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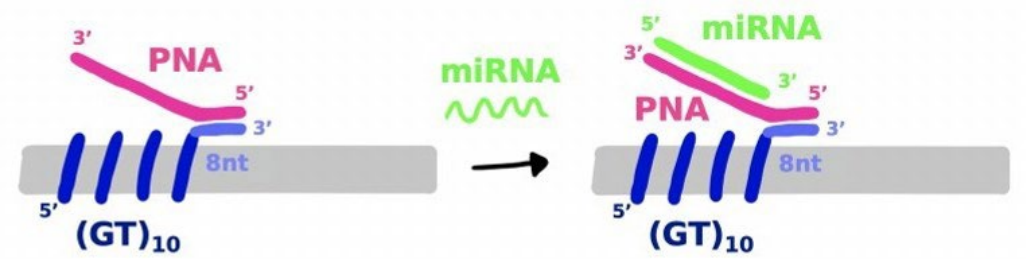
Licensing Opportunity

TTO – Technology Transfer Office

Label-free optical detection of targeted nucleic acids



Exemplary embodiment showing the detection of miRNA using PNA-DNA-SWCNT hybrids. Schematic of PNA-DNA8bp-rev configuration used to create the sensor for miRNA detection. The DNA wrapping sequence consisted of a (GT)10 anchor and eight bases designed to hybridize with the PNA sequence. Binding of miRNA results in spectral changes in the emission spectrum of the SWCNT (not shown).

Ref. Nr

6.2162

Keywords

SNPS, miRNA, XNA, PNA, single nucleic polymorphisms (SNPs), diagnosis, personalised medicine

Intellectual Property

PCT/EP2022/067129

Publications

PhD Thesis: *Optical Biosensors for Improved Neurochemical Sensing Using Single-Walled Carbon Nanotubes*, Alice Gillen (EPFL Infoscience)

Date

05/10/2022

Description

The rollout of personalised medicine requires the rapid and accurate detection of SNPs or miRNA as biomarkers. However, the current gold standard for detecting specific nucleic acids in-vivo or directly in clinical samples relies on PCR, which involves extensive processing steps that are both costly and time consuming.

The technology is a unique label-free sensor for the targeted detection of nucleic acids such as miRNAs or SNPs that addresses the diagnostic requirements of personalised medicine.

The sensor combines the versatility of Single Walled Carbon Nanotubes (SWCNT) and that of synthetic biology oligomers such as locked nucleic acid (LNA) and peptide nucleic acid (PNA).

Advantages

- The sensor functions with non-processed clinical samples
- The use of synthetic biology oligomers such as PNA provides strong specificity and tolerance to salt concentration
- The sensor does not require any surfactants

Applications

- Diagnosis
- Personalised medicine
- Research and development

Opportunity

Licensing and/or collaboration