Abstract Submitted
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The expression levels of cellular prion protein affect copper isotopic shifts in the organs of mice KERRI A. MILLER, Dept. of Physics and Astronomy, University of Calgary, CATHERINE M. KEENIN, Dept. Physiology Pharmacology, University of Calgary, GARY R. MARTIN, FRANK R. JIRIK, Dept. Biochemistry Molecular Biology, University of Calgary, KEITH A. SHARKEY, Dept. Physiology Pharmacology, University of Calgary, MICHAEL E. WIESER, Dept. of Physics and Astronomy, University of Calgary — Copper isotopic fractionations can occur in biological systems during metabolic processes. Determining the distribution of Cu isotopes in the body can provide a detailed understanding of Cu processing. We measured the Cu isotopic composition of specific organs in transgenic mice. The strains of mice include wild type (WT, n=4), prion knockout (*Prnp*-/-, n=3), and a strain of mice that had a mutation in the copper binding sites in the N-terminus of PrP^c (Cu-del, n=5). We found the liver, kidney and brain tissue samples to be enriched in ^{65}Cu compared to the food. When comparing the difference in isotopic composition between two organs or bodily fluids, or the *isotopic shift*, in each individual mouse we observed genotype dependent isotopic shifts between the food and intestinal regions and between the serum and select brain regions. We attribute these differences in isotopic shifts to changes in Cu processing within the organs. Our results demonstrate that by modifying a key copper-binding protein through altered gene expression, we see marked changes in the copper isotopic patterns in mice.

Kerri A. Miller
Dept. of Physics and Astronomy, University of Calgary

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