

## BIO 5060 Special Topics, W2018

### **Selected topics on central regulation of metabolism**

Winter 2018

10:00-11:15 pm T Th

0115 STAT

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- The course aims are to (i) advance understanding of metabolic aspects of central regulation of obesity and diabetes, integrating molecular, cellular & physiologic research, (ii) enhance use of databases and critical thinking and interpretive skills that will facilitate identifying and understanding scientific literature, and (iii) improve skills required to organize and discuss (orally and in writing) current research publications.

This course addresses major principles of how various brain systems regulate physiological processes of the body function, both individually and as an integrated unit. The first part of the course deals with principles of physiological communication as it relates to homeostasis, metabolism, and both neural and endocrine communication. This will include lectures from the invited speakers, working in the field of obesity and diabetes. Emphasis is given not only to major principles but also to how these principles were developed. The class format consists of lectures, student/faculty discussions of primary research literature, and informal discussions aimed at illustrating how brain systems are integrated to allow adaptation to changes in the environments during everyday life experiences and at times of stress and disease. Topics will include (but not be limited to) dysfunction and disorders of the CNS in the context of obesity and hormonal systems (e.g., diabetes mellitus), age-associated adipose tissue dysfunction, CNS and reproductive systems, CNS and gastrointestinal system, metabolic control of neuroinflammation.

*Prerequisite: Human Physiology or equivalent*

**Textbook:** None. Materials from many sources will be posted on Blackboard

**Participation:** Required for every class, and will be recorded at the beginning on the class. Failure to attend 2 or more classes will reduce the final grade up to 20%.

**Presentations:** There will be three graded components in this course. **1.** Students are expected to give a 30 minute presentation on a relevant materials-related topic. A list of suitable topics will be provided in advance, and students will have the opportunity to choose. Presentation will focus on your understanding of the topic/chosen paper and concepts discussed in class. Students are expected to

actively participate in the discussions. **2.** At the end of the semester students are expected to provide two-page written proposal on the related chosen topic. This proposal will include analysis of a current research problem and proposed specific aims to address the problem. **3.** Present a short chalk talk (10-15 min) briefly discussing this proposal and providing the rationale for proposed aims.

**Grading policy:** 50% of the grade will be given to the 30 min presentation on the topic/paper of interest, 25% for the written proposal and 25% for the short chalk talk discussing this proposal.

Each student will be assigned date/time for his presentation.

**Office hours:** Every Tue, 12-1pm. Or, whenever you want (just send me an e-mail to make sure I am around and have time)!

### Tentative schedule

Week/Dates	Subject	Presenter
1/Jan 9	Introduction	Lecture
1/Jan 11	The role of brain in the regulation of food intake and blood sugar levels	Dr. Kavaljit Chhabra (UM)
2/Jan 16	CNS Mechanisms of Leptin Action	Dr. Jonathan Flak (UM)
2/Jan 18	CNS Mechanisms of energy balance	Lecture
3/Jan 23	Adipose tissue in age and disease	Dr. Amiya Ghosh (UM)
3/Jan 25	Lipid metabolism in obesity	Dr. Emilio Mottillo (WSU)
4/Jan 30	Regulation of the hypothalamic circuitry that controls fertility	Dr. David Garcia Galiano (UM)
4/ Feb 1	Effects of bariatric surgery on weight and metabolism	Dr. Chelsea Hutch (UM)
5/Feb 6	Inflammation and glucose monitoring systems	Dr. Ulrike Klueh (WSU)
5/ Feb 8	Neuroinflammation and obesity	Lecture
6/Feb 13	Central regulation of glucose metabolism	Lecture
6/Feb 15	How to write a proposal	Lecture
7/Feb 20	Stress and endocrine function	Dr. Samuele Zilioli (WSU)
7/Feb 22-8/ Feb 27	CNS manipulation and CRISPR tools	Dr. Tammy Barnes (UM)

<b>8/ Mar 1</b>	<b>Presentations</b>	<b>Students</b>
<b>9/Mar 6, Mar 8</b>	<b>Presentations</b>	<b>Students</b>
<b>Mar 13, Mar 15</b>	<b>Spring Break</b>	
<b>10/Mar 20, Mar 22</b>	<b>Presentations</b>	<b>Students</b>
<b>11/Mar 27, Mar 29</b>	<b>Presentations</b>	<b>Students</b>
<b>12/Apr 3, Apr 5</b>	<b>Presentations</b>	<b>Students</b>
<b>13/Apr 10, Apr 12</b>	<b>Presentations</b>	<b>Students</b>
<b>14/Apr 17, Apr 19</b>	<b>Presentations</b>	<b>Students</b>
<b>15/Apr 26</b>	<b>Last day to submit written proposals</b>	

**Grading Policy:** Grades will be calculated on the following scale: A 92.5-100%  
A- 90.0-92.4% B+ 87.5-89.9% B 82.5-87.4% B- 80.0-82.4% C+ 77.5-79.9% C  
72.5-77.9% C- 70.0-72.4% D+ 67.5-69.9% D 62.5-67.4% D- 60.0-62.4% F 0-  
59.9%

**Disabilities:** If you feel that you need an accommodation based on the impact of a disability, please feel free to contact the Instructor(s) privately to discuss your specific needs. Additionally, The Student Disability Services (SDS) office coordinates reasonable accommodations for students with documented disabilities. Information on the office is available on Blackboard under the "Important WSU Offices and University Policies" link.