

# Mitsuhiro ODAKA



✉ odaka[at]nii[dot]ac[dot]jp

🐦 @NII90795280

🌐 <https://mitsuhiro-odaka.github.io>








## CURRENT POSITION


- 2021 – . . . .  **Research Fellowship for Young Scientists**, Japan Society for the Promotion of Science (JSPS), Tokyo. 3-year tenure fellowship (category: DC1).
- 2019 – . . . .  **Collaborative Researcher**, Department of International Health and Medical Anthropology, Institute of Tropical Medicine, Nagasaki University, Nagasaki. Collaboration with Taro YAMAMOTO, Eisei TSURUMI and Fumio MATSUMOTO: Novel methods development for graphical representation of population dynamics in infectious disease epidemics via simulation of proximity-based multi-agent systems.

## EXPERIENCES



### Qualification

-  Experience in academic research on mathematical modeling and simulation of infectious diseases
-  Experience in deep learning as a freelance engineer (JDLA Deep Learning for GENERAL Certificate verified by Japan Deep Learning Association, 2019)
-  Experience in data visualization and statistical analysis (Python 3 Engineer Certificate verified by Python Engineer Development Association, 2017) (Japan Statistical Society Certificate Grade 2 verified by Japan Statistical Society, 2017)
-  Excellent communication skills in oral and written Japanese and English (IELTS 6.5, 2016)
-  Proficient in Microsoft Office Word, Excel, PowerPoint (Microsoft Office Specialist; MOS, 2012)


### Overseas Clinical Clerkship

-  1 month of experience in international clinical training as a student doctor at the division of infectious diseases of Tan Tock Seng Hospital (via Special Clinical Electives Program by Yong Loo Lin School of Medicine, National University of Singapore, 2017)




## RESEARCH ASSISTANTSHIP

- 2018 – 2021  **Research Assistant**, National Institute of Informatics (NII), Tokyo. Assisted Katsumi IN-OUE: Modeling of viral dynamical systems in SARS-CoV-2 infection, numerical analysis (sensitivity analysis and stability analysis), and calibration experiments with observed data. Conducted a model development and sensitivity analysis considering preferred vaccination effects on specific populations and calibrated the model with weekly observed data on malaria incidence to clarify the optimum vaccination strategy of malaria vaccines.
- 2018 – 2019  **Research Assistant**, The Canon Institute for Global Studies (CIGS), Tokyo. Assisted Takayuki MIZUNO: Data-driven evidenced-based study of Chinalization by the One Belt, One Road and network analysis of global stock ownership big data.

## TEACHING ASSISTANTSHIP




- 2022 – . . . .  **Enseignant vacataire**, École Centrale de Nantes (ECN), Nantes. Assisted Françoise FOUCHER with travaux pratiques (TP) in the course of Mathématiques (MATHS-S6) .

## EDUCATION

- 2021  **Qualification equivalent to M.Sc. Informatics**, The Graduate University for Advanced Studies (SOKENDAI).
- 2020  **Bachelor of Science**, National Institution for Academic Degrees and Quality Enhancement of Higher Education (NIAD-QE), Tokyo. Second-degree acquisition through the credit accumulation as a part-time coursework student and the accredited examination.
- 2019  **Bachelor of Medicine**, Nagasaki University School of Medicine, Nagasaki.

## GRANTS & AWARDS


### Grants

- 2021 – 2024  **3-year Grant-in-Aid for Scientific Research (2.5 million JPY)**, Japan Society for the Promotion of Science (JSPS), Tokyo.  
Theme: Model-driven Study of Host Cell Multiscale Dynamics in Viral Infection
- 2021 – 2022  **1-year Grant-in-Aid (1.0 million JPY)**, Research Organization of Information and Systems (ROIS), Tokyo.  
Theme: Multiscale Modeling of Network Dynamics in SARS-CoV-2 infectious systems
- 2020 – 2021  **1-year Grant-in-Aid (1.4 million JPY)**, Research Organization of Information and Systems (ROIS), Tokyo.  
Theme: Multiscale Quantitative Analysis of SARS-CoV-2 Infection Dynamics

### Awards

- 2019  **Best Paper Award**, Information Processing Society of Japan (IPSJ) National Convention

## ACADEMIC SERVICES

- 2020  **Reviewer**, The 11th International Conference on Computational Systems-Biology and Bioinformatics

## RESEARCH PUBLICATIONS

### Journal Articles

- 1 **Odaka, M.**, Magnin, M., & Inoue, K. (2022). Gene Network Inference from Single-Cell Omics Data and Domain Knowledge for Constructing COVID-19-Specific ICAM1-Associated Pathways. *Preprint on Research Square (under review)*. [doi:10.21203/rs.3.rs-1300133/v1](https://doi.org/10.21203/rs.3.rs-1300133/v1)
- 2 **Odaka, M.**, & Inoue, K. (2021). Modeling viral dynamics in SARS-CoV-2 infection based on differential equations and numerical analysis. *Heliyon*, 7(10), e08207. [doi:10.1016/j.heliyon.2021.e08207](https://doi.org/10.1016/j.heliyon.2021.e08207)

### Conference Proceedings & Presentations

- 1 **Odaka, M.**, Magnin, M., & K., I. (2022). Exploring Differential Equations for Modeling SARS-CoV-2 Dynamics with Sensitivity and Stability Analysis. In *Statistical Methods for Post Genomic Data 2022, Online. Nantes. France. (SMPGD 2022)*.
- 2 **Odaka, M.**, Magnin, M., & K., I. (2021). Within-host Dynamics Modeling of Novel Coronaviruses Based on Sensitivity and Stability Analyses. In *ROIS/I-URIC Young Researchers Cross-Talk 2021. Online. Japan*.
- 3 Yakushiji, R., **Odaka, M.**, Ribeiro, T., Magnin, M., & K., I. (2021). Comparing the Accuracy of Machine Learning Methods Towards Predicting Cell Behavior Under Radiation. In *Artificial Intelligence in Medicine (AIM 2021)*.

- 4 **Odaka, M.** (2020a). Infected Japonia: Serious Game of Infectious Diseases. In *The 10th Annual Conference of Digital Games Research Association Japan. Tokyo, Japan. (DiGRA 2020)*.
- 5 **Odaka, M.** (2020b). The Gamification of SIR Model-based Simulation of COVID-19 Epidemics. In *IEEE Conference on Games (IEEE CoG 2020)*.
- 6 **Odaka, M.** (2020c). Visualization and Sonification of Infection: Sensitivity Analysis of Multi-Agent Systems to Space Structural Metamorphosis. In *Expressive Japan 2020 of Art and Science Forum. Tokyo, Japan*.
- 7 **Odaka, M., & Inoue, K.** (2020). Computational modeling and simulation of viral load kinetics in sars-cov-2 replication. In *Proceedings of the Eleventh International Conference on Computational Systems-Biology and Bioinformatics (CSBio 2020)* (pp. 75–82). doi:10.1145/3429210.3429214
- 8 Mizuno, T., & **Odaka, M.** (2019a). Indirect dominance detection on a global shareholding network. In *5th International Conference on Computational Social Science, Amsterdam. The Netherlands. (IC2S2 2019)*.
- 9 Mizuno, T., & **Odaka, M.** (2019b). Indirect dominance relationship among countries on stock ownership network. In *The 18th Social Systems Division Workshop. The Society of Instrument and Control Engineers. Okinawa, Japan*.
- 10 Mizuno, T., & **Odaka, M.** (2019c). Visualization of indirect dominance by China on global stock ownership network. In *Proceedings of the 33th Annual Conference of the Japanese Society for Artificial Intelligence 2019 (JSAI 2019)* (2D5OS1b04–2D5OS1b04). Retrieved from [https://www.jstage.jst.go.jp/article/pjsai/JSAI2019/0/JSAI2019\\_2D5OS1b04/\\_pdf](https://www.jstage.jst.go.jp/article/pjsai/JSAI2019/0/JSAI2019_2D5OS1b04/_pdf)
- 11 **Odaka, M.** (2019). Model Fitting in Malaria Epidemics: Applying High-Frequency Empirical Data for SEI-SI Model. In *Conference on Complex Systems 2019 of The Complex Systems Society. Nanyang Technological University. Singapore. (CCS 2019)*.
- 12 **Odaka, M., & Mizuno, T.** (2019a). Data-driven Study on Chinalization by One Belt One Road Initiative: Network Analysis of Global Stock Ownership Network. In *Proceedings of the 81st national Convention of Information Processing Society of Japan 2019 (IPSJ 2019)* (pp. 343–344). Retrieved from <http://id.nii.ac.jp/1001/00196289/>
- 13 **Odaka, M., & Mizuno, T.** (2019b). Indirect dominance relationship on global ownership network. In *Data-Driven Mathematical Science: Econophysics and other disciplines. Tokyo, Japan*.
- 14 **Odaka, M., & Mizuno, T.** (2019c). The Structure of Chinalization in Global Stock Ownership Network. In *The 3rd Computational Social Science Workshop. Nagoya, Japan*.
- 15 **Odaka, M., & Sunahara, T.** (2019). Targeting Malaria Hotspots can be Counterproductive: Vaccination Simulation and Sensitivity Analysis. In *Conference on Complex Systems 2019 of The Complex Systems Society. Nanyang Technological University. Singapore. (CCS 2019)*.
- 16 **Odaka, M.** (2018). Predicting Sex Determinant Proteins of Human Malaria Parasites: Sequence and Structure Homology Analysis. In *The 14th International Congress of Parasitology. Daegu, Korea. (ICOPA 2018)*. Retrieved from <http://icopa.cjint.kr/index.php?gt=pro/pro03&day=22>
- 17 **Odaka, M., & Mizuno, T.** (2018). Visualization of Chinalization by Global Ownership Network: Silent Invasion in One Belt One Road. In *Cross-Disciplinary Study Group to Economy and Society. Tokyo, Japan*.
- 18 **Odaka, M., & Sunahara, T.** (2018). Vaccination Strategy Against Malaria in Heterogeneous Environments: Mathematical Model Analysis. In *The 54th Annual Scientific Conference of The Malaysian Society of Parasitology and Tropical Medicine. Kuala Lumpur, Malaysia (MSPTM 2018)*. Retrieved from <https://secureservercdn.net/72.167.241.180/114.7f7.myftpupload.com/wp-content/uploads/2018/03/Final-Programme-Oral-8-March-2018.pdf>
- 19 **Odaka, M., & Sunahara, T.** (2017). Optimum Vaccination Strategies for Malaria Elimination: A Model Analysis. In *Japan-Brazil Malaria Research Workshop: fostering new partnerships*.

## SKILLS

---

Languages	📖 Japanese (Mother tongue), English (Fluent), French (Proficient writing and reading; basic speaking)(Diplome d'Aptitude Pratique au Francais 3ème grade).
Coding	📖 Python, R, Matlab, C#, Prolog
Web Dev	📖 HTML, CSS, JavaScript
Computer Graphics	📖 Unity, Blender, Processing
Misc.	📖 KHCoder (Text analysis), Cytoscape, Gephi (Network analysis), ImageJ (Image processing), artisoc (Simulation of multi-agent systems), AviUtl (Film making), Sonic Pi, SuperCollider (Sound programming), Octoparse (Web scraping), UPP-AAL (Model checking)

## MISCELLANEOUS EXPERIENCES

---

### Social Activities

- 2019    📖 **Digital Humanities Club Chief editor, Planner, Performer**, Science Agora 2019, Tokyo.  
Theme: Haruki Murakami and Plato: Connection Beyond the Time

### Professional Memberships

- 📖 International Society for Computational Biology (ISCB)
- 📖 Association for the Advancement of Artificial Intelligence (AAAI)
- 📖 The Japan Society for Industrial and Applied Mathematics (JSIAM)
- 📖 Information Processing Society of Japan (IPSJ)