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Yannick Wurm

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Organismal Biology
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My lab examines the interplay between social evolution and genome evolution. In particular, we use genomics and big data approaches to characterize genes involved in behavioral decisions, caste-specific developmental fates, and environmental challenges in ants and other insects. We additionally create innovative bioinformatics tools for genomics work.

2014- SENIOR LECTURER IN BIOINFORMATICS, Queen Mary University of London (QMUL)
2012-2014 LECTURER IN BIOINFORMATICS, Queen Mary University of London
2010-2011 POSTDOCTORAL with L. Keller, Dept. Ecology & Evolution, U Lausanne &
EMBEDDED BIOINFORMATICIAN with I. Xenarios, Vital-IT, Swiss Institute of Bioinformatics (SIB)
2006-2009 MEMBER OF SIB PHD TRAINING NETWORK
2005-2009 PHD: SOCIOGENETICS OF FIRE ANTS with L. Keller, Dept. Ecology & Evolution, U Lausanne
2004 RESEARCH TRAINEE (6 MONTHS) with R. Roy, Biology Dept., McGill, Montreal
2003 JUNIOR SOFTWARE DEVELOPER (6 MONTHS) with N. Zinovieff, Krugazor Software, Paris
1999-2004 BIOINFORMATICS & MODELING (MASTERS); Natl. Institute of Applied Sciences, INSA Lyon
1999 SCIENTIFIC BACCALAUREATE (BIOLOGY & MATH) Cité Scolaire Internationale de Lyon
Residence: France (10 years; citizen); Germany (4 years; citizen), USA (9 years), Switzerland (7 years),
Indonesia (1 year), Quebec (9 months); UK (since 2012).

DISTINCTIONS & GRANTS

2015 QMUL innovation fund - crowdsourcing gene curation (8,000 £).
2015-2017 FP7 Marie Curie Fellowship Host (221,606.40 €).
2014-2017 Science without Borders Phd Scholarship host (\$78,046).
2014-2017 NERC grant (520,313£ Full economic cost to QMUL).
2014-15 NERC Big Data Capital Call (local co-I with R. Nichols; 85,000 £ to QMUL).
2014 QMUL VP-research fund (Wurm et al (with 12 others) 45,000 £).
2014 Queen Mary Faculty of Science & Engineering Research Performance Award.
2013 Google Summer of Code (GSoC) with A. Priyam and MA. Dragan (\$5,500).
2013-14 NEScent Working Group. Building non-model species genome curation
communities (with A. Papanicolaou & M. Muñoz-Torres; \$50,000).
2012-14 BBSRC sTDRF. Genome Annotation for the Masses (148,136£ Full economic cost).
2011 NERC BioMolecular Analysis Facility proposal NBAF627 with RL. Hammond (5,656 £)
2011 Society for Molecular Biology & Evolution Postdoc travel award (\$2,500).
2010 PhD award: Prix de la faculté de l'Université de Lausanne (1,000 CHF).
2009 Infectigen: Ultra-high throughput sequencing for discovery & characterization of viral genomes
in fire ants. With E. Zdobnov, L. Keller, D. Shoemaker, S. Valles (100,000 CHF).
2008 Swiss Zoological Society & Fondation du 450^{ième} grants to attend
International Congress of Entomology (3,500 CHF).
2008 Ecogenics innovation award for oral communication at Biology08 (400 CHF).
2004 Région Rhône-Alpes and Office Franco-Québécois de la Jeunesse to
visit Prof. Richard Roy's laboratory at McGill (2,800€).
2002 Apple WorldWide Developer Conference Scholarship (San Jose; \$1,600).
1999 Scientific baccalaureate honors: "Mention Bien."

MEDIA COVERAGE Social insects are media-friendly. See <http://wurmlab.github.io/pressCoverage/>

REVIEWER for BBSRC, Research Foundation Flanders, Nature Communications, Proc B, Genome Biol, Mol Ecol, Mol Biol Evol, Bioinformatics, BMC Evol Biol, BMC Genomics, Insect Mol Biol, Nucl Acids Res, Bull Insectol, Insectes Sociaux, PLoS One, Curr Zool, iConcept Press, Herdity, Nature Scientific Reports. Guest editor for special edition on non-model organisms Briefings in Functional Genomics.

ADDITIONAL RESPONSIBILITIES

Supervision/line management: postdocs (E Stolle, J Colgan); PhD students (R Pracana, B Vieira, L Santiago, N Araujo (shared)); Sysadmin, software developer (A Priyam), five 3rd year project students; **PhD panel** of: S Dodsworth, S Bailey, L Sollars, J Zohren, D Radcliffe, S Saha. **Advisor** to ~30 undergraduate students. **Chair** of QMUL School of Biology web committee; **Member**, QMUL High Performance Computing steering group; **Teaching** (Year 1 Evolution, Year 3 Ecological & Evolutionary Genomics, Year 3 Research Methods, MSc Bioinformatics for genomics). **Leading** <http://antgenomes.org> and <http://sequenceserver.com>. Previously: 3 Bioinformaticians: (O Riba-Grognuz, F Ricci, M Bota, B Vieira), 3 Lab technicians (C LaMendola, C Stoffel, N Tzaud), 3 Masters students (S Buechel, P Siguier, H Darras).

INVITED ORAL PRESENTATIONS

2014/12/11	U Helsinki, Finland	2012/01/20	European Course on Comparative Genomics, ENS Lyon
2014/12/8	Oulu, Finland	2011/07/31	Laboratory of Insect Ecology, Okayama
2014/05/28	Balti & Bioinformatics, Birmingham U	2011/06/29	Social Insect Genomics Conf, Shenzhen
2013/11/25	Sheffield University	2011/05/06	Communication in Social Insects, Taipei
2013/09/05	Cream Teas & Bioinformatics, Exeter	2011/04/11	Laboratoire de Biométrie et Biologie Évolutive, Lyon
2013/04/11	Sussex University	2011/03/31	Les Doctoriales, Lausanne
2013/03/19	Bristol University	2011/03/29	UCL Genetics Ecology & Environment
2013/03/15	Institut Jacques Monod, Paris	2010/10/31	Jakarta Ruby Brigade, Indonesia
2013/03/13	UCL Genetics, Evolution & Environment	2010/08/31	RAD sequencing meeting, Edinburgh
2013/01/17	Zoologisches Kolloquium, U Regensburg	2009/01/15	Past, Present & Future of Ant Genomics, Arizona State University
2012/11/05	UCL MRes BEC	2008/12/01	Interaction Seminar, Zurich
2012/09/06	EurBee 5, Halle an der Saale	2008/10/23	Symposium of Ecology and Evolution
2012/06/18	SIB workshop on Evolutionary & Ecological Genomics, Adelboden		Doctoral Students, Lausanne

PUBLICATIONS (°corresponding authorship; *equal contributions)

- soon Dragan, Moghul, Bustos, Priyam, Wurm°. **GeneValidator: identify problems with gene predictions.**
- soon Priyam, Woodcroft, Rai, Wurm°. **SequenceServer: BLAST searching made easy.** <http://sequenceserver.com>
- 2015 Nygaard* & Wurm*. **Ant genomics: challenges to overcome and opportunities to seize.** Myrmecological News 21:59-72.
- 2014 Buechel*, Wurm*, Keller. **Social chromosome variants differentially affect queen determination and the survival of workers in the fire ant *Solenopsis invicta*.** Molecular Ecology 23:5117-27.
- 2014 16 authors (including Wurm). **Transposable element islands facilitate adaptation to novel environments in an invasive species.** Nature Communications 5:5495.
- 2014 Nipitwattanaphon, Wang, Ross, Riba-Grognuz, Wurm, Khurewathanakul, Keller. **Effects of ploidy and sex-locus genotype on gene expression patterns in the fire ant *Solenopsis invicta*.** Proceedings of the Royal Society B 281:20141776.
- 2014 Purcell, Brelsford, Wurm, Perrin, Chapuisat. **Convergent genetic architecture underlies social organization in ants.** Current Biology 24:2728–2732.
- 2013 Wang*, Wurm*, Nipitwattanaphon, Riba-Grognuz, Huang, Shoemaker, and Keller°. **A Y-like social chromosome causes alternative social organization in fire ants.** Nature 493: 664-68.
- 2013 Valles°, Shoemaker, Wurm, Strong, Varone, Becnel, Shirk. **Discovery & molecular characterization of an ambisense densovirus from South American populations of *Solenopsis invicta*.** Biological Control 67:431-39.
- 2013 Corona, Libbrecht, Wurm, Riba-Grognuz, Studer, Keller°. **Vitellogenin underwent subfunctionalization to acquire caste and behavioral specific expression in the harvester ant *Pogonomyrmex barbatus*.** PLoS Genetics 9:e1003730.
- 2013 Manfredini, Riba-Grognuz, Wurm, Keller, Shoemaker, Grozinger°. **Sociogenomics of cooperation and conflict during colony foundation in the fire ant *Solenopsis invicta*.** PLoS Genetics 9:e1003633.
- 2013 38 authors (incl. Wurm). **Social insect genomes exhibit dramatic evolution in gene composition and regulation while preserving regulatory features linked to sociality.** Genome Research 23:1235-1247.
- 2013 Privman, Wurm°, Keller°. **Duplication and concerted evolution in a master sex determiner under balancing selection.** Proceedings of the Royal Society B 280:20122968.
- 2013 Kulmuni°, Wurm, Pamilo. **Comparative genomics of chemosensory protein genes reveals rapid evolution and positive selection in ant-specific duplicates.** Heredity 110:538-547.
- 2012 Ingram°, Kutowski, Wurm, Shoemaker, Meier, Bloch. **The molecular clockwork of the fire ant *Solenopsis invicta*.** PLoS One 7:e45715.
- 2012 Chittka, Wurm, Chittka. **Epigenetics: The making of ant castes.** Current Biology 22:R835-8.
- 2012 Gadau°, Helmkamp, Nygaard, Roux, Simola, Smith, Suen, Wurm, Smith. **The genomic impact of 100 million years of social evolution in seven ant species.** Trends in Genetics 28:14-21 [cover photo].
- 2011 Riba-Grognuz°, Keller, Falquet, Xenarios, Wurm°. **Visualization and quality assessment of *de novo* genome assemblies.** Bioinformatics, 27:3425-26.
- 2011 Hunt, Ometto, Wurm, Shoemaker, Yi, Keller, Goodisman°. **Relaxed selection is a precursor to the evolution of phenotypic plasticity.** PNAS 108:15936-41.
- 2011 Nygaard°, Zhang, Schiøtt, Li, Wurm, and 11 additional authors including Boomsma). **The genome of the leaf-cutting ant *Acromyrmex echinatior* suggests key adaptations to advanced social life and fungus farming.** Genome Research 21:1339-48.
- 2011 Wurm°. **Behind the scenes of an ant genome project.** Formosan Entomologist, 31:149-56.
- 2011 Wurm° et al (38 authors). **The genome of the fire ant *Solenopsis invicta*.** PNAS, 108:5679-84.
- 2011 Gotzek, Robertson, Wurm, Shoemaker. **Odorant binding proteins of the Red Imported Fire Ant, *Solenopsis invicta*: An example of the problems facing the analysis of widely divergent proteins.** PLoS ONE 6: e16289.
- 2010 Wurm°, Keller. **Parasitoid Wasps: From natural history to genomic studies.** Current Biology 20:R242-4.
- 2010 Wurm°, Wang, Keller. **Changes in reproductive roles are associated with changes in gene expression in fire ant queens.** Molecular Ecology 19:1200-11.
- 2009 Wurm°, Uva, Ricci, Wang, Jemielity, Iseli, Falquet, Keller. **Fourmidable: a database for ant genomics.** BMC Genomics 10(5):5.
- 2007 Wang, Jemielity, Uva, Wurm, Gräff, Keller. **An annotated cDNA library and microarray for large-scale gene-expression studies in the ant *Solenopsis invicta*.** Genome Biology 8:R9.
- 2007 Wurm, Wang, Keller. **Behavioral genomics: A, bee, C, G, T.** Current Biology 17:R51-3.
- 2005 Zerlin, Greiffenberg, Wurm, Winkler, Kreusel, Toemoe, Ballabas, Martin. **Cryostock, a software for cell culture management.** ESACT Proceedings: Animal Cell Technology Meets Genomics. 397-400.