

Unit Name

Evolutionary Genomics Unit

Collaborations

Dr. Yukihiro Kinjo , Okinawa International University, Japan, Cockroach Genom Analysis

Research Personnel

Esra Kaymak, Staff Scientist

Simon Hellemans, Staff Scientist

Julien Malem, Postdoctoral Scholar

Yi Ming Weng, Postdoctoral Scholar

Erina Kawai, Research Unit Technician

Reiko Sekine, Research Unit Technician

Catherine Gatt, Visiting Research Students, PhD student at NSW University

Tracy Lynn Audisio, PhD Student

Kensei Kikuchi, PhD Student

Zhuli Cheng, PhD Student

Cong Liu, PhD Student

Anastasiia Ishchenko, PhD Student

Kyla Rose Gumapac, Research Intern

Catherine Rose Gatt, Visiting Research Student

Tereza Berankova, Visiting Research Student

Scholarly Contributions and Creative Productions (by Faculty)

Journal Article

1. Scheffrahn, Rudolf H., Yves Roisin, Menglin Wang, Thomas Bourguignon, and Simon Hellemans. 2025. "Obtusitermes Monomorphus, a New Termite Species (Isoptera: Termitidae: Nasutitermitinae) from Panama." Zootaxa.
<https://www.mapress.com/zt/article/view/zootaxa.5583.3.9>
2. Liu, Cong, Cédric Aumont, Alina A. Mikhailova, Tracy Audisio, Simon Hellemans, Yi Ming Weng, Shulin He, et al. 2025. "Unravelling Termite Evolution with 47 High-Resolution Genome Assemblies." BioRxiv.
3. Beránková, Tereza, Jigyasa Arora, Johanna Romero Arias, Aleš Buček, Gaku Tokuda, Jan Šobotník, Simon Hellemans, and Thomas Bourguignon. 2024. "Termites and Subsocial Roaches Inherited Many Bacterial-Borne Carbohydrate-Active Enzymes (CAZymes) from Their Common Ancestor." Communications Biology 7:1449.
<https://www.nature.com/articles/s42003-024-07146-w>

4. Gergonne, Damien, Virginie Roy, Chantal Poteaux, Simon Hellemans, Thomas Bourguignon, Romain Fougeyrollas, Robert Hanus, et al. 2024. "Evolutionary History of Soil-Feeding Neotropical Termites Reveals Recent Divergences Linked to Geologic-Climatic Influences." *Insect Systematics and Diversity* 8:8.
5. Škerlová, Jana, Jiří Brynda, Jan Šobotník, Marek Zákopčaník, Petr Novák, Thomas Bourguignon, David Sillam-Dussès, and Pavlína Řezáčová. 2024. "Crystal Structure of Blue Laccase BP76, a Unique Termite Suicidal Defense Weapon." *Structure* (London, England : 1993) 32:1581-1585.e5.
6. Timmermans, Johanne, Simon Hellemans, Jan Křivánek, Esra Kaymak, Nicolas Fontaine, Thomas Bourguignon, Robert Hanus, and Yves Roisin. 2024. "How Inquilinism Shaped Breeding Systems in a Termite Host-Inquiline Relationship." *Molecular Ecology* 33:e17494.
<https://onlinelibrary.wiley.com/doi/10.1111/mec.17494>
7. Ewart, Kyle M., Simon Y W Ho, Al-Aabi A. Chowdhury, Frederick R. Jaya, Yukihiro Kinjo, Juno Bennett, Thomas Bourguignon, Harley A. Rose, and Nathan Lo. 2024. "Pervasive Relaxed Selection in Termite Genomes." *Proceedings. Biological Sciences* 291:20232439.
<https://royalsocietypublishing.org/doi/10.1098/rspb.2023.2439>
8. Tang, Qian, Edward L. Vargo, Intan Ahmad, Hong Jiang, K. Varadínová, Pilot Dovih, Dongmin Kim, et al. 2024. "Solving the 250-Year-Old Mystery of the Origin and Global Spread of the German Cockroach,." *Proceedings of the National Academy of Sciences of the United States of America* 121:e2401185121.
<https://pubmed.ncbi.nlm.nih.gov/38768340/>
9. Hellemans, Simon, Mauricio M. Rocha, Menglin Wang, Johanna Romero Arias, Duur K. Aanen, Anne-Geneviève G. Bagnères, Aleš Buček, et al. 2024. "Genomic Data Provide Insights into the Classification of Extant Termites." *Nature Communications* 15:6724.
<https://www.nature.com/articles/s41467-024-51028-y>
10. Bourguignon, Tom M. 2024. "Dating in the Dark: Elevated Substitution Rates in Cave Cockroaches (Blattodea: Nocticolidae) Have Negative Impacts on Molecular Date Estimates." *Systematic Biology*.
11. Mizumoto, Nobuaki, Simon Hellemans, Michael S. Engel, Thomas Bourguignon, and Aleš Buček. 2024. "Extinct and Extant Termites Reveal the Fidelity of Behavior Fossilization in Amber." *Proceedings of the National Academy of Sciences of the United States of America* 121:e2308922121.
<https://www.pnas.org/doi/10.1073/pnas.2308922121>
12. Beasley-Hall, Perry G., Yukihiro Kinjo, Harley A. Rose, James Walker, Charles S P Foster, Toby G L Kovacs, Thomas Bourguignon, Simon Y W Ho, and Nathan Lo. 2024. "Shrinking in the Dark: Parallel Endosymbiont Genome Erosions Are Associated with Repeated Host Transitions to an Underground Life." *Insect Science*.
<https://onlinelibrary.wiley.com/doi/10.1111/1744-7917.13339>

Scholarly Contributions (by Unit Members)

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Dr. Simon Hellemans	Book Chapter	Les Insectes du Monde. Biodiversité. Classification	Chapitre 21: Ordre des Dictyoptera (Dictyoptères), Clade des Isoptera (Termites). pp. 549-562	Quae & Muséo	2025
Dr. Simon Hellemans	Book Chapter	Discover the Science and Secrets Behind the World of Insects	Royal Entomological Society (RES)	Dorling Kindersley Limited (DK)	2024

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Mr. Cong Liu	Journal Article	Cryptocercus genomes expand knowledge of adaptations to xylophagy and termite sociality	Bio Rxiv	Cold Spring Harbor Laboratory	2025
Dr. Yi-Ming Weng	Journal Article	A near chromosome-level genome assembly of a ghost moth (Lepidoptera, Hepialidae)	Scientific Data	Nature	2024
Dr. Yi-Ming Weng	Journal Article	Phylogenomics of the major lineages of Bembidion and related ground beetles (Coleoptera: Carabidae: Bembidiini)	Insect Systematics And Diversity	Oxford Academic	2024
Dr. Yi-Ming Weng	Journal Article	Evidence for Admixture and Rapid Evolution During Glacial Climate Change in an Alpine Specialist	Molecular Biology and Evolution	Oxford Academic	2024
Ms. Esra Kaymak	Journal Article	Phylogenomics of Brachystegia: Insights into the origin of African miombo woodlands	Americal Journal of Botany	Botanical Society of America	2024
Dr. Simon Hellemans	Poster Presentation at Conference	Genetics and morphology reveal cryptic species hidden within the first termite described (Termes fatalis Linnaeus 1758)	International Congress of Entomology (ICE2024 in Kyoto, Japan)	With Mr. Fontaine Nicolas	2024
Dr. Simon Hellemans	Poster Presentation at Conference	Diversification of Neotropical termites	International Congress of Entomology (ICE2024 in Kyoto, Japan)	With Dr. Menglin Wang	2024
Dr. Simon Hellemans	Presentation at Conference	Complete genomes reconstructed with HiFi metagenomic reveal the function of the dominant gut bacteria of a Nasute termite	International Congress of Entomology (ICE2024 in Kyoto, Japan)	With Dr. Anna Prokhorova (Visiting Researcher)	2024
Dr. Julien Malem	Presentation at Conference	lluminating blind spots in cockroach phylogeny : new data on two enigmatic and undersampled families (Blattodea: Tryonicidae, Oulopterygidae	International Congress of Entomology (ICE2024 in Kyoto, Japan)		2024
Mr. Cong Liu	Presentation at Conference	The Evolution of Horizontal Gene Transfers in Termites	International Congress of Entomology (ICE2024 in Kyoto, Japan)		2024
Dr. Simon Hellemans	Presentation at Conference	Fossil and living termites reveal the evolution of termite tandem running	Entomological Society of America, in Phoenix (Arizona), USA	With Prof. Dr. Nobuaki Mizumoto	2024

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
Dr. Simon Hellemans	Presentation at Conference	Revision of Indian termite taxonomy based on mitogenome data	Annual Meeting of the Entomological Society of Japan (ESJ). Sendai (Miyagi), Japan	With Prof. Dr. Kalleshwaraswamy C.M	2024
Dr. Simon Hellemans	Presentation at Conference	How inquilinism shapes reproductive systems within an inquiline-host relationship in termites	International Congress of Entomology (ICE2024 in Kyoto, Japan)	With Ms. Johanne Timmermans	2024
Dr. Simon Hellemans	Presentation at Conference	Genome-scale phylogenies and their use in Blattodea	International Congress of Entomology (ICE2024 in Kyoto, Japan)		2024
Dr. Yi-Ming Weng	Presentation at Conference	The genomic landscape of metallic color variation in ground beetles	International Congress of Entomology (ICE2024 in Kyoto, Japan)		2024
Dr. Julien Malem	Review	<i>Calcistylopyga surtagalica</i> gen. et sp. nov. (Blattodea: Blattidae), a new micropterous cockroach from Luzon, Philippines, with notes on the subfamily Austrostylopyginae	N-A	Journal of Natural History	N-A
Dr. Yi-Ming Weng	Review	Genetic insight into a polygenic trait using a novel genome-wide association approach in a wild amphibian population	Molecular Ecology	Wiley	2024
Dr. Yi-Ming Weng	Review	Genomic Architecture Underlying the Striking Colour Variation in the Presence of Gene Flow for the Guinan Toad-Headed Lizard	Pub Med	National Library of Medicine (National Center for Biotechnology Information)	2024
Dr. Yi-Ming Weng	Review	Climate change will lead to range shifts and genetic diversity losses of dung beetles in the Gobi Desert and Mongolian Steppe	Scientific Report		2024
Dr. Yi-Ming Weng	Review	A ghost moth olfactory prototype of the lepidopteran sex communication	Giga Science	Oxford Academic	2024
Dr. Yi-Ming Weng	Review	"Genomic, morphological and physiological data support fast ecotypic differentiation and incipient speciation in an alpine diving beetle"	Molecular Ecology	Wiley (Online Library)	2024
Dr. Yi-Ming Weng	Review	The first chromosome-level genome of the stag beetle	Scientific Data	Nature.com	2024

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
		Dorcus hopei Saunders, 1854 (Coleoptera: Lucanidae)			
Dr. Yi-Ming Weng	Review	Geomorphic impacts within Red River Fault and island shifting as witnessed by the phylogeography of the largest water strider	Molecular Phylogenetics and Evolution	Elsevier	2024
Dr. Yi-Ming Weng	Review	Larvae of grassland caterpillar endemic to Qinghai–Tibet Plateau (Lepidoptera: Lymantriinae: Gynaephora): identification, distribution, and ultramorphology	Research Square		2024
Dr. Yi-Ming Weng	Review	Molecular phylogenetic relationships among lineages in the genus Carabus (Coleoptera: Carabidae) and radiation of the subgenus Apotomopterus	Zoological Journal of the Linnean Society	Oxford Academic	2024
Dr. Simon Hellemans	Seminars	Termites' phylogenomic islands and sex chromosomes	DBO Seminar Series	Université libre de Bruxelles, Bruxelles, Belgium	2024
Dr. Yi-Ming Weng	Seminars	Uncovering evolutionary clues buried in genomes: Case studies on the divergence of alpine ground beetles and origins of Lepidoptera	National Chung-Hsing University (Taiwan)	NA	2024

Workshops and Seminars (Organized and Hosted by Faculty/Units)

Speaker Name(s)	Title	Location	Date
Mr. Tomohito Noda	Exploring Intracellular Symbiosis Through Cockroach Bacteriocytes: Histology, Vertical Transmission, and Single-cell Transcriptomics	OIST Lab 3 (C700)	2025-04-21
Prof. Dr. Alma Mohagan	Preserving Nature's Treasures: Biodiversity Conservation, Species Discoveries, and World Heritage Nomination in Mindanao	OIST(C700)	2025-01-22
Prof. Dr. Rudolf Meier	Towards holistic insect monitoring by accelerating species discovery, description, and identification using robots, nanopore sequencing, and Artificial Intelligence	OIST(C210)	2024-11-05
Prof. Dr. Haruna Fujioka	Mature larvae continue calling at night in Vespa mandarinia	OIST (C700)	2024-07-16