

Maria A. Gutierrez

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Education

- Oct 2021- **PhD in Applied Mathematics, Gates Cambridge Scholar, University of Cambridge (UK)**
Sep 2025 Thesis "Population dynamics of infectious disease and pathogen evolution: modelling vaccine escape": [link](#)
Supervisor: Julia Gog OBE; Advisor (secondary supervisor): Michael Cates FRS
2020-2021 **Mathematics MMath (Part III, Distinction), University of Cambridge (UK)**
2017-2020 **Mathematics BA (First Class Honours), University of Cambridge (UK)**

Research experience

- Oct 2025- **Postdoctoral Research Associate, Odum School of Ecology, University of Georgia (USA)**, Rohani Lab, ecology and evolution of influenza viruses
2021 **Quantitative finance summer internship, Susquehanna Intl. Group, Dublin (Ireland)**
2020 **Cosmology summer project, University of Cambridge (UK)**, with Enrico Pajer
2019 **Biophysics summer project, U. of Cambridge**, with Pierre Haas and Raymond Goldstein FRS

Publications

- 2026 **Infectious disease outbreak controllability: biological, social and public health factors**, *Proceedings of the Royal Society B: Biological Sciences*, 293 (2063): 20252848, Thompson RN, Bansal S, Clapman H, Dyson L, Gutierrez MA, et al.: [link](#)
2025 **Final-size solutions of SIRI models with vaccination**, *Bulletin of Mathematical Biology* (accepted), Gutierrez MA and Gog JR: [preprint](#) [link](#)
2023 **The importance of vaccinated individuals to population-level evolution of pathogens**, *Journal of Theoretical Biology*, 567, 111493, Gutierrez MA and Gog JR: [link](#)
2022 **Stabilization of microbial communities by responsive phenotypic switching**, *Physical Review Research*, 4, 033224, Haas PA, Gutierrez MA, Oliveira NM, Goldstein RE: [link](#)

Awards and grants

- 2021-2025 **Gates Cambridge scholarship**, *Bill & Melinda Gates Foundation*, merit, service and leadership full scholarship (stipend + international fees) for outstanding international PhD candidates
2022-2025 **Academic travel grants**, *European Society of Mathematical and Theoretical Biology; King's College (U. of Cambridge); Gates Cambridge Trust*, to Germany, Finland, Sweden, Italy, Portugal
2021 **Clarendon scholarship (declined)**, *University of Oxford*, full scholarship for PhD position
2021 **Roth scholarship (declined)**, *Imperial College London*, full scholarship for PhD position
2018-2021 **Examination prizes**, *Christ's College (U. of Cambridge)*, for outstanding academic performance
2017 **Excellence scholarship (2500€)**, *Region of Madrid, Department of Education*
2017 **Entrance award (500€)**, *Universidad Complutense de Madrid*
2017 **Honours scholarship**, *Sagrado Corazon Madrid School*, **over 1000€** in university fees

Research presentations

- 2025 **EEID25 (Ecology and Evolution of Infectious Diseases) conference**, poster: [pdf](#)
2025 **Bifurcation and Chaos in Population Biology workshop**, *Brin Mathematics Research Center (University of Maryland)*, invited speaker: [slides](#)
2025 **MPDEE25 (Conference on Models in Population Dynamics, Ecology, and Evolution)**, selected talk: [slides](#)

- 2024 **VGEB24 (Virus, Genomics, Evolution & Bioinformatics) conference**, poster: [pdf](#), [video](#)
- 2024 **MIDAS (Models of Infectious Disease Agent Study) network**, webinar: [slides](#), [video](#)
- 2024 **Isaac Newton Institute for Mathematical Sciences: Modelling and inference for pandemic preparedness (workshop)**, *University of Cambridge*, selected talk: [slides](#), [video](#)
- 2024 **Centre for Ecology and Evolution (Imperial/UCL) Spring Symposium: The evolution of viral epidemics and pandemics: past, present and future**, *London*, invited speaker: [slides](#)
- 2024 **Disease Dynamics and Pathogen Genomics seminar**, *Department of Veterinary Medicine, University of Cambridge*, [slides](#)
- 2024 **SMB MathEpiOnco 2024 (online mini conference)**, selected talk: [slides](#)
- 2024 **DSABNS 2024 (15th Conference on Dynamical Systems Applied to Biology and Natural Sciences)**, *Lisbon (Portugal)*, invited lecture: [slides](#)
- 2023 **EPIDEMICS9 (9th International Conference on Infectious Disease Dynamics)**, *Bologna (Italy)*, selected talk: [slides](#)
- 2023 **IDDConf2023 (Infectious Diseases Dynamics Conference)**, *Lake District (UK)*, talk: [slides](#)
- 2023 **UNAM, Faculty of Mathematics**, *Mexico City (Mexico)*, seminar in Spanish: [slides](#)
- 2023 **NORDITA program: Unifying the epidemiological and evolutionary dynamics of pathogens**, *Stockholm (Sweden)*, research seminar: [slides](#)
- 2023 **Cambridge Infectious Diseases Annual Symposium**, *Cambridge (UK)*, selected talk: [slides](#)
- 2023 **JUNIPER Consortium**, *United Kingdom*, online seminar: [slides](#)
- 2022 **ECMTB 2022 (SMB - ESMTB joint meeting: 12th European Conference on Mathematical and Theoretical Biology)**, *Heidelberg (Germany)*, selected poster: [pdf](#)
- 2022 **Cambridge Infectious Diseases Annual Symposium**, *Cambridge (UK)*, poster: [pdf](#)

Teaching

- 2021-2024 **Invited lecturer**, *Introduction to Mathematical Biology*, for junior high school students Christ's - Trinity Women in Maths Residential 2021, 2024; King's - Christ's Joint Easter Residential 2023
- 2021-2023 **Undergraduate supervisor**, *Differential Equations, Methods, Mathematical Biology*
- 2022 **Undegraduate mathematics admissions interviewer**, *King's College Cambridge*
- 2021-2022 **Drop-in sessions (office hours for master courses)**, *Stochastic Processes in Biology*

Public talks and outreach activities

- 2024 **LEGO epidemics**, *Cambridge Science Festival*, hands-on activity for children
- 2023 **Maths and viruses**, *50 Years of Women at King's Festival*, invited speaker: [slides](#)
- 2023 **Contagious maths (for young children)**, 'Meet the researchers', [video](#)
- 2022 **Maths and the evolution of viruses**, *Christ's College Maths Society*, invited speaker: [slides](#)
- 2022 **A mathematician's adventures in pandemic modelling**, *Pint of Science (international popular science festival)*, invited speaker: [slides](#)
- 2021 **Statistical field theory in biological systems**, *Part III Seminar Series*, talks by masters students
- 2020 **Mathematical epidemiology**, *Cambridge University Biological Society, The Archimideans (Cambridge University Mathematical Society)*, student talks for and by undergraduates
- 2019 **Una matemática biológica**, *Sagrado Corazon Madrid School*, for senior high school students

Service

- 2023- **Peer-reviewing**, *Journal of Theoretical Biology, Bulletin of Mathematical Biology, PNAS*
- 2019-2022 **Mentoring of female students**, high-schoolers from Spain and Cambridge undergraduates

Committees

- 2023-2024 **King's College Boat Club**, alumni officer
Organised a boat naming ceremony and the alumni boat club dinner, held at King's College Cambridge.
- 2022-2023 **Equality, Diversity & Inclusion (Faculty of Mathematics)**, graduate representative
Arranged for free menstrual products, LGBT/Trans flags during pride month/trans awareness week.
- 2021-2022 **Emmy Noether Society (for women in mathematics)**, graduate representative
Gave two study skills workshops, organised socials, and talks by female academics.
- 2020-2021 **Effective Altruism Cambridge**, consultant
Led 3 online careers workshops (over 200 sign-ups each) on "High Impact Careers for Mathematicians".