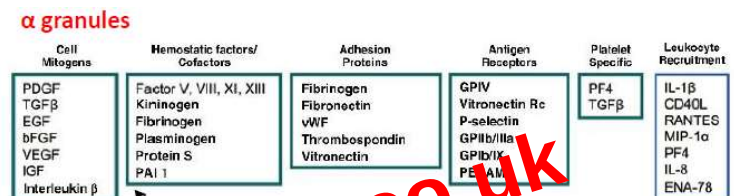


- Upon activation platelets (are important for haemostatic function)
 - Change shape
 - Secrete granules
 - Become sticky
- The resting platelet cytoskeleton – membrane skeleton
 - Spectrin interconnects with F-actin filaments forming a network under the plasma membrane – a single continuous network of actin and spectrin
 - The network helps the platelet maintain integrity when subjected to the shear forces of blood flow
 - Microtubules are organised into a coil around the end of the discoid shape – platelet marginal band
 - This coil is made up of 1 long stable microtubule and 6-8 short dynamic microtubules
 - The microtubules coil expands, helping to drive rounding of the platelet before coiling in to a central small coil as the platelet spreads
 - Microtubules ultimately depolymerise and can be reformed to support the spread platelet shape
- The resting platelet cytoskeleton – actin skeleton
 - These filaments are held together in a network by filamin, α -actinin and via spectrin/adducin
 - Actin cytoskeleton is also linked to receptors
 - Along with spectrin, provides a support for maintenance of platelets integrity in flow

Platelet Activation

1. Relaxation of the membrane skeleton (shape change – Discoid $\rightarrow$ round)
2. Turnover of the resting actin cytoskeleton
3. Changes in the microtubule cytoskeleton
4. Polymerisation of actin and MTs - spreading



Platelet spreading is driven by actin polymerisation and organisation

- Platelets contain 2 types of granules
 - α granules (bigger)
 - Dense granules
 - Also contain 0-1 lysosome which can secrete hydrolases
- Granules need to be brought close to the plasma membrane and the membranes need to fuse to allow content release
- Granule release is mediated by SNARE proteins
 - SNAREs – a family of proteins that mediate vesicle fusion with the membrane
 - v-SNARE – vesicular SNAREs
 - t-SNAREs – target SNAREs on plasma membrane
- How do platelets become sticky
 - Adhesion is mediated by the activation of cell adhesion molecules – integrins
 - Agonists binding to receptors triggers activation of the integrins
- Platelet activation via multiple surface receptors
- Secretion of granules many different compounds/proteins which have wide ranging effects on platelet, endothelial cells, leucocytes and coagulation

