Oliver John (OJ) Watson

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EMPLOYMENT

Imperial College London **Oct 2023 – Present**

- Imperial College Research Fellow supported by an Eric and Wendy Schmidt AI in Science Fellowship

London School of Hygiene and Tropical Medicine **Oct 2021 – Sep 2023**

- Schmidt Science Fellow

Imperial College London **Apr 2020 – Sep 2021**

- Postdoctoral Researcher in infectious disease modelling

Brown University **Oct 2019 – Mar 2020**

- Postdoctoral Researcher in computational genetics, bioinformatics

EDUCATION

Imperial College London **Oct 2015 – Sept 2019**

PhD Wellcome Trust Funded 1+3 PhD Student (October 2016 – October 2019. Viva Date 18 Nov 2019):
- Thesis Title: "Integrating genetic information into malaria transmission modelling"
- Supervisors: Prof Azra Ghani, Dr Lucy Okell and Dr Robert Verity

MRes Biomedical Research (2015 – 2016): Dissertation
- Dean's Prize Awardee for top overall mark within MRes

University of Cambridge, Pembroke College **Oct 2011 – Jun 2015**

MSci Systems Biology (2014 – 2015): 1st Class (Top bioinformatics research project mark)
BA Natural Sciences (2011 – 2014): 1st Class (Foundation and College Scholarships for examination results)

SCIENTIFIC PROFILE

Evidence of Esteem

- 62 publications, 16 first/equal-contribution (*Science*, *Lancet Infectious Diseases*, *BMJ*), 2 book chapters
- 20 invited talks and 16 conference presentations (2 Invited, 5 Oral and 9 poster)
- Undergraduate, Masters and PhD Supervision experience (Brown, Oxford) and Masters Examination (Oxford)
- Track record of securing fellowship funding, contributing to international interdisciplinary grants (3 NIH grants, US CDC, CEPI, WHO) and securing grants as principal investigator (Wellcome).

Committee and Consortium Memberships

- **Afya Consortium (2022 - Present)**: US CDC funded consortium of academic and civil society organisations, working equitably to strengthen research capacity, improve data equity and conduct research in humanitarian settings.
- **WHO pfhrp23 Technical Panel (2023 - Present):** Supporting the update of the WHO response plan to pfhrp23 deletions, providing expertise and modelling to support malaria diagnostic policy.
- **ROpenSci (2018 - Present):** Community of software developers building open source and reproducible tools using the R programming language. I have contributed R packages and code reviews for data access and survey tools.
- **VacSafeWG (2022 - Present):** Schmidt Futures funded group for furthering vaccine safety and confidence-building in Africa. I contribute to policy briefs on vaccines, data sources and early warning systems for supranational agencies.

Academic Service

- **Journal Reviewer:** Nature, PNAS, Nature Communications, PLoS Computational Biology, Genome Biology and Evolution, PLoS Global Public Health, American Journal of Tropical Medicine & Hygiene, Evolutionary Applications, Malaria Journal, Conflict and Health, Royal Society Interface, Lancet Regional Health
- **Grant Reviewer:** Wellcome (2021) and NIH (2020)

RESEARCH SUPPORT

Grants and Fellowships

As Principal Investigator

Wellcome Trust. Dr Oliver Watson (PI). Leveraging forecasts to optimise decision making. £79,365 2024 - 2025

Imperial College Research Fellowship supported by an Eric and Wendy Schmidt AI in Science Postdoctoral Fellowship. Dr Oliver Watson (PI). Novel methods and data sources for pandemic preparedness. £337,465 2023 - 2027

Schmidt Science Fellowship. Dr Oliver Watson (PI). Vaccine impact assessments and mortality estimation from COVID-19. $200,000. 2021 - 2023

Wellcome Trust. Mr Oliver Watson (PhD Funding). Integration of parasite genetic information in malaria transmission modelling. £165,784.00 2015 - 2019

As Co-Investigator

Coalition for Epidemic Preparedness Innovations. Prof Azra Ghani (PI). Assessing and predicting the public health benefits and economic health impact of CEPI's investments for COVID-19. £40,000 2022

US CDC, U01GH002319. Prof Francesco Checchi (PI). Covid-19 and related public health threats in populations affected by crises: a multi-disciplinary, collaborative research programme. $15,000,000 (Initial Award. Annual funder obligations reviewed through cooperative agreement). Named co-investigator, contribution in kind to ensure LMIC partner funding in response to funding reductions. 2022 - 2027

NIH, 1R01AI177791-01A1. Dr Jonathan Parr (PI). Epidemiology and determinants of emerging artemisinin resistant malaria in Ethiopia. $3,603,465. Named co-investigator. $42,000 over 3 years. 2023 - 2028

NIH, 1R01AI156267-01A1. Dr Jeffrey Bailey (PI). Artemisinin Resistance in Africa: its emergence and evolution in Rwanda. $3,989,037. Named co-investigator. $60,000 over 3 years 2021 - 2026

NIH, 1R03AI173899-01A1. Dr Jessica Lin (PI). Does treating low density malaria infections reduce malaria transmission? $100,000. Named co-investigator. $15,000 over 2 years 2023 - 2025

World Health Organisation. Dr Alexandra Hogan (PI). Modelling the Impact of COVID-19 Vaccination Strategies. $100,533. Drafted submission. $52,325 allocated for my 100% FTE on grant as named researcher. 2021

Wellcome Trust. Dr Patrick Walker (PI). Modelling the global spread and determinants of COVID-19 transmission. £96,664. Drafted submission. £30,255 allocated for 100% FTE on grant as named researcher. 2020 - 2020

Invited Consulting

Clinton Health Access Initiative. Modelling the spread of antimalarial resistance in sub-Saharan Africa. 2023 - 2024

World Health Organization. Modelling the global risk and spread of pfhrp2/3 gene deletions. 2022 - 2023

Asian Development Bank. Evaluating COVID-19 vaccine impact and long term vaccination strategies in India. 2021 - 2022

PUBLICATIONS

* = Equal Author Contribution

1. Barnsley G, Olivera Mesa D, Hogan AB, Winskill P, Torkleson AA, Walker DG, Ghani A, **Watson OJ**. Impact of 100 Days Vaccination Mission on COVID-19: A Mathematical Modelling Study (2023). Under Review at Lancet Global Health. doi:10.2139/ssrn.4519550
2. Bhatia S*, Imai N*, **Watson OJ***, Abbood A, Abdelmalik P, Cornelissen T, Ghozzi S, Lassmann B, Nagesh R, Ragonnet-Cronin ML, Schnitzler JC, Kraemer MU, Cauchemez S, Nouvellet P, Cori A. Lessons from COVID-19 for rescalable data collection. Lancet Infect. Dis. 23, e383–e388 (2023)
3. Hogan AB, Doohan P, Wu SL, Mesa DO, Toor J, **Watson OJ**, Winskill P, Charles G, Barnsley G, Riley EM, Khoury DS, Ferguson NM, Ghani AC. Estimating long-term vaccine effectiveness against SARS-CoV-2 variants: a model-based approach. Nat. Commun. 14, 4325 (2023)
4. Chemwor GC, Andagalu BM, Onyango IA, Opot BH, Okoth RO, Yedah RA, Juma JA, Mwakio EW, Wakoli DM, Amwoma JG, Cheruiyot AC, Juma DW, Ogutu BR, Egbo TE, Garges EC, Roth AL, Kamau E, **Watson OJ**, Akala HM. Therapeutic response to artemisinin combination therapies among individuals with Plasmodium falciparum single infection vs mixed Plasmodium species infections: a retrospective posthoc analysis in Kisumu County, western Kenya. Int. J. Infect. Dis. 132, 17–25 (2023)

5. Sheppard RJ, **Watson OJ**, Pieciak R, Lungu J, Kwenda G, Moyo C, Chanda SL, Barnsley G, Brazeau NF, Gerard-Ursin ICG, Olivera Mesa D, Whittaker C, Gregson S, Okell LC, Ghani AC, MacLeod WB, Del Fava E, Melegaro A, Hines JZ, Mulenga LB, Walker PGT, Mwananyanda L, Gill CJ. Using mortuary and burial data to place COVID-19 in Lusaka, Zambia within a global context. Nat. Commun. 14, 3840 (2023)
6. McCabe R, Whittaker C, Sheppard RJ, Abdelmagid N, Ahmed A, Alabdeen IZ, Brazeau NF, Ahmed Abd Elhameed AE, Bin-Ghouth AS, Hamlet A, AbuKoura R, Barnsley G, Hay JA, Alhaffar M, Koum Besson E, Saje SM, Sisay BG, Gebreyesus SH, Sikamo AP, Worku A, Ahmed YS, Mariam DH, Sisay MM, Checchi F, Dahab M, Endris BS, Ghani AC, Walker PGT, Donnelly CA, **Watson OJ**. Alternative epidemic indicators for COVID-19 in three settings with incomplete death registration systems. Sci Adv. 9, eadg7676 (2023)
7. Paschalidis A*, **Watson OJ***, Aydemir O, Verity R, Bailey JA. coiaf: Directly estimating complexity of infection with allele frequencies. PLoS Comput. Biol. 19, e1010247 (2023)
8. Kirby R, Giesbrecht D, Karema C, **Watson O**, Lewis S, Munyaneza T, Butera JDD, Juliano JJ, Bailey JA, Mazarati J-B. Examining the Early Distribution of the Artemisinin-Resistant Plasmodium falciparum kelch13 R561H Mutation in Areas of Higher Transmission in Rwanda. Open Forum Infect Dis. 10, ofad149 (2023)
9. Andagalu B, **Watson OJ**, Onyango I, Opot B, Okoth R, Chemwor G, Sifuna P, Juma D, Cheruiyot A, Yeda R, Okudo C, Wafubwa J, Yalwala S, Abuom D, Ogutu B, Cowden J, Akala HM, Kamau E. Malaria Transmission Dynamics in a High-Transmission Setting of Western Kenya and the Inadequate Treatment Response to Artemether-Lumefantrine in an Asymptomatic Population. Clin. Infect. Dis. 76, 704–712 (2023)
10. Andagalu B, **Watson OJ**, Onyango I, Opot B, Okoth R, Chemwor G, Sifuna P, Juma D, Cheruiyot A, Yeda R, Okudo C, Wafubwa J, Yalwala S, Abuom D, Ogutu B, Cowden J, Akala HM, Kamau E. Reply to Blanken et al. Clin. Infect. Dis. 76, 557–559 (2023)
11. **Watson OJ***, Barnsley G*, Toor J, Hogan AB, Winskill P, Ghani AC. Global impact of the first year of COVID-19 vaccination: a mathematical modelling study. Lancet Infect. Dis. 22, 1293–1302 (2022)
12. **Watson OJ***, Gao B*, Nguyen TD*, Tran TN-A, Penny MA, Smith DL, Okell L, Aguas R, Boni MF. Pre-existing partner-drug resistance to artemisinin combination therapies facilitates the emergence and spread of artemisinin resistance: a consensus modelling study. Lancet Microbe. 3, e701–e710 (2022)
13. Whittaker C, **Watson OJ**, Alvarez-Moreno C, Angkasekwinai N, Boonyasiri A, Carlos Triana L, Chanda D, Charoenpong L, Chayakulkeeree M, Cooke GS, Croda J, Cucunubá ZM, Djaafara BA, Estofolete CF, Grillet ME, Faria NR, Figueiredo Costa S, Forero-Peña DA, Gibb DM, Gordon AC, Hamers RL, Hamlet A, Irawany V, Jitmuang A, Keurueangkul N, Kimani TN, Lampo M, Levin AS, Lopardo G, Mustafa R, Nayagam S, Ngamprasertchai T, Njeri NIH, Nogueira ML, Ortiz-Prado E, Perroud MW, Phillips AN, Promsin P, Qavi A, Rodger AJ, Sabino EC, Sangkaew S, Sari D, Sirijatuphat R, Sposito AC, Srisangthong P, Thompson HA, Udwadia Z, Valderrama-Beltrán S, Winskill P, Ghani AC, Walker PGT, Hallett TB. Understanding the Potential Impact of Different Drug Properties on Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Transmission and Disease Burden: A Modelling Analysis. Clin. Infect. Dis. 75, e224–e233 (2022)
14. Ghafari M*, **Watson OJ***, Karlinsky A, Ferretti L, Katzourakis A. A framework for reconstructing SARS-CoV-2 transmission dynamics using excess mortality data. Nat. Commun. 13, 3015 (2022)
15. Brazeau NF, Verity R, Jenks S, Fu H, Whittaker C, Winskill P, Dorigatti I, Walker PGT, Riley S, Schnekenberg RP, Hoeltgebaum H, Mellan TA, Mishra S, Unwin HJT, **Watson OJ**, Cucunubá ZM, Baguelin M, Whittles L, Bhatt S, Ghani AC, Ferguson NM, Okell LC. Estimating the COVID-19 infection fatality ratio accounting for seroreversion using statistical modelling. Commun. Med. 2, 54 (2022)
16. Pons-Salort M, John J, **Watson OJ**, Brazeau NF, Verity R, Kang G, Grassly NC. Reassessing Reported Deaths and Estimated Infection Attack Rate during the First 6 Months of the COVID-19 Epidemic, Delhi, India. Emerg. Infect. Dis. 28, 759–766 (2022)
17. Olivera Mesa D, Hogan AB, **Watson OJ**, Charles GD, Hauck K, Ghani AC, Winskill P. Modelling the impact of vaccine hesitancy in prolonging the need for Non-Pharmaceutical Interventions to control the COVID-19 pandemic. Commun. Med. 2, 14 (2022)
18. Favas C, Jarrett P, Ratnayake R, **Watson OJ**, Checchi F. Country differences in transmissibility, age distribution and case-fatality of SARS-CoV-2: a global ecological analysis. Int. J. Infect. Dis. 114, 210–218 (2022)
19. McCabe R, Kont MD, Schmit N, Whittaker C, Løchen A, Walker PGT, Ghani AC, Ferguson NM, White PJ, Donnelly CA, **Watson OJ**. Communicating uncertainty in epidemic models. Epidemics. 37, 100520 (2021)
20. Mousa A, Winskill P, **Watson OJ**, Ratmann O, Monod M, Ajelli M, Diallo A, Dodd PJ, Grijalva CG, Kiti MC, Krishnan A, Kumar R, Kumar S, Kwok KO, Lanata CF, de Waroux OLP, Leung K, Mahikul W, Melegaro A, Morrow CD, Mossong J, Neal EF, Nokes DJ, Pan-Ngum W, Potter GE, Russell FM, Saha S, Sugimoto JD, Wei WI, Wood RR, Wu J, Zhang J, Walker P, Whittaker C. Social contact patterns and implications for infectious disease transmission - a systematic review and meta-analysis of contact surveys. Elife. 10, e70294 (2021)
21. Whittaker C, Walker PGT, Alhaffar M, Hamlet A, Djaafara BA, Ghani A, Ferguson N, Dahab M, Checchi F, **Watson OJ**. Under-reporting of deaths limits our understanding of true burden of covid-19. BMJ. 375, n2239 (2021)

22. Mangal T, Whittaker C, Nkhoma D, Ng'ambi W, Watson O, Walker P, Ghani A, Revill P, Colbourn T, Phillips A, Hallett T, Mfutso-Bengo J. Potential impact of intervention strategies on COVID-19 transmission in Malawi: a mathematical modelling study. BMJ Open. 11, e045196 (2021)
23. Imai N, Hogan AB, Williams L, Cori A, Mangal TD, Winskill P, Whittles LK, **Watson OJ**, Knock ES, Baguelin M, Perez-Guzman PN, Gaythorpe KAM, Sonabend R, Ghani AC, Ferguson NM. Interpreting estimates of coronavirus disease 2019 (COVID-19) vaccine efficacy and effectiveness to inform simulation studies of vaccine impact: a systematic review. Wellcome Open Res. 6, 185 (2021)
24. Knock ES, Whittles LK, Lees JA, Perez-Guzman PN, Verity R, FitzJohn RG, Gaythorpe KAM, Imai N, Hinsley W, Okell LC, Rosello A, Kantas N, Walters CE, Bhatia S, **Watson OJ**, Whittaker C, Cattarino L, Boonyasiri A, Djaafara BA, Fraser K, Fu H, Wang H, Xi X, Donnelly CA, Jauneikaite E, Laydon DJ, White PJ, Ghani AC, Ferguson NM, Cori A, Baguelin M. Key epidemiological drivers and impact of interventions in the 2020 SARS-CoV-2 epidemic in England. Sci. Transl. Med. 13 (2021), doi:10.1126/scitranslmed.abg4262
25. McCabe R, Kont MD, Schmit N, Whittaker C, Løchen A, Baguelin M, Knock E, Whittles LK, Lees J, Brazeau NF, Walker PG, Ghani AC, Ferguson NM, White PJ, Donnelly CA, Hauck K, **Watson OJ**. Modelling intensive care unit capacity under different epidemiological scenarios of the COVID-19 pandemic in three Western European countries. Int. J. Epidemiol. 50, 753–767 (2021)
26. Brazeau NF, Mitchell CL, Morgan AP, Deutsch-Feldman M, **Watson OJ**, Thwai KL, Gelabert P, van Dorp L, Keeler CY, Waltmann A, Emch M, Gartner V, Redelings B, Wray GA, Mwandagalirwa MK, Tshefu AK, Likwela JL, Edwards JK, Verity R, Parr JB, Meshnick SR, Juliano JJ. The epidemiology of Plasmodium vivax among adults in the Democratic Republic of the Congo. Nat. Commun. 12, 4169 (2021)
27. Barnett-Howell Z, **Watson OJ**, Mobarak AM. The benefits and costs of social distancing in high- and low-income countries. Trans. R. Soc. Trop. Med. Hyg. 115, 807–819 (2021)
28. Smith TP, Flaxman S, Gallinat AS, Kinosian SP, Stemkovski M, Unwin HJT, **Watson OJ**, Whittaker C, Cattarino L, Dorigatti I, Tristem M, Pearse WD. Temperature and population density influence SARS-CoV-2 transmission in the absence of nonpharmaceutical interventions. Proc. Natl. Acad. Sci. U. S. A. 118 (2021), doi:10.1073/pnas.2019284118
29. Djaafara BA, Whittaker C, **Watson OJ**, Verity R, Brazeau NF, Widyastuti, Oktavia D, Adrian V, Salama N, Bhatia S, Nouvellet P, Sherrard-Smith E, Churcher TS, Surendra H, Lina RN, Ekawati LL, Lestari KD, Andrianto A, Thwaites G, Baird JK, Ghani AC, Elyazar IRF, Walker PGT. Using syndromic measures of mortality to capture the dynamics of COVID-19 in Java, Indonesia, in the context of vaccination rollout. BMC Med. 19, 146 (2021)
30. Hogan AB, Winskill P, **Watson OJ**, Walker PGT, Whittaker C, Baguelin M, Brazeau NF, Charles GD, Gaythorpe KAM, Hamlet A, Knock E, Laydon DJ, Lees JA, Løchen A, Verity R, Whittles LK, Muhib F, Hauck K, Ferguson NM, Ghani AC. Within-country age-based prioritisation, global allocation, and public health impact of a vaccine against SARS-CoV-2: A mathematical modelling analysis. Vaccine. 39, 2995–3006 (2021)
31. **Watson OJ**, Alhaffar M, Mehchy Z, Whittaker C, Akil Z, Brazeau NF, Cuomo-Dannenburg G, Hamlet A, Thompson HA, Baguelin M, FitzJohn RG, Knock E, Lees JA, Whittles LK, Mellan T, Winskill P, Imperial College COVID-19 Response Team, Howard N, Clapham H, Checchi F, Ferguson N, Ghani A, Beals E, Walker P. Leveraging community mortality indicators to infer COVID-19 mortality and transmission dynamics in Damascus, Syria. Nat. Commun. 12, 2394 (2021)
32. Ragonnet-Cronin M, Boyd O, Geidelberg L, Jorgensen D, Nascimento FF, Siveroni I, Johnson RA, Baguelin M, Cucunubá ZM, Jauneikaite E, Mishra S, **Watson OJ**, Ferguson N, Cori A, Donnelly CA, Volz E. Genetic evidence for the association between COVID-19 epidemic severity and timing of non-pharmaceutical interventions. Nat. Commun. 12, 2188 (2021)
33. Akala HM*, **Watson OJ***, Mitei KK, Juma DW, Verity R, Ingasia LA, Opot BH, Okoth RO, Chemwor GC, Juma JA, Mwakio EW, Brazeau N, Cheruiyot AC, Yeda RA, Maraka MN, Okello CO, Kateete DP, Managbanag JR, Andagalu B, Ogutu BR, Kamau E. Plasmodium interspecies interactions during a period of increasing prevalence of Plasmodium ovale in symptomatic individuals seeking treatment: an observational study. Lancet Microbe. 2, e141–e150 (2021)
34. Nouvellet P, Bhatia S, Cori A, Ainslie KEC, Baguelin M, Bhatt S, Boonyasiri A, Brazeau NF, Cattarino L, Cooper LV, Coupland H, Cucunuba ZM, Cuomo-Dannenburg G, Dighe A, Djaafara BA, Dorigatti I, Eales OD, van Elsland SL, Nascimento FF, FitzJohn RG, Gaythorpe KAM, Geidelberg L, Green WD, Hamlet A, Hauck K, Hinsley W, Imai N, Jeffrey B, Knock E, Laydon DJ, Lees JA, Mangal T, Mellan TA, Nedjati-Gilani G, Parag KV, Pons-Salort M, Ragonnet-Cronin M, Riley S, Unwin HJT, Verity R, Vollmer MAC, Volz E, Walker PGT, Walters CE, Wang H, **Watson OJ**, Whittaker C, Whittles LK, Xi X, Ferguson NM, Donnelly CA. Reduction in mobility and COVID-19 transmission. Nat. Commun. 12, 1090 (2021)
35. **Watson OJ**, Okell LC, Hellewell J, Slater HC, Unwin HJT, Omedo I, Bejon P, Snow RW, Noor AM, Rockett K, Hubbart C, Nankabirwa JI, Greenhouse B, Chang H-H, Ghani AC, Verity R. Evaluating the Performance of Malaria Genetics for Inferring Changes in Transmission Intensity Using Transmission Modeling. Mol. Biol. Evol. 38, 274–289 (2021)
36. Moser KA, Madebe RA, Aydemir O, Chiduo MG, Mandara CI, Rumisha SF, Chaky F, Denton M, Marsh PW, Verity R, **Watson OJ**, Ngasala B, Mkude S, Molteni F, Njau R, Warsame M, Mandike R, Kabanywanyi AM, Mahende MK, Kamugisha E, Ahmed M, Kavishe RA, Greer G, Kitojo CA, Reaves EJ, Mlunde L, Bishanga D, Mohamed A, Juliano JJ, Ishengoma DS, Bailey JA. Describing the current status of Plasmodium falciparum population structure and drug resistance within mainland Tanzania using molecular inversion probes. Mol. Ecol. 30, 100–113 (2021)

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38. Thompson HA, Imai N, Dighe A, Ainslie KEC, Baguelin M, Bhatia S, Bhatt S, Boonyasiri A, Boyd O, Brazeau NF, Cattarino L, Cooper LV, Coupland H, Cucunuba Z, Cuomo-Dannenburg G, Djaafara B, Dorigatti I, van Elsland S, FitzJohn R, Fu H, Gaythorpe KAM, Green W, Hallett T, Hamlet A, Haw D, Hayes S, Hinsley W, Jeffrey B, Knock E, Laydon DJ, Lees J, Mangal TD, Mellan T, Mishra S, Mousa A, Nedjati-Gilani G, Nouvellet P, Okell L, Parag KV, Ragonnet-Cronin M, Riley S, Unwin HJT, Verity R, Vollmer M, Volz E, Walker PGT, Walters C, Wang H, Wang Y, **Watson OJ**, Whittaker C, Whittles LK, Winskill P, Xi X, Donnelly CA, Ferguson NM. SARS-CoV-2 infection prevalence on repatriation flights from Wuhan City, China. J. Travel Med. 27 (2020), doi:10.1093/jtm/taaa135
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40. Unwin HJT, Mishra S, Bradley VC, Gandy A, Mellan TA, Coupland H, Ish-Horowicz J, Vollmer MAC, Whittaker C, Filippi SL, Xi X, Monod M, Ratmann O, Hutchinson M, Valka F, Zhu H, Hawryluk I, Milton P, Ainslie KEC, Baguelin M, Boonyasiri A, Brazeau NF, Cattarino L, Cucunuba Z, Cuomo-Dannenburg G, Dorigatti I, Eales OD, Eaton JW, van Elsland SL, FitzJohn RG, Gaythorpe KAM, Green W, Hinsley W, Jeffrey B, Knock E, Laydon DJ, Lees J, Nedjati-Gilani G, Nouvellet P, Okell L, Parag KV, Siveroni I, Thompson HA, Walker P, Walters CE, **Watson OJ**, Whittles LK, Ghani AC, Ferguson NM, Riley S, Donnelly CA, Bhatt S, Flaxman S. State-level tracking of COVID-19 in the United States. Nat. Commun. 11, 6189 (2020)
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42. Tan-Torres Edejer T, Hanssen O, Mirelman A, Verboom P, Lolong G, **Watson OJ**, Boulanger LL, Soucat A. Projected health-care resource needs for an effective response to COVID-19 in 73 low-income and middle-income countries: a modelling study. Lancet Glob Health. 8, e1372–e1379 (2020)
43. Okell LC, Verity R, Katzourakis A, Volz EM, **Watson OJ**, Mishra S, Walker P, Whittaker C, Donnelly CA, Riley S, Ghani AC, Gandy A, Flaxman S, Ferguson NM, Bhatt S. Host or pathogen-related factors in COVID-19 severity? - Authors' reply. Lancet. 396 (2020). p. 1397
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52. Verity R, Aydemir O, Brazeau NF, **Watson OJ**, Hathaway NJ, Mwandagalirwa MK, Marsh PW, Thwai K, Fulton T, Denton M, Morgan AP, Parr JB, Tumwebaze PK, Conrad M, Rosenthal PJ, Ishengoma DS, Ngondi J, Gutman J, Mulenga M, Norris DE, Moss WJ, Mensah BA, Myers-Hansen JL, Ghansah A, Tshefu AK, Ghani AC, Meshnick SR, Bailey JA, Juliano JJ. The impact of antimalarial resistance on the genetic structure of Plasmodium falciparum in the DRC. Nat. Commun. 11, 2107 (2020)
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55. FitzJohn RG, Knock ES, Whittles LK, Perez-Guzman PN, Bhatia S, Guntoro F, **Watson OJ**, Whittaker C, Ferguson NM, Cori A, Baguelin M, Lees JA. Reproducible parallel inference and simulation of stochastic state space models using odin, dust, and mcstate. Wellcome Open Res. 5, 288 (2020)
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57. **Watson OJ**, FitzJohn R, Eaton JW. rdhs: an R package to interact with The Demographic and Health Surveys (DHS) Program datasets. Wellcome Open Res. 4, 103 (2019)
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61. Verity R, Hathaway NJ, Waltmann A, Doctor SM, **Watson OJ**, Patel JC, Mwandagalirwa K, Tshefu AK, Bailey JA, Ghani AC, Juliano JJ, Meshnick SR. Plasmodium falciparum genetic variation of var2csa in the Democratic Republic of the Congo. Malar. J. 17, 46 (2018)
62. **Watson OJ**, Slater HC, Verity R, Parr JB, Mwandagalirwa MK, Tshefu A, Meshnick SR, Ghani AC. Modelling the drivers of the spread of Plasmodium falciparum hrp2 gene deletions in sub-Saharan Africa. Elife. 6, e25008 (2017)

Book Chapters

Routledge I, **Watson OJ**, Griffin JT, Ghani AC. "Predictive Malaria Epidemiology, Models of Malaria Transmission and Elimination" in Encyclopedia of Malaria, P. G. Kremsner, S. Krishna, Eds. (Springer New York, New York, NY, 2018). pp. 1–7

Watson OJ, Routledge I, Griffin JT, Ghani AC. "Predictive Malaria Epidemiology, Models of Malaria Control Interventions and Elimination" in Encyclopedia of Malaria, P. G. Kremsner, S. Krishna, Eds. (Springer New York, New York, NY, 2018). pp. 1–7

REPORTS

Imperial College COVID-19 Reports. Author of 19 Imperial College COVID-19 Reports including (Co)-First/Last Author of 6 Reports, all of which have led to pee-reviewed scientific publications

UK COVID-19 Public Inquiry. First Witness Statement of Professor Neil Ferguson. Contributed writing to three sections as part of UK COVID-19 Public Inquiry.

"From insight to action: Examining mortality in Somalia". Contributing author to WHO and UNICEF report on Excess Mortality in Somalia due to drought

"Mortality patterns in Somalia: Retrospective estimates and scenario-based forecasting". Lead author of modelling analysis underpinning WHO and Unicef Policy Report on Mortality in Somalia

"Evaluating COVID-19 vaccine impact and long term vaccination strategies in India". Lead Author of Asian Development Bank Internal Report

"COVID-19: Preparing for the future. Looking ahead to winter 2021/22 and beyond". Contributed analysis to UK Academy of Medical Sciences Rapid Review.

SEMINARS AND INVITED PRESENTATIONS

International Advances in COVID-19. Framework for Scientific Evolution and Evaluation. Oral Presentation. UCSF Fresno Town Hall Lecture Series. 7 December 2023

Surrogate modelling of agent based model features: an application for evaluating the risk of malaria parasites evolving to evade diagnosis. Seminar. University of Bergen. Workshop on teaching and research in statistics and data science. 28 November 2023

Approaches to Navigating Science Beyond 2050. Chair of Panel Session. Schmidt Science Fellows 5 year Alumni Conference. 18 November 2023

Update on the state of COVID-19 underreporting in Africa. Afternoon. The impact of pfhrp2/3 deletions on future testing of malaria in Africa. Seminar. Johns Hopkins University. 21 July 2023

Global risk of selection and spread of Plasmodium falciparum histidine-rich protein 2 and 3 gene deletions: Implications for future RDT procurement and WHO malaria control policy guidance. Oral Presentation. President's Malaria Initiative RDT Task Force. 10 July 2023

Mortality patterns in Somalia: retrospective estimates and scenario-based forecasts. Oral Presentation. Somalia Ministry of Health; WHO EMRO; Horn of Africa Food Security and Nutrition Working Group. 30 March 2023

Risk based approach to transitioning to alternative RDTs. Oral Presentation. WHO Meeting to update response plan to pfhrp2/3 gene deletions. 26 January 2023

Pros and Cons of Global Roll-Out. Oral Presentation. International Workshop on COVID-19 Vaccines 2022 - December Edition organised by Virology Education. 15 December 2022

Integrating novel data sources for COVID-19 outbreak modelling. Seminar. Afya Research Consortium. Nairobi. 20 July 2022

COVID-19 Vaccines: Unfinished Business. Chair of Panel Session. International Symposium on Vaccines and Global Health. 1 April 2022

Lessons in persistence for fellowship rejections and practising equanimity in academia. Oral Presentation. Johns Hopkins University Lunchtime Seminar. 29 March 2022

Utilising vaccine safety and confidence data in support of modelling global vaccine roll out. Oral Presentation. Inaugural meeting of Columbia-Wits Vaccine Safety and Confidence-Building Working Group. 29 April 2021

Imperial SPI-M & covidsim.org Modelling Overview. Seminar. UK Cabinet Office. 16 March 2021

Using Earth Observation to understand the COVID-19 pandemic. Oral Presentation. Imperial Earth Observation Network. 25 February 2021

Impact of COVID-19 vaccination in India: a subnational mathematical modelling study. Oral Presentation. Asian Development Bank. 20 January 2021

Modelling COVID-19 epidemic in Khartoum. Oral Presentation. Sudan Federal Ministry of Health. 9 December 2020

COVID-19 Mortality Underreporting: Investigation into Damascus, Syria. Oral Presentation. Save The Children COVID-19. 16 November 2020

COVID-19 Mortality Underreporting: Investigations in Damascus, Khartoum and Aden. Oral Presentation. WHO COVID-19 Modeling Group. 23 October 2020

Modelling to support COVID-19 decision making. Oral Presentation. UK DfID Country Offices. 25 June 2020

Short-term forecasts of healthcare demand for countries in the early stage of COVID-19 epidemics. Oral Presentation. WHO COVID-19 Modeling Group. 15 May 2020

Infectious disease modelling 101- An introduction to COVID-19 models. Seminar. PATH. 14 April 2020

Integration of malaria parasite genetics into malaria transmission modelling. Seminar. Warren Alpert Medical School of Brown University. 22 October 2019

Modelling the epidemiological implications and explanations of discordances between microscopy and rapid diagnostic tests. Seminar. University of North Carolina at Chapel Hill. 1 November 2017

CONFERENCE AND MEETING PRESENTATIONS

Poster Presentation. Barnsley G, ..., **Watson OJ**. Modelling the potential impact of 100 days mission and broader investments on the COVID-19 pandemic. 17th Vaccine Congress. 2023

Poster Presentation. Meier-Scherling C, **Watson OJ** et al. Comparison of strength of selection for Plasmodium falciparum artemisinin resistance-associated mutations between southeast Asia and Uganda. ASTMH. 2023

Poster Presentation. McCabe R, ..., **Watson OJ**. Alternative epidemic indicators for COVID-19 in three settings with incomplete death registration systems. ASTMH. 2023

Oral Presentation. Barnsley G, ..., **Watson OJ**. Modelling the potential impact of 100 Days Mission and broader investments on the COVID-19 pandemic. Epidemics 9. 2023

Invited Meeting Participant. Rhodes Policy Summit: Creating a Positive Legacy from the Pandemic. London. 2023

Invited Chair of Panel Session. Karlinsky A, **Watson OJ** et al. The old-new science of excess mortality. Royal Statistical Science Conference. 2023

Oral Presentation. **Watson OJ** et al. Vaccine Impact Estimation: Pros and Cons of the Global COVID-19 Vaccination Campaign and evaluation of improved R&D in the Republic of Korea. UK-Korea bilateral international meeting organised by The Royal Society. 2023

Poster Presentation. Barnsley G, ..., **Watson OJ**. Global impact of the first year of COVID-19 vaccination: a mathematical modelling study. 16th Vaccine Congress. 2022

Poster Presentation. Paschalidis A, **Watson OJ** et al. Complexity of Infection Estimation with Allele Frequencies. ASTMH. 2021

Oral Presentation. Okell L, **Watson OJ** et al. Multiple first line therapies versus reducing overprescription of antimalarials to slow antimalarial resistance. ASTMH. 2018

Poster Presentation. **Watson OJ** et al. The impact of seasonal variation in the detection of clinically relevant plasmodium falciparum hrp2 gene deletions: a modelling study. ASTMH. 2018

Poster Presentation. **Watson OJ** et al. Evaluating the performance of malaria genomics for inferring changes in transmission intensity using transmission modelling. Genomic Epidemiology of Malaria. 2018

Poster Presentation. Cremin I, **Watson OJ** et al. An infectious way to teach students about outbreaks. Epidemics 6. 2017

Oral Presentation. **Watson OJ** et al. rdhs: an R package to interact with the demographic and health surveys (DHS) program data sets. ASTMH. 2017

Oral Presentation. **Watson OJ** et al. Characterizing the potential bias within genomic tools for inferring changes in plasmodium falciparum transmission intensities. ASTMH. 2017

Poster Presentation. **Watson OJ** et al. Modelling the epidemiological implications and explanations of discordances between microscopy and rapid diagnostic tests. Future of Malaria Research Symposium. 2017

Oral Presentation. **Watson OJ** et al. Drivers of the spread of “diagnostic resistant” P. falciparum malaria: a model-based evaluation of the spread of pfhrp2 gene deletions in Africa. ASTMH. 2016

Invited Oral Presentation. **Watson OJ** et al. Modelling the drivers of Plasmodium falciparum hrp2 deletions. WHO organised panel meeting on “Plasmodium falciparum hrp2/3 gene deletions: update, implications and response” at ASTMH. 2016

TEACHING EXPERIENCE

PhD Supervision:

Cecile Meier-Scherling. Brown University. Comparison of strength of selection for P. falciparum artemisinin resistance-associated mutations between southeast Asia and Uganda.	2022 -
Ruth McCabe. University of Oxford. Epidemiological analysis and modelling of COVID-19 and other high consequence infectious disease transmission risks.	Expected 2023

Undergraduate Supervision:

Rebecca Kirby. Brown University. Examining the Early Distribution of the Artemisinin-Resistant Plasmodium falciparum kelch13 R561H Mutation in Areas of Higher Transmission in Rwanda. Published in Open Forum Infectious Diseases, Volume 10, Issue 4, April 2023, ofad149.	2020 - 2021
Aris Paschialidis. Brown University. Direct estimation of COI from whole genome sequence data. Published in PLoS Computational Biology. 2023;19(6):e1010247.	2020 - 2022

Teaching:

Weekly distance learning for 5 Somali researchers at SIMAD university for mortality estimation in R.	2023
Demonstrator on 2-day practical on developing a model to answer a public health control policy question. Imperial College London. MSc Epidemiology.	2016 - 2021
Introduction to R and statistical modelling. 3 day introductory course for computational biology rotation students. Brown University.	2020
Organised teaching material and demonstration assistance on Imperial College London 2-week short course on infectious disease modelling.	2016 - 2018
Prepared computer-based practical exercise on outbreak reconstruction. Imperial College London. MSc Epidemiology. The practical exercise and its administration were subsequently published as a pedagogical exercise ("An infectious way to teach students about outbreaks". Epidemics. 23, 42–48 (2018))	2016
Demonstrator on the use of multi locus sequence typing databases in epidemiology. Imperial College London. MSc Epidemiology	2016
Demonstrator on introductory excel refresher. Imperial College London. MSc Epidemiology	2016

For my teaching demonstrations, I have been nominated for a Student Academic Choice Awards (SACA) Teaching Award (2019).

I am passionate about improving my supervision approach and mentorship and have undertaken both external training on career development offered by Stanford University and provide evaluation forms from all students and researchers I supervise and manage (which have all been scored as excellent (6 out of 6), N = 5). This was an initiative I chose to start, both to understand how I can improve as I develop seniority and more frequently supervise other researchers but also in response to expanding my research supervision and support across time zones and country borders.

SOFTWARE DEVELOPMENT

I am an author of dozens of reproducible research compendia (committed to open, reproducible science) and the developer and maintainer of multiple R packages, with the top 8 most used frequently cited in studies by researchers around the world.

rdhs. API Client and Data Munging for the Demographic and Health Survey Data. Cited in 27 publications. https://github.com/ropensci/rdhs

squire. SEIR transmission model of COVID-19 and model fitting tools. Cited in 14 publications. https://github.com/mrc-ide/squire

nimue. Extension to the squire package that allows vaccination to be included. Cited in 6 publications. https://github.com/mrc-ide/nimue

McCOILR. R implementation of The REAL McCOIL method for estimating complexity of infection in malaria infections. Cited in 3 publications. https://github.com/OJWatson/McCOILR

hrp2malaria. Individual based model of Imperial College malaria model for modelling hrp23 deletions. Cited in 3 publications. https://github.com/OJWatson/hrp2malaRia

safir. Individual based rewrite of the squire and nimue COVID-19 models. Cited in 2 publications. https://github.com/mrc-ide/safir

outbreakteachR. Accompanying R package for assisting in the analysis and execution of a simulated outbreak amongst students. Cited in 1 publication. https://github.com/mrc-ide/outbreakteachR

magenta. Spatial, individual based model of Imperial College malaria model for modelling parasite genetics. Cited in 1 publication. https://github.com/OJWatson/magenta

PROFESSIONAL MEMBERSHIP AND SERVICE

Reviewer. Nature, PNAS, Nature Communications, PLoS Computational Biology, Genome Biology and Evolution, PLoS Global Public Health, American Journal of Tropical Medicine & Hygiene, Evolutionary Applications, Malaria Journal, Conflict and Health, Royal Society Interface, Lancet Regional Health

Grant Reviewer. Wellcome Trust (2021) and NIH (2020)

Shadow Interview Panels. Imperial College London (2023)

Interview Panels. Imperial College London (2021, '22, '23), LSHTM (2022, '23)

Examiner. Imperial MSc (2021), Imperial MPH (2021), Oxford MSc (2021, '23)

Member. Afya Consortium: US CDC funded consortium of academic and civil society organisations, working equitably to strengthen research capacity, improve data equity and conduct research in humanitarian settings.

Member. WHO pfhrp23 technical panel: Supporting the update of the WHO response plan to pfhrp23 deletions, providing expertise and modelling to support malaria diagnostic policy.

Member. ROpenSci: Community of software developers building open source and reproducible tools using the R programming language. I have contributed R packages and code reviews for data access and survey tools.

Member. VacSafeWG: Schmidt Futures funded group for furthering vaccine safety and confidence-building in Africa. I contribute to policy briefs on vaccines, data sources and early warning systems for supranational agencies.

PUBLIC ENGAGEMENT AND OUTREACH

Various media appearances including TV (Sky, BBC, Euronews, TV Globo), Radio (BBC, RTS, Sky) and News (FT, Times, Guardian, Washington Post, NY Times, Economist - cover story) related to my COVID-19 work. Additionally, I provide to a number of fact-checking agencies (AFP Fact Check, German Press Agency dpa).

Science in Context Imperial College London Videos to discuss findings from our research.

Facebook Live Community Outreach with Sudanese Health Influencers. Conducted a series of live interviews and AMA with an Arabic interpreter to explain the impacts of our research in Khartoum (2020).

RISE Residential Summit. Interactive classroom simulation and pandemic tabletop exercise showcasing the role of infectious disease modelling in policy making. Delivered to the 100 winners of the RISE Global Scholarship program (2023).

Central London Data Science. Organiser of a meetup group teaching fundamentals of data science to over 3000 members across industry, academia and members of the public. (Founded in 2016).

Brilliant Club Course Author. Co-authored an 8-week Key Stage 2 UK (ages 7-11) curriculum entitled "Disease Detectives" (2018).