**Project Title:** Understanding the effects of storage conditions on the glycosylation patterns of platelet receptors.

**Code:** ARCBS1

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<tr>
<th>Host School/ Institute</th>
<th>Address: 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

**Project Keywords:**
1. Platelet
2. Glycosylation
3. Cryopreservation
4. Cold-storage

**Project Description:**
Platelet products for transfusion are typically stored at room temperature which limits their shelf-life to five days. Consequently, platelet products are often in short supply. Refrigeration (2-6 °C) and cryopreservation (-80 °C) of platelets represent an alternative solution to extend the shelf-life, thus improving their availability, although neither practice is routine in Australia, due to an incomplete knowledge base. Refrigeration is a much cheaper and simpler process than cryopreservation, and also has simplified transport and storage logistics. As such, our research group is interested in understanding the consequences of these storage conditions on platelet function when transfused.

Platelets stored under refrigerated conditions or cryopreserved have been shown to be haemostatically active when transfused to bleeding patients. However, data has shown that refrigerated platelets are cleared more quickly from circulation following transfusion due to changes in glycosylation of the GPIIbα receptor. Cryopreserved platelets are also thought to be removed from circulation more quickly than fresh platelets, although the effect of cryopreservation on the glycosylation status of platelet receptors remains unknown. As such, this laboratory based summer project aims to examine the glycosylation patterns of extracellular proteins on cryopreserved platelets, compared to those stored at room temperature and following refrigeration. To assess this, the student will learn techniques including flow cytometry and western blotting.