

Dr Helen Baxter
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Research Interests: protein detection, microscopy, spectroscopy and immunology.



The central theme in my work has been the integrated application of biochemical, physical and immunological techniques to solve problems in biological systems with particular relevance to medical applications. My current research focuses on monitoring and diagnosis of transmissible spongiform encephalopathy (TSE) diseases using a surrogate marker, 14-3-3 protein, and on the detection and destruction of TSE infectivity and other residual biomolecules on medical devices.

Current research includes

- The development of immunological methods of detection for monitoring 14-3-3 proteins in prion diseases.
- Developing an aptamer affinity assay for use as a surrogate marker in the diagnosis of neurodegenerative diseases.
- Developing decontamination methods, based on RF gas-plasma chemistry, which allow destruction of surface biomolecules to levels 1000 to 10,000 fold better than current practice.
- Evaluation of the efficacy of decontamination systems using *in vivo* model systems.
- Evaluation of scanning technologies for monitoring decontamination of protein residues on surgical instruments.

SELECTED RECENT PUBLICATIONS

1. Immunolocalisation of 14-3-3 isoforms in normal and scrapie-infected murine brain. Baxter HC, Liu WG, Forster JL, Aitken A, Fraser JR. *Neuroscience*. 2002, **109**, 5-14.
2. Specificity of 14-3-3 isoform dimer interactions and phosphorylation. Aitken A, Baxter HC, Dubois T, Clokie S, Mackie S, Mitchell K, Peden A, Zemlickova E. *Biochem Soc Trans*. 2002, **30**, 351-60
3. Unchanged survival curves of 14-3-3 γ knock-out mice after inoculation with pathological prion protein. Steinacker P, Schwarz P, Reim K, Brechlin P, Jahn O, Kratzin H, Aitken A, Wiltfang J, Aguzzi A, Bahn E, Baxter HC, Brose N, Otto M. *Molecular & Cellular Biology* 2005; **25**: 1339-1346
4. Plasma cleaning of dental instruments. Whittaker AG, Graham EM, Baxter RL, Jones AC, Richardson P, Meek G, Campbell GA, Aitken A, Baxter HC. *J Hosp Infection*. 2004; **56**: 37-41
5. Towards fluorescence detection of protein residues on surgical instruments. Richardson PR, Jones AC, Baxter RL, Baxter HC, Whittaker AG, Campbell GA *Proc SPIE*. 2004; **5502**: 291-294
6. Elimination of TSE infectivity and decontamination of surgical instruments using RF gas-plasma treatment. Baxter HC, Campbell GA, Whittaker AG, Aitken A, Simpson AH, Casey M, Jones AC, Bountiff L, Gibbard L, and Baxter R.L. *J Gen Virol*, 2005; **86**: 2393-2399.
7. The role of Radio frequency Gas-plasma treatment in the decontamination of surgical equipment and the prevention of TSE infectivity. Baxter HC & RL Baxter. *Managing Infection Contro*.2005; **5**: issue 11.
8. Surgical Instrument Decontamination: efficacy of introducing an argon:oxygen RF gas-plasma cleaning step as part of the cleaning cycle for stainless steel instruments. Helen C Baxter, Gaynor A Campbell, Patricia C Richardson, Anita C Jones, Ian R Whittle, Mark Casey, A Gavin Whittaker, & Robert L Baxter. *IEEE Trans on Plasma Science*. 2006: **34**: 1337-1345.
9. Application of epifluorescence scanning for monitoring the efficacy of protein removal by RF gas-plasma decontamination. HC Baxter, PR Richardson, GA Campbell, VI Kovalev, R Maier, JS Barton, AC Jones, G DeLarge, M Casey and RL Baxter. *NJP* 11. 2009; 115028 (**13**)