13.S: Cancer Genetics (Summary)

- Cancer is the name given to a class of different diseases that share common properties.
- Most cancers require accumulation of mutations in several different genes.
- Most cancer causing mutations are sporadic, rather than inherited, and most are caused by environmental carcinogens, including virus, radiation, and certain chemicals.
- Oncogenes are hyperactivated regulators of cell division, and are often derived from gain-of-function mutations in proto-oncogenes.
- Tumor suppressor genes normal help to repair DNA damage, arrest cell division, or to kill over proliferating cells. Loss-of-function of these genes contributes to the progression of cancer.
- Genetic research into cancer can provide enzyme targets for drug investigation and potential treatment. E.g. Gleevec™

Key Terms:

- metastasis
- dysplasia
- carcinogen
- HPV
- oncogene
- ras
- apoptosis
- BRC1A
- p53
- tumor suppressor
ionizing
epidemiology
proto-oncogene
receptor
signal transduction

phosphorylation
CML
Gleevec™
bcr-abl