

LEMNA MINOR RESPONSE TO CADMIUM ACCUMULATION

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The water plant *Lemna minor* is an angiosperm with a worldwide distribution. It has been used as an experimental model system to investigate heavy metal induced responses and to study the regulation of sulfate assimilation in higher plants. It is a free-floating plant, easy to culture in laboratory and it is reported to be an effective decontaminant of waste waters from many xenobiotics and some heavy metals such as Cd. This species takes up nutrients and all chemicals in the growth medium directly into the lower surface of its green fronds. In previous work we have investigated the factors influencing the response of sulphate metabolism to Cd and its interaction with photosynthesis. The sulphate uptake and reduction are essential to detoxify Cd but are also energetically very expensive and thus require an efficient and active photosynthesis. Since uptake and compartmentation of reduced glutathione (GSH), oxidized glutathione (GSSG), and glutathione conjugates are important for functions such as sulfur transport, resistance against biotic and abiotic stresses, and developmental processes, we are biochemically and molecularly characterising the response of *Lemna minor* in steady-state conditions and in response to excess Cd. Based on *Oryza sativa* genomic sequences we are isolating metal-uptake transporters genes, genes associated to GSH pathway and genes correlated to developmental processes in order to dissecting the molecular and morphological basis of metal hyperaccumulation.

Moreover, we are setting up new protocols for *Lemna minor* genetic transformation to further improve its use in phytoremediation.