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News

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WORK HISTORY AND EXPERIENCE

Senior Vice President & Director 2013 - present
Institute for Systems Biology, Seattle, WA USA

Director of Integrative Biology 2012 – 2013
Institute for Systems Biology, Seattle, WA USA

Visiting Scientist 2010 – present
Lawrence Berkeley National Laboratory

Professor 2010 – present
Institute for Systems Biology, Seattle, WA USA

Associate Professor 2008 – 2010
Institute for Systems Biology, Seattle, WA USA

Assistant Professor 2005 – 2007
Institute for Systems Biology, Seattle, WA USA

Affiliate Faculty 2005 – present
Department of Microbiology, School of Medicine
Department of Biology
Molecular and Cellular Biology Program, Full Member
University of Washington, Seattle, WA USA

Senior Research Scientist 2002 - 2004
Institute for Systems Biology, Seattle, WA USA

Postdoctoral Fellow 2000 - 2002
Advisor: Prof. Leroy Hood, Institute for Systems Biology Seattle, WA, USA

Graduate Research Assistant 1996 – 2000
Advisor: Prof. Shiladitya DasSarma, University of Massachusetts Amherst, MA, USA

Junior Research Fellow 1994 – 1996
Council for Scientific and Industrial Research (CSIR)
Advisor: Prof. Dileep Deobagkar University of Pune, Pune, MH, India

Graduate Fellow 1992 – 1994
Department of Biotechnology
Advisor: Prof. Uday Sangodkar, Goa University, Panaji, GA, India

EDUCATION

Ph.D. Microbiology (2000), University of Massachusetts, Amherst, MA, USA
M.Sc. Marine Biotechnology (1994), Goa University, Panaji, GA, India
B.Sc. Microbiology (1992), University of Bombay, Mumbai, MH, India
Diploma. Systems Management (1991) National Inst. for Information Technology. Mumbai, India.

AWARDS AND RECOGNITION

- 2012 Alvin J. Thompson award and recognition for "fostering public trust in biomedical research through education and dialogue" from the Northwest Association for Biomedical Research.
- Daniel J. Zaffarano Lecture 2009. Recognition for contributions to interdisciplinary science, Iowa State University.
- SciFoo Camp 2008, hosted by Google, Nature Publishing Group and O'reilly Publishing @ Googleplex, Mountain View, CA.
- Washington State LASER (Leadership and Assistance for Science Education Reform) recognition for outreach.
- Council for Scientific and Industrial Research (CSIR) Junior Research Fellowship for graduate research in India. Awarded by the Central Government of India. 1994-1996.
- Department of Biotechnology (DBT) scholarship for graduate study in Biotechnology. Awarded by the Central Government of India. 1992-1994.

EXECUTIVE ACCOMPLISHMENTS (selected)

- Successfully steered ISB through leadership reorganization towards stability and sustainability
- Crafted Scientific Strategic Plan for ISB
- Recruited and developed faculty, and senior scientists
- Developed career tracks for junior scientists
- Established ISB Post-Baccalaureate and Post-Doctoral Fellows program to recruit outstanding young investigators
- Created ISB Innovator Award to promote transformational, cross-disciplinary, and collaborative activities among junior scientists across faculty groups
- Organized high profile events to increase ISB visibility worldwide: ISB annual symposia, ISB-Town Hall science discussions, ISB Systems Biology Course
- Established strategic partnerships with non-profit and for-profit research entities
- Founded Systems Education Experiences program to effect systemic change in education to increase underrepresented groups including minorities and women in STEM careers
- Coordinated institutional fundraising, communications, and grant-writing for education and research
- Established processes to streamline internal and external science communications
- Developed and executed strategy to cover $17M annual gap by coordinating financial projections, streamlining operations, and increasing fund raising through traditional and new channels
- Introduced crowdfunding into the spectrum of fund raising efforts at ISBQA

OTHER ADVISORY AND LEADERSHIP ROLES (selected)

- Director of Computation Component of ENIGMA -a $60M DOE Science Focus Area
- Scientific Review Panels for federal funding agencies include NSF, NIH, and DOE
- Advisory Boards for EMSL at Pacific Northwest National Lab, Richmond, WA
- Lead Editor for special issue on Systems & Synthetic Biology of Archaea (2011 – current)
- Bio-ITEST Advisory Board. Northwest Association for Biomedical Research (2009-2013)
- DoE ARPA-E – expert panel for evaluating future prospects for bioenergy (2009)

- Scientific Review Board member for Center for BioRenewable Chemicals (CBiRC) NSF ERC at Iowa State University (2007-current)
- Nature Scientific Data. Editorial Board Member. (2014-current)
- BMC Systems Biology Section Editor. (2007-current)
- DoE BER – chaired panels for planning a Systems Biology Knowledgebase for the Genomes to Life program (2007-2009)
- DoE ASCR – planning commission for identifying investments into biological problems requiring petascale computing (2009)
- DOE BER – planning commission for planning future energy investments into renewable energy technologies (2009)
- Reviewer. Review of the Department of Energy's Genomics: GTL Program National Research Council of the National Academies (2006).

GRANTS (Active and Completed)

Active (Selected)

- NSF- MCB: Physiologic state modulation by conditional translational complexes (09/01/16 – 08/31/19)
- NSF- ABI Innovation: A framework to predictably manipulate a microbial gene regulatory program (05/01/16 – 04/30/20)
- Celgene: Transcriptional regulatory network to inform multiple myeloma clinical studies (12/01/16-11/20/18)
- NIH- NIAID R01: A systems analysis of drug tolerance in Mycobacterium tuberculosis (12/01/16 – 11/30/21)
- NSF-MCB: Interplay of Transcriptional, Translational Regulatory Mechanisms and Kinetics of an Environmental Response (9/15/13-08/31/17)
- NSF-BBSRC: Identifying Mechanisms for Environmental Adaptation in Bacteria. NSF/BIO1518261. (08/01/2015-07/31/2018)
- DOE (BER): ENIGMA: Ecosystems and Networks Integrated with Genes and Molecular Assemblies. Project: Experimental Design, Implementation, and Data Analysis for the Magic Project. GTL Foundational Science through contract DE-AC02-05CH11231 between Lawrence Berkeley National Laboratory and the U.S. Department of Energy (10/01/2011 – 9/30/2015_
  - ❖ Discovery Project: Stress Test for assaying resilience of nitrogen cycling microbial communities (10/01/16-09/30/17)
- NIH: Omics for TB Disease Progression (OTB): Modeling Core. U19AI106761 (06/21/13 – 05/31/18)
- NIH: Center for Systems Biology. P50GM076547. (9/01/12 – 08/31/17)
- Institutional start-up funds; for FY2005-current.

Completed (Selected)

- NSF: Ocean Acidification: A systems biology approach to characterize diatom response to ocean acidification and climate change II. EF-1316206. 07/01/13 - 06/30/16.
- NSF-MCB: Interplay of Transcriptional, Translational Regulatory Mechanisms and Kinetics of an Environmental Response. MCB-1330912. 09/15/13 – 08/31/16.
- NSF: ABI Innovation: An Approach to construct a systems scale predictive model of a gene regulatory network complete with mechanisms at nucleotide resolution. DB-1262637. 04/01/13 – 3/31/16
- ISB-Sapphire Strategic Partnership. 09/17/12 – 09/16/15
- M.J. Murdock Charitable Trust Partners in Science Program: Employing systems models to accurately predict the biological consequences of sequence variation and small 3D structural changes in the P53 protein. 02/28/13 - 02/27/15
- DOE: Enabling a Systems Biology Knowledgebase with Gaggle and Firegoose. DE-SC0004877. 8/05/10-08/14/14.NSF: EAGER: Shared Principles of Adaptive Learning - Anticipatory behavior in *Halobacterium salinarum*. MCB-1237267. 7/1/12 – 6/30/14
- Strategic Partnership University of Luxembourg1/1/2009-12/31/2014
  - ❖ Project 1: Personal Genome Sequencing and Systems Genetics
  - ❖ Project 2: Personal blood Proteomics, RNA, and Cell Analysis
- NSF: Award OCE 0928561; A systems biology approach of diatom response to ocean acidification and climate change; FY2008-2013

- DOE: Award DE-FG02-04ER63807; Hydrogen regulation and global responses to electron, carbon, and nitrogen sources in *Methanococcus maripaludis.* FY2008-2011.
- DOE: Program: MAGGIE Component 3; Award DE-FG02-07ER64327; FY2006-2011. Molecular Assemblies, Genes, and Genomics Integrated Efficiently (MAGGIE). Component 3: Systems Approach in a Multi-Organism Strategy to Understand Biomolecular Interactions in DOE Relevant Organisms.
- Battelle: Award 214610; FY2007-2009. ISB/ PNNL Software Collaboration.
- NIH: Award GM077398; DNA Repair Process. FY2007-2009.
- DOE: Program: Genomes to Life; Award DE-FG02-04ER63807; FY2004-2007. Project title: Development of advanced tools for data management, integration, analysis and visualization through a comprehensive systems analysis of the halophilic archaeon Halobacterium sp.
- NASA: Program: Extreme Environmental Conditions; Award NNG05GN58G; FY2005-2007. Project Title: Molecular basis for adaptation to extreme environmental conditions of halophilic microorganisms.
- DOE: ISB/PNNL Collaboration; FY2007.
- NSF: Program: Information Technology Research; Award 0220153; FY2002-2004. Project title: Development of an integrated computational and experimental approach to predict biological networks in *Halobacterium sp*.
- NSF: Program: Biocomplexity in the Environment; Award 0220153; FY2003-2006. Project title: The oxygen-stress response in the extremophile *Halobacterium sp. NRC-1*: systems analysis and development of supplemental high school instruction modules.
- NSF: Program: Quantitative Systems Biotechnology; Award 0425825; FY2004-2007. Project Title: Modeling Predictive Biological Networks in *Halobacterium sp*.

PUBLICATIONS

1. Qin W, Amin SA, Lundeen RA, Heal KR, Martens-Habbena W, Turkarslan S, Urakawa H, Costa KC, Hendrickson EL, Wang T, Beck DAC, Tequia SM, Taub F, Holmes AD, Lowe TM, Moffett JW, Devol AH, **Baliga NS**, Arp DJ, Sayavedra-Soto LA, Hackett M, Armbrust EV, Ingalls AE and Stahl DA. (**2017**) Systems for recovery of energy generation selectively retained during periods of nutrient stress of an ammonia-oxidizing archaeon. ***in review***
2. Ament SA, Pearl JR, Bragg RM, Skene PJ, Coffey SR, Bergey DE, Plaisier CL, Wheeler VC, MacDonald ME, **Baliga NS**, Rosinski J, Hood LE, Carroll JB and Price ND. (**2017**) Genome-scale transcriptional regulatory network models for the mouse and human striatum predict roles for smad3 and other transcription factors in Huntington's disease. ***in review***
3. Valenzuela JJ, López García de Lomana A, Lee A, Armbrust EV, Orellana MV and **Baliga NS** (**2017**) The marine diatom *Thalassiosira pseudonana* is more resilient in an acidified ocean. ***in review***
4. Lomana Adrián López García de, Kaur A, Turkarslan S, Beer KD, Mast FD, Smith JJ, Aitchison JD and **Baliga NS** (**2017**) Adaptive prediction emerges over short evolutionary time scales. ***in review***
5. **Baliga NS**, Bjorkegren JL, Boeke JD, Boutros M, Crawford NP, Dudley AM, Farber CR, Jones A, Levey AI, Lusis AJ, Mak HC, Nadeau JH, Noyes MB, Petretto E, Seyfried NT, Steinmetz LM and Vonesch SC. (**2017**) The state of systems genetics in 2017. ***Cell Syst*** 4(1)7-15
6. Thompson AW, Turkarslan S, Arens CE, Lopez Garcia de Lomana A, Raman AV, Stahl DA and **Baliga NS**. (**2017**) Robustness of a model microbial community emerges from population structure among single cells of a clonal population. ***Environ Microbiol***
7. Turkarslan S, Raman AV, Thompson AW, Arens CE, Gillespie MA, von Netzer F, Hillesland KL, Stolyar S, Lopez Garcia de Lomana A, Reiss DJ, Gorman-Lewis D, Zane GM, Ranish JA, Wall JD, Stahl DA and **Baliga NS**. (**2017**) Mechanism for microbial population collapse in a fluctuating resource environment. ***Mol Syst Biol*** 13(3)919
8. Wang Z, Danziger SA, Heavner BD, Ma S, Smith JJ, Li S, Herricks T, Simeonidis E, **Baliga NS***, Aitchison JD* and Price ND* (**2017**) Combining inferred regulatory and reconstructed metabolic networks enhances phenotype prediction in yeast. ***PLoS Comput Biol*** 13(5)e1005489
9. Patra B, Kon Y, Yadav G, Sevold AW, Frumkin JP, Vallabhajosyula RR, Hintze A, Ostman B, Schossau J, Bhan A, Marzolf B, Tamashiro JK, Kaur A, **Baliga NS**, Grayhack EJ, Adami C, Galas DJ, Raval A,

Phizicky EM and Ray A (**2017**) A genome wide dosage suppressor network reveals genomic robustness. ***Nucleic Acids Res*** 45(1)255-270

10. Peterson EJ, Ma S, Sherman DR and **Baliga NS**. (**2016**) Network analysis identifies rv0324 and rv0880 as regulators of bedaquiline tolerance in mycobacterium tuberculosis. ***Nat Microbiol*** 1(8)16078
11. Plaisier CL, O'Brien S, Bernard B, Reynolds S, Simon Z, Toledo CM, Ding Y, Reiss DJ, Paddison PJ and **Baliga NS**. (**2016**) Causal mechanistic regulatory network for glioblastoma deciphered using systems genetics network analysis. ***Cell Syst*** 3(2)172-86
12. Keller MP, Paul PK, Rabaglia ME, Stapleton DS, Schueler KL, Broman AT, Ye SI, Leng N, Brandon CJ, Neto EC, Plaisier CL, Simonett SP, Kebede MA, Sheynkman GM, Klein MA, **Baliga NS**, Smith LM, Broman KW, Yandell BS, Kendziorski C and Attie AD. (**2016**) The transcription factor nfatc2 regulates beta-cell proliferation and genes associated with type 2 diabetes in mouse and human islets. ***PLoS Genet*** 12(12)e1006466
13. Hennon GMM, Ashworth J, Groussman RD, Berthiaume C, Morales RL, **Baliga NS**, Orellana MV and Armbrust EV. (**2015**) Diatom acclimation to elevated co2 via camp signalling and coordinated gene expression. ***Nature Climate Change*** 5)761–765
14. Ashworth J, Turkarslan S, Harris M, Orellana MV and **Baliga NS**. (**2016**) Pan-transcriptomic analysis identifies coordinated and orthologous functional modules in the diatoms *Thalassiosira pseudonana* and *Phaeodactylum tricornutum*. ***Marine Genomics*** 26(21-28
15. Toledo CM, Ding Y, Hoellerbauer P, Davis RJ, Basom R, Girard EJ, Lee E, Corrin P, Hart T, Bolouri H, Davison J, Zhang Q, Hardcastle J, Aronow BJ, Plaisier CL, **Baliga NS**, Moffat J, Lin Q, Li XN, Nam DH, Lee J, Pollard SM, Zhu J, Delrow JJ, Clurman BE, Olson JM and Paddison PJ. (**2015**) Genome-wide crispr-cas9 screens reveal loss of redundancy between pkmyt1 and wee1 in glioblastoma stem-like cells. ***Cell Rep*** 13(11)2425-39
16. Imam S, Schäuble S, Valenzuela J, López García de Lomana A, Carter W, Price ND, **Baliga NS.** (**2015**). A refined genome-scale reconstruction of Chlamydomonas metabolism: A platform for systems-level analyses. ***Plant J*** 84(6)1239-56
17. Ludwig C, Orellana MV, DeVault M, Simon Z, and **Baliga N.** (2015) Ocean acidification: Engaging students in solving a systems-level, global problem. ***The Science Teacher.*** 82(6)41-48
18. Turkarslan S, Peterson EJ, Rustad TR, Minch KJ, Reiss DJ, Morrison R, Ma S, Price ND, Sherman DR and **Baliga NS.** (**2015**) A comprehensive map of genome-wide gene regulation in mycobacterium tuberculosis. ***Sci Data*** 2(150010
19. Thompson AW, Crow MJ, Wadey B, Arens C, Turkarslan S, Stolyar S, Elliott N, Petersen TW, van den Engh G, Stahl DA and **Baliga NS.** (**2015**) A method to analyze, sort, and retain viability of obligate anaerobic microorganisms from complex microbial communities. ***J Microbiol Methods*** 117(74-77).
20. Reiss DJ, Plaisier CL, Wu WJ and **Baliga NS.** (**2015**) cMonkey2: Automated, systematic, integrated detection of co-regulated gene modules for any organism. ***Nucleic Acids Res*** 43(13)e87
21. Raman A. V. and Baliga N. S. (**2015**) The universe under a microscope. ***Environ Microbiol Rep*** 7(1)11-2
22. Imam S, Schauble S, Brooks AN, **Baliga NS** and Price ND. (**2015**) Data-driven integration of genome-scale regulatory and metabolic network models. ***Front Microbiol*** 6(409
23. Gomes-Filho JV, Zaramela LS, Italiani VC, **Baliga NS**, Vencio RZ and Koide T. (**2015**) Sense overlapping transcripts in is1341-type transposase genes are functional non-coding rnas in archaea. ***RNA Biol*** 12(5)490-500
24. Danziger SA, Reiss DJ, Ratushny AV, Smith JJ, Plaisier CL, Aitchison JD and **Baliga NS.** (**2015**) Bicluster sampled coherence metric (bscm) provides an accurate environmental context for phenotype predictions. ***BMC Syst Biol*** 9 Suppl 2
25. Minch KJ, Rustad TR, Peterson EJ, Winkler J, Reiss DJ, Ma S, Hickey M, Brabant W, Morrison B, Turkarslan S, Mawhinney C, Galagan JE, Price ND, **Baliga NS**, Sherman DR. The DNA-binding

network of Mycobacterium tuberculosis. Nat Commun.2015 Jan 12;6:5829. doi: 10.1038/ncomms6829. PubMed PMID: 25581030; PubMed Central PMCID: PMC4301838.

26. Muller EE, Pinel N, Laczny CC, Hoopmann MR, Narayanasamy S, Lebrun LA, Roume H, Lin J, May P, Hicks ND, Heintz-Buschart A, Wampach L, Liu CM, Price LB, Gillece JD, Guignard Schupp JM, Vlassis N, **Baliga NS**, Moritz RL, Keim PS, Wilmes P. Community-integrated omics links dominance of a microbial generalist to fine-tuned resource usage. Nat Commun. 2014 Nov 26;5:5603. doi: 10.1038/ncomms6603. PubMed PMID: 25424998; PubMed Central PMCID: PMC4263124.
27. Plaisier CL, Lo FY, Ashworth J, Brooks AN, Beer KD, Kaur A, Pan M, Reiss DJ, Facciotti MT, **Baliga NS**. Evolution of context dependent regulation by expansion of feast/famine regulatory proteins. BMC Syst Biol. 2014 Nov 14;8(1):122. [Epub ahead of print] PubMed PMID: 25394904; PubMed Central PMCID: PMC4236453
28. Rustad TR, Minch KJ, Ma S, Winkler JK, Hobbs S, Hickey M, Brabant W, Turkarslan S, Price ND, **Baliga NS**, Sherman DR. Mapping and manipulating the Mycobacterium tuberculosis transcriptome using a transcription factor overexpression-derived regulatory network. Genome Biol. 2014;15(11):502. PubMed PMID: 25380655; PubMed Central PMCID: PMC4249609.
29. Ashworth J, Bernard B, Reynolds S, Plaisier CL, Shmulevich I, **Baliga NS**. Structure-based predictions broadly link transcription factor mutations to gene expression changes in cancers. Nucleic Acids Res. 2014 Dec 1;42(21):12973-83.doi: 10.1093/nar/gku1031. Epub 2014 Nov 5. PubMed PMID: 25378323; PubMed Central PMCID: PMC4245936.
30. Hillesland KL, Lim S, Flowers JJ, Turkarslan S, Pinel N, Zane GM, Elliott N, Qin Y, Wu L, **Baliga NS**, Zhou J, Wall JD, Stahl DA. Erosion of functional independence early in the evolution of a microbial mutualism. Proc Natl Acad Sci U S A. 2014 Oct 14;111(41):14822-7. doi: 10.1073/pnas.1407986111. Epub 2014 Sep 29. PubMed PMID: 25267659; PubMed Central PMCID: PMC4205623.
31. Ashworth J, Plaisier CL, Lo FY, Reiss DJ, **Baliga NS**. Inference of expanded Lrp-like feast/famine transcription factor targets in a non-model organism using protein structure-based prediction. PLoS One. 2014 Sep 25;9(9):e107863. doi:10.1371/journal.pone.0107863. eCollection 2014. PubMed PMID: 25255272; PubMed Central PMCID: PMC4177876.
32. Zaramela LS, Vêncio RZ, ten-Caten F, **Baliga NS**, Koide T. Transcription start site associated RNAs (TSSaRNAs) are ubiquitous in all domains of life. PLoS One. 2014 Sep 19;9(9):e107680. doi: 10.1371/journal.pone.0107680. eCollection 2014. PubMed PMID: 25238539; PubMed Central PMCID: PMC4169567.
33. Peterson EJ, Reiss DJ, Turkarslan S, Minch KJ, Rustad T, Plaisier CL, Longabaugh WJ, Sherman DR, **Baliga NS**. A high-resolution network model for global gene regulation in Mycobacterium tuberculosis. Nucleic Acids Res. 2014 Oct;42(18):11291-303. doi: 10.1093/nar/gku777. Epub 2014 Sep 17. PubMed PMID: 25232098.
34. Brooks AN, Reiss DJ, Allard A, Wu WJ, Salvanha DM, Plaisier CL, Chandrasekaran S, Pan M, Kaur A, **Baliga NS**. A system-level model for the microbial regulatory genome. Mol Syst Biol. 2014 Jul 15;10:740. doi:10.15252/msb.20145160. PubMed PMID: 25028489; PubMed Central PMCID: PMC4299497.
35. Wurtmann EJ, Ratushny AV, Pan M, Beer KD, Aitchison JD, **Baliga NS**. An evolutionarily conserved RNase-based mechanism for repression of transcriptional positive autoregulation. Mol Microbiol. 2014 Apr;92(2):369-82. doi:10.1111/mmi.12564. Epub 2014 Mar 19. PubMed PMID: 24612392; PubMed Central PMCID:PMC4060883.
36. Ekici S, Turkarslan S, Pawlik G, Dancis A, **Baliga NS**, Koch HG, Daldal F. Intracytoplasmic copper homeostasis controls cytochrome c oxidase production. MBio. 2014 Jan 14;5(1):e01055-13. doi: 10.1128/mBio.01055-13. PubMed PMID: 24425735; PubMed Central PMCID: PMC3903287.
37. Beer KD, Wurtmann EJ, Pinel N, **Baliga NS**. Model organisms retain an "ecological memory" of complex ecologically relevant environmental variation. Appl Environ Microbiol. 2014 Mar;80(6):1821-31. doi: 10.1128/AEM.03280-13. Epub 2014 Jan 10. PubMed PMID: 24413600; PubMed Central PMCID: PMC3957629.

38. Turkarslan S, Wurtmann EJ, Wu WJ, Jiang N, Bare JC, Foley K, Reiss DJ,Novichkov P, **Baliga NS**. Network portal: a database for storage, analysis and visualization of biological networks. Nucleic Acids Res. 2014 Jan;42(Database issue):D184-90. doi: 10.1093/nar/gkt1190. Epub 2013 Nov 23. PubMed PMID: 24271392; PubMed Central PMCID: PMC3964938.
39. Danziger SA, Ratushny AV, Smith JJ, Saleem RA, Wan Y, Arens CE, Armstrong AM, Sitko K, Chen WM, Chiang JH, Reiss DJ, **Baliga NS**, Aitchison JD. Molecular mechanisms of system responses to novel stimuli are predictable from public data. Nucleic Acids Res. 2014 Feb;42(3):1442-60. doi: 10.1093/nar/gkt938. Epub 2013 Oct 31. PubMed PMID: 24185701; PubMed Central PMCID: PMC3919619.
40. Ballereau S, Glaab E, Kolodkin A, Chaiboonchoe A, Biryukov M, Vlassis N, Ahmed H, Pellet J, **Baliga NS**, Hood L, Schneider S, Balling R, Auffray C. Systems Biology: Integrative Biology and Simulation Tools (Chapter) in Functional Genomics and bioinformatics for systems biology. Eds, Prokop A and Csukas B. Springer. 2013.
41. Yoon SH, Turkarslan S, Reiss DJ, Pan M, Burn JA, Costa KC, Lie TJ, Slagel J, Moritz RL, Hackett M, Leigh JA, **Baliga NS**. A systems level predictive model for global gene regulation of methanogenesis in a hydrogenotrophic methanogen. Genome Res. 2013 Nov;23(11):1839-51. doi: 10.1101/gr.153916.112. Epub 2013 Oct 2. PubMed PMID: 24089473; PubMed Central PMCID: PMC3814884.
42. Beer KD, Orellana MV, **Baliga NS**. Modeling the evolution of C4 photosynthesis. Cell. 2013 Jun 20;153(7):1427-9. doi: 10.1016/j.cell.2013.05.058. PubMed PMID: 23791172; PubMed Central PMCID: PMC3832052.
43. Orellana MV, Pang WL, Durand PM, Whitehead K, **Baliga NS**. A role for programmed cell death in the microbial loop. PLoS One. 2013 May 8;8(5):e62595. doi: 10.1371/journal.pone.0062595. Print 2013. PubMed PMID: 23667496; PubMed Central PMCID: PMC3648572.
44. Ashworth J, Coesel S, Lee A, Armbrust EV, Orellana MV, **Baliga NS**. Genome-wide diel growth state transitions in the diatom Thalassiosira pseudonana. Proc Natl Acad Sci U S A. 2013 Apr 30;110(18):7518-23. doi: 10.1073/pnas.1300962110. Epub 2013 Apr 17. PubMed PMID: 23596211; PubMed Central PMCID: PMC3645528.
45. Pang WL, Kaur A, Ratushny AV, Cvetkovic A, Kumar S, Pan M, Arkin AP, Aitchison JD, Adams MW, **Baliga NS**. Metallochaperones regulate intracellular copper levels. PLoS Comput Biol. 2013;9(1):e1002880. doi: 10.1371/journal.pcbi.1002880. Epub 2013 Jan 17. PubMed PMID: 23349626; PubMed Central PMCID: PMC3551603.
46. Costa KC, Yoon SH, Pan M, Burn JA, **Baliga NS**, Leigh JA. Effects of H2 and formate on growth yield and regulation of methanogenesis in Methanococcus maripaludis. J Bacteriol. 2013 Apr;195(7):1456-62. doi: 10.1128/JB.02141-12. Epub 2013 Jan 18. PubMed PMID: 23335420; PubMed Central PMCID: PMC3624518.
47. Bare JC, **Baliga NS**. Architecture for interoperable software in biology. Brief Bioinform. 2014 Jul;15(4):626-36. doi: 10.1093/bib/bbs074. Epub 2012 Dec 11. PubMed PMID: 23235920; PubMed Central PMCID: PMC4103535.
48. Muller EE, Pinel N, Gillece JD, Schupp JM, Price LB, Engelthaler DM, Levantesi C, Tandoi V, Luong K, **Baliga NS**, Korlach J, Keim PS, Wilmes P. Genome sequence of "Candidatus Microthrix parvicella" Bio17-1, a long-chain-fatty-acid-accumulating filamentous actinobacterium from a biological wastewater treatment plant. J Bacteriol. 2012 Dec;194(23):6670-1. doi:10.1128/JB.01765-12. PubMed PMID: 23144412; PubMed Central PMCID: PMC3497503.
49. Rustad TR, Minch KJ, Brabant W, Winkler JK, Reiss DJ, **Baliga NS**, Sherman DR. Global analysis of mRNA stability in Mycobacterium tuberculosis. Nucleic Acids Res. 2013 Jan 7;41(1):509-17. doi: 10.1093/nar/gks1019. Epub 2012 Nov 3. PubMedPMID: 23125364; PubMed Central PMCID: PMC3592478.
50. Plaisier CL, **Baliga NS**. Harnessing the power of human tumor-derived cell lines for the rational design of cancer therapies. Pigment Cell Melanoma Res. 2012 Jul;25(4):406-8. doi: 10.1111/j.1755-148X.2012.01020.x. PubMed PMID: 22781216; PubMed Central PMCID: PMC3825090.

51. Plaisier CL, Pan M, **Baliga NS**. A miRNA-regulatory network explains how dysregulated miRNAs perturb oncogenic processes across diverse cancers. Genome Res. 2012 Nov;22(11):2302-14. doi: 10.1101/gr.133991.111. Epub 2012 Jun 28. PubMed PMID: 22745231; PubMed Central PMCID: PMC3483559.
52. Edgar RS, Green EW, Zhao Y, van Ooijen G, Olmedo M, Qin X, Xu Y, Pan M, Valekunja UK, Feeney KA, Maywood ES, Hastings MH, **Baliga NS**, Merrow M, Millar AJ, Johnson CH, Kyriacou CP, O'Neill JS, Reddy AB. Peroxiredoxins are conserved markers of circadian rhythms. Nature. 2012 May 16;485(7399):459-64. doi: 10.1038/nature11088. Erratum in: Nature. 2012 Sep 27;489(7417):590. PubMed PMID: 22622569; PubMed Central PMCID: PMC3398137.
53. Ashworth J, Wurtmann EJ, **Baliga NS**. Reverse engineering systems models of regulation: discovery, prediction and mechanisms. Curr Opin Biotechnol. 2012 Aug;23(4):598-603. doi: 10.1016/j.copbio.2011.12.005. Epub 2011 Dec 28. Review. PubMed PMID: 22209016; PubMed Central PMCID: PMC3477774.
54. Turkarslan S, Reiss DJ, Gibbins G, Su WL, Pan M, Bare JC, Plaisier CL, **Baliga NS**. Niche adaptation by expansion and reprogramming of general transcription factors. Mol Syst Biol. 2011 Nov 22;7:554. doi: 10.1038/msb.2011.87. PubMed PMID: 22108796; PubMed Central PMCID: PMC3261711.
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PATENTS

Patent Title: "Methods to Increase and Harvest Desired Metabolite Production in Algae"
Inventors: Nitin Baliga, Monica Orellana, Kenia Whitehead, Lee Pang
Assignee: Institute for Systems Biology

US Patent No: 8,911,965
Issue Date: 12/16/2014

Application Title: "Products and Methods Relating to Micro RNAs and Cancer.
Inventors: Chris Plaisier, Nitin Baliga
Assignee: Institute for Systems Biology
Patent Application No: 14/901,707
Priority Date: 6/27/13
Status: Pending

Application Title: "Methods to Identify Antituberculosis Compounds"
Inventors: Eliza Peterson, Nitin Baliga
Assignee: Institute for Systems Biology
Patent Application No: PCT/US17/012616
Priority Date: 1/8/16
Status: Pending

Application Title: "Computer-Implemented Method for Identifying Treatment Targets"
Inventors: Chris Plaisier, Nitin Baliga
Assignee: Institute for Systems Biology
Patent Application No: PCT/US17/030750
Priority Date: 5/3/16
Status: Pending

EDUCATION AND COMMUNITY LEADERSHIP

- Established Internships and Scientist-Educator-Student Partnerships to transfer authentic scientific practice and content from laboratories to classrooms (Systems Education Experiences): 2003-current
- Created a crowdsourced network to coordinate training and research on food security issues (Project Feed 1010): 2015-current. (http://www.projectfeed1010.com)
- Developed Next Generation Standards-aligned High School curriculum on systems biology, technology, computation, food security, ocean acidification (http://see.systemsbiology.net)
    - Trained thousands of teachers worldwide
    - Impacted ~2.5 million students in schools across all 50 States, >100 countries
- Instructor. Graduate level systems biology course. University of Washington, Seattle, WA. 2007-current
- Organizer. Systems biology workshop. Institute for Systems Biology, Seattle, WA. 2004-current
- Instructor. ATCC sponsored workshop on extremophile biology. 1997-1999 and 2002.
- Lecturer. Graduate level immunology course. University of Massachusetts, Amherst
- Lecturer. Undergraduate level microbiology course. University of Massachusetts, Amherst
- Lead Organizer. Gaggle Workshop for coordinating multi-institutional systems biology software development (http://gaggle.systemsbiology.net)

CURRENT GRADUATE STUDENTS, POSTDOCS, and SCIENTISTS

Abrar Abidi	Post-bac Fellow
Adrián López García de Lomana	Research Scientist, PhD (2010) Pompeu Fabra University
Amardeep Kaur	Research Associate IV
Annie Otwell	Postdoc, PhD (2016) Cornell
Christopher Plaisier	Senior Scientist, Ph.D. (2000) UCLA
Claudia Ludwig	Director, Systems Education Experiences
Eliza Peterson	Senior Scientist, PhD (2013) University of North Carolina
Jacob Valenzuela	Postdoc, PhD (2013) Montana State University
James Park	Postdoc, PhD (2016)
Jessica Day	Program Manager, Project Feed 1010

Julie Bletz	Senior Scientific Program Manager, PhD (2003), Stanford
Mario Arrieta-Ortiz	Postdoc, PhD (2016)
Matt Wall	Postdoc, PhD (2016)
Min Pan	Research Associate IV
Monica Orellana	Principal Scientist, PhD University of Washington
Serdar Turkarslan	Senior Scientist, Ph.D. (2009), UPenn
Vivek Srinivas	Postdoc, PhD (2016)
Wei-Ju Wu	Software Engineer

FORMER LAB MEMBERS

Name (alpha first name)	Current Employer	Current Position	Position when at ISB
Aaron Brooks	EMBL (Steinmetz group, Genome Biology Unit)	Postdoc	Grad Student
Abe Armstrong			RA
Aimee Desaki	Stratos Product Development	Interaction Designer	Technician
Allison Lee	Scripps	Graduate Student	Research Associate
Amy Schmid	Duke University	Assistant Professor, Department of Biology, Center for Systems Biology	Postdoc
Anne Thompson	Portland State University	Research Assistant Professor	Sr. Research Scientist
Arjun Raman			Postdoc
Bev Morrow	Retired		Exec Assistant
Carl Hansen	UBC, Vancouver	Professor	Visiting Scientist
Chris Bare	Sage Bionetworks	Senior Software Engineer	Software Engineer
Christina Arens	Living Computer Museum	Education Coordinator	Research Associate
Dan Tenenbaum	FHCRC	Systems Analyst/Programmer	Software Engineer
Danielle Miller Durudas			Postdoc
David Reiss	University of Washington	Research Scientist	Senior Scientist
Diego Martinez Salvanha	Universidad de Sao Paolo		Grad student and Visiting Scientist
Dina Kovarik	Shoreline Community College, Digital World Biology	Chair, Biotech Program & Instructor; Curriculum Developer, Instructor (Digital World)	Project Manager
Elisabeth Wurtmann	University of Minnesota	Graduate Student, Genetic Counseling	Postdoc and Research Scientist
Fang Yin Lo	Labcorp Clinical Trials		Grad student
Jesus Vicente Carbajosa	Dep Biotecnologia - UPM Madrid. SPAIN		Visiting Scientist
Justin Ashworth	Univ. of Technology, Sydney	Postdoc	Postdoc
Karen Foley			Software Engineer
Karlyn Beer	CDC - Atlanta		Grad student

Kenia Whitehead	Integrated Consulting		Postdoc
Kenichi Masumura	National Institute of Health Sciences in Japan		Visiting Scientist
Lee Pang	Genomatica	Research Scientist	Postdoc
Madhavi Vuthoori	Peterson Sullivan LLP	Accounting Services Professional	RA
Marc Facciotti	UC Davis	Assistant Professor	Postdoc and Research Scientist
Megan Bettilyon	Global Good	Senior Manager of Planning and Operations	Exec Assistant
Michael Johnson	Washington University St. Louis	Surgeon	RA
Micheleen Harris	Revolution Analytics	R Programmer	Software Engineer
Nadine Waldmann			Exec Assistant
Nicolas Pinel			Postdoc
Ning Jiang			Software Engineer
Paul Shannon	ISB		Software Engineer
Phu T. Van	FHCRC	Postdoc	Grad student
Richard Bonneau	NYU	Associate Professor	Senior Research Scientist
Sacha Coesel	University of Washington	Postdoc	Postdoc
Saheed Imam	Synthetic Genomics		Postdoc
Santosh Sathe	University of the Witwatersrand	Postdoc	Visiting Scientist
Sergey Lyubinetsky			RA III
Sergey Stolyar	University of Idaho	Research Professor	Senior Research Scientist
Sung Ho Yoon	KRIBB	Senior Scientist	Postdoc
Tie Koide	U of Sao Paolo	Assistant Prof	Postdoc
Tova Hornung	Amazon Web Services, Brew Haus Tours of Seattle		Exec Assistant
Victor Ng	National Yang-Ming University (Taiwan)	Associate Professor	Senior Research Scientist
Warren Carter	Nanostring	Research Associate	Research Associate
Yong Ah goo	University of Maryland	Research Assistant Professor	Graduate student

Undergrad interns

2004: Megan Mieslin
2005: Patrick Mar
2006: Jamie Mazon
2010: Alexis Valauri-Orton
2011: Holly Kuestner, Alexis Boleda
2012: Steven Do
2013: Olachi, William Harvey
2014: Paige Henry, Helen Tang, William Harvey

2015: Helen Ippolito, Anna Sherman
2016: Haley Lytle, Amanda Shu, Ayodale Braimah, Aza Allen

High School Interns

Name	Internship year	High School	Undergrad/Grad School
Hanh Nguyen	2003	Garfield HS	Stanford University
Sharmila Pal	2003	Garfield HS	University Washington
Gregory Alvarado	2004	Sealth HS	University of Miami
Stephanie Gil	2004	Nathan Hale HS	Whitman College
John Thompson	2004	Mount Rainier HS	
Katherine Alexander	2005	Nathan Hale HS	
Teresa Bailey	2005	Ballard HS	
Lu Zheng	2006	Roosevelt HS	NYU
Marian Deuker	2006	Ballard HS	Williams in MA
Jessica McFadden	2007	Garfield	Berkeley
Elsa Ogbe	2007	Foster HS	UW
Jessica Hale	2008	Ballard HS	UW, School of Aquatic and Fishery Sciences
Sue Yi	2008	Lakeside/ Rainier Scholar	Notre Dame
Neelofer Vahora	2009	Highline HS3, Evergreen/SSCC	UW – Gates Millenium Scholar
Pramod Chavali	2009	Redmond HS	UW
Goodwin Gibbins	2010	Andover	Cambridge
Danny Thomson	2010	Ballard HS	Princeton
Aisha McKee	2010	International School	Loyola Marymount
Kevin Baker	2011	Chief Sealth HS	
Olachi Oleru	2011	Garfield HS	Columbia
Jocelyn Lee	2011	Garfield HS	Stanford
Jia Hao Xu	2011	Eastside Prep	
Donald Chao	2012	Newport HS	U of MI, business school
Meredith Carlson	2012	Nathan Hale	Bryn Mawr
Raisah Vesteindottir	2012	Garfield	Santa Clara? (ask Vestein)
Julia Joo	6/2013-5/2014	International School, Bellevue	UW – full honors scholarship. doing research w/Ivy Center director, Dr. Charles Cobbs and collab w/ Dhiman Ghosh from ISB and using ISB's mass specs
Tian Qing Yen	6/2013-8/2013	Ballard HS	
Eric Grewal	2013	Monroe HS	Berkeley
Kedus Getaneh	2013	Bishop Blanchet	University of WA
Helen Ippolito	2013	Garfield	Lewis and Clark
Christine Huang	2013	Lakeside	Princeton
Karla Najera	2013	West Seattle HS	University of WA

Will Greene	2013	Seattle Academy	Cal Poly
Sarah Williams	2013	Interlake	
Alexandra Kuo	2014	Issaquah HS	University of WA
Amanda Shu	2014	Inglemoor	University of WA
Allison Kiang	2014	Harker School	
Anne Robertson	2014	Issaquah HS	Berkeley - Civil engineering
Daaniya Iyaz	2014	STEM Redmond	
Anna Farrell-Sherman	9/2014-2015	Ingraham HS	Wellesley College
Joan Aoanan	2015	Raisbeck Aviation High School	
Meena Reddy	2015	Tesla STEM HS	
Xin Yi Chen	2015	Inglemoor High School	
Anika Thomas-Toth	2015	Garfield High School	
Christine Pham	2015	Tesla STEM Redmond	WSU
Ashiana Dhanini	2015	Tesla STEM Redmond	
Rahul Srivastava	2015	Tesla STEM Redmond	
Jake Newfeld	2015	Tesla STEM Redmond	
Anjali Sribalaskandara	2015	Tesla STEM Redmond	
Varsha Veeramachaneni	2015	Tesla STEM Redmond	
Marco Rossi	2016	Seattle Academy	
Athan Liu	2016	Bellevue HS	Univ. of Chicago
Ivan Esmeral	2016	Skyline	Penn
Linnea Stavney	2016	Shorecrest	UW
Nida Khalil	2016	Doha, Qatar	
Sara Michelassi	2016-2017	Ballard and N. Seattle Community College	UW
Sumaiya Sather	2016-2017	Redmond	UW
Cole Hofstrand	2016	Shorecrest	UW
Rachel Zhang	2016	Forest Ridge School	
Grace Chen	2016	Redmond HS	
Kate Olsen	2016	Holy Names Academy	Univ. of Chicago

High School Teachers

Years	Name	Primary project	School
2004-2006	Claudia Ludwig	EcoNet, EIGN (then all)	International School
2004-	Jeannine Sieler	EcoNet	Bellevue HS
2008	Ryan Gunhold	Halo	
2008-2010	Brad Moore	OBOS	International School and others
2009-2011	Eric Muhs	OBOS	Ballard High School
2009	Debra Knickerbocker	EIGN	International School
2009	Kim Sciarrone	OBOS	Ingraham HS
2009-	Mari Knutson Herbert	EIGN, OBOS, OA	Lynden HS
2009	David Brunke		Aberdeen HS
2013-	Dexter Chapin	Modeling	Seattle Academy of Arts and Sciences
2012-14	Jennifer Duncan-Taylor	OA and then Murdock	Port Angeles HS
2012	Michael Walker	OA	Olympic HS in Bremerton
2013-14	Tami Caraballo	Murdock	Glacier Peak HS (Snohomish)
2014-2017	Mark Buchli	Modeling	Liberty HS (Issaquah)
2014	Megan DeVault	OA, Food Security	Chesapeake Schools in Virginia, was at Central Kitsap
2014	Nancy Mouat Rich	Food Security, Modeling	Bethel School District
2014-2015	Jessica Day	Food Security, Modeling	Amarillo School District
2015-2017	Barb Steffens	OA, Invisible Forest, Modeling, Food Sys	Shorecrest HS
2015-	Steve Roderick	ABI- Modeling	Sudbury HS, MA
2015	Gabe Cronin	OA	Seattle Academy of Arts and Sciences
2016-	Amanda Cope	ABI	Leaders in Learning, Monroe SD
2016-	Emily Borden	BBSRC, Food Systems Sustainability	Eastlake HS
2016	Uzma Khalil	Invisible Forest	Al Argam Academy, Doha, Qatar