

# Maria A. Gutierrez

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## Education

- 2021-2025 **PhD in Applied Mathematics and Gates Cambridge Scholar**, *University of Cambridge*  
○ Department of Applied Mathematics and Theoretical Physics (DAMTP).  
○ Supervisor: **Prof Julia Gog OBE**.  
○ Advisor (secondary supervisor): Prof Michael Cates FRS.  
○ 2022 Helsinki Summer School in Mathematical Ecology and Evolution.
- 2020-2021 **Mathematics MMath (Part III, Distinction)**, *University of Cambridge*  
Thesis: "Renormalisation Group Approach to the Dynamics of Epidemics", with Dr Ronjoy Adhikari.
- 2017-2020 **Mathematics BA (First Class Honours)**, *University of Cambridge*  
2019 London Mathematical Society Undergraduate Research Summer School.
- Undergraduate summer research internships**
- 2021 **Quantitative finance (trading and research)**, *Susquehanna Intl. Group, Dublin (Ireland)*
- 2020 **Cosmology**, *University of Cambridge*, with Prof Enrico Pajer
- 2019 **Biophysics**, *University of Cambridge*, with Dr Pierre Haas and Prof Raymond Goldstein FRS

## Publications

- 2023 **The importance of vaccinated individuals to population-level evolution of pathogens**, *Journal of Theoretical Biology*, 567, 111493, [Gutierrez, M.A.](#); Gog, J.R.: [link](#)
- 2022 **Stabilization of microbial communities by responsive phenotypic switching**, *Physical Review Research*, 4, 033224, Haas, P.A.; [Gutierrez, M.A.](#); Oliveira, N.M.; Goldstein, R.E.: [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
- 2022-2024 **Travel grants**, *European Society of Mathematical and Theoretical Biology, King's College Cambridge*, for academic travel to Germany, Finland, Sweden, Italy, and Portugal
- 2021 **Claredon 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 and scholarships**, *Christ's College*, for outstanding academic performance, including the Kelly Prize, and the J. A. J. Whelan Prize in Mathematics (three times)
- 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*, **more than 1000€** in university fees

## Research presentations

- 2024 **UCL Centre for Ecology and Evolution spring symposium: The evolution of viral epidemics and pandemics: past, present and future**, *Imperial College London*, invited speaker
- 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 **IDDCnf2023 (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 experience

- 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 **Undergraduate mathematics admissions interviewer**, *King's College Cambridge*
- 2021-2022 **Drop-in sessions (office hours for master courses)**, *Stochastic Processes in Biology*

## Outreach

- 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](#)
- 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](#)
- 2022 **Maths to help us in the next pandemic**, *Gates Cambridge Internal Symposium: How does your research improve the lives of others?*, selected speaker: [slides](#)
- 2022 **How mathematicians can save the world from the next pandemic**, *Cambridge University Ethics in Maths Society*, invited speaker
- 2020 **Statistical field theory in biological systems**, *Part III Seminar Series*, talks by masters students
- 2020 **Mathematical epidemiology**, *Cambridge University Biological Society*, student talk
- 2020 **Mathematical modelling of infectious diseases**, *The Archimedians*, student talk
- 2019 **Una matemática biológica**, *Sagrado Corazon Madrid School*, for senior high school students

## Service

- 2023- **Peer-review refereeing**, *Journal of Theoretical Biology, Bulletin of Mathematical Biology*
- 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, academic talks. Mentor of female undergraduates.
- 2020-2021 **Effective Altruism Cambridge**, consultant  
Led 3 online careers workshops (over 200 sign-ups each) on "High Impact Careers for Mathematicians".