Amazing Animal Adaptations

This packet is to help introduce your students to terms and ideas that will be discussed during your visit to the Peoria Zoo. It is designed to enhance your program experience either through class prep or follow-up.
By using the vocabulary, activities and ideas it will help reinforce the program and meet the State Standards listed on page 4.

Terms to introduce:

Adaptation- a physical characteristic or behavior that helps an animal survive in its environment
Appendage-any complex part or organ extending from the body
Antenna-a sensory appendage on the head of an arthropod
Arachnid-an arthropod with four pairs of walking legs (spiders, scorpions, mites or ticks)
Arthropod-a segmented animal with jointed appendages and an exoskeleton
Biofact-an object found in nature including feathers, eggs, and teeth
Burrowing-when an animal digs a hole to hide and live in
Camouflage-hiding by protective coloring, pretending to be part of the natural surroundings
Cold-blooded-an organism that regulates its body temperature by exchanging heat with its environment
Counter shading-form of camouflage where there is darker coloring located on the top and a lighter shade on the bottom, making it difficult for it to be seen from either above or below
Crepuscular-animals which are active at dawn and dusk
Diurnal-animals which are active during the daytime
Habitat-the environment where an organism usually lives
Endoskeleton-an organism whose support is located on the inside
Exoskeleton-an organism whose support and protection is located on the outside
Molting-is to shed the outer covering periodically for growth
Nocturnal-animals which are active at night
Pedipalps-in arachnids, an appendage that aids in chewing
Predator-is the organism who is doing the eating
Prey-is the organism that is being eaten
Shedding-is a process reptiles go through to grow, by losing their outer covering, so they can have a new larger covering
Spiracles-an external opening of a trachea in an insect, in the case of the Madagascar Hissing Cockroach they are also used to make the hissing noise
Warm-blooded-an organism which maintains its constant body temperature independent of the environment

Ideas covered in program:

- Introducing adaptations as something about an animal that makes it possible for it to live in a particular place and in a particular way. It may be a physical adaptation, like the size or shape of the animal's body, or the way in which its body works, or it may be the way the animal behaves.
- Every animal needs food to eat, water to drink, air to breathe, and a place to live, but they also need to have a way to protect themselves from danger. We'll talk about what possible enemies of animals might be (ex. predators, disease, etc) and how even their environment might be its enemy too.
- Animals have developed adaptations over time. This means a long period of slow change resulted in an animal's adaptations. The spots on a snow leopard, for example, did not emerge overnight. Instead, this process took generation upon generation of snow leopards physically adapting to their environment for the characteristic spot patterns to evolve. Those snow leopards with spot patterns were able to hide more successfully, therefore surviving longer than those without spot patterns like their own. Instead, this process of change over time is the key to how many organisms develop adaptations. Some adaptations can arise quickly through genetic mutations; these mutations also may be deadly (albinism, etc).

Activities for students:

CREATE YOUR OWN:
Have the students design an animal that might live in an extreme environment (ex. arctic, desert, hot springs, etc) and have them draw a picture of that animal. Then have the students either label the picture with its adaptations or have them present their new animal to the class and explain how their animal survives.

SCAVENGER HUNT:
Design a scavenger hunt for the students by creating a list of different adaptations (ex. webbed feet, striped fur, sharp claws, wings, scales, etc.). Then have the students find animals that have these adaptations in the Zoo.

SOLAR SENSATION
Make two foil mittens completely cover your hand. Paint the top of one white and the other black. Have students hypothesize which is going to heat up faster and why. Now hold both hands under a bright light or go into the sun. Which one warms up first? How can an animal's coloring affect its body temperature? What animals have you seen this in?

COOLING SENSATION:
Spray a student's right arm with water from a water bottle (please be sure to explain that it is only water). Have students hypothesize which will get cooler faster and why. Have the students wave both arms in the air. Discuss which arm felt cooler, were they right with their hypothesis? Why? The sensation of evaporation provides a cooling feeling. Some animals that live in hot areas with water access will wet themselves and then sun (our wallaby is an example). This process provides cooling for the body.

HOW TO EAT PEANUT:
The foods we eat may be more difficult for animals to tackle. Find out how various animals manage to eat a peanut. Clean student's desk or lay paper towels down before this activity. The instructor may choose to have only a few representatives from the class demonstrate one or several of the following animals. This is dependent on class age and behavior make-up. If there is time, this may be done as a whole class activity.

Bear:
Tape their fingers and thumbs so they can't move freely. Next have them roll the peanut on the desk to crack it and eat the nut with their tongues.

Spider Monkey:
Tape their thumbs to their palms. Have them try to crack the nut with their teeth.

Chimpanzee:
Tape their thumbs to the sides of their hands so that only the top joint can be moved.

Bird:
No hands allowed, only the mouth!

ANIMAL RIDDLES:
Ask the students riddles which you write that includes adaptations and how they are used. Have the students guess what the animal is (ex. I reach the leaves at the top of the trees and pick them with my 18 inch long tongue. Who am I? – giraffe).
Now assign each student an animal and have them research the animal and write a riddle based on their adaptations.

State Standards met by:

Listening to the program:
4.A.2b-c; 4.B.2b; 12.A.2b
4.A.3a; 4.A.3c-d

Write about the animals they saw:
3.A.2; 3.B.2a-d; 3.C.2a; 4.A.2a; 12.B.2a; 12.B.2b; 17.B.2b
3.A.3; 3.B.3a-b; 3.C.3a; 4.B.3a; 4.B.3a; 12.A.3c; 12.B.3b; 17.B.3b

Create your own:
4.B.2a; 5.A.2a-b; 5.B.2a-b; 5.C.2a-b; 17.B.2b; 26.B.2d
5.A.3a; 5.B.3a-b; 5.C.3a-c; 17.B.3b; 26.B.3d

Scavenger Hunt:
12.A.2b; 12.B.2b
12.A.3c; 12.B.3b

Solar/Cooling Sensation:
4.B.2b; 11.A.2a; 11.A.2b; 12.C.2a; 12.A.2b; 12.B.2b; 17.B.2b
11.A.3a-b; 12.A.3c; 12.B.3b

How to eat a peanut:
11.A.2a-b; 12.A.2b; 12.B.2b
11.A.3a-b; 12.A.3c; 12.B.3b

Animal Riddles:
3.B.2a-b; 4.A.2b
3.B.3a; 3.C.3a; 4.B.3a; 5.C.3b