**Project Title:** Assessment of serum growth factor inter-donor variability and the impact on human corneal epithelial cell proliferation and migration  

**Code:** ARCBS2  

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<th><strong>Host School/ Institute</strong></th>
<th><strong>Address:</strong> 17 O’Riordan Street, Alexandria, NSW, 2015</th>
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<td>Australian Red Cross Blood Service</td>
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**Project Type:** Laboratory based  

**Project Category:** Blood, Ageing, Vision, Chronic Diseases/Illness  

**Project Keywords:**  
1. Serum eye drops  
2. Growth factors  
3. MAGPIX & ELISA  
4. Cell migration & proliferation  

**Project Description:**  
Severe dry eye syndrome is a common disorder of the ocular surface characterised by decreased tear production, damage and inflammation resulting in severe discomfort and reduced vision. Serum eye drops (SED) have been shown to have beneficial effects in many patients suffering from severe dry eye. The Blood Service currently manufactures SED for these patients, although some patients are unable to donate blood due to their poor health.  

We are interested in testing serum from healthy individuals (blood donors) to determine if the concentration of essential nutrients such as epidermal growth factor (EGF), transforming growth factor-β (TGF-β), platelet-derived growth factor (PDGF) and fibronectin are similar to those found in the serum of severe dry eye patients. The minimum concentration of serum growth factors for SED to successfully relieve symptoms in patients is not known. We hypothesise that there is inter-donor variation in serum growth factor concentrations that may influence the ability of serum to support proliferation and migration of corneal epithelial cells. Serum samples from healthy blood donors will be quantitated for EGF, TGF-β, PDGF and fibronectin using a MAGPIX System (a magnetic bead-based platform using CCD imaging) and by enzyme-linked immunosorbent assays (ELISA). The ability of cultured human corneal epithelial cells to proliferate and to migrate in response to different serum preparations will also be assessed. The outcomes of this project will provide a better understanding of individual variability in serum growth factor concentration and whether these differences influence the efficacy of SED.