# Enzyme may hold key to improved targeting of cancer-fighting drugs

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A critical enzyme used to prepare a powerful cancer-killing agent may be able to help drug makers better target the cells the natural product attacks, according to findings published in the May 23 edition of the *Journal of Biological Chemistry*.

Building on their earlier research into neocarzinostatin, a team of researchers from Boston College and the University of Wisconsin, Madison discovered that one of the enzymes contained in the bacteria used to produce the drug may hold promise in creating newer, more stable compounds from the structurally complex class of antibiotic known as chromoproteins.

"We've revealed that the enzyme is loose in specificity, which means it may be able to be used to make new drugs," said Boston College Chemist Steven D. Bruner, a co-author of the report. "Based on these findings, we foresee success in the lab making certain compounds more controllable."

In addition to Bruner, the research team includes BC graduate student Heather A. Cooke and University of Wisconsin Professor Ben Shen and researchers Yinggang Luo, Shuangjun Lin and Jian Zhang.

Used as a chemotherapeutic, the drug – an enediyne anti-tumor agent – targets both normal and cancer cells, says Bruner, an assistant professor of chemistry. But the team has determined that the chemical components of the antibiotic are capable of distinguishing between normal cells and

cancer cells.

The latest research confirmed the team's proposal that the naphthoic acid within the compound can be altered to design cancer-fighting drugs specific to chemotherapeutic targets. That will require the use of genetic engineering in order to manipulate the molecules within the bacteria, which occurs naturally in soil.

Genetic engineering will enable researchers to produce more specific and less toxic analogs of neocarzinostatin and increase the available supply of the drug, Bruner says.

"This is the beginning of an approach to be able to understand and manipulate these chemical pathways to make new drugs," says Bruner.

Source: Boston College