Cameron Amadeus Myhrvold
Postdoctoral Fellow
Broad Institute of MIT and Harvard
75 Ames St. Rm 6105
Cambridge, MA 02142

Starting at Princeton in January 2021
Email: cmyhrvol@princeton.edu
Website: https://molbio.princeton.edu/people/cameron-myhrvold
Twitter: @cambearon
Google Scholar

Education

Ph.D., Systems Biology, Harvard University 2011-16
A.B., Molecular Biology, Princeton University, *magna cum laude*, 2007-11
with a certificate in Quantitative and Computational Biology

Research

Postdoctoral research: Broad Institute of MIT and Harvard 2016-present
Cas13-based technologies for viral detection and destruction. Advisor: Pardis Sabeti, Harvard

Graduate research: Department of Systems Biology, Harvard Medical School 2011-2016
Synthetic biology and nanotechnology. Advisors: Pamela Silver and Peng Yin.

Undergraduate thesis research: Department of Molecular Biology, Princeton University 2009-2011
Microbiology, quorum sensing. Advisor: Bonnie Bassler.

High school and undergraduate research: Department of Biology, University of Washington 2005-2008
Insect mechanosensing and flight control. Advisor: Thomas Daniel.

Honors and Awards

Forbes 30 Under 30, Healthcare category 2019
ASTMH Robert E. Shope, MD, Fellowship in Infectious Diseases ($25,000 award for 1 year) 2018
Broad Institute Shark Tank Program ($100,000 award for 1 year) 2017
John and Fannie Hertz Foundation Graduate Fellow ($250,000 award for 5 years) 2011-2016

Last Author Publications

(* denotes equal contribution, + denotes corresponding authors)

1. Arizti-Sanz J*, Freije CA*, Stanton AC, Boehm CK, Petros BA, Siddiqui S, Shaw BM, Adams G, Kosoko-Thoroddsen TF, Kemball ME, Gross R, Wronka L, Caviness K, Hensley LE, Bergman NH, MacInnis BL, Lemieux JE, Sabeti PC*, and **Myhrvold C*,+**. Integrated sample inactivation, amplification, and Cas13-based detection of SARS-CoV-2. bioRxiv. DOI: 10.1101/2020.05.28.119131
2. Metsky H+, Freije CA, Kosoko-Thoroddsen TF, Sabeti PC, and **Myhrvold C+**. CRISPR-based surveillance for COVID-19 using genomically-comprehensive machine learning design. bioRxiv. DOI: 10.1101/2020.02.26.967026

First Author Publications

(* denotes equal contribution, + denotes corresponding authors)

3. Ackerman CM*, **Myhrvold C*+**, Thakku SG, Freije CA, Metsky HC, Yang DK, Ye SH, Boehm CK, Kosoko-Thoroddsen TF, Kehe J, Nguyen TG, Carter A, Kulesa A, Barnes JR, Dugan VG, Hung DT, Blainey PC*+, and Sabeti PC*. Massively multiplexed nucleic acid detection with Cas13. *Nature*. DOI: 10.1038/s41586-020-2279-8
   * equal contributions and listed alphabetically.
4. Freije CA*+, **Myhrvold C*+**, Boehm CK, Welch NL, Lin AE, Carter A, Metsky HC, Luo CY, Abudayyeh OO, Gootenberg JS, Yozwiak NL, Zhang F, Sabeti PC+. Programmable inhibition and detection of RNA viruses using Cas13. 2019. *Molecular Cell* 76:1-12. DOI: 10.1016/j.molcel.2019.09.013
5. **Myhrvold C*+**, Freije CA*+, Gootenberg JS, Abudayyeh OO, Metsky HC, Durbin AF, Kellner MJ, Tan AL, Paul LM, Parham LA, Garcia KF, Barnes KG, Chak B, Mondini A, Nogueira ML, Isern S, Michal SF, Lorenzana I, Yozwiak NL, MacInnis BL, Bosch I, Gehrke L, Zhang F, and Sabeti PC+. Field-deployable viral diagnostics using CRISPR-Cas13. 2018. *Science* 360(6387): 444-448. DOI: 10.1126/science.aas8836
6. Sachdeva G*, **Myhrvold C***, Yin P, Silver PA. Synthetic RNA Scaffolds for Spatial Engineering in Cells. 2018. Synthetic Biology: Parts, Devices and Applications (book chapter)

7. **Myhrvold C**, Baym M, Hanikel N, Ong LL, Gootenberg JS, and Yin P[+]. Barcode Extension for Analysis and Reconstruction of Structures. 2017. *Nature Communications* 8:14698. DOI: 10.1038/ncomms14698
8. **Myhrvold C***, Polka J*, and Silver PA[+]. Synthetic Lipid-Containing Scaffolds Enhance Indigo Production by Colocalizing Enzymes. 2016. *ACS Synthetic Biology* 5(12): 1396-1403. DOI: 10.1021/acssynbio.6b00141
9. **Myhrvold C**, Kotula JW, Hicks WM, Conway NJ, and Silver PA[+]. A Distributed Cell Division Counter Reveals Growth Dynamics in the Mammalian Gut. 2015. *Nature Communications* 6: 10039. DOI: 10.1038/ncomms10039
10. **Myhrvold C[+]** and Silver PA[+]. Using synthetic RNAs as scaffolds and regulators. 2015. *Nature Structural and Molecular Biology* 22(1): 8-10. DOI:10.1038/nsmb.2944 (review)
11. **Myhrvold C**, Dai M, Silver PA, and Yin P[+]. Isothermal self-assembly of complex DNA structures under diverse and biocompatible conditions. 2013. *Nano Letters* 13(9): 4242-4248 DOI: 10.1021/nl4019512

Collaborative Publications

(* denotes equal contribution)

12. Barnes KG, Lachenauer AE, Nitido A, Siddiqui S, Gross R, Beitzel B, Siddle KJ, Freije CA, Dighero-Kemp B, Mehta S, Carter A, Uwanibe J, Ajogbasile F, Olumade T, Odia I, Sandi JD, Momo M, Metsky HC, Boehm CK, Lin AE, Kemball M, Park DJ, Grant DS, Happi CT, Branco L, Boisen M, Sullivan BM, Amara M, Tiamiyu A, Parker Z, Iroezindo M, Modjarrad K, **Myhrvold C**, Garry RF, Palacios G, Hensley LE, Schaffner SF, Colubri A, Sabeti PC. Deployable CRISPR-Cas13a diagnostic tools to detect and report Ebola and Lassa virus cases in real-time. bioRxiv. DOI: 10.1101/2020.05.26.116442
13. Woods D*, Doty D*, **Myhrvold C**, Hui J, Zhou F, Yin P, and Winfree E. Diverse and robust molecular algorithms using reprogrammable DNA self-assembly. 2019. *Nature* 567: 366-372. DOI: 10.1038/s41586-019-1014-9
14. Han D*, Qi X*, **Myhrvold C**, Wang B, Dai M, Jiang S, Bates M, Liu Y, An B, Zhang F, Yan H* and Yin P*. Single-stranded DNA and RNA Origami. 2017. *Science* 358(6369): eaao2648. DOI: 10.1126/science.aao2648
15. Ong LL, Hanikel N, Yaghi OK, Grun C, Strauss MT, Bron P, JLai-Kee-Him J, Schueder F, Wang B, Wang P, Kishi JY, **Myhrvold C**, Zhu A, Jungmann R, Bellot G, Ke Y, and Yin P. Programmable self-assembly of three-dimensional nanostructures from 10^4 unique components. 2017. *Nature* 552: 72-77. DOI: 10.1038/nature24648
16. Gootenberg JS*, Abudayyeh OO*, Lee JW, Essletzbichler P, Dy AJ, Joung J, Verdine V, Donghia N, Daringer NM, Freije CA, **Myhrvold C**, Bhattacharyya RP, Livny J, Regev A, Koonin EV, Hung DT, Sabeti PC, Collins JJ*, and Zhang F*. Nucleic acid detection with CRISPR-Cas13a/C2c2. 2017. *Science* 356(6336): 438-442. DOI: 10.1126/science.aam9321
17. Wei B, Dai M, **Myhrvold C**, Ke Y, Jungmann R, and Yin P. Design space for complex DNA structures. 2013. *Journal of the American Chemical Society* 135(48):18080-8. DOI: 10.1021/ja4062294
18. Caudy AA, Guan Y, Jia Y, Hansen C, DeSevo C, Hayes AP, Agee J, Alvarez-Dominguez JR, Arellano H, Barrett D, Bauerle C, Bisaria N, Bradley PH, Breunig JS, Bush E, Cappel D, Capra E, Chen W, Clore J, Combs PA, Doucette C, Demuren O, Fellowes P, Freeman S, Frenkel E, Gadala-Maria D, Gawande R, Glass D, Grossberg S, Gupta A, Hammonds-Odie L, Hoisos A, Hsi J, Hsu YH, Inukai S, Karczewski KJ, Ke X, Kojima M, Leachman S, Lieber D, Liebowitz A, Liu J, Liu Y, Martin T, Mena J, Mendoza R, **Myhrvold C**, Millian C, Pfau S, Raj S, Rich M, Rokicki J, Rounds W, Salazar M, Salesi M, Sharma R, Silverman S, Singer C, Sinha S, Staller M, Stern P, Tang H, Weeks S, Weidmann W, Wolf A, Young C, Yuan J, Crutchfield C, McClean M, Murphy CT, Llinás M, Botstein D, Troyanskaya OG, and Dunham MJ. A New System for Comparative Functional Genomics of Saccharomyces Yeasts. 2013. *Genetics* 195(1): 275-287. DOI: 10.1534/genetics.113.152918
19. Daniel, TL, Dieudonne, A, Fox, JL, **Myhrvold, CA**, Sane, SP, and Wark, B. Inertial guidance systems in insects: from the neurobiology to the structural of biological gyroscopes. 2008. *Journal of the Institute of Navigation* 55(4): 235-240

Academic Talks (selected)

Massachusetts Consortium on Pathogen Readiness Seminar (invited talk)	2020
Broad Institute Annual Retreat (invited talk)	2019

ASTMH Annual Meeting (invited talk), National Harbor, MD 2019
CRISPR Technologies Conference (abstract selected for talk), Wurzburg, Germany 2019
Broad Infectious Disease and Microbiome Seminar (internally invited talk), Cambridge, MA 2019
Synthetic Biology: Engineering, Evolution & Design (abstract selected for talk), New York, NY 2019
6th Sapporo Summer Symposium for One Health (invited talk), Sapporo, Japan 2018
Broad Global Health Symposium (internally invited talk), Cambridge, MA 2018
Festival of Genomics (invited talk), Boston, MA 2017
Broad Infectious Disease and Microbiome Seminar (internally invited talk), Cambridge, MA 2017
Synthetic Biology: Engineering, Evolution & Design (invited talk), Los Angeles, CA 2014
Synthetic Biology Engineering Research Center retreat (internally invited talk), Cambridge, MA 2012
SICB Annual Meeting (abstract selected for talk), San Antonio, TX 2008
Society for Integrative and Comparative Biology Annual Meeting (abstract selected for talk), Orlando, FL 2006

Patents

1. United States Patent Application No. 2018/041099. Crispr system based antiviral therapy. 2018
2. United States Patent Application No. 2018/022764. Crispr effector system based diagnostics for virus detection. 2018
3. United States Patent No. 9,975,916. Compositions and methods relating to complex nucleic acid nanostructures 2018
4. United States Patent No. 9,751,812. Taggant for cement authentication. 2017
5. United States Patent Application No. 15/556,436. Single-stranded dna nanostructures. 2016
6. United States Patent No. 8,851,518. Energy dissipative cushioning elements. 2014
7. United States Patent No. 8,327,564. Repeatably displaceable emanating element display. 2012
8. United States Patent No. 8,096,069 Repeatably displaceable emanating element display. 2012
9. United States Patent No. 8,059,000. Wearable/portable protection for a body. 2011
10. United States Patent No. 7,548,168. Wearable/portable protection for a body. 2009

Teaching and Mentoring Experience

Mentoring, 3 graduate and 3 undergraduate students, 4 research associates, Broad Institute 2016-present
Mentoring, 2 graduate rotation students, Harvard Medical School 2014-16
Teaching fellow, SB200: A Systems Approach to Biology, Harvard University 2013

Service

Hertz Foundation Summer Workshop Organizing Committee 2016-present
Referee for Communications Biology, Applied Physics Letters, Biosensors and Bioelectronics, ACS Sensors, PLoS One

References

Pardis Sabeti (Postdoc Advisor), HHMI/Harvard/Broad Institute, pardis@broadinstitute.org (additional contact: mjbutts@broadinstitute.org)
Pamela Silver (PhD Advisor), Harvard Medical School/Wyss Institute, Pamela_Silver@hms.harvard.edu (additional contact: Meghan_VanOrden@hms.harvard.edu)
Peng Yin (PhD Advisor), Wyss Institute/Harvard Medical School, py@hms.harvard.edu (additional contact: jiawen.zheng@wyss.harvard.edu)