

Researchers genetically engineer E.coli bacteria to detect cancer and diabetes

In two articles published Wednesday in the journal *Science Translational Medicine*, researchers reported they had equipped *E. coli* bacteria with genetically encoded digital amplifying genetic switches. Those engineering tweaks transformed the bacteria into living sensors, capable of staying in a mouse's body for as long as a month.

In [one of studies](#), scientists improved the *E. coli* bacteria's ability to pass through the gut's walls and enter the liver of a mouse, gravitating directly toward cancer cells, for which these bacteria have an affinity. Once the organisms find and colonize a tumor there, they have been engineered to begin producing an enzyme that is visible as a detectable change in the color of the affected mouse's urine. In mice, the visible evidence that "bactosensors" had latched onto cancer cells came within 24 hours.

In urine samples from humans tested in the [second study](#), researchers tried their bactosensors to probe for glycosuria, the presence of sugar in urine that is a telltale sign of uncontrolled diabetes.

Suspended in hydrogel beads, the engineered *E. coli* sensors turned urine samples fluorescent red in almost 89 percent of cases where glycosuria was present. And they rarely sent up a false alarm, suggesting diabetes where it was not present in just over 3 percent of cases. Those measures of "sensitivity and specificity"—the ability to detect disease without creating a dragnet of false positives—made the bactosensors almost as reliable as urine dipsticks currently used in physicians' offices.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Talented bacteria detect cancer, diabetes](#)