# Processes of Science

## Scientific Method & Experimental Design

1. Demonstrate the correct use of a dissection microscope
2. Demonstrate safe and correct dissection technique
3. Demonstrate the correct use of a compound microscope
4. Formulate a testable hypothesis to investigate a scientific problem (e.g., factors affecting enzyme activity, tonicity of various cells)
5. Formulate and carry out a repeatable, controlled procedure to test the hypothesis:
   - identify controlled versus experimental variables
   - identify the independent and dependent variables
   - use control and experimental groups, as appropriate
   - use a control as appropriate
   - use appropriate sample size
6. Observe, measure, and record data
7. Interpret results to draw conclusions
8. Determine whether the conclusions support or reject the hypothesis
9. Determine whether the experiment is reliable
10. Use information and conclusions as a basis for further comparisons, investigations, or analyses

### 11. Define and example the following terms:
- conclusion
- experimental group
- sample size
- control
- hypothesis
- theory
- control group
- independent variable
- validity
- dependent variable
- procedure
- experiment
- reliability

## Vocabulary

- conclusion, control, control group, controlled variable, dependent variable, electron micrograph, experimental group, experimental variable, independent variable, reliable, repeatable procedure, sample size, scientific method, testable hypothesis

## Homeostasis

- Not a listed PLO, but included with the Exam Specifications.

1. An understanding of how the diverse body systems are integrated to maintain homeostasis
2. An understanding of negative feedback as applied to the body systems, e.g.,
   - Urinary system:
     i. ADH (water)
     ii. Aldosterone (salt)
iii. Thyroxin, Thyroid Stimulating Hormone (temperature)

- Reproductive system
  i. LH – Testosterone (male)
  ii. LH – Progesterone (female)
  iii. FSH – Estrogen (female)

3. Demonstrate knowledge of a positive feedback mechanism involving GnRF/GnRH, HCG, and oxytocin (reproductive system).

Cell Biology

Cell Structure

1. Describe the following cell structures and their functions:
   - cell membrane
   - cell wall
   - chloroplast
   - cytoskeleton
   - cytoplasm
   - Golgi bodies
   - lysosomes
   - mitochondria – including cristae and matrix
   - nucleus – including nuclear pore, nucleolus, chromatin, nuclear envelope, and chromosomes
   - ribosomes (polysomes)
   - smooth and rough endoplasmic reticulum
   - vacuoles
   - vesicles

2. State the balanced chemical equation for cellular respiration

3. Describe how the following organelles function to compartmentalize the cell and move materials through it:
   - rough and smooth endoplasmic reticulum
   - vesicles
   - Golgi bodies
   - cell membrane

4. Identify cell structures depicted in diagrams and electron micrographs

Vocabulary

cell membrane, cell wall, cellular respiration, chloroplast, chromatin, chromosome, cristae, cytoplasm, cytoskeleton, Golgi bodies, lysosome, matrix, mitochondria, nuclear envelope, nuclear pore, nucleolus, nucleus, organelle, polysome, ribosome, rough endoplasmic reticulum, smooth endoplasmic reticulum, vacuole, vesicle

Cell Compounds

1. Describe the role of water as a solvent, temperature regulator, and lubricant
2. Describe how the polarity of the water molecule results in hydrogen bonding
3. Differentiate among acids, bases, and buffers
4. Describe the importance of pH to biological systems in the human body
Learning Objectives

Biological Molecules

1. Demonstrate a knowledge of dehydration synthesis and hydrolysis as applied to organic monomers and polymers
2. Differentiate among carbohydrates, lipids, proteins, and nucleic acids with respect to chemical structure
3. Recognize the following molecules in structural diagrams:
   - adenosine triphosphate (ATP)
   - deoxyribonucleic acid (DNA)
   - disaccharide
   - glucose
   - glycerol
   - hemoglobin
   - monosaccharide
   - neutral fat
   - phospholipid
   - polysaccharide (starch, glycogen, and cellulose)
   - ribose
   - RNA
   - saturated and unsaturated fatty acids
   - steroids
4. Recognize the empirical formula of a monosaccharide as $C_nH_{2n}O_n$
5. List the main functions of carbohydrates
6. Differentiate among monosaccharides (e.g., glucose), disaccharides (e.g., maltose), and polysaccharides
7. Differentiate among starch, cellulose, and glycogen with respect to
   - function
   - type of bonding
   - level of branching
8. Describe the location, structure, and function of the following in the human body:
   - neutral fats
   - steroids
   - phospholipids
9. Compare saturated and unsaturated fatty acids in terms of molecular structure
10. List the major functions of proteins
11. Draw a generalized amino acid and identify the amine, acid (carboxyl), and R-groups
12. Identify the peptide bonds in dipeptides and polypeptides
13. Differentiate among the following levels of protein organization with respect to structure and types of bonding:
   - primary
   - secondary (alpha helix, beta pleated sheet)
   - tertiary
   - quaternary (e.g., hemoglobin)
14. List the major functions of nucleic acids (RNA and DNA)
15. Name the four nitrogenous bases in ribonucleic acid (RNA) and describe the
structure of RNA using the following terms:
- nucleotide (ribose, phosphate, nitrogenous base, adenine, uracil, cytosine, guanine)
- linear, single stranded
- sugar-phosphate backbone

16. Name the four nitrogenous bases in DNA and describe the structure of DNA using the following terms:
- nucleotide (deoxyribose, phosphate, nitrogenous base, adenine, thymine, cytosine, guanine)
- complementary base pairing
- double helix
- hydrogen bonding
- sugar-phosphate backbone

17. Compare the general structural composition of DNA and RNA
18. Relate the general structure of the ATP molecule to its role as the “energy currency” of cells

**Vocabulary**
acid, acid (carboxyl) group, adenine, adenosine triphosphate (ATP), alpha helix, amine group, amino acid, base, beta pleated sheet, bonding, buffer, carbohydrate, cellulose, complementary base pairing, cytosine, dehydration synthesis, deoxyribonucleic acid (DNA), deoxyribose, dipeptide, disaccharide, double helix, glucose, glycerol, guanine, glycogen, hemoglobin, hydrogen bonding, hydrolysis, lipid, lubricant, maltose, monomer, monosaccharide, neutral fat, nitrogenous base, nucleic acids, nucleotide, organic, peptide bond, pH, phosphate, phospholipid, polarity, polymer, polypeptide, polysaccharide, primary structure, protein, quaternary structure, R-group, ribonucleic acid (RNA), ribose, saturated fatty acid, secondary structure, solvent, starch, steroid, sugar-phosphate backbone, temperature regulator, tertiary structure, thymine, unsaturated fatty acid, uracil

**DNA Replication**
1. Describe the three steps in the semi-conservative replication of DNA:
   - “unzipping” (DNA helicase)
   - complementary base pairing (DNA polymerase)
   - joining of adjacent nucleotides (DNA polymerase)
2. Describe the purpose of DNA replication
3. Identify the site of DNA replication within the cell
4. Define recombinant DNA
5. Describe a minimum of three uses for recombinant DNA

**Vocabulary**
complementary base pairing, DNA helicase, DNA polymerase, nucleotides, recombinant DNA, replication, semi-conservative replication

**Protein Synthesis**

1. Identify the roles of DNA, messenger RNA (mRNA), transfer RNA (tRNA), and ribosomes in the processes of transcription and translation, including initiation, elongation, and termination
2. Determine the sequence of amino acids coded for by a specific DNA sequence (genetic code), given a table of mRNA codons
3. Identify the complementary nature of the mRNA codon and the tRNA anti-codon
4. Give examples of two environmental mutagens that can cause mutations in humans
5. Use examples to explain how mutations in DNA change the sequence of amino acids in a polypeptide chain, and as a result may lead to genetic disorders

**Vocabulary**

amino acid, anti-codon, codon, DNA sequence (genetic code), elongation, environmental mutagen, genetic disorder, initiation, messenger RNA (mRNA), mutation, polypeptide chain, ribosomes, termination, transcription, transfer RNA (tRNA), translation

**Transport Across Cell Membrane**

8. Apply knowledge of organic molecules – including phospholipids, proteins, glycoproteins, glycolipids, carbohydrates, and cholesterol – to explain the structure and function of the fluid-mosaic membrane model
2. Identify the hydrophobic and hydrophilic regions of the phospholipid bilayer
3. Explain why the cell membrane is described as “selectively permeable”
4. Describe passive transport processes including diffusion, osmosis, and facilitated transport
5. Explain factors that affect the rate of diffusion across a cell membrane (e.g., temperature, size of molecule, charge of molecule, concentration gradient, pressure gradient)
6. Predict the effects of hypertonic, isotonic, and hypotonic environments on osmosis in animal cells
7. Describe active transport processes including active transport, endocytosis (phagocytosis and pinocytosis), and exocytosis
8. Compare specific transport processes – including diffusion, osmosis, facilitated transport, active transport, endocytosis, and exocytosis – in terms of
   – concentration gradient
   – use of channel or carrier protein
   – use of energy
Learning Objectives

- types/sizes of molecules transported

9. Devise an experiment using the scientific method (e.g., to investigate the tonicity of cells)

10. Differentiate between cells that have a high or low surface area-to-volume ratio

11. Demonstrate an understanding of the significance of surface area-to-volume ratio in cell size

Vocabulary
active transport, carbohydrates, carrier protein, cell membrane, channel protein, cholesterol, concentration gradient, diffusion, endocytosis, exocytosis, facilitated transport, fluid-mosaic membrane model, glycolipid, glycoprotein, hydrophobic, hypertonic, hypotonic, isotonic, osmosis, passive transport processes, phagocytosis, phospholipid, phospholipid bilayer, pinocytosis, pressure gradient, protein, selectively permeable, surface area-to-volume ratio, tonicity

Enzymes

1. Explain the following terms: metabolism, enzyme, substrate, coenzyme, activation energy
2. Use graphs to identify the role of enzymes in lowering the activation energy of a biochemical reaction
3. Explain models of enzymatic action (e.g., induced fit)
4. Differentiate between the roles of enzymes and coenzymes in biochemical reactions
5. Identify the role of vitamins as coenzymes
6. Apply knowledge of proteins to explain the effects on enzyme activity of pH, temperature, substrate concentration, enzyme concentration, competitive inhibitors, and non-competitive inhibitors including heavy metals
7. **Devise an experiment using the scientific method** (e.g., to investigate the activity of enzymes)
8. Identify the thyroid as the source gland for thyroxin, and relate the function of thyroxin to metabolism

Vocabulary
activation energy, biochemical reaction, coenzyme, competitive inhibitor, enzyme, enzyme activity, enzyme concentration, heavy metal, induced fit model, metabolism, non-competitive inhibitor, pH, proteins, substrate, substrate concentration, thyroid, thyroxin, vitamins

Human Biology
Learning Objectives

Digestive System

1. Identify and give a function for each of the following:
   - mouth
   - tongue
   - teeth
   - salivary glands
   - pharynx
   - epiglottis
   - esophagus
   - cardiac sphincter
   - stomach
   - pyloric sphincter
   - duodenum
   - liver
   - gall bladder
   - pancreas
   - small intestine
   - appendix
   - large intestine (colon)
   - rectum
   - anus

2. Describe swallowing and peristalsis

3. Identify the pancreas as the source gland for insulin, and describe the function of insulin in maintaining blood sugar levels

4. List at least six major functions of the liver

5. Explain the role of bile in the emulsification of fats

6. Describe how the small intestine is specialized for chemical and physical digestion and absorption

7. Describe the structure of the villus, including microvilli, and explain the functions of the capillaries and lacteals within it

8. Describe the functions of anaerobic bacteria in the colon

9. Demonstrate the correct use of the dissection microscope to examine the various structures of the digestive system

10. Relate the following digestive enzymes to their glandular sources and describe the digestive reactions they promote:
    - salivary amylase
    - pancreatic amylase
    - proteases (pepsinogen, pepsin, trypsin)
    - lipase
    - peptidase
    - maltase
    - nuclease

11. Describe the role of water as a component of digestive juices

12. Describe the role of sodium bicarbonate in pancreatic juice

13. Describe the role of hydrochloric acid (HCl) in gastric juice

14. Describe the role of mucus in gastric juice

15. Describe the importance of the pH level in various regions of the digestive tract

Vocabulary

absorption, anaerobic bacteria, anus, appendix, bile, capillary, cardiac sphincter, chemical digestion, digestive enzyme, digestive tract, duodenum, emulsification,
Learning Objectives

epiglottis, esophagus, gall bladder, gastric juice, hydrochloric acid (HCl), insulin, intestinal juice, lacteals, large intestine (colon), lipase, liver, maltase, microvillus, nuclease, pancreas, pancreatic amylase, pancreatic juice, pepsin, pepsinogen, peptidase, peristalsis, pH, pharynx, physical digestion, protease, pyloric sphincter, rectum, salivary amylase, salivary gland, salivary juice/saliva, small intestine, sodium bicarbonate, stomach, swallowing, trypsin, villus

Circulatory System

1. Identify and give functions (including where blood is coming from and going to, as applicable) for each of the following:
   – left and right atria
   – left and right ventricles
   – coronary arteries and veins
   – anterior and posterior vena cava
   – aorta
   – pulmonary arteries and veins
   – pulmonary trunk
   – atrioventricular valves
   – chordae tendineae
   – semi-lunar valves
   – septum

2. Recognize heart structures using both internal and external diagram views

3. Describe the location and functions of the sinoatrial (SA) node, atrioventricular (AV) node, and Purkinje fibres

4. Describe how the autonomic nervous system increases and decreases heart rate and blood pressure

5. Differentiate between systolic and diastolic pressures

6. Describe hypertension and hypotension and their causes

7. Demonstrate the measurement of blood pressure

8. Identify and give the function (including where the vessel is carrying blood from and where it is carrying blood to) of each of the following:
   – subclavian arteries and veins
   – jugular veins
   – carotid arteries
   – mesenteric arteries
   – anterior and posterior vena cava
   – pulmonary veins and arteries
   – hepatic vein
   – hepatic portal vein
   – renal arteries and veins
   – iliac arteries and veins
   – coronary arteries and veins
   – aorta

9. Describe and differentiate among the five types of blood vessels with reference to characteristics such as
   – structure and thickness of vessel walls
   – presence of valves
   – direction of blood flow (toward or away from the heart)

10. Differentiate between pulmonary and systemic circulation with respect to oxygenation or deoxygenation of blood in the vessels involved
11. Demonstrate a knowledge of the path of a blood cell from the aorta through the body and back to the left ventricle
12. Relate blood pressure and blood velocity to the total cross-sectional area of the five types of blood vessels
13. Describe capillary-tissue fluid exchange
14. Identify and describe differences in structure and circulation between foetal and adult systems, with reference to umbilical vein and arteries, oval opening, venous duct, arterial duct
15. Describe the shape, function, and origin of red blood cells, white blood cells, and platelets
16. List the major components of plasma
17. Explain the roles of antigens and antibodies
18. Describe the functions of the lymphatic system
19. Identify and give functions of lymph capillaries, veins, and nodes

**Vocabulary**

anterior vena cava, antibody, antigen, aorta, arterial duct atrioventricular valve, autonomic nervous system, atrioventricular (AV) node, blood, blood pressure, blood velocity, blood vessel, capillary-tissue fluid exchange, carotid artery, chordae tendineae, coronary artery, coronary vein, diastolic pressure, fetal circulation, heart rate, hepatic portal vein, hepatic vein, hypertension, hypotension, iliac artery, iliac vein, jugular vein, left atrium, left ventricle, lymph capillaries, lymph node, lymphatic system, lymphatic veins, mesenteric artery, oval opening, plasma, platelets, posterior vena cava, pulmonary arteries, pulmonary circulation, pulmonary trunk, pulmonary veins, Purkinje fibres, red blood cell, renal artery, renal vein, right atrium, right ventricle, sinoatrial (SA) node, semi-lunar valve, septum, subclavian artery, subclavian vein, systemic circulation, systolic pressure, total cross-sectional area, umbilical artery, umbilical vein, valve, veins, venous duct, vessel wall, white blood cell

**Respiratory System**

1. Identify and give functions for each of the following:
   - nasal cavity
   - pharynx
   - larynx
   - trachea
   - bronchi
   - bronchioles
   - alveoli
   - diaphragm and ribs
   - pleural membranes
   - thoracic cavity

2. Explain the roles of cilia and mucus in the respiratory tract
3. Explain the relationship between the structure and function of alveoli
4. Describe the interactions of the following structures in the breathing process:
Learning Objectives

- respiratory centre in the medulla oblongata
- lungs
- pleural membranes
- diaphragm
- intercostal (rib) muscles
- stretch receptors

5. Compare the processes of inhalation and exhalation
6. Explain the roles of carbon dioxide and hydrogen ions in stimulating the respiratory centre in the medulla oblongata
7. Explain the roles of oxygen, carbon dioxide, and hydrogen ions in stimulating carotid and aortic bodies
8. Describe the exchange of carbon dioxide and oxygen during internal and external respiration, including
   - location of exchange
   - conditions that favour exchange (e.g., pH, temperature)
9. Explain the roles of oxyhemoglobin, carbaminohemoglobin, reduced hemoglobin, bicarbonate ions, and carbonic anhydrase in the transport of carbon dioxide and oxygen in the blood
10. Write the chemical equations for internal and external respiration

Vocabulary
alveoli, aortic bodies, bicarbonate ions, bronchi, bronchioles, carbaminohemoglobin, carbon dioxide, carbonic anhydrase, carotid bodies, cilia, diaphragm, exhalation, external respiration, hydrogen ions, inhalation, intercostal (rib) muscles, internal respiration, larynx, lungs, mucus, nasal cavity, oxygen, oxyhemoglobin, pH, pharynx, pleural membrane, reduced hemoglobin, respiratory centre in the medulla oblongata, respiratory tract, ribs, stretch receptors, thoracic cavity, trachea

Nervous System
1. Identify and give functions for each of the following: dendrite, cell body, axon, axoplasm, and axomembrane
2. Differentiate among sensory, motor, and interneurons with respect to structure and function
3. Explain the transmission of a nerve impulse through a neuron, using the following terms:
   - resting and action potential
   - depolarization and repolarization
   - refractory period
   - sodium and potassium gates
   - sodium-potassium pump
   - threshold value
   - “all-or-none” response
   - polarity
4. Relate the structure of a myelinated nerve fibre to the speed of impulse conduction, with reference to myelin sheath, Schwann cell, node of Ranvier, and saltatory transmission
5. Identify the major components of a synapse, including
Learning Objectives

- synaptic ending
- presynaptic and postsynaptic membranes
- synaptic cleft
- synaptic vesicle
- calcium ions and contractile proteins

- excitatory and inhibitory neurotransmitters (e.g., norepinephrine, acetylcholine – ACh)
- receptor
- acetylcholinesterase (AChE)

6. Explain the process by which impulses travel across a synapse
7. Describe how neurotransmitters are broken down in the synaptic cleft
8. Describe the structure of a reflex arc (receptor, sensory neuron, interneuron, motor neuron, and effector) and relate its structure to how it functions
9. Compare the locations and functions of the central and peripheral nervous systems
10. Identify and give functions for each of the following parts of the brain:
- medulla oblongata
- cerebrum
- thalamus
- cerebellum

- hypothalamus
- pituitary gland
- corpus callosum
- meninges

11. Explain how the hypothalamus and pituitary gland interact as the neuroendocrine control centre
12. Differentiate between the functions of the autonomic and somatic nervous systems
13. Describe the inter-related functions of the sympathetic and parasympathetic divisions of the autonomic nervous system, with reference to
   - effect on body functions including heart rate, breathing rate, pupil size, digestion
   - neurotransmitters involved
   - overall response (“fight or flight” or relaxed state)
14. Identify the source gland for adrenalin (adrenal medulla) and explain its role in the “fight or flight” response

Vocabulary
acetylcholine (ACh), acetylcholinesterase (AChE), action potential, adrenal medulla, adrenalin, “all-or-none” response, autonomic nervous system, axon, axoplasm, calcium ion, cell body, central nervous system, cerebellum, cerebrum, corpus callosum, dendrite, depolarization, effector, excitatory neurotransmitter, hypothalamus, impulse, inhibitory neurotransmitter, interneuron, medulla oblongata, meninges, motor neuron, myelin sheath, myelinated nerve fibre, neuroendocrine control centre, neuron, neurotransmitters, node of Ranvier, norepinephrine, parasympathetic division, peripheral nervous system, pituitary gland, polarity, postsynaptic membrane, potassium gate, presynaptic membrane, protractile protein, receptor, reflex arc, refractory period, repolarization, resting potential, saltatory
transmission, Schwann cell, sensory neuron, sodium gate, sodium-potassium pump, somatic nervous system, sympathetic division, synapse, synaptic cleft, synaptic ending, synaptic vesicle, thalamus, threshold value

**Urinary (Excretory) System**

1. Identify and explain the functions of each of the following:
   - kidney
   - ureter
   - urethra
   - urinary bladder
   - renal cortex
   - renal medulla
   - renal pelvis

2. Identify and explain the functions of the following components of the nephron:
   - glomerulus
   - Bowman’s capsule
   - afferent and efferent arterioles
   - peritubular capillary network
   - proximal and distal convoluted tubules
   - collecting duct
   - loop of Henle

3. Describe the production of urine with reference to the following terms:
   - pressure filtration
   - selective reabsorption
   - reabsorption of water following an osmotic gradient
   - tubular excretion
   - metabolic waste (e.g., nitrogenous waste, urea, ammonia)

4. Describe how the kidneys maintain blood pH

5. Compare urea and glucose content of blood in the renal artery with that of the renal vein

6. Identify the source glands for antidiuretic hormone (ADH) and aldosterone

7. Describe how the hypothalamus, posterior pituitary, ADH, and the nephron achieve homeostasis of water levels in the blood

8. Describe how the adrenal cortex, aldosterone, and the nephron achieve homeostasis of water and sodium levels in the blood

**Vocabulary**

antidiuretic hormone (ADH), adrenal cortex, afferent and efferent arterioles, aldosterone, ammonia, Bowman’s capsule, collecting duct, glomerulus, glucose, homeostasis, hypothalamus, kidney, loop of Henle, metabolic waste, nephron, nitrogenous waste, osmotic gradient, peritubular capillary network, pH, posterior pituitary, pressure filtration, proximal and distal convoluted tubules, reabsorption of water, renal artery, renal cortex, renal medulla, renal pelvis, renal vein, selective reabsorption, tubular excretion, urea, ureter, urethra, urinary bladder, urine

**Reproductive System**

1. Identify and give functions for each of the following:
Learning Objectives

- testes (seminiferous tubules and interstitial cells)
- scrotum
- epididymis
- ductus (vas) deferens
- prostate gland
- Cowper’s glands
- seminal vesicles
- penis
- urethra

2. Describe the path of sperm from the seminiferous tubules to the urethral opening

3. List the components seminal fluid (as contributed by the Cowper’s glands, prostate gland, and seminal vesicles), and describe the functions of each component

4. Identify the tail (flagellum), midpiece, head, and acrosome of a mature sperm and state their functions

5. Describe the functions of testosterone

6. Describe the homeostatic regulation of testosterone levels by the hypothalamus, anterior pituitary, and testes

7. Identify and give functions for each of the following:
   - ovaries (follicles and corpus luteum)
   - oviducts (fallopian tubes)
   - uterus
   - endometrium
   - cervix
   - vagina
   - clitoris

8. Describe the functions of estrogen

9. Describe the sequence of events in the ovarian cycle, with reference to the follicular phase, ovulation, and the luteal phase

10. Describe the sequence of events in the uterine cycle, with reference to menstruation, the proliferative phase, and the secretory phase

11. Describe the control of the ovarian and uterine cycles by hormones including gonadotropin-releasing hormone (GnRH), follicle-stimulating hormone (FSH), luteinizing hormone (LH), estrogen, and progesterone

12. Describe the hormonal changes that occur as a result of implantation, including
   - production of human chorionic gonadotropin (HCG) to maintain the corpus luteum
   - increased production of progesterone by the corpus luteum

13. Describe a positive feedback mechanism involving oxytocin

Vocabulary

acrosome, anterior pituitary, cervix, clitoris, corpus luteum, Cowper’s glands, ductus (vas) deferens, endometrium, epididymis, estrogen, follicles, follicle-stimulating hormone (FSH), follicular phase, gonadotropin-releasing hormone (GnRH), head, homeostatic regulation, human chorionic gonadotropin (HCG), hypothalamus, implantation, interstitial cells, luteal phase, luteinizing hormone (LH), menstruation, midpiece, ovarian cycle, ovaries, oviducts (fallopian tubes), ovulation, oxytocin, penis, positive feedback mechanism, progesterone, proliferative phase, prostate gland,
scrotum, secretory phase, seminal fluid, seminal vesicles, seminiferous tubules, sperm, tail (flagellum), testes, testosterone, urethra, urethral opening, uterine cycle, uterus, vagina

**Special Skills** (as listed above)
1. Demonstrate the ability to collect, display, and interpret data (Examinable)
2. Devise an experiment using the scientific method (Examinable)
3. Demonstrate safe and correct dissection techniques
4. Demonstrate the correct use of the compound microscope
5. Demonstrate the measurement of blood pressure

**Not on the Provincial Exam**
The following prescribed learning outcomes will not be assessed on the provincial examinations:
1. Demonstrate the correct use of the dissection microscope
2. Demonstrate safe and correct dissection techniques
3. Demonstrate the correct use of the compound microscope
4. Demonstrate the measurement of blood pressure