Ralstonia metallidurans to Produce Gold Alongside Other Rare Metals

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Abstract Ralstonia metallidurans to produce gold alongside other rare metals The Ralstonia metallidurans is a gram negative bacteria that lives in metallic environment in order to produce gold. R. metallidurans is a hydrogenotrophic bacterium that uses oxygen to produce Au element through its metabolism occurring due to the surrounding metallic environment. It starts to form gold nuggets, as it's final product after moving the molecules to the top of the cell membrane. The project aims to produce gold in an efficient way to produce high amount of gold with no loss keeping in mind the facilities, workers, the bacteria, and other fields to be considered. Since that the bacteria needs large amount of space to reproduce, we decided to use the sand as the environment for the bacteria, noting that the sand has some metallic molecules. However, the process in the bacteria to produce Au will be slow. Intercellular enzymes are used in order to support the bacteria and make it more efficient in producing Au. After several experiments done, we have found that the enzyme (AE 104 rpoQ-rsqA) has the best impact on the bacteria to produce Au rapidly efficiently, which is 142 μm. After several mathematical operations and equations, we confirmed that after 9.13 years Saudi Arabia will produce 71 tons of gold in a space of 300,000km2 in the Rub' Al-khali. This will save up to $8billion dollars. This amount of money will reach a certain extent of 113 tons of gold due to the limited space of 300,000km2.

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