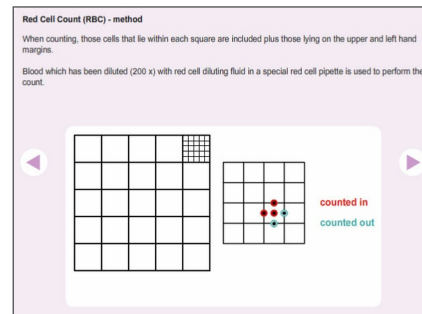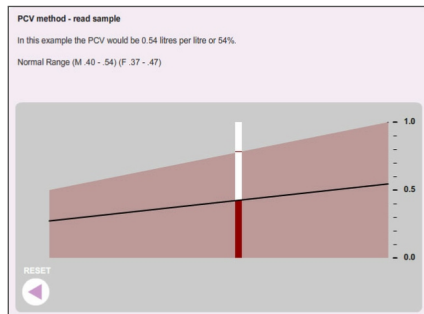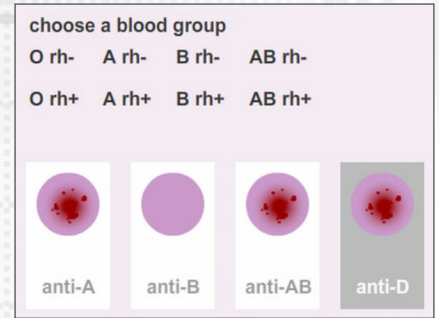Cat.# SB-2 - **BLOOD PHYSIOLOGY** *Windows*

1. Red Blood Cell Indices - this program simulates the determination of standard red blood cell indices, which may be performed in the laboratory using fresh blood samples, and used to produce a haematological profile. Red blood cell count - simulated haemocytometry, Haematocrit (PCV) - simulation of the use of an haematocrit reader Haemoglobin (Hb) concentration - simulated spectrophotometry including the construction of a standard haemoglobin curve.

choose a blood group

| O rh- | A rh- | B rh- | AB rh- |
| O rh+ | A rh+ | B rh+ | AB rh+ |

anti-A   anti-B   anti-AB   anti-D

In the **Methods Section** the principles of each method are explained using a combination of text and imaginative graphics. Students can then simulate performing the tests on either a normal male or a normal female subject. This allows them to interactively obtain results for red cell count, PCV and [Hb] which may then be entered into a simple calculation program to give MCV, MCH and MCHC. The complete haematological profile may then be printed.

2. Blood Groups - text and graphics are used to introduce and explain the basis of the determination of ABO and Rhesus blood groups. There is then an exercise in which students can observe the interaction of a blood sample, from a subject of unknown blood group, and known antisera (anti-A, anti-B and anti-D). They are then asked to select the correct blood group from a list of possible answers. Different blood groups are generated randomly and students can try as many examples as they wish. A record of their score is kept and displayed on-screen.

3. Anaemia's - Nine patient case histories are used to teach the principles of how the medical history, peripheral blood films and the results of haematological tests can contribute to diagnosis of anaemias. Each case has a brief medical history, a haematological profile (RBC count, Hb concentration, PCV, MCV, MCH, MCHC), a peripheral blood film which indicates how this differs from normal blood and the results of other blood indices.

Students are required to select an appropriate diagnosis initially from one of the four main types (iron deficiency, megaloblastic, haemolytic and aplastic) and then with the aid of additional test results to further define this by selecting one from nine possible diagnoses (enzyme deficiency, thalassaemia, haemorrhage, sickle cell, bone marrow aplasia, folate deficiency, hereditary spherocytosis, vitamin B12 deficiency, autoimmune (drug induced), iron deficiency).

PCV method - read sample

In this example the PCV would be 0.54 litres per litre or 54%.

Normal Range (M .40 - .54) (F .37 - .47)

Red Cell Count (RBC) - method

When counting, those cells that lie within each square are included plus those lying on the upper and left hand margins.

Blood which has been diluted (200 x) with red cell diluting fluid in a special red cell pipette is used to perform the count.

counted in
counted out

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

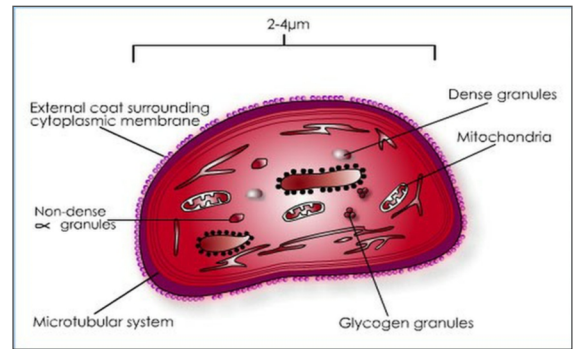This program is available as a Multi-User Educational Licence. See for prices

The program is divided into several sections:

Tutorials: uses text, colour graphics and animated graphics to teach the morphology and physiological function of platelets, the haemo-static mechanisms: platelet plug formation and coagulation (intrinsic, extrinsic and common pathways) and anti-clotting mechanisms especially fibrinolysis.

Methods: uses text and animated graphics to describe the principles and a step-by-step method of each of the major laboratory tests used in producing a haemostatic profile (Bleeding time, Prothrombin Time, Activated Partial Thromboplastin Time (APTT), Thrombin Time). It also includes details of an automated technique using a coagulometer.

In **Clinical Cases** the use of the test results in diagnosis is taught using a highly interactive problem-solving approach which requires students to use data from selected clinical case histories to make a diagnosis. For each of five different cases (haemophilia, Disseminated Intravascular Coagulation, von Willebrand Disease, alcohol-induced liver disease, pro-myelocytic leukaemia) a brief patient history and a haemostatic profile is provided. Students must answer on-screen questions and may access relevant further test results. They must then use this information to make a correct diagnosis from a list of possible conditions. Feedback and help are available throughout and there is also a glossary, which explains the medical terms used.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-15 - **INTESTINAL ABSORPTION** *Windows*

The program simulates experiments designed to demonstrate by investigation the important characteristics of the transport of two important nutrients - hexoses and amino acids, in the small intestine.


Introduction and **Methods** use a combination of text and high-resolution graphics to explain the process of carrier-mediated transport of these nutrients, the everted sac preparation and the methods used to measure nutrient transport: using radio labelled galactose, glycine and methionine and a scintillation counting technique; measuring the transmural potential difference particularly for kinetic analysis of the transport system.

Experiments allows the user to collect sample data from a range of experiments designed to:

1. Measure the transport of each of these nutrients - Control experiments;

2. Demonstrate the Na+ dependence of the transport process by measuring transport of each nutrient when the mucosal fluid contains reduced concentrations of sodium ions (NaCl partly replaced with KCl/tris chloride/choline chloride); investigate the mutual interaction of the hexose and amino acid transport systems by performing a series of experiments (including a kinetic analysis and calculation of apparent Km and Vmax for the transport process) to assess whether the interaction is due to competition for energy or competition at the carrier level.

Students are presented with raw data: weights: wet empty sac; weight of sac containing 0.5 ml Krebs bicarbonate saline; wet weight after incubation in mucosal fluid containing a nutrient; wet weight of final empty sac; radioactive counts) cpm, ESR, dpm, blank-corrected dpm): blank; control sample; serosal sample, gut sample. The data is based on predictive models of carrier-mediated transport, which have been verified by experiment. Students collect the data and use them to calculate transport parameters e.g. mucosal fluid transfer, total amount of nutrient transferred, final gut concentration and T/M ratio, in much the same way as they would if they performed the experiment for real.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-30 - CHEST CLINIC   *Windows*
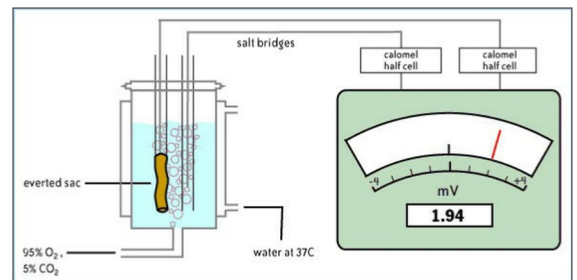
This program is designed to cover the principles of respiratory function testing and adopts a patient orientated, case-centred approach to teach, by investigation, the use of these tests in the diagnosis of common respiratory disorders. It is aimed at undergraduate medical/science students studying physiology on a range of biomedical courses.
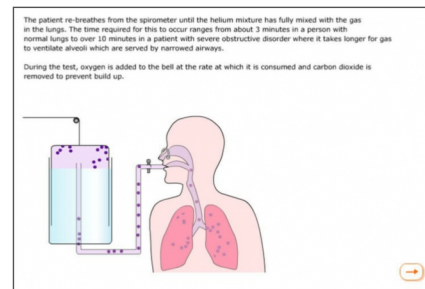

The program is divided into several sections:

Tutorials is subdivided into: Introduction; Limitation to Airflow; Lung Size; Gas Transfer; Bronchodilation; Constriction; Normal Values; Test your knowledge. Each section typically combines text, high-quality graphics, animations to explain the underlying physiology, anatomy and pathophysiology. Self-assessment questions are used for students to assess how much they have understood.

Methods is subdivided into: Introduction; Peak Expiratory Flow; Spirometry; Reversibility; Challenge Tests (Metacholine, exercise); Lung Volumes; Transfer Factor; Each section typically combines text, high-quality graphics, animations and video-clips to explain, in detail, the principles of the investigative methods used to assess respiratory function. Self-assessment questions are used for students to assess how much they have understood.

Cases contains details of seven patients including a normal subject and patients suffering a range of respiratory disorders. For each the user is presented with the results of relevant respiratory function tests which may be compared to predicted normal values for that patient. Users are required to draw conclusions (in the form of true/false questions) about the patients' conditions.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-25 - RESPIRATORY PHYSIOLOGY   *Windows*

This highly interactive program is designed to be used as a student-centred, self-paced learning resource and would occupy students for 3-4 hours. The content is divided into several sections accessible from a menu:

Introduction - the basic principles of respiration put into a health context by introducing some of the more common respiratory disorders.

Structure of the respiratory tract - structure and function of the upper respiratory tract (nose, mouth, pharynx and larynx), trachea, lungs, bronchial tree and alveoli.

Transport of gases

- transport of oxygen by haemoglobin (normal dissociation curve and physiological factors affecting it),

- carbon dioxide (dissolved in plasma, in combination with haemoglobin, as bicarbonate).
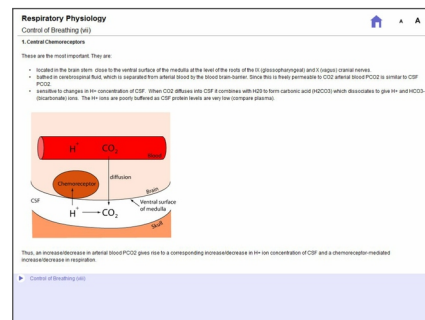
Mechanics of breathing

- introduces respiratory volumes and capacities and covers how the contractions of the respiratory muscles and diaphragm give rise to inspiration and expiration. Muscles involved in forced respiratory movements .

- Control of Respiration

Nervous control - central respiratory centres, autonomic reflexes and conscious control of breathing.

Chemical control - central and peripheral chemoreceptors, influence of hydrogen ions, carbon dioxide and oxygen in regulation of breathing.

High quality interactive graphics and animations are used extensively to explain principles such as how the respiratory muscles and diaphragm interact to cause inspiration and expiration. Throughout the emphasis is on problem-based tasks - interpretation of graphical data (e.g. haemoglobin dissociation curves), interpretation of experimental data, calculations (e.g. ventilatory volumes and dead space, volume of oxygen in arterial and venous blood), and exercises to stimulate understanding. There are also self-assessment questions (multiple choice, multiple true/false) in each section.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

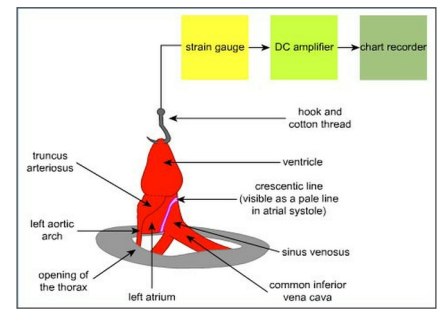Cat.# SB-10 - **FROG HEART**   *Windows*

An interactive, menu-driven and easy to use program which simulates a number of experiments which can be performed on the 'in situ' heart of a pithed frog. High-resolution simulations of contractions of the frog heart, derived from real data, are presented on a scrolling display to simulate a chart recorder. The trace may be paused to facilitate measurement of heart rate or to assess changes in the amplitude of atrial or ventricular contraction.

Experiments include:

- Interpretation of a typical trace;
- the effects of adrenaline;
- the effects of acetylcholine (with physostigmine or atropine);
- the effects of temperature;
- refractory period;
- electrical conduction through the heart (Stannius ligatures).

Each experiment is prefaced by introductory text and includes an experiment guide and assignments.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-6 - **INTRODUCTION TO ENDOCRINOLOGY**   *Windows*

An interactive, foundation level computer-based tutorial to introduce the endocrine system

This highly interactive program is divided into several sections, each of which may be accessed from a menu:
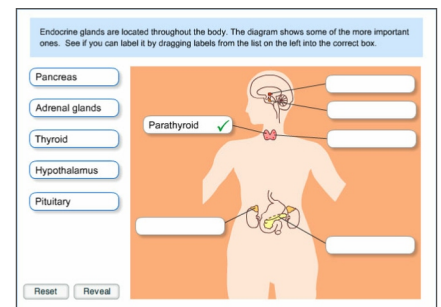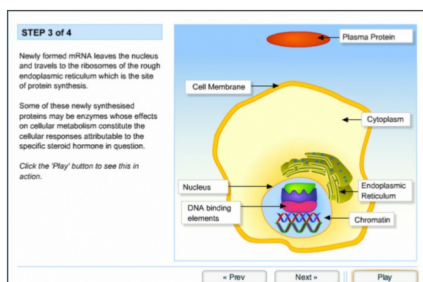
Introduction: an overview of the function of the endocrine system, location of some of the important endocrine glands;

Chemical properties: covers the three main chemical groups of hormones: peptides and glycoproteins, steroids and amines, giving examples of each. For each group the program describes the synthesis, transport and physiological implications of the chemical properties.

Cellular Mechanisms of Action: covers the main features of how (i) peptide and catecholamine hormones act at the cellular level (second messengers) and (ii) steroids and thyroid hormones act at the cellular level;

Hypothalamus - Pituitary: describes the anatomy of the structures and the relationship and connections between the hypothalamus and the pituitary gland; the hormones of the anterior and posterior lobes, regulation of their release and main physiological functions.

High quality colour graphics are used extensively throughout the program and features such as animation and a hotword facility are used to enhance student learning. The program is highly interactive and uses several features to promote this. For example the main sections all have associated student tasks e.g. true/false questions with feedback, drag-and-drop exercises. These are designed to allow students to assess their understanding of the section they have completed and also to present additional information and explanations through the feedback. The learning package is intended to be used either: to support existing teaching methods, or for independent study where it could be used as an alternative to staff-led tutorials or lectures. It is estimated that it would occupy students for two to three hours of fairly intensive study and is suitable for primary learning or revision. The question-answer sections may also be useful for self-assessment.
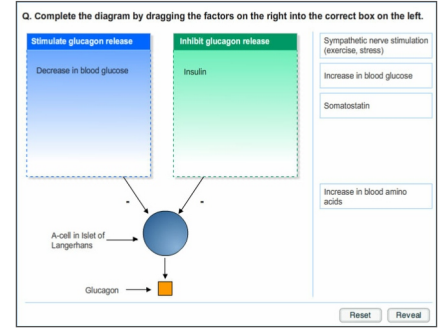
Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

The highly interactive program is designed to teach the basic physiology of the pancreatic hormones and the regulation of blood glucose.
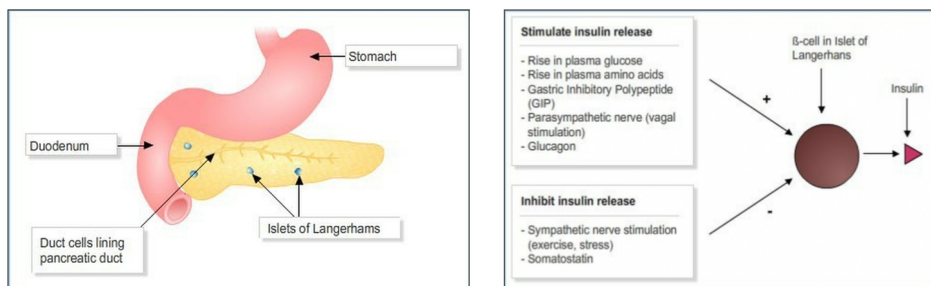

The program covers:

- location and structure of the Islets of Langerhans
- factors affecting release of insulin and glucagon and their effects on target cells
- principal clinical disorders - Type I and Type II diabetes mellitus (causes, symptoms and treatment)
- hypoglycaemia and hyperglycaemia

High quality colour graphics are used extensively throughout the program and features such as a Hypertext facility are used to enhance student learning. The program uses several features to promote interactivity e.g. students are required to:

1. Identify correct actions of hormones or characteristics of certain clinical conditions by "dragging" phrases/words from a list and "dropping" them into the appropriate box on the diagram,

2. Answer a variety of self-assessment questions on the glucose tolerance test.
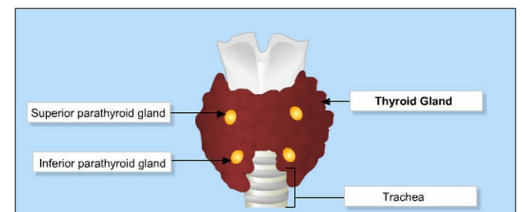

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-35 - **PARATHYROID HORMONES, CALCITONIN AND VITAMIN D** *Windows*

The highly interactive program is designed to teach the basic physiology of the hormones involved in the regulation of plasma calcium.

The program covers:

- location and structure of the parathyroid glands,
- synthesis, release, transport and action of parathyroid hormone, calcitonin and vitamin D on bone, kidney and gastrointestinal tract,
- physiological role of calcium,
- structure of bone and bone remodelling,
- principal abnormalities of calcium metabolism - hyperparathyroidism, hypoparathyroidism, vitamin D deficiency and osteoporosis.

High quality colour graphics are used extensively throughout the program and features such as animation and a Hypertext facility are used to enhance student learning. The program uses several features to promote interactivity e.g. students are required to:

(i) label diagrams by "dragging" labels from a list and "dropping" them into the appropriate box on the diagram,

(ii) answer a variety of self-assessment questions (multiple choice, selecting correct phrases from a list to complete a statement, and true/false questions with feedback).
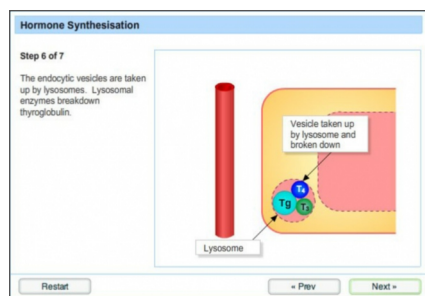
Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-26 - **THYROID HORMONES** *Windows*

The highly interactive program is designed to teach the basic physiology of the thyroid hormones and covers:

- location and structure of the thyroid glands,
- synthesis, release, transport and mechanism of action of the thyroid hormones,
- function of the thyroid hormones T3 and T4,
- principal abnormalities of thyroid function - hypothyroidism and hyperthyroidism.
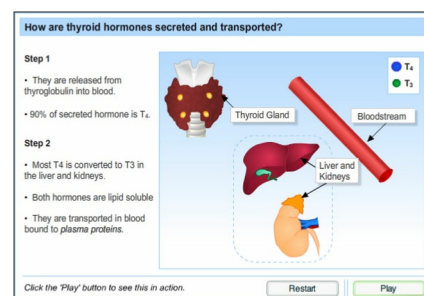
High quality colour graphics are used extensively throughout the program and features such as animation and a Hypertext facility are used to enhance student learning. The program is highly interactive and uses several features to promote this.

For example students are required to: 1. Label diagrams by "dragging" labels from a list and "dropping" them into the box corresponding to the correct position on the diagram,

2. Answer a variety of questions included in each section. These may be multiple choice, selecting correct phrases from a list to complete a statement, and true/false questions with feedback.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-23 - **EXPERIMENTS ON RENAL FUNCTION IN HUMANS** *Windows*

This highly interactive computer program is designed to allow students to collect urine and plasma data from groups of healthy male students who took part in the following investigations:

1. Control experiment (no water loading)
2. Water loading experiment
3. Experiments to investigate the action of four diuretics (acetazolamide, amiloride, hydrochlorothiazide, bumetanide) in water loaded subjects

For each experiment, data are presented (mean values: n=10) graphically for:

- plasma electrolyte concentrations (Na^+, K^+, $C1^-$, HCO_3^-)
- plasma creatinine concentration and plasma osmolality
- urine electrolyte (Na^+, K^+, $C1^-$, HCO_3^-)
- urine creatinine output and total solute output
- urine osmolality
- urine flow
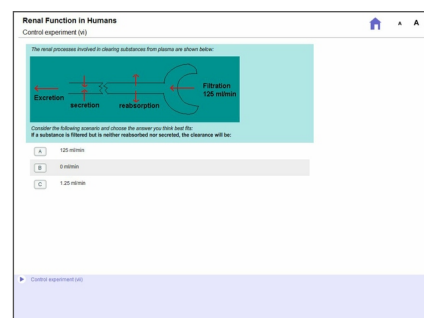
Students observing data from water-loaded subjects may superimpose control data to give a visual comparison. Similarly, water-loading data can be superimposed for each of the diuretic experiments. The program also describes the protocol for each experiment and, in brief, the methods used to analyse urine and plasma. Accompanying each experiment are several interactive questions and tasks to emphasise the important physiological principles. These may be questions (e.g. multiple choice or true false with feedback), data interpretation exercises, or calculations. For example, for each experiment and in addition to other questions, students are asked to calculate using data they have collected from the program: glomerular filtration rate; total and fractional (%) water re-absorption; total and fractional (%) Na^+ re-absorption. The calculations require them to take measurements from the graphical screen displays, enter it into well-established formulae and type in their answers. Assistance with the calculations is available via an on-screen "Help" and, if they get the answer incorrect, there is also a"Tell" facility which demonstrates how the correct answer is arrived at. These questions are designed to consolidate knowledge and to allow students to self-assess their understanding of the section they have completed. A summary of all other data, which may be calculated, is also incorporated.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-5 - INTRODUCTION TO THE CLINICAL ASPECTS OF PAIN
Windows

This highly interactive program is divided into several sections each of which may be accessed from a menu:

Introduction,

Terminology: definitions and explanations of important terms e.g. pain, analgesia, allodynia, hyperalgesia, nociceptors,

Types of Pain: e.g., acute, chronic, nociceptive, neuropathic,

Functions of Pain: under normal physiological conditions,

Pain and Injury: examples of the variable link between pain and injury,

Dimensions of Pain: sensory, affective, cognitive,

Pain Assessment: pain assessment tools including rating scales and pain location charts,

Pain Management: introduction to pharmacological and non-pharmacological methods of pain relief,

Summary,

Revision: 20 self-assessment MCQ questions.
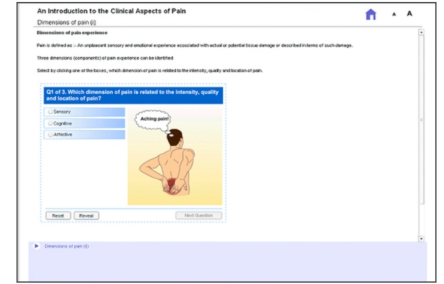
High quality colour graphics, animation and Hypertext are used extensively throughout the program to enhance student learning. The program is highly interactive and uses several features to promote this - e.g. students are required to:

1. Label diagrams by "dragging" labels from a list and "dropping" them into the box corresponding to the correct position on the diagram;

2. Interpret different pain charts,

3. Answer a variety of questions which may be multiple choice, selecting correct phrases from a list to complete a statement, true/false questions with feedback, hangman game, matching definitions with statements etc.

The learning package is intended to be used either to support existing teaching methods or for independent study where it could be used as an alternative to staff-led tutorials or lectures (the material covers approximately two to three one-hour lectures to first year students). It is estimated that it would occupy students for two to four hours of fairly intensive study and is suitable for primary learning or revision. The question-answer sections may also be useful for self-assessment.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

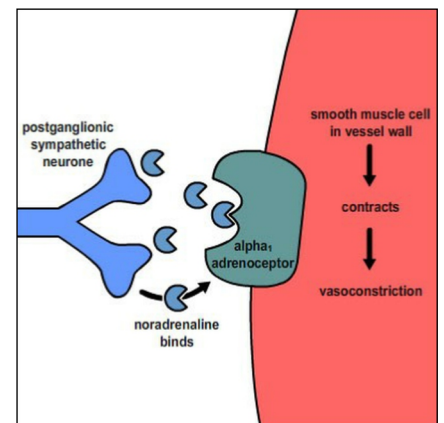## Cat.# SB-3 - PHYSIOLOGY OF THE CIRCULATORY VESSELS
Windows

The highly interactive program is designed to teach the basic physiology of the circulation. It is divided into several sections accessed from a menu:

Introduction: - structure and function of the circulatory system;

The Circulatory vessels:

1. Structure and function - blood vessel wall, arteries, arterioles, capillaries, venous vessels;

2. Blood flow - flow, pressure and resistance.

3. Peripheral resistance - peripheral resistance vessels and their control;

4. Blood pressure - measurement, regulation of BP (autonomic reflexes, hormones, intrinsic regulation, long-term control by kidneys).

High quality colour graphics are used extensively throughout the program and features such as animation and a Hypertext facility are used to enhance student learning. The program is highly interactive and uses several similar features to those described opposite.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-11 - **PHYSIOLOGY OF THE HEART** *Windows*

The highly interactive program is designed to teach the basic physiology of the heart and is designed to complement and accompany a similar program (The Circulation.) covering the physiology of the circulatory vessels. It is divided into several sections accessed from a menu: Introduction: structure and function of the cardiovascular system;

The Heart:

- gross structure - chambers and major blood vessels, the wall of the heart and the pericardium;
- heart valves - structure and function of atrioventricular and semi-lunar valves;
- histology - cardiac muscle and pacemaker cells;
- excitation - spread of depolarization and the ECG;
- heart sounds
- the cardiac cycle - pressure and volume changes;
- cardiac output - control by autonomic nerves, hormones and autoregulation.
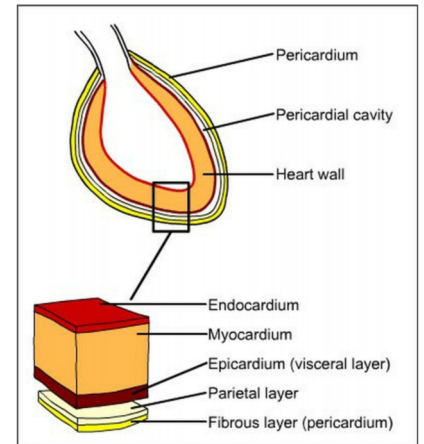

High quality colour graphics are used extensively throughout the program and features such as animation and a Hypertext facility are used to enhance student learning. The program is highly interactive and uses several features to promote this. For example students are required to:

a) label diagrams by "dragging" labels from a list and "dropping" them into the box corresponding to the correct position on the diagram;

b) interpret recordings of pacemaker cell action potentials to better understand the effect of autonomic nerves on heart rate.

In addition they must answer a variety of questions included in each section. These may be multiple choice, selecting correct phrases from a list to complete a statement, and true/false questions with feedback.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

Cat.# SB-35 - **EPILEPSY** *Windows*

This highly interactive program is divided into several sections each accessed from a menu:

Introduction: incidence of epilepsy, definitions, terminology, symptoms, diagnosis,

Causes of Seizures: covers the variety of causes e.g. infection, birth & perinatal damage, metabolic disturbances, genetic causes, head trauma, tumour, drugs, vascular insults, congenital malformations, febrile convulsions in children, neurodegenerative disease,

Classification of Seizures: main features and symptoms of partial (simple and complex) and generalised seizures (tonic-clonic, absence, atonic and myoclonic),

Seizure Mechanisms: describes the underlying mechanisms and factors contributing to initiation, synchronization and propagation of the abnormal neural discharge,

Screening for potential anti-seizure drugs: describes the major tests: MES, PTZ and kindling and indicates their usefulness in predicting efficacy of tested drugs against different seizure types,

Anti-seizure drugs: focuses on the structure, clinical usefulness, mechanism of action and important clinical pharmacology of phenytoin, carbamazepine, valproate and ethosuximide,

Status Epilepticus: describes the main clinical features and treatment of this condition.

High quality colour graphics are used extensively throughout the program and features such as animation, a Hypertext facility and interactive student-tasks are used to enhance student learning.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.
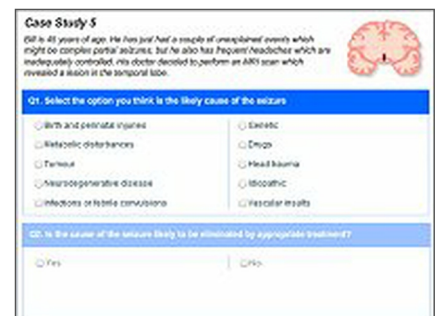
An interactive, menu driven program, suitable for students of biology at high school and undergraduate level. This program simulates some of the important physiological measurements which can be made to assess cardio-respiratory performance or "fitness" in the laboratory.

The program presents results, in a form comparable to a chart recorder (in high resolution graphics), from healthy individuals performing a fixed schedule of graded exercise on a bicycle ergometer, and includes:-

- Heart Rate,
- Minute (Pulmonary Ventilation),
- Oxygen Consumption,
- Blood Lactate Concentration

Measurements can be taken from the trace by pausing it and using the cross-hair cursor facility provided. The program simulates the response of a subject working continuously under a work load which is increased by increments of 20 watts each minute until the subject is exhausted. The screen display also shows a digital clock and work load meter. Heart rate is monitored continuously and respiratory performance is assessed by breath-by-breath analysis of expiratory air samples. Blood samples may be taken during the exercise regime and the [lactate] determined using a simulated spectrophotometer.

The program allows subject parameters (age, weight, height, sex, trained or untrained) to be determined by the user and may thus be used to compare, for example, male with female performance, or the effects of training or age.
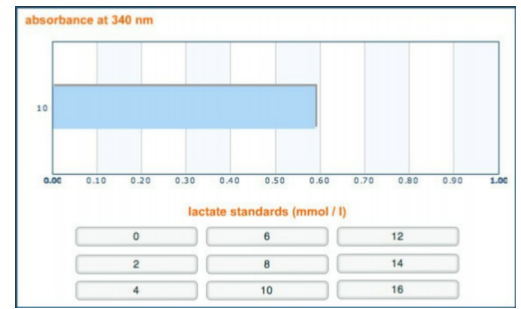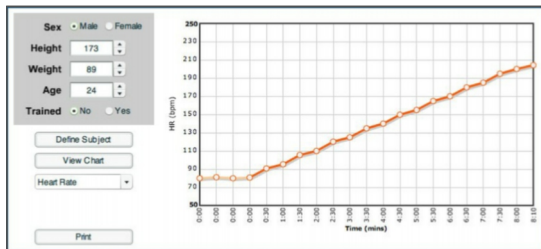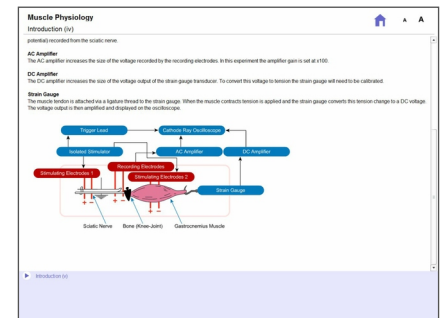

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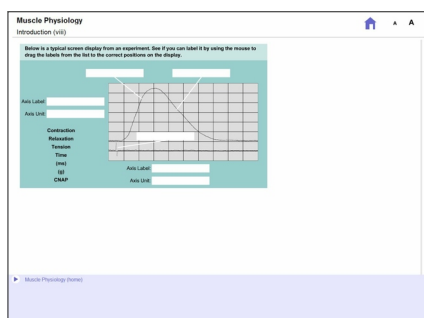
An interactive, menu-driven and easy to use program, which simulates experiments on the frog sciatic nerve - gastrocnemius muscle preparation to illustrate physiological properties of skeletal muscle.

Experiments include:

- stimulus voltage/response relationships,
- summation,
- tetanus,
- length-tension relationship,
- action of curare.

Real experimental data is used to generate simulated muscle contractions, which are displayed in a form comparable to that of an oscilloscope. Each experiment is prefaced by introductory text, and experiment guide and includes assignments (MCQ, true-false, data interpretation) for students to complete which are designed to reinforce underlying physiological principles, and test accuracy of data collection and data interpretation.
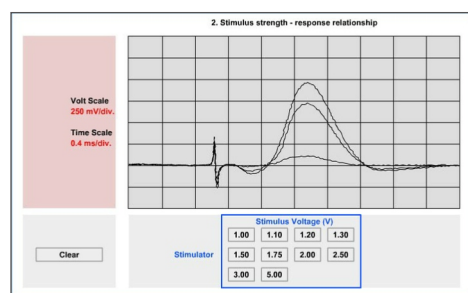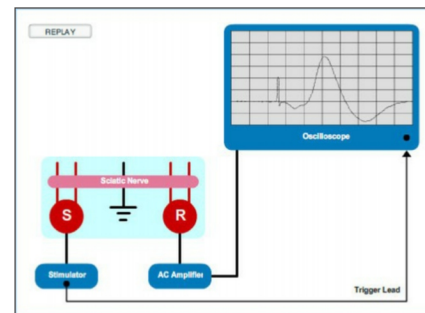

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

An interactive, menu-driven and easy to use program, which simulates a number of experiments performed on the frog sciatic nerve preparation to illustrate some of the important properties of mixed nerves. High-resolution graphic simulations of compound nerve action potentials, derived from real experimental data, are displayed on a simulated oscilloscope screen.

Experiments include;

- stimulus voltage/response relationships,
- investigation of refractory period,
- measurement of conduction velocity,
- effects of temperature and action of a local anaesthetic.

Each experiment is prefaced by introductory text, and each experiment has associated assignments. The package includes a manual, tutor's guide and student workbook.

Recommended System Requirements: Microsoft Windows XP (32 bit), Windows Server 2003 (32-bit), Windows Server 2008 (32 bit), Windows Vista (32 bit), Windows 7 (32 bit and 64 bit), Windows 8, 2.33GHz or faster x86-compatible processor, or Intel Atom 1.6GHz or faster processor for netbooks, 128MB of RAM (1GB of RAM recommended for netbooks); 128MB of graphics memory, Internet Explorer 7.0 or later, Mozilla Firefox 4.0 or later, Google Chrome, Safari 5.0 or later, or Opera 11.

This program is available as a Multi-User Educational Licence. See for prices