

Engineered bacteria mop up mercury spills

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Thousands of tonnes of toxic mercury are released into the environment every year. Much of this collects in sediment where it is converted into toxic methyl mercury, and enters the food chain ending up in the fish we eat. New research, published in BioMed Central's open access journal *BMC Biotechnology*, showcases genetically engineered bacteria which are not only able to withstand high levels of mercury but are also able to mop up mercury from their surroundings.

These mercury-resistant bacteria, developed by researchers from Inter American University of Puerto Rico, Bayamon Campus, contained either the mouse gene for metallothionein or the [bacterial gene](#) for polyphosphate kinase. Both strains of bacteria were able to grow in very high concentrations (120µM) of mercury, and when the bacteria containing metallothionein were grown in a solution containing 24 times the dose of mercury which would kill non-resistant bacteria, they were able to remove more than 80% of it from the solution in five days.

Dr Ruiz who led the research said, "The inclusion of heavy metal scavenging molecules in bacteria provides a viable technology for mercury bioremediation. This method not only would allow us to clean up mercury spills from the environment but the high accumulation of mercury within the transgenic bacteria also provides the possibility of recycling it for further industrial applications."

More information: Characterization of mercury bioremediation by transgenic bacteria expressing metallothionein and polyphosphate kinase, Oscar N Ruiz, Derry Alvarez, Gloriene Gonzalez-Ruiz and Cesar Torres,

BMC Biotechnology (in press)

Provided by BioMed Central

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