

## A nano-sensor for better detection of Mad Cow Disease agent

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In an advance in food safety, researchers in New York are reporting development of a nano-sized sensor that detects record low levels of the deadly prion proteins that cause Mad Cow Disease and other so-called prion diseases. The sensor, which detects binding of prion proteins by detecting frequency changes of a micromechanical oscillator, could lead to a reliable blood test for prion diseases in both animals and humans, the researchers say. Their study is scheduled for the April 1 issue of ACS' *Analytical Chemistry*.

Prions are infectious proteins that can cause deadly nerve-damaging diseases such as Mad Cow Disease in cattle, scrapie in sheep, and a human form of Mad Cow Disease called variant Creutzfeldt-Jakob Disease. Conventional tests are designed to detect the proteins only upon autopsy and the tests are time-consuming and unreliable.

In the new study, Harold G. Craighead and colleagues describe a hightech, nano-sized device called a nanomechanical resonator array. The device includes a silicon sensor, which resembles a tiny tuning fork, that changes vibrational resonant frequency when prions bind. Its vibration patterns are then measured by a special detector. In experimental trials, the sensor detected prions at concentrations as low as 2 nanograms per milliliter, the smallest levels measured to date, the researchers say.

Source: ACS



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