

Engineers key in potential new cancer drug delivery

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Mechanical engineering professor Warren Finlay has taken on a major role in research to improve drug delivery for lung cancer patients.

Working with Faculty of Pharmacy and Pharmaceutical Sciences researcher Raimar Lobenberg and Wilson Roa at the Cross Cancer Institute, Finlay has devised a way to manufacture an inhalable powder that could effectively disperse [chemotherapy drugs](#) into a patient's lungs.

The team encapsulated [chemotherapy](#) drugs into nanoparticles that could be inhaled by patients with [lung cancer](#). To keep the nanoparticles apart, they first freeze the particles in tiny ice carrier particles before removing the ice to make a powder. The challenge then was to produce a powder that would not only make it into a patient's lungs, but also disperse the drugs effectively.

“The idea was to add in effervescent material inside the carrier particles that produces carbon dioxide gas. So when the particle lands in the lungs, it releases carbon dioxide gas and the nanoparticles are released over a much bigger region. They are dispersed beyond the landing site, which prevents the released nanoparticles from getting all stuck together.”

In tests using animal models, results showed that the inhalable dry powder was more effective than using a solution and IV injection of drug-bound nanoparticles. The research results are presented in the *Journal of Controlled Release*.

“There is a pretty clear advantage to using this interesting way of delivering these nanoparticles,” said Finlay. “What we really want to do now is to go into human trials.”

Provided by University of Alberta

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