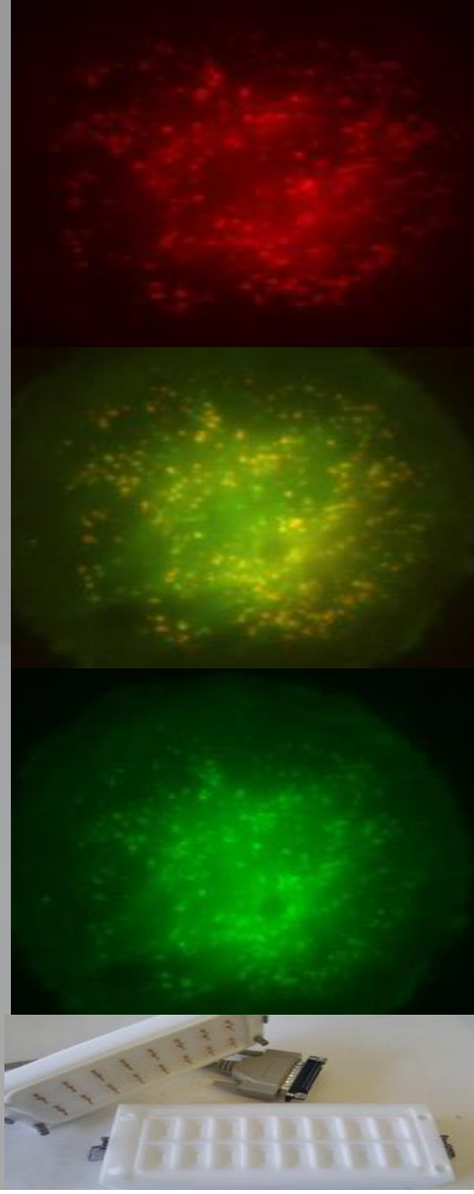

INNOVUS

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Autophagic Flux Biosensor

Innovus Technology Transfer (PTY) Ltd is Stellenbosch University's wholly-owned technology transfer company. Contact Anita Nel, Innovus Chief Executive Officer, on (021) 808 3826 or send an email to ajnel@sun.ac.za for more information.

UNIVERSITEIT STELLENBOSCH UNIVERSITY

A unique nano-biosensor with a software readout component that delivers autophagic flux numerically, comparable to a routinely-used blood glucose or cholesterol test

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BRIEF DESCRIPTION

With the aging of populations worldwide, neurodegenerative diseases such as Alzheimer's occurs more frequently, and there is therefore a need to develop technologies to address this tragic health problem. Autophagy is a protein degradative pathway, that is dysfunctional in human neurodegeneration such as in Alzheimer's disease, but there is currently no means to quantitatively assess this critical system, and hence candidate drugs that are thought to modulate autophagy cannot be accurately screened. The Autophagic Flux Biosensor technology allows the quantification of the autophagic flux in a rapid and effective manner.

TARGET MARKET

The project intends to leverage the benefits to the health care and biomedical industry, to accelerate diagnosis and drug development in Alzheimer's disease but also cancer and aging. The potential sectors are the key beneficiaries and that are likely to pay for the problem solution are the health sector (clinicians, biomedical applications, pathology services) as well as the pharmaceutical industry (drug development platforms). The desire to have the problem solved is substantial.

TECHNICAL DESCRIPTION

The sensing device, connected to a laptop, detects a unique signature of flux specific proteins. The sensing device measures protein binding in a highly sensitive manner, by using antibody-coated carbon-nano fibers. The antibodies are directed against the flux specific proteins. Magnitude of binding is detected through resistance readings, which are concomitantly recorded and used to indicate the level of autophagic activity. The sensor is hence decorated with a unique composition of selected proteins that change with increased autophagy. The resistance readings therefore report on and reflect this change in autophagic activity. Since resistance change of the known flux samples serve as inherent sensor standards, the flux of an unknown sample can be derived based on the resistance change caused.

PRINCIPAL RESEARCHERS

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UNIQUE FEATURES

Consists of

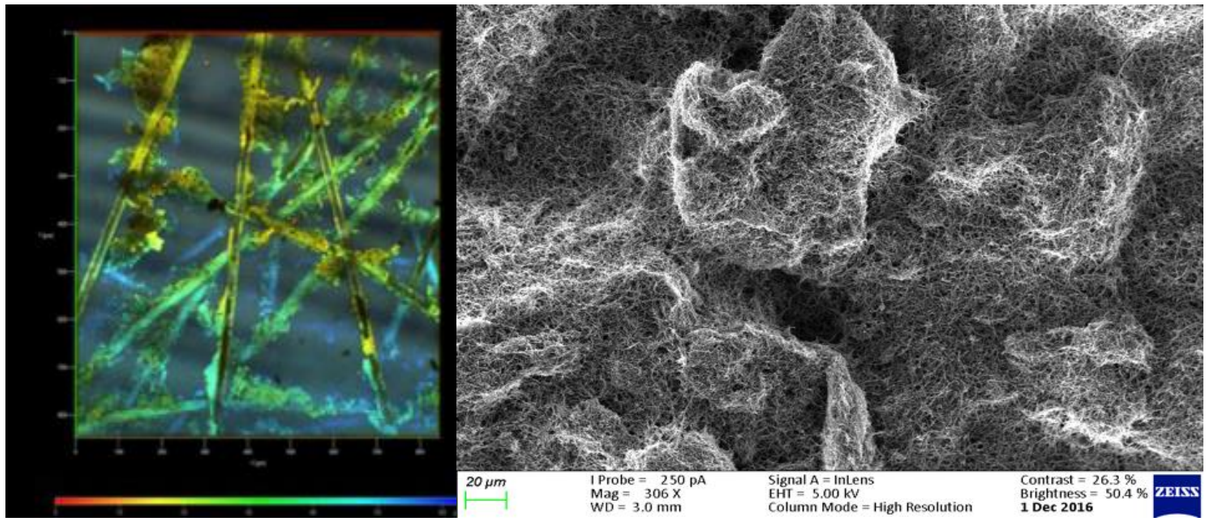
- a unique nano-biosensor with a software readout component

Delivers

- autophagic flux numerically, comparable to a routinely-used blood glucose or cholesterol test

VALUE PROPOSITION/BENEFITS

The distinctive feature of the Biosensor is the highly sensitive detection unit that is coupled to a unique computational interface that enables the calculation of autophagic activity based on the relative abundance of key autophagic flux response proteins. The biosensor is versatile, highly cost-effective, the interface user-friendly and easy to use.



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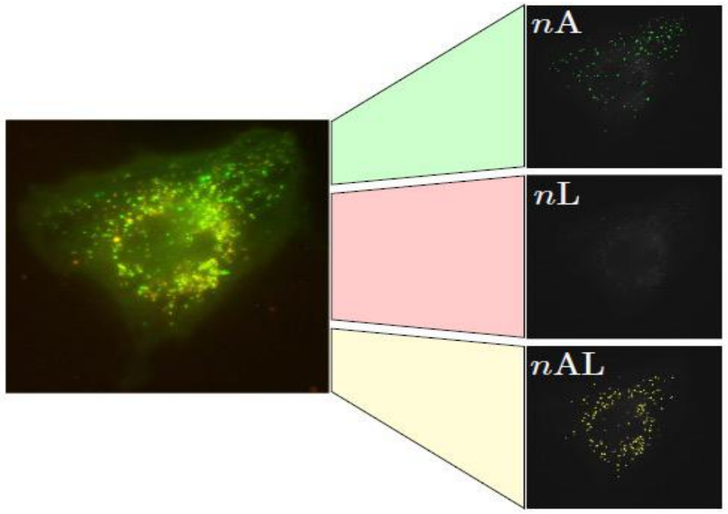

INNOVATION STATUS

A PCT application (PCT/IB2017/052732) was filed on 10/05/2016 for this invention