A. IDENTIFYING DATA

Name: Manu Prakash

B. ACADEMIC HISTORY

2011	Junior Fellow, Biophysics/Applied Physics, Harvard Society of Fellows, Boston, MA, USA
2008	Ph.D., Media Arts and Sciences, Massachusetts Institute of Technology, MA
2002	B. Tech, Computer Science, Indian Institute of Technology, Kanpur, UP, India

C. EMPLOYMENT RECORD

Academic Experience

2018-present	Associate Professor, Department of Bioengineering, Stanford University Senior Fellow, Woods Institute of Environment, Stanford University
2011-2018	Assistant Professor, Department of Bioengineering, Stanford University
2017-present	Biohub Investigator
2016-present	HHMI Faculty Fellow
2015-present	Senior Fellow, Center for Innovation in Global Health, Stanford School of Medicine Faculty Fellow, Chemistry, Engineering and Medicine (ChemH) Inaugural LInC Fellow, Woods Institute of the Environment Affiliate, Program for Disease Ecology, Health, and the Environment
2012-present	Biophysics Program, Participating Faculty Member
2008-2011	Junior Fellow, Biophysics, Harvard Society of Fellows

D. AWARDS AND HONORS

2020	Unilever Colworth Prize, Microbiology Society
2020	Rotary STAR Humanitarian Award for Contributions in Science, Technology and Robotics
2019	The Creative Class of 2019, Newsweek
2018	Beazley Design of the Year Award (Paperfuge)
2018	Inaugural LInC Fellow, Leading Interdisciplinary Collaborations, Stanford Woods Institute
2018	HHMI Investigator Competition, Semi-finalist
2017	INDEX Design Award
2017	Tau Beta Pi Teaching Award
2017-2022	Chan Zuckerberg BioHub Investigator
2017	Popular Science/NSF "Vizzies" Experts' Choice Award
2017	WIRED's Next List
2016-2020	HHMI-Gates Fellow
2016	MacArthur Fellow, MacArthur Foundation
2016	APS DFD Milton van Dyke Award
2016	Nikon Small World Video Competition
2015	NIH Directors New Innovator Award
2015	National Geographic Emerging Explorer
2014	Gates Foundation Explorations Award
2014	Invited Member, First White House Maker Faire
2014	Winner, Society for Science and the Public 21st Century Chemistry Set Competition
2014	Popular Science Brilliant Top 10 Award
2014	TR35 MIT Technology Review
2014	NSF Career Award
2013-2016	Ellison Young Faculty Award declined
2013	APS DFD Gallery of Fluids Motion Award
2013-2017	Pew Scholar
2013	India Abroad Face of the Future Award
2011-2012	Baxter Foundation Junior Faculty Award
2011	TED Senior Fellow
2011	Terman Fellow, Stanford University
2011	mHealth Alliance Innovation Award, United Nations Foundation
2011	APS DFD Gallery of Fluids Motion Award
2011	Vodafone Wireless Innovation Award
2011	Gates Foundation Explorations Award
2008-2011	Harvard University William F. Milton Fund Award

E. Selective Publications: Submitted Pre-prints (medRxiv/arXiv/bioRxiv)

1. Laurel Kroo et al. Pneumask: Modified Full-Face Snorkel Masks as Reusable Personal Protective Equipment for Hospital Personnel, medRxiv, 2020 2020.04.24.20078907; doi: https://doi.org/10.1101/2020.04.24.20078907
2. Molina, Anton et al., Project 1000 x 1000: Centrifugal melt spinning for distributed manufacturing of N95 filtering facepiece respirators.*arXiv:2004.13494* (2020).
3. Hongquan Li et al., Utah-Stanford Ventilator (Vent4US): Developing a rapidly scalable ventilator for COVID-19 patients with ARDS, medRxiv 2020.04.18.20070367; doi: https://doi.org/10.1101/2020.04.18.20070367
4. Thibaut Pollina, Adam G. Larson, Fabien Lombard, Hongquan Li, Sebastien Colin, Colomban de Vargas, Manu Prakash, PlanktonScope: Affordable modular imaging platform for citizen oceanography, bioRxiv 2020.04.23.056978; doi: https://doi.org/10.1101/2020.04.23.056978
5. Gong, Xingting, Arnold Mathijssen, Zev Bryant, and Manu Prakash. "Engineering reconfigurable flow patterns via surface-driven light-controlled active matter." *arXiv preprint arXiv:2004.01368* (2020).
6. Hongquan Li, Hazel Soto-Montoya*, Maxime Voisin*, Lucas Fuentes Valenzuela*, Manu Prakash, Octopi: Open configurable high-throughput imaging platform for infectious disease diagnosis in the field, BioRxiv: https://doi.org/10.1101/684423 June 2019

Refereed Journal Publications

1. Laurel A. Kroo, Jeremy P. Binagia, Noah Echman, Manu Prakash, Eric S. G. Shaqfeh, A Swimming Rheometer: Self-propulsion of a freely-suspended swimmer enabled by viscoelastic normal stresses, arxiv, 2021; arXiv:2111.10515 [physics.flu-dyn]

2. Ray Chang, Manu Prakash, Entangled architecture of rough endoplasmic retiiculum (RFR) and vacuoles enables topological damping in cytoplasm of an ultra-fast giant cell, bioRxiv, doi: https://doi.org/10.1101/2021.12.13.472465

3. Deepak Krishnamurthy, Rachel Pepper, Manu Prakash, Active Sinking Particles: Sessile Suspension Feeders significantly alter the Flow and Transport to Sinking Aggregates, bioRxiv, 2021.08.05.455190; https://doi.org/10.1101/2021.08.05.455190

4. Matthew S. Bull, Laurel A. Kroo, Manu Prakash, Excitable mechanics embodied in a walking cilium, arXiv:2107.02930, 2021.

5. Mathew S. Bull, Vivek N. Prakash, Manu Prakash, Ciliary flocking and emergent instabilites enable collective agility in a non-neuromuscula animal, arXiv:2107.02934, 2021

6. Matthew S. Bull, Manu Prakash, Mobile defects born from an energy cascade shape the locomotive behavior of a headless animal, arXiv:2107.02940, 2021

7. Byrum JR, Waltari E, Janson O, Guo SM, Folkesson J, Chhun BB, Vinden J, Ivanov IE, Forst ML, Li H, Larson AG, Wu W, Tato CM, McCutcheon KM, Peluso MJ, Henrich TJ, Deeks SG, Prakash M, Greenhouse B, Pak JE, Mehta SB, multiSero: open multiplex-ELISA platform for analyzing antibody responses to SARS-CoV-2 infection, medRxiv.2021 May 11:2021.05.07.21249238, doi: 10.1101/2021.05.07.21249238.

8. Kumar, S., Hol, F. J., Pujhari, S., Ellington, C., Narayanan H.V., Li, H., Rasgon, J. L., Prakash, M., A microfluidic platform for highly parallel bite by bite profiling of mosquito-borne pathogen transmission, Nature Communications, 2021; 12 (1): 6018.

9. Armon, S., Bull, M. S., Moriel, A., Aharoni, H., Prakash, M., Modeling epithelial tissues as active-elastic sheets reproduce contraction pulses and predict rip resistance, Communications Physics, 2021; 4 (1).

10. Molina, A., Kumar, S., Karpitschka, S., Prakash, M., Droplet tilings for rapid exploration of spatially constrained many-body systems, Proceedings of the National Academy of Sciences of the United States of America, 2021; 118 (34).

11. Pramesh, C.S., Babu, G. R., Basu, J., Bhushan, I., Booth, C. M., Chinnaswamy, G., Guleria, R., Kalantri, S. P., Kang, G., Mohan, P., Mor, N., Pai, M., Prakash, M., Rupali, P., Sampathkumar, P., Sengar, M., Sullivan, R., Ranganathan, P., Choosing Wisely for COVID-19: ten evidence-based recommendations for patients and physicians, Nature Medicine http://doi.org/10.1038/s41591-021-01439-x 2021.f

12. Kuppalli, K., Gala, P., Cherabuddi, K., Kalantri, S. P., Mohanan, M., Mukherjee, B., Pinto, L., Prakash, M., Pramesh, C. S., Rathi, S., Pai, N. P., Yamey, G., Pai, M., India's COVID-19 crisis: a call for international action, Lancet (London, England) http://doi.org/10.1016/S0140-6736(21)01121-1 2021.

13. Prakash, V. N., Bull, M. S., Prakash, M., Motility-induced fracture reveals a ductile-to-brittle crossover in a simple animal's epithelia, Nature Physics, http://doi.org/10.1038/s41567-020-01134-7 2021.

14. Kroo, L., Kothari, A., Hannebelle, M., Herring, G., Pollina, T., Chang, R., Peralta, D., Banavar, S. P., Flaum, E., Soto-Montoya, H., Li, H., Combes, K., Pan, E., Vu, K., Yen, K., Dale, J., Kolbay, P., Ellgas, S., Konte, R., Hajian, R., Zhong, G., Jacobs, N., Jain, A., Kober, F., Ayala, G., Allinne, Q., Cucinelli, N., Kasper, D., Borroni, L., Gerber, P., Venook, R., Baek, P., Arora, N., Wagner, P., Miki, R., Kohn, J., Kohn Bitran, D., Pearson, J., Arias-Arco, B., Larrainzar-Garijo, R., Herrera, C. M., Prakash, M., Modified full face snorkel masks as reusable personal protective equipment for hospital personnel, PloS one, 2021; 16 (1): e0244422

15. Doshi, S., Banavar, S. P., Flaum, E., Kulkarni, S., Vaidya, U., Kumar, S., Chen, T., Bhaattacharya, A., Prakash, M., Applying heat and humidity using stove boiled water for decontamination of N95 respirators in low resource settings, PloS one, 2021; 16 (9): e0255338.

16. Jove, V., Gong, Z., Hol, F. J., Zhao, Z., Sorrells, T.R., Carroll, T. S., Prakash, M., McBride, C. S., Vosshall, L. B., Sensory Discrimination of Blood and Floral Nectar by Aedes aegypti Mosquitoes, Neuron http://doi.org/10.1016/j.neuron.2020.09.019 2020.

17. Vivek Prakash, Matthew S. Bull, Manu Prakash, Motility induced fracture reveals a ductile to brittle crossover in the epithelial tissues of a simple animal, BioRxiv: https://doi.org/10.1101/676866 June 2019, In press *Nature Physics*

18. Felix JH Hol, Louis Lambrechts, Manu Prakash, BiteOscope: an open platform to study mosquito blood-feeding behavior, bioRxiv 2020.02.19.955641; doi: https://doi.org/10.1101/2020.02.19.955641, eLife 2020

19. Veronica Jové, Zhongyan Gong, Felix J.H. Hol, Zhilei Zhao, Trevor R. Sorrells, Thomas S. Carroll, Manu Prakash, Carolyn S. McBride, Leslie B. Vosshall, The Taste of Blood in Mosquitoes, bioRxiv 2020.02.27.954206; doi: https://doi.org/10.1101/2020.02.27.954206, Neuron 2020

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24. *SM Coyle,* E Flaum, H Li, D Krishnamurthy, M Prakash, Coupled active systems encode emergent behavioral dynamics of the unicellular predator Lacrymaria olor, Current Biology, 406595, 2018

25. *Shahaf Armon*, Matthew Storm Bull, Andres Jesus Aranda-Diaz, Manu Prakash, Ultrafast epithelial contractions provide insights into contraction speed limits and

tissue integrity, Proceedings of the National Academy of Sciences 115 (44), E10333-E10341, 2018

26. Mark Ilton et al The Principles of Cascading Power Limits in Small, Fast Biological and Engineered Systems, *Science*, April 27, 2018
27. H. Mukundarajan, *F. Hol,* E.A. Castillo, C. Newby, M. Prakash, "Using mobile phones as acoustic sensors for the surveillance of spatio-temporal mosquito ecology," *eLife*, 6:e27854, 2017.
28. M.W. Elting, M. Prakash, D.B. Udy, S. Dumont, "Mapping load-bearing in the mammalian spindle reveals local kinetochore-fiber anchorage that provides mechanical isolation and redundancy," *Current Biology*, Vol. 27, No. 14, pp. 2112-2122, 2017.
29. W. Gilpin, *V. Prakash,* and M. Prakash, "Vortex arrays and ciliary tangles underlie the feeding-swimming tradeoff in starfish larvae," *Nature Physics*, Vol. 13, No. 4, pp. 380-386, 2017.
30. D. Krishnamurthy, G. Katsikis, A. Bhargava, and M. Prakash, "Schistosoma mansoni cercariae swim efficiently by exploiting an elastohydrodynamic coupling," *Nature Physics*, Vol. 13, No. 3, pp. 266-271, 2017.
31. *M.S. Bhamla,* B. Benson*, C. Chai*, G. Katsikis, A. Johri, and M. Prakash "Paperfuge: An ultra-low cost, hand-powered centrifuge inspired by the mechanics of a whirligig toy," *Nature Biomedical Engineering*, Vol. 1, No. 1, pp. 1-7, 2017.
32. R.K.D. Ephraim, E. Duah, J.S. Cybulski, M. Prakash, M.V. D'Ambrosio, D.A. Fletcher, J. Keiser, J. R. Andrews, and I.I. Bogoch, "Diagnosis of schistosoma haematobium infection with a mobile phone-mounted foldscope and a reversed-lens cellscope in Ghana," *American Journal of Tropical Medicine and Hygiene*, Vol. 14-0741, 2015.
33. G. Katsikis, J.S. Cybulski, and M. Prakash, "Synchronous universal droplet logic and control," *Nature Physics,* Vol. 11, pp. 588-596, 2015.
34. G. Korir and M. Prakash, "Punch card programmable microfluidics," *PLoS ONE*, Vol. 10, No. 3, pp. 1-12, 2015.
35. N. Cira, *A. Benusiglio*, and M. Prakash, "Vapor mediated sensing and motility in two-component droplets," *Nature* Vol. 519, pp. 446-450, 2015.
36. S. Dumont and M. Prakash, "Emergent mechanics of biological structures," *Molecular Biology of the Cell,* Vol. 25, No. 22, pp. 3461-3465, 2014.
37. J. Cybulski, J. Clements and M. Prakash, "Foldscope: Origami based paper microscope," *PLoS ONE*, Vol. 9, No. 6, pp. 1-11, 2014.
38. M. Prakash, D. Quere, and J. Bush, "Surface tension transport of prey by feeding shorebirds: The capillary ratchet," *Science*, Vol. 320 No. 5878, pp. 931-934, 2008.
39. J. Bush, D. Hu, and M. Prakash, "The integument of water-walking arthropods: Form and function," *Advances in Insect Physiology,* Vol. 34, pp. 117-192, 2007.
40. M. Prakash, N. Gershenfeld, "Microfluidic bubble logic," *Science*, Vol. 315, No. 519, No. 7544, pp. 832-835, 2007.

Patents

1. M Prakash, D Krishnamurthy, *Hydrodynamic Treadmill: A Tracking Device to Study Biotic/Abiotic Systems in Gravitational and Hydrodynamic fields*, US Patent App. 16/021,988
2. RFW Pease, M Prakash, JS Cybulski, A Nojeh, *Vacuum tube electron microscope,* US Patent 9,859,097
3. M Prakash, JS Cybulski, K Laurel, *Optical lens fabrication*, US Patent 9,810,892
4. Zhang, S., Mershin, A., Kaiser, K., Cook, B., Graveland-Bikker, J.F., Prakash, M., Kong, D., Maguire, Y., *Bio-sensing nanodevice* Issued July 25, 2017 US9714941.
5. Prakash M., Cybulski J., Clements J., *Foldscope: Ultra-low-cost fluorescence microscope constructed via folding*. Issued July 4, 2017 US9696535.
6. Prakash M., Gershenfeld N., *Microfluidic bubble logic*, Filed August 2008 Issued August 2, 2016 US9404835.
7. Prakash M., Boddupalli, D., Clements J., *Techniques for standardized imaging of oral cavity*. Issued April 7, 2015 US8998609.
8. Chow B., Joo J., Prakash M., *Methods and apparatus for control of hydrothermal nanowire synthesis*. Issued June 16, 2013 US8367435.