

# Seasonal variations of the seminiferous tubules morphometry in domestic rams (*Ovis aries*)

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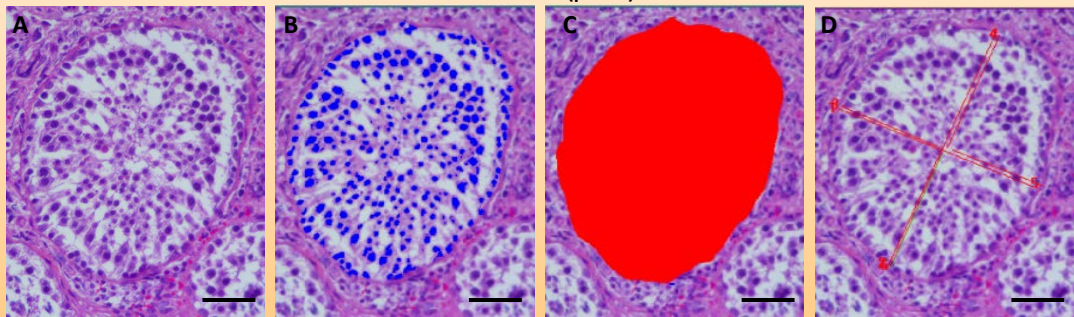
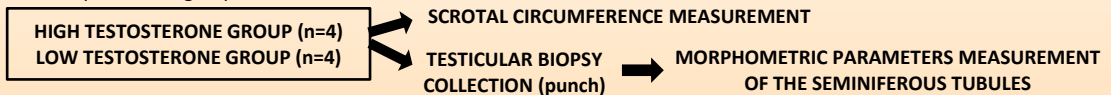
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**Introduction:** Small ruminants are seasonal breeding mammals that reproduce during a short period of time in the wild in order to have offspring at the optimal time of year. Domestic species are considered to have a less marked seasonality pattern since they have sexual activity throughout the year, however, they still have a seasonal pattern of testosterone secretion. Testosterone plays a crucial role in spermatogenesis that takes place inside the seminiferous tubules of the testis. Previous studies in rats showed a relationship between testosterone levels and the morphology of seminiferous tubules.

**Objective:** To study morphological changes of the seminiferous tubules and fluctuations on the scrotal circumference at two different moments of the year coinciding with high (July) and low (December) plasma testosterone concentrations (High Testosterone versus Low Testosterone groups) in domestic rams (*Ovis aries*).

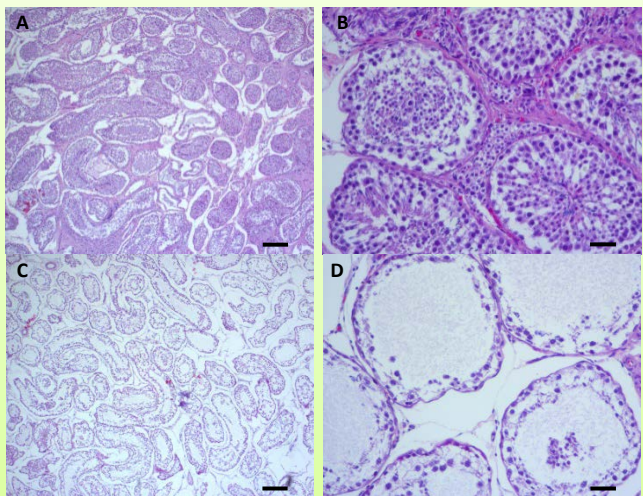
## Methodologies

Experimental groups:

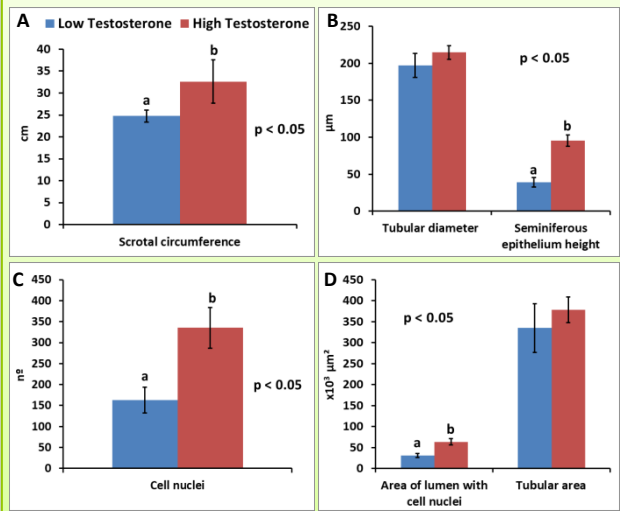


**Fig. 1:** Seminiferous tubule of ram testis (A). The number of cell nuclei (B), tubular area (C), tubular diameter and seminiferous epithelium height (D) were measured with the Leica QWinPro software (bar scale=50µm).

## Results



**Fig. 2:** Parenchyma of ram testis biopsied with high (A, B) and low (C, D) plasma testosterone concentration at 4x (left; bar scale=200µm) and 20x (right; bar scale=50µm) magnification. Sections were stained with haematoxylin and eosin.



**Fig. 3:** Scrotal circumference (A) and morphometric parameters of the seminiferous tubules (B, C, D) with high (red bars) and low (blue bars) plasma testosterone concentration. Different letters (a-b) indicate statistically significant differences.

**Discussion:** Although animal domestication has changed the sexual behaviour in domestic rams, there are still seasonal variations of the testis such as the involution of the seminiferous tubules that occurs with the fall of testosterone levels. Despite the fluctuation of cell density inside the seminiferous tubules between seasons, rams are able to maintain a high quality of fresh semen throughout the year. The higher cell density that was found inside the tubular lumen, could be related with a higher spermatogenesis activity prior to the natural breeding season of small ruminants during the autumn.

**Conclusion:** There was an effect of season on the seminiferous tubules morphometry of ram testis related with the fluctuations in the levels of testosterone throughout the year.

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