Aaron N. Brooks

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Education

University of Washington and Institute for Systems Biology

Doctor of Philosophy in Molecular and Cellular Biology *(in progress, expected August 2014)*

Advisor: Nitin Baliga, PhD. Institute for Systems Biology.

Thesis: "Characterizing the dynamic modular states of gene regulatory networks in prokaryotes"

University of New Mexico

Bachelor of Science in Biochemistry, May 2007, Summa Cum Laude

Advisor: David G. Bear, PhD

Thesis: "Characterization of the dynamic interactions of cytoplasmic poly(A) binding protein with poly(A) RNA"

Thesis Honors: Robert B. Loftfield Award for excellence in biochemical research

Bachelor of Arts in Political Science, May 2007, Minor*:* Philosophy

General University Honors, May 2007, Summa Cum Laude

Publications

Reiss DJ , Plaisier CL, Wu W , **Brooks AN**, Baliga NS. Python cMonkey. *In preparation.*

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. *Submitted.*

Salvanha DM, **Brooks AN**, Reiss DJ, Vêncio RZN, and Baliga NS. iGB^{web}: an interactive genome browser for the web. *Submitted*.

Westerhoff H*, **Brooks AN***, Simeonidis E*, García-Contreras R*, Boogerd F, He F, Jackson VJ, Goncharuk V, Kolodkin A. Macromolecular networks and intelligence in microorganisms. *Accepted at Frontiers in Microbiology.*

Brooks AN*, Reiss DJ*, Allard A, Wu W, Salvanha DM, Plaisier CL, Chandrasekaran S, Pan M, Kaur A, Baliga NS. A system-level model for the microbial regulatory genome. *Accepted at Molecular Systems Biology*.

Brooks AN, Turkarslan S, Beer KD, Lo FY, Baliga NS. Adaptation of cells to new environments. *Wiley Interdiscip Rev Syst Biol Med*. 2010 Dec 31. PMID: 21197660.

** Denotes equal contribution*

In the News

Knowing Networks. *NIH NIGMS Inside Life Science*, May 2014.

Presentations at Conferences

Brooks AN*, Reiss DJ*, Allard A, Plaisier CL, Chandrasekaran S, Pan M, Kaur A, Baliga NS. A systems scale mechanistic model for environment-dependent modular states of a transcriptional regulatory network. Poster. International Conference on Systems Biology (ICSB). 2013. Copenhagen, Denmark.

Brooks AN*, Reiss DJ*, Allard A, Plaisier CL, Chandrasekaran S, Pan M, Kaur A, Baliga NS. A systems scale mechanistic model for environment-dependent modular states of a transcriptional regulatory network. Poster. DOE SCGF Annual Meeting 2012. Brookhaven NL, NY, USA

Brooks AN, Ratushny AV, Miller D, Reiss, DJ and NS Baliga. Characterization of Microbial Promoter Architectures for Rational Reengineering. Poster. DOE SCGF Annual Meeting 2011. Oak Ridge NL, TN, USA

Brooks AN, Ratushny AV and NS Baliga. Quantitative Mapping of High-resolution Transcriptional Dynamics. Poster. EMBO 2010. Barcelona, Spain

Brooks AN and T Lane. Combinatorics: A Mechanism to Curb miRNA Promiscuity. Poster. Keystone Symposium on RNAi, microRNA, and non-coding RNA. 2008. Whistler BC, Canada.

Brooks AN and T Lane. A constraint-based approach to model and predict miRNA specificity. Poster. 2007. SACNAS National Conference. Kansas City, MO

Professional service

Co-organizer, 2010 Molecular and Cellular Biology Student Symposium on *Bioplasticity: flexibility within and beyond the code*. October 2010. Fred Hutchinson Cancer Research Center

Research Positions

Graduate student, **Institute for Systems Biology**, Jan – Mar 2009, July 2009 – present. Advisor: Nitin Baliga, PhD

Project: High-throughput, predictive characterization of microbial systems for rational reengineering

Rotating graduate student, **Fred Hutchinson Cancer Research Center**, Mar – June 2009. Advisor: Wenying Shou, PhD

Project: Determinants of synthetic cooperation.

Rotating graduate student, **Institute for Systems Biology***,* Sep 2008 – Dec 2009. Advisor: Timothy Galitski, PhD

Project: Modeling genetic interactions for heterogeneous perturbations

Postbaccalaureate student, **Department of Computer Science,** *University of New Mexico,* May 2007 – July 2008. Advisor: Terran Lane, PhD

Project: Combinatorics: a mechanism to curb miRNA promiscuity

Undergraduate student, **Department of Cell Biology and Physiology**, *University of New Mexico*, August 2002-May 2007. Advisor: David Bear, PhD

Project 1: Pathogenic mechanism of Oculopharyngeal Muscular Dystrophy (OPMD)

Project 2: Imaging the dynamic interactions of poly(A) binding proteins with poly(A) RNA by transmission electron microscopy

Undergraduate student, **Institute of Molecular Biology**, *University of Oregon*, June 2005 – August 2005. Mentor: Alice Barkan, Ph.D.

Project: Insights into self-splicing introns: a role for RNC1

Teaching and Community Development

USA Science and Engineering Festival, *Washington, D.C.* April 2014. Designed and facilitated a hands-on activity and web-based game to understand the structure

and function of networks. Over 300 children have played the online game. Covered by NIH NIGMS Inside Life Science.

Institute for Systems Biology, *Seattle WA*

Co-organizer, lecturer. Introduction to Systems Biology. July 2011.

Pacific Science Center, *Seattle WA*

Science Communication Fellow, August 2009—Present

Department of Microbiology, *University of Washington*

Graduate Teaching Assistant, MICRO 411: Gene Action, Jan 2010—Mar 2010

Department of Biochemistry, *University of New Mexico*

Education Assistant, BIOCHEM 445: Intensive Biochemistry, August 2006—December 2006

Education Assistant, BIOCHEM 448: Biochemical Methods, March 2005 – April 2005

Students Mentored

Robin Green. PhD student at University of Washington, WA. Fall 2012.

Darach Miller. Undergraduate at University of California at Davis, CA. Summer 2011. Currently PhD student at NYU.

Alexis Valauri-Orton. Undergraduate at Davidson College, NC. Summer 2010. Currently Watson Fellow.

Awards and Fellowships

DOE Office of Science Graduate Fellowship, 2010

NSF Graduate Research Fellowship Honorable Mention, 2009

Barry M. Goldwater Scholarship, 2006

University of New Mexico Regents' Scholarship, 2002-2006

University of New Mexico Regents' Study Abroad Grantee, 2006

University College Award, University of New Mexico Research and Creativity Symposium, 2004

Valedictorian, Rio Rancho High School, New Mexico, 2002

Advanced Placement Scholar with Distinction, 2002

Samsung-American Legion Scholar, 2001

Research Fellowship Programs

Post-baccalaureate Research and Education Program (PREP), *University of New Mexico,* 2007-2008

Initiatives to Maximize Student Diversity (IMSD) Research Fellow, *University of New Mexico*, 2006-2007

Summer Program for Undergraduate Research (SPUR) Research Fellow, *University of Oregon*, 2005

Professional Training and Courses

Santa Fe Institute. Complex Systems Summer School. 2011.

Societies and Honoraries

Phi Beta Kappa, 2006

Phi Kappa Phi, 2004

Phi Eta Sigma, 2002

Professional Contacts

Nitin Baliga, Ph.D.

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David Bear, Ph.D.
Department of Cell Biology and Physiology
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