

7 HUMAN SKIN - CROSS SECTION (100x) AND SURFACE (10x)

Human skin, like the skin of other animals, is a protective organ. It is the largest organ in our bodies and is very important in keeping us healthy.

Examine the picture on the left of the slide. It shows a CROSS-SECTION of human skin. Examine the dead skin cells on the surface (D). They prevent infection by keeping germs out of the body. They are like a tiny suit of armor. Beneath these dead cells is a living layer (L). Here, new cells are produced as the surface layer wears away. Hair (H) is mostly useless in humans, although hair on the head gives some protection from cold and eyelashes protect the eye from foreign objects. *Do you think the animals we descended from*

had more hair on their bodies than we do?

At (G) is an oil gland. Oil protects the skin and hair by keeping it soft. At (F) is a layer of fat cells. Fat cells act in humans the way down does in birds. *Can you guess how fat protects us?*

On the right side of the slide is what you would see if you held some human skin under a microscope. It is a SURFACE view. In this picture, you can see the surface of the protective layer (D) shown in the first picture. *Can you see the armor these dead cells form? Compare this picture to Microslide #2. Is there a similarity between human skin and animal scales? Can you think of some reasons why humans wear clothing?*

8 FINGERNAILS (4x) AND CLAWS (10x)

Look at the left side of the slide. It shows a section of a human fingertip. The fingernail (N) protects the finger. It is made of keratin. *Can you think of other purposes fingernails serve? What other animals also have keratin?*

On the right of the slide you can see the claws of a lizard (small) and a crow. *Can you see that human fingernails and claws*

are similar adaptations of skin? They are only different in size and shape. They are different because they do different things. What do claws do? What do fingernails do?

Think of the hooves on horses and cows. They are also made of keratin. *Do you think hooves are adaptations of skin like nails and claws? What purpose do hooves serve?*

SUMMARY

In this lesson, you have studied feathers and fur, skin, and scales. They all are adaptations of skin that protect the animal from heat or cold, enemies, or from infection. Strong claws and sharp teeth help animals that must kill others to survive, like the dogfish or an eagle. There

are many, many different ways the skin has changed to help animals survive. Think of a porcupine - its quills are special sharp hairs! A rhinoceros' or cow's horn are also special skin adaptations. *Can you see why scientists often call skin the "jack of all trades"?*

Photomicrographs 1, 3, 4, 5, 6, 8R Dr. J. Metzner

ADAPTATION

(Fur, Feathers, Skin, and Scales)

INTRODUCTION

All animals have a skin. The skin protects the animal. It keeps germs and other bad things out. It also keeps the animal's organs and fluids IN!

Think of some different animals: a dog, a fish, a porcupine, a human. Although all of them have a skin, each of these animals' skins is very different from the others. The animals' skins have ADAPTED (uh-DAP-tid) for different purposes. A bird flies, a fish swims. Some animals need fur to keep

warm or spines for protection.

In this lesson, you will learn about several kinds of animals' "skin." You may be surprised at the different forms skin can take. As you study each slide, imagine how the adaptation shown can help the animal survive. The magnification given, for example, Slide 1 - (40x) means that the microscope was set at that power when the photograph was taken.

1 SCALES - GUPPY (40x) AND DOGFISH (100x)

On the left side of the slide is a picture of part of a guppy. A guppy is a type of fish. The slide shows two SCALES (SKAYLZ). Many other kinds of fish have scales like these.

escape from its enemies.

On the right side of the slide are dogfish scales. These scales look like pointed teeth. If you touch dogfish skin, the scales make it feel like very rough sandpaper.

Scales protect fish. They overlap to form a hard armor. The fish's shape is called STREAMLINED. Its surface is very smooth and sleek. *Can you guess how streamlining helps a fish survive?*

A dogfish is a hunter, like a shark. It eats other fish. The dogfish's teeth look like these scales! The dogfish uses its sharp teeth to eat its prey.

A fish's skin is also very slimy. It is coated with a slippery substance called MUCUS (MEW-kus). A streamlined, slippery fish can swim very fast. A fast fish can better

Do you think the dogfish teeth and scales may have developed in the same way? Do you think a rough skin protects the dogfish from its enemies?

By Herbert A. Nestler

Copyright © National Teaching Aids, Inc. 2013