# The genetics of platelet based bleeding disorders

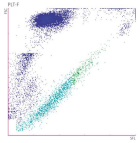
There are a variety of bleeding disorders caused by an effect to platelet production, function or destruction. Many of these disorders have a genetic cause such as a gene mutation. We try to discover these genetic causes in patients in the UK though the GAPP Project.

## How we find the genetic cause in patients

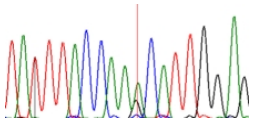
We recruit patients from across the UK.

We analyse the function of the patient's platelets.

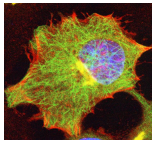

We determine the number of platelets in the patients blood.



We sequence the patients DNA to try and find a mutation.



We try to determine the effect of the mutation and how it causes disease.



## What is a platelet base bleeding disorder?

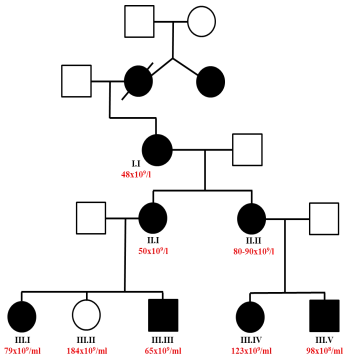
There are two main types of disorders involving platelets;

- Those that reduce the number of platelets, known as thrombocytopenia.
- Those that effect platelet function.

A number of aspects of platelet function can be affected by mutation, these include how platelets are activated, how they stick to each other and how they relay signals.

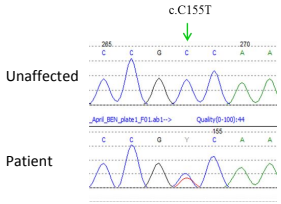
The effect of a problem in one of these pathways, or a reduction in platelet count, is an increased risk of prolonged bleeding upon injury. This is a potentially life threatening problem in severe cases and can require continuous treatment and monitoring.

## An example of discovering the genetic cause of disease




A large family with multiple affected family members, black shapes, with low platelet counts was presented

After DNA sequencing mutation in a gene was found in all of the patients.




The gene is one known to cause disease and the mutation is near previous mutations.

The gene affects the survival of platelets and we are now working on the mechanism behind this.

To date in the GAPP study we have been able to identify around 60% of patients gene mutations. This includes the detection of a number of new genes not previously known to cause disease.