

DNA with a twist: New company to search for cancer drugs and antibiotics

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DNA Topoisomerase molecule. Credit: JIC

A new company has joined the fight against MRSA and cancer. Researchers at the John Innes Centre (Norwich) have launched a new company, Inspiralis Ltd, based around their expertise in DNA topoisomerases – a group of enzymes that help DNA molecules to unravel and wind up properly and not to become tangled during replication.

“DNA becomes tangled as a result of various cellular processes, such as

replication, which ultimately stops these processes continuing. DNA topoisomerases untangle it. Without them cells die”, says Inspiralis co-founder Dr Nicolas Burton.

Topoisomerases are already targets for several drugs, including anti-tumour drugs and antibiotics, such as ciprofloxacin – the anti-anthrax drug. The search is now on for new ways of inhibiting them. Inspiralis Ltd make a range of products targeted to the pharmaceutical industry to enable drug-discovery work in this area including topoisomerase enzymes themselves as well as associated products.

A new high-throughput assay, developed recently in the laboratory of Prof. Tony Maxwell of the John Innes Centre (and co-founder of Inspiralis), will also provide a huge advance on the standard gel-based screening method for topoisomerase inhibitors. Inspiralis Ltd will develop the technique further as well as offering screening services to companies. “The assay will potentially allow millions of compounds to be screened for activity rather than just hundreds”, says Dr Burton.

The technology can now be accessed as a service or as a kit helping pharmaceutical companies and academics to screen for new and better cancer drugs and antibiotics.

Some powerful antibiotics and key anti-cancer drugs act by inhibiting topoisomerases. In cancer, cells rapidly divide in an uncontrolled manner and topoisomerase inhibitors can block this uncontrolled cell division.

“Topoisomerase inhibitors are key targets for new drug development”, says Mrs Alison Howells (co-founder). “We can test potential new drugs against topoisomerases as well as help discover new inhibitors as a first step to developing brand new drugs”.

Inspiralis is based at the Norwich Bio-Incubator at JIC and was founded

with backing from the ICENI fund, a private investor and the John Innes Centre.

The high-throughput assay is patented by JIC's and BBSRC's technology transfer company, Plant Biosciences Ltd, and non-exclusive licenses have already been granted to pharmaceutical companies.

Source: Norwich BioScience Institutes

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