

CURRICULUM VITAE

DR KYLIE MAE CAIRNS

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TERTIARY EDUCATION

Institution: The University of New South Wales (Australia)
Qualification: **PhD Candidate (Biochemistry and Molecular Genetics)**
Thesis title: Population differentiation in the dingo: biogeography and molecular ecology of the Australian Native Dog using maternal, paternal and autosomal genetic markers
Supervisors: Professor J. W. O. Ballard, A/Professor A. N. Wilton (deceased) and Dr P. Waters
Awarded: 18 February 2015

Institution: The University of New South Wales (Australia)
Qualification: **B. Sc. Hons (Biology and Genetics), 1st class**
Thesis title: Evidence of recent population expansion in the field cricket *Teleogryllus commodus*
Supervisors: Professor J. W. O. Ballard and Professor R. C. Brooks
Completion: 2009

TECHNICAL SKILLS

- DNA extraction, amplification and preparation for Quantitative and Digital PCR and Sanger and Next Generation sequencing
 - Library Preparation for a range of Illumina platforms including:
 - Nextera and Nextera XT
 - TruSeq Nano, DNA and RNA
- Bioinformatic and population genetic analysis of DNA sequence data
 - Experience with mtDNA, Y-Chromosome, autosomal and whole genome SNP markers
 - Population genetics analysis using ADMIXTURE, Structure, Arelequin, DNAsp, R and other software
 - Phylogenetic analysis of DNA sequences using BEAST, PAUP and RAxml
 - Bioinformatic analysis of Whole Genome SNP arrays, specifically with PLINK
- Proficiency in report and research manuscript writing; including communication of results to public persons and stakeholders
- Dingo ancestry estimation using the Wilton “Dingo DNA Test” methodology

RESEARCH AND EMPLOYMENT HISTORY

Institution: Centre for Ecosystem Science, **The University of New South Wales (Australia), School of Biological, Earth and Environmental Sciences**

Position: Adjunct Associate Lecturer
Start date: July 2017
End date: Current

- Planning, facilitating and directing scientific research concerning the molecular biology and genetics of dingoes. Specific focus on conservation genetics, origins and hybridisation.
- Developing a new, high-throughput, reliable and accurate DNA test for hybridisation in dingoes; building upon my past experience with the 'Wilton' dingo DNA test.
- Scientific and public outreach activities concerning past and present research projects.

Institution: **Australian Dingo Foundation**
Position: Molecular Biology and Genetics Consultant
Start date: June 2017
End date: Current

- Advising the Australian Dingo Foundation on captive breeding programs using genetics data and research.
- Planning, facilitating and directing scientific research concerning the molecular biology and genetics of dingoes. Specific focus on conservation genetics, origins and hybridisation.
- Liaising and discussing research and genetic testing outcomes with ADF directors and external researchers.
- Public outreach activities such as presenting research talks to ADF members or the public and contributing to media engagement.

Institution: **Ramaciotti Centre for Genome Analysis, The University of New South Wales (Australia), School of Biotechnology and Biomolecular Sciences**
Position: Research assistant
Start date: August 2014
End date: April 2016

- Highly methodical and organised member of a productive team
- Responsible of preparing and managing laboratory reagents, biological samples and materials for Next Generation Sequencing
- Responsible for library preparation for Next Generation Sequencing
- Management of H&S documentation, including writing and implementation of Risk Assessments and Safe Operating Procedures
- Liaising and discussing research experiments and outcomes with researchers and customers

Institution: **The University of New South Wales (Australia), School of Biotechnology and Biomolecular Sciences**
Position: Dingo Genetics Testing
Start date: November 2011
End date: August 2014

- Optimisation of DNA extraction and PCR amplification techniques on animal tissues, blood samples, FTA preserved blood spots and buccal swabs
- Analysis of microsatellite data to estimate percentage of dingo/dog ancestry in canine samples and other population based genetics questions
- Experience with ABI's Genemapper software and structure

- Involved in all aspects of customer service including processing of payments and customer liaising
- Responsible for the communication of results to customers, public persons, conservation groups and government departments

Institution: **The University of New South Wales (Australia), School of Biotechnology and Biomolecular Sciences**

Position: Postgraduate demonstrator

Start date: February 2010

End date: June 2010

- Responsible for demonstration, training and supervision of practical laboratory work for 1st year BSc undergraduates

Institution: **The University of New South Wales (Australia), School of Biotechnology and Biomolecular Sciences**

Position: Postgraduate student

Start date: February 2010

End date: August 2014

- Responsible and organised member of a research laboratory
- Involved in co-writing research grants, including writing progress reports for funded projects.
- Carried out research for the fulfilment of a PhD thesis; this included DNA extraction, PCR amplification, DNA sequencing and analysis of genetic data from a range of DNA markers including microsatellites, mtDNA, Y-chromosome, autosomal and whole genome SNP arrays.
- Collaborating with international and national colleagues, liaising with conservation groups and government departments to progress research goals.
- Preparation of manuscripts for publication in collaboration with colleagues.
- Management of H&S documentation, including writing and implementation of Risk Assessments and Safe Operating Procedures.

CAREER BREAKS

August 2013 - January 2014: Maternity leave (6 months)

April 2016 – June 2017: Extended career break for family reasons including maternity leave.

FUNDING

- Ballard JWO, Wilton AN and **Cairns KM**. Did Dingoes colonise Australia once or were there multiple introductions with seafaring traders? Hermon Slade Foundation, HSF11/6, July 2011 - July 2014, \$26,900

PUBLICATIONS

JOURNALS

- **Cairns KM**, Brown SK, Sacks BN and Ballard JWO (A2017) Conservation implications for dingoes from the maternal and paternal genome: multiple populations, dog introgression and demography. *Ecology and Evolution* 23: 9787:9807.

- O'Neill AJ, Cairns KM, Kaplan G and Ernest Healy E (2016) Managing dingoes on Fraser Island: culling, conflict, and an alternative. *Pacific Conservation Biology*, 2016, 23, 1–11
- Cairns KM, Wilton AN (2016) New insights on the history of canids in Oceania based on mitochondrial and nuclear data. *Genetica*: 1-13 doi:10.1007/s10709-016-9924-z
- Arendt M, Cairns KM, Ballard JWO, Savolainen P, Axelsson E (2016) Diet adaptation in dog reflects spread of prehistoric agriculture. *Heredity* doi:10.1038/hdy.2016.48
- Cairns KM, Wolff JN, Brooks RC, Ballard JWO (2010) Evidence of recent population expansion in the field cricket *Teleogryllus commodus*. *Aust J Zool* 58:33-38 doi:doi:10.1071/ZO09118

BOOKS AND BOOK CHAPTERS

- Cairns KM, Wilton AN, Ballard JWO (2011) The identification of dingoes in a background of hybrids. In: Urbano KV (ed) *Advances in genetics research*. Nova Science Publishers, New York, pp 309–327

CONFERENCES

PLENARY PRESENTATIONS

- Cairns, K.M., Wilton, A.N., Ballard, J.W.O. Whole mitochondrial genome data suggests that dingoes immigrated into Australia at least twice from the Oceanic continent of Sahul (Oral). Genetics Society of Australasia. Melbourne. 2012

ORAL PRESENTATIONS AND POSTERS

- Cairns, K.M., Wilton, A.N., Ballard, J.W.O. New insights on the history of dogs in Oceania based on whole mitochondrial genome and autosomal data (Oral). Genetics Society of Australasia. Sydney. 2013
- Cairns, K.M., Wilton, A.N., Ballard, J.W.O. Population genetics of the top-level Australian carnivore: Is there genetic subdivision between dingo populations? (Poster). Australasian Vertebrate Pest conference. Sydney. 2011

OTHER CONTRIBUTIONS

- **Co-secretary**. Organising committee of the 2013 GSA conference. Sydney, Australia. 2013
- **Scientific Advisor**. New Guinea Highland Wild Dog Foundation. 2011- current
- **Scientific Advisor**. New Guinea Singing Dog Conservation Society. 2017- current

SCHOLARSHIPS AND AWARDS

- Australian Postgraduate Award (APA). Australia. 2010-2014
- Faculty of Science Maternity Leave Scholarship. 2013
- Postgraduate Research Student Support- Conference travel Scholarship. Australia. 2012
- BABS PhD Scholarship Supplement. 2011

PROFESSIONAL MEMBERSHIPS

Member of the Genetics Society of Australasia, 2011-2013

PROFESSIONAL OUTREACH

Various scientific talks to public persons to communicate the results of PhD research:

- March 2011 at the Bargo Dingo Sanctuary AGM
- March 2012 to representatives of the Bargo Dingo Sanctuary at UNSW
- November 2014 to WIRES (East branch, Sydney, NSW)

Interviews with journalists resulting in media publications