Course Coding(科目ナンバー)	Year/Semester/Term(年度・学期)	Faculty Offering Course(時間割所属・時間割コード)	Eligible Student Year(開講年次)	Credits(単位数)	Weekday and Period(曜日・時限)
RDM7-025-79-1	2025whole year	Graduate School of Medical Sciences (22150)	1, 2, 3, 4	2	others

Course Title(Theme)(科目名(講義題目))	Instructor(s)(担当教員)
Special Lecture "Tokuron" on Developmental Biology and Regenerative Medicine II(E2)	ISHIGURO Keiichiro, Yuichiro Arima, Rieko ASAI,Norika Liu, Kenichi Miharada, Akio Kobayashi, Shunsuke Tanigawa,Hitoshi Takizawa, Joji Watase,Yusuke Ono, Ryuki Shimada

Goals with their ratio(学修成果とその割合)
1.Advanced expert knowledge, skill and research capability ‥‥60% 2.Profound inter-disciplinary knowledge ‥‥25% 3.Global perspective and ability to take initiative action ‥‥10% 4.Social leadership drive ‥‥5%

Type of Class(授業の形態)	Lecture
Teaching Method(授業の方法)	PowerPoint and/or OHP will be used in the lectures, and active participation in discussion is encouraged.
Course Goals(授業の目的)	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.
Course Learning goals(学修目標)	【A level (A水準)】 During attending the lectures in this course, students are expected to be familiar with general basics of developmental biology and specific developmental biology and mechanisms of diseases in various organs including the liver, lung, heart, nervous tissue, inner ear and connective tissues. 【C level (C水準)】
Course Outline(授業の概要)	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 ・pathological analyses of hereditary amyloidosis ・development of treatment for hereditary amyloidosis ・development and regeneration of skin（recovery of injury） ・denervation and reinnervation of the larynx ・Physiology and pathophysiology of hematopoietic stem cells ・basic and clinic on vascular neogenesis ・treatment of ischemic heart disease ・pathological analysis and treatment of genetic diseases ・tissue and organ grafts in general, present status and problems of liver transplant

Details for Individual Classes(各回の授業内容)

No.(回)	Date(月日)	Class Theme(授業テーマ)	Brief Outline of Class(内容概略)
1	03/09	【1st grade】 4th period Yuichiro Arima 【eE-0】	Vascular development and pathological changes
2	03/09	5th period Rieko ASAI 【eE-0】	Cardiac development and molecular mechanisms of congenital heart disease
3	03/16	4th period Norika Liu	Hematopoiesis and morphogenesis
4	03/16	5th period Kenichi Miharada	Maternally derived factors and regulation of proteostasis in fetal development
5	03/23	4th period Akio Kobayashi	Cellular lineages during kidney development
6		【2nd grade】 Shunsuke Tanigawa	Generation of kidney organoids based on developmental biology
7		Jun Hatakeyama	Brain Development: Origin of intelligence generated by neural stem cells
8		Jun Hatakeyama	Human Brain Development: Importance of nurturing the brain in utero
9		Hitoshi TAKIZAWA	Physiology of hematopoietic stem cell
10		Hitoshi TAKIZAWA	Pathophysiology of hematopoietic stem cell
11		【3rd grade】 Joji Watase	Germ cell development and aging
12		Yusuke Ono	Development and regeneration of skeletal muscle
13		Yusuke Ono	Plasticity in skeletal muscle
14		Keiichiro ISHIGURO	Development of mammalian germ cells
15		Ryuki Shimada	Germ cells for regenerative medicine

Estimated out-of-class study time	
Required Textbook(テキスト)	
Reading List(参考文献)	
Enrollment Conditions(履修条件)	
Assessment Methods and Criteria(評価方法・基準)	Grading will be based on active class participation, paper summaries, and the final report. Grading will be based on the student's understanding of the course subject matter. The students' understanding will be evaluated on the basis of papers and quizzes related to the topics dealt with in class to be scored from 0 to 100. Final grades

Assessment Methods and Criteria(評価方法・基準)	will be based on the average score of the papers and quizzes as well as participation in class discussions.
Textbook/Material Language(教科書・資料の言語)	Combination of Japanese and English
Course Based on Practical Work Experience(実務経験を活かした授業)	Not applicable