

Development of a Biosensor for the Detection of Underground Water Pollutions

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Anaerobic bacteria seem to be superior for biosensors to monitor anoxic circumstances as those in underground water because they are able to maintain their cells under anaerobic conditions and subsist for a long time under poor nutrient conditions. Therefore, we tried to develop a biosensor using an anaerobic bacterium for toluene in underground water. In this study, we subjected an anaerobic toluene degrader, *Azoarcus* sp. DSM9506, to the gene engineering, and designed to produce enzymes in the presence of toluene under anaerobic conditions. The resulting bacterium proved a toluene biosensor detecting in the range from 0.1 mg/l to 10 mg/l.