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Fast forward to a sensitive test for prion diseases

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Prion diseases such as scrapie, bovine spongiform encephalopathy (BSE) and variant Creutzfeldt-Jakob disease can currently be diagnosed only by post-mortem examination of brain tissue. The trace amounts of prions in the blood of infected individuals remain beyond detection. In the June 14 Nature, Gabriela Saborio and colleagues at the Serono Pharmaceutical Research Institute in Geneva, Switzerland, report that minute amounts of prion protein (PrPSc) can convert large amounts of normal protein (PrPC) into its faulty state *in vitro* and this could be applied to the detection of the prions in spinal fluid or blood.

The procedure that Saborio *et al*. have developed is conceptually analogous to polymerase chain reaction cycling. Aggregates formed when PrPSc is incubated with PrPC are disrupted by sonication to generate multiple smaller units for the continued formation of new PrPSc. After cyclic amplification, they found that 97% of the protease-resistant PrP present in the sample corresponded to newly converted protein (*Nature* 2001, **411**:810-813).

"Accelerating the prion natural conversion process in the laboratory can compress years of [real] time into a few hours," said Claudio Soto, the senior author of the paper. The method may also provide an opportunity to determine whether PrPSc replication results in the generation of infectivity *in vitro.*

References

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