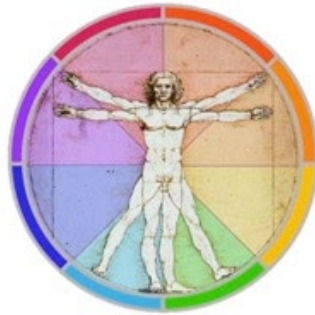


# HUBS 191 Lecture Material

This pre-lecture material is to help you prepare for the lecture and to assist your note-taking within the lecture,  
it is NOT a substitute for the lecture !



Please note that although every effort is made to ensure this pre-lecture material corresponds to the live-lecture there may be differences / additions.

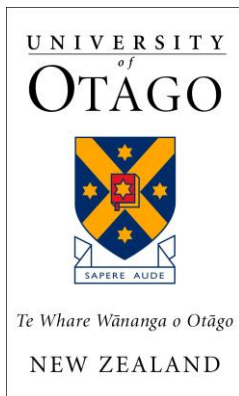
# Human Body Systems HUBS 191

## Introduction to HUBS

*Associate Professor Jeff Erickson*

*Academic Course Convenor*

*Department of Physiology*



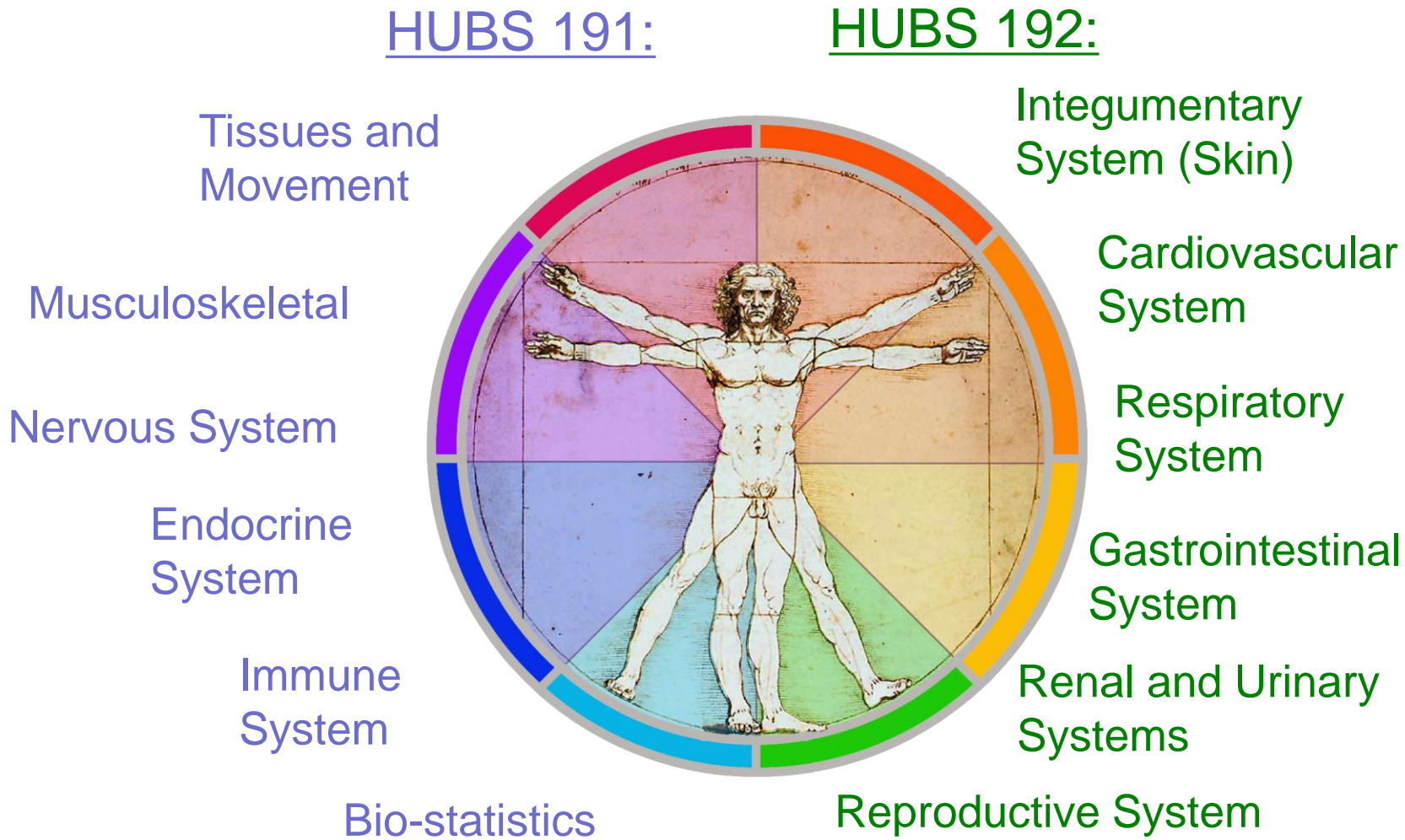
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# *What we'll talk about today*

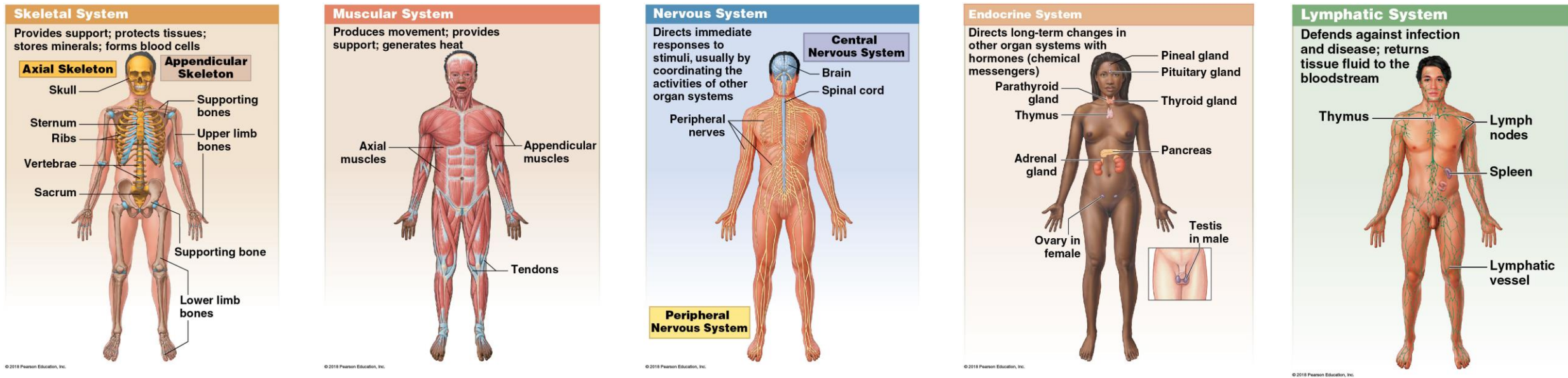
- Key information on the paper including details on labs and assessments
- Tips to support your study and ensure you get the most out of your time with us
- Important information on the human tissues we use in the paper
- The four basic tissues that make up the human body

***What is HUBS?*** – An introduction to human body systems course designed to prepare students for professional and science courses



*Homeostasis - maintenance of the internal environment*

# Together, we will learn how to build the human body



Martini et al., Visual Anatomy and Physiology (3<sup>rd</sup> ed) Module 1.14-15

**The Anatomy** (Greek: 'cutting up')  
=structure of an organ system and the relationship of its parts  
(Dept of Anatomy)

**The Physiology** (Greek: 'study of nature')  
=function of an organ system and its parts  
(Dept of Physiology)

**The Biostatistics**  
=How do we know? How do we trust information?  
(Centre for Biostatistics, & Dept Mathematics and Statistics)

**The Immunology** (Greek: 'exempt from disease')  
=study of the structure and function of the body's defense system against disease  
(Dept of Microbiology and Immunology)

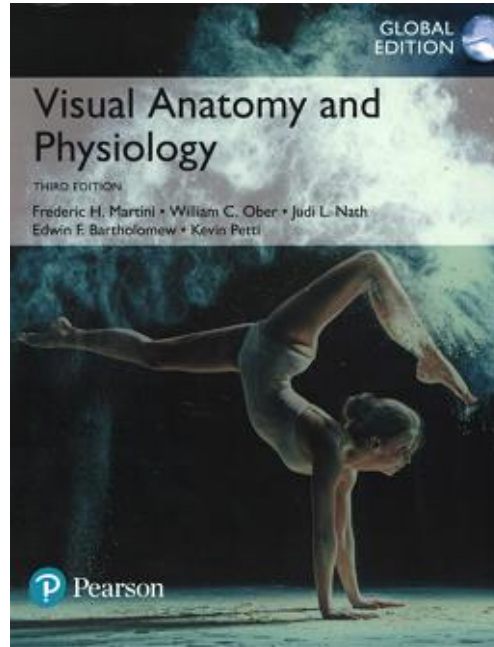


# HUBS Textbooks

## Primary:

Martini, Ober, Nath, Bartholomew, Petti (2018). Visual Anatomy and Physiology and Martini's Atlas of the Human Body 3rd Edn, Pearson.

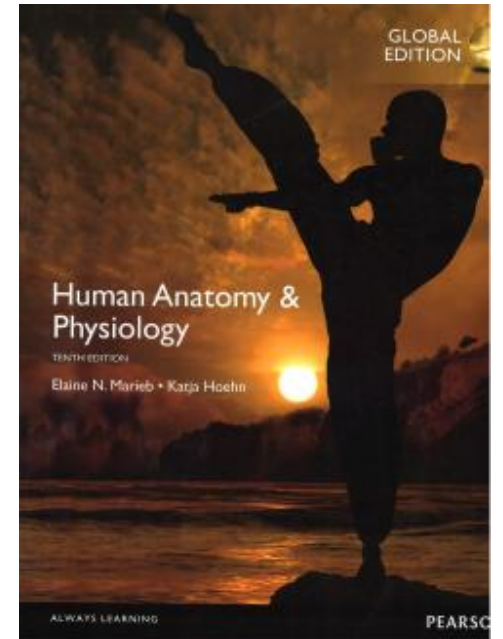
This will be the primary textbook cited for reading in both HUBS 191 and 192.



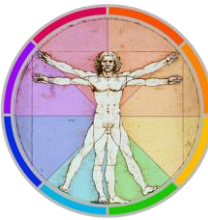
## Reference text:

Marieb & Hoehn (2015). Human Anatomy & Physiology, 3<sup>rd</sup> Global Edition, Pearson.

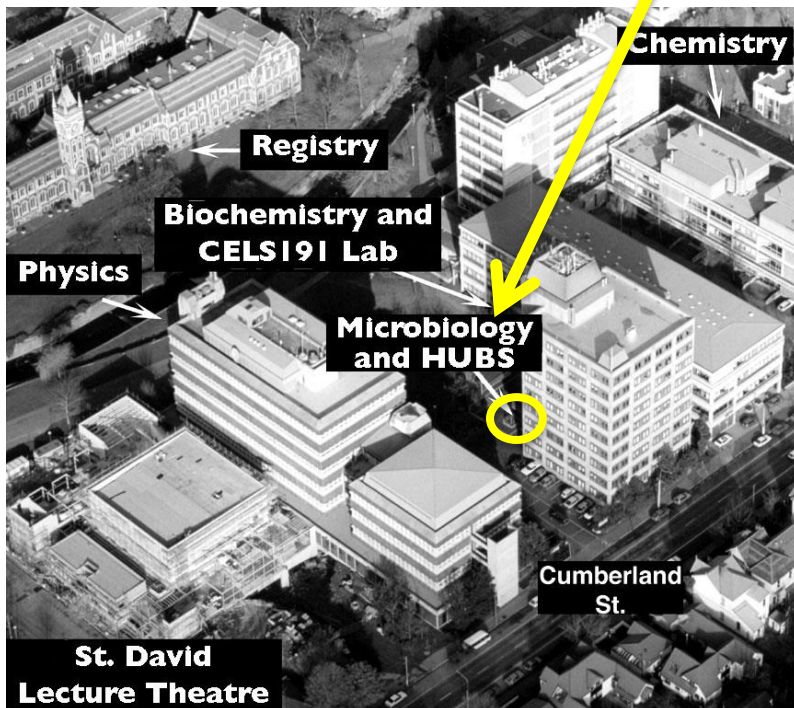
Used largely for Immunology section – but this material will be available on the HUBS 191 Blackboard.



# Where are the HUBS office and lab?!



- The HUBS office is located in **Room G01**, ground floor, Microbiology building.
- Enter the building, go to the right of the elevators.
- Contact the HUBS office if you have any problems (e.g. with timetable)
- Phone: 479 7106
- Email: [hubs@otago.ac.nz](mailto:hubs@otago.ac.nz)



- The HUBS laboratory is located in **Room G08**, ground floor, Microbiology building.
- Enter the building, go to the left of the elevators, past the male toilet, and the lab is straight ahead.
- Cubby holes are provided inside the lab for your belongings.
- Please do not wear lab coats outside of the lab.

# Lectures *(begin Mon 24th February)*

- 3 Lectures per week – check eVision for where you need to go
- Quad 2 is our overflow lecture theatre
- Lecture slides available by noon the day before the lecture
- Recommended pre-readings for all lectures are available in the lecture objectives document
- Lecture recordings will be available after the lecture is finished and the file is compiled. They will remain on Blackboard for 2 weeks from the date of the lecture.
- You will need to take notes! Pen/paper or digital- lectures are more than what is on the slides!
- All lecture content is examinable EXCEPT anything marked 'for interest only'



# Laboratories *(begin Mon 3rd March)*

- Labs are compulsory! They are a Terms requirement and essential for succeeding in HUBS – this is the place where you will “learn by doing”.
- eVision will show which lab stream you are assigned. You will attend a lab once in a 2 week period. If you are unable to attend your lab you need to restream to another session.
- Labs start on the hour and if you are late you will need to restream- we recommend arriving 5-10 minutes early. Labs run for 3 hours.
- You will need to complete some activities (pre-lab tasks) on your own before/after the lab
- You will receive your lab manual in the first lab.

# Laboratories

- You must have a labcoat and shoes which completely enclose your feet to work in the lab. You will also need to tie up long hair.
- You must bring your student ID with you to labs.
  - You will need to scan your ID card for attendance
- You cannot have phones or computing devices in the lab
  - These need to be kept in your bags, or not brought to class

# Learning Modules (LMs)

- On the xOtago platform
  - Next week you will receive an email (to your student email) with details on how to log in.
  - For any issues contact [hubs.tf@otago.ac.nz](mailto:hubs.tf@otago.ac.nz)
  - Open at start of each major lecture block
  - Close after Final Exam
  - Online quizzes— formative only
  - These LMs are designed to help you learn
1. Bones and Biomechanics
  2. Biostatistics
  3. Nerve and Muscle
  4. Endocrine System
  5. Immunology

**Note: while available, you can review these LMs as many times as you like.**

# Assessment

Type	Number	Time allocated	% Marks
Final Examination	1	3 hrs	70%
Progress Tests	2	30 mins per test + 15 min for practice essay	20% total (8% PT 1, 12% PT 2)
Labs	6	Lab summary quizzes	10% total
LMs	5	Your choice (estimate 4 hrs each to complete)	Formative only

## Key Dates

Progress Test 1:  
Saturday, 29<sup>th</sup> March (45 mins)

Progress Test 2:  
Saturday, 17<sup>th</sup> May (45 mins)

Final Exam:  
TBA June (3 hrs)

**Note: Students must gain 40% IN THE FINAL EXAM  
in order to pass HUBS 191**



# MCQ Structure

- Progress Tests and the Final Exam use MCQs to test your knowledge

If the left atrium of the heart is contracting, which of the following is most likely to be CORRECT?

- A. The left ventricle is also contracting.
- B. The right ventricle is also contracting.
- C. The right atrium is also contracting.
- D. No other chamber of the heart is also contracting.

- Final Exam also has 'mini essays'
  - You will practice mini essays in the Progress Tests, LMs, in some lectures

# If you have questions...

- About how HUBS works, lab or assessment absences, general enquiries etc:
  - Contact the HUBS office G01 Microbiology Building
  - [hubs@otago.ac.nz](mailto:hubs@otago.ac.nz)
  - 03 479 7106
- About issues with accessing xOtago for LMs:
  - Contact [hubs.tf@otago.ac.nz](mailto:hubs.tf@otago.ac.nz)
- About lecture or lab content:
  - Ask your lecturer in person after the lecture (please do not email them)
  - On Discussion Board (check for the tab on Blackboard)
  - At the weekly drop in Q&A: HUBS office, day/time announced weekly
  - To your Redcoat in labs
  - At the in person drop ins before the tests and exam

# What are the top mistakes that prevent people from passing HUBS?

- Missing lab (and not making it up)
  - Remember, labs are a terms requirement
  - Contact the HUBS office as soon as possible if you miss lab
  - We do want to help you, so don't hesitate!!!
- Falling behind on the material
  - For an 18 point paper (like HUBS), students are expected to spend about 180 hours total (~12 hours per week) in total
  - Because the material keeps arriving at a steady rate, it can be difficult to catch up!
  - Communication is key! If you feel you're falling behind, let us know as soon as possible so we can work together on a plan to get you back on track.

# What material is examinable???

- Lecture content
  - HUBS doesn't have 'core slides'
  - Consider anything on the slides, unless lecturers specify that it isn't, as examinable content
  - Lecture content is not just what is written on the slides, but what is talked about in the lecture
- Laboratory content
  - Labs generally complement lecture content
  - Some new concepts in Labs- these are examinable
  - Experiments carried out in Labs are examinable too



# What about the textbook? How should I use it?

My goal is to:

Pass HUBS

- Review the recommended sections, skimming or reading in detail depending on how you feel after the lecture
- Pay particularly close attention to terms or concepts that were unclear in lecture – might explain the info a different way!
- Take some time to look at the figures (and their captions) that were also presented in lecture

Maximize my mark

- Read the recommended sections BEFORE lecture
- This makes key terms and concepts more familiar when the lecturer is covering them in class

Troll my friends  
in HUBS

- Tell them that they need to memorize everything in the book, because the lecturers purposely pick out random details they never covered to use as exam questions! (*This is NOT true!*)

# *Strategies for Lecture Note Taking*

**BEFORE** – review the Lecture Objectives, read the recommended sections in your textbook

**DURING** – Listening and writing – at the same time...use shorthand?

- Beginning of lecture – often a brief reminder of previous lecture
- Objectives – in lecture objectives document (a great revision tool)
- Capitalise or underline key words
- Questions to self - ??? Put a note in the margin for revisiting

**AFTER**

- Draw a concept map or construct your own diagram
- Reading of textbook material to review any points that were unclear
- Look up meanings for any words you didn't understand
- Rephrase lecture objectives and questions and try to write a summary answer

# *Studying Anatomy*

Studying Anatomy in New Zealand today

Bodies come from **bequests**

**Informed consent:** people while alive made the free choice to donate their bodies.



Prosections which are plastinated



# *Human Tissue Act 2008*

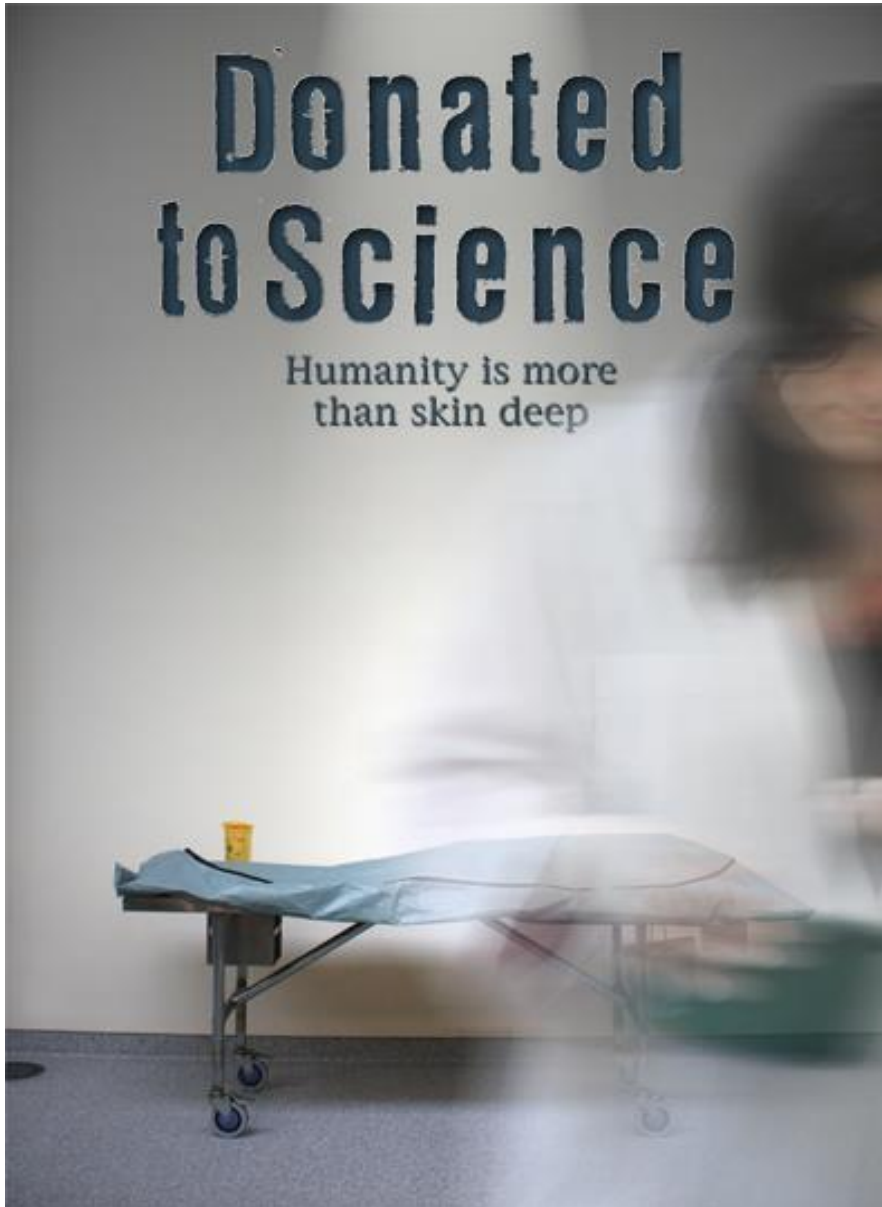
1. Voluntary donation of bodies
2. Requires dual signed consent by the donor and an immediate family member
3. Most bodies are held for ~18 months, however body parts can be kept for longer periods for teaching and research (allowed under the Act)



Show **respect** for the bodies & body parts. Treat material as having a special importance.







If you have any questions regarding the body bequest programme or the use of human tissues in this course, please contact Dr Rebecca Bird from the Dept of Anatomy ([rebecca.bird@otago.ac.nz](mailto:rebecca.bird@otago.ac.nz)).

# Working with human material in your practical class

Your practical laboratory classes may involve the handling of human material donated to the Department of Anatomy through our body bequest programme.

Our practical teaching spaces have been blessed by a Kaumātua, Māori Advisor for the University, making the space a safe environment for you to work in.

Wai ora (cleansing water) is available outside the classroom for you to use as you leave your class.

If you need additional support, please don't hesitate to contact the Māori Centre, the Kōhatu Centre for Hauora Māori or the department's Kaiāwhina

- Dr Rebecca Bird & Dr Charlotte King

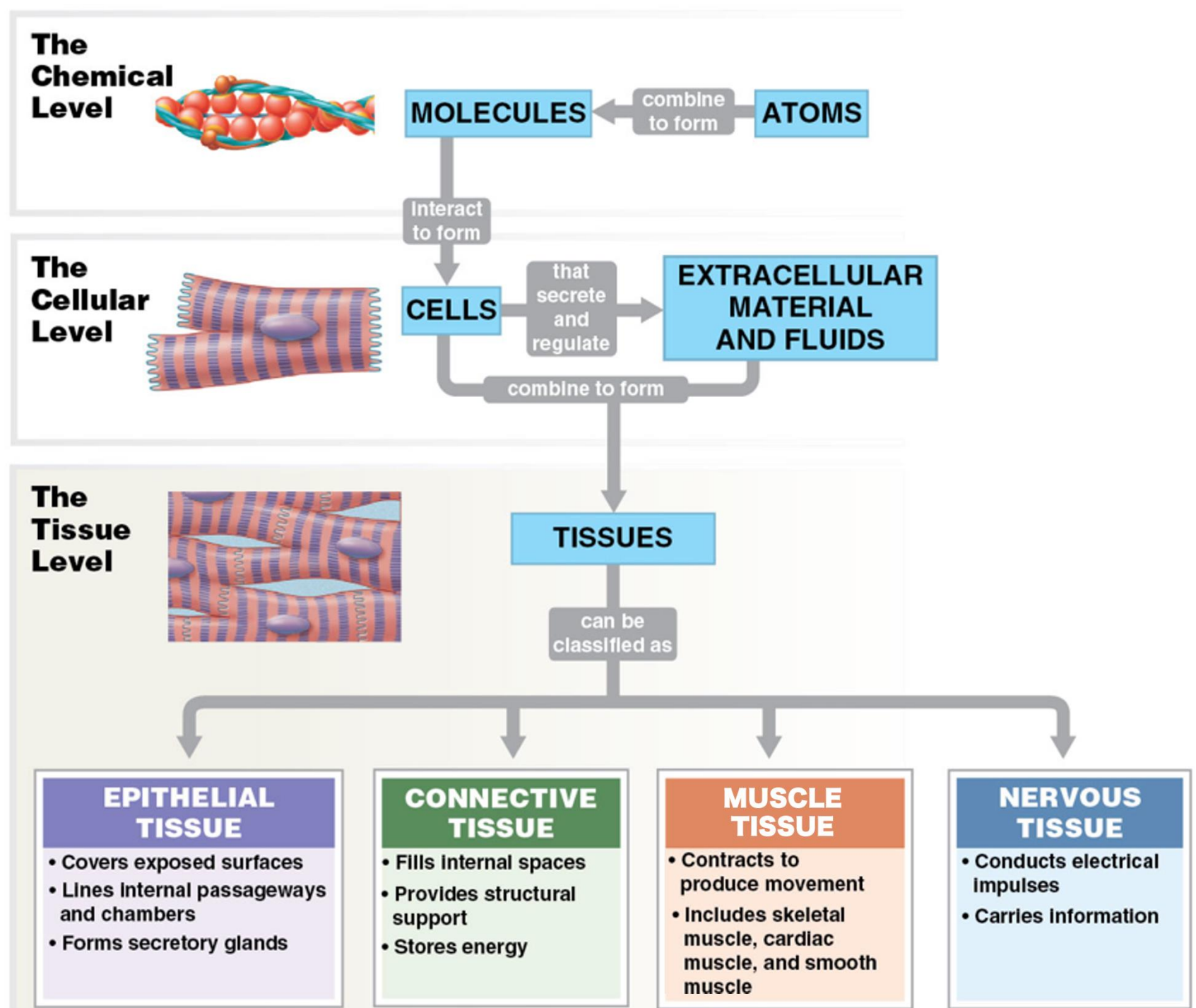
***And now for today's examinable content:***

## ***Lecture Objective***

*After you have revised this lecture you should be able to:*

- Describe the four basic types of tissue – what is similar and what is different.

# Basic tissues of the body



*Martini - Visual Anatomy and Physiology (2018)  
Module 4.1 p. 185.*



# EPITHELIAL TISSUE

Includes

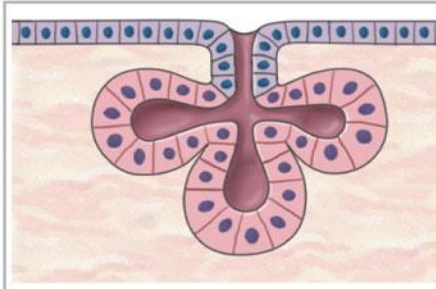
## Epithelia



Apical  
(Microvilli)

Basolateral

## Glands



## Exocrine Glands

## Endocrine Glands

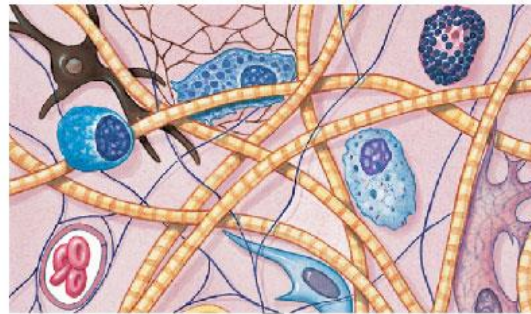
### Functions of Epithelial Tissue

- Provide physical protection
- Control permeability
- Provide sensation
- Produce specialized secretions

*Martini - Visual Anatomy  
and Physiology (2018)  
Module 4.1 p. 188 & 189.*

# Connective Tissue

## Connective Tissue Proper



### Loose

- areolar tissue
- adipose tissue
- reticular tissue

### Dense

- dense regular
- dense irregular
- elastic

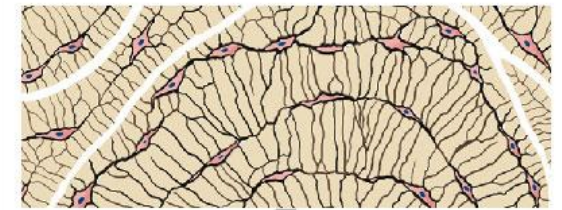
## Fluid Connective Tissues



### Blood

### Lymph

## Supporting Connective Tissues



### Cartilage

- hyaline cartilage
- elastic cartilage
- fibrocartilage

### Bone

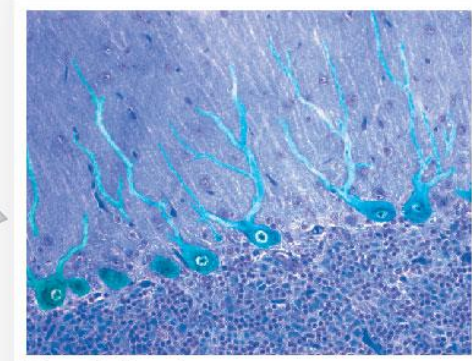
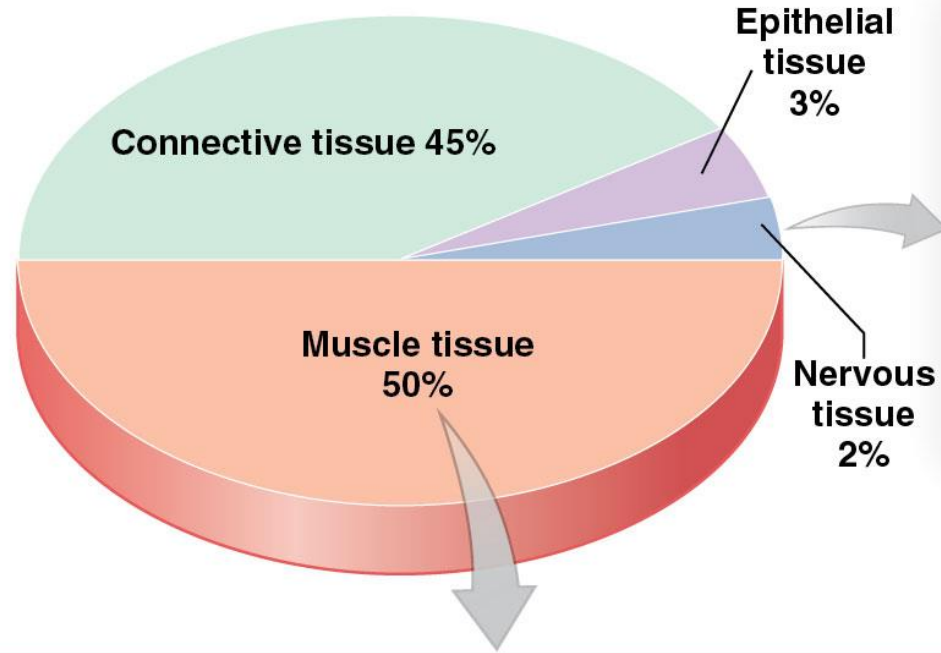
## Functions of Connective Tissue

- Establish a structural framework for the body
- Transport fluids and dissolved materials
- Protect delicate organs
- Support, surround, and interconnect other types of tissue
- Store energy, especially in the form of triglycerides
- Defend the body from invading microorganisms

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*Martini - Visual Anatomy  
and Physiology (2018)  
Module 4.10 p. 201*

# MUSCLE TISSUE



Specialized neurons  
in the brain

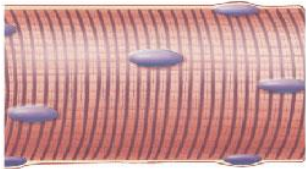
LM x 350

## MUSCLE TISSUE

- Contracts to produce movement
- Includes skeletal muscle, cardiac muscle, and smooth muscle

## Muscle Tissue

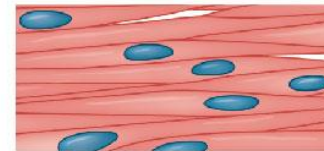
### Skeletal Muscle Tissue



### Cardiac Muscle Tissue



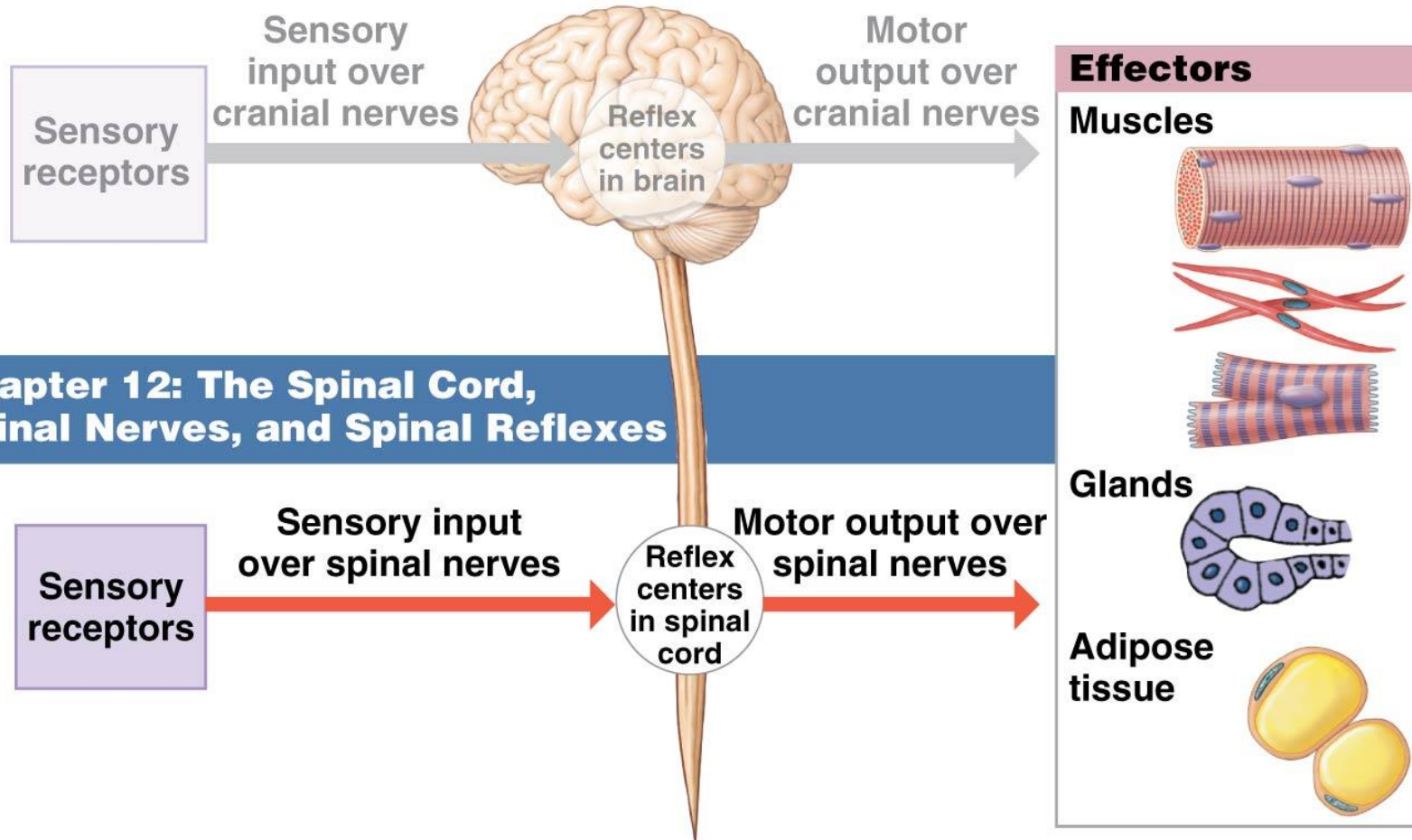
### Smooth Muscle Tissue





# NERVOUS TISSUE

## Chapter 13: The Brain, Cranial Nerves, and Sensory and Motor Pathways



*Martini - Visual Anatomy  
and Physiology (2018)  
Module 12.1 p. 479*

# NERVOUS TISSUE

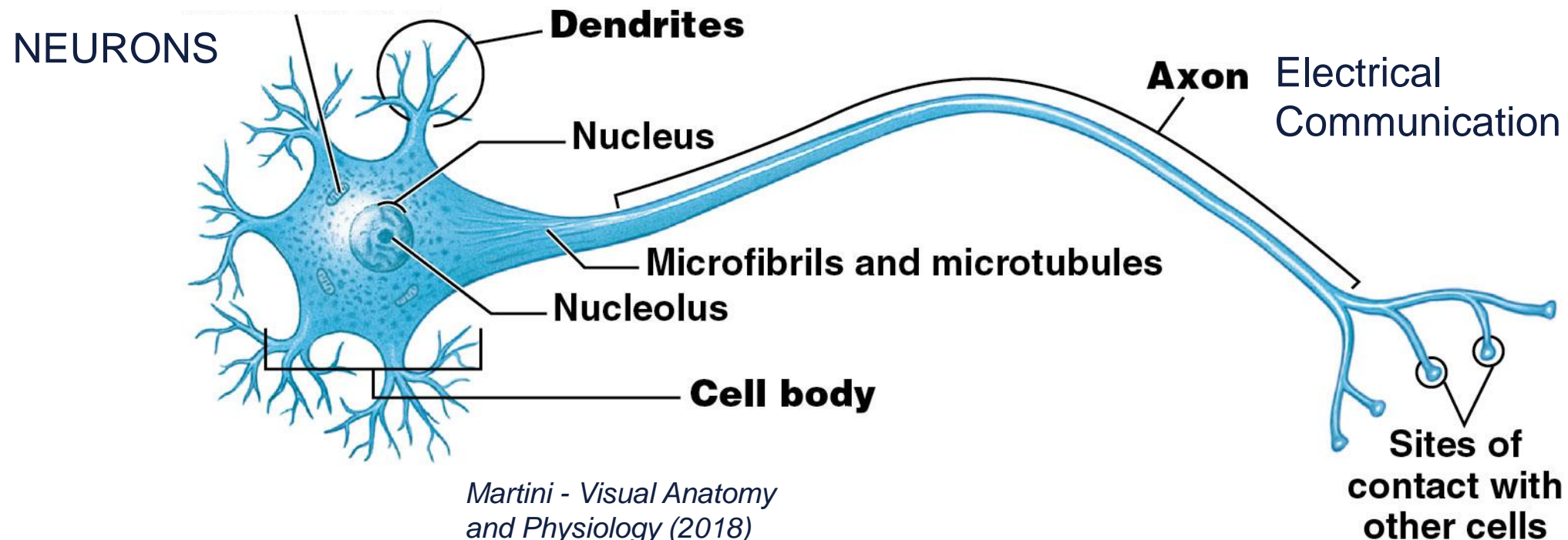
GLIA



## NERVOUS TISSUE

- Conducts electrical impulses
- Carries Information

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*Martini - Visual Anatomy  
and Physiology (2018)  
Module 4.17 p. 215*

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## *What basic tissue...*

- Includes blood and lymph?
- Forms glands?
- Allows information to be quickly sent around the body?
- Can be divided into skeletal, cardiac, and smooth?
- Is the most common in the body? The least common? (Don't need to know exact percents!)
- Would you find in your knee joint? (Hint: it's more than one!)



# Summary:

- HUBS191 explores the Anatomy, Physiology and Immunology of the human body, along with Biostatistics
- Time management is key for doing well in HUBS191
- Use resources!
- The body bequest programme involves individuals who have given their informed consent for us to use their bodies after they die. The Human Tissue act (2008) governs how we must behave with these tissues
- Four basic tissues make up the body: Epithelium, Connective, Muscle and Nervous

# HUBS191

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