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The following images copyright Dennis Kunkel Microscopy, Inc.: hummingbird feather, plant cell, blade of grass, E. Coli bacteria on surface of small intestine, Anthrax virus, Northern house mosquito, yellow jacket wasp stinger, mucus and pollen grain on a nose hair, antibiotic treatment on E. Coli, Rhinovirus (common cold), surface of rockcress leaf, Velcro™ fastener, bone, broccoli floret, egg shell, red ant, housefly, skin of dogfish shark, tongue with papillae and taste buds, Diatoms, cat tongue papillae, moss spores on moss, blood, spinneret of spiny orb-weaver spider, pollen grains, bean weevil and bean seed, Salmonella bacteria, sperm and egg, pill bug, root of a germinating radish seed, sand grains, red spider mite, grasshopper head, scales on monarch butterfly, head of monarch butterfly, brown recluse spider, and rose petal

The following images copyright CMSP, Inc.: human hair, window mold, cat hairs, cotton fibers, skin, cross section of a pine needle, cross section of a chrysanthemum leaf, deer tick, greenbottle fly maggot on beef, streptococcus bacteria, dental floss with plaque, table salt, starch granules in wheat flour, cockroach leg, head louse on a human hair, dust mite, chromosomes, head of leech, newsprint paper, human eye, tongue with bacteria, blood-filled aorta, and animal cell

# GEO SAFARI®

EI-8803  
Ages 8+  
Grades 3+

# Talking Electron Microscope™



## The amazing Scanning Electron Microscope

Most of the fantastic images in the Talking Electron Microscope were created with a Scanning Electron Microscope.

Conventional microscopes use glass lenses to bend light to create a magnified image. The Scanning Electron Microscope bombards the image with electrons instead of light waves. The resulting images are super-detailed 3-dimensional images that are at much higher magnifications than can be accomplished with a light microscope.

The images in the Talking Electron Microscope reveal the amazing detail and complexity of living things and tiny structures in the world all around us.



Engage Minds, Inspire Discovery.™



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### 1. Push the on/off button to begin

When you see the GeoSafari screen in the eyepiece, you'll know that your Talking Electron Microscope is ready to use.



### 2. Pick a category

Press select to learn about the first category. Press the up or down arrows to see the other categories and press select to choose one.

- ANIMALS
- THE HUMAN BODY
- PLANTS
- VIRUSES AND BACTERIA
- "STUFF"



### 3. Pick a game: Facts or Quiz



Press this button for Facts



Press this button for Quiz

### 4. Pick a specimen

Press select to learn about the first specimen. Press the up or down arrows to see the other specimens and press select to choose one.

### 5. HOME

Press the home button anytime to return to the main category listing.



### 6. Now the Talking Electron Microscope will begin with fun facts or a quiz!

You may switch from Facts to Quiz at anytime by pressing the other button. To change specimens, press the HOME button.

#### Facts

Each time you press the arrow keys in Facts mode, the Talking Electron Microscope will say an interesting fact about the image in the eyepiece. The display will automatically zoom and pan the image to focus on the part of the image that the fact is about.

#### Quiz

Each time you press the arrow keys in Quiz mode, the Talking Electron Microscope will ask a question. Some questions are True or False. Press **A** for true. Press **B** for false. Some questions are multiple choice. Listen to the question and select your choice **A, B, or C**.

Look into the microscope for hints that will help you answer questions. The display will automatically zoom and pan the image to focus on the part of the image that the question is asking about.

### Keep in mind....

- Forgot to turn it off? The Talking Electron Microscope will power down on its own.
- Use the focusing dial to adjust the focus of the Talking Electron Microscope for individual use.

### Battery Installation

GeoSafari Talking Electron Microscope uses three C batteries.

1. Carefully remove the screw to lift the battery compartment door, located on the bottom of the Talking Electron Microscope.

2. Install three fresh C batteries in the battery compartment, as shown.

- Do not use rechargeable batteries.
- Non-rechargeable batteries are not to be recharged.
- Do not mix old and new batteries.
- Do not mix different types of batteries: alkaline, standard (carbon zinc) or rechargeable (nickel – cadmium) batteries.
- Only batteries of the same or equivalent type are to be used.
- Batteries must be inserted with the correct polarity.
- Remove exhausted batteries from the unit.
- The supply terminals are not to be short-circuited.

3. Close the compartment door and tighten the screw.



### How to Reset

If the microscope should malfunction, turn it off and then on again. If that doesn't help, try inserting new batteries.

### Cleaning Instructions

Clean product with a damp or dry cloth. Do not immerse or spray any liquid or water on product.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into a different outlet from the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Note: The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

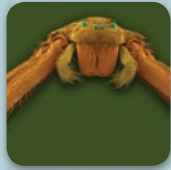
## Animals



Bean weevil and bean seed



Northern house mosquito



Brown recluse spider



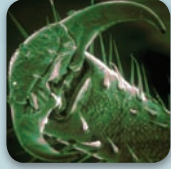
Spinneret of spiny orb-weaver spider



Head of monarch butterfly



Scales on monarch butterfly



Cockroach leg



Pill bug



Head louse on a human hair



Cat tongue papillae



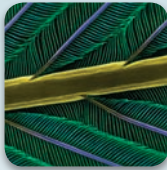
Deer tick



Skin of dogfish shark



Greenbottle fly maggot on beef



Hummingbird feather



Red ant



Housefly



Dust mite



Red spider mite



Grasshopper head

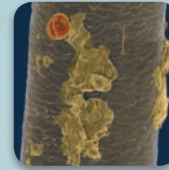


Yellow jacket wasp stinger



Head of leech

## The Human Body



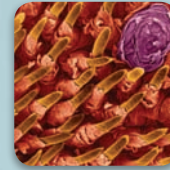
Mucus and pollen grain on a nose hair



Skin



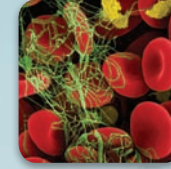
Bone



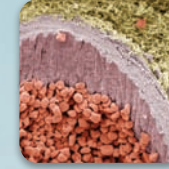
Tongue with papillae and taste buds



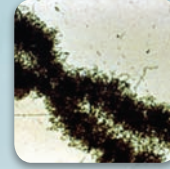
Human eye



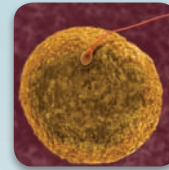
Blood



Blood-filled aorta



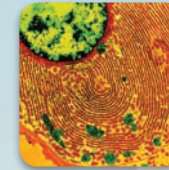
Chromosomes



Sperm and egg



Human hair



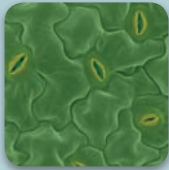
Animal cell



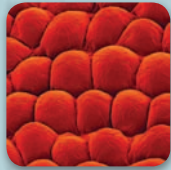
## Plants



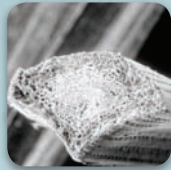
Blade of grass



Surface of rockcress leaf



Rose petal



Cross section of a pine needle



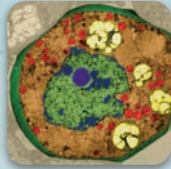
Broccoli floret



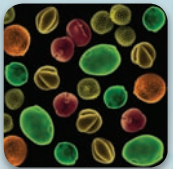
Diatoms



Moss spores on moss



Plant cell



Pollen grains

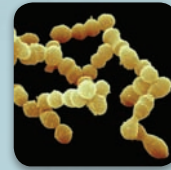


Cross section of a chrysanthemum leaf

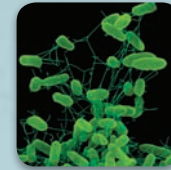


Root of a germinating radish seed

## Viruses and Bacteria



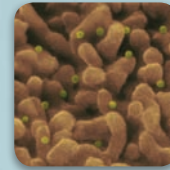
Streptococcus bacteria



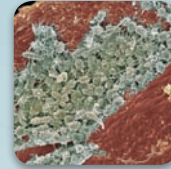
Salmonella bacteria



E. coli Bacteria on surface of small intestine



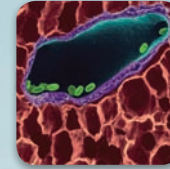
Rhinovirus (common cold)



Tongue with bacteria



Antibiotic treatment on E. coli

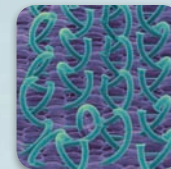


Anthrax virus

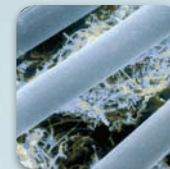
## "Stuff"



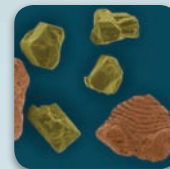
Table salt



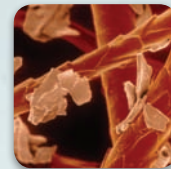
Velcro™ fastener



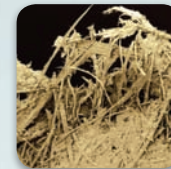
Dental floss with plaque



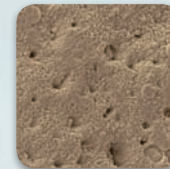
Sand grains



Cat hairs



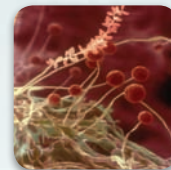
Newsprint paper



Egg shell



Cotton fibers



Window mold



Starch granules in wheat flour