A long-sought test for direct detection of disease-causing E. coli bacteria

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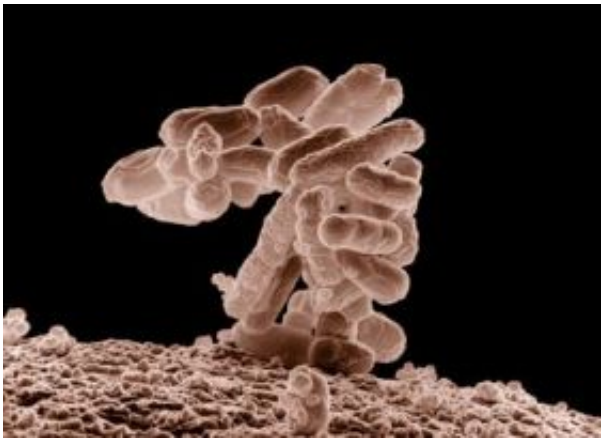

Researchers have developed a test for direct detection of disease-causing E. coli bacteria. This photo shows an electron micrograph of a bacteria cluster. Credit: Courtesy of USDA-Agricultural Research Service

Biochemists in Japan are reporting development of a long-sought direct test for identifying the presence E. coli bacteria that get into water and food as a result of fecal contamination. That contamination causes millions of cases of food poisoning and other gastrointestinal illness around the world each year. Their study is scheduled for the April 4 issue of ACS' *Biotechnology Progress*.

In the report, Yasunori Tanji and colleagues point out that tests now in use do not directly identify E. coli. Instead, these tests detect "coliform" bacteria that health officials use as indicators for fecal contamination.

Coliforms, however, can originate from natural sources, and are not always reliable indicators of fecal contamination. Direct tests for E. coli do exist, but are too time-consuming and complex for general use.

The new study describes successful use of genetically engineered viruses that infect E. coli to identify a wide range of E. coli strains found in sewage. Researchers first engineered the viruses to be harmless to E. coli. Then they gave the viruses genes to produce green fluorescent proteins. The resulting viruses reveal the presence of E. coli by lighting up and glowing after infecting the bacteria. The test uses a fluorescent microscope to detect the glow and the presence of disease-causing bacteria, and takes only a few hours.

Source: ACS