The Course of Developmental Biology and Regenerative Medicine
Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine II
Subject Code 22150

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【Objectives】

Developmental and regenerative medicine aims at curing diseases by revealing molecular mechanisms of organ development and the origin of diseases in order to develop a diagnosis and treatment for the diseases. Furthermore, this course will up-to-date with the present status of the regeneration medicines, the on going investigations on replacement of lost cells, tissues or organs. In this course, you will obtain essential knowledge on embryonic stem cells, tissue stem cells, their properties and application on regenerative medicine, mechanisms of development and repairs of epithelial tissues, methodologies in the regenerative medicine of sensory and circulatory organ, tissue injury and restoration surgery, genetic defects and their treatments, status and problems in transplant medicine.

【Content Description】

In this course, lectures on the following fields will be given:

- Regenerative medicine using embryonic stem cells and tissue stem cells
- properties and application of endodermal tissue stem cells
- growth, differentiation and abnormalities of epithelial cells
- damage, repair and mechanisms of tissue reconstitution
- retinal stem cells, retinal graft and regenerative medicine
- reconstitution of eye surface, vascular neogenesis of the eye
- development and regeneration of skin (recovery of injury)
- neuropathy and treatment of pharyx paralyses
- regeneration of cochlear hair cells
- Basic and clinic on vascular neogenesis
- regenerative medicine of ischemic heart disease
- pathological analysis and treatment of genetic diseases
- tissue and organ grafts in general, present status and problems of liver transplant

【Keywords】

ES cells, tissue stem cells, differentiation, proliferation, pancreas, liver, retina, cardia disease, lung epithelium, pharynx, the middle/inner ear, epidermis, cellular injury and restoration, regeneration, liver transplantation, genetic defects

【Class Style】

PowerPoint and/or OHP will be used in the lectures, and active participation in the discussion is encouraged. Reports are considered for those who are regularly absent for unavoidable reasons.

【Textbooks】

Textbooks are not specified, and handouts will be distributed.

【Recommended Readings】

【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 report.

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

【1st grade】

Session Date & time	Instructors	Topics
1. Feb.1 (Mon) 4th period	Shoen Kume	embryonic stem cells and tissue stem cells
2. Feb. 8 (Mon) 4th period	Shoen Kume	applications in regenerative medicine
3. Feb.15 (Mon) 4th period	Takaaki Ito	growth, differentiation and abnormalities of epithelial cells
4. Feb.22 (Mon) 4th period	Takaaki Ito	damages, repair and tissue reconstitution
5. Mar.1 (Mon) 4th period	Fumio Endo (Kimitoshi Nakamura)	endodermal tissue stem cells

【2nd grade】

Session Date & time	Instructors	Topics
6. Feb.1 (Mon) 4th period	Hidenobu Tanihara	retinal stem cells, retinal graft and regenerative medicine
7. Feb.8 (Mon) 4th period	Hidenobu Tanihara	reconstitution of eye surface, vascular neogenesis
8. Feb.15 (Mon) 4th period	Hironobu Ihn	development and regeneration of skin（recovery of injury）
9. Feb.22 (Mon) 4th period	Eiji Yumoto	neuropathy and treatment of pharyx paralyses
10.Mar 1 (Mon) 4th period	Ryosei Minoda	regeneration of cochlear hair cells

【3rd grade】

Session Date & time	Instructors	Topics
11. Feb.4 (Thur) 4th period	Michio Kawasuji	Basic and clinic on vascular neogenesis
12. Feb.11 (Thur) 4th period	Michio Kawasuji	regenerative medicine of ischemic heart disease
13. Feb.18 (Thur) 4th period	Fumio Endo (Kimitoshi Nakamura)	pathological analysis and treatment of genetic diseases
14. Feb.25 (Thur) 4th period	Yukihiro Inomata	present status and problems of organ transplants
15. Mar.4 (Thur) 4th period	Ktsuhiro Asonuma	liver grafts from brain-dead and living donor

4th period：15:00-16:30