BSCI 338(G) – Fall 2013
SEMINAR ON DEREGULATED CELL GROWTH:
CANCER AND DRUG DEVELOPMENT

Pre-requisites: BSCI330

Lectures
WF 11:00-11:50, PLS 1162

Professor
I.Z. Ades – 2248 BPS
Office: Mon 11:00-12:30 or by arrangement
izades@umd.edu

The course will focus on recent advances in cancer biology and rationales for development of potential anti-cancer drugs. The first few meetings will consist of introductory lectures to place the subject in context for the student-led presentations to follow. Each student is to prepare a Power Point (PP) lecture and submit the material described below. As a mechanism to encourage critical analysis of peer presentations, students will provide written critiques of each colleague's lecture - highlighting its strengths and suggesting points for improvement; Ades will keep all such submissions confidential.

Final grades will be based on assessments of each student's overall performance and contributions to the course. The following weights will be given to the various activities:

Scholarly Review: 80 points
Power Point lecture and submitted material.

Presentation: A lecture (40 min) that would center on one of the topics from pp 3-4.

Submission (electronically to Ades and due by three days following the oral presentation): Finalized PP document, two-page single-spaced summary with citations, descriptive figure legends embedded in the PP document, and two questions in essay format with the answers (one page single-spaced) for potential inclusion in the course's final exam.

Determination of each grade will take into consideration factors such as delivery, apparent level of comfort with background material, clarities of the figures and adequacy of their explanations, contents of submitted texts, and the depth of coverage.

Attendance, written critiques, and contributions to discussions: 20 points.[1]

Final Exam (Wednesday, Dec 18 at 8:00): 50 points

[1] Point assignments will be based on discussions and critiques submitted in class, thus sessions missed cannot be made up. Each missed student-led presentation session would be worth 2 points, and five missed sessions would result in a non-passing grade.

COURSE SCHEDULE

Activity	Topic & Date
Lectures	Sep 4 – Sep 27 Characteristics of malignant cells Actions of carcinogens Molecular basis of deregulated cell growth How to structure a presentation
Student Presentations	Oct 2 - Dec 11
Final Examination	Wednesday, Dec 18 at 8:00

GRADE ASSIGNMENTS

Final grade assignments will be based upon each student's performance as reflected in the accumulated points. Except for those who may have missed five or more sessions (per footnote on page 1), students within the following ranges of accumulated points would be guaranteed to receive at least each grade indicated below:

A+ ≥ 145 pts	C+ = 114 - 117
A = 136 - 144	C = 105 - 116
A- = 133 - 135	C- = 100 - 104
B+ = 129 - 132	D = 80 - 99
B = 121 - 128	F < 80
B- = 118 - 120	

EXAMINATIONS AT DSS

The completed DSS test authorization form should be provided to Ades by December 11, 2013 if the final exam is to be administered at DSS. The arrangement with DSS should be such that the examination would begin on the date and time specified for the rest of the class.

THE HONOR CODE

The University of Maryland at College Park has a nationally recognized Code of Academic Integrity administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards in the course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, visit http://www.shc.umd.edu/SHC/Default.aspx.

COURSE EVALUATIONS

The university has instituted an online course evaluation system for student input and teaching assessments. The system will be accessible towards the end of the semester, and it important that we hear from you.

TOPICS FOR PRESENTATIONS

Cancer Genetics

1 . Juin, P., *et al* (2013) **Decoding and unlocking the BCL-2 dependency of cancer cells.** *Nature Reviews Cancer* 13: 455-465.

2. Brosh, R. M. (2013) **DNA helicases involved in DNA repair and their roles in cancer.** *Nature Reviews Cancer* 13: 542-558.

3. Bert, S. A., *et al* (2013) **Regional activation of the cancer genome by long-range epigenetic remodeling.** *Cancer Cell* 23: 9-22.

4. Swick, J. M. and Maize,Sr., J. C. (2012) **Molecular biology of melanoma.** *Journal of the American Academy of Dermatology* 67:1049-1054.

Intracellular Transforming Pathways

5. Greuber, E. K., *et al* (2013) **Role of ABL family kinases in cancer: from leukaemia to solid tumors.** *Nature Reviews Cancer* 13: 559-571.

6. Brisken, K. (2013) **Progesterone signalling in breast cancer: a neglected hormone coming into light.** *Nature Reviews Cancer* 13: 385-396.

7. Prior, I. A., *et al* (2012) **A comprehensive survey of Ras mutations in cancer.** *Cancer Research* 72: 2457-2467.

8. Pasula, S., *et al* (2012) **Endothelial epsin deficiency decreases tumor growth by enhancing VEGF signaling.** *Journal of Clinical Investigations* 122: 4424-4438.

9. Arzumanyan, A., *et al* (2013) **Pathogenic mechanisms in HBV- and HCV-associated hepatocellular carcinoma.** *Nature Reviews Cancer* 13: 123-135.

10. Campbell, J. P., *et al* (2012) **Stimulation of host bone marrow stromal cells by sympathetic nerves promotes breast cancer bone metastasis in mice.** *PLOS Biology* 10: 1-12.

11. Wakefield, L. M. and Hill, C. S. (2013) **Beyond TGF*beta*: roles of other TGF*beta* superfamily members in cancer.** *Nature Reviews Cancer* 13: 328-341.

Studies for Drug Development

12. Winter, G. E., *et al* (2012) **Systems-pharmacology dissection of a drug synergy in imatinib-resistant CML.** *Nature Chemical Biology* 8: 905-912.

13. Yao, H.-P., *et al* (2013) **MSP-RON signalling in cancer: pathogenesis and therapeutic potential.** *Nature Reviews Cancer* 13: 466-481.

14. Tabemero, J., *et al* (2013) **First-in-man trial of an RNA interference therapeutic targeting VEGF and KSP in cancer patients with liver involvement.** *Cancer Discovery,* published online January 28, 2013.

15. Gan, H. K., *et al* (2012) T**argeting of a conformationally exposed, tumor-specific epitope of EGFR as a strategy for cancer therapy.** *Cancer Research* 72: 2924-2930.

16. McTigue, M., *et al* (2012) **Molecular conformations, interactions, and properties associated with drug efficiency and clinical performance among VEGFR TK inhibitors.** *Proceedings of the National Academy of Sciences, USA* 109: 18281-18289.

17. Gonzales, C. (2013) ***Drosophila melanogaster*: a model and a tool to investigate malignancy and identify new therapeutics.** *Nature Reviews Cancer* 13: 172-183.

Immunotherapies in Cancer

18. Palucka, K., *et al* (2011) **Recent developments in cancer vaccines.** *J Immunol* 186:1325-1331. Palucka, K. and Banchereau, J. (2013) **Dendritic-cell-based therapeutic cancer vaccines.** *Immunity* 39: 38-48.

19. Cao, Y., *et al* (2012) **Single-chain-antibody-based immunotoxins targeting Her2/neu: Design optimization and impact of affinity on antibody efficacy and off-target toxicity.** *Molecular Cancer Therapeutics* 11:143-153.

20. Cheung, N.-K. V. and Dyer, M. A. (2013) **Neuroblastoma: developmental biology, cancer genomics and immunotherapy.** *Nature Reviews Cancer* 13: 397-411.

21. Kershaw, M. H., *et al* (2013) **Gene-engineered T cells for cancer therapy.** *Nature Reviews Cancer* 13: 525-541.

22. Landsberg, J., *et* al (2012) **Melanomas resist T-cell therapy through inflammation-induced reversible dedifferentiation.** *Nature* 490: 412-416.

Preventative Measures

23. Umar, A., *et al* (2012) **Future directions in cancer prevention.** *Nature Reviews Cancer* 12: 8835-848.

24. Bleyer, A. and Welch, H. G. (2012) **Effect of three decades of screening mammography on breast cancer incidence.** *New England Journal of Medicine* 367: 1998-2005. Independent UK Panel on Breast Cancer Screening (2012) **The benefits and harms of breast cancer screening: an independent review.** *Lancet* 380: 1778-1786.