

**Currently**  
Postdoc @ EMBL

# Aaron Brooks/PhD

Genetics of complex adaptive (synthetic) biological systems

## Mail

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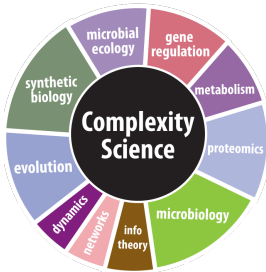
## Web

aaronbrooks.info  
linkedin/aaron-brooks  
github/scalefreegan

## Twitter

@scalefreegan

## Research Interests



## Publications

SK Strauss, D Schirman, G Jona, **AN Brooks**, ..., Y Pilpel. (2019) **Evolthon: A Community Endeavor to Evolve Lab Evolution**. *PLoS Biol* 17(3): e3000182

**AN Brooks**, WF Mueller, LM Steinmetz (2016) **SYGNALing a Red Light for Glioblastoma**. *Cell Systems* 3 (2), 118-120

S Imam, S. Schaeuble, **AN Brooks**, NS Baliga, ND Price. (2015) **Data-driven integration of genome-scale regulatory and metabolic network models**. *Front. Microbiol.* 6:409

CL Plaisier, FY Lo, J Ashworth, **AN Brooks**, KD Beer, A Kaur, M Pan, DJ Reiss, FT Facciotti, NS Baliga. (2014) **Evolution of Context Dependent Regulation by Expansion of Feast/Famine Regulatory Proteins**. *BMC Systems Biology* 8(1):122.

H Westerhoff\*, **AN Brooks**\*, E Simeonidis\*, R Garcia-Contreras\*, F Boogerd, F He, VJ Jackson, V Goncharuk, A Kolodkin. (2014) **Macromolecular networks and intelligence in microorganisms**. *Front. Microbiol.* 5:379.

**AN Brooks**\*, DJ Reiss\*, A Allard, W Wu, DM Salvanha, CL Plaisier, S Chandrasekaran, M Pan, A Kaur, NS Baliga. **A system-level model for the microbial regulatory genome**. *Mol Syst Biol.* (2014) 10: 740.

**AN Brooks**, S Turkarslan, KD Beer, FY Lo, NS Baliga. (2011) **Adaptation of cells to new environments**. *Wiley Interdiscip Rev Syst Biol Med.* 3(5): 544–561.

\* Denotes equal contribution

## Research

2015 - now **Postdoc**

EMBL | Genome Biology Unit

*Project: "Molecular consequences of large-scale genetic variation in synthetic yeast."*

*Advisor: Prof. Lars Steinmetz, Professor of Genetics, Stanford University, Co-Director, Stanford Genome Technology Center, Group Leader and Senior Scientist, EMBL, Germany*

**Key skills developed:** Long-read DNA/RNA sequencing, pipeline development, scalable computing, containerized computing, grantsmanship (1.4M received), project leadership and management

## Education

## Wetlab

### DNA/RNA Sequencing

### Long read sequencing (Nanopore)

### Microbial culture

2008 - 2014

### PhD Molecular and Cellular Biology

[University of Washington](#)

*Dissertation: "Data-driven inference of dynamic transcriptional regulatory mechanisms in prokaryotes: a systems perspective."*

*Advisor: Prof. Nitin Baliga, SVP and Director, Institute for Systems Biology*

**Key skills developed:** Machine learning (ensemble learning), full-stack software development, scientific writing, scientific collaboration

2002 - 2007

### BS Biochemistry & BA Political Science

[University of New Mexico](#)

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

*Thesis Honors: Robert B. Loftfield Award*

*Advisor: Prof. David G. Bear*

*Summa Cum Laude*

*General University Honors*

*Minor: Philosophy*

**Key skills developed:** Basic laboratory skills

## Computational

### Common languages

(Python, R, Bash, HTML/JS)

### Pipeline development (Snakemake)

### Parallel environments (SLURM, SGE)

### Containerization (Singularity, Docker)

### Database management (SQL and NoSQL)

### Web frameworks (Django, Shiny)

## In the news

05/2014

### Knowing Networks

[NIH NIGMS Inside Life Science](#)

*Outreach at USA Science and Engineering Festival*

## Awards

2016-2019

### EMBL Interdisciplinary Postdoctoral Fellowship (EIPOD)

[EU Marie Curie](#)

[Actions](#)

2010-2013

### Office of Science Graduate Fellowship

[Department of Energy](#)

2007-2008

### Postbaccalaureate Research Education Program (PREP)

[NIH](#)

2006-2007

### Initiative for Maximizing Student Development (IMSD)

[NIH](#)

2006

### Goldwater Scholarship

[Barry M. Goldwater Foundation](#)

## Teaching & Outreach

2019

### Advanced Training with Oxford Nanopore Technologies

[EMBL, Heidelberg](#)

*Speaker*

2018

### Using Nanopore Technology for Real Time, Direct, Scalable DNA/RNA Sequencing

[EMBL, Heidelberg](#)

*Speaker*

2015

### Data Mining and Integration with Networks

[EMBL, Heidelberg](#)

*Co-organizer, Speaker*

2014

### USA Science and Engineering Festival

[Washington, D.C](#)

*Designed and facilitated a hands-on activity and web-based game to understand the structure and function of networks. Over 300 students have played the online game.*

2011

### Introduction to Systems Biology

[Institute for Systems Biology](#)

*Co-organizer, Speaker*

2009-2015

### Science Communication Fellow

[Pacific Science Center, Seattle WA](#)

## Students mentored

2019	<b>Ramya Vijayram</b>	MS student at IIT Madras, India
2016-2017	<b>Marc Rubsam</b>	MS student at Heidelberg University, Germany
2016	<b>Felix Frauhammer</b>	PhD student at Heidelberg University, Germany
2012	<b>Robin Green</b> Currently at Fred Hutchinson Cancer Research Center	PhD student at University of Washington, WA
2011	<b>Darach Miller</b> Currently PhD student at NYU	Undergraduate at UC Davis, CA
2010	<b>Alexis Valauri-Orton</b> Currently Ocean Acidification Intern at Ocean Conservancy	Undergraduate at Davidson College, NC

## Other

2011	<b>Complex Systems Summer School</b>	Santa Fe Institute
2010	<b>MCB Student Symposium</b> Co-organizer, <i>Bioplasticity: flexibility within and beyond the code</i>	Fred Hutchinson Cancer Research Center

## References

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