Biology 37
Endocrinology
Dartmouth College, Spring 2025

Portrait of a Young Woman with a Gilded Wreath
120-140 AD (artist unknown)

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Biology 37 s25 **Endocrinology** **Weekly Schedule 10A**

Lectures/Case Studies: Tuesday and Thursday 10:10 am-12:00 pm
X-hour: Friday 3:30-4:20 pm (three (3) to be used this term for optional patient/visiting faculty presentations)
Text/Case Studies:

1. **Text:** None required
2. **Case Studies:** Abstract-only reading of 36 clinical case studies. All posted as .pdf files on Canvas.

Course Assessments: Six (6) on-line, open-book quizzes (2 grades can be dropped); mid-term & final exams
Faculty: Professor Lee Witters

Date	Topic
Tuesday, April 1	Lecture 1: Course Introduction and Overview of the Mammalian Endocrine System
Thursday, April 3	Lecture 2: Hormone Receptors/Nuclear Receptors
Friday, April 4	**NO X-HOUR**
Saturday, April 5	**Practice Quiz Due Monday, April 7**
Tuesday, April 8	Lecture 2 Case Study; Lecture 3: Hormone Receptors/Cell-Surface Receptors
Thursday, April 10	Lecture 3 Case Studies; Lecture 4: Pituitary and Hypothalamus-An Overview
Friday, April 11	**NO X-HOUR**
Saturday, April 12	**Quiz #1 (Topics #1, 2 & 3) Due Monday, April 14**
Tuesday, April 15	Lecture 4 Case Studies; Lecture 5: Hypothalamic/Pituitary/Gonadal Axis
Thursday, April 17	Lecture 5 Case Studies; Lecture 6: Sex Steroids; Hormones of Pregnancy & Lactation
Friday, April 18	**NO X-HOUR**
Saturday, April 19	**Quiz #2 (Topics #4 & 5) Due Monday, April 21**
Tuesday, April 22	Lecture 6 Case Studies; Lecture 7: The Adrenal Cortex and Its Hormones
Thursday, April 24	Lecture 7 Case Studies; Lecture 8: Sexual Differentiation and Puberty
Friday, April 25	**NO X-HOUR**
Saturday, April 26	**Quiz #3 (Topics #6 & 7) Due Monday, April 28**
Tuesday, April 29	Lecture 8 Case Studies; Lecture 9: Growth Hormone and Related Growth Factors
Thursday, May 1	Lecture 9 Case Studies; Lecture 10: Thyroid Hormones
Friday, May 2	**X-HOUR:** Patient Visit and Presentation
Saturday, May 3, 6-8 PM	**Optional Mid-Term Exam Review Session**
Monday, May 5, 7-9 PM	**Mid-Term Exam (covers Topics # 1-9 & associated Case Studies)**
Tuesday, May 6	Lecture 10 Case Studies; Lecture 11: Calcium-Regulating Hormones:PTH & Vitamin D
Thursday, May 8	Lecture 11 Case Studies; Lecture 12: Hormone Production by "Non-Endocrine" Tissue
Friday, May 9	**NO X-HOUR**
Saturday, May 10	**Quiz #4 (Topics #10 & 11) Due Monday, May 12**
Tuesday, May 13	Lecture 12 Case Studies; Lecture 13: Fuel Homeostasis and Pancreatic Hormones
Thursday, May 15	Lecture 13 Case Studies; Lecture 14: Diabetes Mellitus: Pathogenesis/Celebrating Insulin@100+
Friday, May 16	**NO X-HOUR**
Saturday, May 17	**Quiz #5 (Topics #12 & 13) Due Monday, May 19**
Tuesday, May 20	Lecture 14 Case Studies; Lecture 15: Body Weight: Obesity and Type 2 Diabetes
Thursday, May 22	Lecture 15 Case Studies; Lecture 16:Body Weight:Disrupted Eating & Athlete's Dilemma (REDS)
Friday, May 23	**X-HOUR:** Patient/Faculty Visit & Patient Presentation
Saturday, May 24	**Quiz #6 (Topics # 14 & 15) Due Monday, May 26**
Tuesday, May 27	Lecture 16 Case Studies; Lecture 17: Neoplasia & Immunoendocrinopathy
Thursday, May 29	Lecture 17 Case Studies; Lecture 18: What is a Hormone Anyway?
Friday, May 30	**X-HOUR:** Faculty Visit & Patient Presentation
Tuesday, June 3	**Optional Final Exam Review Session**
Monday June 9, 3 PM	**Final Exam (covers Topics # 10-18 & associated Case Studies)**

Biology 37 Course Goals, Format & Expectations

I. General Course Goals

- To provide a broad overview of the endocrine signaling system and its function/dysfunction in humans
- To integrate aspects of molecular endocrinology and cellular biochemistry with *in vivo* physiology and pathophysiology
- To illustrate how the study of the molecular genetics, cell biology, biochemistry and pathobiology of an endocrine disorder reveals insights into the molecular/cellular mechanisms and physiology of normal endocrine function
- To introduce students to the biomedical literature through case studies to learn some techniques of clinical/molecular investigation in a hypothesis-based, problem-solving paradigm
- To practice the application of deductive reasoning in clinical problem solving

II. Course Format

The course will consist of 18 lectures/case studies on Tuesday and Thursday from 10:10-noon (with a break in the middle). **Attendance at all classes is expected of each student; attendance at X-hours is optional, but encouraged** (see below).

The lecture/case study format will generally consist of a presentation of a case study (or studies) from the biomedical literature (based on the prior class lecture topic) in the 1st hour followed in the 2nd hour by a lecture on a different topic to prepare students for the next class. Powerpoint slides for each lecture (annotated) & case studies, along with a summary slide of sub-topics in every lecture, will be posted on our Canvas site at least a week in advance of each class. At the end of each class 2nd hour lecture, the case studies for the next class will be previewed. The web site also contains a Powerpoint set on "What the Major Hormones Do". These slides may be helpful in summarizing in a "Notes' view the information about each of the major hormones to be studied. Additionally, there is a Powerpoint set including the analytical techniques used in the case studies (to be added to after each discussion). The web site also contains "tips" documents for course success, a link for Zoom & for scheduling office hour visits via Calendly, how to use Slack and a map to Professor Witters' office. Lastly, a short video ("Navigating Biology 37") is posted on the web site to introduce you to course organization & expectations.

On our Canvas site, navigating from the Syllabus page, there are several links to explore. Two of the most important are:

A. Course Topic Pages: There is a separate page for each course topic (1-18) Each page contains (or will contain) the following:

1. **Topic lecture summary slide** (identifies major topics presented; a beginning point for review)
2. **Powerpoint (PP) slides** for (1) topic lecture which are annotated (use 'Notes Page' view in PP 'View' menu) and (2) PP slides of the case study/studies.
3. **Links for the Case Studies:** Read Abstract only. These full papers are **OPTIONAL,** but included for your interest and further exploration. Some cases will be "mystery cases" revealed at the time of discussion.
4. **"Lecture Check" (Lect-Chex) mini-quizzes** for a quick review/reflection of each lecture on the day of each class to help you keep on top of the material in a timely way.
5. For some topics, **optional,** but interesting readings or video links

B. Course Aids & Help Documents Page: On this web site page you will find a collations of (1) the individual "Lecture Summary Slides' of all the lectures on a particular topic which indicate the major points (and serve as a study guide for lecture content) of (2) of the major analytical techniques used in the Case Studies and (3) "solutions" to the Case Studies, based on an Bio37 algorithm. There is also a PP set on "What the Major Hormones Do". These latter slides summarize the information about what are the major actions/roles of the major hormones to be studied. This page also contains a "tips" documents for course success, podcasts of Saturday office hours and sample questions for both the midterm and final exams (the latter posted just before each).

III. Course Schedule. The course schedule indicates the lecture topic/case studies and dates of the quizzes/examinations & pre-exam review sessions Note that the case study/studies corresponding to a particular lecture subject occurs in the 1st hour of the next class. Note also the dates of the X-hours we will use for patient and faculty visits (3 in the term).

IV. Case Studies: Reading the ABSTRACT of each of the case studies in advance of class is REQUIRED. Reading of the full paper is **OPTIONAL.** These case studies (some "mystery" to be revealed in class) have been chosen for their seminal nature and, most importantly, their integration of molecular and physiologic information. All are based on a central aspect of endocrine physiology or pathophysiology in humans and are meant to illustrate important principles of endocrinology and the techniques used to discover them. Each case study will be previewed in class & then discussed in the following class by Professor Witters. **ALL students should be encouraged to participate in those discussions.** ***Participation, not the "right" answer(s), through comment or questions is the desired goal of these discussions.*** The **principles** that these case studies illustrate and the general content, methods of analysis & the modes of data display of each will be **very useful** on the quizzes & examinations. The case studies illustrate a number of **analytical techniques** used in the analysis of the endocrine system and you will need to be familiar with (1) what each technique measures and how the data are displayed & (2) with the interpretation of data obtained from its application. **Simply said, you will have more success in the class & get more out of our course if you participate in the case study discussions!**

All the case study papers are available as .pdf files on the course web site.

V. Course Assessments and Grading

A. Quizzes (40 possible points): There will be **6 on-line quizzes** beginning at end of Week 2 accessible in the 'Assignments' link in the course menu. **I will also upload the first week a practice quiz ("silly questions'), just so that everyone gets familiar with the format.** Quizzes will be posted on Saturday at 10 AM (after group Zoom office hours) and will be due at 10 AM on the following Monday (48 hours to complete). Each quiz will consist of 10 single-answer multiple choice, multiple answer or matching questions (some requiring interpretation of data figures) worth 1 point each (**10 points per quiz; your two lowest grades will be automatically dropped, thus 40 possible points for the term**). All quizzes can be taken **"open book/notes"** (though not in consultation with anyone else verbally or by messaging or with use of generative AI) and you will have **ONE ATTEMPT and 40 MIN** to complete. Note, however, that the quiz will disappear at the due date/time from the web site, *even if you are in the middle of taking it*, so plan in advance. The answers will be revealed after the due time. **Study in advance** is strongly encouraged. Regardless of the number of questions answered correctly, **it is REQUIRED that ALL SIX quizzes will be completed to satisfy the course requirement. Again, your two lowest grades will be automatically dropped. Any deviation from these policies must be discussed (e.g illness, internet access issues) with Professor Witters IN ADVANCE of the due date, i.e. not after its due date/time.**

B. Examinations: There will be **two "in person" exams** (mid-term and "final"). Each will count equally toward the class grade (**40 points each**). The "final" exam is non-cumulative, emphasizing only the material in the second half of the course, though principles & experimental data we have covered in the first half of the course are 'fair game'. My policy is to only grant exemptions from scheduled exam time for a direct time conflict with other classes, for illness or for unavoidable absence from campus.

The **general format of the exams** will consist of narrative-style questions (with some use of matching/fill-in-the-blank/true-false/multiple choice/answer format) that will be designed to assess the application (not just memorization) of course material in unique problem-solving situations & will include, in some instances, crafting experimental design. Data interpretation of graphs/figures is also an element. **Sample questions from prior exams will be posted in the 'Course Aids & Help' section prior to each exam.** Material for

the exams will be drawn from class lectures/notes and Powerpoint slides accompanying each lecture/case study. Pre-exam review sessions will be offered prior to both the mid-term and final.

D. Completion of Course Assignments. It is expected that students will complete ALL course assignments on the date and time that they are scheduled. My policy is to give deferral only for illness, unavoidable absence from campus or a direct conflict with a scheduled activity of another class (in the case of the exams). **Communication by the student with me about any deviation from this policy is expected of all students before the fact, not afterwards.**

E. Course Grading The course grade will be determined by (1) **required completion** of **all** course assignments (6 quizzes; 2 exams), (2) the number of accumulated course points and (3) by course "engagement" (see below). The policy of the Biology Department is that a minimum of 50% of total possible points must be earned to achieve a passing grade. Anyone with ≥ 90% of possible points will receive "some kind of A". Historically, the median grade in this course has been in the B+ range, but I do not feel held to that, depending on overall class performance (in either direction). **Exam grading is done by me; on-line quizzes are "automatically" graded and you will see the correct answers after the quiz deadline is passed. Exams will be returned in class or in my office (122 LSC) and can be picked up during my office hours. Note: You will have one week after I announce their availability to pick them up and to request any re-grading then. After that, they will be discarded and grades are then final.**

Breakdown of course points (total 120 possible)

1. 6 quizzes: 40 points (10 points each); **required to complete all 6 (2 lowest grades dropped).**
2. Mid-term examination: 40 points (covers Topics 1-9)
3. Final examination: 40 points (covers Topics 10-18; not cumulative)

While I will not assign a specific point value to it, I do take into account what I term "active engagement and participation" in the course in assigning the final letter grade. Is there evidence that the student is intellectually engaged with the course in and out of the classroom, is providing interesting insights to peers and is contributing to the general learning atmosphere of the course? **This will be used only to raise your letter grade, not lower it.** Ways students can demonstrate this include:

- **active participation** in class (through questions or comments, particularly during discussion of our case studies)
- **regular use** of office hours (X hours are optional, but encouraged)
- **posting of comments or questions** about class material on 'Slack' on the web site
- **bringing new or recent insights** to the attention of us all (e.g. posting an interesting article, image or URL in 'Slack'); commentary from others on these postings.

Taken together, this does provide you an opportunity to influence your final letter grade, but I will look for evidence that you have done these things **throughout the course** and not just intermittently or towards the end of the course. **Note:** this also means that course points yielding your "numerical" standing relative to the class DO NOT guarantee a certain letter grade.

VI. Laptop/Phone Policy. I have no objection to your using laptops/tablets to take notes. **However, if you are going to use your laptop (or phone) for any purpose other than notes (such as checking e-mail, Facebook, Instagram, Twitter/X, TikTok, etc.), I am going to ask you to sit on the periphery of the class by yourself so as not to disrupt others.** Studies tell us that students who are focused on the class are disrupted by someone nearby using their computers/phones for other purposes. Some students have either taken note directly on the PP slides or on a printout of the slides.

VII. Course Text, Case Studies, Web Sites, Lecture Video & Lecture Tools

A. Course Textbook: I am not recommending or requiring a course text. There are reference texts/links available on-line as eResources that can be linked to from our web page ('Syllabus'>>'Useful Web Links & Textbooks')

B. Case Study Manuscript Readings are available on the Canvas site as .pdf files. **Reading of their abstracts in advance of class is REQUIRED. Reading the entire paper is OPTIONAL, but may be of interest.** Exams/quizzes WILL NOT draw on any specific detail of these case studies, but the studies themselves (and the in-class discussions) will help to reinforce important points AND the techniques that are in use to generate their conclusions **(including, but not limited to, data interpretation).**

C. Valuable Reference Materials: eBooks, Web Sites & Dana Library Research Guide. Via the 'Useful Web Links & Texts' of our web site ('Syllabus') you can access Note also a link from that page to a Dana Library Research Guide to assist you in literature searching if you are interested.

E. Course Web Site

http://canvas.dartmouth.edu

On Day One of the course, please set up your desired contact information, as I will be using this mode through 'Announcements" to communicate with you during the course. To do this, click on your picture. Under 'Announcement' in menu, I recommend choosing 'Notify me immediately', so you receive any announcements promptly.

Also register for Slack, the course Q&A module. If you have registered for Slack in another course, you shouldn't have to do it again. If not, you will be asked to create a password (don't use your Net ID or Dartmouth PW). **Review the document 'Using Slack in Bio37'** (accessible from Canvas site 'Syllabus" page) to see how access and the channels that are set up.

On Day One: take a tour of the Canvas site to see how it is organized. The site is organized with a 'Syllabus' page (which has several links to general course pages and course aids), a 'Calendar', individual pages devoted to each course lecture topic (each of which, in turn, contains .pdf files of the case studies, a lecture summary slide, lecture Powerpoint slides, Lecture Check (Lect-Chex) mini-quizzes), 'Course Aids & Help Documents' with summary PP slides, tips documents, Panopto recordings of Saturday group Zoom office hours & sample exam questions, a 'Calendly' link for scheduling individual office hour appointments and a link for the course Zoom access (to be used in group office hours). In the Canvas menu, note an 'Assignments' section for quizzes, a 'Slack' link for asking questions and posting interesting material, a 'Panopto Video' link for class recordings and a 'Grades' section.

I STRONGLY encourage the viewing of the Powerpoint files on your computer (the animation and color can be very helpful). Note that many of the lecture slides (but not the case studies) are **annotated**, so also view in 'Notes" version to see highlights of main points. Some folks also like to print these out and take notes on them during class. They will be up-loaded prior to each class, typically the week before the lectures for the coming week.

F. Lecture Recording (Panopto)

We will be using the Panopto lecture capture recording system this term. These files will be available within a few hours of the lecture in a link from the course Canvas menu. Any laser pointing will not be seen. **While I do NOT regard this as a substitute for class attendance**, it might be helpful for several of you if you have an unavoidable absence from class or would simply like to review aspects of a lecture or discussion (you can start and stop me!). Historically, many students have found these useful as a course

study adjunct. However, there are things we do in class that are not always easily captured with these technologies (especially classroom discussions, student questions).

Keep in mind that there is NO GUARANTEE that this Panopto technology will work to effectively capture every lecture, so DO NOT rely on this system as a substitute for class attendance!

VIII. Office Hours; Use of X- hour

Weekday Individual Office Hours: offered 5 days a week generally (excluding Saturday/Sunday). Students are asked to sign up for 20 minute appointments (no double booking on same day, please) at indicated times using **Calendly** (see link from 'Syllabus' page) up to 7 days in advance. **My office is located in the Class of 1978 Life Sciences Center (Room 122; map on web site).** Students are encouraged to drop by to ask questions, review material, discuss case studies or just chat about life, career plans, Red Sox vs Yankees, politics, art history, the cosmos, music/movie favorites, etc! It is very important to me to "make the class smaller" by encouraging students to come by, even for seemingly minor issues and questions or for going beyond course material. **Every one of you is important to me regardless of your background in biology & your present/future plans. I value very much these interactions and want to get to know you all better!** Office hours also offer you the opportunity of being PROACTIVE AND CURIOUS in your approach to your education, even if you feel in command of the material we are covering, is important. **If you don't feel in command (or even if you feel okay), don't wait till you "see how you do" on the first quiz or mid-term! If you do feel in command, let me "stretch you"!**

Saturday AM Office Hours: I am offering a **group office hour via Zoom on Saturday morning (9-10 AM)** prior to release of the weekly on-line quiz. Join anytime during that hour for your own questions and to listen to the questions of others. Use the "All-Purpose Bio37 Zoom Link' on the Canvas site 'Syllabus' page.

Three (3) X-hours (see the course schedule) **that will be used this term are optional, but attendance encouraged and will be used for patient/faculty visits. However, nearly all past students who have taken this course have said they have found the X-hour to be VERY enjoyable & useful to their study and relating what they are learning to actual patients.** These sessions will be recorded, but experience tells me that student comments/questions are not always well-picked up on the classroom recording system.

H. Commitments Toward Your Success in This Course

As course designer and instructor, I care about each of you & am committed to your successful achievement of your goals in this course. I also understand that you may encounter challenges during the term. Resources are available to help you. These may include:

- **Accessibility support.** Students requesting disability-related accommodations and services for Bio78 are encouraged to schedule a meeting with me as early in the term as possible. This conversation will help to establish how your accommodations will be implemented in this course and what role Student Accessibility Services (SAS) or its Testing Center may play in assisting. In order for accommodations to be authorized, students are required to register with SAS.

Use this link or phone number:

(https://students.dartmouth.edu/student-accessibility/students/where-start; 603-646-9900) and request an accommodation email be sent to me in advance of the need for an accommodation. If students have questions about whether they are eligible for accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential. **It is very important that we then continue to communicate over the term** to assure that your needs are being met. Receiving accommodations **DOES NOT** relieve you of the responsibility of communicating with me about any deviations from course requirements **BEFORE the fact.**

- **Mental health and wellbeing support.** The academic & social environments at Dartmouth are challenging, our terms are intensive, and classes are not the only demanding part of your life. There are

a number of resources available to you on campus to support your wellness, including: your undergraduate dean (http://www.dartmouth.edu/~upperde/), the Counseling Center (http://www.dartmouth.edu/~chd/), the Student Wellness Center (http://www.dartmouth.edu/~healthed/) and the Mental Health and Wellbeing web page (https://mentalhealth.dartmouth.edu/). The student-led Dartmouth Mental Health Union and their Peer Support Programs may additionally be helpful to you.

Find phone numbers for emergency mental health support, information on how to make a counseling appointment, and links to mental health and wellness resources across the institution at
https://home.dartmouth.edu/mental-health-resources

- **Financial support.** Some courses may require purchases of course materials, though this is likely not the case for Bio 37. If help needed, consult with your dean, review Financial Aid Policies and Resources, and keep me informed.
- **Support around issues of sex or gender-based harassment, sexual assault, and their after-effects.** The Sexual Respect Website (sexual-respect.dartmouth.edu) provides information on your rights and obligations with regard to sexual respect and resources that are available to all in our community. Please keep in mind that if you report prohibited conduct as detailed in the Sex and Gender-based Misconduct policy, I am obliged to share your concern with the Title IX Coordinator.

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Please make me aware of anything that will hinder your success in & enjoyment of this course.
I will help and I will put you in touch with others who can help even more.
The earlier I am aware of issues, the more I can do to assist you.

Case Studies for Biology 37 s25

Each set corresponds to the subject of the lecture topic in the previous class.
READ ONLY THE ABSTRACTS: the important data will be discussed by Professor Witters.
You are responsible for the information in these discussions.
Feel free to read the entire papers (all available on Canvas site), but NOT REQUIRED.

Topic 1: Course Introduction and Overview

No Reading

Topic 2: Hormone Receptors ; Mechanisms of Hormone Action I

Bochukova, E et al (2012) A mutation in the thyroid hormone receptor alpha gene, *New Engl J Med*, 366, 243-249 [supplemental data on web site].

Topic 3: Hormone Receptors ; Mechanisms of Hormone Action II

Swords, F.M. et al (2002) Impaired desensitization of a mutant adrenocorticotropin receptor associated with apparent constitutive activity, *Mol Endo*, 16, 2746-2753

Jiang, S. et al (2011) Functional characterization of insulin receptor gene mutations contributing to the Rabson-Mendenhall syndrome—phenotypic heterogeneity of insulin receptor gene mutations, *Endocrine J*, 58, 931-940

Topic 4: Pituitary and Hypothalamus: An Overview

Siggaard, C. et al (1999) Clinical and molecular evidence of abnormal processing and trafficking of the vasopressin preprohormone in a large kindred with familial neurohypophyseal diabetes insipidus due to a signal peptide mutation, *J Clin Endo Metab*, 84, 2933-2941

Two Mystery Cases To Be Presented & Reading Posted After Class

Topic 5: Hypothalamic/Pituitary/Gonadal Axis

Bouligand, J et al (2009) Isolated familial hypogonadotropic hypogonadism and a *GNRH1* mutation, *New Engl J Med*, 360, 2742-2748

Mystery Cases To Be Presented & Reading Posted After Class

Topic 6: Sex Steroids; Hormones of Pregnancy and Lactation

Quaynor, SD et al (2013) Delayed puberty and estrogen resistance in a woman with estrogen receptor α variant, *New Engl J Med*, 369, 164-171 [+supplemental data on web site]

Shozu, M. et al (2003) Estrogen excess associated with novel gain-of-function mutations affecting the aromatase gene, *New Engl J Med*, 348, 1855-1865

Topic 7: The Adrenal Cortex and Its Hormones

Geller, D.S. et al (2000) Activating mineralocorticoid receptor mutation in hypertension exacerbated by pregnancy, *Science*, 289, 119-123

Samuels, ME et al (2013) Bioinactive ACTH causing glucocorticoid deficiency, *J Clin Endo Metab,* 98, 736-742 [+supplemental data on website]

Topic 8: Sexual Differentiation, Gender and Puberty

Mystery case for discussion: A case of mistaken gender identity (includes study guide), READ THE CASE & STUDY GUIDE & PONDER THE QUESTIONS IN ADVANCE OF CLASS.

Topic 9: Growth Hormone and Related Growth Factors

Besson, A et al (2005) Short stature caused by a biologically inactive mutant growth hormone (GH-C53S), *J Clin Endo Metab*, 90, 2493-2499

Woods, K.A. et al (1996) Intrauterine growth retardation and postnatal growth failure associated with deletion of the insulin-like growth factor I gene, *New Engl J Med,* 335, 1363-1367

Abuzzahab, M.J. et al (2003) IGF-1 receptor mutations resulting in intrauterine and postnatal growth retardation, *New Engl J Med*, 349, 2211-2222

Topic 10: Thyroid Hormones

NO READING: "Mini-Cases" to be presented

Topic 11: Calcium-Regulating Hormones

Mystery Case To Be Presented & Reading Posted After Class

Pallais, J.C. et al (2004) Acquired hypocalciuric hypercalcemia due to autoantibodies against the calcium-sensing receptor, *New Engl J Med*, 351, 362-369

Topic 12: Hormone Production by "Non-Endocrine" Tissue

Burtis, W.J. (1990) Immunochemical characterization of circulating parathyroid hormone-related protein in patients with humoral hypercalcemia of cancer, *New Engl J Med,* 322, 1106-1112.

Mystery Case To Be Presented & Reading Posted After Class

Topic 13: Fuel Homeostasis and Pancreatic Hormones

Taschenberger, G. et al (2002) Identification of a familial hyperinsulinism in the sulfonylurea receptor I that prevents normal trafficking and function of K_{ATP} channels, *J Biol Chem*, 277, 17139-17146

Féry, F. et al (1999) Impaired counter-regulation of glucose in a patient with hypothalamic sarcoidosis, *New Engl J Med*, 340, 852-856.

Topic 14: Diabetes Mellitus: Molecular Pathogenesis & Celebrating Insulin@100+

Girard, CA et al (2009) Expression of an activating mutation in the gene encoding the K_{ATP} channel subunit Kir6.2 in mouse pancreatic β cells recapitulates neonatal diabetes, *J Clin Invest*, 119, 80-98\

Kahleova, H et al (2020) Effect of a low-fat vegan diet on body weight, insulin sensitivity, postprandial metabolism and intramyocellular and hepatocellular lipid levels in overweight adults, *JAMA Network Open*, e2925454; doi.10.1001/jamanetworkopen.2020.25454

Topic 15: Body Weight: Obesity and Type 2 Diabetes

Funcke, J-B et al (2023) Rare antagonistic leptin variants and severe, early-onset obesity, *New Engl J Med*, 388, 2253-2261

The "BlockBuster GLP-1/GIP Drugs": Cases to be presented

Topic 16: Body Weight: Disrupted Eating & Athlete's Dilemma (REDS)

Caronia, LM et al (2011) A genetic basis for functional hypothalamic amenorrhea, *New Engl J Med*, 364, 215-225

The Genetics/Epigenetics of Anorexia Nervosa & REDS: A Review & Discussion

Topic 17: Neoplasia of Endocrine Glands/ Immunoendocrinopathy

Michiels, F-M et al (1997) Development of medullary thyroid carcinoma in transgenic mice expressing the RET protooncogene altered by multiple endocrine neoplasia type 2A mutation, *Proc. Natl. Acad. Sci. USA*, 94, 3330-3335.

Knauf, JA et al (2005) Targeted expression of $BRAF^{V600E}$ in thyroid cells of transgenic mice results in papillary thyroid cancers that undergo dedifferentiation, *Cancer Res*, 65, 4238-4245

Topic 18: NO READING