

April 16th, 2024

11:00



Dr. Valery Radchenko

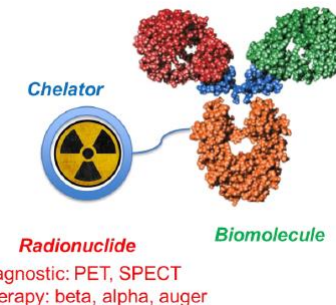
TRIUMF & University of British Columbia,
Vancouver, Canada

BACKGROUND

Dr. Radchenko is Research Scientist at TRIUMF and an adjunct professor at the University of British Columbia, Chemistry Department with the main research focus on the production and application of therapeutic radionuclides for Targeted Radionuclide Therapy (TRT). Radiochemist by training, he received his Ph.D. in 2013 with a thesis focused on the design of production of promising radionuclide for immuno-PET: ^{90}Nb , followed by a postdoctoral position at Los Alamos National Laboratory, NM, USA, working on the production of ^{225}Ac from spallation of thorium with high-energy protons, and on the extraction of valuable medical radionuclides from irradiated thorium targets as $^{223/224/225}\text{Ra}$, ^{230}Pa , $^{103}\text{Ru}/^{103m}\text{Rh}$, ^{111}Ag , on the design of production alternative for low energy slot at Isotope Production Facility at LANL and others. He published over 80 scientific papers in peer-reviewed journals and was a guest editor on special issues on alpha and Auger emitters for Targeted Therapy.

Modern alchemy (radiochemistry) for cancer imaging and therapy

Abstract



The use of radionuclides has become more and more common in the diagnosis and therapy of cancer. Targeted radionuclide diagnostics and therapy based on the combination of appropriate radionuclides with selective delivery systems (e.g. antibodies, peptides etc.) maximizes the precision of the imaging as well as minimizes the damage of healthy tissues during therapy. Furthermore, based on imaging (tumor sizes and locations), appropriate therapeutic radionuclides emitting alpha, beta- particles or Auger electrons can be utilized. TRIUMF provides a unique infrastructure for the production of medical radionuclides with protons for imaging and therapy. Low energy (TR-13) is a working horse of the Life Sciences Division, which is used for the production of well-established imaging radionuclides (^{18}F , ^{11}C), as well as several imaging radiometals (^{68}Ga , ^{44}Sc , ^{86}Y , ^{89}Zr) and therapeutic radionuclides (^{119}Sb , $^{197m+g}\text{Hg}$, ^{103}Pd). Besides, TR-13 actively utilized several other TRIUMF infrastructures, including ISAC (production of $^{209/211}\text{At}$, $^{225}\text{Ra}/^{225}\text{Ac}$, ^{226}Ac , ^{155}Tb , ^{165}Er) Isotopes Production Facility (IPF) for spallation reaction on thorium target for production of several emerging therapeutic radionuclides (e.g. ^{225}Ac). The status of TRIUMF infrastructures use will be presented as well as potential future production capabilities, including ARIEL proton and electron beamlines and IAMI will be discussed.

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