

# Study shows potential to revive abandoned cancer drug by nanoparticle drug delivery

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Current nanomedicine research has focused on the delivery of established and novel therapeutics. But a UNC team is taking a different approach. They developed nanoparticle carriers to successfully deliver therapeutic doses of a cancer drug that had previously failed clinical development due to pharmacologic challenges. They report their proof of principle findings in the April 30, 2012 early online edition of *Proceedings of the National Academy of Sciences*.

Wortmannin is a [drug](#) that was highly promising as a cancer drug, but its successful preclinical studies did not translate into clinical efficacy because of challenges such as high toxicity, low stability and low solubility (unable to be dissolved in blood).

Andrew Z. Wang, MD, study senior author, says, "Drug development is a difficult and expensive process. For a cancer drug to make it to clinical use, it not only has to be effective against [cancer cells](#), but also needs to have low toxicity, good stability and good solubility. Many promising drugs such as wortmannin failed clinical development because they failed one or more of these requirements. Nanoparticle drug delivery is a breakthrough technology and has the ability to overcome these limitations. Our study is a proof of principle to demonstrate that nanoparticles can renew the clinical potential of many of these 'abandoned' and 'forgotten' drugs.

"We found that the nanoparticle formulation of wortmannin decreased toxicity and increased stability, solubility and effectiveness.

Additionally, nanoparticle wortmannin can improve the efficacy of [radiotherapy](#) dramatically and is more effective than the most commonly utilized chemotherapeutics. " Wang is a member of UNC Lineberger Comprehensive Cancer Center.

Wang explains, "Most research has focused on established drugs. However, there is a large number of these 'forgotten' drugs that can be revived and re-evaluated using nanoparticle [drug delivery](#). These drugs can provide new targets and offer new strategies that previously didn't exist."

The team will now focus on further development of the nanoparticle wortmannin as well as look into developing nanoparticle formulation of other abandoned drugs.

Provided by University of North Carolina School of Medicine

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