



College of Public Health, Medical & Veterinary Sciences
Discipline of Biomedical Science
Gamete & Embryology (GAME) Lab

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**Novel appeasing pheromones to minimise stress & aggression,
& bolster reproductive & immune function in African wild dogs.**

African wild dogs are highly endangered, and have a complex pack structure with separate male and female dominance hierarchies in which reproduction is typically exclusive to the alpha male and female. Current efforts to maintain genetic diversity involve translocation of live animals in both captivity and the wild; a process that involves the combination of male and female single-sex groups to form a new social pack. Due to their complex social structure, such introductions are difficult; regularly leading to aggression and injuries to the animals.

We are investigating the use of dog appeasing pheromone (DAP) to down-regulate stress & aggression associated with the formation of new packs in captivity. Our initial findings indicate that DAP may reduce baseline stress levels in females and, when applied during regrouping of same-sex individuals, results in a relative reduction in observed levels of aggression. We are also currently determining whether DAP is a useful mitigation strategy during medical interventions on individual animals within existing packs, and have recently completed a series of trials across 5 US Zoos and *in situ* in Namibia.

We seek a dedicated, self-driven & highly motivated student to undertake a PhD project to isolate & test the effectiveness of several novel African wild dog-specific pheromones during pack formation in both captive & wild populations (Europe & Southern Africa). Research will involve: (i) mass spectrometry/gas chromatography for pheromone isolation; (ii) comprehensive behavioural observations of dominant/subdominant interactions and aggression in pheromone-treated African wild dogs; & (iii) non-invasive measurement of reproductive & stress hormones as well as immune markers to validate underlying beneficial physiological effects. This work forms part of a broader collaboration with the Research Institute in Semiochemistry & Applied Ethology (France), & the Wild Dog Advisory Group (South Africa), & is supported by the Morris Animal Foundation.

The prospective candidate will be required to apply for one of JCU's highly competitive PhD scholarships due ~31st August 2017 (international applicants) or 31st October 2017 (Australian domestic applicants) (<https://www.jcu.edu.au/graduate-research-school/candidates/scholarships>). If successful, the awardee should look to commence the project in January 2018. Applicants should have a 1st class Honours or MSc Research Degree in a related field, demonstrate Band 2 English language proficiency, and have preferably (co)authored at least one scientific publication. Only high calibre students will be considered.

Interested individuals should email a curriculum vitae (containing a list of publications, awards & referees), as well as an academic transcript of their highest degree to damien.paris@jcu.edu.au.

Relevant Publications

- Van den Berghe F, Paris MCJ, Sarnyai Z, Millar RP, Ganswindt A, Cozzi A, Pageat P, Paris DBBP (2017) Dog Appeasing Pheromone prevents the testosterone surge, and may reduce contact-dominance and active-submission behaviours after interventions in captive African wild dogs (*Lycaon pictus*). In 'European Association of Zoos and Aquaria Annual Conference'. Emmen, The Netherlands.
- Van den Berghe F, Paris DBBP, Briggs MB, Vander Weyde LK, Martin GB, Vlamings BHAC, Paris MCJ (2014) A Genetic Management Toolkit: Hormonal and behavioural research towards the development of artificial insemination technology in the African wild dog (*Lycaon pictus*). In 'African Painted Dog Conference'. Chicago, IL, USA p. 32.
- Van den Berghe F, Paris DBBP, Van Soom A, Rijsselaere T, Van der Weyde L, Bertschinger H, Paris MCJ (2012) Reproduction in the endangered African wild dog: Basic physiology, reproductive suppression and possible benefits of artificial insemination. *Animal Reproduction Science* **133**, 1-9.
- Vlamings BHAC (2011). Dog appeasing pheromone: A useful tool to minimize stress and aggression of African wild dogs (*Lycaon pictus*)? Universiteit Utrecht MSc. thesis pp. 1-54.