





Human Pathology

- To interpret the terminology used in the report (histotype, grade, diagnosis, prognosis and prediction)
- To explain the basic principles and clinical significance of immunohistochemistry and molecular pathology
- To illustrate and exemplify the role of histology and immunocytochemistry in the management of an oncological patient.
- To discuss the advantages and limits of cytology in the diagnostic workflow and in the screening
- To explain why, when and how they should use cytology, histology or both
- To Know the indications and impact of molecular pathology in the management of oncological diseases
- To discuss the significance of intraoperative examination in guiding surgeon's hand
- To explain the role of biopsy sampling and surgical resection as regard the pathological staging and grading of tumors
- To understand the role of imaging and of clinical information in the diagnostic pathological process
- To interpret and discuss a pathology report of a patient with an oncological disease, including molecular analyses

Clinical Pathology



This module of Blood Disease is designed to guide medical students across the essential features of molecular hematology and to achieve an understanding on the current knowledge of the blood disease processes in terms pathophysiology and the underlying genetic and molecular abnormalities. Theory will be applied for the evaluation, classification, diagnosis and monitoring of blood diseases.

Module 3 Human Pathology

The module of Human Pathology is designed so that at the end of the course, medical students should have knowledge and understanding skills to be able to describe what is Pathology; what are the main areas of application of Pathology in personalized medicine, with particular regard to molecular pathology; how does Pathology integrate in the management of a patient. The final goal will be to understand all the information listed in the pathological report and to be aware of their clinical impact.

Module 4 Clinical Pathology

The module of Clinical Pathology is designed to guide medical students across the use of phenotypic or genetic markers for the screening and diagnosis of cancer, risk stratification, prognosis, and monitoring treatment response. Serum markers, circulating tumor cells (CTC) and nucleic acids



- Describe how to take a thorough clinical history, perform a physical examination, define the performance status (different scales) and the prognosis of a cancer patient

Lecture: Treatment strategies 1

- Illustrate the main systemic therapeutic options, as chemotherapy, hormonotherapy, targeted therapy, immunotherapy
- Describe the general principles of the therapeutic management of cancer patients, the importance of the multidisciplinary approach, and of personalized medicine
- Indicate the role of adjuvant/neoadjuvant treatment and of treatment for advanced/metastatic disease

Lecture: Treatment strategies 2 and clinical trials

- Describe treatment endpoints, and criteria for assessment of objective response
- Describe the general aspects of clinical and translational cancer research, and different phases of clinical trials

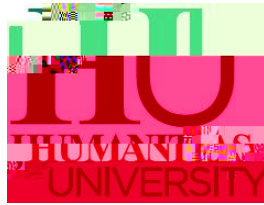
Lecture: Complications, emergencies, and simultaneous and palliative care

- Describe most common complications and emergencies associated with cancer, their diagnosis and treatment
- Illustrate the general principles of simultaneous and palliative care

Lecture: Treatment toxicities, quality of life, follow up, cancer survivors

- Describe the most common side effects of anti-cancer therapies, their diagnosis and treatment, and their late effects in cancer survivors
- Illustrate other aspects of cancer patient management: nutrition, quality of life, psycho-oncology
- Illustrate the importance of follow-up care

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- Develop a systematic and multidisciplinary approach to the main solid tumors, including modern laboratory, radiological and therapeutic tools currently used in oncology
 - Explain the general pr-5(-)-11 0 0 1 110./F4 11.04 Tf1 0 0pc(o)-4(sis)22()JTJETQq0.000008 0 595.3



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- To define the impact of genomic lesions in the biology, phenotype and prognosis of myeloid neoplasms
 - To discuss the relevance of genomic information in the clinical decision making process in patients with myeloid neoplasms

Lecture: Next generation sequencing technologies in hematology



- b. phyllodes tumor
- c. intraductal papilloma.
- Describe the epidemiological features of invasive and not invasive carcinoma of the female breast.
- Compare and contrast the pathological (cytology, histology and gross findings) and clinical features (relative incidence and prognosis) of the following types of breast carcinoma:
 - a. high-grade in situ ductal carcinoma
 - b. low-grade in situ ductal carcinoma
 - c. in situ lobular carcinoma
 - d. infiltrating carcinoma of no special type
 - e. infiltrating lobular carcinoma.
 - f. infiltrating carcinomas of other special types
- Discuss the role of fine needle aspiration (FNA) in the diagnosis of a patient with a breast nodule.
- Discuss the role of core-biopsy in the diagnosis of a patient with a breast nodule.
- Describe the role of intraoperative examination in a patient with a breast nodule.
- Describe how stage and grade impact on the clinical course of breast cancer.
- List the main morphological and molecular biomarkers that impact on prognosis and prediction of response to therapy in breast cancer.
- Know the correlation between the morphological and the molecular classification of breast cancer.
- Know the main pathological, genetic, and clinical features of invasive male breast cancer.

Lecture: Female genital system 1. Cervical carcinoma: pathological features, with focus on



- Illustrate risk factors, pathogenesis, clinical features, and spread of endometrial carcinoma.
- Explain the molecular pathogenesis of endometrial carcinoma and its relationships with risk factors and with different histotypes.
- Describe and compare the typical clinical presentation and microscopic features of uterine leiomyoma, leiomyosarcoma, and endometrial stromal tumor.
- Illustrate the basis of the classification of ovarian tumors and incidence of main histological types.
- Describe and compare the pathological, genetic and clinical features of ovarian surface tumors.
- Illustrate the issue of peritoneal involvement in the staging of ovarian surface tumors.
- Describe the usual clinical presentation and pathologic features of germ cell tumors of the ovary.
- Describe the most common types of sex cord-stromal tumors.
- Illustrate metastatic tumors to the ovaries.
- Explain the role of inherited predisposition in endometrial and ovarian neoplasms.

Lecture: Central and peripheral nervous system: gliomas and more

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- Illustrate the definition of not-clinical significant tumor and active surveillance in prostate cancer patients.
- List the prognostic histological parameters of prostate cancer.
- Illustrate the value of germline and somatic mutations of DNA repair genes in developing prostate carcinoma.
- Define the role of mutations in BRCA genes in prostate carcinoma.
- Describe the cell types present in the testis
- Illustrate the principles of the last WHO classification of tumors of the testis
- List and describe seminomatous and non seminomatous germ cell tumors
- List and describe sex chord tumors of the testis

Lecture: Urinary system: Tumor of the kidney and of the urinary bladder and related structures

- Describe the epidemiology of renal tumors
- Illustrate the main types of renal cell tumors
- Discuss the importance of genetic alterations in renal cell tumors
- Illustrate the main types of urinary bladder tumors
- Define the cancerogenetic pathways of urothelial tumors
- Discuss the importance of grading and subtyping of urothelial tumors

Lecture: Melanocytic and not melanocytic lesions of the skin

- Define a melanocytic nevus.
- List the variant forms of melanocytic nevi.
- Know the importance of the family history of patients with multiple nevi.
- Define a dysplastic nevus in terms of architectural and cytologic features and clinical significance.
- Discuss the concept that some dysplastic nevi are precursors of malignant melanomas.
- Define a malignant melanoma in terms of architectural difference from a melanocytic nevus.
- Describe the risk factors for the development of a malignant melanoma.
- List the main histological variants of melanoma.
- Discuss the concept of horizontal and vertical growth in melanoma.
- Illustrate the main phenotypic features of melanoma cells.
- Discuss the significance of tumor regression as prognostic parameter related to the staging of melanoma
- Illustrate the Breslow and Clark criteria and their significance in the staging of melanoma.
- List all the information that need to be reported in a diagnosis of melanoma.
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- Diagnostic, prognostic and predictive molecular features of different subtypes of lung cancer
- Describe the clinical course and prognosis of lung cancer
- Cytological and bioptic approach to lung nodule

Lecture: Morphological and Molecular approach to oesophageal and gastric cancer

- Illustrate precursor lesions and conditions of oesophageal cancer
- The role of Helicobacter pylori in gastric carcinogenesis
- Illustrate gross findings, histology and immunohistochemical features of oesophageal cancer
- Describe the clinical course and prognosis of oesophageal cancer
- Illustrate precursor lesions and conditions of gastric cancer
- The role of Helicobacter pylori in gastric carcinogenesis
- Illustrate gross findings, histology and immunohistochemical features of gastric cancer
- Describe the clinical course and prognosis of gastric cancer
- Illustrate the molecular classification of gastric cancer

Lecture: Morphological and Molecular approach to Colorectal cancer

- Illustrate precursor lesions of colorectal cancer
- Adenoma-carcinoma sequence
- Histological classification of colorectal cancer
- Illustrate gross findings, histology and immunohistochemical features of colorectal cancer
- Diagnostic, prognostic and predictive molecular features of colorectal cancer

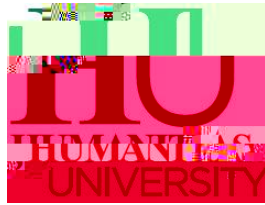
Lecture: Morphological and Molecular approach to pancreatic and hepatic cancer

- List the main types of liver cancers
- Illustrate risk factors and precursor lesions for hepatocellular carcinoma
- Describe the morphological and molecular features of hepatocellular carcinoma and its subtypes
- Describe the morphological and molecular features of carcinoma of extra- and intra-hepatic bile ducts
- List the main types of pancreatic cancer
- Discuss risk factors and precursor lesions of pancreatic cancer



Lecture: Morphological and Molecular approach to head and neck cancer cancer

- Illustrate risk factors and precursor lesions for squamous cell carcinoma of the head and neck





Lecture: The Immunoscore

- Illustrate the basic principles of the immunoscore
- The cellular players
- Introduction of the immunoscore in the clinical practice.
- The immunoscore: prognosis and response to immunotherapy

Lectures, clinical case discussion,

