

Mice Breeding Protocol

- 1- Timeframe for reaching sexual maturity: 40 to 60 days of age

Although mice can reproduce well beyond one year of age, their reproductive performance will typically diminish after eight to ten months of age.

2- Type of breeding

- **Polygamous (harem system)**

Breeding of a male with two or more females. No more than three females should be kept with one male in cages 11" long x 7" wide x 5" high.

- **Monogamous**

Breeding of one male with one female.

Observe:

For breeding purposes, **only one male is permitted per cage**. Multiple males will fight and can kill one another. They can cause damage to the females and often will kill the offspring. Having multiple males also results in them producing more scent.

- 3- The female is placed in the male's box. The breeding date must be written down.

4- Detection of gestation status

a- Performing vaginal smear

To verify whether or not the female was impregnated, a vaginal smear can be performed to check for the presence of sperm. It should be carried out the day following the introduction of the male. Waiting more than this allotted time could result in the vaginal plug dislodging from within the vagina and becoming lost in the cage litter.

b- Swelling of the abdomen

On occasion, pregnant females may show swelling of the abdomen in the days close to their due date.

- 5- Breeding time may vary, however, the male must be removed from the cage four to five days prior to the female giving birth.

In the case of polygamous breeding, the females must be separated four to five days prior to the due date. This procedure is important for the following reasons:

- The mother of the litter is identified.
- If the male remains in the cage, once the female gives birth, he can couple with her again and get her pregnant while she is nursing.
- Stress among nursing and parturient females is lessened.
- Overcrowding in the cages is prevented.
- The number of offspring for each female mother can be identified.

6- Gestation period

18 to 21 days, depending on the mouse's line.

- 7- The male mouse that is separated from the female must be placed in a cage (short time) by himself because fighting may occur if he is taken to another group of mice.
- 8- The female must be observed every day from the tentative due date, keeping in mind the coupling time spent with the male.
- 9- Once the female gives birth, **she must not be disturbed**. This is done to prevent stress that could cause her to stop nursing or even kill her young. The use of nesting material can be introduced.
- 10- Counting the young is recommended and from the third day postpartum, the young must be identified by gender.

11- Weaning

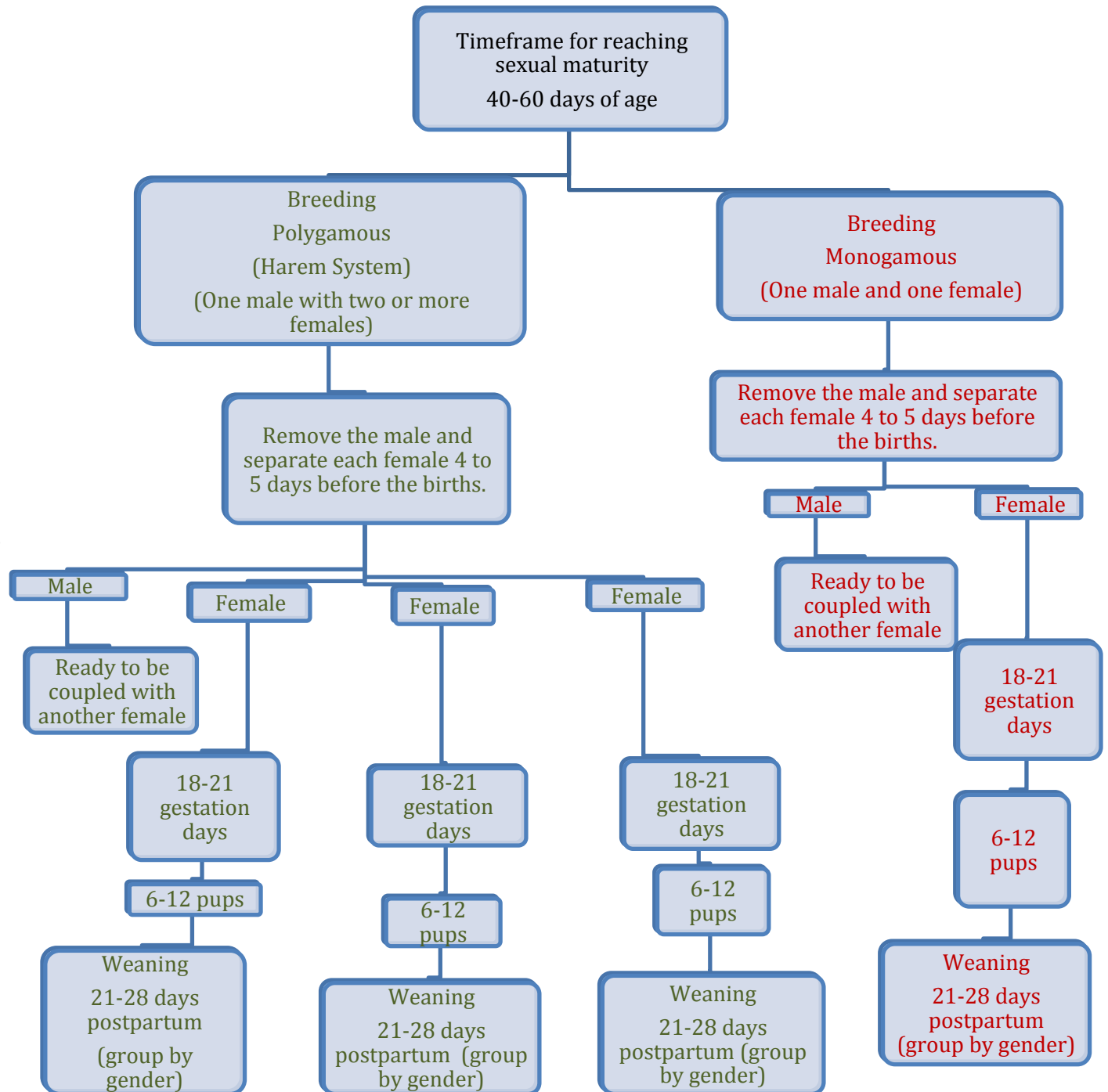
- The young are weaned from their mother 21-28 days after they are born. This time period may be longer if the litter is big, as in transgenic animals for example.
- Offspring who are still nursing must be left with the mother until they are able to eat and drink totally by themselves, and then they can be weaned.
- Size of the litter: 6 to 12 pups

12- Important information

- a- Breeding life: 6 to 8 months
- b- All information about the breeding process must be written down on the cage plate. The plate must contain the following information at least:

- name of the lead researcher
 - phone extension
 - number of animals per cage
 - animal species and line
- c- Transgenic and Knockout mice may be more difficult to breed than inbred mice. Among the many possible problems encountered with these animals is the failure of homozygotes to survive to breeding age. If homozygotes are needed for a study, it may be necessary to use an alternative scheme, such as breeding heterozygotes.
- d- The Animal Resources Center will notify the lead researcher or his or her delegate regarding his or her animal colony of:
- an excess of animals per cage
 - missing information on the cage plate
 - violation of regulations regarding the breeding process
- The IACUC will be notified and if no reply is received, the Center will take necessary action regarding the animal colony.

MICE BREEDING PROTOCOL



References:

1- American Association for Laboratory Animal Science; 2005; pages 107-108.

2- Ferrets, Rabbits, and Rodents. Clinical Medicine and Surgery. Hillyer & Quesenberry; 1997; page 298.

3- The Laboratory Mouse, Mark N. Suckow, Peggy Danneman, Cory Brayton; 2002; pages 28-33.