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Our group focuses on studying dendritic cells (DC) by analysing the cell surface receptors they express with the view that these receptors contribute to specialised functions. Ultimately the knowledge that we acquire is directed at generating better and safer vaccines. Our research approach is exemplified by our work with Clec9A: we have identified a molecule critical to the function of a certain DC subset and then exploited this molecule as a means to deliver cargo to DC and thereby creating better vaccines. We have also discovered a receptor that plays an important role in recognising certain types of DNA. Since modified oligonucleotides (DNA) are used as adjuvants in vaccines, it is important to understand how this receptor (DEC-205) interacts with DNA and what the consequences of this interaction are. Importantly, by maximising the efficiency with which DEC-205 captures DNA, we can design DNA with superior adjuvant properties.

Research Projects

1. Characterising the immunostimulatory properties of CpG
2. Identifying CpG oligonucleotides that promote CD8 T cell responses
3. Properties of inducing potent immune responses

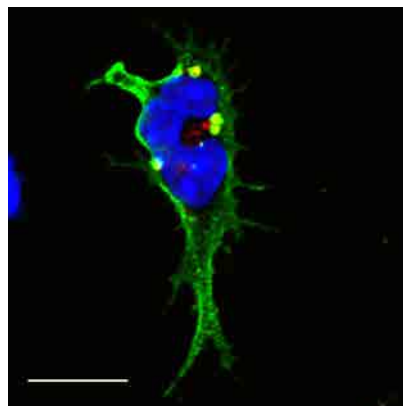
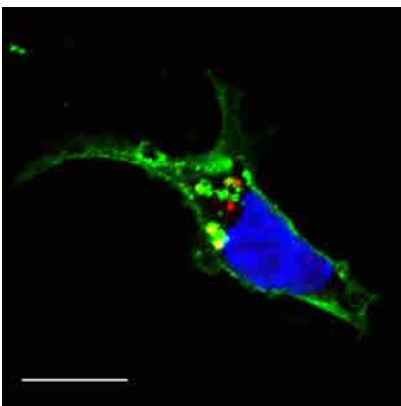


Image of dendritic cell capturing DNA: MHC class II (green) and internalised CpG DNA is seen in red. Yellow indicates where CpG-DNA has co-localized with MHC II.

Selected significant publications:

1. Kato Y, A Zaid, GM Davey, SN Mueller, SL Nutt, D Zotos, DM Tarlinton, K Shortman, MH Lahoud, WR Heath, and **I Caminschi**. 2015. Targeting Antigen to Clec9A Primes Follicular Th Cell Memory Responses Capable of Robust Recall. *J Immunol* 195:1006-1014.
2. Lahoud MH, F Ahmet, JG Zhang, S Meuter, AN Policheni, S Kitsoulis, CN Lee, M O'Keeffe, LC Sullivan, AG Brooks, R Berry, J Rossjohn, JD Mintern, J Vega-Ramos, JA Villadangos, NA Nicola, MC Nussenzweig, KJ Stacey, K Shortman, WR Heath, and **I Caminschi**. 2012. DEC-205 is a cell surface receptor for CpG oligonucleotides. *Proceedings of the National Academy of Sciences of the United States of America* 109:16270-16275.
3. Lahoud MH, F Ahmet, S Kitsoulis, SS Wan, D Vremec, CN Lee, B Phipson, W Shi, GK Smyth, AM Lew, Y Kato, SN Mueller, GM Davey, WR Heath, K Shortman, and **I Caminschi**. 2011. Targeting antigen to mouse dendritic cells via Clec9A induces potent CD4 T cell responses biased toward a follicular helper phenotype. *Journal of immunology* 187:842-850.
4. **Caminschi I**, AI Proietto, F Ahmet, S Kitsoulis, J Shin Teh, JC Lo, A Rizzitelli, L Wu, D Vremec, SL van Dommelen, IK Campbell, E Maraskovsky, H Braley, GM Davey, P Mottram, N van de Velde, K Jensen, AM Lew, MD Wright, WR Heath, K Shortman, and MH Lahoud. 2008. The dendritic cell subtype-restricted C-type lectin Clec9A is a target for vaccine enhancement. *Blood* 112:3264-3273.
5. **Caminschi I**, F Ahmet, K Heger, J Brady, SL Nutt, D Vremec, S Pietersz, MH Lahoud, L Schofield, DS Hansen, M O'Keeffe, MJ Smyth, S Bedoui, GM Davey, JA Villadangos, WR Heath, and K Shortman. 2007. Putative IKDCs are functionally and developmentally similar to natural killer cells, but not to dendritic cells. *The Journal of experimental medicine* 204:2579-2590.