

**Kinesiology (KINE 8970)
Course Syllabus
Fall 2010**

1. **Course Number:** KINE 8970
Course Title: Special Topics: Lactate and Cancer
Credit Hours: 3 semester hours (Lecture 3)
Prerequisite: KINE 7680 or equivalent or departmental approval.
Corequisite: None

2. **Course Instructor:** L. Bruce Gladden.
Meeting Place & Time: To Be Determined.

3. **Text:** None. We will be reading scientific papers from the literature.

4. **Course Description:** Investigation, reading, synthesizing, and presenting both historic and current scientific literature on possible relationships between lactate and cancer.

5. **Course Objectives:** Upon completion of this course, students will understand:
 1. Basic mechanisms underlying lactate metabolism;
 2. Potential applications of lactate metabolism to cancer treatment.

6. **Course Content:**

Approximately the first half of the semester will involve group discussions of assigned papers, listed below in the schedule. During the second half of the semester, two scientific papers will be presented by students and discussed at each weekly class meeting.

7. **Course Requirements/Evaluation:**

Format: This will be a journal club type of class. You must arrive at each class prepared to discuss the papers assigned for the day.

Each student will present at least one scientific paper related to lactate and cancer. Each presentation will last 15-20 minutes (**must be in this range**). The student will describe in HIS/HER OWN WORDS the background for the paper, the purpose of the paper, the methods used, the results, the conclusions, and the student's own evaluation of the paper. PowerPoint must be used as an aid for the presentation. Following the presentation, there will be several minutes of discussion that is moderated by the presenting student. The presenting student should attempt to keep the discussion moving. The paper to be presented must be cleared with me no later than one week prior to the scheduled presentation. The presenting student should make a copy of the paper available to the course instructor for posting on Blackboard immediately after the paper is approved. In order to be fully prepared, presenters should read 2-3 additional papers which relate to the paper they are presenting; complete references for these papers must be turned in to the instructor. **All** students are to read the primary paper prior to the presentation.

Each presentation will be graded on a 100% scale. Grade for the class will be determined by the average for however many papers each student presents.

≥ 90%	= A
≥ 80 but < 90	= B
≥ 70 but < 80	= C
≥ 60 but < 70	= D
< 60%	= F

In order to select a paper for presentation, I suggest that you employ one or more of the following methods (or perhaps others that I have not listed):

1. Choose either classical or recent articles that are cited by textbooks, review articles, or standard research articles.
2. Look through journals that might include articles about lactate metabolism, cancer metabolism or both.
3. Do an Entrez PubMed Computer search – it allows you to use subjects, key words, combinations of key words, and authors' names. You may also try Google Scholar.
4. Use the Science Citation Index/Web of Science. Access this through the AU Libraries website. At the Web of Science site, you can enter an author name and a year and the site will return the articles that fit that description AND you can get a list of articles that have cited the article in question. So, the useful feature of this system is that if you find one paper that is interesting, you can use this index to see if any later publications have cited the original paper.

8. Class Policy Statements:

Participation - It is expected that students taking a graduate class will attend every class meeting and will actively participate in class discussions. Please refer to the current edition of the Tiger Cub (<http://www.auburn.edu/tigercub>) for the definition of excused absences. Students are expected to show evidence of thorough reading of assigned papers. Students are responsible for initiating arrangements for missed work.

Unannounced Quizzes – There is the possibility of unannounced quizzes in this class. If given, the scores will be included in determination of the overall grade.

Accommodations - Students who need special accommodations in class, as provided for by the American Disabilities Act, should arrange a confidential meeting with the instructor during office hours the first week of classes - or as soon as possible if accommodations are needed immediately. You must bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have these forms but need accommodations, make an appointment with the Program for Students with Disabilities, 1244 Haley Center, 844-2096.

Honesty Code – The University Academic Honesty Code and the Tiger Cub Rules and Regulations pertaining to Cheating will apply to this class.

Professionalism – As faculty, staff, and students interact in educational settings, they are expected to demonstrate professional behaviors as defined in the College of Education's conceptual framework. These professional commitments or dispositions are as follows: 1) engage in responsible and ethical practices, 2) contribute to collaborative learning communities, 3) demonstrate a commitment to diversity, and 4) model and nurture intellectual vitality.

Schedule

Week 1 – Introduction.

Week 2 - Gladden discusses lactate metabolism.

Gladden, L.B. Lactate metabolism: a new paradigm for the third millennium. Journal of Physiology 558(1):5–30, 2004.

Week 3 - Vander Heiden, M.G., L.C. Cantley, and C.B. Thompson. Understanding the Warburg Effect: the metabolic requirements of cell proliferation. Science 324:1029-1033, 2009.

Week 4 – Kennedy, K.M. and M.W. Dewhirst. Tumor metabolism of lactate: the influence and therapeutic potential for MCT- and CD147-regulation. Future Oncology 6(1):127-148, 2010.

Week 5 – Sonveaux, P., F. Végran, T. Schroeder, M.C. Wergin, J. Verrax, Z.N. Rabbani, C.J. De Saedeleer, K.M. Kennedy, C. Diepart, B.F. Jordan, M.J. Kelley, B. Gallez, M.L. Wahl, O. Feron, and M.W. Dewhirst. Targeting lactate-fueled respiration selectively kills hypoxic tumor cells in mice. Journal of Clinical Investigation 118(12):3930-3942, 2008.

Semenza, G.L. Tumor metabolism: cancer cells give and take lactate. Journal of Clinical Investigation 118(12):3835-3837, 2008.

Week 6 – Yeluri, S., B. Madlock, K.R. Prasud, P. Quirke, and D.G. Jayne. Cancer's craving for sugar: an opportunity for clinical exploitation. Journal of Cancer Research and Clinical Oncology 135:867-877, 2009.

Nijsten, M.W.N. and G.M. van Dam. Hypothesis: Using the Warburg effect against cancer by reducing glucose and providing lactate. Medical Hypotheses 73:48-51, 2009.

Week 7 – Student presentations.

Week 8 – Student presentations.

Week 9 – Student presentations.

Week 10 – Student presentations.

