



Okinawa Institute of Science and Technology
Postdoctoral Position in Model-based Evolutionary Genomics Unit

The Okinawa Institute of Science and Technology Graduate University (OIST; see www.oist.jp) is a dynamic new graduate university of science and technology in Okinawa Prefecture, Japan. The university is located on 85 hectares of protected forestland overlooking beautiful shoreline and coral reefs. The campus is striking architecturally, and the facilities are outstanding ([OIST campus video tour](#)). There are no academic departments, which facilitates multidisciplinary research. Outstanding resources and equipment are provided and managed to encourage easy access and collaboration. English is the official language of the University, and the university research community is fully international, with more than 50 countries represented. OIST is rapidly gaining recognition in the worldwide academic community as a model for excellence in education and research.

Position Summary:

Join the [Model-Based Evolutionary Genomics Unit](#) for a postdoc at the intersection of computational and evolutionary biology. Our unit works to decode the complex patterns and processes that underpin the evolution of life across its myriad forms with a significant focus on reconstructing the Tree of Life and modeling the dependency between different levels of organization in biological systems. By employing probabilistic models and leveraging the power of machine learning, we aim to unravel the co-evolutionary dynamics that have shaped the Tree of Life, from the enigmatic origins of early life forms to the sophisticated structures of modern biological systems.

Current topics include:

- applying and developing phylogenetically-aware models of horizontal gene transfer in order to reconstruct eukaryogenesis and better understand gene transfer in eukaryotes;
- applying and developing molecular dating methods that use novel sources of timing information from transfers and correlations between phenotypes and ancient environments;
- reconstructing ancient phenotypes from genome-scale data using machine learning;
- adapting protein language models to reconstruct fitness landscapes and ancestral sequences;
- understanding somatic evolution in hierarchically organized tissues and across the Tree of Life from a theoretical standpoint (e.g., To what extent has tissue organization evolved to minimize somatic evolution in humans? Why do both plants and animals have stem cells?)



This postdoctoral position offers the freedom to pursue your own research ideas and provides a platform for innovation and discovery in a unit that thrives on intellectual curiosity and interdisciplinary collaboration. The position includes funding to travel to international conferences as well as extended research visits to international collaborators, including Tom Williams at the University of Bristol, Anja Spang at NIOZ in the Netherlands, Phil Hugenholtz at the University of Queensland, and others, provided by the budget of the Model-based Evolutionary Genomics Unit.

Some recent papers of ours:

“A rooted phylogeny resolves early bacterial evolution” Coleman, Davin, Mahendrarajah, Szánthó, Spang, Hugenholtz*, Szöllősi*, Williams*

Science 2021

<https://science.sciencemag.org/content/372/6542/eabe0511.abstract>

"Divergent genomic trajectories predate the origin of animals and fungi" Ocaña-Pallarès, Williams, Baptiste, Tikhonenkov, Keeling, Szöllősi, Ruiz-Trillo

Nature 2022

<https://www.nature.com/articles/s41586-022-05110-4>

“Trade-off between reducing mutational accumulation and increasing commitment to differentiation determines tissue organization” Demeter, Derényi, Szöllősi

Nature Communications 2022

<https://www.nature.com/articles/s41467-022-29004-1>

“Compositionally Constrained Sites Drive Long-Branch Attraction” Szánthó, Lartillot, Szöllősi*, Schrempf*

Systematic Biology 2023

<https://doi.org/10.1093/sysbio/syad013>

“AleRax: A tool for gene and species tree co-estimation and reconciliation under a probabilistic model of gene duplication, transfer, and loss” Morel, Williams, Stamatakis, Szöllősi

Bioinformatics 2024 (to appear)

<https://doi.org/10.1101/2023.10.06.561091>

Position:

Postdoctoral Scholar

Starting Date:

October 1st, 2024, or according to agreement.



Working Location:

OIST Main Campus

1919-1 Tancha, Onna-son, Kunigami-gun, Okinawa, Japan 904-0495

Responsibilities:

Devise and carry out state-of-the-art interdisciplinary research in Evolutionary Biology, and have fun doing it! Collaborate with team members as well as other researchers at OIST and other Universities, including the University of Bristol and the University of Queensland, NIOZ in the Netherlands, and the Institute of Evolution in Budapest. Publish results in leading journals and present them at international conferences. Work with and supervise PhD students. Application for postdoctoral fellowships is encouraged but not required.

Qualifications:

(Required)

Education: Ph.D. in Natural Science, fields encompass Life Sciences, Physics, Computer Science, and Mathematics.

Publication Record: A publication history appropriate to the candidate's academic experience.

Research Interest: A keen interest in Evolutionary Biology.

(Preferred)

Research Alignment: Independent research ideas and interests that complement the goals of the Model-based Evolutionary Genomics Unit.

Technical Skills: Proficiency in mathematical modelling, programming and/or bioinformatics.

Report to:

Professor Gergely Szöllősi

Compensation & Benefits:

In accordance with the OIST Employee Compensation Regulations

Benefits:

- Relocation, housing and commuting allowances
- Annual paid leave and summer holidays
- Health insurance ([Private School Mutual Aid](#))
- Welfare pension insurance (kousei-nenkin)



- Worker's accident compensation insurance (roudousha-saigai-hoshou-hoken)
- Access to [Child Development Center](#)
- Access to [Schooling Options](#)
- [Language Education](#)
- [Resource Center](#) (Daily Life Support in Okinawa)

Term:

Full-time, fixed-term appointment for 2 years with a possibility of extension to 3 years. The contract is initially with a 3-month probationary period (inclusive). In exceptional cases, this contract may be renewed for up to 5 years or more.

Working hours

9:00-17:30 (Discretionary)

How to Apply:

Apply by emailing your Submission to: gergely.szollosi@oist.jp. Please ensure that you mention "modevolgenom postdoc 2024" in the subject line of your email.

Submission Documents:

- Cover letter
- 1-2 page summary of your past research and your future plans
- Curriculum vitae including publications and if possible, Google Scholar link
- Names and contact information of 3-5 referees, one of which should be a previous employer

* Prior to the start of employment all new hires are required to successfully complete a background check. Personal information including employment history and academic background should be submitted to third-party administrators after a conditional offer of employment.

Contact Address:

If you have any question, please contact: gergely.szollosi@oist.jp

Application Due Date:

Applications will be reviewed starting April 1st, 2024, until the position is filled.



Declaration:

- * OIST Graduate University is an equal opportunity, affirmative action educator and employer and is committed to increasing the diversity of its faculty, students and staff. The University strongly encourages women and minority candidates to apply.
- * Information provided by applicants or references will be kept confidential, documents will not be returned. All applicants will be notified regarding the status of their applications.
- * Please view our policy for rules on external professional activities (<https://groups.oist.jp/acd/information-disclosure/>).
- * Further details about the University can be viewed on our website (www.oist.jp).