Long-distance transport and seed loading of essential and toxic heavy metals.

David G. Mendoza-Cozatl,
Asst. Prof. Plant Sciences
mendozacozatld@missouri.edu

Division of Plant Sciences, C.S. Bond Life Sciences Center, University of Missouri, Columbia, Missouri 65211, USA.

Plants and seeds are the main dietary source of essential micronutrients (Zn, Fe, Cu, Mn) but also the main entry point for toxic elements (Cd, Pb, As) into the food chain. Plants rely on two vascular systems (xylem and phloem) for long-distance transport of molecules within plant tissues. Leaf-to-leaf transfer and seed loading however, occurs preferentially through the phloem. Our lab is currently using phloem-specific translatome analysis, functional genomics and ionomics to understand the role of phloem transporters in the distribution of heavy metals within the plant. If we understand the mechanisms by which plants take up and distribute essential and non-essential metals, we could engineer plants with a higher nutritional value even if they are grown in the presence of non-essential toxic metals.