

LICENSING OPPORTUNITY

## Planarian stem cells as a tool for carcinogenic screening

### INTRODUCTION

Our daily life is dominated by chemical products. The development of these chemicals is often accompanied by health and safety risks. Legislations like REACH (and equivalents worldwide) increase the need for suitable testing methods to provide the necessary framework to analyse the risk of a compound.

For carcinogenicity, one of the most potent tests is the two-year rodent assay. Depending on the occurrence of cancer in both rats and mice during a two-year long exposure, variants of this test are able to identify most carcinogens. Several millions of euros are invested each year together with the sacrifice of several thousands of rodents.

The drive to implement alternative models and testing methods in laboratory experiments was born in 1959, when the 3R-concept, Reducing, Refining and Replacing animal usage, was proposed.

The zoology group at the Centre of Environmental Sciences of Hasselt University introduced planarians or flatworms as an alternative model for carcinogenicity testing. These organisms provide us with the possibility to study stem cells in vivo and their responses appear to be promising to be used in carcinogenic screening methods.

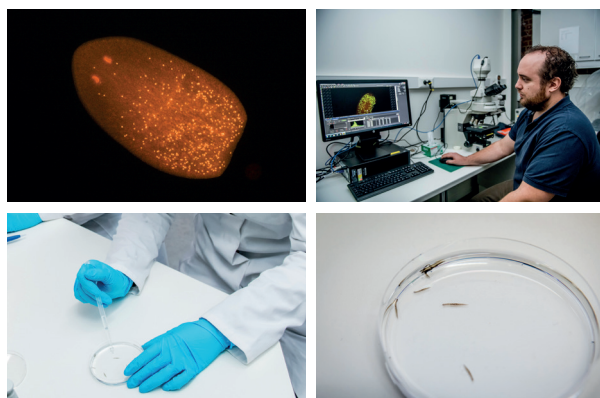


**UHASSELT**

KNOWLEDGE IN ACTION

## THE PLANARIAN CARCINOGENICITY ASSAY

The assay is based on the observed responses of the stem cells after different durations of exposure to a carcinogenic compound. When investigating cell division of these stem cells, different patterns are observed. The identification of potential carcinogens is based on these proliferation patterns.



Among 20 compounds (genotoxic, non-genotoxic and non-carcinogens) are currently validated, rendering a correct classification for about 80% of the tested chemicals. We seek collaboration to further validate our assay, in function of contract testing or joint projects.

## RELEVANT PUBLICATIONS

Willems et al. 2015 Appl In vitro Tox  
Stevens et al. 2017 Scientific Reports

## KEY FEATURES AND ADVANTAGES

Initial validation studies have proven the value of the concept in that it appears to be able to correctly identify **both genotoxic and non-genotoxic carcinogens** in a **very short time**.

Planarians can be used as alternative model organism since it is an invertebrate. The housing of these organisms does not require specified infrastructure and trained personnel, resulting in a **relatively cheap model** for carcinogenicity testing.

The implementation of the planarian assay as a pre-screening method, would allow to significantly **diminish the number of compounds to be tested on rats and mice** in the two-year rodent assay.

## OUTSTANDING OPPORTUNITY

Patent applications that are available for licensing: WO2016146620 A1, EP15159158.3

Hasselt University and Gent University are searching for interested parties to complete commercialization.

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