folic acid or folate deficiency
- characteristics similar to B12 deficiency
- causes → pregnancy, dietary deficiency, elderly

sickle-cell anaemia
- hereditary → African or West Indian
- abnormal haemoglobin structure
- sickle-shaped cells → red blood cells get stuck in blood vessels
- there is no cure yet

thalassemia
- hereditary → Mediterranean, Middle or Far Eastern
- fewer red blood cells produced → globin chain production affected

Haematology II

white blood cells → leukocytes → nucleated

roles in the human body:
- defence against pathogens
- toxin and waste removal → remove damaged cells
- act mainly outside tissues → while in transit between sites of activity

granular leukocytes or granulocytes → abundance stained granules
agranular leukocytes or agranulocytes → few or no stained granules

granulocytes → neutrophils, eosinophils, basophils
agranulocytes → monocytes, lymphocytes

[note: sometimes they do contain granules but they are smaller and difficult to see with light microscope]
circulating leukocytes have four characteristics:
- all can migrate out of bloodstream → extravasation or diapedesis
- all are capable of amoeboid movement
- all are attracted to specific stimuli → positive chemotaxis
- capable of phagocytosis → neutrophils, eosinophils, monocytes

leukocytes migrate out of the bloodstream:
stimulated → activated to undergo margination → they make contact and adhere to vessel walls → further interaction with endothelial cells → squeeze through adjacent cells → enter surrounding tissue → this is called extravasation or diapedesis

normal white blood cell count: 4 – 11 x 10^9