

# Research could help minimize unnecessary exposure to drugs with potential side effects

February 25 2014, by Elaine Smith

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Patients with advanced non-small cell lung cancer (NSCLC) often suffer the challenging side effects of drug regimens that may not have any impact, says Jayson Parker, PhD, a lecturer at U of T Mississauga. Meanwhile pharmaceutical companies are experiencing rising costs to bring new drugs to market for patients.

Now, a new study by Parker and his colleagues at the Leslie Dan Faculty of Pharmacy and Johns Hopkins University, published in the February issue of the *Journal of Thoracic Oncology*, illustrates how the pain and the wasted time and money may be more easily avoided.

"When you take medication, you want it to be responsive because you may have to endure the negative side effects," says Parker, the lead author. "We also want to reduce the number of red herrings that are pursued by [pharmaceutical companies](#)."

Personalized medicine tailors medicines to patients based on their unique metabolism and genetics (biomarkers) that may identify them as responders to a [drug](#). In the study, Parker and his colleagues have determined that drugs administered to NSCLC patients during clinical trials during the past 14 years have a meagre success rate of 11 per cent overall, while the drugs that target cells with a biomarker have a cumulative success rate of 62 per cent. The study encompasses drugs submitted to the U.S. Food and Drug Administration for approval.

In addition, Parker and his fellow researcher have found that the success

rate for complex drugs that targeted a receptor – a protein sitting on the surface of a cell – had a 31 per cent cumulative success rate, compared to 11 per cent for simpler, small-molecule drugs that didn't focus on a target.

"This research could help minimize unnecessary exposure to drugs with potential side effects, such as chemotherapy drugs, for people with advanced non-small cell lung cancer," says Parker. Being strategic about drug development is "also a way of making research and development more cost effective by reducing the number of dead ends," he said.

"There is an estimated cost of \$1.5-2 billion dollars to bring a new drug to market, because we also have to pay for the failures. This could save drug developers about \$400 million per drug for NSCLC."

Lung cancer is the second most commonly diagnosed cancer in Canada, other than non-melanoma skin cancers, according the Canadian Cancer Society. In 2013, it was estimated that 25,000 Canadians would be diagnosed with lung cancer and 20,200 Canadians would die of the disease, accounting for 27 per cent of all Canadian cancer deaths. The current five-year survival rate for [lung cancer](#) is just 17 per cent.

Provided by University of Toronto Mississauga

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