NUTR 63400: Nutrition and Cancer Prevention

2 credits

Instructor: Silvia D. Stan, Ph.D.

Wednesdays, 3:30-5:20 pm, UNIV 301

Contact Info: Email: stand@purdue.edu; Phone: (765) 496-3847; Office: HANS 135A;

Course Description: An in-depth examination of the role of nutrition in cancer prevention.

Purpose: Over the past 30 years, the molecular basis for several forms of cancer has been clarified; at the same time, population based trials have suggested candidate nutrients that may modulate the risk of these same cancers. Progress has been made to understand the molecular basis of diet and cancer relationships, and the utility of dietary factors in chemoprevention and chemotherapy. The goal of this course is to give you an overview of the principles of cancer biology and cancer prevention, to identify approaches to study the role of specific nutrients or bioactive compounds in molecular pathogenesis of cancer, and to discuss existing research on the influence of dietary factors on cancer disease risk.

Format: This will be a discussion based course. There will be a few formal lectures. As such, you will need to read all assignments prior to attending class and you will need to come equipped with questions regarding: concepts, implications, methodology, and interpretation. You must also be prepared to state your opinion on the subject being discussed. If you do not understand the issue to be discussed due to lack of background in physiology, biochemistry, nutrition, or genetics, it is expected that you will conduct additional reading in that area.

Assignments and Grading:

1) You will write a brief critical review (BCR) paper on a specific dietary factor-cancer interaction.

The criteria for choosing a specific dietary factor is that there should be solid evidence to support the role of this compound in cancer prevention or treatment in two of the following areas: clinical intervention studies (epidemiological studies alone are not enough), animal studies in preclinical models, and mechanistic studies.

During this process, you will report your choice of dietary agent and the studies to support your position in an informal presentation on MARCH 5th, 2014.

In the BCR paper, the following points should be discussed:

• Demonstrate that a relationship between the dietary factor and cancer exists
• Demonstrate and discuss potential molecular bases for the relationship
• Explain where the relationship is likely to influence cancer development
• Explain prospects for using the dietary factor for the prevention or treatment of a specific cancer
• Take a clear position regarding whether you believe the relationship is strong and reliable (and provide support for your position)
• Identify gaps in our understanding that you believe need to be clarified in the future

The effort should not be on convincing me that your area has promise. Rather I want you to critically evaluate the relationship that you choose.

Paper formatting:
• 15 pages (not including the references or a cover page)
• double spaced
• 12 pt type
• 1 inch margins
• ≥ 10 primary research papers as citations
• number each page and include your name at the top of each page

Paper due: on May 2\textsuperscript{nd}, by 5:00 pm

2) Formal presentation on the topic you have chosen (25 min in class, PowerPoint presentation)

Organize a 25 min formal presentation to discuss the role of the dietary factor in cancer prevention. The presentation should focus on 2-3 research papers with other papers for background.

3) Participation:

Each student will be required to participate in discussions of class material and research articles. While voluntary participation will be appreciated, we will also call upon students for their answers/insights/opinions. Failure to actively participate will negatively influence your grade. The following guidelines will help you understand the level of participation that is required for each grade level:

• no participation = no points
• participation only when called upon
  o response demonstrating a lack of understanding of the material = 260 pts
  o response providing only the minimum (correct) information = 300 pts
  o response providing insightful or thoughtful information = 340 pts
• voluntary participation
  o response demonstrating a lack of understanding of the material = 260 pts
  o response providing minimum (correct) information = 340 pts
  o response providing insightful or thoughtful information = 400 pts
Grading

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<td>Class participation</td>
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<td>Presentation</td>
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<td>BCR paper</td>
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Tentatively, the grading scale will be 97+\%=A+; 93-96\%=A; 90-92\%=A-; 87-89\%=B+; 83-86\%=B; 80-82\%=B-; 77-79\%=C+; 73-76\%=C; 70-72\%=C-; 67-69\%=D+; 63-66\%=D; 60-62\%=D-; <60\%=F.

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. This syllabus is subject to change. Ways to get information about changes in this course include the course Blackboard page and from the instructor (see contact information above).

Policies:

**General:**
This course and its instructors will follow policies as provided in *University Regulations*.

Dishonesty (cheating, plagiarism, or providing false information) will not be tolerated in this course and will subject the student(s) involved to disciplinary action and/or failure in this course.

It is the policy of the instructors in this course (as well as the department, school and University) not to discriminate against any person based on their race, religion, sex, age, national origin or ancestry, disability, or status as a disabled or Vietnam era veteran.

Discrimination, harassment, or intimidation of any person for any reason will not be tolerated in this class.
COURSE SCHEDULE:

All required reading materials will be provided on Blackboard.

PART I: PRINCIPLES OF CANCER BIOLOGY AND CANCER PREVENTION

January 15: Class Business
             Overview of Nutrition and Cancer Prevention

January 22: Principles of Cancer Biology

January 29: Overview of Cancer Prevention

February 5: Epigenetics
            Guest Lecturer: Barbara Stefanska, Ph.D.

PART II: DIETARY AGENTS AND CANCER PREVENTION

February 12: Vitamin D

February 19: Beta Carotene, Vitamin A

February 26: Vitamin E
             Guest Lecturer: Barbara Stefanska, Ph.D.

March 5: Phytochemicals: Isothiocyanates
         (Epidemiological studies and Clinical trials)

Deadline for selection of topic for brief critical review paper (Students)

March 12: Phytochemicals: Isothiocyanates (Mechanistic studies)

March 19: SPRING BREAK / No Class

March 26: Phytochemicals: Polyphenols, Soy Isoflavones
PART III: NOVEL TARGETS IN CANCER PREVENTION

April 2: Cancer Stem Cells
April 9: MicroRNAs
April 16: Student Presentations
April 23: Student Presentations
April 30: EB 2014 / No Class

Brief Critical Review Paper is due on May 2\textsuperscript{nd}, by 5:00 pm.
Reference Text:

Weinberg, R.A. “The Biology of Cancer”, 2013, Garland Science Publisher

Cancer Related Websites:

National Cancer Institute: http://cancer.gov/

Cancer Genome Anatomy Project: http://cgap.nci.nih.gov/