

**Shoya Iwanami** Ph.D.

*interdisciplinary Biology Laboratory, Division of Natural Science, Graduate School of Science, Nagoya University, Assistant professor, Japan*

**Research interest:** I have been engaged in mathematical modeling and data analysis of biological phenomena in vivo and in vitro during my doctoral studies at the Graduate School of Systems Life Sciences, Kyushu University (2016-2020), and during my work at the Faculty of Science, Kyushu University (2020-2021) and the Graduate School of Science, Nagoya University (2021-). The topics that have been the subject of my research are the differentiation dynamics of cells derived from hematopoietic stem cells and the viral infection dynamics within the host. In particular, in the study of viral infection dynamics, we have taken advantage of the combination of experiments and mathematical models, including quantitative analysis of the infection dynamics of simian/human immunodeficiency virus strains with different pathogenicity (1, 2), analysis of hepatitis C virus strains with different life cycles using multi-scale mathematical models (3), and analysis of the interferon sensitivity of clinical human immunodeficiency virus isolates in consideration of their mode of infection (4). After an outbreak of coronavirus disease 2019 (COVID-19), we used time changes in the amount of severe acute respiratory syndrome coronavirus 2 in the COVID-19 patient's body to analyze the relationship between time since infection and polymerase chain reaction testing results (5), as well as the relationship between the detection of therapeutic effect of antiviral drugs and study design in randomized controlled trials (6). My research interest related to global health is to find a relationship between the spread of infectious diseases and the dynamics of viral infection in the body of infected people, which reflects their nature as a virus. The spread of infectious diseases is determined by a variety of factors, including people's immune status, living environment, and behavior. In collaboration with researchers in many fields, I hope to contribute to the control of infectious disease epidemics and policy making for this purpose from the perspective of viral infection dynamics.

**Selected publications:**

1. Iwanami S. et al., **Theor. Biol. Med. Model.** 2017 Apr. 21 ; 14:9.
2. Hara A. et al., **J. Theor. Biol.** 2019 Oct. 2 ; Vol. 479, Pages 29-36.
3. Iwanami S. et al., **PLOS Biol.** 2020 Jul. 30 ; 18(7): e3000562.
4. Kumata R. et al., **PLOS Comp. Biol.** 2022 Apr. 25 ; 18(4): e1010053.
5. Ejima K. et al., **J. R. Soc. Interface** 2021 Apr. 21 ; 18: 20200947.
6. Iwanami S. et al., **PLOS Med.** 2021 Jul. 6 ; 18(7): e1003660.