

ADVANCED ENDOCRINOLOGY

EXMD 503

General Information

Course #	EXMD 503
Section #	708
Term	Winter
Year	2018
Course pre-requisite(s)	Advanced Endocrinology (EXMD 502)
Course co-requisite(s)	N/a
Course schedule (day/time of class)	Mondays and Tuesdays, 4:35 pm to 5:55 pm
Number of credits	3
Course location	Education Building, 3700 McTavish St, Room 627

Instructor Information

Name / Title	Professor Andrew Bateman / Professor Maia Kokoeva
E-mail	Andrew.bateman@muhc.mcgill.ca and maia.kokoeva@mcgill.ca
Telephone number for office appointments	<i>Dr. Bateman:</i> 514-934-1934 x35833 <i>Dr. Kokoeva:</i> 514-934-1934 x35360
Office hours for students	Upon e-mail request
Office location	MUHC-RI Glen Site, E Block Building, Room EM2.3220 (A. Bateman) or Room E02.7218 (M. Kokoeva)

TA Information

Name	Stavroula Kalantzis
E-mail	Stavroula.kalantzis@mcgill.ca or expmedcasual.medicine@mcgill.ca
Telephone number for office appointments	514-934-1934 x32964
Office hours for students	Monday to Friday, 8:30 am to 4:30 pm
Office location	Glen Site - Royal Victoria Hospital, D Pavilion, 5 th floor, Room D05.7149

Course Overview / General Information

Both EXMD 502 and 503 focus on the study of hormonal signaling mechanisms, pancreatic hormones, gut hormones, thyroid, parathyroid hormones, neuroendocrinology, steroids, and growth factors. In addition, the role of hormones and growth factors in metabolism, reproduction and fetal maturation will be discussed. *EXMD 503 focuses on metabolism and nutrition, development, reproduction, bone and endocrine aspects of cancer.*

The two courses, EXMD 502 and EXMD 503, are designed as a single course to give a basic foundation in the understanding of endocrine systems. The course is open to graduate students and U3 level undergraduate students. Although no assumptions are made that the students have studied endocrinology previously, they are expected to be familiar with certain biochemical and physiological principles.

The logical sequence for the course is the first part (EXMD 502) followed by the second part (EXMD 503). *It is possible* to take either course independently for students that have previously taken a course in endocrinology or cell signaling. When in doubt, students should consult Dr. Andrew Bateman or Dr. Maia Kokoeva, the Course Coordinators.

In accordance with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or French any written work that is to be graded.

Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site <http://www.mcgill.ca/secretariat/policies/students/handbook-student-rights-and-responsibilities-le-recueil-des-droits-et-obligations-d>

Office Hours

Dr. Bateman and Dr. Kokoeva's offices are located at the Glen site (McGill University Health Centre). A student wishing to meet the course coordinators or any other lecturing professor may do so during office hours but it is advisable that they contact the professor beforehand. Phone numbers and e-mails can be obtained *as per above*.

Schedule / Instructional Method

Lectures will begin on January 8, 2018, at 4:35 pm in the Education Building, Room 627. Thereafter, the course will take place Mondays and Tuesdays from 4:35 pm to 5:55 pm unless otherwise indicated by the Course Coordinators and/or Teaching Assistant as in the case of a class cancellation.

Students are urged to be punctual so that all of the material can be given in the scheduled period, thus eliminating the necessity of having extended lectures. Lecturers will be available for consultation outside the lecture hours.

Lectures will be carried out with the projection of PowerPoint presentation slides as a visual tool in the learning process. Additionally, there will be Student Seminars organized in the latter half of the course (over a maximum of four days depending on class size) for the purpose of enabling the students' involvement in knowledge acquisition/dissemination.

MyCourses will be used as a tool for the collection of term papers.

Required Course Materials

No specific textbook is used for the course.

Standard endocrinology texts such as *Textbook of Endocrinology* (Williams) and *Endocrinology* (de Groot) are recommended for background reading. Copies can be found in the reference sections of the McIntyre Medical Library and in the medical libraries of the various teaching hospitals.

Each lecturer will give you specific references. Handouts/lecture notes will be posted weekly on MyCourses website.

The books listed above are general texts which will be useful for most cases.

Optional Course Materials

Not Applicable.

Course Content / Important Dates / Grading

EXMD 503 will cover topics on metabolism and nutrition, development, reproduction, and the endocrine aspects of cancer. Emphasis is placed on the science *behind* key concepts– no clinical aspects (i.e., anatomy, pathology, etc.) will be taught.

Topic Submission for Term Paper & Seminar – March 6, 2018 (Reading Week/Study Break).

No lecture is scheduled for April 2, 2018.

Grading is as follows:

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| - Topic submission | March 6, 2018 |
| - Term Paper submission (25%) | April 16, 2018 |
| - Oral Seminar Presentation (10%) | March 27, April 3, 9, 10, & 16, 2018 |
| - Written Examination (65%)
(exact date to be determined by McGill) | Exam period – April 17 to April 30, 2018 |

Term Paper / Seminar

Each student must write a review (provide evidence for any statement you make and if there are problems or issues with the evidence, you will discuss them) in an area related to endocrinology. The paper should be typed in 12 font, double-spaced, and should be between 15 and 20 pages including tables, figures, and references. The length of the paper is a guide only. The papers are graded for quality not quantity, so it is possible for a shorter paper to be assessed a better grade than a longer paper. Some suggested topics are listed below but students may also select other topics. For students who select their own topic, please check with the course coordinators that the topic is appropriate for the course. Papers may be evaluated by any of the professors who take part in the EXMD 502 or 503 courses. Papers should cover the selected topic *in depth* rather than attempt a broad but superficial coverage of the topic area. Students must submit a digital copy (PDF or Word file) of the term paper. They will be collected on April 11th. Digital copies can be emailed to Ms. Stavroula Kalantzis at stavroula.kalantzis@mcgill.ca or they can be uploaded on MyCourses.

The seminar should be 10 minutes in length (with a 5-min Q&A) and should be on the same topic as the term paper. It is very important to keep to this time limit so that all seminars can be presented as scheduled. Slides or overheads can be used to illustrate the material being presented. The lecture room is equipped with a data projector for Power Point presentations. The classroom has a PC laptop, so be careful that your presentation is PC-compatible. Seminars are evaluated by the course coordinators.

The topic you choose must be submitted via e-mail to the course coordinators for their approval at Andrew.bateman@muhc.mcgill.ca and at maia.kokoeva@mcgill.ca.

Term paper topic should *not* be a major focus of the host lab.

To avoid multiple presentations on the same subject, a MAXIMUM of two students *per topic* are allowed.

It is required that students attend the Seminars (even if they are NOT presenting) as this will allow them to interact with their fellow classmates and ultimately add to their overall learning experience. Students NOT attending one or more seminars will have 10% of the seminar grade subtracted.

Submission of term paper topic and *completed* term papers must be made on time. Students who are unable to meet the deadlines should contact the course coordinators beforehand to explain the reasons for the delay. The course coordinators will evaluate whether there is adequate justification for the delay on a *case-by-case* basis.

Students will be asked to judge the seminars with the professors, Dr. Bateman & Dr. Kokoeva. The seminar grade will be calculated as 20% graded by students and 80% graded by Dr. Bateman & Dr. Kokoeva. Interesting comments/questions from the students would be considered and added to their *individual* seminar grade (worth 10%).

	Suggested Topics for Term Paper/Seminar
1	Current concepts of steroid hormone action: genomic versus non-genomic
2	Hormonal regulation of testicular function
3	Hypothalamic releasing hormones – recent progress
4	Regulation of growth hormone release
5	Cell biology and biochemistry of peptide pro-hormone processing
6	Mechanism of action of insulin
7	Inhibin and related hormones
8	Role of G proteins in hormone action
9	Regulation of hormone action by protein phosphatases
10	Role of intermediates of the phosphatidyl inositol pathways as second messengers
11	Role of prostaglandins in the reproductive system
12	Regulation of arachidonic acid release
13	Role of food reward in obesity epidemics
14	Interaction of the reproductive axis with energy balance
15	Menopause onset: triggers and mechanisms?
16	Adolescence onset: triggers and mechanisms?
17	Morningness and eveningness: links to circadian pacemaker function?
18	Angiogenesis and diabetes
19	Why is the hunt for anti-obesity drugs so unsuccessful? Limitations in anti-obesity drug development
20	Mammalian sirtuins and energy metabolism
21	The roles of AMP-kinases and mTOR in energy regulation

22	Obesity, inflammation, and insulin resistance
23	Selective estrogen response modifiers (SERMS) in breast cancer therapy – their mechanism of action
24	The interactions between growth factor signalling and the integrin system
25	B-Adrenergic receptors and their involvement in cardiovascular disease (e.g. congestive heart failure)
26	Androgen receptors in the development and progression of prostate cancer
27	Crosstalk between the immune and hormonal systems
28	Coping with stress: hormonal response of the body
29	Diabetes: a disease of plenty?
30	Hormonal therapy for treatment of menopause: pros and cons
31	Hormonal regulation of bone remodeling
32	Causes and consequences of insulin resistance in diabetes
33	The role of hepatic gluconeogenesis and its key enzyme, fructose 1, 6 bisphosphatase in regulating appetite and obesity
34	Bariatric surgery for type 2 diabetes: weight loss independent mechanism?
35	IGF-dependent and-independent functions of IGF binding proteins
36	Leptin resistance: causes and consequences

Learning Outcome(s)

At the end of the course, the student should have a solid understanding of the science of Endocrinology and have acquired experience in written and oral presentation of biomedical concepts.

Policy

Instructor-generated course materials (e.g. handouts, notes, summaries, exam questions, etc) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow-up by the University under the Code of Student Conduct and Disciplinary Procedures.

If you have a disability, please contact the instructor to arrange a time to discuss your situation. It would be helpful *first and foremost*, if you contact the **Office for Students with Disabilities** at 514-398-6009.

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course *may be* subject to change.

Course Evaluations

End-of-course evaluations are one of the ways that McGill works toward maintaining and improving the quality of courses and the student's learning experience. You will be notified by e-mail when the evaluations are available on Mercury, the online course evaluation system. Please note that a minimum number of responses must be received for results to be available to students.

We strongly encourage students to complete their evaluations and provide feedback on the EXMD 502 and 503 courses by logging into Minerva/Mercury.

WINTER 2018

**ADVANCED ENDOCRINOLOGY (EXPERIMENTAL MEDICINE EXMD 503)
MONDAYS & TUESDAYS 4:35-5:55 PM
MCGILL EDUCATION BUILDING, 3700 MCTAVISH, ROOM 627**

Course Coordinators:

Dr. Andrew Bateman: MUHC-RI Glen Site – E Block Bldg, Room EM2.3220, Ext. 35833
Dr. Maia Kokoeva: MUHC-RI Glen Site – E Block Bldg, Room E02.7218, Ext. 35360

METABOLISM AND NUTRITION

Jan 8	Central control of appetite and metabolism	M. Kokoeva
Jan 9	Reward and brain stem circuits in energy balance control	M. Kokoeva
Jan 15	The adipose tissue as an endocrine organ	M. Kokoeva
Jan 16	Mechanism of action of insulin and glucagon	J-L. Liu
Jan 22	Insulin-like growth factors	J-L. Liu
Jan 23	The genetics Type-II Diabetes	R. Sladek
Jan 29	Hepatic Steatosis and hepatitis	T. Nilsson
Jan 30	Cholesterol, Steroids, and Oxysterols	R.S.Kiss
Feb 5	Thyroid gland physiology-secretion, regulation/HPT axis	M. Tamilia
Feb 6	Thyroid-regulated thermogenesis and energy metabolism	M. Tamilia

DEVELOPMENT, REPRODUCTION AND ENDOCRINE ASPECTS OF CANCER

Feb 12	Male reproduction	M. Nagano
Feb 13	Regulation of gonadotropin secretion and ovulatory cycle	M. Nagano
Feb 19	Role of androgens and estrogens in the male reproductive System and cancer	C. O'Flaherty
Feb 20	PCOS (=Polycystic Ovarian Syndrome)	D. Morris

Feb 26	Skeletal development	M. Murshed
Feb 27	Skeletal development	M. Murshed
Mar 5	READING WEEK/STUDY BREAK	
Mar 6	READING WEEK/STUDY BREAK (Term paper topic submission due)	
Mar 12	Mechanism of action of TGFB and related factors	JJ. Lebrun
Mar 13	TBA	E. Torban
Mar 19	Somatic growth factors – Class I	A. Bateman
Mar 20	Somatic growth factors – Class II	A. Bateman
Mar 26	Immune-endocrine Interactions	A. Bateman
Mar 27**	<i>STUDENT SEMINARS</i>	A. BATEMAN/M. KOKOEVA
Apr 2	NO LECTURE (EASTER)	
Apr 3**	<i>STUDENT SEMINARS</i>	A. BATEMAN/M. KOKOEVA
Apr 9**	<i>STUDENT SEMINARS</i>	A. BATEMAN/M. KOKOEVA
Apr 10**	<i>STUDENT SEMINARS</i>	A. BATEMAN/M. KOKOEVA
Apr 16**	<i>STUDENT SEMINARS</i> (Term papers due)	A. BATEMAN/M. KOKOEVA

****Seminar Room: Glen Site, 1001 Décarie Blvd, Bloc E, room EM13509**