

Course	Cancer Biology
Course No.	
Credits	2 Credits
Grade	1 Year
Timetable	Fall AB Wed 1, 2
Instructor	Kenji Irie, Mitsuyasu Kato, Saroru Takahashi, Ryosuke Ohniwa, Norihiko Obayashi, Hiroyuki Suzuki, Atsushi Kawaguchi, Tomoaki Mizuno, Yuji Funakoshi, Yasuyuki Suda
Course Overview	This course focuses on Cancer Biology from the aspect of molecular and cell biology, epidemiology, and biotechnology. This course will be shared with National Taiwan University and Kyoto University through TV meeting system. Students will join in lectures by instructors, and student presentation introducing scientific papers related cancer biology. Students will learn scientific literacy in cancer, and science communication in English. This course is hosted by University of Tsukuba. Some lectures are given by the lecturers from National Taiwan University and Kyoto University.
Remarks	Conducted in English.
Course Type	Seminars
Link between Course Objectives and Activities	In this course, students will study current situation of cancer biology, to understand health security issue from the viewpoint of medical science including molecular and cellular biology, epidemiology, physiology, and animal science. The effect of compounds in food resource to health is also related. In addition, this course nurture the scientific communication skills through the discussion and presentation of scientific articles with the participants from National Taiwan University and Kyoto University by TV meeting system.
Academic Goal	<ol style="list-style-type: none"> <li>1. To be able to explain cancer biology from the viewpoint of medical science.</li> <li>2. To be able to present scientific paper in the field of cancer biology.</li> <li>3. To be able to discuss about the contents of scientific paper in the field of cancer biology with the participants of the class.</li> </ol>
Course Schedule	<ol style="list-style-type: none"> <li>1. Overview of cancer biology (Kenji Irie)</li> <li>2. The biology of cancer: tumorigenesis (Ryosuke Ohniwa)</li> <li>3. Mechanisms of genomic instability and its cancer relation (Kenji Irie)</li> <li>4. Telomere biology (Ryosuke Ohniwa)</li> <li>5. RNA regulation and its cancer relation (Kenji Irie)</li> <li>6. Cancer epigenetics (Ryosuke Ohniwa)</li> <li>7. Tumor virology (Atsushi Kawaguchi)</li> <li>8. Animal models in cancer research (SatoruTakahashi)</li> <li>9. Signal transduction in cancer cells (Norihiko Obayashi, Yuji Funakoshi)</li> <li>10. Comparative cancer genomics (Ryosuke Ohniwa)</li> <li>11. Molecular tumorigenesis (Mitsuyasu Kato, Hiroyuki Suzuki)</li> <li>12. Neuroblastoma (Kenji Irie)</li> <li>13. Scientific paper presentation (Kenji Irie, Ryosuke Ohniwa, Tomoaki Mizno, Yasuyuki Suda)</li> </ol>
Course Prerequisites and Advisories	
Grading Philosophy (Percentage/ Criteria/ Methodology)	Class participation (30%) and discussion (30%) and paper presentation (40%). Grading Criteria is A+ (Superior), A (Excellent), B (Good), C (Average) and D (Failure).
Self-Directed Learning Other Than Coursework	Read textbooks and activate discussion out of classes.
Textbooks, References and Supplementary Materials	The Biology of Cancer 2nd edition, Robert A. Weinberg, Garland Science.
Office Hours	Name: Kenji Irie E-mail: kirie@md.tsukuba.ac.jp Name: Ryosuke Ohniwa E-mail: ohniwa@md.tsukuba.ac.jp By appointment only

Other (i.e. Expectations on Classroom, Conduct and Decorum etc.)	
Related Courses	Oncology Cellular Network of Biological Molecules Contemporary Issues in Global Health Nutrition, Physiological Regulation and Major Human Diseases
Keywords	Cancer, Molecular and Cellular Biology, Epidemiology, Model Animal