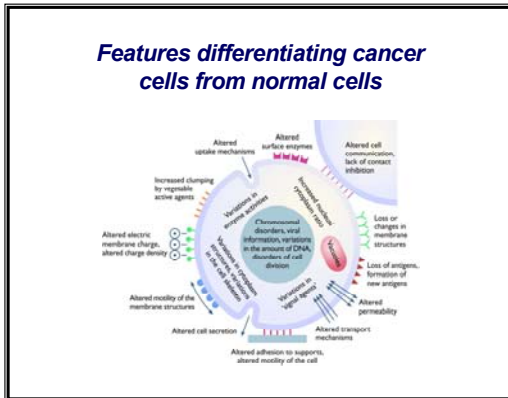


The cancer cell, invasion and metastasis

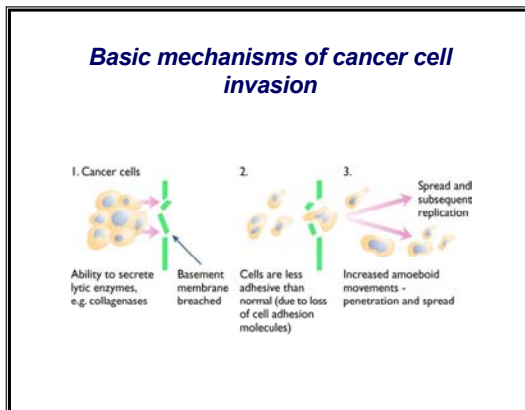
Features differentiating cancer cells from normal cells



Features differentiating cancer cells from normal cells

- Cancer cells differ significantly from normal cells
 - potential for uncontrolled division
 - enlarged nucleus
 - less mitochondria and large vacuoles in cytoplasm
 - altered cell membrane making membrane antigenic
 - increased transport across cell membrane
 - abnormal cellular metabolism is abnormal (predominantly anaerobic respiration)
 - may possess abnormal enzymes and produce inappropriate 'export' products
- Loss of architectural organisation and cellular structure may make tumour unrecognisable from parent structure – dedifferentiation

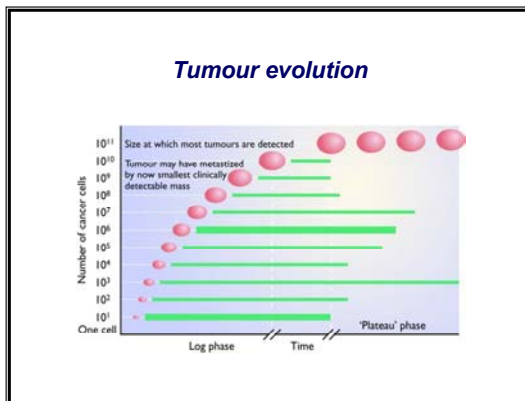
Basic mechanisms of cancer cell invasion



Basic mechanisms of cancer cell invasion

- Cancer cells damage the body by invasion
- May displace, occlude or constrict other organs or vessels
- Central cells of tumour may die, produce toxins or become infected
- Tumours follow line of least resistance
- Cells are slightly motile and lack contact inhibition – important in the invasive stages
- Cells may produce proteolytic enzymes to aid infiltration

Tumour evolution



Tumour evolution

- Initial log phase of growth and division - tumour remains clinically undetectable
- By the time the tumour reaches the smallest clinically detectable mass it may already have metastasised