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***Departmen****t: Anatomy*

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***Course Code****: ANA 314*

***Question***

*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.*

***Answer***

*1. Comparative anatomy: is the study of similarities and differences in the anatomy of different species.*

*2. Criteria necessary to caring for laboratory animals*

***The Guide for the Care and Use of Laboratory Animals establishes standards for laboratory animal environments in regard to:***

* *room temperature*
* *humidity*
* *ventilation*
* *illumination and light schedule*
* *noise moderation*
* *The details of these standards are generally not a concern to researchers who house their animals in an institutional animal facility, because it is the animal care staff who have the responsibility of operating the facility in compliance with these environmental standards.*
* ***Temperature and humidity for mouse/rats :****Temperatures of 65-75°F (~18-23°C) with 40-60% humidity are recommended*
* *For practical considerations due to common work hours, researchers should be aware of the lighting schedules used in the rodent housing rooms (commonly 12 hrs. light: 12 hrs. dark or 14 hrs. light: 10 hrs. dark).*
* *If researchers working late turn on the lights in the animal rooms during the dark period, the disruption of the light schedule may cause the animals to be perturbed, which may have effects on breeding performance and on circadian rhythms*
* *Ensure lights are not used and that researchers and technicians do not enter the mouse room during the dark cycle.*

***Housing and Routine Care: Animal Crowding***

*Animal crowding in a cage affects environmental quality (the accumulation of urine, for example, leads to excess ammonia and moisture).*

* *Crowding can also cause newborn pups to be injured or killed.*
* *Crowding is a special concern for multiple litters in a cage since pups grow very quickly and rapidly increase their output of excreta.*
* *In particular, if the mother is about to give birth to a second litter, the first litter should be weaned and removed to new cages to prevent smothering and trauma of the newborns.*
* *Routine sanitation and environmental controls are necessary for protecting animal health and for minimizing the introduction for non-experimental variables which could undermine the quality of research data.*
* *Sanitation schedules vary according to the type of vertebrate animal caging.*

*3*

*Differences in the digestive system anatomy of amphibians and man.*

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| *Man* | *Amphibians* |
| *Humans have strong teeth. They use their teeth to chew food.* | *Frogs do not have strong teeth. They use their teeth to hold rather than chew.* |
| *Human tongue is not sticky.* | *The tongue is sticky.* |
| *The tongue of the human is attached to the back of the mouth.* | *The tongue of the frog is attached to the starting point of the mouth.* |
| *The tip of the tongue is straight.* | *The tip of the tongue is folded backward.* |
| *The elimination of undigested materials occur through rectum.* | *The elimination of undigested materials occur through cloaca.* |
| *Humans chew food before swallowing.* | *Frogs swallow the prey without chewing.* |
| *Humans have a long small intestine. It has three parts: duodenum, jejunum, and ileum.* | *Frogs have a shorter small intestine. The two parts of the small intestine of the frog are duodenum and ileum.* |

***Similarities in the digestive system anatomy of amphibians***

|  |  |
| --- | --- |
| *Man*  | *Frog* |
| *Presence of mouth* | *Presence of mouth* |
| *Presence of teeth* | *Presence of teeth*  |
| *Presence of tongue* | *Presence of tongue* |
| *Presence of oesophagus* | *Presence of oesophagus* |
| *Presence of small intestine* | *Presence of small intestine* |

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