

CV: Mahan Ghafari, DPhil *(last updated: 19 Dec, 2025)*

Life & Mind Building, Department of Biology, University of Oxford, South Parks Road, Oxford, OX1 3EL

mahan.ghafari@biology.ox.ac.uk; <https://users.ox.ac.uk/~univ4613>

Education

2022 DPhil in Interdisciplinary Bioscience, University College, University of Oxford
Thesis: “Quantitative analysis of the mode and tempo of virus molecular evolution”
Supervisors: Aris Katzourakis and Oliver Pybus FRS

2018 MSc in Physics, Emory University
Thesis: “Quantitative analysis of adaptive evolution”
Supervisor: Daniel Weissman

2015 BSc in Physics, Sharif University of Technology

Employment & Research Experience

2025– Group Leader, Department of Biology, University of Oxford

2025– Independent Investigator, Pandemic Sciences Institute, University of Oxford

2025– Kemp Junior Research Fellow in Medical Sciences, Lincoln College

2022–2025 Postdoctoral Researcher, Pandemic Sciences Institute, University of Oxford
Supervisor: Katrina Lythgoe

2017–2018 Visiting Graduate Student, Department of Genetics, University of Cambridge
Supervisor: Christopher Illingworth

2017–2018 Research Scientist, Leiden Academic Centre for Drug Research, Leiden University
Supervisor: Alireza Mashaghi

2014–2015 Undergraduate Researcher, Department of Physics, Sharif University of Technology
Supervisor: Shahin Rouhani

Research Funding

2025–2030 Wellcome Trust Early Career Research Fellowship [[link](#)] (£553K)

2018–2022 Oxford-Radcliffe Scholarship, University College, University of Oxford (£175K)

2018–2022 Marie Curie Actions Research Fellowship, IST Austria (€146K; Declined)

2018–2022 EPSRC-IDS, Imperial College London (£166K; Declined)

2015–2018 Laney Graduate School Scholarship, Emory University (\$269K)

Peer-Reviewed Publications (*=equal contribution; †=corresponding author)

- **Ghafari M†**, Kemp SA, Hall M, Clarke J, Ferretti L, ... Walker AS, Golubchik T, Lythgoe K (2025) SARS-CoV-2 genomic diversity and within-host evolution in individuals with persistent infection in the UK: an observational, longitudinal, population-based surveillance study. *The Lancet Microbe* 6, 101154. [[link](#)] (10 authors)
- Rubino L, Abrahamian P, An W, Aranda MA, Ascencio-Ibañez JT, Bejerman N, ..., **Ghafari M**, ... Zerbini FM, Zhang S, ICTV Taxonomy Summary Consortium (2025) Summary of taxonomy changes ratified by the International Committee on Taxonomy of Viruses from the Plant Viruses Subcommittee, 2025. *Journal of General Virology* 106: 002114. [[link](#)] (97 authors)
- Pekar JE, Lytras S, **Ghafari M**, Magee AF, Parker E, ... Worobey M, Wertheim J, Lemey P (2025) The recency and geographical origins of the bat viruses ancestral to SARS-CoV and SARS-CoV-2. *Cell* 188, 3167-3183.e18. [[link](#)] (19 authors)
- Zhao L, Hall M, Giridhar P, **Ghafari M**, Kemp S, ... Barnes E, Ansari MA, Lythgoe K (2025) Genetically distinct within-host subpopulations of hepatitis C virus persist after Direct-Acting Antiviral treatment failure. *PLoS Pathogens* 21: e1012959. [[link](#)] (10 authors)
- **Ghafari M†**, Hall M, Golubchik T, Ayoubkhani D, House T, ... Bonsall D, Walker AS, Lythgoe K (2024) Prevalence of persistent SARS-CoV-2 in a large community surveillance study. *Nature* 626, 1094-1101. [[link](#)] (33 authors)

Peer-Reviewed Publications (cont.)

- **Ghafari M[†]**, Sômera M, Sarmiento C, Niehl A., Hébrard E., ... Lemey P, Katzourakis A and Fargette, D (2024) Revisiting the origins of the Sobemovirus genus: A case for ancient origins of plant viruses. *PLoS Pathogens*, 20: e1011911. (11 authors)
- Lythgoe KA, Golubchik T, Hall M, House T, Cahuantzi R, ... **Ghafari M**, ... Walker AS, Bonsall D (2023) Lineage replacement and evolution captured by 3 years of the United Kingdom Coronavirus (COVID-19) Infection Survey. *Proceedings of the Royal Society B* 290: 20231284. [\[link\]](#) (31 authors)
- **Ghafari M[†]**, Hosseinpour S, Rezaee-Zavareh MS, ... Madani K, Kordasti S (2023) A quantitative evaluation of the impact of vaccine roll-out rate and coverage on reducing deaths: insights from the first 2 years of COVID-19 epidemic in Iran. *BMC Medicine* 21, 429. [\[link\]](#) (8 authors)
- Markov PV, **Ghafari M**, Beer M, Lythgoe K, Simmonds P, Stilianakis NI, and Katzourakis A (2023) The evolution of SARS-CoV-2. *Nature Reviews Microbiology* 21, 361-379. [\[link\]](#)
- Francisco NM, Wyk SV, Moir M, San J, Sebastiao C, Tegally H, ... **Ghafari M**, ... Lessells R, de Oliveira T, Morais J (2023) Insights into SARS-CoV-2 in Angola during the COVID-19 peak: Molecular epidemiology and genome surveillance. *Influenza and Other Respiratory Viruses* 17: e13198. [\[link\]](#) (42 authors)
- **Ghafari M^{*†}**, Watson OJ*, Karlinsky A, Ferretti L, and Katzourakis A (2022) A framework for reconstructing SARS-CoV-2 transmission dynamics using excess mortality data. *Nature Communications* 13, 3015. [\[link\]](#)
- **Ghafari M**, Liu Q, Dhillon A, Katzourakis A, and Weissman DB (2022) Investigating the evolutionary origins of the first three SARS-CoV-2 variants of concern. *Frontiers in Virology* 2: 942555. [\[link\]](#)
- Hinch R, Panovska-Griffiths J, Probert WJ, Ferretti F, Wymant C, Di Lauro F, Baya N, **Ghafari M**, Abeler-Dorner L, and Fraser C (2022) Estimating SARS-CoV-2 Variant Fitness and the Impact of Interventions in England using Statistical and Geo-Spatial Agent-Based Models. *Philosophical Transactions of the Royal Society A* 380: 20210304. [\[link\]](#)
- **Ghafari M**, du Plessis L, Raghwani J, Bhatt S, Xu B, Pybus OG, and Katzourakis A (2022) Purifying selection determines the short-term time dependency of evolutionary rates in SARS-CoV-2 and pH1N1 influenza. *Molecular Biology and Evolution* 39, msac009. [\[link\]](#)
- **Ghafari M**, Pybus OG, Simmonds P, and Katzourakis A (2021) A mechanistic evolutionary model explains the time-dependent pattern of substitution rates in viruses. *Current Biology* 31, 4689-4696e5. [\[link\]](#)
- Dascalu S, Flammer PG, **Ghafari M**, Henson SC, Nascimento R, and Bonsall MB (2021) Engaging Religious Institutions and Faith-Based Communities in Public Health Initiatives: A Case Study of the Romanian Orthodox Church During the COVID-19 Pandemic. *Frontiers in Public Health* 9: 768091. [\[link\]](#)
- **Ghafari M[†]**, Rezaee-Zavareh MS, Dascalu S, and Katzourakis A (2021) Iran's covid-19 vaccination programme: using transparency to build public trust in immunisation. *The BMJ Opinion*. [\[link\]](#)
- **Ghafari M[†]**, Kadivar A, and Katzourakis A (2021) Estimates of anti-SARS-CoV-2 antibody seroprevalence in Iran. *Lancet Infectious Diseases* 21, 602-603. [\[link\]](#)
- **Ghafari M[†]**, Kadivar A, and Katzourakis A (2021) Excess deaths associated with the Iranian COVID-19 epidemic: A province-level analysis. *International Journal of Infectious Diseases* 107, 101-115. [\[link\]](#)
- **Ghafari M[†]**, Hejazi B, Karshenas A, Dascalu S, Kadivar A, Khosravi MA, Abbasalipour M, Heydari M, Zeinali S, Ferretti L, Ledda A, and Katzourakis A (2021) Lessons for preparedness and reasons for concern from the early COVID-19 epidemic in Iran. *Epidemics* 36, 100472. [\[link\]](#)
- **Ghafari M^{*}**, Lumby CK*, Weissman DB, Illingworth CJR (2021) Inferring transmission bottleneck size from viral sequence data using a novel haplotype reconstruction method. *Journal of Virology* 94:10.1128/jvi.00014-20. [\[link\]](#)
- Wikramaratna PS, Paton RS, **Ghafari M**, and Lourenco J (2020) Estimating the false-negative test probability of SARS-CoV-2 by RT-PCR. *Eurosurveillance* 25: 2000568. [\[link\]](#)
- **Ghafari M** and Weissman DB (2019) The expected time to cross extended fitness plateaus. *Theoretical Population Biology* 129, 54-67. [\[link\]](#)
- **Ghafari M** and Mashaghi A (2017) On the role of topology in regulating transcriptional cascades. *Physical Chemistry Chemical Physics* 19, 25168-25179. [\[link\]](#)
- Holmes CM, **Ghafari M**, Anzar A, Saravanan V, and Nemenman I (2017) Luria-Delbrück revisited: The classic experiment does not rule out Lamarckian evolution. *Physical Biology* 14: 055004. [\[link\]](#)

Preprint/in review

- Khurana, M.P., Katsiferis, A., Scheidwasser, ... **Ghafari M**, Krause TG, Duchêne DA, Bhatt S (2025) Large-scale genomic surveillance reveals immunosuppression drives mutation dynamics in persistent SARS-CoV-2 infections. *medRxiv* 2025.02.10.25321987. [\[link\]](#) (18 authors)
- **Ghafari M**, Simmonds P, Katzourakis A (2025) A unified evolutionary framework to reconstruct the viral histories of human, simian, and prosimian immunodeficiency viruses across timescales. *bioRxiv* 2023.06.28.546833. [\[link\]](#)
- Gracy J, **Ghafari M**, Labasse G, Fargette D, Hebrard E (2024) Understanding evolutionary and functional relationships of RNA polymerases in plant and fungal viruses through structural modeling and divergence date estimations. *bioRxiv* 2024.11.13.623411. [\[link\]](#)
- Ferretti L, Golubchik T, Di Lauro F, **Ghafari M**, ... Fraser C, Hall M (2024) Biased estimates of phylogenetic branch lengths resulting from the discretised Gamma model of site rate heterogeneity. *bioRxiv* 2024.08.01.606208. [\[link\]](#) (8 authors)
- Li Y, **Ghafari M**, Holbrook AJ, Boonen I, Amor NMS et al. (2023) The evolutionary history of hepaciviruses. *bioRxiv* 2023.06.30.547218. [\[link\]](#)
- de Oliveira T, Lutucuta S, Nkengasong J, Morais J, ... **Ghafari M**, ... Tshiabuila D, Martin D, Lessells RJ (2021) A novel variant of interest of SARS-CoV-2 with multiple spike mutations detected through travel surveillance in Africa. *medRxiv* 2021.03.30.21254323. [\[link\]](#) (28 authors)

Research Supervision & Mentoring

University of Oxford

Postdoctoral researchers

- Sanni Översti, postdoctoral research associate, Department of Biology (2025–)

Departmental

- Freya Cook, MBiol student, Department of Biology (project supervisor, 2025–26)
- Nafisa Sharder, MBiol student, Department of Biology (project supervisor, 2025)
- Sofya Lebedeva, DPhil student, Nuffield Department of Medicine (joint supervisor, 2025–)
- Wenyang Lyu, DPhil student, Department of Biology (joint supervisor, 2024–)
- George Lister, Kornelija Aleksejeva, DTC DPhil students (capstone project supervisor, 2024)

Lincoln College

- Graduate Advisor (pastoral and academic advisor to MSc & DPhil students, 2025–)

Other Institutes

- Selen Kizilkaya, University of Jena, Erasmus Mundus master's student (thesis supervisor, 2026)
- Javier Zabalegui Bayona, Erasmus Mundus master's student (project supervisor, 2025)
- Shusuke Kawakubo, JSPS Research Fellow-PD, IMSUT (project supervisor, 2024–)
- Arushi Dhillon, undergraduate student, Emory University (project supervisor, 2022)

Graduate Examination & Assessment

University of Oxford (ToS=DPhil Transfer of Status; CoS=DPhil Confirmation of Status)

- Kai Kean, CoS examiner, Nuffield Department of Medicine, 2025 (supervisor: T. Golubchik)
- Kaitlin Reid, CoS examiner, Nuffield Department of Medicine, 2025 (supervisor: T. Golubchik)
- Charlie Hamilton, ToS examiner, Nuffield Department of Medicine, 2025 (supervisor: L. Ferretti)
- Lucy Greenwood, ToS examiner, Nuffield Department of Medicine, 2025 (supervisor: R. Aguas)
- Rhys Inward, ToS examiner, Department of Biology, 2025 (supervisor: M. Kraemer)

Other Institutes

- Vinicius Franceschi, PhD Imperial College London, 2025 (thesis examiner; supervisor: E. Volz)

Selected Awards & Recognitions

Nov 2025	Selected as an inaugural “New Voice in Virology”, Journal of Virology, ASM
May 2022	Accelerating Impact Award, Doctoral Training Centre, University of Oxford (£4K)
Nov 2021	Doctoral Training Impact Award, BBSRC & University of Oxford (£250)
Jun 2019	European Society for Evolutionary Biology conference travel award (£300)
Apr 2018	Communicate Your Science Award, Genetics Society, UK (£250)
Jul 2016	NSF-sponsored Travel Award, 10th q-bio conference, USA (\$880)
Jun 2016	Emory University Professional Development Travel Award, USA (\$1500)

Invited Talks

Oct 2025	Virology Symposium, Institute of Medical Science, University of Tokyo, Japan
Oct 2025	72 nd Annual Meeting of Japanese Society for Virology, Hamamatsu, Japan
May 2025	Theory in Understanding Viral Dynamics & Evolution Symposium, SMTPB
May 2025	Oxford Virology Network, Wellcome Trust Centre for Human Genetics, Oxford
Feb 2025	Boeing Company Applied Math Seminar, USA
Jan 2025	Infectious Disease Dynamics Seminar, Johns Hopkins School of Pub. Health, USA
Apr 2024	TIDE Symposium, Max Planck Institute for Evolutionary Anthropology, Germany
Apr 2023	Plant Health Institute Montpellier seminar series, France
Mar 2023	TRACE working group, FNIH, USA
Jul 2022	Graduate Student Talks, University of Oxford, UK
Jun 2022	DTP Annual Symposium, Oxford Brookes University, UK
Mar 2022	Interdisciplinary approaches to public health conference, University of Oxford, UK
Oct 2020	5 th Uppsala Transposon Symposium, Sweden
May 2020	Contemporary Iran Forum, MacMillan Center, Yale University, USA
May 2020	IBC Webinar, University of Oxford, UK
Jun 2016	Q-bio Summer School Symposium, Colorado State University, USA

Contributed Presentations

Nov 2024	Oral, 5 th VGE(B) Conference, Wellcome Connecting Science, UK
Sep 2024	Oral, UK International Coronavirus Network Annual General Meeting, UK
Jun 2024	Oral, 31 st International Dynamics & Evolution of Human Viruses, Canada
Jul 2023	Oral, 1 st International Pandemic Sciences Conference 2023, UK
Apr 2023	Oral, 30 th International Dynamics & Evolution of Human Viruses, Germany
Nov 2022	Oral, 4 th VGE Conference, Wellcome Connecting Science, UK
Sep 2021	Oral, 3 rd VGE Conference, Wellcome Connecting Science, UK
Jul 2019	Poster, Molecular Basis to Predictability & Evolution, Nordita Institute, Sweden
Jun 2018	Poster, Stochastic Models of Evolving Populations, ICMS Edinburgh, UK
Mar 2018	Poster, EGGS 2018, Department of Genetics, University of Cambridge, UK
Jul 2016	Oral, 10 th Annual q-bio Conference, Vanderbilt University, USA

Professional Service

- Contributing participant, Scientific Pandemic Influenza Group on Modelling, Operational sub-group (SPI-M-O), UK Government
- Member, Royal Society Publishing Early Career Researcher Advisory Panel (2025–)
- Organiser, PSI-DAE Away Day, Pandemic Sciences Institute, University of Oxford (2025)
- Grant reviewer for UK Research and Innovation MRC (2025), French National Research Agency (2024), Wellcome Trust Discovery Award (2023)

Referee for Nature, The BMJ, The Proceedings of the National Academy of Sciences, Molecular Biology and Evolution, Lancet Infectious Diseases, Nature Communications, Virus Evolution, PLoS Computational Biology, Philosophical Transactions B, Proceedings of the Royal Society B, mBio, Cell Reports Medicine, Communications Medicine, Theoretical Population Biology

Teaching

2025 Co-lead, Infectious Disease Modelling practical (Year 3 Mbiol Computer Skills)
Department of Biology, University of Oxford

2025 Lead, Bioinformatics practical (Year 1 Mbiol Research Skills & Computing)
Department of Biology, University of Oxford

2025 Lead, Epidemiology practical (Year 3 Mbiol Computer Skills)
Department of Biology, University of Oxford

2023-2025 Guest lecturer, SARS-CoV-2 Evolution (MSc Modelling for Global Health)
Centre for Tropical Medicine and Global Health, University of Oxford

2023 Module leader, Statistics & Data Management (DTC Year 1 DPhil students)
Doctoral Training Centre, University of Oxford

2021-2022 College tutor, Introduction to Statistics and Programming with R
University College, University of Oxford

2019-2021 Demonstrator: Infectious Disease Modelling, Intro. to programming, Evolutionary Biology
Department of Zoology and Doctoral Training Centre, University of Oxford

2016-2017 Teaching Assistant: Statistical Physics, Introductory Physics, Modern Physics
Department of Physics, Emory University

2013 Teaching Assistant: Statistical Physics & Thermodynamics
Department of Physics, Sharif University of Technology

Media Interviews

Sep 2025 ContagionLive – Fast change and little spread of persistent SARS-CoV-2 infections

Feb 2024 University of Oxford News – High number of persistent COVID-19 infections in populations

Jan 2023 Science – Iranian researchers fear for science after hardline cleric takes important post

Aug 2022 Washington Post – Amid covid surge, Iran cut corners to approve yet-unproven vaccine

June 2022 Nature – What Omicron's BA.4 and BA.5 variants mean for the pandemic

Oct 2021 New Scientist – Nearly every person in Iran seems to have had covid-19 at least once

Oct 2021 NPR – A new study sheds light on the elusive idea of herd immunity

Sep 2021 University of Oxford News – Coronavirus Epidemics first hit more than 21,000 years ago