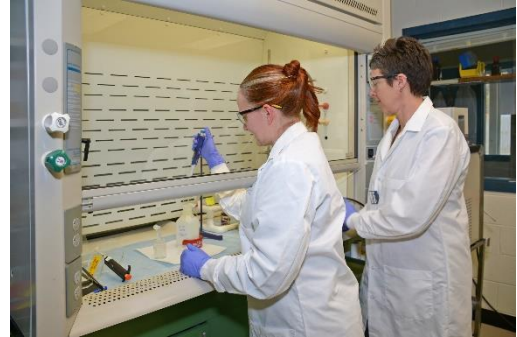


## RESEARCH AND EDUCATION AT MURR

### Radiopharmaceutical Research

The University of Missouri is the only university in the United States that, in collaboration with industry, has brought four FDA approved radiopharmaceuticals to market. This is an area where the University already has a recognized leadership position in translational, precision medicine.

Our vision is for faculty from chemistry, biochemistry, veterinary medicine, engineering and medicine to create a pipeline for radiopharmaceuticals that includes imaging agents for cancer, cardiovascular disease, and neurological disorders as well as new therapeutic agents for cancer and other chronic disorders. The recent success of the targeted radiotherapeutic Lutathera™ which utilizes Lu-177 produced at MURR has reinvigorated industry interest



in developing these agents and MU is poised to lead this rapidly emerging opportunity. While other universities have cyclotron facilities like MURR and are able to produce radioisotopes for imaging agents, MURR is the only facility in the U.S. that can produce the short-lived, beta-emitting therapeutic isotopes on a weekly basis at a scale that will support clinical application of targeted therapeutics. MURR played a critical role in the development of the Molecular Imaging and Theranostic Center (MITC) and the recruitment of a director for MITC and MURR will continue to invest in faculty and research infrastructure to develop new theranostic agents and to translate these life-saving drugs to clinical application.

### Social Science Research

Provenance analysis permits archaeologists to investigate such diverse topics as the mobility patterns of Paleo-Indian hunters in North America, the prehistoric migrations of the Puebloan people in what is today the American Southwest, and ancient commerce in the Eastern Mediterranean.

Since its creation in 1988, the MURR Archaeometry Laboratory has been continuously funded by the National Science Foundation to facilitate archaeological research utilizing the unique capabilities of the research reactor and the Laboratory has collaborated on over 500 archaeological research projects around the world. Recently, MURR partnered with the



Department of Anthropology to hire a tenure track and non-tenure track faculty member and MURR will continue to invest in this internationally recognized program that lies at the intersection of the humanities and the physical sciences.

## Radiochemistry

Radiochemistry uses radioactive isotopes to study systems and processes that cannot be investigated by traditional chemical means. MU has built one of the largest radiochemistry programs in the country with MURR serving as a cornerstone to the campus initiatives in this area. The use of radioactive isotopes has allowed researchers to answer a myriad of questions about wide-ranging subjects from plant metabolism and animal nutrition to the risk and protective factors of disease. MURR houses a dedicated teaching lab for the largest radiochemistry class in the nation and facilitates the use of radioisotopes by faculty and students from across campus. Recently, MURR partnered with the Department of Chemistry to hire two radiochemistry tenure-track faculty and will continue to invest in this nationally recognized program.



## Material Sciences

In the area of materials science, the reactor is a unique resource for faculty and students to characterize the structure and dynamics of materials and investigate their behavior in extreme environments. Whenever an important new material is discovered, its basic structural and magnetic properties will invariably be explored using neutron scattering techniques. Likewise, development of new materials for next generation reactors and space exploration requires an understanding of their behavior in high radiation fields. MURR supports four neutron scattering instruments and is creating the infrastructure needed to perform post-irradiation analysis of highly radioactive materials.