) Monovalent and multivalent ligation of the B cell receptor exhibit differential dependence upon Syk and Src family kinases.
Science Signaling. 6. (Faculty 1000 Prime selection)

26. **Das, J.*** (2013) Positive feedback produces broad distributions in maximum activation attained within a narrow time window in stochastic biochemical reactions.
Journal of Chemical Physics. 138, 15101.

27. Mukherjee, S., Rigaud, S., Seok, S.C., Fu, G., Porchenka, A., Dworkin, M.*****, Gascoigne, N., Vieland, V.J., Sauer, K*****.,& **Das, J.*** (2013) *In Silico* modeling of Itk activation kinetics in thymocytes suggests competing positive and negative IP4 mediated feedbacks increase robustness.
PLOS ONE. 8, e73937.

28. Joshi, R.P., Schmidt, A., **Das, J.,** Pytel, D., Riese, M.J., Lester, M., Diehl, J.A., Behrens, D.M., Kambayashi, T., & Koretzky, G.A. (2013) A predominant role for the ζ isoform of diacylglycerol kinase in regulatory T cell development and TCR-mediated Ras signaling.
Science Signaling. 6, ral 102.

29. Mukherjee, S., Seok, S.C., Vieland, V.J., & **Das, J.*** (2013) Data-driven quantification of the robustness and sensitivity of cell signaling networks.
Physical Biology. 10, 66002.

30. Mukherjee, S., Seok, S.C. Vieland, V.J., & **Das, J.*** (2013) Cell responses only partially shaped cell-to-cell variations in protein abundances in Escherichia coli chemotaxis.
Proceedings of National Academy of Science USA. 110, 18531-6.

31. Cassidy, S., Mukherjee, S., Myint, T.M., North, H., Traherne, J., Claas, A.M.F.HJ., Purbhoo, M.A., **Das, J.,** Khakoo, S.I. (2015) Peptide selectivity discriminates NK cells from KIR2DL2-and KIR2DL3-positive individuals.
European Journal of Immunology. 45, 492.

32. Mukherjee, S., Weimer, K.E., Seok, S.C., Ray, W.C., Jayaprakash, C., Vieland, V.J., & Swords, W. E., **Das, J.*** (2015) Host-to-host variation of ecological interactions in polymicrobial infections.
Physical Biology. 12, 16003. (highlights of 2015 selection)

33. Khakoo, S. I. & **Das, J.** (2015) NK cells: tuned by peptide?
Immunological Reviews. 267, 214-27.

34. **Das, J.***, Mukherjee, S**.**, and, Hodge, S. E. (2015) Maximum Entropy estimation of probability distribution of variables in higher dimensions from lower dimensional data.
Entropy, 17, 4986.

35. Westernberg, L., Conche, C., Huang, Y.H., Rigaud, S., Deng, Y., Siegemund, S, Mukherjee, S., Nosaka, L., **Das, J.,** Sauer, K. (2016) Non-canonical antagonism of PI3K by the kinase Itpkb delays thymocyte B-selection and renders it Notch-dependent.
Elife, 11, 5.

36. **Das, J.*** (2016) Limiting energy dissipation induces glassy kinetics in single cell high precision responses.
Biophysical Journal, 110, 1180.

37. Sugar I.P., **Das, J.**, Jayaprakash C., Sealfon S.C. (2017) Multiscale Modeling of Complex Formation and CD80 Depletion during Immune Synapse Development.
Biophysical Journal, 112, 997.

38. Mukherjee, S., Jensen, H., Stewart, W., Stewart, D., Ray, W.C., Chen, W.Y., Nolan, G.P., Lanier, L.L*., **Das, J.*** (2017) In silico modeling identifies CD45 as a regulator of IL-2 synergy in the NKG2D-mediated activation of immature human NK cells.
Science Signaling, 10, eaai 9062.

39. Mukherjee, S., Stewart, D., Stewart, W., Lanier, L.L., **Das, J.*** (2017) Connecting the dots across time: reconstruction of single-cell signaling trajectories using time-stamped data.
Royal Society Open Science, **4**, 170811.

40. **Das, J.***, Mokrzan, E., Lakhani, V., Rosas, L., Jurcisek, J., Ray, W.C., and, Bakaletz, L. O.* (2017) Extracellular DNA and Type IV Pilus Expression Regulate the Structure and Kinetics of Biofilm Formation by Nontypeable Haemophilus influenza.
mBio **8**, e01466-17.

41. Lakhani V, Tan L, Mukherjee S, Stewart WCL, Swords WE*, **Das J***. (2018) Mutations in bacterial genes induce unanticipated changes in the relationship between bacterial pathogens in experimental otitis media.
Royal Society Open Science, **5**, 180810.

42. Jadcherla SR, Prabhakar V, Hasenstab KA, Nawaz S, **Das J**, Kern M, Balasubramanian G, Shaker R. (2018) Defining pharyngeal contractile integral during high-resolution manometry in neonates: a neuromotor marker of pharyngeal vigor.
Pediatric Research, **84**, 341.

43. Mbiribindi B, Mukherjee S, Wellington D, **Das J**[*] and Khakoo SI[*] (2019) Spatial clustering of receptors and signaling molecules regulates NK cell response to peptide repertoire changes.
Frontiers Immunology, **10**, 605.

44. **Das J**[*] and Lanier LL[*] (2019). Data Analysis to Modeling to Building Theory in NK Cell Biology and Beyond: How Can Computational Modeling Contribute?
Journal of Leukocyte Biology, **105**, 1305.

45. Brown JR, Jurcisek J, Lakhani V, Snedden A, Ray WC, Mokrzan EM, Bakaletz LO*, **Das J*** (2019). *In Silico* Modeling of Biofilm Formation by Nontypeable Haemophilus influenzae *In Vivo*.
mSphere, 4, e00254-19.

46. Jayaprakash C* and **Das J*** (2019). Stochastic Sequestration Promotes Specificity in Decision Making in Single Cells.
Journal of Physical Chemistry B, doi: 10.1021/acs.jpcb.9b05722.

47. Wethington D, Harder O, Uppulury K, Stewart W, Chen P, King T, Reynolds S, Perelson AS, Peeples ME*, Niewiesk S*, **Das J*** (2019). Mathematical Modeling Identifies the Role of Adaptive Immunity as a Key Controller of Respiratory Syncytial Virus (RSV) Titer in Cotton Rats.
Journal of Royal Society Interface, doi: 10.1098/rsif.2019.0389.

EDITORIALS AND REVIEW ACTIVITIES

JOURNAL EDITOR

PLOS ONE. Sept. 2018 -

JOURNAL REVIEWER

Jun-Jul 2005	Manuscript Reviewer for Nano Letters
Mar-Apr 2008	Manuscript Reviewer for Journal of Chemical Physics
Feb-Mar 2009	Manuscript Reviewer for Biophysical Journal
Jun-Jul 2009	Ad Hoc Reviewer for Science Signaling
Jul-Aug 2009	Manuscript Reviewer for Journal of the American Chemical Society
Dec 09-Feb 10	Manuscript Reviewer for PLoS Computational Biology

Mar-Apr 2010	Manuscript Reviewer for Molecular Systems Biology
Jun-Jul 2010	Manuscript Reviewer for Proceedings of the National Academies of Sciences
Jun-Jul 2010	Manuscript Reviewer for ACS Nano
Nov 10-Jan 11	Manuscript Reviewer for Journal of Theoretical Biology
Dec 10-Feb 11	Manuscript Reviewer for Proceedings of the National Academies of Sciences
Aug-Oct 2011	Manuscript Reviewer for Molecular Systems Biology
Oct-Dec 2011	Manuscript Reviewer for PLoS ONE
Nov 11-Feb 12	Manuscript Reviewer for Proceedings of the National Academies of Sciences
Aug 11-Apr12	Manuscript Reviewer for PLoS ONE
May-Jun 2012	Ad hoc Reviewer for PLoS Computational Biology
Aug 2012	Ad hoc Reviewer for Proceedings of the National Academies of Sciences
Oct 2012	Ad hoc Reviewer for Molecular Systems Biology
Dec 12-Jan 13	Ad hoc Reviewer for Molecular Systems Biology
Feb-Mar 2013	Ad hoc Reviewer for (Journal) Science Signaling
May 2013	Ad hoc Reviewer for (Ad hoc) Science Signaling
Oct 2013	Ad hoc Reviewer for (Journal) Frontiers in Immunology
Feb 2014	Ad hoc Reviewer for Trends in Immunology
Mar 2014	Ad hoc Reviewer for Biophysical Journal
May-Jun 2014	Ad hoc Reviewer for PLoS ONE
May-Jun 2014	Ad hoc Reviewer for Journal of Chemical Physics
July 2014	Ad hoc Reviewer for (Manuscript) Biophysical Journal
Oct 2014	Ad hoc Reviewer for (Manuscript) Molecular Systems Biology
Nov 2014	Ad hoc Reviewer for Molecular Systems Biology
Nov-Dec 2014	Ad hoc Reviewer for Frontiers in Immunology
Nov-Dec 2014	Ad hoc Reviewer for Biophysical Journal
April 2015	Ad hoc Reviewer for Science Signaling
May 2015	Ad hoc Reviewer for eLife
June 2015	Ad hoc Reviewer for European Journal of Immunology
July 2015	Ad hoc Reviewer for Frontiers in Immunology
July 2015	Ad hoc Reviewer for Bioinformatics
Oct. 2015	Ad hoc Reviewer for PloS Computational Biology
Oct. 2015	Ad hoc Reviewer for BMC Bioinformatics
Jan. 2016	Ad hoc Reviewer for Science Signaling
Mar. 2016	Ad hoc Reviewer for Journal of Chemical Physics
Aug. 2016	Ad hoc Reviewer for Proceedings of the National Academies of Sciences
Aug. 2016	Ad hoc Reviewer for Proceedings of the National Academies of Sciences
Aug. 2016	Ad hoc Reviewer for Scientific Reports
Sep. 2016	Ad hoc Reviewer for Molecular Systems Biology
Nov. 2016	Ad hoc Reviewer for Biophysical Journal

Apr. 2017	Ad hoc Reviewer for Cell Reports
Jun. 2017	Ad hoc Reviewer for Biophysical Journal
Oct. 2017	Ad hoc Reviewer for PNAS
Oct. 2017	Ad hoc Reviewer for Dysphagia
Jan. 2018	Ad hoc Reviewer for Cell Reports
Jan. 2018	Ad hoc Reviewer for PNAS
Feb. 2018	Ad hoc Reviewer for Frontiers Microbiology
Feb. 2018	Ad hoc Reviewer for Dysphagia
Feb. 2018	Ad hoc Reviewer for Journal of Physics A
Mar. 2018	Ad hoc Reviewer for Biophysical Journal
Apr. 2018	Ad hoc Reviewer for JCO Clinical Cancer Informatics
Jul. 2018	Ad hoc Reviewer for mSphere
Aug. 2018	Ad hoc Reviewer for Physical Biology
Aug. 2018	Ad hoc Reviewer for Elife
Oct. 2018	Ad hoc Reviewer for PNAS
Oct. 2018	Ad hoc Reviewer for Frontiers in Immunology
Oct. 2018	Ad hoc Reviewer for mSphere
Oct. 2018	Ad hoc Reviewer for Dysphagia
Nov. 2018	Ad hoc Reviewer for Physical Biology
Mar. 2019	Ad hoc Reviewer for Immunology and Cell Biology
Jul. 2019	Ad hoc Reviewer for Journal of Theoretical Biology
Sep. 2019	Ad hoc Reviewer for iScience
Jan. 2020	Ad hoc Reviewer for Nature

TEACHING

COURSES TAUGHT

2009	Professor – Biophysics Course 6702 The Ohio State University Columbus, Ohio
2009	Professor – Signaling in the Immune System The Ohio State University MBI Columbus, Ohio
2010	Professor – Biophysics Course 6702 The Ohio State University Columbus, Ohio
2011	Professor – NIH Sponsored Workshop on Computational Immunology Yale University New Haven, Connecticut
2012	Professor – Biophysics Course 6702 The Ohio State University

Columbus, Ohio

2013 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2014 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2015 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2016 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2017 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2018 Professor – Biophysics Course 6702
The Ohio State University
Columbus, Ohio

2019 Professor –BSGP Course 7040
The Ohio State University
Columbus, Ohio

LECTURES/PRESENTATIONS

National/International

2006 Early and Late Time Signaling Events during T cell activation.
National Center for Biological Sciences
Bangalore, India

2007 The Immunological Synapse Modulates Antigen Quality during T cell Activation.
Engineering Cell Biology
Cambridge, Massachusetts

2010 Extracting mechanistic insights from statistical analysis of high throughput data.
Harvard Medical School
Boston, Massachusetts

2011 Competing Negative and Positive Feedbacks Generate Specific T cell Responses by Tuning Duration and Amplitude of Itk Activation.
BIRS Banff Centre
Banff, Canada

2011 Can we extract mechanistic insights from large biochemical networks using pair correlations?
St. John's College
Santa Fe, New Mexico

2011 From Models to Mechanisms: Understanding cell signaling response.
University of Pittsburgh
Pittsburgh, Pennsylvania

2012 From Models to Mechanisms Understanding cell signaling responses.
Bose Institute
Kolkata, India

2012 Dramatic reduction of dimensionality in large biochemical networks due to strong pair correlations.
New York University
New York City, New York

2012 From Models to Mechanisms: Understanding cell signaling responses.
Zing Conference
Xcaret, Mexico

2013 From Models to Mechanisms Understanding Cell Signaling Responses.
Bar-Ilan University
Tel-Aviv, Israel

2013 Modeling Signaling and Other Processes.
Society of Natural Immunity
Heidelberg, Germany

2014 Form-Function relationship in E. coli chemotaxis.
American Physical Society
Denver, Colorado

2014 Form-Function relationship in E. coli chemotaxis.
SIAM Conference on the life Sciences
Charlotte, North Carolina

2014 Form-Function relationship in E. coli chemotaxis.
Centre Europen de Calcul Atomique et Moleculaire

Lausanne, Switzerland

2014 Spatiotemporal growth of NTHi biofilms.
2nd Zing Conference on Computational and Mathematical Medicine
Cancun, Mexico

2015 Participation at a NIMBios meeting
University of Tennessee
Knoxville, Tennessee

2015 Connecting high dimensional data to mechanistic models in cell signaling.
Indiana University-Purdue University
Indianapolis, Indiana

2015 Single cells to cell populations: A search for mechanisms.
Indiana University-Purdue University
Indianapolis, Indiana

2015 From models to mechanisms: Understanding immune cell signaling responses.
Colorado State University
Fort Collins, Colorado

2015 Limiting Energy dissipation induces glassy kinetics in single cell high precision responses.
Telluride Meeting on Complexity of Dynamics and Kinetics: from Single Molecules to Cells
Telluride, Colorado

2016 Modeling single cell responses
Quantitative Immunology Program, Kavli Institute of Theoretical Physics
UCSB, Santa Barbara, California

2016 Connecting the dots across time: Gleaning signaling mechanisms from single cell snapshot data
Mathematical Biosciences Institute
The Ohio State University, Columbus, Ohio

2016 Connecting the dots across time: Gleaning signaling mechanisms from single cell snapshot data
3rd International Conference on Mathematical and Computational Medicine
The Ohio State University, Columbus, Ohio

2016 Gleaning NK cell signaling mechanisms from single cell snapshot data
1st Conference on Computational Genetics and Proteomics

Guanacasta, Costa Rica

2017 Gleaning NK cell signaling mechanisms from single cell snapshot data
Telluride Meeting on Complexity of Dynamics and Kinetics: from Single Molecules to Cells
Telluride, Colorado

2018 Mechanism of activation and tolerance in NK cells
2nd Meeting on Physical Concepts and Computational Models in Immunology
Paris, France

2018 Mechanism of activation and tolerance in NK cells
4th International Conference on Mathematical and Computational Medicine
Cancun, Mexico

2019 Modeling formation of biofilms by a bacterial pathogen in vitro and in vivo
International Conference on Multiscale Modeling in Biology
Guanacaste, Costa Rica

Local/Regional

2008 Membrane Proximal Signaling in Lymphocytes: An interplay between co-operative processes and stochastic fluctuation.
The Ohio State University MBI
Columbus, Ohio

2009 Membrane Proximal Signaling in lymphocytes: An interplay between co-operative processes and stochastic fluctuations.
The Ohio State University
Columbus, Ohio

2010 How Does Ligand Quality Modulate NK Cell Signaling?: Mechanistic Insights from a Computational Model.
The Ohio State University
Columbus, Ohio

DIRECT SUPERVISION

Graduate Students

2010-2015 Aleya Dhanji
Physics Department
PhD
The Ohio State University
Columbus, Ohio

2010-2012 Mithila Agnihotri
Biophysics Program
PhD
The Ohio State University
Columbus, Ohio

2011-2012 Katherine Williams
Mathematical Biosciences Institute
MS
The Ohio State University
Columbus, Ohio

2020 - Darren Wethington
BSGP
The Ohio State University
Columbus, Ohio

Summer Students

2009-2010 Adam Lachappelle
Lab Volunteer Student
High School
Metro High School
Columbus, Ohio

2010 Justin Wiser
Lab Volunteer Student
Graduate Student
The Ohio State University
Columbus, Ohio

2011 Talha Saif
Lab Volunteer Student
High School
Nationwide Children's Hospital Research Institute
Columbus, Ohio

2011 Siddharth Soni
Lab Volunteer Student

High School
New Albany High School
New Albany, Ohio

2011-2012 Arjun Venkataraman
Lab Volunteer Student
High School
Dublin High School
Dublin, Ohio

2015 Aditya Jadcherla
Lab Volunteer Student
High School
Columbus Academy
Columbus, Ohio

Undergraduate

2010-2012 Michael Dworkin
Math Major at The Ohio State University

2011-2012 Birra Aburrahman
Math Major at The Ohio State University

2014-2015 Josh Wallum
Math Major at The Ohio State University

2015-2016 Eric Typpi
Bioengineering Major at The Ohio State University

Research Assistants

2015-2018 Darren Wethington
BS in Chemical Engineering at The Ohio State University

Postdoctoral Research Fellows and Research Scientists

2009-2017 Sayak Mukherjee, Postdoctoral Fellow. PhD
2011-2012 Jagadish Kumar, PhD
2015-2018 Vinal Lakhani, Postdoctoral Fellow. PhD
2017-2018 Jonathan R. Brown, Research Scientist. PhD
2019- Rajdeep Grewal, Postdoctoral Fellow. PhD

CONFERENCES AND SYMPOSIA

NATIONAL/INTERNATIONAL DISTINGUISHED ACTIVITIES

1. Invited speaker at international meeting for Annual American Physical Society: *Driven magnets, spatio-temporal chaos and chiral steady states.* 2001 Seattle, Washington

2. Invited speaker at international meeting for Annual American Physical Society: *Voltage transport and voltage noise in disordered superconductors.* 2002 Indianapolis, Indiana

3. Invited speaker at international meeting for Annual American Physical Society: *Phase behavior of cross-linked di-block copolymers.* 2003 Austin Texas

4. Invited speaker at international meeting for AIChE: *Phase behavior of cross-linked di-block copolymers.* 2003 San Francisco, Texas

5. Invited speaker at international meeting Berkeley mini Stat-mech: *Single chain configurations and self-assembly of dendronized polymer.* 2004 Berkeley, California

6. Invited speaker at international meeting for Annual American Physical Society: *A dendronized polymer is a single molecule glass.* 2005 Los Angeles, California

7. Invited speaker at international meeting for AIChE: *Antigen quality regulates signaling and degradation in the immunological synapse.* 2006 San Francisco, California

8. Poster presenter at international meeting for EMBO conference series on Signaling in the immune system: *Rasgrp dependent feedback of SOS contributes to digital Erk responses and efficient lymphocyte activation.* 2007 Siena, Italy

9. Invited speaker at international meeting for AIChE: *Rasgrp dependent feedback of SOS contributes to digital Erk responses and efficient lymphocyte activation.* 2007 Salt Lake City, Utah

10. Poster presenter at international meeting for FASEB summer research conference on Signal Transduction on the immune system: *Rasgrp dependent feedback of SOS contributes to digital Erk responses and efficient lymphocyte activation.* 2008 New Haven, Connecticut

11. Poster presenter at international meeting for FASEB summer research conference on Signal Transduction in the Immune System: *Activation or Tolerance is Modulated by Ligand Affinity in a Non-monotonic way in NK cell Signaling.* 2009 Snowmass Village, Colorado

12. Poster presenter at international meeting for Annual American Association of Immunologists: *In silico Modeling of Itk Activation Kinetics in Thymocytes Suggests*

Competing Positive and Negative IP4 Mediated Feedbacks Increase Robustness. 2012 Boston, Massachusettes

13. Invited speaker at international meeting for qbio conference: *In silico Modeling of Itk Activation Kinectics in Thymocytes Suggests Competing Positive and Negative IP4 Mediated Feedbacks Increase Robustness.* 2012 Santa Fe, California

14. Poster presenter at international meeting for FASEB conference: *Monovalent and multivalent ligation of the B cell receptor exhibit differential dependence upon SYK and SRC family kinases.* 2013 Nassau, Bahamas

15. Flash Talk and Poster presenter at international meeting for EMBO conference: *Monovalent and multivalent ligation of the B cell receptor exhibit differential dependence upon SYK and SRC family kinases.* 2013 Dead Sea, Israel

16. Invited speaker at international meeting for annual American Physical Society: *Positive feedback produces broad distributions in maximum activation attained within a narrow time window in stochastic biochemical reactions.* 2013 Baltimore, Maryland

17. Invited speaker at international meeting for annual American Physical Society: *Limits on energy dissipation qualitatively change kinetic proofreading in single cells.* 2015 San Antonio, Texas

PROFESSIONAL MEMBERSHIPS AND ACTIVITIES

August 2008	Member	The American Society for Microbiology
September 2008	Member	Biophysical Society
March 2010-2011	Member	The American Association for Immunologists
January 2013-	Member	American Physical Society
January 2014 -	Member	The American Society for Microbiology