**Dr. Susan DeWolf** (Mentor: Dr. Megan Sykes)

**Scientific Question:** We aim to investigate fundamental characteristics of the human alloreactive T cell repertoire via high-throughput T cell receptor (TCR) sequencing. Using a new approach to identify the allo-specific T cell repertoire for any specific HLA-mismatched responder-stimulator (or donor-recipient) pair, we will study the CD4 and CD8 T cell alloresponse qualitatively and quantitatively. We will assess key features of the T cell alloresponse at an unprecedented level of resolution, including repertoire size, diversity, specificity, and stability; we also seek to address how different T cell population variables, such as HLA mismatching, may affect these properties.