

MONITORING AND DETECTION OF BIOTIC AND ABIOTIC POLLUTANTS BY ELECTRONIC, PLANTS AND MICROORGANISMS BASED SENSORS (Mobiles)

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In the Mobiles project, advanced biosensors will be developed to monitor organic pollutants such as pesticides and hormones, as well as antibiotic-resistant microorganisms in water, soil, and air. Additionally, biosensors based on organisms, such as genetically modified chemiluminescent bacteria capable of detecting antibiotics, heavy metals, and pesticides in water, and plants that change color in the presence of arsenic in soil, will be developed. The Department of Microbiology at IUNG-PIB participates in the assessment of genetic diversity and identification of microorganisms in soils contaminated with various pollutants.

The described tasks will be achieved through the implementation of an interdisciplinary approach combining electronic, biotechnological, and microbiological technologies to create an integrated platform for the detection and monitoring of pollutants. The Department of Microbiology at IUNG-PIB is involved in the metagenomic analysis of microorganisms from contaminated areas, supporting the sequencing and bioinformatic analysis of genetic data.

The main objective of the project is to develop and validate innovative biosensors based on organisms and electronic technology to monitor and detect biotic and abiotic pollutants in various environments, including water, soil, and air. The Department of Microbiology at IUNG-PIB focuses on studying the impact of pollutants on soil structure and functionality and collaborates in creating a metagenomic database.

Among other things, the environmental performance of the developed organisms and devices will be tested, including their impact on the natural environment, using safety and environmental compliance tests. The Department of Microbiology at IUNG-PIB will be responsible for the proper selection and collection of soil samples, as well as DNA/RNA extraction and cooperation in the sequencing of genetic material.

The project started on 1 September 2024.

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