

Alberta Prion
Research Institute

prion

Alberta Prion Research Institute

Kevin Keough, PhD FCAHS

Executive Director, Alberta Prion Research Institute
Alberta Innovates Bio Solutions



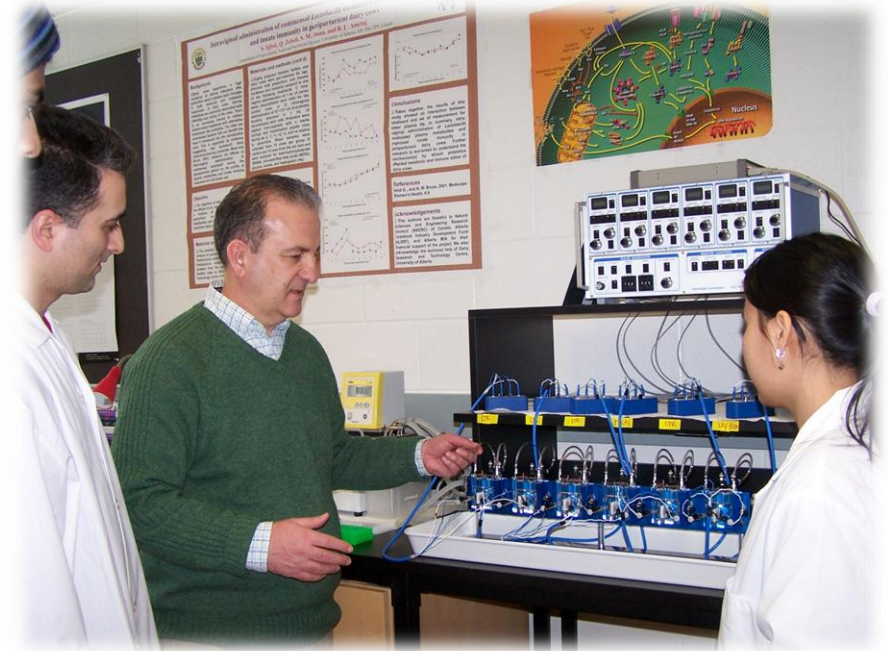
Six Years Ago

- **35 million** initiative created in 2005, in response to the BSE crisis of 2003
- Funded by the Government of Alberta
- Currently part of Alberta Innovates – Bio Solutions (2010)
- Build capacity for prion and protein misfolding research in Alberta
- Contribute to new knowledge
- Use research to help industry

Investing in Expertise

38 world-class prion and misfolded protein researchers
More than **250** young professionals conducting prion research

- graduate students
- post-doctoral fellows
- research associates
- high trained research technicians



Dr. David Wishart

- Physicist, biochemist, molecular biologist, computer scientist
- Computational models and experimental methods developed in Dr. Wishart's NMR spectroscopy lab have provided new insights into protein biology
- Among his many contributions to prion science is the development of techniques to clone prions for use in experiments
- Metabolomics, biomarkers and diagnostics



Dr. David Westaway

- Head of Alberta Centre for Prions and Protein Folding Diseases at the University of Alberta
- This burgeoning enterprise involves the Faculties of Medicine and Dentistry, Science, and Agriculture, Life and Environmental Sciences
- Over 27,000 square feet of customized laboratory space, in addition to six laboratory areas, communal areas with analytical instrumentation are designated for biocontainment use.
- Research space available for academic and industrial use



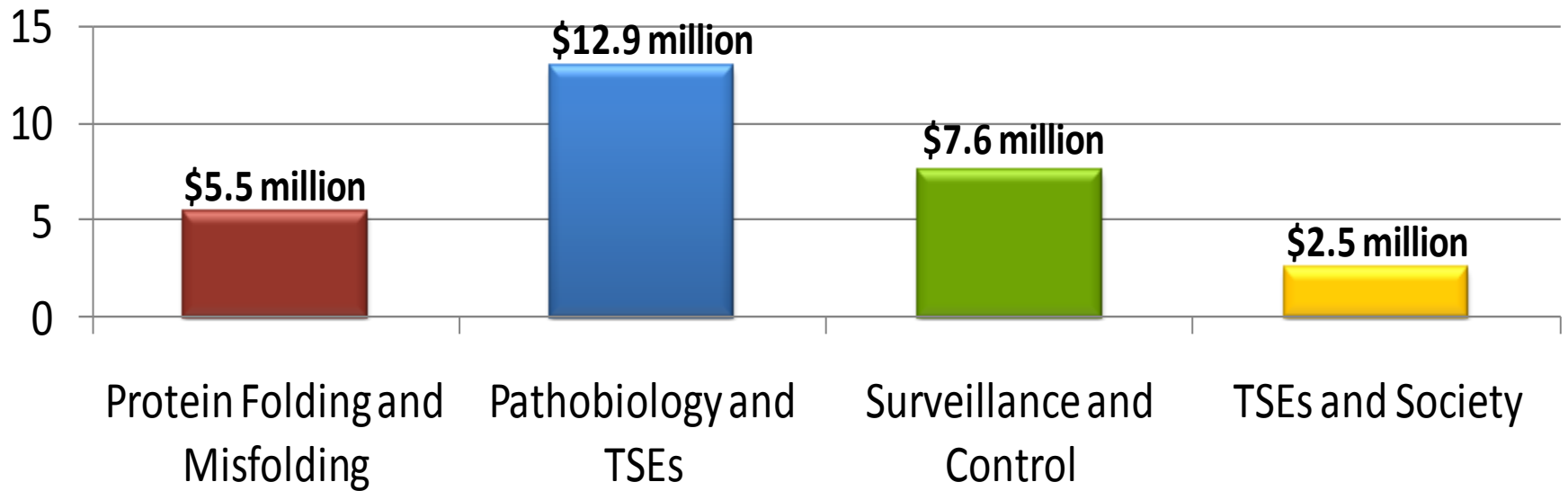
Dr. Stefanie Czub

- Head of the Canadian Food Inspection Agency's National and OIE BSE Reference Laboratories
- Adjunct professor at the University of Calgary
- 5-year, \$5 million project examining CWD and risk to humans
- Pre-clinical biomarkers



Funding Summary

Total: \$28.6 million



Human Diseases

Prions and Potential Prionoids

DISEASE	PROTEIN	MOLECULAR TRANSMISSIBILITY	INFECTIOUS LIFE CYCLE
Prion diseases	PrP ^{Sc}	Yes	Yes
Alzheimer's disease	Amyloid- β	Yes	Not shown
Tauopathies	Tau	Yes	Not shown
Parkinson's disease	α -Synuclein	Host-to-graft	Not shown
AA amyloidosis	Amyloid A	Yes	Possible
Huntington's disease	Polyglutamine	Yes	No shown

Modified from Aguzzi, Adriano, "Beyond the prion principle." *Nature*, Vol 459, June 18, 2009.

Sharing the Learnings

- Emerging evidence suggests prion diseases share characteristics in common with brain diseases such as Alzheimer's, Parkinson's, Huntington's
- All characterized by neurodegeneration and protein misfolding
- Prion models explaining how other protein misfolding diseases spread throughout the brain



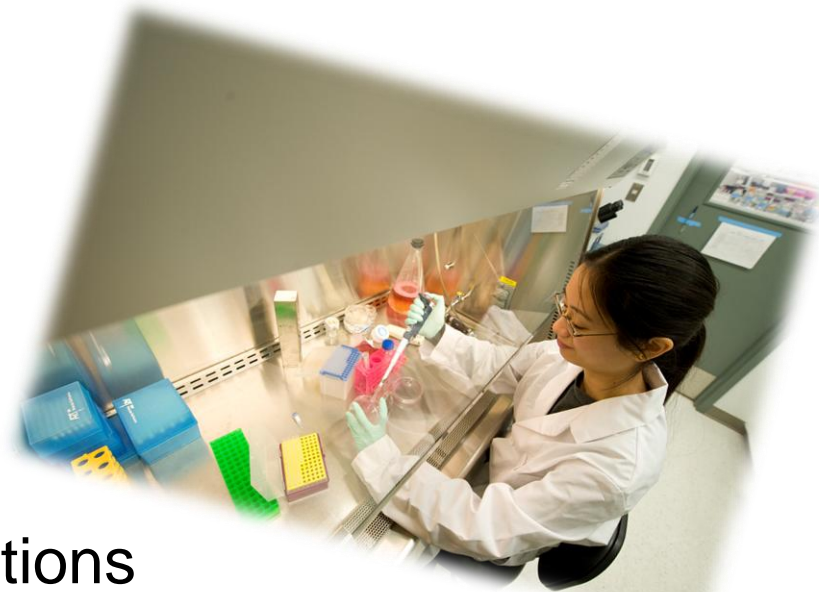
Opportunities and Challenges

- Risk Mitigation
- Specified Risk Materials
- Trade Restrictions
- Spread of CWD
- Human Neurodegenerative Diseases



Momentum

- A vibrant community of researchers
- A world-class environment
- An international reputation
- Excellence in Alberta
 - Protein Structure (50 years)
 - Neurosciences (35 years)
 - Prions (5 years)
- Inter-disciplinary research
- Industry and research collaborations



Contact Information

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