

REPRODUCTION IN DONKEYS

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INTRODUCTION

This is an overview of the practical aspects of male and female donkey reproduction. Where significant reproductive differences other than the obvious anatomical size exist between miniatures and larger donkeys, they are noted.



Figure 1: Miniature Donkey Jennet and Foal

REPRODUCTIVE ANATOMY

MALE ANATOMY

The genitalia of a full-size donkey is similar to that of the full-size horse. The testes of the donkey are relatively large for the size of the animal (Fig. 2). They are located in the scrotum and oriented vertically. The penis length of a miniature donkey is approximately 14-18 inches when fully erect, and thus a full-sized equine AV is used for semen collection. The testes and penis of larger sized donkeys are larger than that of comparably sized horses. Although the jack and the stallion have the same accessory sex glands, the ampulla is larger in the jack than in the stallion of comparable size.²



Figure 2: Miniature Donkey Testes and Erect Penis.

FEMALE ANATOMY

The vagina is approximately 14 inches long in the average miniature donkey. The cervix lies on the cranial vaginal floor and has a similar appearance to that of the horse with the exception that it often points upwards and is usually longer than that of the mare and with a smaller diameter.¹ A cardboard equine speculum (shortened by 6 inches) is used for vaginal exam of the miniature donkey (Fig. 3). Full length speculums may be used for larger donkeys. It is difficult to pass pipettes or catheters through a narrow speculum and into the cervix because of its location in the vagina so it is best to guide these instruments with a lubricated, gloved hand in the vagina if possible. The donkey uterine shape and size is similar to the standard size equine, even in miniatures.

Transrectal ultrasound examination is possible with a linear probe taped within a plastic extension (Fig. 4) in miniature donkeys when the arm is too large to be inserted through the anus. Ultrasound is useful to examine ovarian follicle size (Fig. 5) for estimation of the opportune time to breed, and then for detection of pregnancy starting at 16 days after breeding (Fig. 6).



Figure 3: Cardboard and Plastic Speculums Used in Donkeys.

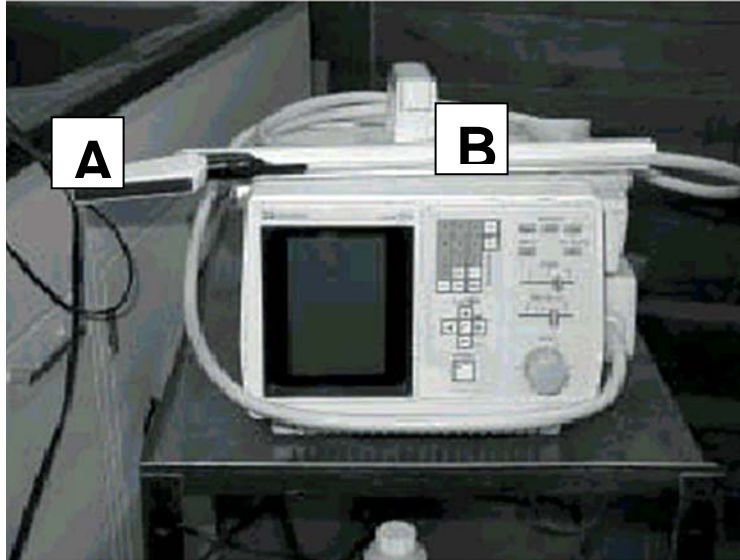


Figure 4: Ultrasound Equipment Used for Transrectal and Transabdominal Examinations of the Donkey Reproductive Tract. Note the 5 MHz Linear Probe (A) Used with 0.75" PVC Extension approximately 14" long (B) used for transrectal ultrasound examinations in donkeys. Note that the probe head and slot in the PVC would be covered with duct tape prior to lubrication and insertion into the rectum. The PVC extension may be left on while performing a *transabdominal* (through the abdomen) examination.

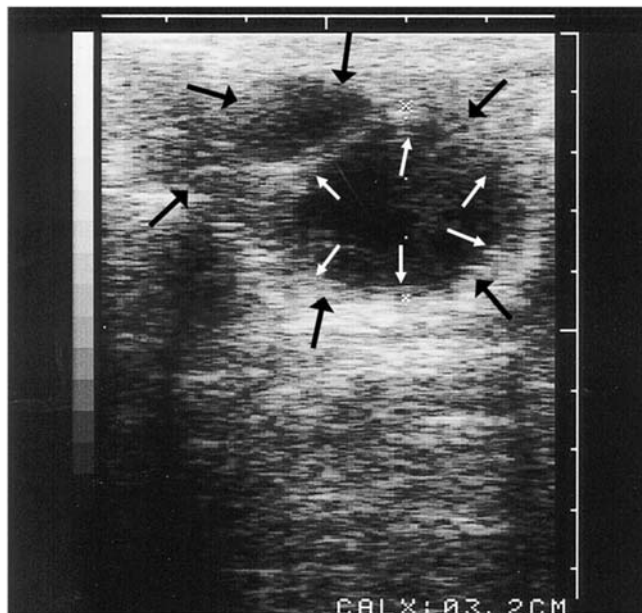


Figure 5: Ultrasound Image of Donkey Ovaries. Black arrows delineate border of the entire ovary. White arrows show borders of a 3.2 cm diameter ovulatory size follicle.

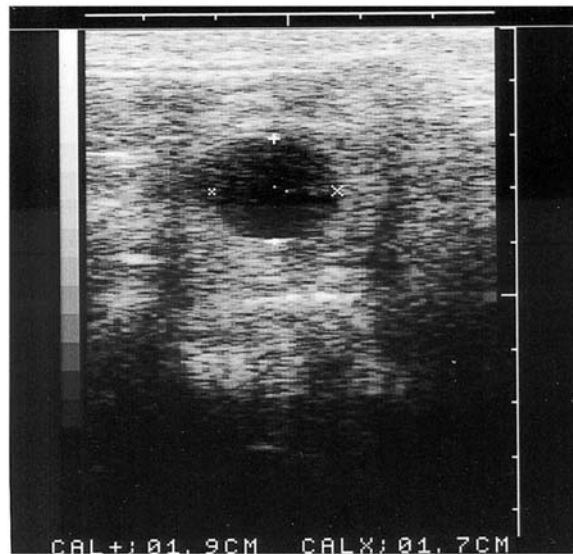


Figure 6: Eighteen Day Pregnancy Ultrasound in a Donkey. (+ and X marks indicate the area of the embryonic fluid.)

REPRODUCTIVE PHYSIOLOGY AND BEHAVIOR

ESTRUS CYCLE

The estrus cycle length in donkeys is 21-28 days, with the jennet sexually receptive for 5-10 days of this period. The ovulatory follicle size (Fig. 5) is similar to that in full-size equines and follicles > 25-30 mm in diameter should be considered potentially Ovulatory.¹ One miniature jennet I examined ovulated a 42 mm diameter follicle. The cervical appearance changes with the stage of the estrus cycle, relaxing during estrus, which is accompanied with an increase in vaginal mucous secretions. Jennets may cycle throughout the winter.

REPRODUCTIVE BEHAVIOR

A jennet often shows her first heat at 8-12 months of age. Female receptivity is evidenced by the jennet backing up to the jack and making jawing motions with the mouth (Fig. 7). Jennets in estrus will kick a jack in the chest (and face if the jack is not careful) for several minutes when receptive (Fig. 8). This behavior is required for the jack to achieve full erection. Receptive jennets also squat, wink the vulva, and urinate in the presence of the jack. A receptive jennet may also raise her tail when approached by a jack. Jennets mount each other on occasion, with the estrus jennet on the bottom. Some jennets do not show receptivity when there is no jack present, when nursing a foal, or when another female interferes with the advances of the jack.

A jack pursues a jennet in estrus, sometimes very aggressively, and especially when first introduced. He may bite the neck, back, and hind legs and even draw blood. As a consequence, some jacks have to wear a breeding muzzle to avoid injury to the jennet. Jacks usually calm down after a short time (15-30 minutes) and then the muzzle may be removed. It is easy to teach most jacks to mount without biting the jennet by using a chain lead shank over the nose. Vigorous jerking motions on the chain along with verbal commands usually result in a quick learning process for the jack. Donkeys are intelligent animals and respond well to consistent, firm training methods.



Figure 7: Jawing Behavior Exhibited by Jennet in Heat Being Mounted by a Jack.

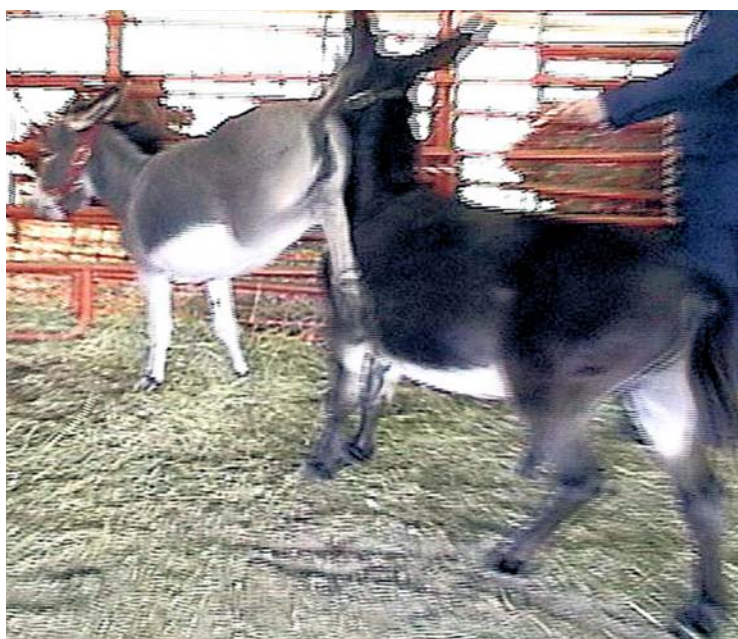


Figure 8: Jennet in Heat Kicking Approaching Jack.

A jennet may back up to the jack after ovulation, but he may not mount again if he has recently bred the jennet by natural cover or through collection for artificial insemination. Normally, jacks mount jennets a few times before fully erect, and some jacks are slow to achieve erection (10-15 minutes). In my opinion, there is no correlation between time to achieve full erection or degree of aggressive breeding behavior and fertility. The jack responds to a jennet's jawing behavior with vocalization and flehmen (Fig. 9). Some jacks are timid and will not breed when new people are

present. It is common for multiple mounts to be required along with some periods of inactivity at a short distance from the jennet before the jack achieves a full erection and completes the breeding.



Figure 9: Juvenile Miniature Donkey Exhibiting Flehmen Reaction Behavior When Approaching a Jennet in Heat.

FIELD BREEDING

Jack owners most commonly use field breeding by turning one jack out with as many as 10 jennets. The jack selects the most receptive jennet to breed by checking the herd's manure for pheromones that may be involved in estrus detection. Receptive jennets may also approach a breeding pair to attract the jack.

HAND BREEDING

Controlled, hand or "appointment" breeding allows for recording of exact breeding dates. The breeding cycle may be coordinated with serial transrectal ultrasound examinations of the ovaries to determine the time of ovulation and the best time to breed. Jacks may be overly aggressive or timid when first training them to mount in controlled situations; however, they are fast learners. Estrus synchronization protocols useful in horses seem to be effective in the donkey. If hand breeding is used it is suggested that the jennet be bred on the second day of estrus and then at 48-hour intervals until the end of standing heat.³

ARTIFICIAL INSEMINATION

Artificial insemination (AI) is possible on the farm or with transported fresh, cooled semen. Jacks are easy to train for collection although this technique is not currently used on a widespread basis. Donkey semen is very concentrated and in general has good fertility. It can be handled similar to that of the stallion, and skim milk extenders seem to be useful to keep sperm alive during transport in artificial insemination programs.⁴ French workers have published freezing protocols for donkey semen.⁵

SUMMARY

The reproductive anatomy of the male donkey is similar to that of the standard horse. The same applies for the female, including the size of the reproductive tract. Female donkeys have a 21-28 day estrus cycle with obvious behavioral signs of receptivity when a jack is present. Lactation may stop

a donkey from cycling while other females (related or not) may interfere with displays of sexual receptivity and breeding. Pasture and hand breeding are both used in donkeys. Artificial insemination can be performed successfully in donkeys although not widely accepted by owners at this time. Transrectal and transabdominal ultrasound are safe and effective methods for reproductive examinations in donkeys.

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SUGGESTED READING:

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