This week’s seminar will be held in person at WALC 2007 and presented synchronously through simulcast. The following link can be used for the live stream. Authentication is not required.

“Whole Body Potassium as a Biomarker for Potassium Uptake Using a Mouse Model”

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Tuesday, February 9, 2021
WALC 2007
4:30-5:30 PM Eastern Time (US and Canada)

Abstract: Hypertension is one of the most common diseases among the human population. For example, in 2009-2010, 23.1% of adult Americans had prehypertension, while an additional 29.5% had hypertension. Potassium is the most abundant cation in intracellular fluid, and it has been considered a potential curative source for many diseases. Several nutritional and clinical studies showed that a potassium-rich diet helped lower blood pressures (BP) and related cardiovascular diseases (CVD). Especially, DASH, Dietary Approaches to Stop Hypertension, has gained popularity in the past two decades; however, potassium’s role in this nutrient-rich diet has been questioned by many. There is still knowledge gap to understand how higher or lower potassium intake alone or in the presence of other nutrients is associated with hypertension and CVD. Potassium is often measured in serum, plasma, or urine by using selective electrodes. In order to determine the bio-kinetics of potassium in the body, we have developed a new in vivo method. In-vivo neutron activation analysis (IVNAA) is a unique and powerful technique for elemental analysis in the human body that can quantify potassium and monitor potassium kinetics. The method makes use of a low energy neutron source to stimulate the production of characteristic gamma rays of potassium from a sample. The resulting gamma rays are detected and analyzed to identify and quantify the elements within the sample. Our lab developed a prototype DD neutron generator based IVNAA system for metal quantification. This project aims to test our IVNAA assembly to measure the total body potassium in small animals. The system will be adopted accordingly in the future, first for the in vivo studies in large animals, i.e., pigs, and later on human subjects.