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UNIVERSITÀ CATTOLICA del Sacro Cuore
AGRI SYSTEM
Scuola di Dottorato
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KEY-WORDS:
Food Safety- Biosensors – Foodborne pathogens

PROFILE

Biotechnology Engineer specialized in Molecular Biology and Food Technology with a Master of Science in Agricultural and Food Economics. Currently a second-year Ph.D. student in the Agrisystems program at Unicatt.

AFFILIATION

Department of Food Science and Technology for a Sustainable Food Supply Chain (DISTAS),
Università Cattolica del Sacro Cuore.

LANGUAGES

- Mother language
- Level C1
- Level C1
- Level B2
- Level B1

HOW TO REACH ME

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Reference Contact

Prof. Pier Sandro Cocconcelli

PROJECT TITLE

Development of nucleic acid-based methodologies for the development of biosensors for food safety.

Steps of the research

- Genomic analysis of pathogenic bacteria and viruses for risk assessment.
- Probe design based on sensitivity, specificty, time effectiveness and user-friendliness.
- Sample preparation using appropriate nucleic acid extraction methods from different food matrices.
- Determination of microbial cell viability to increase reliability of results.
- Validation through reproducibility and reliability of data.

Main Results

Through bioinformatic tools and WGS interrogation, biosensors based on pH depedent reactions and nanomaterials, can be succesfully applied for the detection of foodborne pathogens.

Research Contribution

Biosensors automate pathogen detection and have the potential to enable fast analyses that are cost and time-effective which can also be integrated into Hazard Analysis and Critical Control Point programs. Application of the biosensor technique in the field of food processing and quality control is promising. They are applied for on-site diagnosis, screening, and surveillance, in order to rapidly recognize and, consequently, reduce the ill effects of outbreaks.

Collaborations

Istituto Italiano di Tecnologia
Dr. Pier Paolo Pompa

Why should you care?

There is an increasing demand for improvements in global food safety, but it is a challenge to detect and identify foodborne pathogens in a rapid, and effective way. Biosensors provide a reliable and highly specific on-site detection method for pathogenic viruses and bacteria. Such tools can be used for assessment and mitigation of food contaminant to reach food safety along the agri-food chain.