

Unit Name

Evolutionary Genomics Unit
Professor Tom Bourguignon

Collaborations

Prof. Nathan Lo, University of Sydney, Australia, Termite and cockroach evolution
Professor Yves Roisin, University of Brussels, Belgium, Termite evolution
Professor Eliana Canello, University of Sao Paulo, Brazil, Termite evolution
Professor Tiago Carrijo, Universidade Federal do ABC, Brazil, Termite evolution
Professor Jan Sobotnik, Czech University of Life Sciences, Czech Republic, Termite evolution
Professor David Sillam-Dussès, University of Paris 13, France, Termite evolution
Professor Gaku Tokuda, University of the Ryukyus, Japan, Termite evolution
Associate Professor Dino McMahon, Free University of Berlin, Germany, Termite evolution
Dr. Mark Harrison, University of Coventry, UK, Termite evolution
Prof. Alma Mohagan, Central Mindanao University, Philippines, Termite evolution
Dr. Taisuke Kanao, Yamagata University, Japan, Termitophile evolution
Dr. Ales Bucek, Institute of Entomology, Ceske Budejovice, Czech Republic, Termite and termitophile evolution
Associate Professor Frederic Legendre, Musee National d'Histoire Naturelle, France, Termite and cockroach evolution
Associate Professor Fabio Zanini, University of New South Wales, Australia, Termite single-cell sequencing
Dr. Corentin JOUAULT, Oxford University Museum of Natural History, UK, Insect Evolution
Prof. Dr. Rudolf Scheffrahn, University of Florida, USA, Termite evolution

Research Personnel

Simon Hellemans, Staff Scientist
Esra Kaymak, Research Unit Technician
Julien Malem, Postdoctoral Scholar
Yi Ming Weng, Postdoctoral Scholar
Erina Kawai, Research Unit Technician
Kensei Kikuchi, PhD Student
Anastasiia Ishchenko, PhD Student
Cong Liu, PhD Student
Zhuli Cheng, PhD Student
Wahei Hagiwara, PhD Student

Aurelie Van Engeland, Research Intern

Kyla Rose Gumapac, Research Intern

Scholarly Contributions and Creative Productions (by Faculty)

Journal Article

1. Liu, C.; Hellemans, S.; Kinjo, Y.; Mikhailova, A.A.; Aumont, C.; Weng, Y.M.; Buček, A.; Husnik, F.; Šobotník, J.; Harrison, M.C.; McMahon, D.P.; Bourguignon, T.
Recurrent Horizontal Gene Transfers Across Termite Genomes. *Evolution*, 2026, 80, 751–764.
2. Deng, W.B.; Drager, K.; Li, X.R.; Han, W.; Djernaes, M.; Wang, Y.S.; Martin, J.; Schwartz, J.; Zhang, Z.; Kovacs, G.L.; Lo, N.; Hellemans, S.; Che, Y.L.; Bourguignon, T.; Wang, Z.Q.; Evangelista, D.
Blattodea systematics in the genomic age. *Insect Systematics and Diversity*, 10, ixaf042
3. Kikuchi K., Bourguignon T. & Mizumoto N.
Nesting strategy reflects individual worker movement in termites. *Movement Ecology*, 2025, 13, 88.
4. Pontes-Nogueira, S.M.; Aguilera, A.M.; Palma-Onetto, V.; Wang, M.; Hellemans, S.; Scheffrahn, R.; Canello, E.M.; Bourguignon, T.; Carrijo T.
Phylogeny and biogeography of the termite genus *Labioterme*s Holmgren, 1912 (Isoptera, Syntermitinae) suggests predominant sympatric speciation. *Journal of Biogeography* 2025, 53, e70124.
5. Liu, C.; Aumont, C.; Mikhailova, A. A.; Audisio, T.; Hellemans, S.; Weng, Y.-M.; He, S.; Clitheroe, C.; Wang, Z.; Haifig, I.; Sillam-Dussès, D.; Buček, A.; Tokuda, G.; Šobotník, J.; Harrison, M. C.; McMahon, D. P.; Bourguignon, T.
Unravelling the Evolution of Wood-Feeding in Termites with 47 High-Resolution Genome Assemblies. *Nature Communications* 2025, 16, 11154.
6. Hellemans, S.; Wang, M.; Jouault, C.; Rocha, M. M.; Battilana, J.; Carrijo, T. F.; Legendre, F.; Condamine, F. L.; Roisin, Y.; Canello, E. M.; Scheffrahn, R. H.; Bourguignon, T.
Termites Became the Dominant Decomposers of the Tropics after Two Diversification Pulses. *bioRxiv* 2025, 2025.03.25.645184.
7. Josens, G.; Deligne, J.; Harry, M.; Roy, V.; Akama, P. D.; Coulibaly, T.; Dosso, K.; Goergen, G.; Hasson, M.; Kasangij, P.; Kifukiето, C.; Le, R.; Bruno; Loko, L.; Ndiaye, A. B.; Roisin, Y.; Sion, N.; Sobotnik, J.; Stiblik, P.; Kue, D.; Traore, S.; Viage, M.; Wango, S. P.; Kaymak, E.; Bourguignon, T.; Hellemans, S.
An Integrative Revision of the Genus *Isognathotermes* (Termitidae: Cubitermitinae) with Description of Seven New Species and Four New Subspecies. *European Journal of Taxonomy* 2025, 1024, 1–197.
8. Liu, C.; Hellemans, S.; Weng, Y.-M.; Mikhailova, A. A.; Aumont, C.; Bucek, A.; Sobotnik, J.; Harrison, M. C.; McMahon, D. P.; Bourguignon, T.
Robust Termite Phylogenies Built Using Transposable Element Composition and Insertion Events. *Current Biology* 2025, 35, 5626–5632.e2.
9. Hellemans, S.; Weng, Y.-M.; Julseth, M. J.; Fujiwara, K.; Aumont, C.; Liu, C.; Mikhailova, A. A.; Bucek, A.; Kaymak, E.; Sillam-Dusses, D.; Roisin, Y.; Sobotnik, J.; Maekawa, K.; Harrison, M. C.; McMahon, D. P.; Bourguignon, T.
Deciphering the Evolution of Sex Determination across the Termite Tree of Life Using High-Quality Genome Assemblies. *bioRxiv* 2025.
10. Mikhailova, A. A.; Aumont, C.; Liu, C.; Bucek, A.; Weng, Y.-M.; Hellemans, S.; Audisio, T.; Clitheroe, C.; Haifig, I.; He, S.; Sillam-Dusses, D.; Tokuda, G.; Wang, Z.; Sobotnik, J.; Bourguignon, T.; Harrison, M. C.; McMahon, D. P.
Convergent Genetic Rewiring of the Brain Underlies Termite Sociality. *bioRxiv* 2025.
11. Hellemans, S.; Bourguignon, T.; Roisin, Y.
Towards a Universal Understanding of Sex Ratio in Termites. *Communications Biology* 2025, 8, 404.
12. Scheffrahn, R. H.; Roisin, Y.; Wang, M.; Bourguignon, T.; Hellemans, S.

Obtusitermes Monomorphus, a New Termite Species (Isoptera: Termitidae: Nasutitermitinae) from Panama. *Zootaxa* 2025, 5583, 567-578.

13. Scheffrahn, R. H.; Wang, M.; Bourguignon, T.; Rocha, M. M.; Canello, E. M.; Roisin, Y.; Hellemans, S. *Nasutitermes aurantius* (Isoptera, Termitidae, Nasutitermitinae), a New Nasutiform Termite Species from Panama and a Key to Soldiers of Central American Dudley, 1890. *ZooKeys* 2025, 1256, 163–177.
14. Takaesu, R.; Kinjo, Y.; Clitheroe, C.-L. L.; Sunagawa, H.; Bourguignon, T.; Saitoh, S. Sequencing of the Chloroplast Genome of Taimo, a Paddy Cultivar of Taro ((L.) Schott) in the Ryukyu Archipelago. *Mitochondrial DNA. Part B, Resources* 2025, 10, 508–512.

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
Mr. Cong Liu	Journal Article	<i>Cryptocercus</i> genomes expand knowledge of adaptations to xylophagy and termite sociality	Bio Rxiv	Cold Spring Harbor Laboratory	2025
Mr. Kensei Kikuchi (PhD Student)	Journal Article	Exclusive aggression against intruders in cockroach mating pairs following mutual wing-eating	Royal Society Open Access	The Royal Society Publishing	2026
Mr. Cong Liu	Journal Article	<i>Cryptocercus</i> Genomes Expand Knowledge of Adaptations to Xylophagy and Termite Sociality	Genome Biology and Evolution	SMBE	2026
Mr. Cong Liu	Journal Article	Parallel Evolution of Bacteroidota as Long-Term Endosymbionts of Insects	bioRxiv		2025
Dr. Yi-Ming Weng	Journal Article	Gene Family Evolution Suggests Correlated Dietary Adaptations in Butterflies and Moths	Genome Biology and Evolution	Oxford Academic	2025
Mr. Cong Liu	Other Scholarly Work	Transposable Elements Could Help Resolve the Tree of Life	The Scientist	Exploing Life in spiring Innovation	2025
Dr. Simon Hellemans	Journal Article	Loss of pair formation predates the evolution of male-less society in termites	Evolution	Oxford Academic	2026
Dr Nobuaki Mizumoto	Journal Article	Diversification of pre-mating behaviours through temporal reordering of components.	Proceedings of the Royal Society	The Royal Society Publishing	2026
Dr Nobuaki Mizumoto	Journal Article	Observation of tandem running behavior in dealates of Asian dampwood termite, <i>Hodotermopsis sjostedti</i> .	<i>Journal of Ethology</i>	Springer Nature	2025
Mr. Wahei Hagiwara	Poster Presentation at Conference	18S rRNA-Based Phylogenetic Insights into Protists in the Termite Gut Microbiome	International Termite Course 2025, Florida (USA)		2025
Mr. Wahei Hagiwara	Poster Presentation at Conference	Phylogenetic analysis of Metamonad inside of gut from	Japanese Society of Microbiome Ecology 2025, Tokyo (Japan)		2025

Name of Unit Member	Type	Title	Outlet	Publisher	Year Pub
		"Lower Termite" using 18SrRNA based on metagenome			
Mr. Wahei Hagiwara	Poster Presentation at Conference	Global phylogenomic evidence for long-term co-evolution between termites and their gut protists	Japan Symbiosis Society 2025, Okinawa (Japan)		2025
Mr. Cong Liu	Poster Presentation at Conference	The Diversity and Evolution of Transposons in Termite Genomes	Annual Meeting of the Society for Molecular Biology & Evolution (SMBE 2025), Beijing, China.		2025
Dr. Simon Hellemans	Presentation at Conference	Testing the inbreeding hypothesis of neo-sex-chromosome evolution	56th Annual Conference of the Australian Entomological Society (AES25)		2025
Ms.Zhuli Cheng	Presentation at Conference	Relaxed selection led to convergent gene losses in Blattabacterium	SMBE 2025 Annual meeting of the society for molecular biology and evolution		2025
Mr. Cong Liu	Presentation at Conference	The Evolution of Horizontal Gene Transfers in Termites	Wolbachia 2025		2025
Dr. Cedric Aumont (JSPS Researcher)	Presentation at Conference	Investigating the genetic evolution of termite eusocial behaviour	Congress of Animal Behaviour and Ecology 2026		2026
Dr. Cedric Aumont (JSPS Researcher)	Presentation at Conference	Combining ecology, genomics and ontogeny to define sociality in termites	PRTRG		2026
Dr. Yi-Ming Weng (Post Doc)	Presentation at Conference	Long-distance dispersal and hybridization of the sympatric Neotropical termites <i>Nasutitermes corniger</i> and <i>N. ephratae</i>	Congress of Animal Behaviour and Ecology 2026		2026
Dr. Yi-Ming Weng	Presentation at Conference	The evolution of visual opsin genes in termites	Pacific Rim Termite Research Group Conference		2026
Ms.Zhuli Cheng	Presentation at Conference	Relaxed selection led to convergent gene losses in Blattabacterium	Wolbachia 2025		2025
Mr. Cong Liu	Presentation at Conference	Unraveling Termite Evolution with 47 high-resolution genome assemblies"	AsiaEvo2025, Kunming, Yunnan		2025
Mr. Cong Liu	Presentation at Conference	Two waves of transposon bursts associated with the diversification of termites	2025 International Termite Course, Florida, United States.		2025
Mr. Cong Liu	Seminars	Lecture in Molecular Evolution	Shenyang Agricultural University		2025

Honors, Awards & Fellowships

Term 1 2025 - Term 1 2025	JSPS Grant-in-aid for Challenging Research (Pioneering) (co-PI), 2025 [Fiscal Year: 2025-06-01]
Term 1 2025 - Term 1 2025	JSPS Grant-in-aid for Scientific Research (B) (Kakenhi) (co-PI), 2025 [Fiscal Year: 2025-07-01]

Honors, Awards & Fellowships [By Unit Members Only]

Term 2 2026 - Term 2 2026	Dr. Cedric Aumont (JSPS Researcher), Investigating the genetic evolution of termite eusocial behaviour, シロアリの社会性行動における遺伝的進化の解明, 2026, Congress of Animal Behaviour and Ecology, 口頭発表、佳作 [Fiscal Year: 2026-01-26]
Term 1 2025 - Term 1 2025	Mr. Wahei Hagiwara (PhD student: Project Leader), MAMORI: Modular Agricultural Monitoring for On-Site Rapid Pest Identification, DNA 検出キット“MAMORI”と農業への応用, 2025, iGem, 沖縄初の iGEM チームは、フランス・パリで開催された iGEM Grand Jamboree 2025 での成果を地域社会と共有いたします。本イベントは、沖縄県および沖縄銀行の後援を受けて開催され、DNA 検出技術を活用した害虫検出の仕組みとその農業への応用をご紹介します。農家、自治体、教育機関、企業、メディアの皆様とともに建設的な意見交換の場を設けます。 [Fiscal Year: 2025-11-25]

Outreach Activities [For Unit Members Only]

Term 2 2026	Dr. Cedric Aumont, The beauty of cockroaches and termites, OIST [Fiscal Year: 2026-02-14]
Term 2 2026	Dr. Yi-Ming Weng, The beautiful colors of insects, OIST [Fiscal Year: 2026-02-14]

Workshops and Seminars [Organized and Hosted by Faculty/Units]

Speaker Name(s)	Title	Location	Date
Mr. Mathieu Boderau	Rocks instead of clocks: Bayesian modelling of the fossil record enlightens the diversification and extinction of Hemiptera in deep time	OIST	2026-02-25
Prof. Dr. Chisaki Kitajima	Design of Deployable Structures Based on Geometry and Biomimetics	OIST	2026-01-26
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. Takema Fukatsu National Institute of Advanced Industrial Science and Technology (AIST)	The 12th International Wolbachia Conference	OIST	2025-04-13
Prof. Dr. Alma Mohagan	Preserving Nature's Treasures: Biodiversity Conservation, Species Discoveries, and World Heritage Nomination in Mindanao	OIST(C700)	2025-01-22