

## 특별강연 II

# Mechanism of Se and Cd accumulation and tolerance in plants

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To find rate-limiting steps in Se assimilation pathway, the biochemical pathway of Se was genetically manipulated by overexpressing 7 enzyme-encoding genes involved in Se/S assimilation in *Brassica juncea*. Among these transgenic plants 3 kinds showed higher accumulation and altered tolerating capacity of Se; sulfate permease involved in selenate uptake, ATP-sulfurylase in selenate to selenite reduction, and cystathionine- $\beta$  lyase in selenocysteine to selenomethionine conversion. XAS (X-ray absorption spectroscopy) analysis showed that the transgenic plants converted 60~95% of inorganic Se to organic Se (mainly selenomethionine), suggesting that this conversion might be a mechanism for higher Se accumulation. In addition, to elucidate the molecular mechanism of Cd tolerance, AtMRP (multidrug resistance associated protein of Arabidopsis) and CIPK (cadmium-inducible protein kinase) were isolated and characterized.