

INNOVATIVE DIAGNOSTIC TOOLS FOR NUCLEIC ACID DETECTION BASED ON ULTRASENSITIVE POLYTHIOL PROBES

Despite considerable advances over the last years in diagnostic, innovative diagnostic system allowing a sensitive, specific, fast and multiplex detection of nucleic acids are still needed. In this context, the development of new diagnostic technologies with high performances appears to be a challenge. The EFS TransDiag Laboratory developed innovative diagnostic tool with very high performances dedicated to rapid analysis of genomes.

INVENTION:

Development of diagnostic tools based on polythiols probes for the specific and ultrasensitive detection of nucleic acid present in a biological sample. This invention is developed by the TransDiag Laboratory of EFS located in Montpellier in partnership with CNRS and Montpellier University.

KEYWORDS:

Innovative diagnostic, polythiol probes, genotyping or screening, optical or electrochemical detection (Enzyme-Linked OligoSorbent Assay ELOSA, sensors...).

DESCRIPTION:

Development of robust polythiol probes which can be efficiently immobilized in a stable way on :

- Maleimide-activated microplates (ELOSA)
- Electrodes (gold, diamond.....)
- Magnetic/micro/nanoparticles

These formats are compatible with both optical and electrochemical detection. These innovative molecular tools increased strongly the performances of analytical systems

ADVANTAGES:

- Robust molecular tool can be integrated in any kind of diagnostic platforms (optical and electrochemical) depending on targeted needs
- Targets: detection of short/ long synthetic or natural amplified sequences
- Ultrasensitive detection: 10 pM for optical detection and 10 fM for electrochemical detection
- High specificity: DNA screening or sequencing
- Multiplex: able to detect several nucleic acid sequences in parallel

APPLICATIONS:

- Diagnostic : biological analysis and R&D
- Quality control :
 - Environment : freshwater, sewage
 - Security : freshwater, epidemic survey
 - Industrial process : food, pharmaceutical, cosmetic industries

REFERENCE

Lereau M et al, Anal Chem. 10/2013.

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INTELLECTUAL PROPERTY

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US2015-0232957
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