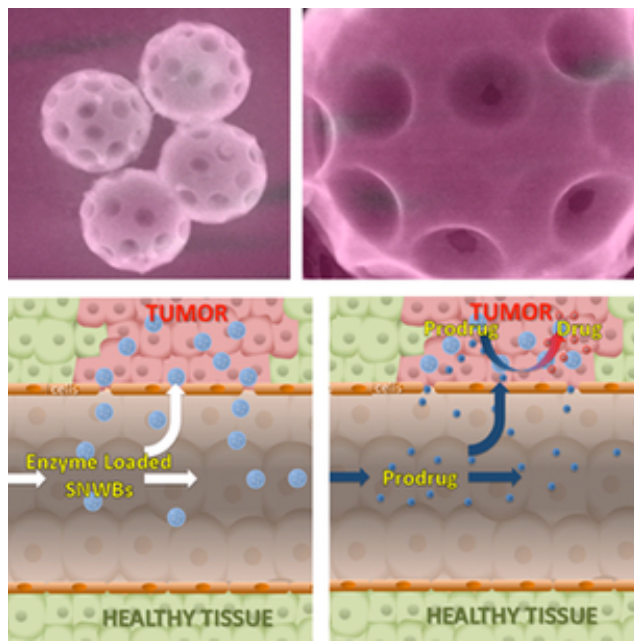


# Center of Excellence for Nano-Medicine and Engineering



## Co-directors

Adah Almutairi, Ph.D.  
*Associate Professor of Pharmaceutical  
Sciences*

Ratneshwar Lal, Ph.D.  
*Professor, Bioengineering, UC San Diego  
Professor, Mechanical and Aerospace  
Engineering, UC San Diego*

The mission of the IEM **Center of Excellence for Nano-Medicine and Engineering (CNME)** is to synergize the expertise in nanotechnology, bioengineering and medical research in the San Diego community and to translate it to the clinic. Because of its multidisciplinary nature, nanomedicine can benefit immensely from collaboration between Engineering and the Health Sciences. UCSD has one of the few engineering schools (JSOE) that can provide expertise and collaboration in bio-nanotechnology with its recently established NanoEngineering department (one of the first in the nation) in close collaboration with its world renowned Bioengineering department in areas emphasized by Health Science including oncology research at the Moores Cancer Center, new imaging and surgical modalities at the departments of radiology and surgery, applications of nanotechnology to treating eye disease at the Shiley Eye Institute, and cell biology and regenerative medicine research at the Skaggs School of Pharmacy and Pharmaceutical Sciences.

The Center for Excellence in Nanomedicine and Engineering (CNME) aims to use responsive and smart materials, nanotechnology, and molecular engineering to transform biological research and medicine.

Nanomedicine is the application of nanotechnology in health research and translation to prevent and treat human diseases. Sub-cellular components and viruses exist and operate at the nanoscale and thus, nanomedicine involves the development of medical applications at the most basic scale of the human body. Some of the potential applications of nanomedicine include:

- In the nearest term, drug delivery systems to improve bioavailability and pharmacokinetic compatibility, targeted imaging contrast agents for MRI and Ultrasound techniques, and assistance in surgical procedures such as determining surgery margins;
- In the medium term, applications to artificial tissues and organs and engineered enzymes; and
- In the longer term, ultimately nano-devices that can be programmed and controlled to target and repair individual cells.

