Detection and alert system for heavy metal contamination using BioBricks devices and Arduino based bacterial-human interface

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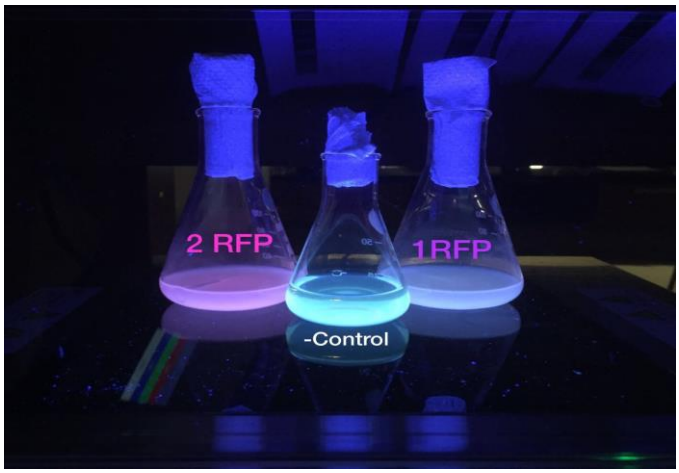
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I. Abstract

Heavy-metal contamination of water is a major threat to both the environment and public health. The extent of water contamination in Pakistan has reached an alarming stage, for instance, a recent study indicated that Arsenic contamination of water in Pakistan has put almost 60 million people at risk. Inefficient disposal of municipal and industrial waste and the excessive use of chemicals in agriculture are the main contributing factors behind this growing problem. The methods currently being applied to assess the heavy metal contamination of water are expensive and complicated. Our research focuses on developing novel prokaryotic and eukaryotic bio-reporter systems (biosensors) for an efficient and simple detection of heavy-metals in freshwater resources. These reporting systems will be genetically engineered inside E.coli and Trout thus enabling them to detect the presence of 6 different heavy metals through specific metal inducible promoters and chromo-protein expressions. Our synthetically engineered system will be complemented with an electronic device which will enable the user to receive an alert message whenever our genetically engineered prokaryotic and eukaryotic bio-reporter system will detect the presence of heavy metals in water.

II. Image:



III. Reference:

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IV. Biography:

Babar is an undergrad biotechnology student and research coordinator at the Centre of Biotechnology and Microbiology (COBAM), University of Peshawar, Pakistan. His research interest are in synthetic biology and bio-entrepreneurship. He has published 3 papers in reputed journals and has been serving as an editor-in-chief of Nuclineers.com.

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