- 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 0-2 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 mediation by the activated 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