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Level: 300

Questions

1. What is comparative anatomy?
2. Highlight the criteria necessary to caring for laboratory animals?
3. Highlight the similarities and differences in the digestive system anatomy of amphibians?

Answers

1. Comparative anatomy is is the study of similarities and differences in the anatomy of different species. The study of comparative anatomy predates the modern study of evolution Early evolutionary scientists like Buffon and Lamarckused comparative anatomy to determine relationships between species.

Comparative anatomy is an important tool that helps determine evolutionary relationships between organisms and whether or not they share common ancestors. However,it is also important evidence for evolution. Anatomical similarities between organisms support the idea that these organisms evolved from a common ancestor, organisms that are closely related to one another share many anatomical similarities. For example

we could take whales and hummingbirds because they have inherited skeletons from a common ancestor.

Types of comparative anatomy

They are classified based on:

•Homologous structures

•Analogous structures

•Vestigial structures

2. Some of the following are criteria's that are necessary for caring for animals are;

● Temperature

Most laboratory animals can tolerate the same temperature range as man, thus the temperature in animal holding rooms tends to be a compromise between what is best for the animal and most comfortable for the workers. Sudden change in temperature variations may harm laboratory animals. Emergency equipment to maintain appropriate environmental temperatures should be available, particularly in buildings where housing of small laboratory animals, normally the range will be of

same man 200C to 250C.

● Humidity

Most animals prefer a humidity of about 50%, but can tolerate a range of 30% to 70% as long as the temperature range is appropriate to the species and the humidity remains relatively constant.

Fluctuations and extremes in relative humidity can precipitate illness, particularly respiratory diseases. Dehumidifiers may need to be used where automatic watering and flushing systems are used in facilities that do not have a controlled environment.

● Ventilation

The animal facility should be ventilated properly. It is preferable to use a total air exchange system. If a recirculation system is to be used, it should be equipped with effective filters and necessary recirculation of air should be given careful consideration when planning a new animal facility. Air conditioning is useful in providing a stable environment of 10-15 changes per hour.

- **Light**

Light in animal rooms should provide good visibility and uniform, glare-free illumination. Intensities of between 807-1345 lux at 76cm (30”) from the floor have been widely recommended to facilitate proper laboratory animal observation, record keeping and house keeping. Light intensity in the order of 200 lux has been shown to be adequate for reproduction and to assure normal social behavior amongst most rodents.

- **Noise**

Noise is unavoidable in an animal care facility, but should be minimized. It can disturb both the animal and staff; unexpected sounds seem to be more harmful. Loud noises precipitate epileptic form seizures in several species and strains of animals, intermittent noise may also affect drug response and breeding performance.

3. Similarities and differences between the digestive system of amphibians(frog) and mammals(man)

Similarities between amphibian(frog) and mammal(man)

FROG	MAN
Presence of mouth	Presence of mouth
Presence of oesophagus	Presence of oesophagus
Presence of teeth	Presence of teeth
Presence of stomach	Presence of stomach
Presence of liver	Presence of liver
Presence of small intestine	Presence of small intestine
Presence of gall	Presence of gall

FROG	MAN
bladder	bladder
Presence of large intestine	Presence of large intestine

Differences between amphibians(frog) and mammals(man)

FROG	MAN
Human tongue is sticky	The tongue is not sticky
The tongue of the frog is attached to the start point of the mouth	The tongue of man is attached to the back of the mouth.
The tip of the tongue is folded backwards	The tip of the tongue is straight

FROG	MAN
Absence of an appendix	Presence of an appendix
During swallowing, eyes will be blinked once or twice or eyes will be closed	During swallowing man is still or normal
The elimination of undigested food or materials occur through the cloaca	The elimination of undigested food or materials occur through the rectum