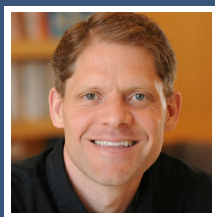


Probing Cell Machinery



Grant Jensen
Professor, Biophysics and Biology

CURRENT RESEARCH

Using advanced microscopy to examine cell structure and function

Some bacteria assemble long needles on their exterior that "poke" into our cells, injecting toxins, while others have harpoon-like spikes that fly out of the bacteria and puncture cells around them. Some sporulate to protect themselves, and others hide in biofilms, but how all this works is not yet understood. Dr. Grant Jensen, Professor of Biophysics and Biology at California Institute of Technology, uses the most advanced electron microscopes available today to image the internal machinery inside cells and see how it all fits together. It is important to learn about all cells and viruses can do so we can improve our abilities to combat the dangerous ones and exploit the others. Eventually we might even be able to mix and match parts to create new forms of cellular life that desalinate water, produce clean energy, clean the environment, or clear infections.

Dr. Jensen's lab of 15 professional and training researchers have the world's best electron microscope for probing the interiors of cells and viruses. Unlike traditional light microscopes that are limited by the wavelength of light (and therefore only allow one to see small bacterial cells but not what's inside them), electron microscopes can probe objects within the cells. The team particularly uses and helps develop cryo-electron microscopy, which preserves cells in a life-like, frozen state, unstained. Producing 3D images of cells much like a CAT scan of one's brain, Dr. Jensen's team is at the forefront of visualizing the internal details of cells and viruses, addressing fundamental questions regarding the movement and behavior of bacteria and bacterial infections.

Current projects include:

- Enhancing Microscopy Techniques:...

AFFILIATION



California Institute of Technology

EDUCATION

- Ph.D. in Biophysics 2000, Stanford University
- B.S. in Physics 1994, Brigham Young University

AWARDS

- Organizer, World Congress on Electron Tomography, 2014
- Member of the Scientific Advisory Board, 2010 - present
- Member of the Defense Science Study Group, 2010 - 2011
- Searle Scholar, 2004 - 2006
- Damon Runyon-Walter Winchell postdoctoral fellow, 1999 - 2002

RESEARCH AREAS

Life Science, Infectious, Proteomics, Oceanic

FUNDING REQUEST

Your contributions will support Dr. Grant Jensen and his team at the California Institute of Technology as they look into cells and viruses with highly advanced electron microscopy. Donations will help fund the annual ~\$1.5M required to operate the lab, ~60% of which supports personnel, ~20% service contracts on equipment, ~15% materials and supplies for experiments, and the rest on other miscellaneous costs. Partner with Dr. Jensen to help us understand cells and viruses!

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