

## **The National Human Radiobiological Tissue Repository: a Unique Resource for Scientists**

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The United States Transuranium and Uranium Registries (USTUR), and the associated National Human Radiobiology Tissue Repository (NHRTR), is a federal-grant program funded by U.S. Department of Energy and operated by College of Pharmacy at Washington State University in Richland, WA. The USTUR studies the biokinetics and internal dosimetry of actinides (uranium, thorium, plutonium, and americium) in occupationally exposed individuals who volunteer their bodies (partially or entirely) for scientific use posthumously. A portion of the tissues received by the USTUR is radiochemically analyzed for actinide isotopes. The remaining portion is retained at the NHRTR in frozen or formalin-fixed state for future studies. Currently, the NHRTR holds ~9,000 frozen and formalin-fixed tissue samples from 40 whole- and 92 partial-body USTUR donors, and ~10,000 acid-digested tissue samples (acid solutions). The NHRTR also houses frozen, ashed, dried, and plastic-embedded bone samples from the radium studies carried out by Argonne National Laboratory/Argonne Cancer Research Hospital, the Massachusetts Institute of Technology, and the New Jersey Radium Research Project. The NHRTR tissue materials: frozen, formalin-fixed, paraffin-embedded, or acid-digested tissues are available to qualified scientists for their research upon request. To qualify for receipt of USTUR/NHRTR samples, researchers must (i) provide a brief summary of the intended use of the samples, (ii) sign a confidentiality statement agreeing to protect the identities of subjects; (iii) provide a copy of Institutional Review Board for Protection of Human Subject approval, if appropriate. The USTUR authorship of published papers is not a condition for collaboration; however, acknowledgement of the source of the materials is required. Recently, the USTUR/NHRTR archived tissue materials were used by national and international researchers to study (i) elemental bio imaging of actinides and beryllium; (ii) microdistribution and long-term retention of plutonium-nitrate in the respiratory tract and its carcinogenic and inflammatory effects; (iii) distribution of actinides using synchrotron radiation micro X-ray fluorescence spectrometry; (iv) beryllium distribution in the human body.

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