

## University of California, Los Angeles (UCLA)

UCLA has been an important **BER** research center since its School of Medicine was founded in the mid-1940s. The first PET clinic for patient care was established here in 1976. Today, **BER** research at UCLA focuses on new ways to image the biology and genetics of several diseases, including **cancer, diabetes, heart disease, Alzheimer's disease,** and **Parkinson's disease.**

**BER** scientists at UCLA recently invented a miniature PET scanner, the "microPET," for imaging mice. This device enables scientists to develop new ways to provide real-time images of the molecules that transform normal cells to diseased cells in a living mouse. The same experimental radiopharmaceuticals can be used in human patients imaged with a PET scanner. With microPET and PET, therefore, **BER** scientists at UCLA now have a safe and noninvasive way to study the same biological processes in both mice and humans.



Since mice can be biologically engineered to carry genes that produce disease, molecular probes are being developed to allow scientists to "watch" (image) the initiation and progression of a disease in a living mouse. In concert with this research, scientists are investigating highly sophisticated drugs designed to correct the molecular errors of disease. With microPET, scientists can watch and measure the capability of these new therapies to correct the abnormal biology of disease. Combined with the explosive growth of knowledge from genome research, PET and microPET play a major role in the promising new era of molecular diagnostics and therapeutics.

The microPET mouse image (at left) shows an example of how **BER** scientists at UCLA watch the genome of cells at work in the living mouse. In this mouse, insulin genes in liver cells have initiated instructions to produce insulin, a hormone that regulates the body's use of sugar. This type of research helps scientists better understand diabetes—at the molecular and genetic levels—and guides the development of future therapies for human patients with **diabetes.**

Many research programs worldwide—in nuclear medicine, biology, genetics, and drug discovery—have adopted UCLA's microPET technology. These microPET studies are constantly moving new knowledge from research labs to PET clinics, working to improve the future healthcare of patients.