

Thomas Harrop

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I am a senior post-doctoral researcher with a background in bioinformatics, genetics and molecular biology and interests in data science and research relating to agriculture. I mainly work with R, Python and shell scripts. I have experience in molecular, plant, animal and medical laboratories and installing, maintaining and using computers running Unix, Linux and MacOS.

Personal information

Nationalities Australian and British

Research My research interests include plant and insect research related to agronomy, tools and techniques in bioinformatics and evolutionary and comparative biology.

Technical Aside from daily use of R, Python and bash scripts, I also use Markdown regularly and have experience with TeX, html and css.

I use git and GitHub for version control and strive to follow the principles of reproducible research when coding.

I have used several different workload managers for high-performance computing (HPC) including SGE and LSF and maintain an installation of SLURM on my own workstation.

I have built and used workstations and servers that run MacOS, Ubuntu and FreeBSD, and run jobs in HPC environments running Debian and CentOS.

I have skills in molecular biology techniques including quantitative real-time PCR, cloning, nucleic acid extraction and cDNA library preparation, as well as classical genetic approaches with live organisms, such as transformation, crosses, microdissection and bioassays.

Languages English (native), German (TELC Level B2) and French (TELC Level B1)

About me Outside work I enjoy building and riding bicycles, social football and basketball, cooking, programming and technology.

Education

2006–2012 **Doctor of Philosophy**, Department of Genetics, the University of Melbourne, Parkville, Australia.

Thesis: [*The functions of cytochrome P450s in Drosophila.*](#)

During my Ph.D. I used classical genetics and modern molecular biology, including transgenic manipulation of gene expression and comparative studies of gene function, to investigate the functions of cytochrome P450 genes in the Drosophila genus.

2002–2005 **Bachelor of Science with Honours (first class)**, the University of Melbourne, Parkville, Australia.

Awards **2006–2009**, Australian Postgraduate Award

Experience

Research positions

- 2014–Present** **Post-doctoral researcher**, UMR DIADE, Institut de Recherche pour le Développement (IRD), Montpellier, France.
I am using machine learning, data mining, statistical analyses and other bioinformatic techniques to study the development of inflorescence architecture in rice, which is related to crop yield. We used laser microdissection and RNA sequencing to characterise molecular events that occur in the developing inflorescence. We are now applying these results to study the effects of selection on gene expression during the parallel domestications of African and Asian rice.
- 2013–2014** **Post-doctoral researcher**, Department of Plant Breeding and Genetics, Max Planck Institute for Plant Breeding Research, Cologne, Germany.
At the Max Planck Institute I worked on a bioinformatic and molecular biology project to compare the transcriptional response of several different land plants to UV-B exposure, which acts as an environmental signal.

Professional positions

- 2004–2007** **Medical scientist**, Network Pathology, the Austin Hospital, Heidelberg, Australia.
- 2001–2004** **Laboratory assistant**, Network Pathology, the Austin Hospital, Heidelberg, Australia.

Teaching

- 2007–2011** **3rd Year Genetics**, Department of Genetics, The University of Melbourne, Parkville, Australia.
- 2006–2009** **High School Biology**, Department of Genetics, The University of Melbourne, Parkville, Australia.
- 2006–2008** **High School Biology**, Gene Technology Access Centre, The University High School, Parkville, Australia.
- 2005–2008** **1st Year Genetics**, The University of Melbourne, Parkville, Australia.

Students co-supervised

- Swarit Jaisal** **Master of Science**, Life Science Informatics, Universität Bonn, Germany.
- Axel Verdier** **Master of Science**, Sciences et Technologies de l'Information et de la Communication pour la Santé, Université de Montpellier, France.

Publications

Peer-reviewed journals

- Harrop, T.W.R.[§], Ud Din, I.[§], Gregis, V., Osnato, M., Jouannic, S., Adam, H. and Kater, M. (2016).** Gene expression profiling of reproductive meristem types in early rice inflorescences by laser microdissection. The Plant Journal 86, 75–88. [doi:10.1111/tpj.13147](https://doi.org/10.1111/tpj.13147).

Harrop, T.W.R.[§], Pearce, S.L.[§], Daborn, P.J. and Batterham, P. (2014). Whole-genome expression analysis in the third instar larval midgut of *Drosophila melanogaster*. *G3 (Bethesda)* 4, 2197–2205. [doi:10.1534/g3.114.013870](https://doi.org/10.1534/g3.114.013870).

Harrop, T.W.R., Sztal, T., Lumb, C., Good, R.T., Daborn, P.J., Batterham, P. and Chung, H. (2014). Evolutionary changes in gene expression, coding sequence and copy-number at the *Cyp6g1* locus contribute to resistance to multiple insecticides in *Drosophila*. *Plos One* 9, e84879. [doi:10.1371/journal.pone.0084879](https://doi.org/10.1371/journal.pone.0084879).

Daborn, P.J., Lumb, C., **Harrop, T.W.R.**, Blasetti, A., Pasricha, S., Morin, S., Mitchell, S.N., Donnelly, M.J., Müller, P. and Batterham, P., (2012). Using *Drosophila melanogaster* to validate metabolism-based insecticide resistance from insect pests. *Insect Biochemistry and Molecular Biology* 42, 918–924. [doi:10.1016/j.ibmb.2012.09.003](https://doi.org/10.1016/j.ibmb.2012.09.003).

[§] Equal contribution

Selected scientific presentations

Harrop, T.W.R. Gene expression during *O. sativa* panicle development. Invited seminar, 19 November 2015, LMI RICE, Hanoi, Vietnam.

Harrop, T.W.R., Gregis, V., Ud Din, I., Kater, M., Jouannic, S. and Adam, H. *Molecular mechanisms underlying the phenotypic convergence of inflorescence architecture in domesticated rice species*. Society for Molecular Biology and Evolution annual meeting, 2015, Vienna, Austria

Harrop, T.W.R., Ud Din, I., Gregis, V., Osnato, M., Jouannic, S., Adam, H. and Kater, M. *Transcriptomic analysis of early developmental stages of the rice panicle*. Workshop in Molecular Mechanisms Controlling Flowering, 2015, Aiguablava, Spain.

Harrop, T.W.R., Batterham, P. and Daborn, P.J. *RNA interference of the Cytochrome P450 redox partners Cpr and dare uncovers novel P450 functions in Drosophila melanogaster*. The 50th Annual Drosophila Research Conference, 2009, Chicago, USA.

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