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FOOD MICROBIOLOGY

- Speaker abstract
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ANNUAL MEETING 2004

- Speaker abstract
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- Student contributed paper**
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Start →

***Deinococcus radiodurans*: Using Genomics and Microbiology in the Development of Radiation Resistant Bioremediation Approaches**

M. Daly*. Uniformed Services University of the Health Sciences, Bethesda, MD

Deinococcus radiodurans is one of the most radiation resistant organisms yet discovered. The bacterium can survive extremely high doses of acute ionizing radiation (10,000 Gy) without cell-killing. 5 Gy is lethal to a human, and 1,000 Gy can sterilize a culture of *Escherichia coli*. *D. radiodurans* is also capable of growth under chronic radiation (60 Gy/hour) and is resistant to other DNA damaging conditions such as desiccation, UV light, and oxidizing agents. The genes and cellular pathways underlying the survival strategies of *D. radiodurans* are under investigation using DNA microarrays and high-throughput proteomic approaches. Its resistance characteristics are being exploited to develop bioremediation strategies for cleanup of highly radioactive US Department of Energy waste sites. We have recently shown facilitated Cr(VI) reduction by *D. radiodurans* engineered for complete toluene mineralization. How bacteria are able to grow under chronic gamma-radiation remains unknown. We have shown that *D. radiodurans* contains high intracellular manganese concentrations, and Mn restriction renders cells sensitive to irradiation. Because the amount of DNA damage inflicted in *D. radiodurans* during irradiation is the same as other organisms, we propose that the high Mn levels facilitate cell survival by quenching metabolism-induced oxidative stress during recovery.

** Contributed papers open to students only. All abstracts will be reviewed and students will be notified of acceptance by mail after May 1.

Are you a student? Yes No Are you a speaker? Yes No If yes, which session: (19) Metals and Bacteria

Are you interested in submitting a manuscript for *JIM&B*? _____

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Signature of Senior Author _____

Date _____

General topic of abstract _____

Sample Abstract

Use the sample shown below as a guide for style and spacing when typing the abstract. Practice typing it in a rectangle 5 inches wide by 4.75 inches long before using the official form.

Start →

Genetic engineering in the biological treatment of hazardous wastes. M.F. DeFlaun*, R.J. Steffan,

A. Jessop, B.D. Ensley, Envirogen Inc., Lawrenceville, NJ.

Strategies for engineering bacteria to be used in the treatment of

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 The original abstract form plus one copy, with all relevant information completely filled out on the bottom of the abstract form, is enclosed.