Finding new anticancer drugs
Novel HT-screening methodology for simultaneous identification of different classes of molecules

The principle

Checkpoint inhibitors
- ATR inhibitors
- Chk1 inhibitors
- Wee1 inhibitors

Topoisomerase inhibitors
- Camptothecin
- Irinotecan
- Etoposide
- ...

Replication inhibitors:
- Gemcitabine
- Cytarabine (Ara-C)
- Clofarabine
- Hydroxyurea

Replication stress markers

• Single stranded DNA
• DNA damage response

TUMOR

The methodology

Drug Library x100k → Image analysis → DNA damage response → Drug ‘signatures’

High throughput microscope

The application

Drug Library x100k → Novel compounds of known classes → Novel compounds

One Single readout

New signature → New mode of action → Further development → New druggable targets

Value proposition/USP
Screening methods for the identification of novel chemotherapeutic drugs are either too unspecific (for instance plain cell viability) or too specific, relying on the development of a specific assay for a specific target. Here we present a methodology that allows the simultaneous identification of molecules belonging to different types of therapeutic targets in one single assay. This method is based on the multi-parameter analysis of replication stress markers, aiming at discovering new classes of successful chemotherapeutic drugs and novel compounds that kill cancer cells by replication stress.

Business Opportunity/Objective/commercial perspectives
The team behind the invention is working towards a spin-out company and the institutions will offer the company an exclusive license to this invention and follow up inventions. The spin-out company is looking for potential investors and/or partners that can support them in bringing the technology on the market.

Technology description/technology Summary
The screening method uses a cell-based assay to depict the response elicited by the drug of interest in cancer cells, which is read by automated microscopy and processed by image analysis. The result is a multi-dimensional quantitative profile of replication stress markers, which derives a unique signature for each type of molecule. These signatures can be used to identify different classes of molecules with extreme accuracy, and the assay also depicts novel stress responses that can lead to the development of new targets.

Development phase/current state
The methodology has successfully been tested in a small setting and is ready to be applied at large scale.

The invention is protected in WO2016078670

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