

Pb-212 AGENDA

AUGUST 17, 2021, 1 PM EDT

1:00 – 1:10 PM	Roy Copping, Oak Ridge National Laboratory (Moderator) Introduction	1:30 – 1:40 PM	Ebrahim Delpassand, RadioMedix
1:10 – 1:20 PM	Mengshi Li, Viewpoint / University of Iowa	1:40 – 1:50 PM	Matt O'Hara, Pacific Northwest National Laboratory
1:20 – 1:30 PM	Rebecca Abergel, University of California at Berkeley	1:50 – 2:30 PM	Moderated Q&A Segment

Oak Ridge $^{224}\text{Ra}/^{212}\text{Pb}$ Generator Production

Roy Copping

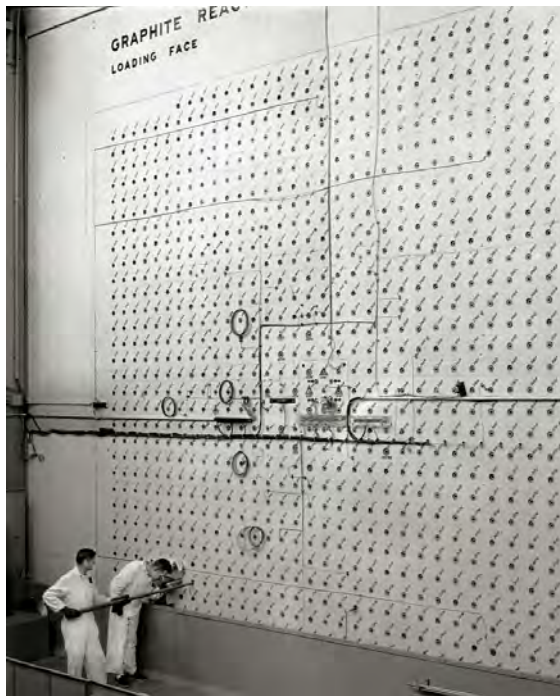
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U.S. DEPARTMENT OF
ENERGY

 **Isotope Program**
U.S. Department of Energy

Isotope production, enrichment and distribution began at Oak Ridge in 1946



ORNL has a Rich History in Medical Radioisotopes

1946



1st ^{14}C shipment to Barnard Free Skin and Cancer Hospital, St. Louis.
1946-1963: 1000's of shipments of up to 60 different radioisotopes

1947-2009



Large-scale mouse genetics project to study the effects of radiation on mammals
Radiation Protection and Effects
- Broad biological research program

1993



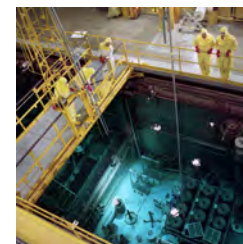
Cancer and Heart Disease Treatment

1997



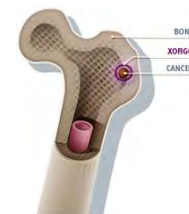
^{225}Ac &
 $^{225}\text{Ac} / ^{213}\text{Bi}$
generator
production

1998-2011



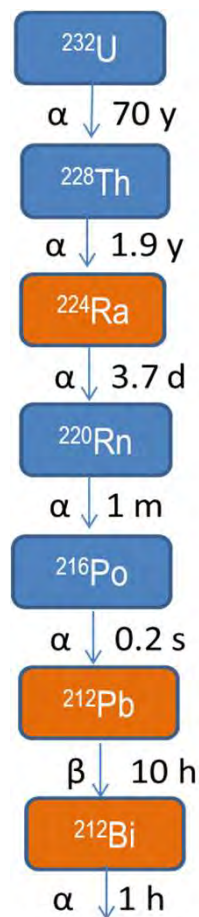
Office of Biological and Environmental Research: Low Dose Radiation Research

2017



$^{227}\text{Ac} / ^{223}\text{Ra}$
treatment for prostate cancer patients

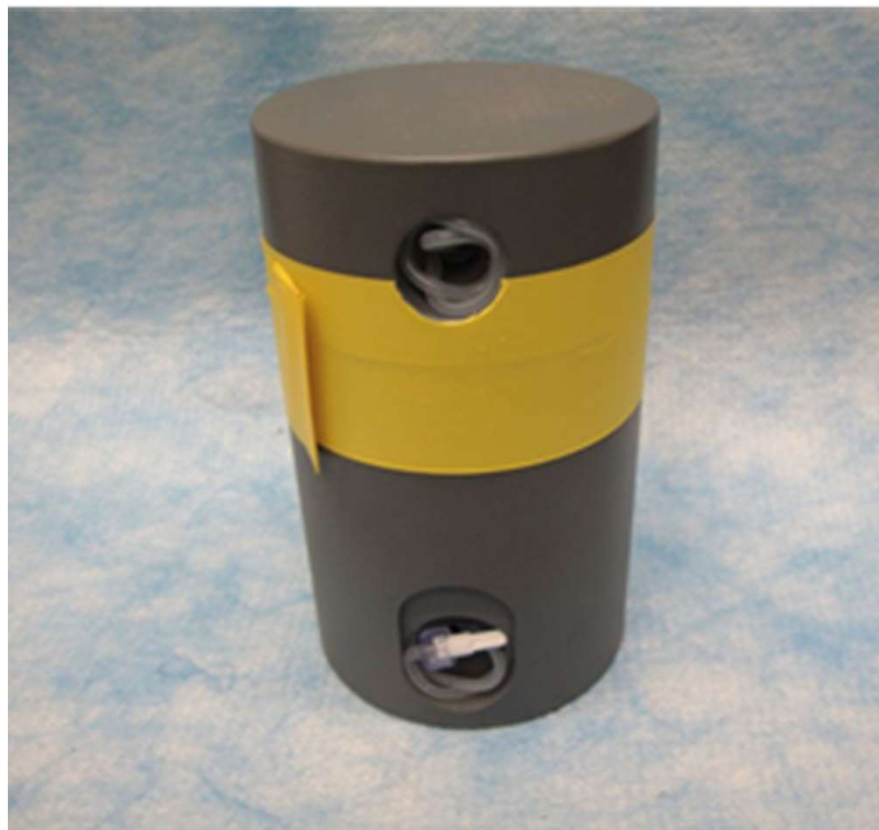
$^{224}\text{Ra}/^{212}\text{Pb}$ Generator production



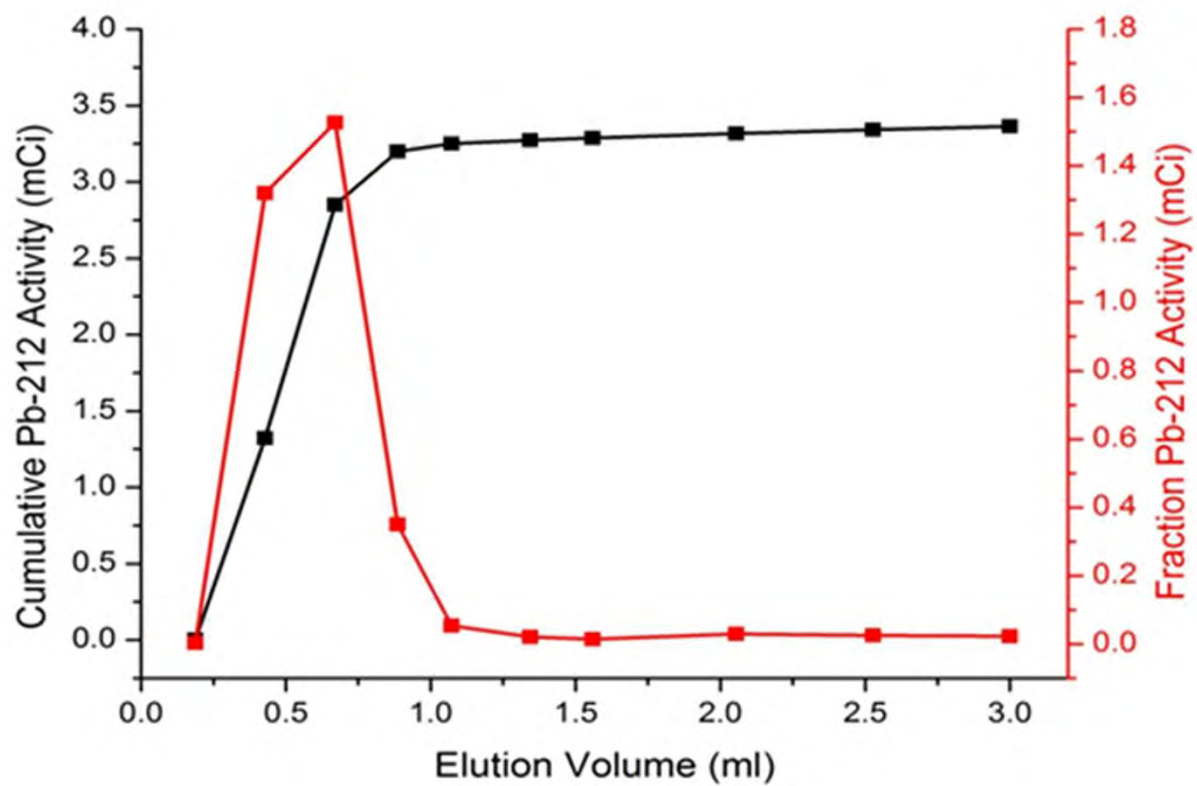
- Production established in 2014
- ^{224}Ra (3.6 d) separated from parent ^{228}Th and loaded on cation resin
- “Generator” (<20 mCi) can be milked periodically for ^{212}Pb ($t_{1/2} = 10$ hrs) and ^{212}Bi (1 hr) and used in TAT applications
- Stock of ^{228}Th available to support production

$^{224}\text{Ra}/^{212}\text{Pb}$ Generator

- ^{212}Pb can be eluted from the generator in 2 M HCl



^{212}Pb Elution Profile



Question?

