

## Useful Background Information



Only mammals and birds maintain body temperature in the face of changing environmental temperature. This lesson explains some of the mechanisms for how that is achieved (movement and chemical reactions) and the pros and cons of having such ability. The lesson also explains Brownian motion and how that relates to metabolism and biochemical reactions.



## The Veterinary Black Bag Program

### Project Goals:

- Develop Veterinarian's Black Bags (VBBs) of instructional items and pamphlets for middle school teachers to support classroom visits by local veterinarians.
- Provide professional development for veterinarians and teachers on how to use items in the VBBs
- Promote inquiry-based thinking about health-related subjects while emphasizing the value of biomedical research and promoting careers in science.



**PEER**

**PARTNERSHIP FOR ENVIRONMENTAL  
EDUCATION AND RURAL HEALTH**

Dr. Larry Johnson  
Principal Investigator, PEER  
979-845-9279  
ljohnson@cvm.tamu.edu

Dr. William Klemm  
Director, Peer  
979-845-4201  
wklemm@cvm.tamu.edu

Department of Veterinary Integrative Biosciences  
College of Veterinary Medicine & Biomedical Sciences  
Texas A&M University, College Station, Tx 77843  
MS#4458



<http://peer.tamu.edu/VBB/Summary.asp>

## Body Temperature

*Follow Up Lesson*



The instruction in this module includes:

Presentation on *Physical Exam*

Follow-up lessons on:

*Signalment*

*Body Temperature*

*Body Sounds*



## SUMMARY OF LESSON

In this lesson, students learn about the functional consequences of animal phyla that are warm-blooded (that is, those that can regulate body temperature) and those that do not thermoregulate. Students learn how to get body temperature measurements that are reliable and what those measurements mean in terms of wellness or sickness. They also learn the principles of how thermometers work and some of the history of the development of thermometers from centuries ago to modern-day digital thermometers.

### Hands On Activity

To help students understand the molecular importance of heat, have them conduct the following experiment: put a drop of food coloring in a small beaker of hot water, watch the color disperse, and time how long it takes for the color to be evenly distributed.

Experiment can be modified by having the students first use hot water and then compare results when ice-cold water is used.

### OPTIONAL ACTIVITY:

#### *Analyzing temperature data*

In this activity, students use temperature data they collect to explore the concepts of mean, median, mode and range, as well as the representation of data in different types of graphs and plots.

### OBJECTIVES

Students should be able to

1. Explain the advantages and disadvantages of being warm blooded.
2. Summarize some mechanisms by which the bodies of mammals and birds regulate body heat.
3. Explain what is required to get reliable body temperature readings, including the calibration of thermometers.
4. Compare and contrast the workings of traditional thermometers and newer digital techniques.
5. Demonstrate Brownian motion and explain its relationship to temperature.

