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## ACCEPTED MANUSCRIPT

# A novel fungal arsenic methyltransferase, *WaarsM* reduces grain arsenic accumulation in the transgenic rice plant

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#### **Highlights**

- First report of arsenic volatilization in rice by *arsM* gene of eukaryotic origin.
- The expression leads to improved arsenic resistance via volatilization.
- Less arsenic accumulation in seeds and all other parts of transgenic plants.
- Present study provides a potential strategy to reduce arsenic accumulation in rice grain.

#### Abstract

Rice (*Oryza sativa* L.) grown on arsenic-containing soil and water become a primary dietary source of arsenic and pose a significant health risk. Gene modification is an important

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