

Uranium bio-precipitation and recovery from high radiation environments: New approaches

Removal of traces of uranium from nuclear waste poses a big challenge for its disposal. Our laboratory has genetically engineered the extremely radio-resistant bacterium *Deinococcus radiodurans* to over-express either an acid phosphatase PhoN, or an alkaline phosphatase PhoK, to achieve impressive uranium bio-precipitation (up to 7-10g U/g dry biomass) over a wide pH (5-9) and uranium concentration (0.2-10 mM) range. Successful preservation of bioprecipitation-active dry biomass for up to 2 years at ambient temperature has been achieved. Conditions have been optimized to accomplish easy and complete recovery of precipitated uranium. Further augmentation of uranium bioremediation has been accomplished by: pyramiding *phoN* and *phoK* genes in a single strain, employing radiation-responsive *Deinococcus*

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