

# CHAPTER 23

In the past two chapters, you have explored your five external senses:

## Hearing, Touch, Vision, Smell and Taste

In this chapter, we are going to look at some other senses that occur in plants, humans and other animals!

Humans tend to think that we only have five senses...but this is not true! If this was true, how would you classify your feelings of hunger or thirst? Are these feelings we get from our sense organs of hearing, touch, vision, smell or taste? Not really...



Our senses of hunger and thirst are examples of **internal senses**. Internal senses are the types of feelings we receive inside our body! We have already looked at one of these feelings in the last chapter. Can you guess what it was?

It was the feeling of pain! You can't find "pain" anywhere in the world, right? Pain is a feeling you have in your own body. That makes pain an **internal sense**, just like hunger, thirst and balance.

Your sense of balance is controlled by a part of your ear. Let's take a closer look at how your ears keep you balanced...

Inside your ear (on top of your cochlea) you have three little curved tubes called **canals**. These canals are full of liquid and contain tiny little hairs in them, just like your cochlea! Every time you move your head, the liquid moves as well. The moving liquid makes the little hairs move too. So whenever these hairs move, a new message is sent to your brain.

JUNIOR GIVES HIS EAR CANALS A WORKOUT...



Waaaaahh!!!!

Imagine holding onto a pitcher of water that is half-full of water... if you tilt the pitcher to one side just a bit, what is going to happen to the water inside? It's going to move, right?

Well, when you lose your balance, this happens in your body! Your canals send a message to the brain for your body to move backwards or forwards... wherever you need to go to stand straight up!

Spend a few seconds running in a circle and you will start swirling this liquid around! All of that liquid movement in your canal confuses your brain into thinking you are falling, when you are not! This is what causes you to feel dizzy! Cool, huh?

## Okay, now let's get into some other neat stuff...

It is true that an animal's senses tell them how to respond to their environment. But some animals can use senses that are very different to humans. For example, let's look at...

### Echolocation

("ek-o-low-kay-shun")

Echolocation is a way some animals (like bats, whales, dolphins and seals) can talk to each other, find food, and move through their environment (without bumping into everything!) All of these animals use their sense of echolocation because their sense of vision is not as good!

## It works like this...

An animal gives off a sound using their mouth or nose. Once the sound hits something (like a tree, an insect, the cave wall...) it bounces back into the animal's ears. This is called an **echo**. These animals can use these echoes to tell them where objects and animals are! Echolocation can tell an animal the size, shape and movement of even the smallest of creatures!



"BLIND AS A BAT. BLIND AS A BAT." THAT'S ALL I EVER HEAR!

WHY DON'T WE EVER HEAR SOMETHING LIKE, "BLIND AS A *DOLPHIN?*"

*IT'S JUST NOT FAIR!*

If you think using sound to find your way around the world is strange, check out this sense...

## Infrared vision

("in-fra-red")

Most of us are pretty good at using our sense of vision to see what is going on. Many other animals use this same type of sense too!

However, some animals (like rattlesnakes) hunt their food at night. It can be pretty hard to see at night, can't it?

Well... rattlesnakes can actually see the heat coming off of the body of another animal! This ability is known as infrared vision! This kind of vision is not like the vision that you and I use to see. When a rattlesnake uses its infrared vision at night, it sees a colorful outline of its prey.

This ability would come in handy at night, wouldn't it? Even though it is very dark outside, the rattlesnake can see exactly where its prey is hiding!

## Light that we cannot see?

It sounds weird but it is very true! Here comes another strange sense...

## Electric sense

Some animals use a strong electric charge to see, move and to kill other animals! This electric charge is much like the shock you get from static electricity, only much stronger! One animal that uses this sense is the **electric eel**.



HOW DO ELECTRIC EELS TASTE?



Think of the electric eel like a powerful battery that can be recharged! When it is in danger from another organism, the electric eel can shock the organism and then escape! If it is

hunting for its food, it can use the same shock to stop its food from swimming away! After relaxing for a short while, the eel can recharge itself without any wires!

Even plants have senses that are different from other organisms...

## Phototropism

("foe-toe-tro-pizm")

Phototropism is the ability of a plant to sense the direction of sunlight and to grow towards it! If you can place a potted plant (carefully!) on its side, the plant will start to grow towards the light once again! The stem of the plant begins to bend towards the light so that the leaves can make food. In fact, if you put that plant into a box with a large hole on its side the plant will start to grow sideways towards the hole! Not bad for a plant!



The world is a large place. It has a lot of organisms which have all kinds of senses that are different from you and me!



Fill in the blanks with the correct letters. The words in the list on the right provide a clue to the answer.

- 1) \_ \_ terna \_ sens \_ s  
types of feelings we receive inside our body like hunger and thirst
- 2) cana \_ s  
three curved tubes in your ear that are filled with fluid
- 3) ec \_ o \_ o \_ at \_ on  
a way for some animals to keep from bumping into everything by giving off sounds and listening for echoes
- 4) \_ c \_ o  
the bouncing back of a sound wave to the person who made the sound
- 5) infr \_ \_ \_ d  
a way for animals to see the heat coming off of the body of another animal
- 6) \_ l \_ ctri \_ sen \_ \_  
a way for some animals to use a strong electric charge to see and move in order to survive
- 7) ph \_ t \_ tropi \_ m  
the ability of a plant to sense the direction of sunlight and to grow towards it

Match the words in the first column to the best available answer in the second column.

- |                       |  |
|-----------------------|--|
| _____ Internal senses | 1) a way for some animals (like bats and dolphins) to keep from bumping into everything by giving off sounds and listening for echos |
| _____ Canals          | 2) the ability of a plant to sense the direction of sunlight and to grow towards it  |
| _____ Echolocation    | 3) the bouncing back of a sound wave to the person who made the sound  |
| _____ Echo            | 4) a way for animals (like rattlesnakes) to see the heat coming off of the body of another animal                                    |
| _____ Infrared        | 5) three curved tubes in your ear that are filled with fluid; acts like the cochlea but works to keep you balanced                   |
| _____ Electric sense  | 6) a way for some animals to use a strong electric charge to see and move  |
| _____ Phototropism    | 7) types of feelings we receive inside our body like hunger and thirst   |

