

## **Meeting Synopsis**

**Title:** Prion Strains: Origins, Mechanisms and Implications for Disease

**Location:** Banbury Center, Cold Spring Harbor Laboratory, NY

**Organizers:** John Collinge, Charles Weissmann, Claudio Soto, Byron Caughey

**Dates:** 11-14 May 2008

Prions are infectious proteins. The prion concept has evolved with the discovery of new self-propagating protein states in organisms as diverse as mammals and fungi. Mammalian prions are lethal pathogens that are principally composed of aggregated conformational isomers of a host-encoded glycoprotein, prion protein (PrP). Fungal prions are protein-based epigenetic elements that also depend on protein aggregation, in most cases. In common with other pathogens, distinct naturally occurring isolates or strains of both mammalian and fungal prions are observed. However, it has been unclear how such strain properties could be encoded within agents that are devoid of coding nucleic acids. This symposium brought together prion experts from around the world to consider the latest insights into the following topics regarding prion strains: Definitions of strains; methods of strain typing; the structural basis of strain-ness; the biology of strains *in vivo*; and, the generation and propagation of strains *in vitro*. The discussions indicated that much progress has been made in understanding each of these topics, however, fundamental issues remain to be fully resolved. The unique biology of prions, allied with the risks to public health posed by prion zoonoses such as BSE and possibly other prion strains in livestock, focuses much attention on the need to better understand prion diversity and the molecular bases of prion propagation.