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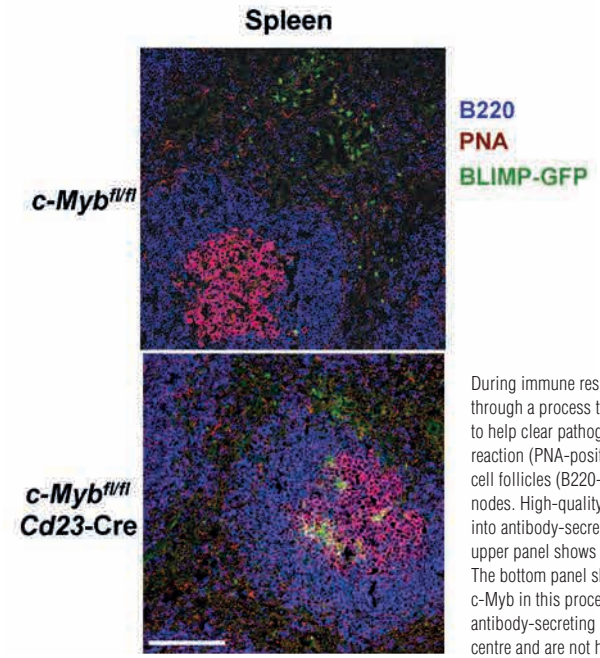
Human health and longevity is dependent on the ability of the immune system to clear the multitude of different foreign pathogens encountered over the life of the host. Our research studies the ability of the immune system to clear pathogens and form immunity through production of antibody and B cell memory. These projects will use both immunological assays and molecular biology techniques to study how the immune system forms long-lived immunity.

Research Projects

1. **Transcriptional regulation of antibody diversity**
2. **Epigenetic regulation of immune memory**
3. **Chronic infectious diseases**



During immune responses to pathogens, B cells go through a process that improves the quality of antibody to help clear pathogen. This is called the germinal centre reaction (PNA-positive cells in images) that occur in B cell follicles (B220-positive) of the spleen and lymph nodes. High-quality B cells are selected to differentiate into antibody-secreting cells (Blimp-GFP-positive). The upper panel shows a typical germinal centre response. The bottom panel shows the critical role of the gene c-Myb in this process. When c-Myb is not present, antibody-secreting cells form early within the germinal centre and are not high quality.

Selected significant publications:

1. **Good-Jacobson KL**, O'Donnell K, Belz GT, Nutt SL, Tarlinton DM. 2015. c-Myb is required for plasma cell migration to bone marrow after immunization or infection. *Journal of Experimental Medicine* 212(7): 1001-9.
2. **Good-Jacobson KL**, Chen Y, Voss AK, Smyth GK, Thomas T, Tarlinton D. 2014. Regulation of germinal center responses and B-cell memory by the chromatin modifier MOZ. *Proceedings of the National Academy of Sciences* 111(26): 9585-90.
3. Tarlinton D, **Good-Jacobson KL**. 2013. Diversity among memory B cells: origin, consequences, and utility. *Science* 341(6151): 1205-11.
4. **Good-Jacobson KL**, Szumilas CG. Chen L, Sharpe AH, Tomayko MM, Shlomchik MJ. 2010. PD-1 regulates germinal center B cell survival and the formation and affinity of long-lived plasma cells. *Nature Immunology* 11(6): 455-543.
5. **Good KL**, Tangye SG. 2007. Decreased expression of Krüppel-like factors in memory B cells induces the accelerated response typical of secondary antibody responses. *Proceedings of the National Academy of Sciences* 104: 13420-13425.