Ancient DNA, Molecular Ecology, Conservation Genetics and Forensics
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**Project: Conservation genetics of dingos**
Dingoes were introduced to Australia around 3000 years ago and have become an important "naturalised" predator in many areas. Since European arrival they have suffered persecution from humans and hybridisation with introduced feral dogs. This project will investigate two aspects of dingo conservation genetics - defining the genetic makeup of pure dingoes prior to European arrival and investigating the genetic status of a captive dingo population at Arid Recovery. The project will use ancient DNA techniques to access mitochondrial DNA from sub-fossil bones and skins of dingoes that pre-date or immediately post-date European arrival, and next generation sequencing techniques to assess the genetic status of the captive dingo population (derived from a very small number of founders). Potential applicants should have a background in molecular biology/ecology, population genetics, or evolutionary biology, and have strong self-motivation, time management, and writing skills.

**Project: Phylogeography and conservation genetics of southern Australian birds**
Several species of birds have a disjunct distribution across southern Australia, with a population in SW Western Australia isolated from populations in south-eastern Australia via the Nullabor Plain. We have mitochondrial DNA data from two such species that are threatened in parts or all of their range - the Eastern and Western groundparrots (*Pezoporus sp.*) and the western whipbird (*Psophodes nigrogularis*). This project will investigate divergence at nuclear genes to assess relative levels of genetic diversity in western and eastern populations, and to examine the timing and magnitude of divergence across the Nullabor barrier. Potential applicants should have a background in molecular biology/ecology, population genetics, or evolutionary biology, and have strong self-motivation, time management, and writing skills.

**Project: Developing a Y-chr SNP-typing Next Generation Sequencing platform for human identification**
Identifying the remains of Australia's war dead is a challenging task made more difficult by the passage of time, poor preservation of remains and the lack of suitable living relatives to provide reference DNA profiles. As part of ongoing identification work for the Australian Army, this project will develop and test a new hybridisation-capture approach for recovering Y-chromosome Single Nucleotide Polymorphism (SNP) data from reference and degraded DNA sources. The outcomes of this research will provide a new tool for the identification of Australian war dead dating to the First and Second World Wars. Potential applicants should have a background in molecular biology, forensics, or evolutionary biology, and have strong self-motivation, time management, and writing skills.

**Project: Conservation genetics of the northern hairy-nosed wombat**
The northern hairy-nosed wombat (*Lasiorhinus krefftii*) is Australia's rarest marsupial with fewer than 200 animals surviving in the wild. Successive Honours projects on this species have developed a new set of microsatellite markers to aid in non-
invasive population censuses, and assessed changes in genetic diversity in the sole remaining population over the last 30 years. This project will extend previous work by generating whole mitochondrial genomes from modern, recent and historical samples to fully assess the matrilineal make-up of surviving individuals and identify the severity of population bottlenecks occurring within this species. Potential applicants should have a background in molecular biology/ecology, population genetics, or evolutionary biology, and have strong self-motivation, time management, and writing skills.