

Human Anatomy & Physiology – Overview



What is the module about?

Giving you a sound understanding of the core anatomical and physiological characteristics you will require as a Graduate Sports Therapist

Gain knowledge of how testing physiological parameters can be used to assess individuals performance

Format

1 hour lecture

2 hour practical (split into kinesiology and physiology)

Readings - Moodle

Worksheet

Why is this Important?

- Prescribing exercise
- Teaching / coaching
- Rehabilitation
- Health, exercise, lifestyle promotion
- Lifestyle Coaching
- Nutritional Assessment
- Understand the nature of health and illness / disease

Anatomy and Physiology

Course Outline

LECTURE SCHEME OF WORK

Date	Topic	Lecturer
	Location: TBC	
Week 1	Course overview; Basic definitions; Homeostasis and feedback systems; Body cavities; Chemistry of life processes; Organisation of the cell; Introduction to systems.	DM
Week 2	Tissues: Types of tissues; epithelial, connective, muscular, and nervous tissues; Types of membranes; mucous, serous, and synovial membranes; Tissue repair and ageing.	DM
Week 3	Skeletal System: Structure of bone; Homeostasis of bone; Skull; Vertebral column; Thorax; Pectoral Girdle; Upper limb; Pelvic girdle; Lower limb.	DM
Week 4	Muscular System: Skeletal muscle; Contraction and relaxation; Metabolism; Control of tension; Exercise; Cardiac muscle; Smooth muscle.	DM
Week 5	Respiratory System: Structure of the respiratory system; Mechanics of ventilation; Gas exchange; Control of respiration; Effects of exercise.	
Week 6	Endocrine System: Hormone action; Hypothalamus and pituitary gland; Thyroid; Parathyroid; Pancreas; Adrenals; Ovaries and testes	DM
Week 7	Cardiovascular System: Structure of the heart; Structure of the vascular system; Conduction system of the heart; The cardiac cycle; Cardiac mechanics; Effects of exercise.	DM
Week 8	Nervous System: Histology; Action potentials; Synaptic transmission; Central nervous system; Autonomic nervous system.	DM
Week 9	Blood and Blood Vessels: Formed elements of blood; Plasma; ~~Haemocytes~~ Clotting; Blood groups; Structure of blood vessels; Naming of major blood vessels.	DM
Week 10	Urinary System: Organs of the urinary system; Detailed renal anatomy; Renal function;	DM

PRACTICAL SCHEME OF WORK

Date	Topic
	Location: TBC
Week 1	Write Up/ Testing Protocols/ Handbook
Week 2	Blood Pressure
Week 3	Strength/ Power
Week 4	Heart Rate and HRV
Week 5	Spirometry
Week 6	Body Composition
Week 7	Aerobic (Sub-Maximal Testing)
Week 8	Anaerobic (Maximal Testing)
Week 9	Flexibility
Week 10	Hot and Cold
Week 11	Revision of module

KINESIOLOGY SCHEME OF WORK

Date	Topic	Lecturer
	Location: Parry	
Week 1	Introduction to Clinical Assessment	DM
Week 2	Hip Anatomy	DM
Week 3	Self-Directed Study	DM
Week 4	Hip ROM and MMT	DM
Week 5	Knee Anatomy	DM
Week 6	Knee ROM	DM
Week 7	Knee MMT	DM
Week 8	Ankle Anatomy	DM
Week 9	Ankle ROM	DM
Week 10	Ankle MMT	DM
Week 11	Recap Lower limb	DM

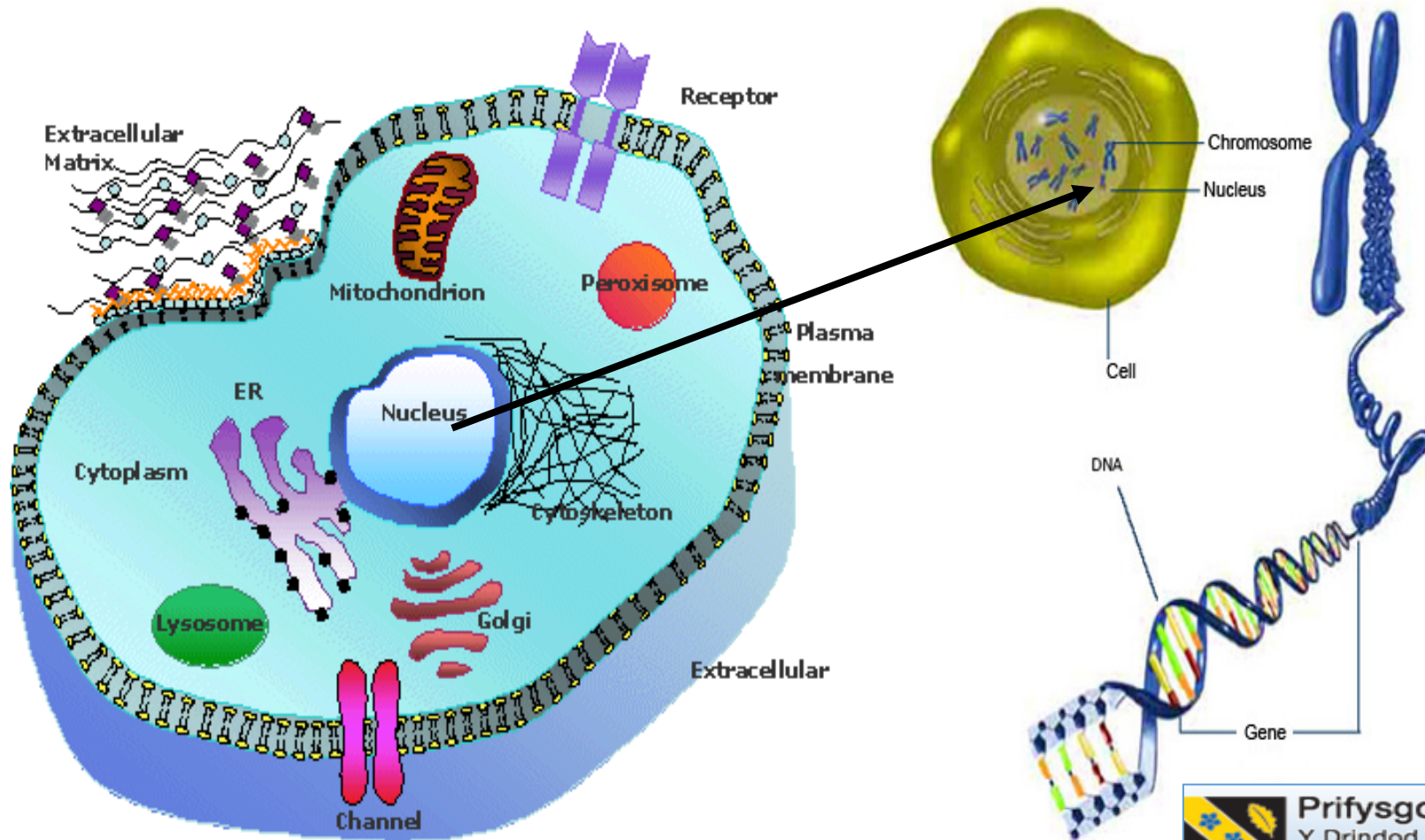
Assessment

- Multiple Choice Exam (50 Questions)
 - 25% Final Mark (Exam Period January 2018)
- Laboratory Experiment (lab report -1500 words)
 - 50% Final Mark (January 2018)
- Practical Assessment (30 minutes)
 - 25% Final Mark (11-20th January 2018)

Basic Biochemistry / The Cell

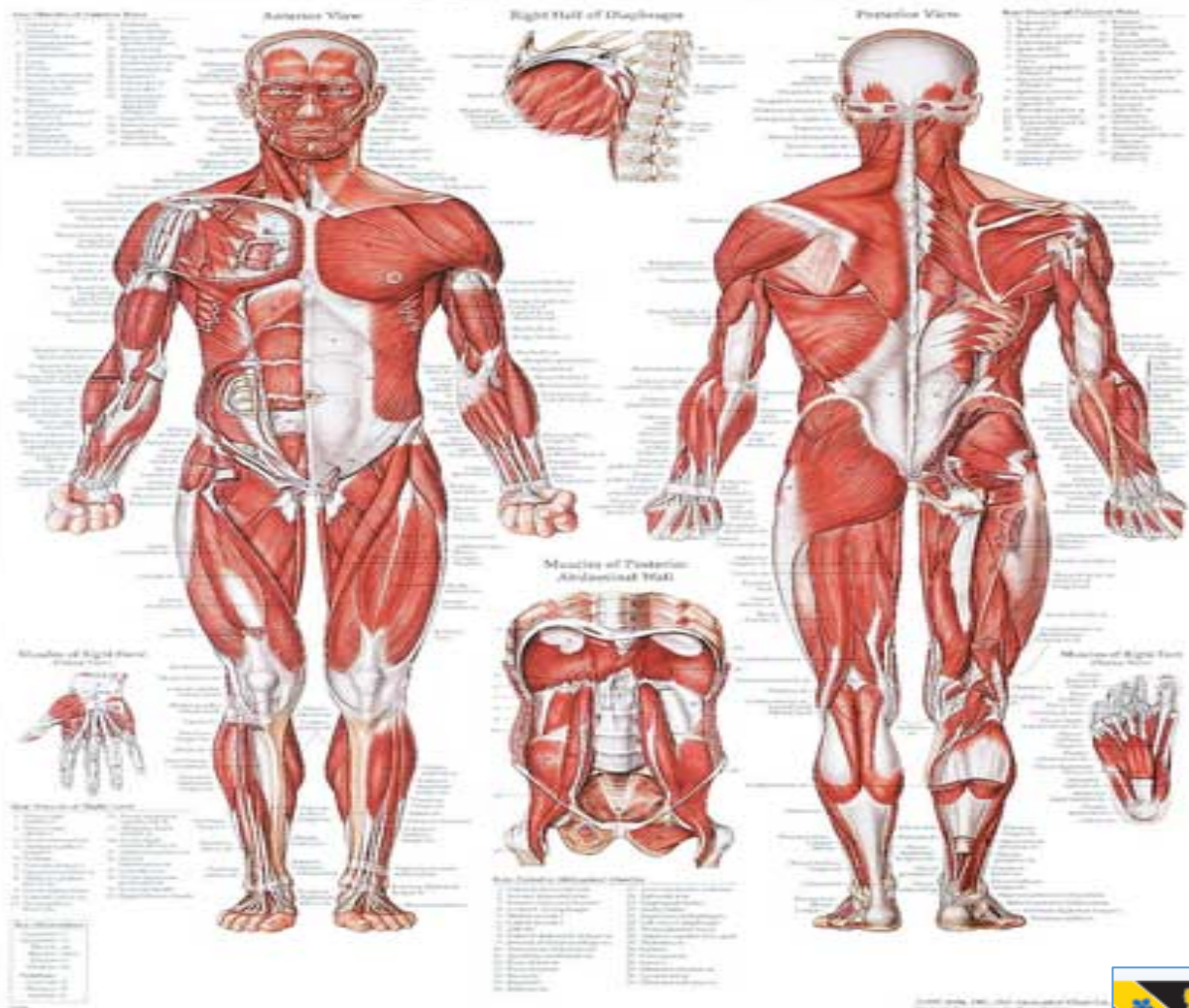
- Structure of the cell.
- Organelles and their functions.
- DNA
- Transcription
- Translation
- Foetal development
- Growth, maturation and aging

Eukaryotic Cell



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

THE MUSCULAR SYSTEM



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

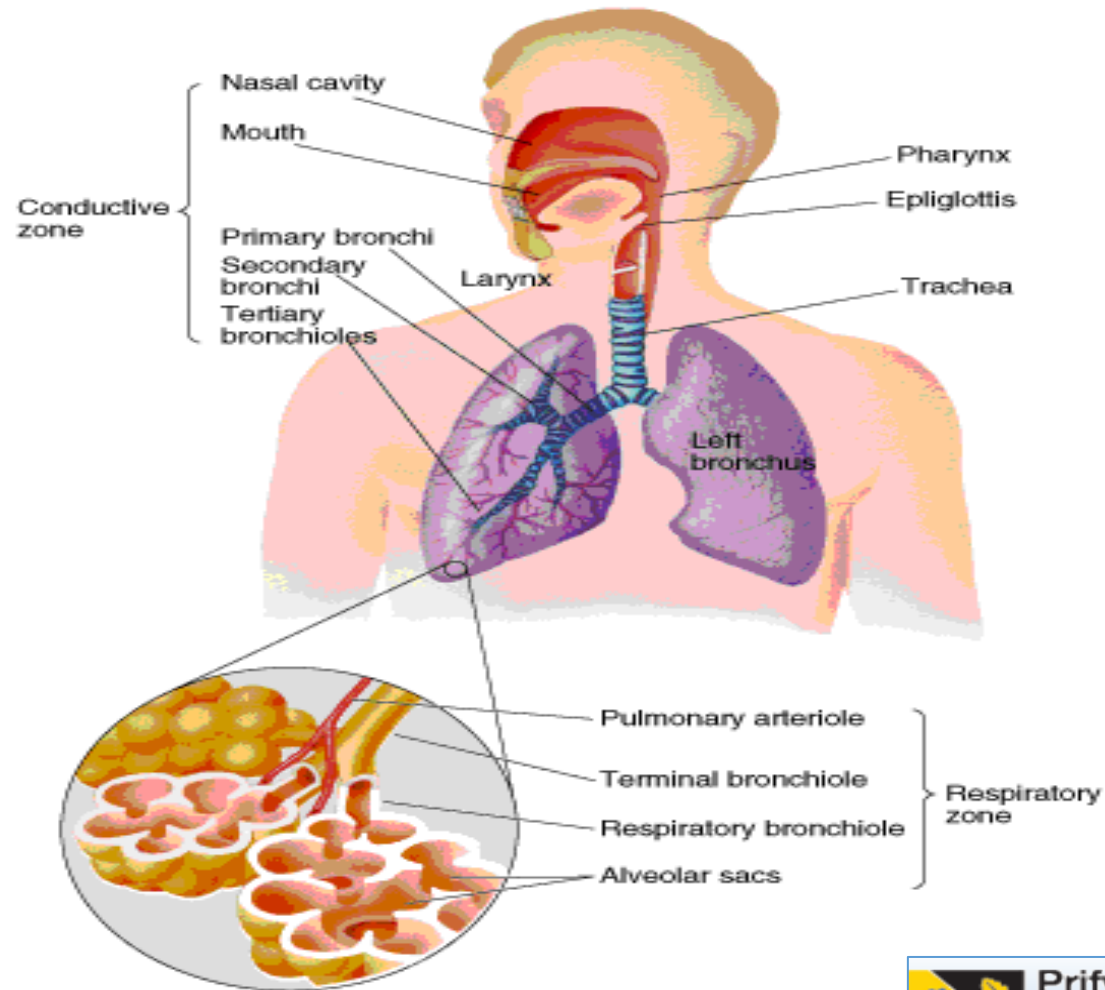
Muscular system

- Structure of muscle
- Skeletal, smooth and cardiac muscle
- Fibre types
- Contractile process
- Muscle Fatigue
- Innervation and control
- Effects of exercise and training
- Origin, Insertions and actions

Skeletal System

- Bones
- Joints
- Ligaments
- Tendons
- Bone landmarks

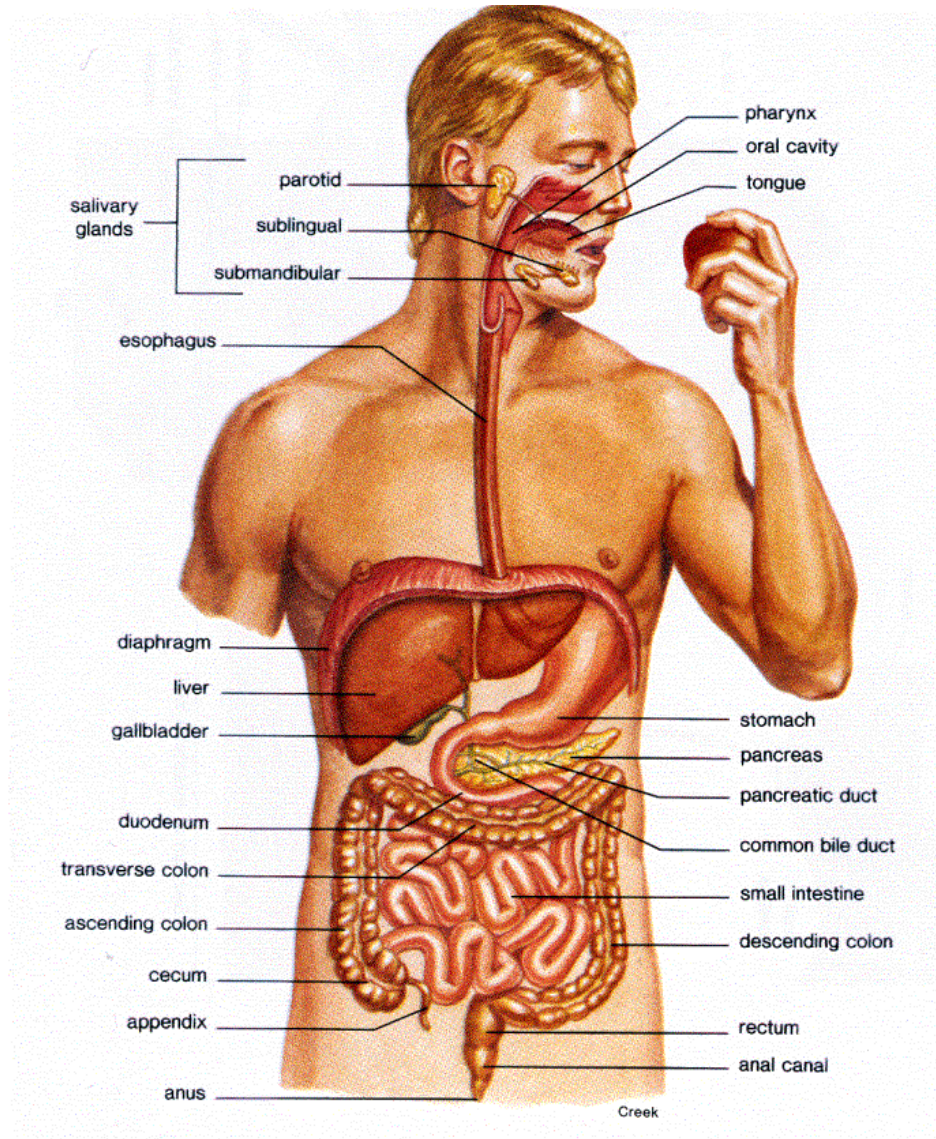
Respiratory System



Respiratory system

- Lungs
- Mechanics of breathing
- Diffusion and partial pressure
- Transport of oxygen
- Transport of carbon dioxide
- Lung capacities and volumes
- Effects of exercise and training

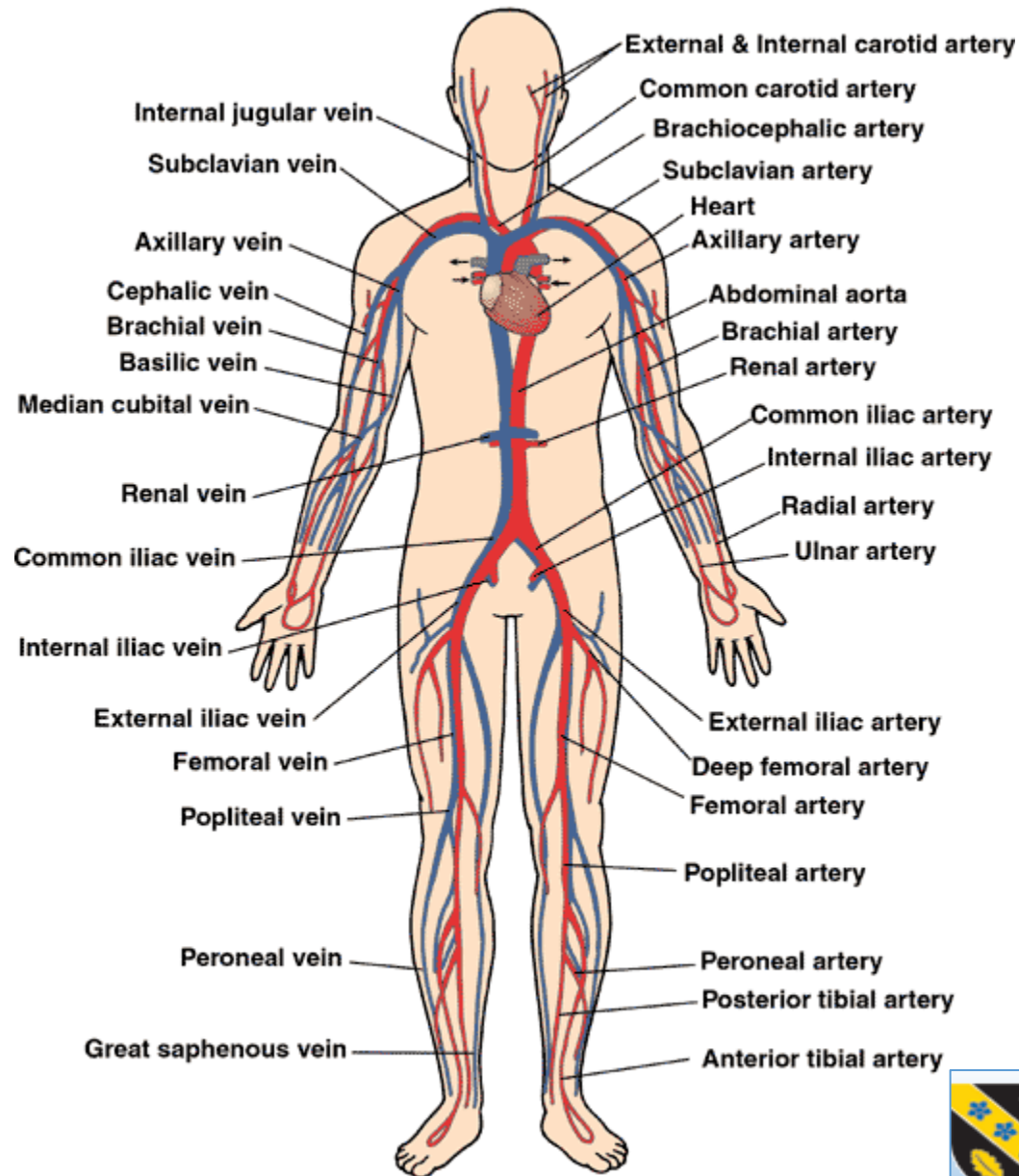
Digestive System



Digestive System

- Structure of the system
- Processes of digestion
- Enzyme activity
- Processes of absorption

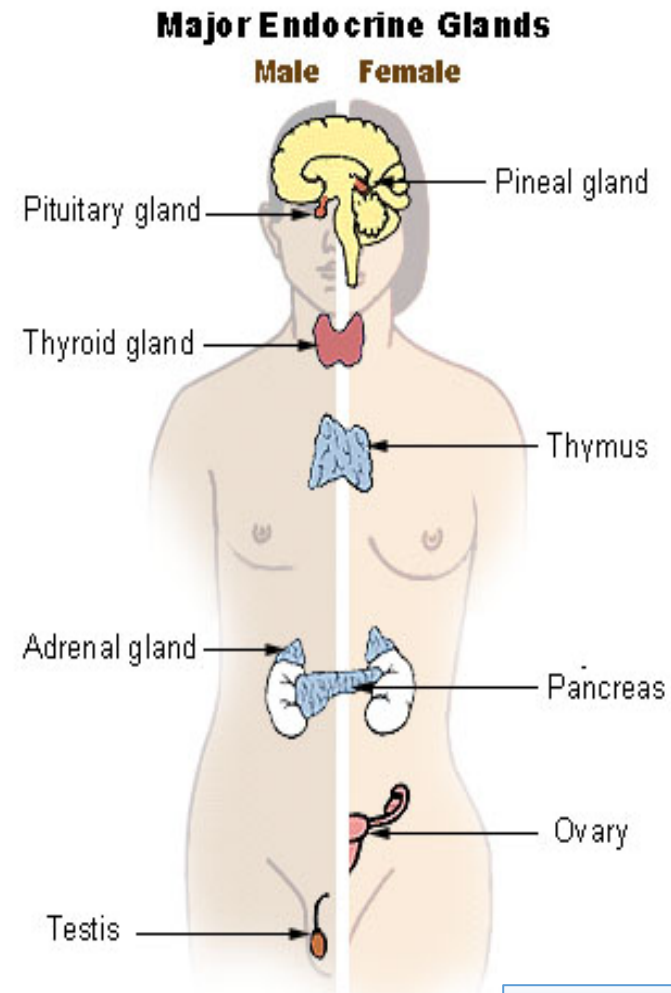
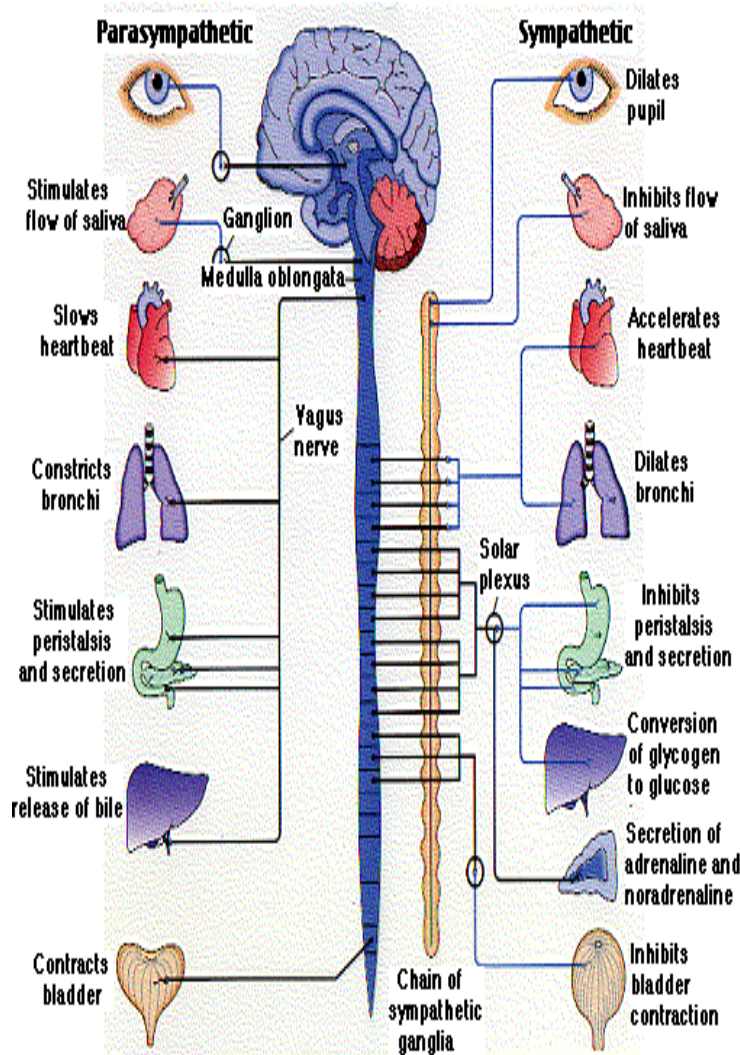
Circulatory System



Cardiovascular system

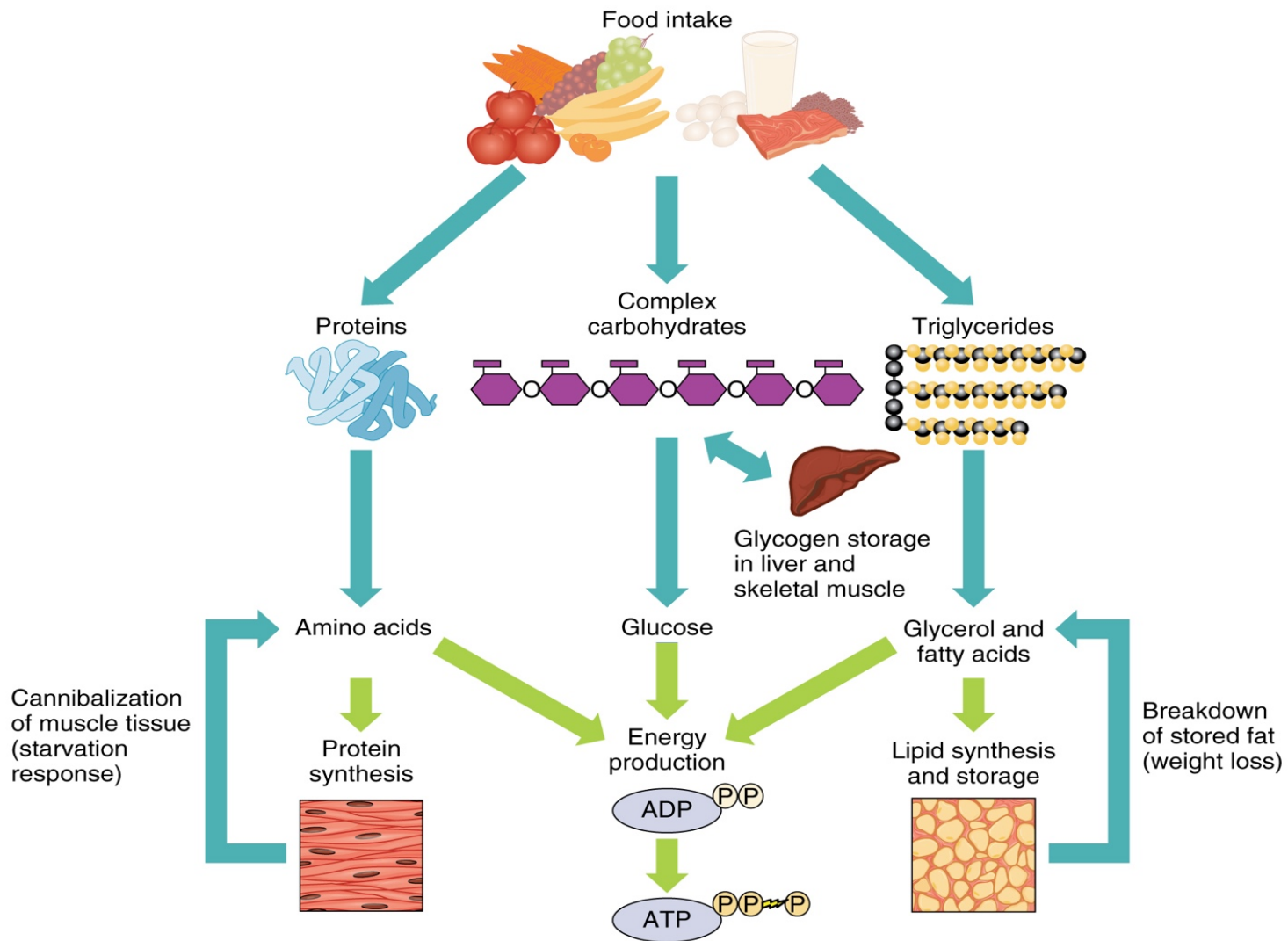
- Heart
- Blood
- Circulation, including blood vessels
- Blood pressures
- Cardiac output
- ECG
- Nerve / hormonal regulation
- Effects of exercise and training

Nervous and endocrine system

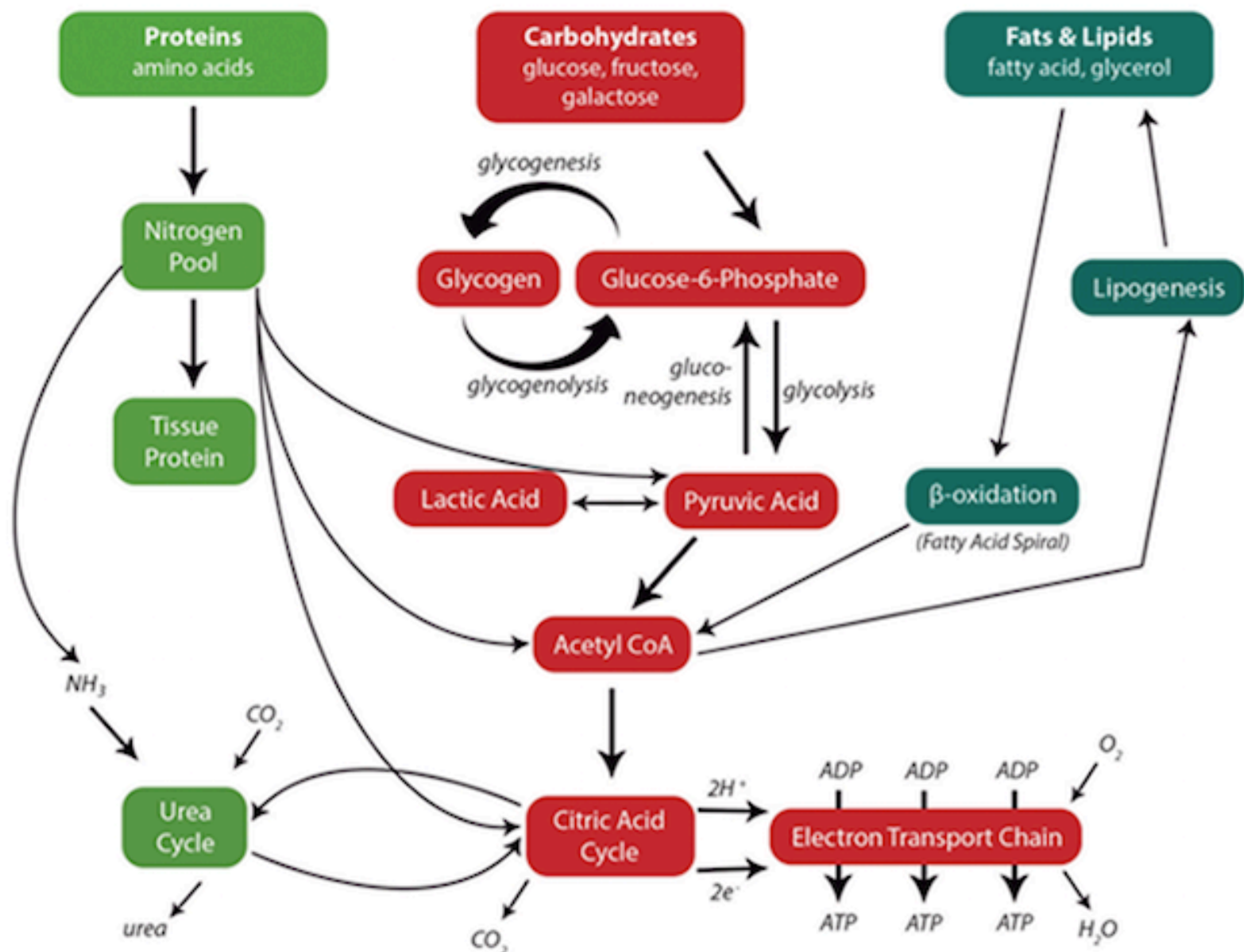


Nervous / Endocrine systems

- Structure of nerves
- Nerve impulse transmission
- Sympathetic and Parasympathetic systems
- Glands and secretion of hormones
- Nature of hormones
- Function of hormones
- Control of the body



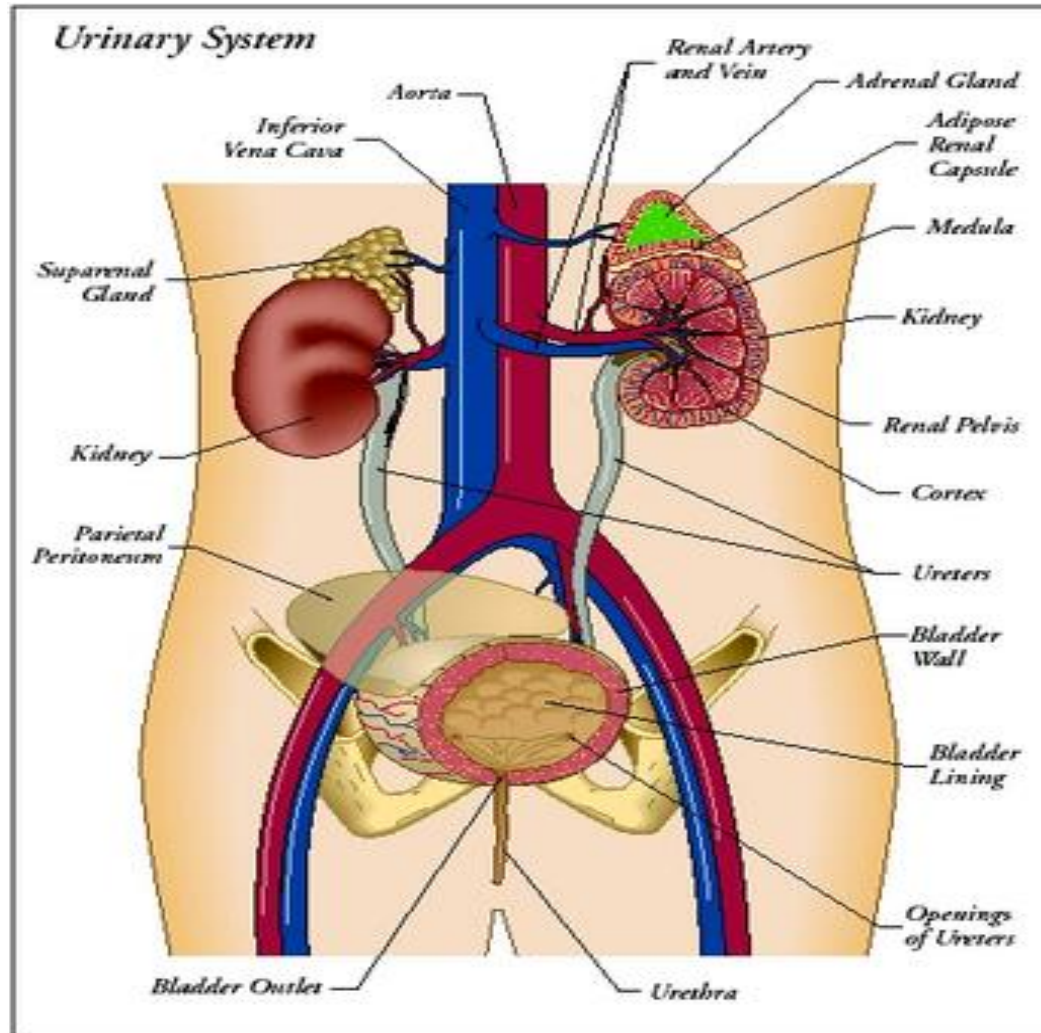
Metabolism Summary



Energy systems

- Adenosine triphosphate
- Aerobic v Anaerobic
- Glycolysis
- Krebs cycle
- Electron transport
- Beta oxidation
- Protein metabolism
- Requirement during and after exercise

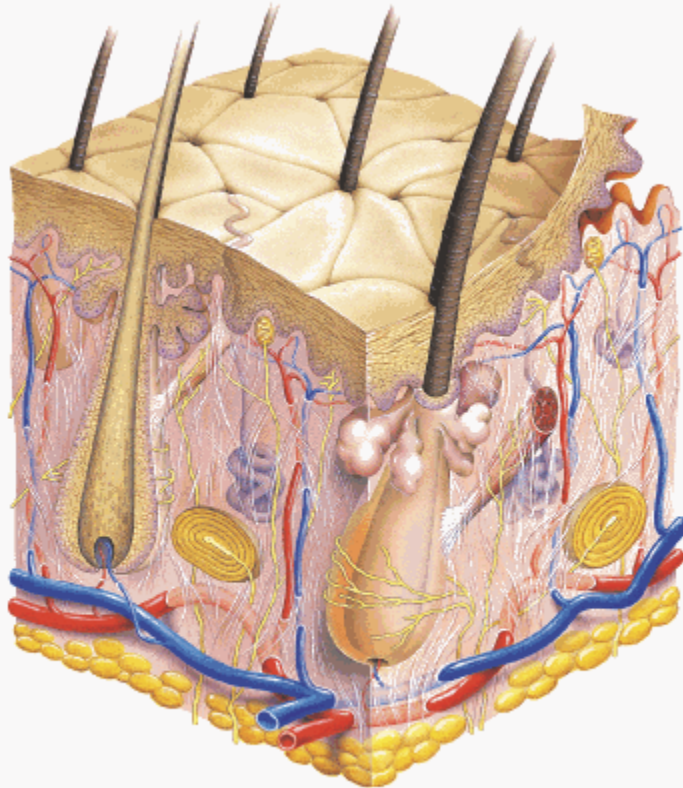
Excretory



Excretory System

- The kidneys
- Constituents of Urine
- Defecation
- Sweating

Integumentary



Copyright © 2001 Benjamin Cummings, an imprint of Addison Wesley Longman, Inc.

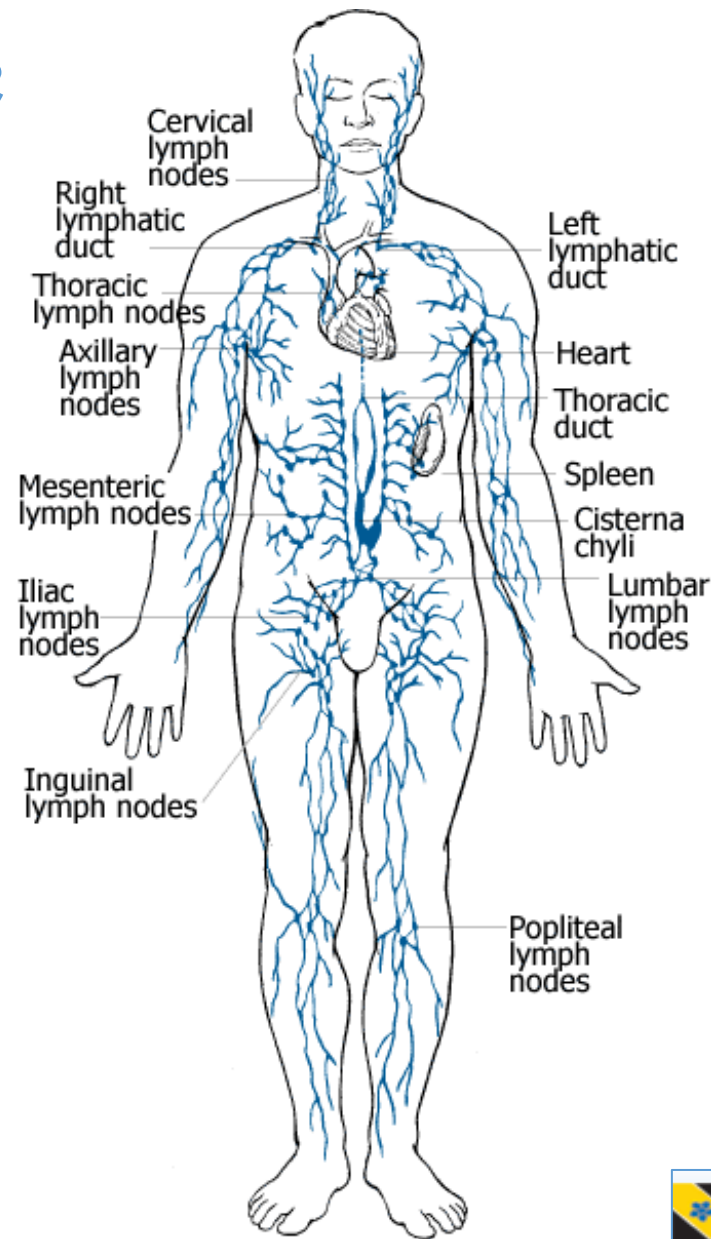


Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Integumentary System

- Skin and structure of the system
- Functions of the system

Lymphatic



Lymphatic system

- Structure of the system
- Function
- Infections