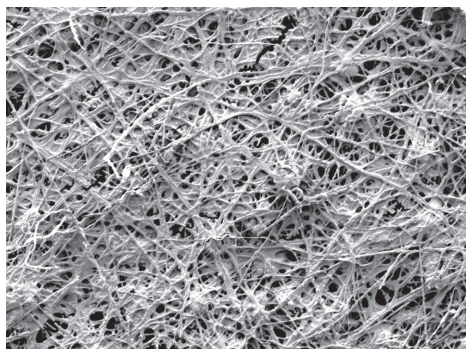


## Guess the Sample!

Can you guess the sample in the SEM picture below?



(See answer below)

Is it:

- a. An egg shell
- b. A wasp nest
- c. A rubber band

Visit us on Facebook **@UTSCOPE** to play **Guess the Sample** every week and see updates about the SCOPE program!



*a. An egg shell*

**All SCOPE Program sessions are absolutely free!**

To schedule a session, or request more information, please contact us:

***cassandra.pittman@utoledo.edu***



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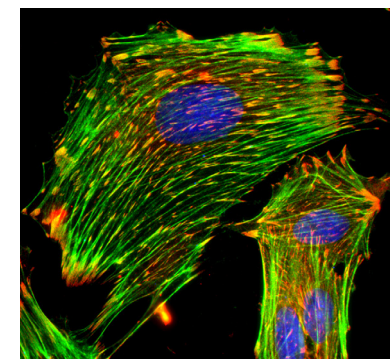
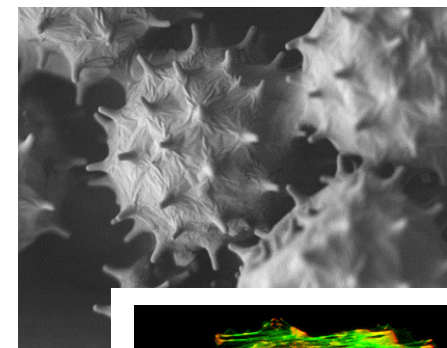
Bowman-Oddy Laboratories  
The University of Toledo  
2801 W. Bancroft St.  
Toledo, OH 43606-3390  
419.530.7847

*This program is made possible by the College of Natural Sciences and Mathematics at The University of Toledo and The National Science Foundation.*

# S.C.O.P.E. Program



**Scientists Changing Our  
Pre-College Education**



**An Instrumentation Center  
Outreach Program**



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# INSTRUMENTATION

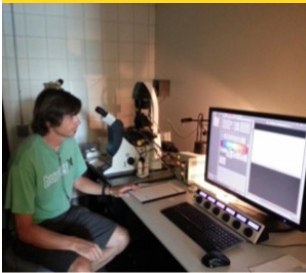
## Scanning Electron Microscope (SEM)

- » Examines morphology of samples
- » Determines chemical composition of samples



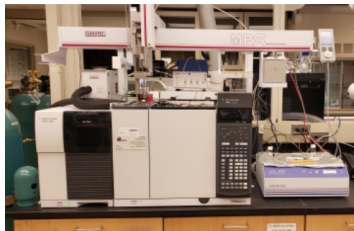
## Confocal Light Microscope

- » Examines cellular structures
- » Uses fluorescence to highlight organelles



## Gas Chromatography-Mass Spectrometer (GC-MS)

- » Examines chemical make-up of samples
- » Determines molecular composition of samples

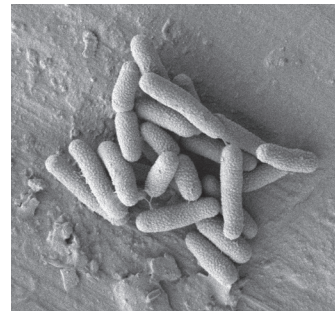
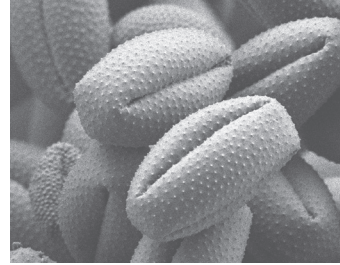


Students access our instruments via desktop sharing software allowing them to use the instrument as would any researcher on campus. Simultaneously, the class video chats with a scientist on campus who loads the samples.

# LESSON PLANS

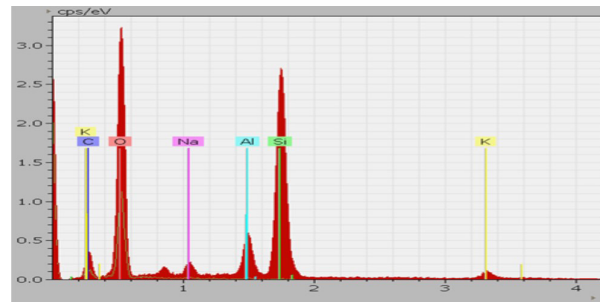
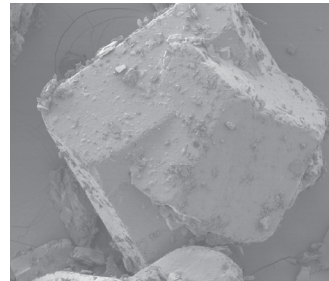
## SEM

- » What does Pollen Look Like?
- » How do Plants Reproduce?
- » SI Units: How Big is a Nanometer?
- » Bacteria and Fungi
- » Forensic Chemistry - A Whodunnit Mystery



- » Insects: Compare and Contrast
- » Fabric: Compare and Contrast
- » Observe and Conclude

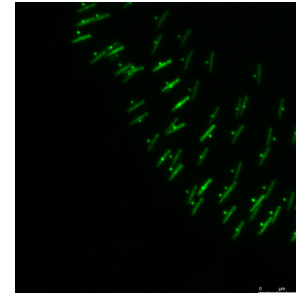
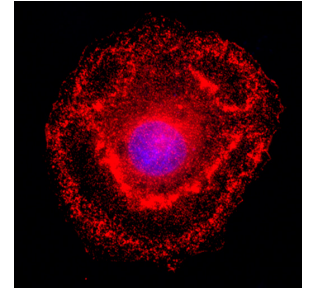
- » Physical and Chemical Properties of Rocks/Minerals \*
- » Elements' Unique Spectra \*



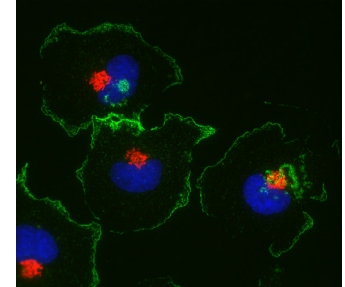
\* Lesson plan aligns with the Ohio Science Standards.

## Confocal Light Microscope

- » Understanding Organelles: Centrioles
- » Transmission and Absorption of Light
- » Looking at a Real Cell
- » Cellular Structure and Function \*
- » Reproduction \*
- » Mitosis \*



In addition to the above Confocal Light Microscope sample lesson plans, the SCOPE team of biologists explain their ongoing research that utilizes the instrument!



## GC-MS

- » The Chemistry of Aromas and Flavors

One to two members of the SCOPE team visit participating classrooms to set-up equipment and run each session.