THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES
Nutritional Sciences & Wellness

SEMINAR ANNOUNCEMENT

The School of Nutritional Sciences and Wellness presents:

"Function of metal transporter ZIP8 in the intestine"

By
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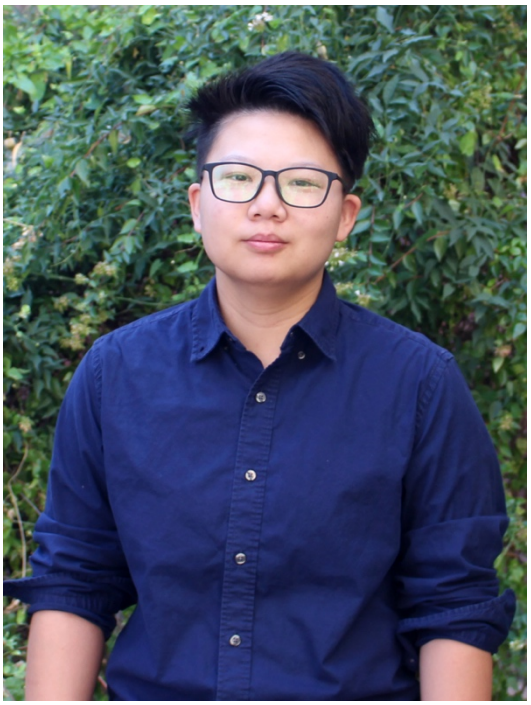

Wednesday, April 6th 2022
12pm
Shantz Building, Room 247
https://arizona.zoom.us/j/82678706371

Function of metal transporter ZIP8 in the intestine

ZIP8 is a metal transport protein and plays an important role in systemic manganese homeostasis. Mutations in the *ZIP8* gene result in severe manganese deficiency, however, the specific function of the ZIP8 in Mn metabolism still needs to be confirmed. Previous experiments found that ZIP14, a Mn transporter in the same family as ZIP8, reabsorbs manganese in the basolateral side of the intestinal enterocyte, but the apical side Mn transporter is unknown. ZIP8 was identified as an apical membrane protein of kidney epithelial cells, pulmonary alveolar epithelial cells, and hepatocytes. We hypothesize that the ZIP8 absorbs manganese from the apical side of the enterocyte.

CaCo2, a human colon epithelial cell line, was used to overexpress the *ZIP8* gene. Wild-type and overexpressed cells were grown in transwell plates and surface proteins were biotinylated to identify the location of ZIP8 in the membrane. In the wild-type mice model, the intestine was collected and analyzed by Western Blot. *Zip8 Flox* & *UBC-Cre* and *Zip8 Flox* & *Villin-Cre* mice were used to create a global knock-out and enterocyte-specific knock-out model, respectively. The intestine sample was collected and analyzed by DAB staining and immunofluorescence to visualize the ZIP8 location in the intestine. In the CaCO2 membrane results, ZIP8 is expressed in both basolateral and apical side, and is enriched on the apical side. In the mice, ZIP8 is expressed in both the basolateral and apical sides.

To identify the function of ZIP8 in CaCo2 cells, we will try Mn uptake experiment and collect the metal content which will be analyzed by inductively coupled plasma mass spectrometry (ICPMS). In mice models, we will use a dietary model and genetic model to monitor how different manganese levels alter the homeostatic environment in the mice. All the mice organs will be collected and manganese levels will be detected by ICPMS. Statistical analysis of ICPMS results will show the function of ZIP8 in mice from the Mn overload and deficiency models, while results from CaCo2 cells will show the function of ZIP8 in the intestinal epithelium.