

The Oak Crest Research Toolbox

By Marc Baum, Oak Crest Institute of Science | Photos by Paul Webster



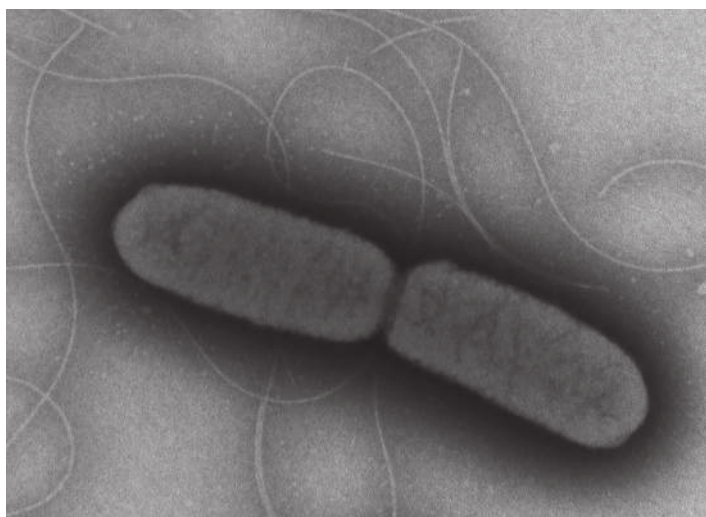
At Oak Crest, we've built a research hub with all the tools a chemist or biologist needs to perform cutting-edge experiments, something I never thought possible when I first started the organization. Over the years, we've gathered a large collection of equipment that allows us to work from the comfort of our own building and attract top scientists from around the area.

But we don't just use this equipment for the Institute's research; we also train students how to work with the equipment and design projects. This helps students develop the confidence and experience they need to succeed in their next academic step as well as giving them job-ready skills.

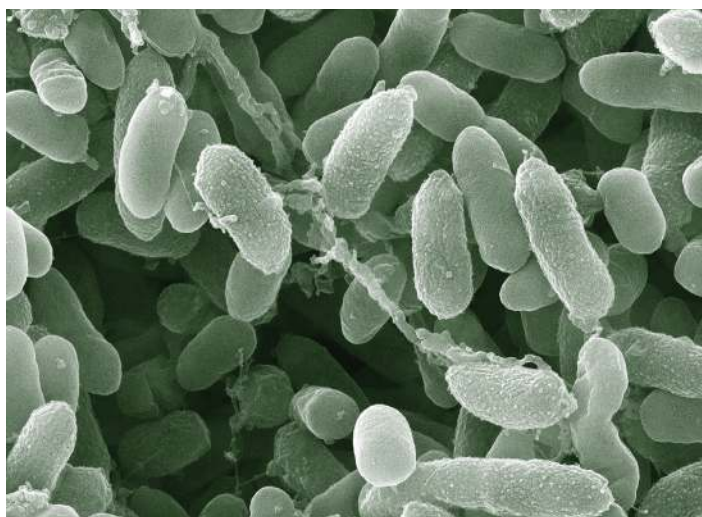
Some of the most impressive additions to our toolbox are our electron microscopes. These microscopes use beams of electrons to magnify even the smallest of objects. If we want to look at an



Destiny Cambero, an Oak Crest intern (a recent US Davis graduate) demonstrates how to magnify bacteria using a transmission electron microscope.



An electron micrograph of some familiar bacterial cells, called "E. coli", taken by Jean Sabety, an Oak Crest intern who is currently a Ph.D. student at Cornell University in Ithaca, NY.



A scanning electron micrograph of a clump of bacteria.



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Oak Crest Institute of Science (Oak Crest) is a 501(c)(3) non-profit organization established to teach and conduct cutting-edge science research. The institute provides an experience-giving role in education, where students work on authentic, funded research projects and develop a sense of belonging to the STEM community.

object's surface, we use the scanning electron microscope. This type of microscope uses a beam that scans across the object, and a computer records the reflected beam to create a magnified image. If we want to see inside the object, such as a cell, we use the transmission electron microscope. This microscope sends an electron beam through the object to create an image.

The images we obtain from these microscopes are an important part of our research and are used in research reports. Many of our students, who are trained to operate these microscopes, become so skilled that they even help out scientists at other institutes.

Having access to this top-notch equipment makes Oak Crest a competitive player in the research world and helps us secure funding from the federal government. But it's not just good for us – it also provides students with a unique opportunity to learn and work with the latest and greatest in research technology.



This is Christopher Polanco operating the scanning electron microscope. He first came to Oak Crest as a Summer Research Experience scholar from Citrus College.