Deciphering the Intracellular trafficking and function of the Neonatal Fc Receptor (FcRn) in rescue of therapeutic proteins

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Albumin and Immunoglobulin G (IgG) are the major serum protein components, representing about 70-80% of total serum protein. The two proteins have critical but completely different Functions in our bodies. Albumin plays a pivotal role in regulating the plasma oncotic pressure and fluid distribution between body compartments whereas the IgG are essential in mediating protective immunity against pathogens and infectious agents. The neonatal Fc receptor (FcRn) binds and protects albumin and IgG from the intracellular degradation pathway and recycles them to the cell surface to be released again into serum. Thus, FcRn prolongs the half-life of these serum proteins. However, the pathways of intracellular trafficking and recycling of FcRn are poorly defined. In my PhD, I will define the intracellular itinerary of FcRn, and use engineered therapeutic proteins fused to albumin to analyse the intracellular compartments where ligand-FcRn interactions occur.