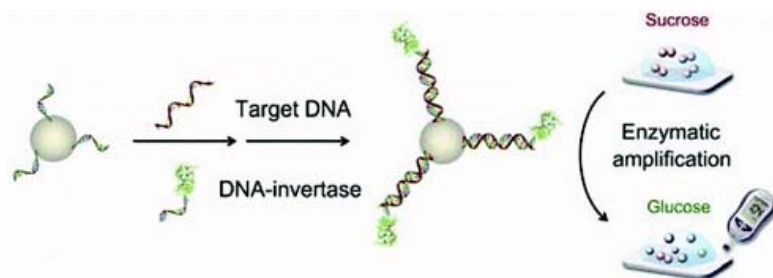


DIAGNOSTICS / PATHOLOGY

# At-Home Glucose Meter Turned into DNA Detector for Disease Diagnosis

by GENE OSTROVSKY on Feb 29, 2012 • 3:22 pm



Researchers from University of Illinois at Urbana-Champaign have converted a common at-home glucose meter to quantitatively detect DNA fragments.

The investigators were able to detect hepatitis B DNA fragments in concentrations that rival the sensitivity of traditional DNA detectors.

Some details from a press release by the American Chemical Society:

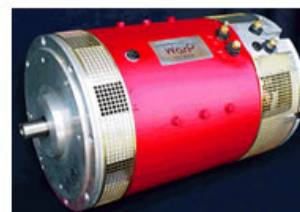
Their test takes place in a liquid containing sucrose (a sugar that isn't detected by glucose meters). First, a bacterial or viral DNA fragment is captured and concentrated on beads. Then, the researchers add an enzyme that is stuck to a different DNA (which can bind to the bacterial or viral DNA). The enzyme, called invertase, turns the sucrose into glucose, which the glucose meter can measure.

From the study abstract in *Analytical Chemistry*:

Herein we report application of personal glucose meters (PGMs), which are widely available, low cost, and simple to use, for quantitative detection of DNA, including a hepatitis B virus DNA fragment. The quantification is based on target-dependent binding of cDNA-invertase conjugate with the analyte DNA, thereby transforming the concentration of DNA in the sample into glucose through invertase-catalyzed hydrolysis of sucrose. Instead of amplifying DNA strands through PCR, which is vulnerable to contaminations commonly encountered for home and field usage, we demonstrate here signal amplifications based on enzymatic turnovers, making it possible to detect 40 pM DNA using PGM that can detect glucose only at the mM level. The method also shows excellent selectivity toward single nucleotide mismatches.

Press release: [Adapting personal glucose monitors to detect DNA](#)

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- Hear presentations from some of the nation's outstanding leaders in medical device technologies
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\*Early Registration ends March 17<sup>th</sup>, 2012      Venue: Student Union at SJSU

For further information and registration please visit: [www.engr.sjsu.edu/bmes/](http://www.engr.sjsu.edu/bmes/)      Date: March 28<sup>th</sup>  
[www.engr.sjsu.edu/bmes/BMDConf2012/registration.html](http://www.engr.sjsu.edu/bmes/BMDConf2012/registration.html)      Time: 8am - 5:30pm

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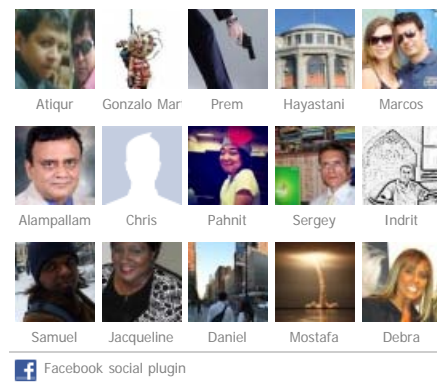
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Abstract in *Analytical Chemistry*: Using Commercially Available Personal Glucose Meters for Portable Quantification of DNA

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