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DEPARTMENT: ANATOMY

LEVEL: 300 LEVEL

COURSE: ANIMAL HANDLING & COMPARATIVE MAMMALIAN GROSS
ANATOMY (ANA 314)

ASSIGNMENT

1. What is Comparative Anatomy?

Comparative anatomy refers to the comparative study of the body structures of different animal species in order to understand the adaptive changes they have undergone in the course of evolution from common ancestors.

2. Highlight the criteria necessary to caring for laboratory animals.

- **Fluid:**

They are to be provided with plentiful supply of fresh clean drinking water from a bottle (250 ml capacity) attached to the outside of the cage. The water is led in a 6-9 mm glass tubing through a rubber bung to an accessible position inside the cage; the outlet tubing is about 3 mm.

- **Diet:**

A balanced diet containing carbohydrate, fat, protein, vitamins and trace elements is to be given regularly. It is commercially in the form of cubes or pellets. Small quantities of green stuff are also to be supplied.

- **Cleanliness:**

Cleanliness of room and cages is essential unless they are kept in considerable risk of epidemic diseases. Animals, when breeding, should not have their cages changed too often. Clean cages should be used. Cages may be boiled in soapy water; alternatively, to be kept immersed in a solution of disinfectant such as 3% Lysol. Lysol, however, should not be used in cleaning the cages of rabbit because its smell distresses the animals.

- **Litter:**

A layer of absorbent material (e.g. soft wood sawdust's, sugarcane piths) should be spread to a depth of 1/2 to 1 inch (1.25-2.5 cm) on the bottom of the cages.

- **Cages:**

Each species of animal requires its own type of cage. It should be large enough for movement and some exercise of the animal.

- **Labelling:**
Every case should be provided with a holder or socket for a small card of 6-9 cm for record of the experiment (date, identifying marks of animal, nature of experiment and specimen).
- **Ventilation:**
Animal room should be air-conditioned; or at least ten changes of air in each hour are needed.
- **Humidity:**
Humidity of animal house ranges between 45% for rabbits to 65% for mice.
- **Marking animals:**
White or light-colored animals are marked by staining the fur with a strong dye (e.g. carbol fuchsin, eosin). Rabbits may be marked in ears with a needle dipped in India ink. Rats and mice are punctured in ear and fowls are marked by numbered metal tags on legs clipped through the loose skin of the wing.
- **Detection of disease in animals:**
A routine tour of inspection of the animals should be made at least once a day with attention to the general condition of animals, amounts of food and water consumed and the nature of faeces. To see nose movements of the animals and to see any animal remaining quiet and still. Such animals may be separated and investigated for the cause of disease.
- **Recording animals' temperature:**
Clinical thermometer is liberally smeared with sterile petroleum jelly and the blunt-ended rectal thermometer is introduced into the rectum or vagina to a depth of about 3 to 3.5 cm.
- **Prevention of disease:**
Newly arrived animals to be kept in a special quarantine room and kept under observation for 10-14 days. Animals falling sick during the period should be kept in quarantine and necropsy must be done for finding out the cause of the illness. Animal infected experimentally with bacteria or viruses should be kept in separate isolation rooms to prevent spread of infection to other animals.
- **Insect pest:**
Bed bugs, fleas, lice, mites, ticks, flies, mosquitoes and cockroaches may all infest the animal house. These can be controlled by 0.5% insecticidal sprays or 10% DDT.

3. Highlight the similarities and differences between the digestive system anatomy of amphibians and man.

Similarities Between Digestive Anatomy of Amphibians and Man

- They both possess an oral cavity/mouth.
- Presence of tongue.
- Presence of small intestine in both.
- They both have teeth.

Differences Between Digestive Anatomy of Amphibians and Man

Amphibians	Man
Nutrient absorption occurs in the ileum after the proteins, carbohydrates, lipids and nucleic acid are broken down in the duodenum.	Majority of nutrient absorption occurs in the jejunum.
Presence of cloacae.	Presence of rectum and urethra.
No presence of appendix.	Presence of appendix.
Have maxillary teeth and vomerine teeth.	Only one set of teeth present.
Their teeth are only used to hold food in place, as they always just swallow their prey whole.	They use their teeth for a lot of functions like chewing, biting, etc.