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# Programme Abstracts

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**MIGRATION EFFICIENCY OF PAIRED SPERM IN THE TRACT OF THE PERI-OVULATORY FEMALE GREY SHORT-TAILED OPOSSUM (*Monodelphis domestica*)**

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American marsupials are the only mammals known to ejaculate paired spermatozoa, which confer a motility advantage *in vitro* over single spermatozoa in viscous environments. In the only American marsupial examined, the Virginian opossum (Didelphidae), relatively low numbers of spermatozoa are ejaculated ( $10^6$ ), but transport is extremely efficient with  $\sim 1$  in 20 spermatozoa reaching the site of fertilization compared to  $\sim 1$  in 10,000 in the rabbit. This study examined the post-copulatory distribution and state (paired or single) of spermatozoa at various times in the female reproductive tract of another didelphid, the polyovular grey short-tailed opossum (*Monodelphis domestica*). After a single mating, the reproductive tracts of 19 females were dissected at 0.5 (n=4), 6 (n=4), 12 (n=3), 18 (n=3) and 24h (n=5) post coitum (p.c.). Each tract was dissected into 8 major anatomical sections and spermatozoa were recovered by flushing. Mating occurred  $5.4 \pm 0.4$ d (mean  $\pm$  SEM; n=19) after pairing, copulation lasted  $4.4 \pm 0.2$  min (n=18) and ovulation occurred 18.0 – 24.1h p.c. (n=5). Shortly after mating (0.5h p.c.) the tract contained  $1.2 \pm 0.2$ g of seminal gel (n=2) and  $2.0 \pm 1.3 \times 10^6$  spermatozoa (n=3; 38% of which were paired) found predominantly in the anterior vaginal *culs de sac*. A uterine sperm reservoir was never observed, but spermatozoa reached the isthmus and ampulla within 6 and 18h p.c. respectively. Paired spermatozoa localized almost exclusively in the isthmus from 6h p.c., and pairing decreased to only 4% of the total sperm population in the tract by the start of ovulation. In total  $\sim 1$  in 300 ejaculated spermatozoa ( $\sim 6.5 \times 10^3$ ; n=9) reached the oviduct. In conclusion, sperm pairing appears to confer effective colonization of the isthmus in *M. domestica* and, like the Virginian opossum, transport of spermatozoa is relatively efficient. Funded by a European Commission Marie Curie Incoming International Fellowship.