TEI-REX

TARGETED EVALUATION OF IONIZING RADIATION EXPOSURE

INTELLIGENCE VALUE

The Intelligence Community (IC) seeks methods to evaluate individuals and/or organisms exposed to low doses, potentially as low as 5cGray, of ionizing radiation. TEI-REX will enable the IC to improve its awareness of intentional or accidental exposure events, improve government personnel and uniformed service members protection, and support counter-proliferation efforts involving radiological material to further improve national and global security concerns

The TEI-REX program aims to establish novel biodosimetry approaches enabling improved quantification of lower-dose ionizing radiation exposures (<0.75 Gray) from samples that can be collected and/or tested minimally or non- invasively, while also expanding quantitative and qualitative knowledge of the exposure environment. Current capabilities approaches are constrained by invasive and/or serially collected samples, dependent on transient markers, and focus on high-dose and high-throughput triage.

The TEI-REX program began in Q4 FY22 and is a 3-phase (42-month) program investigating non-transient biomarkers that inform towards ionizing radiation exposure assessment. This will enable detection of signatures within 25 days and greater than 90 days post-exposure will be studied. The program initially focuses on robust biomarkers associated with higher dose exposures, while driving research towards lower-dose marker(s) discovery.

At program conclusion, viable biomarkers and biodosimetry models are expected to exhibit a high degree of accuracy when tested against partner-informed real-world simulants and samples. TEI-REX capabilities will enhance the IC and U.S. Government's ability to investigate exposure events, counter proliferation efforts, and ensure compliance with established dosimetry protocols.

PRIME PERFORMERS

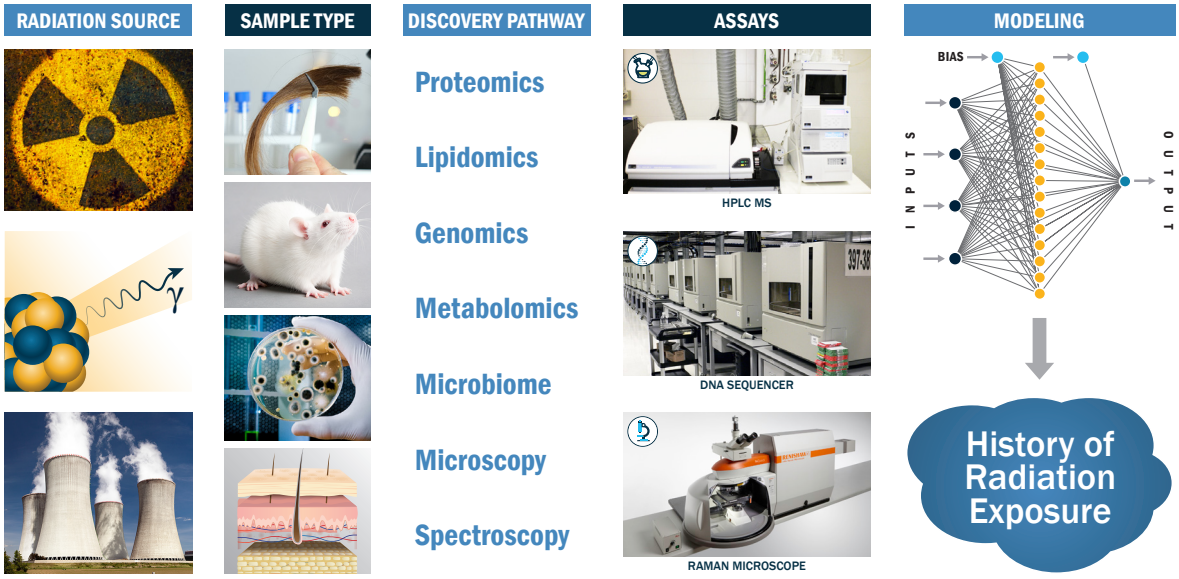
- University of Washington
- The Ohio State University
- Signature Science, LLC
- Areté Associates

TESTING AND EVALUATION PARTNERS

- Armed Forces Radiobiology Research Institute
- Lawrence Berkeley National Laboratory
- Los Alamos National Laboratory

KEYWORDS

- Biodosimetry
- Health Physics
- Radiation Physics
- Biomarker discovery
- Ionizing Radiation
- Low-dose Radiation
- Analytical Biochemistry



TEI REX
Advancing Biodosimetry

PROGRAM MANAGER
Michael Patterson, Ph.D.
Phone: (301) 243-1812
michael.patterson@iarpa.gov