

Course director: Takaaki Ito (Pathology and Experimental Medicine Tel: 373-5086) takaito@kumamoto-u.ac.jp

Instructors : Kn-ichi Iyama (Diagnostic Pathology Division Tel:373-7092) iyama@kumamoto-u.ac.jp

Tetsuro Yamamoto (Molecular Pathology Tel:373-5305) tetsu@gpo.kumamoto-u.ac.jp

Motohiro Takeya (Cell Pathology Tel:373-5095) takeya@kumamoto-u.ac.jp

Yukio Ando (Diagnostic Medicine Tel:373-5686) andoy7@kumamoto-u.ac.jp

Yasuyuki Yamashita (Diagnostic Radiology Tel:373-5261) yama@kumamoto-u.ac.jp

Akihiro Kojima (Isotope Science Tel:373-6508) akojima@kumamoto-u.ac.jp

【Objectives】

During having the lecture series “Current Theory of Medical Diagnosis”, you can learn 1) characteristics of cancer cells at the points of differentiation, morphology and biological activities including cancer cell invasion, 2) significance of apoptosis in host defense and cell differentiation, 3) macrophage dynamics in human disease, 4) development of integrated laboratory science and disease analyses methods, 5) methods and investigative application of radiological image diagnosis, and 6) introduction of RI tracer methods and RI molecular imaging.

【Content Description】

The lecture series “Current Theory of Medical Diagnosis” afford fundamental and current general views of modern medical diagnostic techniques and their application in practical medicine and medical research. For understanding some aspects of pathological diagnosis, morphological techniques and their application for cancer diagnosis are introduced, and analytical methods of cancer cell differentiation, proliferation and invasion activities are shown. Apoptosis is a fundamental phenomenon in normal tissue homeostasis and disease development. In this course, you can learn functions of apoptosis in host defense and hematopoietic cell differentiation and fate of apoptotic cells. Macrophage is a unique cell population in the human and animals, and you can learn all about macrophages in disease processes and investigative methods for this cell population. In the lecture on Laboratory Medicine, focusing on some intractable neuronal diseases and amyloidosis, we introduce novel multidisciplinary diagnostic technologies for diagnosis, their application and analysis methods in the research fields. Moreover, we show pathogenetical data obtained by virtue of molecular biological and proteomics approaches, and ways how to search biomarkers for cancer and inflammation conditions and how to find effective molecular targets for therapy. In the lecture on Diagnostic Radiology, detailed implication of CT and MRI images and application for researches using these images are presented. In the lecture on Isotope Science, principles of RI tracer methods detecting RI distribution in the body and for functional analyses of biological activities are presented. In addition, outline of RI molecular imaging is also explained.

【Key Words】

pathological diagnosis, molecular diagnosis, neoplasm, cancer invasion, immunostain, basement membrane, extracellular matrix, host defense, apoptosis, macrophage, phagocytic cell, red blood cell, ribosome, leukocyte chemotaxis, forefront of modern medicine, amyloidosis, AFP, real time PCR, proteome, SELDI-TOF-MS, cell signal transduction, image diagnosis, CT, MRI, radioisotope (RI) tracer method, RI molecular imaging,(SPECT, PET).

【Textbook】 not specified.

【Class style】 PowerPoint files will be used for giving the lectures, and active participation in the discussion is encouraged. Extra classes or video lectures will be considered for those who are regularly absent for unavoidable reasons.

【Recommended Readings】 Special issue of Cell Technology “ Revenge of RI” (Shujunnsha,2007) for the lecture of Isotope Science.

【Office Hour】 If you have any questions on topics or schedule of the classes, please contact the instructors listed above.

【Evaluation for Grades and Credits】 Grading will be based on active class participation, paper summaries and the final reports. Even if your attendance in this lecture course is very low or none, the students can gain the credit of this course by e-learning system (now in construction), or supplement class (on March 26; needs appointments with Dr. Ito)

【Lecture Schedule】 Please also refer to the timetable shown in the Section 5.

The sessions marked with “e” are under preparation of e-learning contents. In some cases, the session that is not marked with “e” will be done by utilizing e-learning system, as soon as the e-learning contents are ready for use. Therefore, you must check the updated syllabus cited on the home page of the Graduate School of Medical Sciences, Kumamoto University to check the current status of the session before you take a session. If you cannot obtain enough information from the home page, please make contact with the instructors of the sessions.

There are six types of e-learning, those marked with “eE0”, “eEL”, “eJ0”, “eJL”, “eEJ-0” and “eEJ-L”. To know the meanings of these six markings and to learn how to use e-learning system, please see the section explaining about the e-learning system in this syllabus.

Session	Date & time	Instructors	Topics
1.	Feb 2, 2010 (Tue) 4 th period	Ito (Pathol Exp Med)	Tumor diagnosis with immunohistochemistry.
2.	Feb 5, 2010(Fri) 4 th period	Ito (Pathol Exp Med)	Molecular pathological diagnosis.
3.	Feb 9, 2010 (Tue) 4 th period	Iyama (Pathol Diagnosis)	Dynamics of basement membrane and ECM in cancer invasion.
4.	Feb. 12, 2010(Fri) 4 th period	Yamamoto (Mol Pathol)	Apoptosis and host defence.
5.	Feb 16, 2010(Tue) 4 th period	Yamamoto (Mol Pathol)	Apoptosis and hemopoietic cell differentiation.
6.	Feb. 19, 2010(Fri) 4 th period	Takeya (Cell Pathol)	Role of macrophages in huma diseases.
7.	Feb 23, 2010(Tue) 4 th period	Takeya (Cell Pathol)	Methods for macrophage researches.
8.	Feb. 26, 2010(Fri) 4 th period	Ando (Diag Med)	Practice and prospect of current diagnostic medicine.
9.	Mar 2, 10(Tue) 4 th period	Ando (Diag Med)	Practice and application of proteome analyses.
10.	Mar. 5, 2010(Fri) 4 th period	Johno (Diag Med)	Pathophysiological analyses with cell biological methods.
11.	Mar 9, 2010(Tue) 4 th period	Yamashita (Diag Radiolo)	Radiological images of representative diseases.
12.	Mar 12, 2010(Fri) 4 th period	Yamashita (Diag Radiolo)	Application of radiological diagnosis for reserches.
13. eJ-L	Mar 16, 2010(Tue) 4 th period	Kojima (RI Sci)	RI tracer methods: basics and application of radioisotope measurements.
14. eJ-L	Mar 19, 2010(Fri) 4 th period	Kojima (RI Sci)	RI molecular imaging.
15.	Mar 23, 2009(Tue) 4 th -7 th periods	Ito (Pathol Exp Med)	Supplement class; please come to see Dr. Ito if your percentage of attendance in this lecture course is very low or none and you needs the credits of this lecuture course (C1). Please contact Dr. Ito by e-mail.