Testi del Syllabus

Resp. Did.	**PERIN ALESSANDRO**	**Matricola: 015060**

Docente	**PERIN ALESSANDRO, 3 CFU**

Anno offerta:	**2021/2022**
Insegnamento:	**701SM - NEUROONCOLOGY**
Corso di studio:	**SM54 - NEUROSCIENZE**
Anno regolamento:	**2021**
CFU:	**3**
Settore:	**MED/26**
Tipo Attività:	**D - A scelta dello studente**
Anno corso:	**1**
Periodo:	**Secondo Semestre**
Sede:	**TRIESTE**

Testi in italiano

Lingua insegnamento	INGLESE
Contenuti (Dipl.Sup.)	Overview about neuro-oncology (history of neuro-oncology), neuro-anatomy, epidemiology, tumor grading, tumor classification (WHO), introduction to molecular neuro-oncology, critical thinking in neuro-oncology. Overview on meningeal development and anatomy; meninges histology, histopathology; tumor subtypes, grading, treatment options, molecular features/subgroups, prognosis. Overview on hemangiopericytomas; cell of origin, histology, histopathology, grading, treatment options, molecular features, prognosis (see for instance: Armulik et al. Pericytes: Developmental, Physiological, and Pathological Perspectives, Problems, and Promises. Dev Cell 2011) Glial cell subtypes, pylocitic astrocytoma (WHO I), neurofibromatosis type I (and NF1 gene/protein), diffuse astrocytoma (WHO II), oligodendroglioma (WHO II), differences between astro- and oligodendroglioma, significance of MGMT - TP53 - 1p19q LOH - IDH, anaplastic gliomas (WHO III). See for instance Eckel-Passow et al. Glioma Groups Based on 1p/19q, IDH, and TERT Promoter Mutations in Tumors. NEJM 2015; The Cancer Genome Atlas Research Network. Comprehensive, Integrative Genomic Analysis of Diffuse Lower-Grade Gliomas. NEJM 2015; Kelderman et al. Cancer Cell 2015; Ramaswamy and Taylor. Cancer Cell 2015. Levels of evidence and clinical trials. Epidemiology, histopathology, imaging, current standard of treatment, median survival, definition of tumor progression and recurrence, definition of tumor cell, oncogenes vs. oncosuppressors, RTK - p53 - RB

	pathways in glioblastoma, hallmarks of cancer and therapeutic targets in glioblastoma, patients' stratification in clinical trials, new trends towards a better glioma histopatological/molecular/genetic classification. Brain metastases (epidemiology, risk factors, primary tumours which can give rise to brain metastases, treatments, prognosis, new perspectives). Hypothesis behind glioblastoma malignant behaviour, cancer stem cell hypothesis and its origins, from liquid to solid tumors, key-papers from Dick - Dirks - Weiss - Galli, tumor heterogeneity vs hierarchy, definition of GSC, pitfalls of this hypothesis. Evolution of the glioma stem-like cell hypothesis. Extra: how to give a good talk in science. Practical and theoretical examples of DOs and DONTs when you have to prepare and deliver a scientific presentation in front of an audience. This lesson is part of the program, since a part of the final examination will deal with that. See for instance: Alon, U. (2009) Molecular Cell 36, 165–167. History of viral therapy for GBM, viral vectors for GBM, HSV-1 for GBM, hypoxia-GBM-viral therapy, bovine viral vectors for GBM. Definition of translational research, overview on GBM in vitro and in vivo models, serum vs serum-free GBM cell cultures, in vivo models (chemically induced, mutation driven - transgenic models, isograft vs xenograft), virus mediated gene delivery for GBM.
Testi di riferimento	WHO Classification of Tumours, fourth edition (2016) IARC WHO Classification of Tumours, Louis, D.N., Ohgaki, H., Wiestler, O.D., Cavenee, W.K. IARC ISBN-13 9789283224303 ISBN-10 9283224302 Emerging Concepts in Neuro-Oncology (2013) Colin Watts (Editor) Publisher: Springer; 2013 edition (November 9, 2012) ISBN-10: 0857294571 ISBN-13: 978-0857294579 Lecture slides (provided by the teacher) along with some key papers (cited in the slides).
Obiettivi formativi	To understand the basic principles of neuro-oncology, with special regard to the genetic and molecular mechanisms involved.
Prerequisiti	None
Metodi didattici	Frontal lessons. Any changes to the methods here described, which will be necessary to ensure the application of the COVID19 emergency safety protocols, will be communicated on the websites of the Department, the Study program and the Course.
Altre informazioni	For any doubt or for additional information: alessandro.perin@istituto-besta.it dsgubin@gmail.com
Modalità di verifica dell'apprendimento	Written examination. 4 questions + 1 (bonus) to possibly get 'magna cum laude' score. 50 minutes will be given to complete the exam
Programma esteso	Overview about neuro-oncology (history of neuro-oncology), neuro-anatomy, epidemiology, tumor grading, tumor classification (WHO), introduction to molecular neuro-oncology, critical thinking in neuro-oncology. Overview on meningeal development and anatomy; meninges histology, histopathology; tumor subtypes, grading, treatment options, molecular features/subgroups, prognosis.

Overview on hemangiopericytomas; cell of origin, histology, histopathology, grading, treatment options, molecular features, prognosis (see for instance: Armulik et al. Pericytes: Developmental, Physiological, and Pathological Perspectives, Problems, and Promises. Dev Cell 2011)

Glial cell subtypes, pylocitic astrocytoma (WHO I), neurofibromatosis type I (and NF1 gene/protein), diffuse astrocytoma (WHO II), oligodendroglioma (WHO II), differences between astro- and oligodendroglioma, significance of MGMT - TP53 - 1p19q LOH - IDH, anaplastic gliomas (WHO III). See for instance Eckel-Passow et al. Glioma Groups Based on 1p/19q, IDH, and TERT Promoter Mutations in Tumors. NEJM 2015; The Cancer Genome Atlas Research Network. Comprehensive, Integrative Genomic Analysis of Diffuse Lower-Grade Gliomas. NEJM 2015; Kelderman et al. Cancer Cell 2015; Ramaswamy and Taylor. Cancer Cell 2015.
Levels of evidence and clinical trials.

Epidemiology, histopathology, imaging, current standard of treatment, median survival, definition of tumor progression and recurrence, definition of tumor cell, oncogenes vs. oncosuppressors, RTK - p53 - RB pathways in glioblastoma, hallmarks of cancer and therapeutic targets in glioblastoma, patients' stratification in clinical trials, new trends towards a better glioma histopatological/molecular/genetic classification.

Brain metastases (epidemiology, risk factors, primary tumours which can give rise to brain metastases, treatments, prognosis, new perspectives).

Hypothesis behind glioblastoma malignant behaviour, cancer stem cell hypothesis and its origins, from liquid to solid tumors, key-papers from Dick - Dirks - Weiss - Galli, tumor heterogeneity vs hierarchy, definition of GSC, pitfalls of this hypothesis. Evolution of the glioma stem-like cell hypothesis.
Extra: how to give a good talk in science. Practical and theoretical examples of DOs and DONTs when you have to prepare and deliver a scientific presentation in front of an audience. This lesson is part of the program, since a part of the final examination will deal with that.
See for instance: Alon, U. (2009) Molecular Cell 36, 165–167.

History of viral therapy for GBM, viral vectors for GBM, HSV-1 for GBM, hypoxia-GBM-viral therapy, bovine viral vectors for GBM.
Definition of translational research, overview on GBM in vitro and in vivo models, serum vs serum-free GBM cell cultures, in vivo models (chemically induced, mutation driven - transgenic models, isograft vs xenograft), virus mediated gene delivery for GBM.

Testi in inglese

English

Overview about neuro-oncology (history of neuro-oncology), neuro-anatomy, epidemiology, tumor grading, tumor classification (WHO), introduction to molecular neuro-oncology, critical thinking in neuro-oncology.

Overview on meningeal development and anatomy; meninges histology, histopathology; tumor subtypes, grading, treatment options, molecular features/subgroups, prognosis.
Overview on hemangiopericytomas; cell of origin, histology, histopathology, grading, treatment options, molecular features, prognosis (see for instance: Armulik et al. Pericytes: Developmental, Physiological, and Pathological Perspectives, Problems, and Promises. Dev Cell 2011)

Glial cell subtypes, pylocitic astrocytoma (WHO I), neurofibromatosis type

	I (and NF1 gene/protein), diffuse astrocytoma (WHO II), oligodendroglioma (WHO II), differences between astro- and oligodendroglioma, significance of MGMT - TP53 - 1p19q LOH - IDH, anaplastic gliomas (WHO III). See for instance Eckel-Passow et al. Glioma Groups Based on 1p/19q, IDH, and TERT Promoter Mutations in Tumors. NEJM 2015; The Cancer Genome Atlas Research Network. Comprehensive, Integrative Genomic Analysis of Diffuse Lower-Grade Gliomas. NEJM 2015; Kelderman et al. Cancer Cell 2015; Ramaswamy and Taylor. Cancer Cell 2015. Levels of evidence and clinical trials. Epidemiology, histopathology, imaging, current standard of treatment, median survival, definition of tumor progression and recurrence, definition of tumor cell, oncogenes vs. oncosuppressors, RTK - p53 - RB pathways in glioblastoma, hallmarks of cancer and therapeutic targets in glioblastoma, patients' stratification in clinical trials, new trends towards a better glioma histopatological/molecular/genetic classification. Brain metastases (epidemiology, risk factors, primary tumours which can give rise to brain metastases, treatments, prognosis, new perspectives). Hypothesis behind glioblastoma malignant behaviour, cancer stem cell hypothesis and its origins, from liquid to solid tumors, key-papers from Dick - Dirks - Weiss - Galli, tumor heterogeneity vs hierarchy, definition of GSC, pitfalls of this hypothesis. Evolution of the glioma stem-like cell hypothesis. Extra: how to give a good talk in science. Practical and theoretical examples of DOs and DONTs when you have to prepare and deliver a scientific presentation in front of an audience. This lesson is part of the program, since a part of the final examination will deal with that. See for instance: Alon, U. (2009) Molecular Cell 36, 165–167. History of viral therapy for GBM, viral vectors for GBM, HSV-1 for GBM, hypoxia-GBM-viral therapy, bovine viral vectors for GBM. Definition of translational research, overview on GBM in vitro and in vivo models, serum vs serum-free GBM cell cultures, in vivo models (chemically induced, mutation driven - transgenic models, isograft vs xenograft), virus mediated gene delivery for GBM.
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	To understand the basic principles of neuro-oncology, with special regard to the genetic and molecular mechanisms involved.
	None
	Frontal lessons. Any changes to the methods here described, which will be necessary to ensure the application of the COVID19 emergency safety protocols, will be communicated on the websites of the Department, the Study program and the Course.

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