Nonno Hasegawa

Email: nonno.hasegawa3@oist.jp
Cellphone: +81 80-4871-1644

BACKGROUND

I am an evolutionary biologist interested in obligate arthropod symbionts. Although BSc specialized in biochemistry, as a graduate student, I am learning to approach biological questions from an ecological and evolutionary perspective, by utilizing many molecular biology methods learned as an undergraduate student, as well as expanding my skillsets in field work and computer programming to analyze hundreds of sequencing data on HPC.

SKILLS

Research equipment & technical skills | High performance computing, high performance liquid chromatography, ultra performance liquid chromatography, DNA/protein gel electrophoresis, tissue homogenizer/cell lyser, thermocycler, DNA/RNA extractions, library prep, and sequencing, fieldwork (beekeeping & management, plant & insect collections).

Transferable skills | funding acquisition, teaching, report writing, translations, team working, remote working, leadership, independence, organization, and time management.

Languages | Japanese (native/bilingual), English (native/bilingual), Bash command language (2019-present), R programming language (2018-present).

EDUCATION

2020-present — Okinawa Institute of Science and Technology Graduate University
Integrative Community Ecology Unit, Okinawa, Japan

PhD in Ecology and Evolution
Field: Ecology and evolution
Proposal title: "Historical biogeography and landscape genetics of obligate arthropod symbionts"
Advisor: Prof. David Armitage

2015-2019 — University of Guelph
Department of Molecular and Cellular Biology,
College of Biological Science, Guelph, Ontario, Canada

BSc Biochemistry
Thesis title: "Efficacy of plant tinctures against *Paenibacillus larvae*, a causative agent of American foulbrood in *Apis mellifera*"
Note: BSc with distinction (cumulative average > 80%). Coop program entails 16 months of full-time employment related to field.

EMPLOYMENT

May 2020-present — Okinawa Institute of Science and Technology Graduate University
Integrative Community Ecology Unit, Okinawa, Japan

Doctoral research student / Japan Society for the Promotion of Science research fellow
Research Group: Prof. David Armitage

- Collected 500+ Darlingtonia californica plant samples, Metriocnemus edwardsi midge larvae and Sarraceniopus darlingtoniae mites from 50+ sites, extracted DNA from all samples, and sequenced ~200 plant samples (ddRADSeq), and all arthropod samples (COI amplicon).
- Analyzing sequencing data for population genetics and landscape ecology
- Presented a poster at the Tohoku University – OIST 3rd joint workshop on biodiversity 2022

Dec 2019-Apr 2020 Okinawa Institute of Science and Technology Graduate University
Ecology and Evolution Unit, Okinawa, Japan

Visiting Researcher
Research Group: Prof. Alexander (Sasha) Mikheyev

- Created an RNA library of 200+ global Varroa mite collection to unravel honeybee viruses' history as a biogeographical map, and found that contrary to previous findings, Deformed wing virus A originates in Asia, not Europe (see Hasegawa *et al.* 2023)
- Developed a novel method for Varroa mite storage conditions for field working and beekeeping collaborators (see Hasegawa *et al.* 2021).
- Developed a novel method for single Varroa mite DNA & RNA extraction for next generation sequencing (see Hasegawa *et al.* 2021).

Apr-Aug 2019 Okinawa Institute of Science and Technology Graduate University
Protein Engineering and Evolution Unit, Okinawa, Japan

Laboratory Research Intern Student
Research Group: Prof. Paola Laurino

- Investigated substrate promiscuities in human methionine S-adenosyl synthase using directed evolution.
- Optimized protocols involved in studying hMAT2A synthesis and extraction, as well as SAM analog feeding assays.

2018, 2019 * University of Guelph
Department of Molecular and Cellular Biology, College of Biological Science,
Guelph ON, Canada

Undergraduate thesis student / Laboratory Assistant
* 3 separate periods, 8 months as a thesis student and 2x4 months as a lab assistant
Research Group: Prof. Allan Rod Merrill

- Hired full time for 8 months under the Natural Sciences and Engineering Research Council of Canada grant shared between Prof. Merrill and Prof. Ernesto Guzman-Novoa (School of Environmental Sciences, University of Guelph), partly working towards BSc thesis titled "Efficacy of plant tinctures against *Paenibacillus larvae*, a causative agent of American foulbrood in *Apis mellifera*".
- Extended 4 months as a thesis student (unpaid), designed and conducted *in vitro* rearing of honey bee larvae to test for antimicrobial effects of natural plant tinctures against *Paenibacillus larvae*, the causative agent of foulbrood in *Apis mellifera*. Screened from >50, and found several plant derived tinctures that mitigate *P. larvae* growth on agarose media with low minimum inhibitory concentrations.
- Successfully met criteria, submitted thesis, and defended an oral exam for BSc thesis.
- Supervised summer research students and aided in lab management & bee rearing as a part time lab assistant for final 4 months.

2017 * University of British Columbia
Michael Smith Laboratories, Department of Biochemistry & Molecular Biology,
Vancouver BC, Canada

Laboratory Research Intern Student
* 2 separate periods, Jan-Apr & Aug-Dec
Research Group: Prof. Leonard Foster

- Led a side project alongside a postdoctoral-fellow on honey bee sample preservation methods for downstream proteome analysis.
- Processed over 1200 samples (dissection, protein extraction, quantification, digestion, and methyl labelling).
- Supervised and instructed summer intern students to work on said project.

- Attended Bee Better Kelowna Conference 2017.
- Demonstrated applications of high throughput technology (mass spectrometry).

FELLOWSHIPS & AWARDS

Research Fellowship for Young Scientists, DC1 FY2023-2025 (3-year appointment)
Japan Society for the Promotion of Science

- Monthly stipend of JPY 200,000 (~1,300USD).
- Annual research funding of JPY 970,000 (~6600USD).

Outstanding Student, FY2023-2025
Okinawa Institute of Science and Technology

- Tuition waived in recognition of JSPS fellowship (JPY 540,000 annual, ~3700USD).

Tohoku University – OIST 3rd Joint Workshop on Biodiversity: From Genes and Species to Ecosystem Services and Resilience 2022
Okinawa Institute of Science and Technology

- Awarded travel grant, JPY 50,000 (~340USD) for invited poster presentation.

PUBLICATION LIST

Hasegawa N, Techer MA, Adjlane N, Al-Hissnawi MS, Antúnez K, Beaurepaire A, Christmon K, Delatte H, Dukku UH, Eliash N, El-Niweiri MAA, Esnault O, Evans JD, Haddad NJ, Locke B, Muñoz I, Noël G, Panziera D, Roberts JMK, De la Rúa P, Shebl MA, Stanimirovic Z, Rasmussen DA, Mikheyev AS. Evolutionarily diverse origins of deformed wing viruses in Western honey bees. Proc Natl Acad Sci USA (2023). 120:e2301258120.

Hellemans S, Wang M, **Hasegawa N**, Sobotnik J, Scheffrahn RH, Bourguignon T. Using ultraconserved elements to reconstruct the termite tree of life. Mol. Phylogenet. Evol 173 (2022). https://doi.org/10.1016/j.ympev.2022.107520.

Hasegawa N, Techer MA, Mikheyev AS. A toolkit for studying Varroa genomics and transcriptomics: preservation, extraction, and sequencing library preparation. BMC Genomics 22, 54 (2021). https://doi.org/10.1186/s12864-020-07363-7.

OUTREACH ACTIVITIES AND GENERAL SEMINARS

2024-03 | Girl Scouts Beekeeping & Onna village honey coral joint meeting facilitator
2024-02 | Oita Prefectural Association for the Promotion of Nectar and Pollen Source Plants *seminar on the evolutionary origins of Deformed wing virus* 大分県蜜源花粉源植物振興協会講演会
2024-02 | OIST Science Challenge 2024 Poster and Writing workshop
2024-02 | OIST Science Challenge 2024 Internship and PhD Information Session panelist
2024-02 | OIST Science Challenge 2024 Final 3minute presentation judge
2023-10 | OIST PhD Proposal exam information session panelist
2023-10 | Odawara High School (Kanagawa, JP) career seminar
2023-05 | American School in Japan (Tokyo, JP) career seminar
2023-05 | Yamawaki Gakuen High School (Tokyo, JP) poster presentation judge
2023-01 | Kyuyo High School (Okinawa, JP) poster presentation judge
2022-12 | Yonago Higashi High School (Tottori, JP) presentation judge & career seminar
2022-07 | The University of the Ryukyus (Okinawa, JP) guest lecturer (course code 105311001)
2022-01 | Apis cerana Society seminar on current bee research トウヨウミツバチ協会勉強会講師
2022-01 | Oita Prefecture Association for the Promotion of Nectar and Pollen Source Plants *seminar on current bee research* 大分県蜜源花粉源植物振興協会　講演会

202112 | COOP & Onna Village Red Soil Runoff Prevention Measures *seminar on significance of honey bees in red soil runoff prevention* コープ・恩納村赤土等流出防止対策地域協議会　講演
2021-11 | Japan Beekeeping Society seminar on current bee research 日本養蜂協会　講師
2021-11 | Seisen International School (Tokyo, JP) career seminar
2021-11 | Kyuyo High School (Okinawa, JP) career seminar
2021-10 | OIST Net Café Information Session panelist
2021-03 | Fletchers Meadow Secondary School (ON, Canada) career seminar

MEDIA COVERAGE

2023-09 | "Research on bee virus origins uncovers buzz-worthy breakthrough" OIST media release (EN)
2023-02 | "When Nonno met Prof Pääbo" Asahi Shimbun Globe +(JP), Youtube (EN/JP)
2022-11 | "Better late than never 国際的な教育・研究環境で行動力を身につける(developing proactiveness in an international educational and research environment)" University Journal (JP)大学ジャーナルくらむぽん出版
2022-07 | Wrote a column on Honey & Coral Project, Japan Coral Reef Society August issue (JP)
2022-05 | "没頭ガール" nationwide Fuji TV special (JP)
2022-01 | "ミツバチ研究の OIST 大学院生、長谷川のんのさん「『女性だから』で取り上げないで」(OIST Graduate Student studying honeybees, Nonno Hasegawa – Follow up on previous article)" Asahi Shimbun Globe + (JP)
2022-01 | "新春！爆笑アカデミー！！鶴瓶＆さまぁ〜ずのぶっとび博士研究所" nationwide TBS Channel TV special (JP)
2021-09 | "世界で急減のミツバチ、沖縄の女性研究者が解決に没頭　原動力はタトゥー刻むほどの愛 (Battling the honeybee pandemic)" OIST media release (EN), Asahi Shimbun Globe + (JP)