



Aaran Vijayakumaran

Postdoctoral Scholar, Biochemistry

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BIO

Aaran Vijayakumaran, PhD is a Postdoctoral Scholar at Stanford University School of Medicine, where he researches the cell biology of inherited Parkinson's Disease in the Department of Biochemistry under Professor Suzanne Pfeffer.

He completed his PhD at the University of Cambridge, applying volumetric electron microscopy and deep-learning based image segmentation to generate the first nanoscale map of the human airway epithelium. His doctoral work revealed how cellular architecture and metabolism remodel during differentiation, with a particular focus on the motile cilia, their rootlets, and their structural contacts with mitochondria and the consequences for mitochondrial metabolism. Beyond research, Aaran is active in the biotech and innovation ecosystem. He was awarded a scholarship to join EnterpriseTECH at Cambridge Judge Business School, served as an Investment Fellow Intern at Syncona, and worked as a Venture Builder Intern at Cambridge Future Tech and OmniBuds, a medical device startup. In these roles, he contributed to early-stage strategy, clinical trial planning, and commercial development.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, University of Cambridge , Toxicology (2025)
- Masters of Research, King's College London , Translational Cancer Medicine (2021)
- Bachelor of Science, University of Nottingham School of Medicine , Physiology (2020)

STANFORD ADVISORS

- Suzanne Pfeffer, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **3D nanoscale reconstruction of human airway multiciliogenesis reveals cellular architecture remodeling and cilia-mitochondria link via rootlets.** *Cell reports*
Vijayakumaran, A., Godbehere, C., Abuammar, A., Breusegem, S. Y., Hurst, L. R., Morone, N., Llodra, J., Dalbay, M. T., Tanvir, N. M., Jila, A., MacLellan-Gibson, K., O'Callaghan, C., Lorentzen, et al
2026; 45 (7): 117714
- **Uncovering structural themes across cilia microtubule inner proteins with implications for human cilia function.** *Nature communications*
Andersen, J. S., Vijayakumaran, A., Godbehere, C., Lorentzen, E., Mennella, V., Schou, K. B.
2024; 15 (1): 2687
- **Selective loss of primary cilia and neurotrophic signaling in G51D α -synuclein mice highlights a common pathway to Parkinson's disease.** *Proceedings of the National Academy of Sciences of the United States of America*

Lin, Y. E., Jaimon, E., Kim, Y., Loftman, A., Vijayakumaran, A., Belfort, B. D., Chiang, C. Y., Arenkiel, B. R., Zoghbi, H. Y., Pfeffer, S. R.
2026; 123 (33): e2619797123

- **Airway Cells 3D Reconstruction via Manual and Machine-Learning Aided Segmentation of Volume EM Datasets.** *Methods in molecular biology (Clifton, N.J.)*
Vijayakumaran, A., Abuammar, A., Medagedara, O., Narayan, K., Mennella, V.
2024; 2725: 131-146
- **ARL13B controls male reproductive tract physiology through primary and Motile Cilia.** *Communications biology*
Augière, C., Campolina-Silva, G., Vijayakumaran, A., Medagedara, O., Lavoie-Ouellet, C., Joly Beuparlant, C., Droit, A., Barrachina, F., Ottino, K., Battistone, M. A., Narayan, K., Hess, R., Mennella, et al
2024; 7 (1): 1318
- **Phase-shift nanodroplets as an emerging sonoresponsive nanomaterial for imaging and drug delivery applications.** *Nanoscale*
Zhang, W., Shi, Y., Abd Shukor, S., Vijayakumaran, A., Vlatakis, S., Wright, M., Thanou, M.
2022; 14 (8): 2943-2965