Edward Hill

Curriculum Vitae

December 2023

Address: Zeeman Institute: SBIDER, Mathematical Sciences Building, University of Warwick, Coventry, UK.
Email: Edward.Hill@warwick.ac.uk
Web: https://edmhill.github.io/
ORCID iD: 0000-0002-2992-2004
Nationality: British

Research Interests

Addressing interdisciplinary problems in epidemiology that involve the dynamics of behaviour. I have particular interests in public, veterinary and plant health policy, including zoonoses and the implementation of One Health approaches to disease management. My approach involves applying mathematical and computational methods, including the development of models, parameter inference and the evaluation of interventions via computational simulation.

Appointments

Sep 2022 - **Warwick Zeeman Lecturer**, Warwick Mathematics Institute, University of Warwick.

Jun 2017 - Sep 2022 **Research Fellow**, Zeeman Institute: SBIDER, University of Warwick.

Education

Sep 2013 - Aug 2017 **PhD in Interdisciplinary Mathematics and Complexity Science.**
University of Warwick.
Supervised by Dr. Thomas House and Dr. Michael Tildesley.
Funded by EPSRC.
Viva Date: June 2017.

Postgraduate Certificate in Transferable Skills in Science.
University of Warwick.

Sep 2012 - Sep 2013 **MSc in Complexity Science, with Distinction.**
University of Warwick.
Mini-project one: *Multi-host modelling of influenza A*.
Mini-project two: *Social networks and health*.
Funded by EPSRC.

Sep 2008 - June 2012 **Master of Mathematics (MMath), with 1st class honours.**
University of Warwick.
Final year project: *Optimal Vaccination*.

Grant Funding

Active grants

Apr 2024 - Mar 2027 BBSRC. *Modelling to inform interventions during Highly Pathogenic Avian Influenza outbreaks in Great Britain.* Award: £838,305. Role: Co-Investigator (Co-I).

Sep 2023 - Aug 2026 NIHR. *Mathematical and economic modelling for vaccination and immunisation evaluation (MEMVIE) 3.* Award: £900,000. Role: Co-I.

Oct 2023 - Apr 2024 Bill & Melinda Gates Foundation. *Investigation of vaccination strategies to facilitate elimination of foot-and-mouth disease in India.* Award: £86,928. Role: Co-I.

Previous grants

Oct 2022 - Oct 2023	Bill & Melinda Gates Foundation. *Investigation of vaccination strategies to facilitate elimination of foot-and-mouth disease in India.* Award: £180,029. Role: Co-I.
Jan 2023 - Aug 2023	World Health Organisation. *Modelling the impacts of current and variant adapted vaccines on VOC transmission dynamics.* Award: $125,000. Role: Co-I.
Jan 2023 - Mar 2023	NERC. *Quantifying the Impact of HPAI in the UK wild bird population.* Award: £19,968. Role: Co-Principal Investigator (PI).
Sep 2022 - Mar 2023	BBSRC. *Furthering our understanding of the intercontinental transmission dynamics of avian influenza.* Award: £19,990. Role: PI.

Teaching

Lecturing

2023 -	Module organiser and lecturer for *MA4E7 Population Dynamics: Ecology and Epidemiology*, University of Warwick.
2022 -	Module co-organiser for *MA4K8 MA4K9 Projects*, University of Warwick. Core module for 4th year MMath students.
2017 - 2022	Lecturer/workshop assistant for taught module, *Mathematical Modelling*, delivered to postgraduate students in the Midland Integrative Biosciences Training Partnership doctoral training programme, University of Warwick. Delivered one lecture in a set of four workshop sessions. Discussed and aided students with workshop questions. Involved in marking the final assignment for the module..

Support classes

2015 - 2016	Teaching Assistant for 4th year undergraduate Mathematics module *Population Dynamics: Ecology and Epidemiology*, University of Warwick. Planned and ran support class sessions.
2011 - 2014	Supervisor for 1st year undergraduate Mathematics students, University of Warwick. Assigned groups of 4/5 students. Marked student assignments. Discussed assignments and other course material with the students.

PhD student supervision

2024 - present	Co-supervisor for Reanna Gregory (Institute for Global Pandemic Planning, University of Warwick).
2023 - present	Co-supervisor for Elliot Vincent (MathSys CDT, University of Warwick).
2022 - present	Lead supervisor for Phoebe Asplin (MathSys CDT, University of Warwick).
2022 - present	Lead supervisor for Rachel Seibel (MathSys CDT, University of Warwick).
2021 - present	Co-supervisor for Zak Ogi-Gittins (MathSys CDT, University of Warwick).

Masters student supervision

2023 - 2024 MMath Research project supervision (course code: MA4K9). Student: Andi Hani.

2023 Mathematics MSc Dissertation project supervision. Student: Alec Hodgson.

2022 - 2023 MMath Research project supervision (MA4K9). Student: Joe Brooks.

2022 Lead supervisor of two MSc Individual Research Projects (MA931). Students: Phoebe Asplin & Rachel Seibel.

2022 Academic co-leader for an MSc Research Study Group Project (MA932) in collaboration with the Department for Education.

2021 Lauren Adams, Masters in Public Health Professional Project (PC950).

2021 MSc Individual Research Project (MA931) co-supervision . Student: Zak Ogi-Gittins.

2021 Academic co-leader for an MSc Research Study Group Project (MA932) in collaboration with Public Health England.

2020 - 2021 Co-supervision of two MMath Research projects (MA4K9). Students: Panoraia Chortaria and Joel Kandiah.

Publications

Peer-reviewed journal articles

1. **Hill EM**[†], Prosser NS[†], Brown PE, Ferguson E, Green MJ, Kaler J, Keeling MJ, Tildesley MJ. (2023) Incorporating heterogeneity in farmer disease control behaviour into a livestock disease transmission model. *Preventive Veterinary Medicine*, **219**: 106019. doi:10.1016/j.prevetmed.2023.106019.
   [†] denotes joint first authors.
2. **Hill EM**. (2023) Modelling the epidemiological implications for SARS-CoV-2 of Christmas household bubbles in England. *Journal of Theoretical Biology*, **557**: 111331. doi:10.1016/j.jtbi.2022.111331.
3. Keeling MJ, Moore S, Penman B, **Hill EM**. (2023) The impacts of SARS-CoV-2 vaccine dose separation and targeting on the COVID-19 epidemic in England. *Nature Communications*, **14**: 740. doi:10.1038/s41467-023-35943-0.
4. Chan YLE, Irvine MA, Prystajecky N, Sbihi H, Taylor M, Joffres Y, Schertzer A, Rose C, Dyson L, **Hill EM**, Tildesley MJ, Tyson JR, Hoang LMN, Galanis E. (2023) Emergence of SARS-CoV-2 Delta Variant and Effect of Nonpharmaceutical Interventions, British Columbia, Canada. *Emerging Infectious Diseases*, **29**(10): 1999–2007. doi:10.3201/eid2910.230055.
5. Guzman-Rincon LM, **Hill EM**, Thompson RN, Dyson L, Tildesley MJ, Keeling MJ. (2023) Bayesian estimation of real-time epidemic growth rates using Gaussian processes: local dynamics of SARS-CoV-2 in England. *Journal of the Royal Statistical Society Series C: Applied Statistics*, qlad056. doi:10.1093/jrsssc/qlad056.
6. Eames KTD, Tang ML, **Hill EM**, Tildesley MJ, Read JM, Keeling MJ, Gog JR. (2023) Coughs, colds and "freshers' flu" survey in the University of Cambridge, 2007-2008. *Epidemics*, **42**: 100659. doi:10.1016/j.epidem.2022.100659.
7. **Hill EM**, Prosser NS, Ferguson E, Kaler J, Green MJ, Keeling MJ, Tildesley MJ. (2022) Modelling livestock infectious disease control policy under differing social per-

spectives on vaccination behaviour. *PLoS Computational Biology*, **18**(7): e1010235. doi:10.1371/journal.pcbi.1010235.

8. Moore S, **Hill EM**, Dyson L, Tildesley MJ, Keeling MJ. (2022) Retrospectively modeling the effects of increased global vaccine sharing on the COVID-19 pandemic. *Nature Medicine*, **28**: 2416–2423. doi:10.1038/s41591-022-02064-y.
9. Prosser NS†, **Hill EM**†, Armstrong D, Gow L, Tildesley MJ, Keeling MJ, Kaler J, Fergsuon E, Green MJ. (2022) Descriptive analysis of national bovine viral diarrhoea test data in England (2016-2020). *Veterinary Record*. e1854. doi:10.1002/vetr.1854.
† denotes joint first authors.
10. Keeling MJ, Dyson L, Tildesley MJ, **Hill EM**, Moore S. (2022) Comparison of the 2021 COVID-19 roadmap projections against public health data in England. *Nature Communications*, **13**: 4924. doi:10.1038/s41467-022-31991-0.
11. Tildesley MJ, Vassall A, Riley S, Jit M, Sandmann F, **Hill EM**, Thompson RN, Atkins BD, Edmunds J, Dyson L, Keeling MJ. (2022) Optimal health and economic impact of non-pharmaceutical intervention measures prior and post vaccination in England: a mathematical modelling study. *Royal Society Open Science*, **9**(8): 211746. doi:10.1098/rsos.211746.
12. Leng T, **Hill EM**, Keeling MJ, Tildesley MJ, Thompson RN. (2022) The effect of notification window length on the epidemiological impact of COVID-19 contact tracing mobile applications. *Communications Medicine*, **2**: 74. doi:10.1038/s43856-022-00143-2.
13. Leng T, **Hill EM**, Thompson RN, Tildesley MJ, Keeling MJ, Dyson L. (2022) Assessing the impact of lateral flow testing strategies on within-school SARS-CoV-2 transmission and absences: A modelling study. *PLoS Computational Biology*, **18**(5): e1010158. doi:10.1371/journal.pcbi.1010158.
14. Leng T, **Hill EM**, Holmes A, Southall E, Thompson RN, Tildesley MJ, Keeling MJ, Dyson L. (2022) Quantifying within-school SARS-CoV-2 transmission and the impact of lateral flow testing in secondary schools in England. *Nature Communications*, **13**: 1106. doi:10.1038/s41467-022-28731-9.
15. Prosser NS, Green MJ, Fergsuon E, Tildesley MJ, **Hill EM**, Keeling MJ, Kaler J. (2022) Cattle farmer psychosocial profiles and their association with control strategies for bovine viral diarrhea. *Journal of Dairy Science*, **105**(4): 3559–3573. doi:10.3168/jds.2021-21386.
16. Keeling MJ, Dyson L, Guyver-Fletcher G, Holmes A, Semple MG, ISARIC4C Investigators, Tildesley MJ, **Hill EM**. (2022) Fitting to the UK COVID-19 outbreak, short-term forecasts and estimating the reproductive number. *Statistical Methods in Medical Research*, **31**(9): 1716–1737. doi:10.1177/09622802211070257.
17. Dyson L†, **Hill EM**†, … *et al.* (2021) Possible future waves of SARS-CoV-2 infection generated by variants of concern with a range of characteristics. *Nature Communications*, **12**: 5730. doi:10.1038/s41467-021-25915-7.
† denotes joint first authors.
18. **Hill EM**, Keeling MJ. (2021) Comparison between one and two dose SARS-CoV-2 vaccine prioritization for a fixed number of vaccine doses. *Interface*, **18**(182): 20210214. doi:10.1098/rsif.2021.0214.
19. Enright J†, **Hill EM**†, Stage HB, Bolton KJ, Nixon EJ, Fairbanks EM, Tang, ML Brooks-Pollock E, Dyson L, Budd CJ, Hoyle RB, Schewe L, Gog JR, Tildesley MJ. (2021) SARS-CoV-2 infection in UK university students: Lessons from September-December 2020 and modelling insights for future student return. *Royal Society Open Science*, **8**(8): 210310. doi:10.1098/rsos.210310.
† denotes joint first authors.
20. **Hill EM**, Atkins BD, Keeling MJ, Tildesley MJ, Dyson L. (2021) Modelling SARS-CoV-2 transmission in a UK university setting. *Epidemics*, **36**: 100476. doi:10.1016/j.epidem.2021.100476.

21. **Hill EM**,† Atkins BD†, Keeling MJ, Dyson L,Tildesley MJ. (2021) A network modelling approach to assess non-pharmaceutical diseases controls in a worker population: An application to SARS-CoV-2. *PLoS Computational Biology*, **17**(6): e1009058. doi:10.1371/journal.pcbi.1009058. † denotes joint first authors.
22. Gog JR, **Hill EM**, Danon L, Thompson RN. (2021) Vaccine escape in a heterogeneous population: insights for SARS-CoV-2 from a simple model. *Royal Society Open Science*, **8**(7): 210530. doi:10.1098/rsos.210530.
23. Keeling MJ, Guyver-Fletcher G, Holmes A, Dyson L, Tildesley MJ, **Hill EM**, Medley GF. (2021) Precautionary breaks: planned, limited duration circuit breaks to control the prevalence of SARS-CoV-2 and the burden of COVID-19 disease. *Epidemics*, **37**: 100526. doi:10.1016/j.epidem.2021.100526.
24. Southall ER, Holmes A, **Hill EM**, Atkins BD, Leng T, Thompson RN, Dyson L,Keeling MJ, Tildesley MJ. (2021) An analysis of school absences in England during the Covid-19 pandemic. *BMC Medicine*, **19**: 137. doi:10.1186/s12916-021-01990-x.
25. Keeling MJ, Tildesley MJ, Atkins BD, Penman B, Southall E, Guyver-Fletcher G, Holmes A, McKimm H, Gorsich E, **Hill EM**, Dyson L. (2021) The impact of school reopening on the spread of COIVD-19 in England. *Philosophical Transactions of the Royal Society B*, **376**(1829): 20200261. doi:10.1098/rstb.2020.0261.
26. Thompson RN, **Hill EM**, Gog JR. (2021) SARS-CoV-2 incidence and vaccine escape. *Lancet Infectious Diseases*, **21**(7): 913–914. doi:10.1016/S1473-3099(21)00202-4.
27. Moore S, **Hill EM**, Tildesley MJ, Dyson L, Keeling MJ. (2021) Vaccination and non-pharmaceutical interventions for COVID-19: a mathematical modelling study. *Lancet Infectious Diseases*, **21**(6): 793–802. doi:10.1016/S1473-3099(21)00143-2.
28. Moore S, **Hill EM**, Dyson L, Tildesley MJ, Keeling MJ. (2021) Modelling optimal vaccination strategy for SARS-CoV-2 in the UK. *PLoS Computational Biology*, **17**(5): e1008849. doi:10.1371/journal.pcbi.1008849.
29. Keeling MJ, **Hill EM**, Gorsich E, Penman B, Guyver-Fletcher G, Holmes A, Leng T, McKimm H, Tamborrino M, Dyson L, Tildesley MJ. (2021) Predictions of COVID-19 dynamics in the UK: short-term forecasting and analysis of potential exit strategies. *PLoS Computational Biology*, **17**(1): e1008619. doi:10.1371/journal.pcbi.1008619.
30. Stanizewska S, **Hill EM**, Grant R, Grove P, Porter J, Shiri T, Tulip S, Whitehurst J, Wright C, Datta S, Petrou S and Keeling MJ. (2021) Developing a Framework for Public Involvement in Mathematical and Economic Modelling: Bringing New Dynamism to Vaccination Policy Recommendations. *Patient*, **14**(4): 435–445. doi:10.1007/s40271-020-00476-x.
31. **Hill EM**, Petrou S, Forster H, de Lusignan S, Yonova I, Keeling MJ. (2020) Optimising age coverage of seasonal influenza vaccination in England: A mathematical and health economic evaluation. *PLoS Computational Biology*, **16**(10): e1008278. doi:10.1371/journal.pcbi.1008278.
32. **Hill EM**, Petrou S, de Lusignan S, Yonova I and Keeling MJ. (2019) Seasonal influenza: Modelling approaches to capture immunity propagation. *PLoS Computational Biology*, **15**(10): e1007096. doi:10.1371/journal.pcbi.1007096.
33. Buckingham-Jeffery E† , **Hill EM**†, Datta S, Dilger E, Courtenay O. (2019) Spatio-temporal modelling of Leishmania infantum infection among domestic dogs: a simulation study and sensitivity analysis applied to rural Brazil. *Parasites & Vectors*, **12**: 215. doi:10.1186/s13071-019-3430-y. † denotes joint first authors.
34. **Hill EM**, House T, Dhingra MS, Kalpravidh W, Mozaria S, Muzaffar GO, Brum E, Yamage M, Kalam MA, Prosser DJ, Takekawa JY, Xiao X, Gilbert M and Tildesley MJ. (2018) The impact of surveillance and control on highly pathogenic avian influenza outbreaks in poultry in Dhaka division, Bangladesh. *PLoS Computational Biology*, **14**(9): e1006439. doi:10.1371/journal.pcbi.1006439.

35. Eyre RW, House T, **Hill EM** and Griffiths FE. (2017) Spreading of components of mood in adolescent social networks. *Royal Society Open Science*, **4**: 170336. doi:10.1098/rsos.170336.
36. **Hill EM**, House T, Dhingra MS, Kalpravidh W, Mozaria S, Muzaffar GO, Yamage M, Xiao X, Gilbert M and Tildesley MJ. (2017) Modelling H5N1 in Bangladesh across spatial scales: Model complexity and zoonotic transmission risk. *Epidemics*, **20C**: 37–55. doi:10.1016/j.epidem.2017.02.007.
37. **Hill EM**, Tildesley MJ and House T. (2017) Evidence for history-dependence of influenza pandemic emergence. *Scientific Reports*, **7**: 43623. doi:10.1038/srep43623.
38. **Hill EM**, Griffiths FE and House T. (2015) Spreading of healthy mood in adolescent social networks. *Proceedings of the Royal Society B*, **282**(1813): 20151180. doi:10.1098/rspb.2015.1180.

Book chapters

1. **Hill EM** and House T. (2019) Modelling the Spread of Mood. In: *Mood: Interdisciplinary Perspectives, New Theories.* Breidenback B and Docherty T (eds.). Milton Park, Abingdon, Oxon: Routledge. pp. 87–108.

Preprints/In submission

1. Ogi-Gittins I, Hart W, Song J, Nash R, Polonsky J, Cori A, **Hill EM**, Thompson RN. (2023) A simulation-based approach for estimating the time-dependent reproduction number from temporally aggregated disease incidence time series data. *medRxiv*. doi:10.1101/2023.09.13.23295471.
2. Asplin P, Keeling MJ, Mancy R, **Hill EM**. (2023) Epidemiological and health economic implications of symptom propagation in respiratory pathogens: A mathematical modelling investigation. *medRxiv*. doi:10.1101/2023.07.12.23292544.
3. Sherratt K, …, **Hill EM**, … *et al.* Improving modelling for epidemic responses: reflections from members of the UK infectious disease modelling community on their experiences during the COVID-19 pandemic. *bioRxiv*. doi:10.1101/2023.06.12.544667.
4. **Hill EM**, Keeling MJ. (2022) Scenario modelling for diminished influenza seasons during 2020/2021 and 2021/2022 in England. *medRxiv*. doi:10.1101/2022.10.27.22281628.
5. Keeling MJ, Brooks-Pollock E, Challen RJ, Danon L, Dyson L, Gog JR, Guzman-Rincon L, **Hill EM**, Pellis LM, Read JM, Tildesley MJ.(2021) Short-term Projections based on Early Omicron Variant Dynamics in England. *medRxiv*. doi:10.1101/2021.12.30.21268307.
6. Keeling MJ, Thomas AC, **Hill EM**, Thompson RN, Dyson L, Tildesley MJ, Moore S. (2021) Waning, Boosting and a Path to Endemicity for SARS-CoV-2. *medRxiv*. doi:10.1101/2021.11.05.21265977.
7. Challen R, …, **Hill EM**, … *et al.* Early epidemiological signatures of novel SARS-CoV-2 variants: establishment of B.1.617.2 in England. *medRxiv*. doi:10.1101/2021.06.05.21258365.
8. Funk S, …, **Hill EM**, … *et al.* Short-term forecasts to inform the response to the Covid-19 epidemic in the UK. *medRxiv*. doi:10.1101/2020.11.11.20220962.

Other publications

1. Brooks-Pollock E, **Hill EM**, Campillo-Funollet E. (2022) Pandemics Special Issue Editorial *Mathematics Today*, **58**(5): 138–139. URL: `https://ima.org.uk/20322/pandemics-special-issue-editorial/`.
2. **Hill EM**, Tildesley MJ and House T. (2017) How predictable are flu pandemics? *Significance*, **14**(6): 30–35.

PhD thesis

- **Hill EM** (2017) *Mathematical modelling approaches for spreading processes : zoonotic influenza and social contagion*. PhD thesis, University of Warwick, UK.

Awards and prizes

Nov 2022	Weldon Memorial Prize. Awarded to SPI-M-O (Scientific Pandemic Influenza Group on Modelling, Operational sub-group) for its noteworthy contributions to the development of mathematical methods applied to problems in Biology. Specifically, it recognises the epidemiological modelling conducted by SPI-M-O that supported the UK's policy response to the COVID-19 pandemic.
Oct 2022	SPI-M-O Award for Modelling and Data Support. Recognised those people who made an exceptional contribution, during the COVID-19 pandemic, to the work of SPI-M-O outside of their usual work activity.
Apr 2022	RAMP (Rapid Assistance for Modelling the Pandemic) Outreach Innovation Award (£1000). Funding to form the SBIDER Podcast Hub and produce podcast episodes to share research findings from SBIDER with the public.
Feb 2022	RAMP (Rapid Assistance for Modelling the Pandemic) Continuity funding: Early Career Researcher Knowledge Exchange Project Award (£1000). Facilitation and organisation of an Isaac Newton Institute for Mathematical Sciences workshop event on "Behaviour and Policy During Pandemics: Models and Methods ".
Nov 2021	RAMP Continuity funding: Early Career Researcher Knowledge Exchange Project Award (£2500). Facilitation and organisation of an Isaac Newton Institute for Mathematical Sciences workshop series on "Modelling Behaviour to Inform Policy for Pandemics".
Apr 2021	Received a RAMP Early Career Investigator Award from the Royal Society. Recognition of early career researchers who have made exceptional contributions towards RAMP's activities.
Mar 2020	University of Warwick 2020 Faculty Post-Doctoral Research prize (£500). Awarded for the paper "Seasonal influenza: Modelling approaches to capture immunity propagation".
Nov 2018	Bursary from the University of Warwick Public Engagement Fund (£300). Co-applicant with other DataBeers Warwick organising team members. Support the running of a DataBeers Warwick meeting.
Feb 2018	ESMTB travel grant (€300). Support attendance at the European Conference on Mathematical and Theoretical Biology (ECMTB) 2018 conference. Held from 23rd-27th July, 2018 in Lisbon, Portugal.
Aug 2014	Accepted for participation in *The Helsinki Summer School on Mathematical Ecology and Evolution 2014: Dynamics of Infectious Diseases*. 17th-24th August. Held in Turku, Finland. 40 participants.
Sep 2012	Engineering and Physical Sciences Research Council (EPSRC). Full funding for MSc and PhD studies.

Conferences, Workshops and Talks

Session chair

- *Mathematical Epidemiology Contributed Talks Session 9* SMB 2021 (Society for Mathematical Biology 2021 Annual Meeting). Online conference, June2021.
- *COVID-19 Contributed Talks III.* eSMB2020 (Society for Mathematical Biology 2020 Annual Meeting). Online conference, August 2020.
- *Diseases and Epidemics 1.* Conference on Complex Systems 2019. Nanyang Technological University, Singapore, October 2019.
- *Epidemiology: Part A.* 2018 Annual Meeting of the Society for Mathematical Biology & the Japanese Society for Mathematical Biology. Sydney, Australia, July 2018.

Invited Talks

- *RAMP Outreach Innovation Awards and the SBIDER Podcast Hub.* Newton Gateway to Mathematics - 10th Anniversary. Isaac Newton Institute, University of Cambridge, United Kingdom, November 2023. Talk recording URL: `https://youtu.be/rrPfZrwppbc?si=kGMPskBg5nEJqECL`
- *Incorporating heterogeneity in farmer disease control behaviour into a livestock disease transmission model.* North West Seminar of Mathematical Biology and Data Science. University of Liverpool, United Kingdom, November 2023.
- *Modelling the epidemiological implications for SARS-CoV-2 of Christmas household bubbles in England in December 2020.* University of Exeter Computer Science seminar. University of Exeter, United Kingdom, May 2023.
- *Incorporating heterogeneity in farmer disease control behaviour into a livestock disease transmission model.* JUNIPER consortium research meeting, University of Warwick, United Kingdom, March 2023.
- *Incorporating Behaviour into Models – Challenges and Questions.* Workshop on Recent Challenges in Mathematical Epidemiology. University of Nottingham, United Kingdom, September 2022.
- *Incorporating Behaviour into Models – Challenges and Questions.* Modelling to Support Resilience for Pandemics – Open Questions workshop. Møller Institute, Cambridge, United Kingdom, June 2022. Talk recording URL: `https://youtu.be/KikcUbk3Hp4`
- *Modelling potential impacts of SARS-CoV-2 variants of concern.* JUNIPER consortium virtual research meeting, May 2021. Talk recording URL: `https://youtu.be/yd8bKGHYzMI?t=2120`
- *Developing a Framework for Public Involvement in Mathematical and Economic Modelling: Bringing New Dynamism to Vaccination Policy Recommendations.* NIHR Statistics Group Career Development Section and the NIHR Methodology Incubator Statistics Workstream webinar "Applied Statisticians as Principal Investigators", April 2021.
- *Predictions of COVID-19 dynamics in the UK: short-term forecasting, analysis of potential exit strategies and impact of contact networks.* Research and Teaching in statistical and data science seminar, University of Glasgow, September 2020.
- *Modelling SARS-CoV-2 transmission in a higher education setting: Application to the University of Warwick.* COVID 19 and Higher Education Space, Isaac Newton Institute (University of Cambridge) online workshop, July 2020.
- *Modelling seasonal influenza in England: Approaches to capture immunity propagation.* Infections@BDI Seminar, Big Data Institute, University of Oxford, July 2019.
- *Modelling influenza A (H5N1) in South and Southeast Asia.* Mathematical Biology for Understanding Emerging Infectious Diseases at the Human-Animal-Environment Interface: a "One Health" Approach. Banff International Research Station, Alberta, Canada, November 2016.

Contributed Talks

- *Developing a Public Involvement Framework in Mathematical and Health Economic Modelling for Vaccination Policy Recommendations.* IDDconf 2023. Ambleside, UK, September 2023.
- *Modelling livestock infectious disease control policy under differing perspectives on vaccination behaviour.* EuFMD Open Session 2022. Marseille, France, October 2022. Talk recording URL: `https://www.youtube.com/watch?v=JCHCDwlhs0k&t=12979s`
- *Possible future waves of SARS-CoV-2 infection generated by variants of concern with a range of characteristics.* ECMTB 2022: 12th European Conference on Mathematical and Theoretical Biology/SMB 2022 (Society for Mathematical Biology 2022 Annual Meeting). Heidelberg, Germany, September 2022.
- *Enhancing modelling impact through collaboration: The case study of SARS-CoV-2 infection in UK university students.* Modelling the COVID-19 pandemic: achievements and lessons. The Royal Society, London, UK, June 2022. Talk recording URL: `https://youtu.be/3yMU-e38MGo?t=14362`
- *A comparison between one and two dose SARS-CoV-2 vaccine prioritisation in England for a fixed number of vaccine doses.* Epidemics[8] - International Conference on Infectious Disease Dynamics. Online conference, December 2021.
- *A network modelling approach to assess non-pharmaceutical disease controls against SARS-CoV-2 in a worker population.* SMB 2021 (Society for Mathematical Biology 2021 Annual Meeting). Online conference, June 2021.
- *Predictions of COVID-19 dynamics in the UK: short-term forecasting, analysis of lockdown relaxation strategies and impact of reopening schools.* eSMB 2020 (Society for Mathematical Biology 2020 Annual Meeting). Online conference, August 2020.
- *Seasonal influenza: Modelling approaches to capture immunity propagation.* Conference on Complex Systems 2019. Nanyang Technological University, Singapore, October 2019.
- *Spatio-temporal modelling of visceral leishmaniasis among domestic dogs in rural Brazil.* IDDconf 2018. Ambleside, UK, September 2018.
- *Assessing intervention responses against H5N1 avian influenza outbreaks in Bangladesh.* ECMTB 2018: 11th European Conference on Mathematical and Theoretical Biology. Lisbon, Portugal, July 2018.
- *Evidence for history-dependence of influenza pandemic emergence.* 2018 Annual Meeting of the Society for Mathematical Biology & the Japanese Society for Mathematical Biology. Sydney, Australia, July 2018.
- *Assessing intervention responses against H5N1 avian influenza outbreaks in Bangladesh.* Mathematical Challenges from the Life Sciences. Coventry, UK, September 2017.
- *Modelling influenza A at the human-animal interface.* The 2016 Conference on Complex Systems. Amsterdam, The Netherlands, September 2016.
- *Modelling H5N1 influenza in Bangladesh across spatial scales: model complexity and zoonotic transmission risk.* Contagion'16 Satellite Meeting. Amsterdam, The Netherlands, September 2016.
- *Spreading of healthy mood in adolescent friendship networks.* Stochastic models of the spread of disease and information on networks. Edinburgh, UK, July 2016.
- *Analysis of historic pandemic influenza outbreaks.* Student Conference on Complexity Science (SCCS) 2015. Granada, Spain, September 2015.
- *Modelling influenza at the human-animal interface.* Mathematical and Computational Epidemiology of Infectious Diseases (MathCompEpi) 2015. Erice, Italy, September 2015.

Posters

- *Incorporating heterogeneity in farmer disease control behaviour into a livestock disease transmission model.* Epidemics[9] - International Conference on Infectious Disease Dynamics. Bologna, Italy, December 2023.
- *A network modelling approach to assess non-pharmaceutical disease controls against SARS-CoV-2 in a worker population.* Epidemics[8] - International Conference on Infectious Disease Dynamics. Online conference, December 2021.
- *Modelling seasonal influenza in England: Approaches to capture immunity propagation.* Epidemics[7] - International Conference on Infectious Disease Dynamics. Charleston, South Carolina, USA, December 2019.
- *Spatio-temporal modelling of Leishmania infantum infection among domestic dogs in rural Brazil.* Epidemics[7] - International Conference on Infectious Disease Dynamics. Charleston, South Carolina, USA, December 2019.
- *Seasonal influenza in England: Modelling approaches to capture immunity propagation.* 2019 Annual Meeting of the Society for Mathematical Biology. Montreal, Canada, July 2019.
- *Assessing intervention responses against H5N1 avian influenza outbreaks in Bangladesh.* Epidemics[6] - International Conference on Infectious Disease Dynamics. Sitges, Spain, December 2017.
- *Mathematical modelling of influenza A (H5N1) epidemics in Bangladesh.* ECMTB 2016: 10th European Conference on Mathematical and Theoretical Biology. Nottingham, UK, July 2016.
- *Spreading of healthy mood in adolescent social networks.* ECMTB 2016: 10th European Conference on Mathematical and Theoretical Biology. Nottingham, UK, July 2016.
- *Mathematical modelling of zoonotic influenza A applied to Bangladesh.* Epidemics[5] - International Conference on Infectious Disease Dynamics. Clearwater Beach, Florida, USA, December 2015.
- *Modelling influenza at the human-animal interface.* Ecological and Molecular modelling of infections (EMOTIONS) 2014. Lyon, France, December 2014.

Scientific meeting organisation

2022 Co-organiser of the online workshop *Behaviour and Policy During Pandemics: Models and Methods*.
22nd February 2022, Isaac Newton Institute (INI) Newton Gateway to Mathematics.
30 attendees.

2021 Co-organiser of the online workshop *Modelling Behaviour to Inform Policy for Pandemics*.
1st-2nd November 2021, Isaac Newton Institute (INI) Newton Gateway to Mathematics.
40 attendees.

2020 Co-organiser of the online workshop *Mathematical modelling and COVID-19: How can modelling inform a response to the current COVID-19 resurgence?*
5th-6th October 2020, International Centre for Mathematical Sciences.
40 attendees.

2019 Co-organiser of satellite session on *Challenges in Epidemiological Modelling* at the *Conference on Complex Systems 2019*.
In collaboration with two PhD colleagues from SBIDER and MathSys CDT, we solicited abstract submissions, compiled a programme with a run time of 210 minutes, and set up and maintained an event webpage. Engaged with 30 attendees.

2016 Co-organiser for *Centre for Complexity Science Annual Retreat 2016*.
3rd-6th May 2016, Ironbridge Coalport YHA. 60 attendees.

2015 Co-organiser for *Centre for Complexity Science Annual Retreat 2015*.
11th-14th May 2015, YHA Wilderhope Manor. 60 attendees.

2014 Co-organiser for *Mathematical Challenges for Long Epidemic Time Series/Big Data and Google Flu workshop*.
15th-17th December 2014, University of Warwick. 75 delegates.

Service and Leadership

Editorial roles

2021 - present	Editorial Board member: Journal of Theoretical Biology
2024	Guest Editor for the Mathematics in Medical and Life Sciences Journal. A special issue on the theme of epidemiological and behavioural modelling.
2022	Guest editor: Mathematics Today (Pandemics Special Issue)

Reviewer roles

Ongoing	Reviewer for journals (listed alphabetically): BMC Infectious Diseases, BMJ Open, Communications Medicine, Eurosurveillance, Emerging Infectious Diseases, International Journal of Environmental Research and Public Health, International Journal of Infectious Diseases, Journal of Theoretical Biology, Nature Communications, Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, Philosophical Transactions of the Royal Society B: Biological Sciences, PLOS Computational Biology, PLOS One, Proceedings of the Royal Society B: Biological Sciences, Royal Society Open Science, Scientific Reports, Theoretical Biology And Medical Modelling, Tropical Medicine and Infectious Disease, Virus Research, Wellcome Open Research. Reviewer for scientific meetings (listed alphabetically): NetSci-X 2020 subreviewer.

Committees and management teams

2023 - present	University of Warwick Mathematics Institute Impact Committee . Responsibility for engaging early career researchers.
2022 - present	University of Warwick Mathematics Institute Early Career Committee Vice-chair since 2023. Responsibility for new starter induction documents.
2022 - present	University of Warwick MathSys CDT management team member. Responsibilities include: PhD Advisory Committee member for multiple students, assisting admissions interviews, contributing to the annual retreat.
2014-2016	Student-Staff Liaison Committee, student representative.

Public Engagement and Science Communication

- *SBIDER Podcast Hub*. Co-creator and co-producer of podcast series for SBIDER, where researchers from SBIDER share their research, and discuss academic life and careers. Podcast series webpages: `https://sbiderpresents.podbean.com`; `https://sbidercareerspodcast.podbean.com`.
- *Coventry & Warwickshire Pint of Science*. Pint of Science brings researchers to local pubs to present their scientific discoveries. Volunteer at an event venue for the 2019 edition and Presenter for the 2022 edition.
- *University of Warwick Family Day*. Co-organiser of event in collaboration with colleagues from SBIDER and Warwick Medical School. Planned and ran a set of 'have a go' activities under the theme of 'Outbreak - Learning how diseases spread'. Engaged with 500-1,000 attendees (September 2019).
- *Co-organiser for DataBeers Warwick*. Public engagement event bringing together data experts from industry and academia at a level accessible to a wide audience in the West Midlands (2018, 2019).
- *Article writing ('The Conversation')*. Contributed article "When it comes to mental health, parents shouldn't worry who their children are friends with" (2015).

Programming Skills

- Proficient in Julia, MATLAB, R, C, LaTeX.
- Working knowledge of parallel computing.
- Use of git for version control and GitHub for open/reproducible science (GitHub username: EdMHill).

Professional and academic affiliations

2020 - 2022	Participant of the Scientific Pandemic Influenza Group on Modelling, Operational sub-group (SPI-M-O) for the Scientific Advisory Group for Emergencies (SAGE) in the UK responding to the COVID-19 pandemic.
2018 - present	Member of the Society for Mathematical Biology (SMB).
2016 - present	Member of the European Society for Mathematical and Theoretical Biology (ESMTB).

Referees

Prof. Matt Keeling OBE
Director of Zeeman Institute: Systems Biology and Infectious Disease Epidemiology Research (SBIDER)
School of Life Sciences and Warwick Mathematics Institute
University of Warwick, Coventry, CV4 7AL, UK
Email: M.J.Keeling@warwick.ac.uk

Prof. Julia Gog OBE
Professor of Mathematical Biology
Department of Applied Mathematics and Theoretical Physics
University of Cambridge, Cambridge, CB3 0WA, UK
Email: jrg20@cam.ac.uk

Dr. Diann Prosser
Research Biologist
U.S. Geological Survey
USGS Eastern Ecological Science Center, Laurel, MD 20708, United States
Email: dprosser@usgs.gov