

COMPARATIVE VERTEBRATE HISTOLOGY

ANAT/BIOL 3421

JANUARY-APRIL 2015

When and where:

Lectures: Wednesday/Friday 11:35 - 12:25 AM, Tupper Link Room L7

Laboratory: Friday 1:30 - 3:30 PM, Room 12K, Tupper Building

Instructor:

Dr. Frank Smith (course director)

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Office: Department of Medical Neuroscience, Room 14C, Tupper Building

Teaching Assistant: Matt Stoyek, Department of Medical Neuroscience

Course Content:

This course is designed to follow on from ANAT 2160/BIOL 3430 (Introductory Human Histology). The introduction to the basic histology of mammalian tissues and organ systems provided by those course gives the background required to understand this course on the histology of systems and organs across the vertebrates. The course is taught using a combination of lectures and study of microscope slides in the laboratory. Topics covered are organized to take advantage of the strengths in the Departmental comparative histology slide collection. The major concepts in this course are: 1) the relationship between structure and function in each system presented; and 2) how the histology of these systems has varied to meet the evolutionary challenges faced by vertebrates occupying a variety of environmental niches. There will also be a section covering the use of selected histological techniques and discussion of the basic principles of interpreting tissue sections.

Suggested texts and useful references (see end of syllabus):

There is no single textbook that deals with all of the comparative subject matter covered in this course, so a number of textbooks are suggested for your general reference, for details of specific

systems, and for reviewing basic histology.

Course Evaluation:

Your final mark will be based on a midterm (~40 % of total course mark) and a final examination (~60 % of total course mark). Both examinations will have a practical (~ 1/3) and a written (~2/3) component. The practical portion of each examination will comprise two-part questions in which you will be required to give short answers about images taken from the microscope slides assigned in the laboratory sessions. The written component will consist of several different types of questions (but no multiple-choice).

Laboratory Sessions:

The scheduled laboratory time for this course consists of two hours per week throughout the term, but the laboratory is available to you at other times as well, whenever there are no formal classes being conducted. However, it is important to attend the scheduled laboratory sessions as the instructors will be present to aid in identifying difficult structures. The course is organized so that the laboratory material and the lectures on each topic are presented as close together as possible to form a series of "learning modules". Instructions covering each laboratory exercise will be available in PDF format on the course website (<http://medicine.dal.ca/departments/department-sites/medical-neuroscience/current-students/educational-courseware.html>). Select the course name for access to the material. Be sure to bring your lecture notes and materials, the relevant laboratory exercise and at least a general histology text with you to each laboratory session.

ANAT/BIOL 3421 Lecture and laboratory schedule Jan-April 2015

<u>Date</u>	<u>Lecture</u>	<u>Laboratory</u>
Jan 7 W	Introduction	
9 F	Accessory digestive organs	no lab
14 W	Accessory digestive organs	
16 F	Accessory digestive organs	Accessory digestive organs
21 W	Digestive systems	
23 F	Digestive systems	Digestive systems
28 W	Respiratory system	
30 F	Respiratory system	Respiratory system
Feb 4 W	Respiratory system	
6 F	Munro Day - no class, no lab	
11 W	Respiratory system	
13 F	Techniques	Respiratory system
16 - 20	Reading week - no classes, no lab	
25 W	Techniques	
27 F	General sensory	Techniques/General sensory
Mar 4 W	Eye	
6 F	Midterm exam: 11:30 practical (L7); 1:30-3:30 written (12K) topics: Accessory digestive organs, Digestive systems, Respiratory system, Techniques	
11 W	Eye	
13 F	Eye	Eye

	18 W	Labyrinth	
Mar	20 F	Labyrinth	Labyrinth
	25 W	Labyrinth	
	27 F	Integument	Labyrinth/Integument
Apr	1 W	Integument	
	3 F	Good Friday - no class, no lab	
	8 W	Integument	
	10 F	Review class	Integument

Final examination (combined written and practical) held in regular April examination period; date to be set by Registrar

Reference materials.

General histology: note that, in addition to the textbook for ANAT 2160/BIOL 3430 (Junquiera's Basic Histology), you can use any of the general histology texts/atlasses listed below as a good general reference for this course.

Cormack, D. H. Essential Histology. Philadelphia: J. B. Lippincott

Weiss, L. (ed.) Cell and Tissue Biology: A Textbook of Histology. Baltimore: Urban and Schwarzenberg

Fawcett, D. W. Bloom and Fawcett: A Textbook of Histology. Philadelphia: Saunders

Ham, A. W. Histology. Philadelphia: Lippincott

Wheater, P. R., Burkitt, H. G. and Daniels, V. G. Functional Histology: A Textbook and Color Atlas. Edinburgh: Churchill Livingstone. Note: the figures in this book are good supplementary material for any general histology text.

Stevens, A. and Lowe, J. Human Histology. Philadelphia: Elsevier.

General vertebrate anatomy, functional vertebrate morphology and evolutionary aspects of structure-function relationships:

Kardong, K. V. Vertebrates: Comparative Anatomy, Function and Evolution. Dubuque, Iowa: W. C. Brown (Killam Library, QL 805 K 35)

Hildebrand, M. Analysis of Vertebrate Structure. New York: J. Wiley and Sons (Killam QL 805 H 64)

Pough, F. H., Janis, C. M. and Heiser, J. B. Vertebrate Life. New York: Prentice Hall. (Killam Library QL 605 P 68)

Hildebrand, M. Functional Vertebrate Morphology. Cambridge, Mass.: Harvard University Press (Killam Library QL 805 F 86)

Romer, A. S. The Vertebrate Body. Philadelphia: Saunders (Killam Library QL 805 R 65)

Wake, M. H. (ed.) Hyman's Comparative Vertebrate Anatomy. Chicago: University of Chicago Press (Killam Library QL 812 H 87)

Comparative physiology:

Hill, R. W., Wyse, G. and Anderson, M. Animal Physiology. Sunderland, USA: Sinaur (Killam Library QP 33 H 54)

Randall, D. J., Burggren, R.W., and French, K. Eckert's Animal Physiology: Mechanisms and Adaptations. New York: W. H. Freeman and Co. (Killam Library QP 31.2 R 36)