

The Colorful World of Imaging Technology

Check out some of the ways color and contrast can help scientists better visualize tiny specimens, and how this research can help human health!

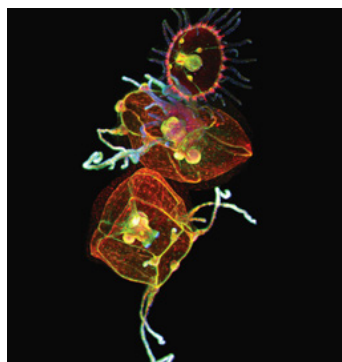
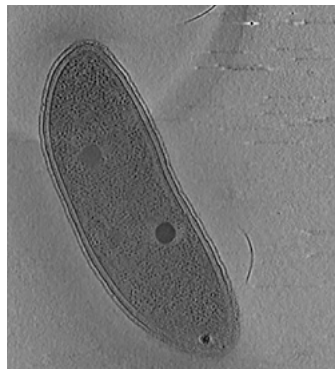
Staining and Colorizing Specimens

Cryo-ET image before and after colorizing

Specimen: Caulobacter bacterium

Color key: In the second image, cell membranes are highlighted in red and blue, protein shell in green, ribosomes in yellow, and storage granules in orange.

Why study this? By studying this bacterium, scientists learn more about asymmetric cell division—an important factor in our understanding of human disease and the growth of tumors.

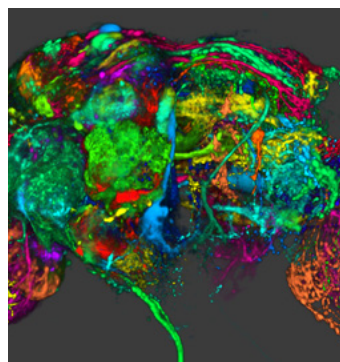


Light sheet fluorescence microscope

Specimen: Jellyfish

Color key: Nervous system is stained green. Musculature is stained red. Cell nuclei are stained blue.

Why study this? By studying jellyfish tissues, scientists learn more about the evolution of animals, including humans!



Confocal microscope + fluorescence

Specimen: Fruit fly brain

Color key: To create this digital, 3D color-coded map, scientists labeled the brain's parts with fluorescence, then captured and combined thousands of photos.

Why study this? By studying the brain of fruit flies, researchers aim to learn more about the functions and structures of the human brain.

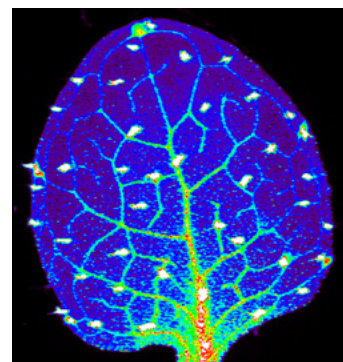


Scanning electron microscope

Specimen: Leg muscle

Color key: Blood vessels are colored pink (with red blood cells at the bottom). The light brown marks the extracellular matrix (ECM), made up of molecules like proteins that physically support the muscle.

Why study this? Disruption of the ECM is associated with many muscle disorders. Scientists hope to learn more about how the ECM functions and how muscle disorders can be treated.



X-ray fluorescence technology

Specimen: Leaf

Color key: The levels of zinc in the leaf from lowest to highest are marked in blue, green, red, and white.

Why study this? Zinc is required for the function of more than 300 enzymes in the human body. With a goal of improving human health, researchers are investigating how plants distribute zinc to find ways of increasing the zinc content of crops.