Genetics, Development & Cancer

The fourth module of the year introduces you to the key principles of human genetics, basis of hereditary disease, how DNA is analysed and how genetic information is increasingly used in treatment. The module also goes over how an embryo develops its complex tissue and where it can go wrong. This module consists of roughly 49 sessions.

Topics Covered

- **Genetics** – structure of genome, X-linkage, mutation, cytogenetics, abnormalities, evolution in medicine.
- **Genetic techniques** – molecular genetics, precision medicine, pre-implantation genetic diagnosis, stem cells and regenerative medicine.
- **Development** – mammalian development, embryonic induction, homeosis, sex determination and development, malformations of the foetus.
- **Pelvic anatomy** – pelvic viscera, perineum.
- **Cancer biology** – molecular basis, tumour immunology, antibody targeted cancer therapy, drug resistance, causes, cervical cancer, hemopoiesis and haematological malignancies, clinical perspectives, vasculature, radiotherapy, oncology, epidemiology.
- **Other** – Labour and childbirth, circadian clock, ageing.

Learning Methods

- Lectures – usually a one-hour teaching session.
- PBL – problem-based learning, with a tutor in a small group.
- CAL – computer-assisted learning, in dry lab rooms with a tutor.
- SPL – self paced learning, homework tasks that you can tackle at your own pace.
- Anatomy laboratory – cadaver dissections with supervision.

Resources

- Emery's elements of medical genetics – Peter D. Turnpenny, Sian Ellard, Alan EH Emery.
- Human molecular genetics - T. Strachan, Andrew P. Read, T. Strachan c2011.
- Medical genetics - Lynn B. Jorde, John C. Carey, Michael J. Bamshad 2016.
- Larsen's human embryology - Gary C. Schoenwolf, Steven B. Bleyl, Philip R. Brauer, P. H. Francis-West 2015.

Tips

- Cancer teaching tends to repeat lots of the same content and ideas – these are extremely important to learn.
- Blood cancers are very important.
- Do not dismiss the anatomy.

For more details, visit the module Moodle page.