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Education

2014-2019 BSc in Mathematics and Statistics (Honours), McMaster University, Hamilton, ON, Canada

2019- PhD candidate in Ecology and Evolutionary Biology, Princeton University, Princeton, NJ, USA

Publications

ORCID: 0000-0003-2202-3361. See Google Scholar for links to articles.

2022 Sender, R., Bar-On, Y., **Park, S.W.**, Noor, E., Dushoff, J., and Milo, R., 2022. The unmitigated profile of COVID-19 infectiousness. *eLife*, 11L e79134.

2022 Messacar, K., Baker, R.E., **Park, S.W.**, Nguyen-Tran, H., Cataldi, J.R., and Grenfell, B., 2022. Preparing for uncertainty: endemic paediatric viral illnesses after COVID-19 pandemic disruption. *Lancet*.

2022 **Park, S.W.**, Bolker, B.M., Funk, S., Metcalf, C.J.E., Weitz, J.S., Grenfell, B.T., and Dushoff, J., 2022. The importance of the generation interval in investigating dynamics and control of new SARS-CoV-2 variants. *Journal of The Royal Society Interface*, 19: 20220173-20220173

2022 Nguyen-Tran, H., **Park, S.W.**, Messacar, K., Dominguez, S.R., Vogt, M.R., Permar, S., Permaul, P., Hernandez, M., Douek, D.C., McDermott, A.B., Metcalf, C.J.E., Grenfell, B., and Spaulding, A.B., 2022. Enterovirus D68: a test case for the use of immunological surveillance to develop tools to mitigate the pandemic potential of emerging pathogens. *The Lancet Microbe*, 3(2): e83-e85.

2022 Lizewski, R.A.*, Sealfon, R.S.G.*, **Park, S.W.***, Smith, G.R.*, Porter, C.K.*, Gonzalez-Reiche, A.S.*, Ge, Y.*, Miller, C.M.*, Goforth, C.W., Pincas, H., Termini, M.S., Ramos, I., Nair, V.D., Lizewski, S.E., Alshammary, H., Cer, R.Z., Chen, H.W., George, M.-C., Arnold, C.E., Glang, L.A., Long, K.A., Malagon, F., Marayag, J.J., Nunez, E., Rice, G.K., Santa Ana, E., Schilling, M.A., Smith, D.R., Sugiharto, V.A., Sun, P., van de Guchte, A., Khan, Z., Dutta, J., Vangeti, S., Voegtly, L.J., Weir, D.L., Metcalf, C.J.E., Troyanskaya, O.G., Bishop-Lilly, K.A., Grenfell, B.T., van Bakel, H., Letizia, A.G.*, and Sealfon, S.C.*, 2022. SARS-CoV-2 outbreak dynamics in an isolated US military recruit training center with rigorous prevention measures. *Epidemiology*, 33(6): 797-807.
*Contributed equally.

2021

Baker, R.E., **Park, S.W.**, Wagner, C.E., and Metcalf, C.J.E., 2021. The limits of SARS-CoV-2 predictability. *Nature Ecology & Evolution*, 5(8): 1052-1054.

2021 Dushoff, J., and **Park, S.W.**, 2021. Speed and strength of an epidemic intervention. *Proceedings of the Royal Society B*, 288(1947): 20201556.

2021 **Park, S.W.**, Pons-Salort, M., Messacar, K., Cook, C., Meyers, L., Farrar, J., Grenfell, B.T., 2021. Epidemiological dynamics of enterovirus D68 in the United States and implications for acute flaccid myelitis. *Science Translational Medicine*, 13(584): eabd2400.

2020 **Park, S.W.**, Sun, K., Champredon, D., Li, M., Bolker, B.M., Earn, D.J.D., Weitz, J.S., Grenfell, B.T. and Dushoff, J., 2020. Forward-looking serial intervals correctly link epidemic growth to reproduction numbers. *Proceedings of the National Academy of Sciences*, 118(2): e2011548118.

2020 Weitz, J.S., **Park, S.W.**, Eksin, C. and Dushoff, J., 2020. Awareness-driven behavior changes can shift the shape of epidemics away from peaks and toward plateaus, shoulders, and oscillations. *Proceedings of the National Academy of Sciences*, 117(51): 32764-32771.

2020 Baker, R.E., **Park, S.W.**, Yang, W., Vecchi, G.A., Metcalf, C.J.E. and Grenfell, B.T., 2020. The impact of COVID-19 nonpharmaceutical interventions on the future dynamics of endemic infections. *Proceedings of the National Academy of Sciences*, 117(48): 30547-30553.

2020 Metcalf, C.J.E., Morris, D.H., and **Park, S.W.**, 2020. Mathematical models to guide pandemic response. *Science*, 369(6502): 368-369.

2020 **Park, S.W.**, Bolker, B.M., Champredon, D., Earn, D.J.D., Li, M., Weitz, J.S., Grenfell, B.T. and Dushoff, J., 2020. Reconciling early-outbreak estimates of the basic reproductive number and its uncertainty: framework and applications to the novel coronavirus (SARS-CoV-2) outbreak. *Journal of the Royal Society Interface*, 17: 20200144.

2020 **Park, S.W.**, Champredon, D., and Dushoff, J., 2020. Inferring generation-interval distributions from contact-tracing data. *Journal of the Royal Society Interface*, 17(167): 20190719.

2020 Weitz, J.S., Beckett, S.J., Coenen, A.R., Demory, D., Dominguez-Mirazo, M., Dushoff, J., Leung, C.-Y., Li, G., Măgălie, A., **Park, S.W.**, Rodriguez-Gonzalez, R., Shivam, S., and Zhao, C.Y., 2020. Modeling shield immunity to reduce COVID-19 epidemic spread. *Nature medicine*, 26(6): 849-854.

2020 **Park, S.W.**, Cornforth, D.M., Dushoff J., and Weitz J.S., 2020. The time scale of asymptomatic transmission affects estimates of epidemic potential in the COVID-19 outbreak. *Epidemics*, 31: 100392.

2020 **Park, S.W.**, and Bolker, B.M., 2020. A note on observation processes in epidemic models. *Bulletin of Mathematical Biology*, 82(3): 1-8.

2020 **Park, S.W.**, Sun, K., Viboud, C., Grenfell, B.T., and Dushoff, J., 2020. Potential Role of Social Distancing in Mitigating Spread of Coronavirus Disease, South Korea. *Emerging infectious diseases*, 26(11): 2697–2700.

2019 **Park, S.W.**, Champredon, D., Weitz, J.S., and Dushoff, J., 2019. A practical generation-interval-based approach to inferring the strength of epidemics from their speed. *Epidemics*, 27: 12-18.

2018 **Park, S.W.**, Dushoff, J., Earn, D.J.D., Poinar, H., and Bolker, B.M., 2018. Human ectoparasite transmission of the plague during the Second Pandemic is only weakly supported by proposed mathematical models. *Proceedings of the National Academy of Sciences*, 115(34): E7892-E7893.

2017 **Park, S.W.**, and Bolker, B.M., 2017. Effects of contact structure on the transient evolution of HIV virulence. *PLoS Computational Biology*, 13(3): e1005453.

2017 Rekart, M.L., Ndifon, W., Brunham, R.C., Dushoff, J., **Park, S.W.**, Rawart, S., and Cameron, C.E., 2017. A double-edged sword: does highly active antiretroviral therapy contribute to syphilis incidence by impairing immunity to Treponema pallidum?. *Sexually Transmitted Infections*, 93(5): 374-378.

Preprints

2022 **Park, S.W.**, Dushoff, J., Grenfell, B.T., and Weitz, J.S., 2022. Intermediate levels of asymptomatic transmission can lead to the highest levels of epidemic fatalities. https://www.medrxiv.org/content/10.1101/2022.08.01.22278288v1

2022 **Park, S.W.**, Sun, K., Abbott, S., Sender, R., Bar-On, Y.M., Weitz, J.S., Funk, S., Grenfell, B.T., Backer, J.A., Wallinga, J., Viboud, C., and Dushoff, J., 2022. Inferring the differences in incubation-period and generation-interval distributions of the Delta and Omicron variants of SARS-CoV-2. https://www.medrxiv.org/content/10.1101/2022.07.02.22277186v1.

2022 Harris, J.D., **Park, S.W.**, Dushoff, J., and Weitz, J.S., 2022. How time-scale differences in asymptomatic and symptomatic transmission shape SARS-CoV-2 outbreak dynamics. https://www.medrxiv.org/content/10.1101/2022.04.21.22274139v1

2022 Lee, W.E., **Park, S.W.**, Weinberger, D.M., Olson, D., Simonsen, L., Grenfell, B.T., and Viboud, C., 2022. Direct and indirect mortality impacts of the COVID-19 pandemic in the US, March 2020-April 2021. https://www.medrxiv.org/content/10.1101/2022.02.10.22270721v1

Software

2022 **Park, S.W.**, and Bolker, B.M., `fitode`: Tools for Ordinary Differential Equations Model Fitting. https://cran.r-project.org/web/packages/fitode/index.html.

Teaching

2019–2021 **Graduate Assistantship in Instruction**, Princeton University.

- Disease Ecology, Economics, and Policy (ENV 304 / ECO 328 / EEB 304 / SPI 455), Fall 2019, 2020, 2021.

Textbook

2017 Alama S., and **Park. S.W.**, MATH 2XX3 – Advanced Calculus II: Class notes recorded, adapted, and illustrated by Sang Woo Park. Available at McMaster University Library.

Professional service

Manuscript reviewer for PNAS, PLOS Computational Biology, BMC Medicine, Emerging Infectious Diseases, Proceedings of the Royal Society A, Proceedings of the Royal Society B, Epidemics, Scientific Reports, Mathematical Biosciences, PLOS One, PeerJ, etc.