

CELL, DEVELOPMENT, AND CANCER BIOLOGY
BIOL 497I
Spring, 2011

Time: Tues/Thurs 4:40 – 5:55 pm Location: 012 Life Sciences Building

Instructor:

Dr. Zhi-Chun Lai

127 Life Sciences Building

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Office Hours: Fridays 3:00-5:00 pm, or by appt.

BIOL 497I “*Cell, Development, and Cancer Biology*” is an embedded course to be offered in the spring semester of 2011, with a short-term education abroad component in summer 2011. Major objectives of this course are:

- To discuss both basic and advanced topics in selected areas in cell biology, developmental biology, and cancer biology;
- To illustrate molecular, genetic and cellular basis of normal development and tumorigenesis;
- To learn how some of the cutting-edge research in cell, developmental and cancer biology is done in China today;
- To gain international experience and knowledge about Chinese culture and history through studying with students from Peking University and visiting some historical places in Beijing, China.

Grades will be mainly based two exams at University Park, one exam in Peking University, and attendance. Make-up exam is discouraged and will be dealt with on a case-by-case basis. A written explanation or official document is required in order for make-up exam to be considered. Students are expected to be aware of and in compliance with the university academic integrity policy, which can be found at <http://www.science.psu.edu/academic/Integrity/index.html>.

Exam #1: March 25, 2011 (35%)

Exam #2: April 29, 2011 (35%)

Exam #3: TBD (30%)

Text: **The Biology of Cancer**
First Edition, by Robert A. Weinberg
Publisher: Garland Science

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| 1. Feb. 15 T | Basic concepts in Genetics, Cell Biology and Molecular Biology (Chapter 1) |
| 2. Feb. 17 Th | Basic aspects of cancer (Chapter 2) |
| 3. Feb. 22 T | Carcinogens/Tumor viruses (Chapters 2 & 3) |
| 4. Feb. 24 Th | Multi-step carcinogenesis/Angiogenesis (Chapters 11 & 13) |
| <i>Mar. 1 T</i> | <i>No class</i> |
| 5. Mar. 3 Th | Invasion and Metastasis (Chapter 14) |
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| <i>Mar. 7 - 11</i> | <i>Spring Break</i> |
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| 6. Mar. 15 T | Cancer genes: Oncogenes (Chapter 4) |
| 7. Mar. 17 Th | Growth factors and receptors (Chapter 5) |
| 8. Mar. 22 T | Cancer genes: Tumor suppressor genes (Chapter 7) |
| 9. Mar. 24 Th | REVIEW |
| 10. Mar. 29 T | EXAM I |
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| 11. Mar. 31 Th | Cell cycle and cell cycle regulation:
CDK regulation by Cyclin binding/Phosphorylation (Chapter 8) |
| 12. Apr. 5 T | CDK regulation by CDK inhibitors/RB and E2Fs (Chapter 8) |
| 13. Apr. 7 Th | Cell death signaling and cancer (I) (Chapter 9) |
| 14. Apr. 12 T | Cell death signaling and cancer (II) (Chapter 9) |
| 15. Apr. 14 Th | Cellular signaling and cancer (Chapter 6) |
| 16. Apr. 19 T | Cell immortalization & tumorigenesis (Chapter 11) |
| 17. Apr. 21 Th | DNA repair defects can lead to cancers (Chapter 12) |
| 18. Apr. 26 T | REVIEW |
| 19. Apr. 28 Th | EXAM II |

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Summer, 2011

Class will begin on Tuesday, July 12

Syllabus for this summer component will be provided later.

Class will end by Thursday, July 28