

Rabbits (*Oryctolagus cuniculus*)

1. Not a rodent experimental animal

Rabbits are not rodents. Evolutionary evidence shows that the similarity in appearance and internal structure between lagomorphs and rodents is the result of convergent evolution. Experimental rabbits raised in animal centers are mostly used to produce specific antibodies required for research. In other words, they are the most common producers of biological products. The domestic rabbit is the largest of the species covered in this section. It may be because their large ears have obvious arteries and veins, so it is easy to collect a large amount of blood and administer drugs through the ear veins, so they became experimental animals. Please remember not to catch rabbits by their ears when handling them. In addition to their sensitive hearing, their ears are also very sensitive to pain. This method of catching often causes rabbits to kick their dangling hind limbs in pain, often causing damage to their lumbar vertebrae. The broken lumbar spine results in paralysis of the lower half of the body.

2. Some anatomical features

Like guinea pigs, rabbits are also herbivores, so their digestive tracts and body length ratios are much larger than those of the other three omnivorous animals, especially the cecum is even larger. Generally, the esophagus of mammals has only two layers of smooth muscle, while the esophagus of rabbits has three layers of muscles. The heart of rabbits has low fat and connective tissue content, making it the first animal to discover cardiac rhythm points. The atrioventricular valves of its heart are 2 on the left and 2 on the right, which is also different from other common mammals.

3. Induction of ovulation

The above-mentioned five species of rodents are the same as humans and are spontaneous ovulators. Female animals that ovulate spontaneously, unless pregnant, have spontaneous cyclic changes in their ovaries from sexual maturity to menopause. Rabbits, like cats and minks, are induced as ovulators. The ovulation of female rabbits depends on the nerve stimulation produced by the penis of male rabbits on the vagina during intercourse. Physiologically, it is called neuroendocrine reflex.). So there is no estrous cycle (Table 1).

Table 1. Some growth and reproductive traits of guinea pigs and rabbits.

Species	Guinea pig		Rabbit	
	♂	♀	♂	♀
Development from birth to weaning				
Birth weight (gm)	70-100		30-80	
Lower/upper incisors growing age (days)	Already grown at birth		-	
Ear hearing age (days)	Ears opened at birth		-	
Visual age of eyes (days)	Eyes open at birth		-	
Number of nipple pairs	1		4	
Visible nipple age	At birth	At birth	-	
Weaning age (weeks)	2-3		4-8	
Weaning weight (gm)	180-240		-	
First time in estrus (months)	2.5-3.5	1.5-2.5	5-6	3.5-5
Adult body weight (Kg)	0.9-1.0	0.7-0.9	2.0-6.0	2.0-4.0
Estrous cycle (days)	15-17		Induced ovulation	
Follicular phase (days)	2		2	
Luteal phase (days)	12-16		14-18	
Estrus phase (hrs)	1-18		Anytime	
Pregnancy (days)	59-72		28-35	
False pregnancy (days)	No		14-18	
Number of litters per litter	2-5		4-10	
Colostrum secretion time (days)	-		2-3	
Postpartum estrus	(+)		No	
Routine breeding				
Monthly age at breeding	3-4	2-3	6-10	4-9
Breeding system	permanent polygamy		temporary polygamy	
Reproductive index (number of pups weaned/breeding mother/month)	0.7-1.4		2-4	
Elimination after the number of births	4-5		7-25	

Number of months from breeding to elimination	18-48	18-48	12-36	12-36
Body temperature (°C)(rectal temperature)	37.2-39.5		38.5-40.0	
Digestive tract emptying time (hrs)	13-30		4-5	
Number of chromosomes	64		44	

4. Building a nest with fur

Rabbits often use their soft coats as nest-building materials, especially before giving birth, when they pluck their own hair to build nests. The newborn babies are hairless and rely entirely on mother's milk for the first 10 days after birth. The rabbit's nursing behavior is different from other common animals. It only spends a very short time nursing every day, and each nursing time is less than 10 minutes. Rabbits are similar to cats. They often eat excessive amounts of hair during grooming, resulting in loss of appetite. Sometimes hair balls the size of ping pong balls may even appear in the stomach. In severe cases, they can cause intestinal obstruction and death. Therefore, LAC member find that a rabbit has a loss of appetite and then often add fat first. It may help the rabbit's hair in the digestive tract to be discharged smoothly.

5. Characteristics of Urology

Rabbits are very capable of "holding urine". The frequency of urination is very low, but the amount excreted each time is large (30-35 mL/day). Therefore, before conducting rabbit experiments, precautions should be taken in case of urinary problems during the experiment. The urine of rabbits contains a large amount of MgPO₄, CaCO₃ and other salt precipitates. This urine stain stains the breeding cages and often cannot be washed away. In addition, blood cells sometimes appear in the urine of rabbits, causing their urine to appear dark brown. If occult blood in the urine does not occur continuously, but only occurs occasionally, it is still a normal rabbit.

6. Common foot wounds

Generally, in order to make it easier for rabbits to keep clean, metal cages with bottom mesh are often used. The toenails have less chance of rubbing with the ground. Therefore, overlong toenails have become a common problem when raising rabbits. Toenails that are too long may be inserted into the skin or flesh. Toenails are broken, so the animal center routinely trims the toenails of rabbits raised every 3-4 weeks. Another common foot injury is also caused by the use of metal cages with bottom

mesh, that is, the soles of the feet are scratched by the sharp points of the metal cage. If colleagues and classmates find that rabbits have foot injuries, they should immediately notify the veterinary team of the animal center.