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### **Assignment**

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 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 Lamarck used 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 as man 20°C to 25°C.

### ● **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 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 bladder    | Presence of gall bladder    |

| FROG                        | MAN                         |
|-----------------------------|-----------------------------|
| 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                       |
| Absence of an appendix   | Presence of an appendix                                 |

| FROG   | MAN  |
|--|--|
| 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 |