

# Plant Genomics

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## Known proteins, unexpected functions: A new insight into the transport mechanism of arsenite and cesium

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Toxic metals in the soil are a major environmental concern for agriculture industry. The translocation of these metals from root to the reproductive organs is the major source of food chain contamination. One of the best methods to reduce the soil contamination is phytoremediation. However, appropriate use of phytoremediation needs the basic mechanistic information of the transport of toxic metals. Hence, identifying the transporters and understanding the cellular transport mechanism are a prerequisite to engineer plants capable of phytoremediation. This talk will be focused on transport mechanisms of two metals, arsenic and cesium. Arsenic exists in two natural forms; arsenate and arsenite. Arsenate is the predominant form in the soil and transported by phosphate transport carrier system. Once arsenate gets inside the plant, it is readily converted to more toxic form arsenite by arsenate reductase. The uptake of arsenite is regulated by aqua glycerol proteins or aquaporins. However, the efflux of arsenite remains obscure. Using molecular and cellular approaches, we found that intracellular arsenite and auxin responses are connected and one of the auxin efflux carriers also functions as an arsenite efflux carrier. I will also introduce our recent work on cesium transporters and provide evidence that cesium transport is regulated by carriers that are not linked to potassium transport system.

### Biography

Abidur Rahman has completed his PhD from Kobe University, Japan and Postdoctoral studies from University of Massachusetts, Amherst, USA. He is currently working as an Associate Professor in the Faculty of Agriculture, Iwate University, Japan. He has published more than 25 papers in high impact journals and has been serving as Editorial Board Member of several reputed journals.

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