WEBINAR:

(September 18, 2024) Gamma Eye calibration, system characterization, and in vivo imaging of 225Ac.

Questions and answers from the September 18th 2024 webinar titled: *"Gamma Eye calibration, system characterization, and in vivo imaging of 225Ac."*

This document includes questions we received and answered during the webinar, as well as those that we did not have time to address.

1. **How would you quantify, daughter redistribution?**

Jacob Hesterman: The daughter Radionuclides are are no longer bound. Then you could have non-equilibrium bismuth in particular, potentially redistribute to other tissues. One approach here is to use the 2 18. Kev Peak making an assumption that the Francium is decaying on the location of the Actinium, and then the 4 40 Kev Peak and assume that the the bismuth may potentially have have redistributed for example, to the kidney, so that you would see a higher signal there. So you can compare those signals. This could potentially also be done using that 82 Kev Peak. But likely we would need to dig in a little more into exactly kind of which decays are contributing to that 82 Kev Peak. And what would we expect, you know, need to model that out a little bit in terms of what you might expect if there is redistribution in terms of the relative signal intensities of those 2 peaks of image.

2. **The poor resolution of images is this related to the Actinium decay chain and the admitted daughters? Or is this a result of the instrument itself?**

Jacob Hersterman: You have a few factors that are coming into play. And I actually thought the images looked looked quite but good, especially the 82 Kev, and and even that some of the 2 18 Kev images looked looked excellent like that 96 h image of mouse, too. So you have typically relatively low administered activities and relatively low abundance. So you know your your images are going to improve with with counts, as we have Poisson statistics here, so the more counts he better your images will look. So so we're relatively count starved. And then for those higher energies you are going to have increased, scatter, increased septal penetration. There are just a a number of factors that are at play here. So I think there's th. This is why Alpha imaging is imaging of alphas, especially for Actinium 2, 2, 5 is is challenging. To begin with, I thought, these images look actually quite good. And

then, as we continue to, or as the biotech team continues to kind of look at these results. Work on the collimator. And or you know, continued optimization of of scatter correction and higher energy peaks or corrections on that front, these images will will only improve.

3. **Which software was used to view and analyze the images?**

Jacob Hasterman: There's a software that comes with the imaging system that was used for some of the analysis. And then here we were using vivo quant to do some continued analysis and visualization. So it was a combination of of the the analysis software that came with the imaging system and the vivo quant software.