Research Interests

My main research areas are in Cancer Cell Biology, Cancer Immunology, Leukaemia and Lymphoma.

My research group's main interest is:

- To characterise the basic functions of normal and malignant B cells, with the aim of translating basic/fundamental discoveries into new therapeutic approaches.
- We aim to understand how malignant B cells are regulated by the gene HVCN1, which codes for the hydrogen voltage-gated proton channel. HVCN1 supports B-cell receptor (BCR) stimulation and we now aim to determine if it helps tumour growth in Chronic Lymphocytic Leukaemia (CLL) and Diffuse Large B-Cell Lymphoma, known to rely on BCR survival signals. We are currently investigating whether they utilize proton channels to sustain BCR signalling and therefore survival.
- We are also studying whether B cells support tumour growth of solid cancers, such as pancreatic and ovarian cancer.

Major Funders

- Bennett Fellowship, Leukaemia and Lymphoma Research
- Medical Research Council PhD studentship
- GlaxoSmithKline/Biotechnology and Biological Sciences Research Council CASE PhD studentship

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Recent Publications

- Regulation of immune responses by proton channels. **Capasso M**. *Immunology*. 2014 May 29. doi: 10.1111/imm.12326
- B regulatory cells in cancer. Balkwill F, Montfort A, **Capasso M.** *Trends Immunol.* 2013 Apr;34(4):169-73.
- pH regulation and beyond: unanticipated functions for the voltage-gated proton channel HVCN1. **Capasso M,** DeCoursey TE, Dyer MJS. *Trends Cell Biol*, 2011 Jan:21(1):20-8.
- HVCN1 modulates BCR signal strength via regulation of BCR-dependent generation of reactive oxygen species. **Capasso M,** Bhamrah MK, Henley T, Boyd RS, Langlais C, Cain K, Dinsdale D, Pulford K, Khan M, Musset B, Cherny VV, Morgan D, Gascoyne RD, Vigorito E, DeCoursey TE, MacLennan IC, Dyer MJ. *Nat Immunol.* 2010 Mar;11(3):265-72.
- Identification of Thr29 as a critical phosphorylation site that activates the human proton channel Hvcn1 in leukocytes. Musset B*, **Capasso M*,** Cherny VV, Morgan D, Bhamrah M, Dyer MJ, DeCoursey TE. *J Biol Chem*. 2010 ;285(8):5117-21.
- Voltage-gated proton channels maintain pH in human neutrophils during phagocytosis. Morgan D, **Capasso M,** Musset B, Cherny VV, Ríos E, Dyer MJ, DeCoursey TE. *Proc Natl Acad Sci USA*. 2009 Oct 20;106(42):18022-7.
- Deregulated expression of cytokine receptor gene, CRLF2, is involved in lymphoid transformation in B-cell precursor acute lymphoblastic leukemia. Russell LJ*, **Capasso M* et al.**. *Blood*. 2009 Sep 24;114(13):2688-98.