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## TITLE New test for quickly diagnosing infections caused by *Candida albicans*

### DESCRIPTION OF THE TECHNOLOGY

A quick diagnosis test and a high sensitivity for detecting infections caused by *Candida albicans* has been developed. It is an organic-inorganic hybrid material functionalized with “molecular gates” based on oligonucleotides.

Materials with smart molecular gates can be defined as devices based on supramolecular concepts in which the transportation of mass can be activated by a targeted external stimulus that can control the gate status; that is, open or closed.

For its construction, the external surface of a porous material is functionalized with adequate molecules capable of blocking the pore entrances. Thus, in the presence of a pre-defined external stimulus, the gate is “opened” allowing the release of the content that was previously inside the pores.

In the case of the present invention, the materials are constituted of an inorganic porous material infused with a colorant/fluorophore and

simple DNA bases. These bases attach to the surface of the material through covalent links or electrostatic interactions and act as “molecular gates” that inhibit the release of the indicator.

The simple DNA bases are selected taking into account a specialized sequence of *Candida Albicans* and are formed of complementary bases to the genomic DNA sequence present in the cells of this pathogen.

When the DNA of *Candida Albicans* is present inside, it is hybridized with the sequence that is used as a “molecular gate.” This causes the pores to open and the release of the colorant inside the nanoparticles.

We have used this to create a new test capable of detecting within minutes up to 7 UCF/mL of *Candida albicans*, with a high specificity and low cost.



## TITULO New test for quickly diagnosing infections caused by *Candida albicans*

### MARKET APPLICATION SECTORS

General: Healthcare system and specialized institutions and centers.

Specific: The main application of this invention is the quick diagnosis test and the high sensitivity of diseases caused by *Candida albicans*.

### TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- Provides the medical diagnosis and decision-making by using a powerful and fast detection tool (in vitro or in situ diagnosis method) of the *Candida albicans* infection.
- Diagnoses *Candida albicans* at the same appointment where the patient's sample is taken.
- Reduces the diagnosis time from 3-4 days to 10-15 minutes.
- Lowers the cost of the diagnosis test up to five-fold compared to its current value.
- Limits the dependence of specialized laboratories to detect the presence of *Candida albicans* on a patient sample.
- Provides the national and international market with an innovative technology that is capable of revolutionizing the health sector with a probe material for detecting *Candida albicans*, which is responsible for a high percentage of infections in the world.

### CURRENT STATE OF DEVELOPMENT

Laboratory Prototype that is being validated in a broad group of clinical samples

### INTELLECTUAL PROPERTY RIGHTS

Patent Pending

Priority: ES201731069

Priority Date: 5/09/2017

### COLABORATION SOUGHT

The inventors are looking for companies interested in establishing patent license agreements for its use, manufacture or sale.

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