Investigating the relevance of blood DNA methylation signals for disease management in CJD.

Emmanuelle Vire, PhD
Institute of Prion Diseases at UCL
London, UK
DNA methylation

- What it is: modification of the DNA
  epi: “on top of”

- Where it is: on Cytosine

- Why we care: changes gene expression
  does not modify the code
  differentiation and specificity
  allow response to environment
DNA methylation

- Role: regulate gene expression
- In diseases: profiles are deregulated
  - drug targets (treat)
  - biomarkers (detect)
DNA methylation in CJD: what we have done so far

- Sporadic CJD and controls (112; 116)
- Bloods
- Profile DNA methylation
- Sites where changes are
- Fingerprints of changes

We can identify patients with sCJD using blood DNA methylation signatures
DNA methylation in inherited CJD: what we proposed to do

• hundreds of inherited cases
• 8 converters

Q1: is the fingerprint that we detected in sCJD also present in inherited patients?
Q2: what are the differences in DNA methylation landscapes before/after conversion;
Q3: can we predict conversion based on DNA methylation profiles?
DNA methylation in inherited CJD: expected outcomes

✓ Improve understanding of mechanisms involved in inherited prion diseases

✓ Provide potential basis for new diagnosis tools

✓ Potential for predicting conversion age/ factors
Acknowledgments

MRC Prion Unit
Simon Mead
John Collinge
Penny Norsworthy
Fernando Guntoro
Luke Dabin
Lee Darwent
Thanos Dimitriadis
Helen Speedy
Carolin Koriath
Emma Jones
Liam Quinn
Tracy Campbell

The Robert Dodd Memorial Grant contributed by Kathleen Dodd and Family
The John Gill Memorial Grant contributed by Lisa Marie Gill Braun and Family
The Cheryl Molloy Memorial Grant contributed by Tim Molloy and Family
The Marsha K. Snively Memorial Grant contributed by Ed Snively and Family
The Strides for CJD