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## JOURNAL ARTICLE

# Maturation of epididymal spermatozoa in the nondomesticated guinea pigs *Cavia aperea* and *Galea musteloides*

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The physiological changes occurring in spermatozoa in the male reproductive tract of 2 nondomesticated species of South American guinea pigs with different mating systems were studied. *Cavia aperea*, the wild ancestor of the domesticated guinea pig, has a polygynous mating system, whereas *Galea musteloides* exhibits promiscuous mating behavior. The epididymis of both species resembled that of the domesticated guinea pig, with a swathe of tubule convolutions (linking the 2 major parts of the organ) that was of smaller size in *Cavia* but not *Galea*. Higher relative epididymal weight was demonstrated in the promiscuous species. During their journey through the epididymis, spermatozoa from *Galea* developed their potential for motility expression more proximally than did those of *Cavia*, but motility developed into forward progression in the same region in both species. The maximal velocities exhibited by mature *Cavia* sperm in vitro were greater than those of *Galea*. Spermatozoa from *Cavia* were twice the length of those from *Galea*, they had larger heads, and the acrosomes of single sperm were more sensitive to disruption during morphological preparation. Only in *Cavia* did agglutination of sperm into rouleaux occur, after the potential for motility had been developed. Migration of the cytoplasmic droplet along the midpiece occurred in the same regions in both species and before agglutination in *Cavia*. It is suggested that the male's reproductive strategy (polygyny vs promiscuity) dictates the size of the testis and epididymis, whereas the female's reproductive physiology (induced ovulation vs cyclicity) influences the posttesticular development of sperm morphology and motility in the epididymis.

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