Combating 2019-nCoV: Advanced Nanobiosensing platforms for POC global diagnostics and surveillance

Fact Sheet

Project Information

CoNVat

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H2020-EU.3.1.3.

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10 March 2020

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9 March 2022

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€ 2 547 152,48

EU contribution
€ 2 547 152,48

Coordinated by
FUNDACIO INSTITUT CATALA DE NANOCIENCIA I NANOTECNOLOGIA
Spain

Project description

A disruptive point-of-care tool for coronavirus detection

The current COVID-19 pandemic has highlighted the unpreparedness of governments, public organisations and communities to face and manage such a health crisis. For many infectious diseases, prompt pathogen detection is central for taking the appropriate containment measures to halt their spread. The scope of the EU-funded CoNVat project is to develop a point-of-care biosensor approach for the direct, fast and specific identification of the new coronavirus, directly in the patient’s sample. The generated technology will be able to differentiate between the various
viral strains and can be implemented in decentralised settings to improve the early diagnosis, surveillance and clinical management of patients.

**Objective**

The recent outbreak in China caused by the emerging nCoV virus is challenging the level of global readiness from governments, public organizations and community to face and manage both its social and health consequences. Once the emergence is recognized and identified, it is crucial to initiate the necessary measures to prevent the spread. This involves therapeutics, vaccines, and devising efficient, fast, readily accessible diagnostics methods that specifically confirm the presence of the virus. Early detection can allow the rapid implementation of containment measures, which are the key to reduce the risk of amplification. The aim of CoNVat is to implement a Point-of-care label free biosensor for the direct, fast and specific identification of nCoV in decentralized settings to improve its early diagnosis and the clinical management of patients. The approach employs an already developed technology based on nanophotonic bimodal waveguide (BiMW) interferometers capable of providing real time, highly sensitive detections assays in short sample turnaround times. We propose two different strategies: (i) the development of a fast antigen-based diagnostic test for the specific detection of the intact virus in patient’s samples such as respiratory specimens and non-respiratory fluids (serum, urine...) to be deployed to clinical settings for initial screening and (ii) development of a multiplexed molecular test, PCR-free, for the reliable identification of nCoV, being possible to differentiate the type and strain of coronavirus form other related or more common respiratory viruses. This latter strategy will provide a disruptive diagnostic tool not only from a clinical perspective to improve patient’s outcome but also for surveillance, to study and understand possible transmission routes of this virus by analysing samples from animal reservoirs. Final prototype validation will demonstrate the potential of this approach for the management of future infectious outbreaks.

**Fields of science**

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**Programme(s)**

**Topic(s)**

**Call for proposal**
Funding Scheme

RIA - Research and Innovation action

Coordinator

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