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Whole cell bacterial biosensor for environmental monitoring and pollutants detection

Saurabh Gupta

International Centre for Genetic Engineering and Biotechnology, India

Whole-cell microbial sensors have become one of the latest approaches of molecular tools in environmental monitoring. A whole-cell bacterial biosensor capable of detecting a wide range of pollutants (e.g. - aromatic hydrocarbons) can be created by placing a reporter gene under the control of an inducible promoter. Expression of the reporter gene provides a measurable response when the appropriate transcription activator protein interacts with a pollutant molecule to signal a particular environmental condition. *Luciferase* is the most sensitive and preferred reporter gene in the application of environmental monitoring, which signals in the form of luminescence. The luminescence is produced by genetically engineered bacteria as a response to the analyte concentration. Linearity range of the curve is determined by exposing the whole cell biosensor to different concentration of analyte and measuring the output luminescence. In summary, this abstract is intended to develop improved bacterial whole-cell sensing systems for detection of water pollutants and environmentally relevant analyte like hydrocarbons, which is typically sensitive, specific and selective, rapid, easy to use, low-cost, and amenable to multiplexing, high-throughput, and miniaturization.

Biography

Saurabh Gupta has completed his PhD from IGIB (Institute of Genomics and Integrative Biology, New Delhi) and is pursuing Postdoctoral studies from ICGEB, New Delhi.

sg.biotech@gmail.com

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