

Overview – Through this session your students will investigate structural features, behavioural responses and physiological mechanisms that help animals maintain a relatively constant internal environment. Looking at the stimulus-response model, we will explore the regulation of temperature, utilisation of water, production of nitrogenous waste, as well as the concentration of salts and gases.

Lesson Logistics – Students take part in a formal presentation, including live animal encounters and PowerPoint slides. This session takes place in one of our indoor education experience areas. Groups are encouraged to use our Student Activity Sheets before, during, or after *The Cold Shoulder* to complete activities focusing on the processes, behaviours and structures animals utilize to maintain homeostasis.

Duration – 60 minutes.

Conservation Message – Climate change impacts are altering ecosystems more quickly than organisms can develop structural, physiological and behavioural processes necessary to maintain a relatively constant internal environment in these new conditions. It is up to us to work to limit the impacts of climate change.



Spinifex Hopping-mouse
Notomys alexis

Links to the Australian Curriculum

Biology Year 12 ATAR Unit 4

Science Understandings

Homeostasis

- Homeostasis is the process by which the body maintains a relatively constant internal environment; it involves a stimulus-response model in which change in environmental conditions is detected and appropriate responses occur via negative feedback.
- Changes in an organism's metabolic activity, in addition to structural features and changes in physiological processes and behaviour, enable the organism to maintain its internal environment within tolerance limits (temperature, nitrogenous waste, water, salts, and gases).
- Thermoregulatory mechanisms include structural features, behavioural responses and physiological mechanisms to control heat exchange and metabolic activity; animals can be endothermic or ectothermic.
- The type of nitrogenous waste produced by different vertebrate groups can be related to the availability of water in the environment.
- Animals have a variety of behavioural, physiological and structural adaptations to maintain water and salt balance in terrestrial and aquatic environments.

