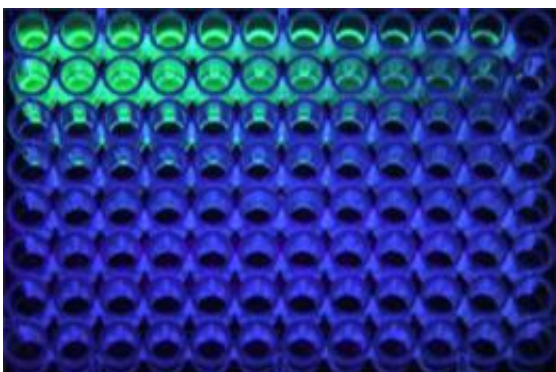


# New research may lead to new approach to detect prostate cancer

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Treating samples with a special enzyme, S&T undergraduate student Casey Burton discovered that the greater the concentration of the metabolite sarcosine, the less the samples fluoresced, or glowed, under ultraviolet light.

(Phys.org) -- An undergraduate student's technique for detecting certain metabolites in urine samples could lead to a simpler and more accurate way to test for prostate cancer.

Developed by Casey Burton of Lake Ozark, Mo., a senior chemistry major at Missouri University of Science and Technology, the technique also could prove to be less expensive than conventional prostate-specific antigen (PSA) testing for [prostate cancer](#). That is because Burton's technique does not require the use of high-tech instrumentation often used to detect metabolites. Instead, his technique relies on a simple chemical reaction as well as diagnostic equipment that is available in

most [health clinics](#).

Burton also believes his approach would be more accurate than [PSA tests](#), which "cannot accurately differentiate between benign prostate conditions and active [prostate cancer](#)," Burton writes in a recent research article published in the journal [Analytical Methods](#).

"This lack of sufficient [diagnostic techniques](#) for prostate cancer highlights the need for more effective [screening methods](#)," he writes in his paper, "A novel enzymatic technique for determination of sarcosine in urine samples." The paper was published in [Analytical Methods](#), Vol. 4, 141, in January 2012.

In the journal article, Burton explains how treating urine samples with a certain enzyme can determine the concentration of the metabolite sarcosine. Enzymes interact with a substrate, or molecule, to cause a chemical reaction that can be measured through various [analytical techniques](#).

Until recently, the presence of sarcosine in urine was thought to be linked to prostate cancer, but that correlation has been refuted, Burton says. Even so, his method for detecting the presence of sarcosine could be used to test for the presence of other metabolites that may be linked to various diseases. The enzyme he used is one of a broad class of enzymes that operate similarly on molecules like [amino acids](#) and [nucleic acids](#), among others.

Using the enzyme sarcosine oxidase on the samples produced the chemical compound formaldehyde. Through oxidation, the formaldehyde in turn produced formic acid.

From this series of [chemical reactions](#), Burton was able to determine how much sarcosine was in each sample by examining the levels of



Provided by Missouri University of Science and Technology

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