

New smart robot accelerates cancer treatment research

September 22 2015

A new smart research robot accelerates research on cancer treatments. The new robot system finds optimal treatment combinations. Today *Scientific Reports* is publishing an article about the robot, authored by Dr Mats Gustafsson, Professor of Medical Bioinformatics at Uppsala University.

Today complex diseases like cancer is medically almost exclusively treated by combining several different drugs. These combinations are typically composed from drugs that show effect on their own, but do not necessarily constitute the best possible combinations. The new [robot](#) system finds optimal treatment combinations and was developed by a research group led by Dr Mats Gustafsson, Professor of Medical Bioinformatics at Uppsala University.

'We have built a [robot system](#) that plans and conducts experiments with many substances, and draws its own conclusions from the results. The idea is to gradually refine combinations of substances so that they kill [cancer cells](#) without harming healthy cells', says Dr Claes Andersson, also a leading scientist in the project.

Instead of just combining a couple of substances at a time, the new lab robot has the ability to handle on the order of a dozen drugs simultaneously. The aim for the future is to be able to handle many more, preferably hundreds.

'We are now one among the few laboratories in the world with this type

of lab robot. However, so far researchers have only used the systems to look for combinations that kills the cancer cells, not taking the side effects into account', says Mats Gustafsson.

The next step in the development is to make the robot system more automated and smarter. The current version still involves a few manual steps that could be automated. The scientists also want to build more prior knowledge into the guiding algorithm of the robot, for example, prior knowledge about drug targets and disease pathways.

For patients with the same cancer type returning multiple times, sometimes the cancer cells develop resistance against the pharmacotherapy used. The new robot systems may also become important in the efforts to find new drug compounds that make these resistant cells sensitive again.

An article about the robot system was presented today in *Scientific Reports*, and is part of a doctoral thesis on drug combinations, recently defended by Dr Muhammad Kashif.

More information: In vitro discovery of promising anti-cancer drug combinations using iterative maximisation of a therapeutic index, *Scientific Reports* 5, Article number: 14118 (2015) [DOI: 10.1038/srep1411](https://doi.org/10.1038/srep1411)

Provided by Uppsala University

Citation: New smart robot accelerates cancer treatment research (2015, September 22) retrieved 16 July 2024 from <https://phys.org/news/2015-09-smart-robot-cancer-treatment.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.