



BIOLOGY
Equipment List, Specifications and Tendering Guidance –
Biology equipment (BIO)

Code	Qty/ number of individual units	Description	Catalog ue No.
		Section 1: Basic equipment	
BIO/100	1	Anaerobic jar, polycarbonate, 3.5 L (12 plates) capacity, “O” ring, self-centring cast lid and clamp, input and output Schrader valves, automatic safety valve, pressure gauge, low temperature and plate carrier	
BIO/101	1	Gas generating kits for above, carbon dioxide, packs of 10.	
BIO/102	6	Blender, single speed, approx. 2000 rpm, 1 Litre capacity, stainless steel container, 230 V	
BIO/103	6	Blender accessory, mini containers for above, stainless steel, with blender assembly, plastic snap-fit lid, to fit in place of standard container, capacity, 250 cm ³	
BIO/104	1	Oven / Incubator, range 20°C – 200°C or nearest, capacity 50 L, number of movable shelves 2 (3 positions), wattage 1000, dimensions H x W x D 33 x 49 x 33 cm or nearest equivalent, 230 V a.c., complete with 2 m three-core cable (note: thermostat and heating elements must be easily replaceable)	
BIO/105	24	Fermentation locks, plastic to include stoppers and flasks.	
BIO/106	12	Level, spirit, aluminium, suitable for suspension on line	
BIO/107	1	Eyepiece Camera, CMOS digital eyepiece, wireless data transfer interface	
BIO/108	1	Visualiser: Min. 13 MP Lens, Up to 4K at 30 fps Video, Built-In Mic, coverage A3 + (533x330mm), USB Interface/wireless & Power Connection to a PC or other device which accepts standard video input, flexible swan neck on heavy base, two year warranty	
BIO/109	12	Model, DNA, pre-built, 3 complete turns of helix made from moulded PVC interlocking components. Shows base pairing and transcription to a short strand of RNA. On stand, dimensions 300 x 85 mm, can be dismantled. In storage containers.	
BIO/110	10	Microscope slides, 75 mm x 25 mm, for routine and student use, box 100 slides	

BIO/111	10	Microscope slide cover slips, box 100.	
BIO/112	12	Binocular microscope, stereoscopic, binocular head inclined at 50°– 55° Inter-pupillary distance adjustment; rack and pinion focusing. Eyepieces x10 with x2 and x4 turret objectives. Fitted with top/bottom fluorescent illuminator, for use with 230 V 50 Hz supply. Supplied with dust cover.	
BIO/113	1	Digital Microscope, 2 mega pixels resolution, 20-200 magnification, still capture and video capture, electricity supply 5v DC from USB port, compatible with Windows operating system, approximate microscope size 110mm x 33mm, complete with microscope, stand and calibration ruler	
BIO/114	6	Net, butterfly, collapsible aluminium frame, with ferrule; dimensions approx. 380 x 350mm, complete with fine nylon mesh, 600 mm deep, handle, female threaded joint, lightweight aluminium, 1200 mm. or Net, sweep net bag (tray), fine mesh, elasticated edges stretched over white plastic coated frame, 500 x 500 mm, with handle, 150 mm. or Net, D-shape frame, complete with coarse mesh pond net bag, dimensions 230 x 200mm. Net bag depth 200 mm.	
BIO/115	12	Land invertebrates Guide, illustrating the common indigenous species for easy identification, wipe-clean, laminated and folded, approximately 39 x 24cm	
BIO/116	12	Woodland habitat Guide, illustrating the common indigenous wildlife of specific habitats and include both plants and animals for easy identification, wipe-clean, laminated and folded, approximately 39 x 24cm	
BIO/117	12	Guide to water invertebrates, illustrating the common indigenous species for easy identification, wipe-clean, laminated and folded, approximately 39 x 24cm	
BIO/118	12	Guide to trees and shrubs, illustrating the common indigenous species for easy identification, wipe-clean, laminated and folded,	
BIO/119	12	Guide to the wildflowers of grassland and hedgerow	
BIO/120	12	Guide to Seashore habitat, illustrating the common indigenous wildlife of the habitat, wipe-clean, laminated and folded, approximately 39 x 24cm	
BIO/121	12	Identification keys – 5 habitats (garden, woodlands, ponds, grassland and hedgerow) 29x24cm laminated	
BIO/122	24	Microbiological inoculating loop with handles, aluminium & nickel plated, brass collar, length 150 mm	
BIO/123	4	Empty petri dishes, sterile, polystyrene disposable, 90 mm x 12 mm, pack of 500.	
BIO/124	1	Multidiscs for antibiotic resistance/ Penicillin G (P) 10ug Discs - 5 Cartridges of 50 Discs	
BIO/125	12	Quadrat, (25 squares), grid type	

BIO/126	2	Masking tape roll 25 mm	
BIO/127	1	Pen, Medium Permanent Black (Pack 10) SP06520	
BIO/128	1	Radish seeds (Pk/100), Cress seeds (Pk/200), Broad Bean Seeds (Pk/100) , Pea Seeds (Pk/100)	
BIO/129	6	Thermometer, soil, spirit or digital, range –10 to 100 °C in aluminium tube, perforated at base which can be pressed into the soil.	
BIO/130	6	Thermometer, digital, general-purpose use, including soil measurements, interchangeable probes, supplied with general purpose temperature probe, battery, range -50°C to 150 °C	
BIO/131	6	Penetration probe on PVC cable, suitable for air, liquid, semi-solid, for use with above.	
BIO/132	6	Protective case (boot) for digital thermometer, as above.	
BIO/133	24	Visking dialysing tubing, inflated diameter approx. 14 mm, 5 m long roll	
BIO/134	3	Water bath, shallow to fit boiling tubes, 22 litres capacity, stainless steel interior with removable false base, digital temperature controller and display, stove enamel or plastic finished exterior, temperature range from ambient to 100 °C, stirrer/ control unit mounted on end of bath, user resettable safety cut-out device, 1250 W, 230 V, 50 Hz.	
BIO/135	12	Bench lamp complete with LED bulb (approx. 11W /850 lumen), flexible neck for angle-poise, with switch, base weighted for stability, inside of shade finished in white gloss, approximate working height 40 cm, complete with long mains cable.	
BIO/136	2	Balance, electronic, digital display, top-loading, with serial interface: 0 – 300 g ´ 0.001 g (i.e. to 3 decimal places = 1 mg), zero tare, stainless steel weighing pan, a.c. mains 230 V. Two year warranty. In storage box.	
BIO/137	1	Disposable graduated pipettes, non-sterile, translucent polyethylene, graduated on the stem, capacity 3ml, 0.5ml graduations, pack 500	
BIO/138	12	Variable and fixed volume micropipettes, single channel, click-stop system for digital volume setting to 100µl – 1000 µl / 0.1ml-1ml, ergonomic design plunger movement, high accuracy and precision, supplied with pack of pipette tips	
BIO/139	6	Carbon dioxide gas sensor, range 0-100,000 ppm CO ₂ , accuracy 0-1,000 ppm, stored data points memory, data logging, including 250 mL sample bottle	
BIO/140	6	Dissolved Oxygen sensor, range 0 to 20 mg/L, 0 to 300% saturation, to measure concentration (mg/L), Saturation (%), O ₂ Gas (in air, qualitative) (%), Temperature (°C), including probe storage	

BIO/141	6	pH sensor, range 0-14 pH, accuracy ± 0.01 pH with calibration, temperature range 5°C - 60°C, logging, including probe storage bottle and pH sensor storage solution	
BIO/142	6	Temperature sensor, stainless steel probe, temperature range 40°C to 125°C, accuracy 0.5°C, stored data points memory (logging) including 35-day capable battery data collection	
BIO/143	6	Light sensor, range 0-100,000 lux with medium, low and high illumination ranges, measures light level (lux), illuminance, UV Index, and colour intensity	
BIO/144	6	Oxygen Gas Sensor, range 0 to 100 % O ₂ concentration; 0 to 1,000,000 ppm, accuracy $\pm 1\%$ O ₂ at constant temp and pressure; $\pm 5\%$ O ₂ outside operating range, operating temperatures 0 - 40°C. Note: wireless sensor with Bluetooth technology as an option, if selected by the school	
BIO/145	6	Hand Grip Heart Rate Sensor, range 0 to 240 beats per minute, Accuracy ± 1 beat per minute, maximum sample rate – every two seconds. Note: wireless sensor with Bluetooth technology as an option, if selected by the school	
BIO/146	6	Exercise Heart Rate Sensor, range 0 to 240 beats per minute, Accuracy ± 1 beat per minute, maximum sample rate – every two seconds. Note: wireless sensor with Bluetooth technology as an option, if selected by the school	
BIO/147	8	Potometer – basic h shape	
BIO/148	8	Soil moisture meter. Light and compact Simple to use, no battery required. Instant dry, moist or wet reading.	
BIO/149	8	Soil pH meter A deluxe soil pH meter with flexible coiled cable and convenient belt clip. No batteries required. Supplied with comprehensive booklet.	
BIO/150	8	Compass, basic type	
BIO/151	6	Anemometer, easy to use, pocket size, simultaneously measurement units: m/sec ft/min, mph, km/hr or knots, min/mas of measured values since power on, auto power off after 15 minutes of no activity (can be user disabled), low battery indicator. 2-year warranty.	
BIO/152	6	Inclinometer/Clinometer, A compact Clinometer with no external moving parts and a combined sighting angle-reading eyepiece. A window on the side allows a second person to check a reading. All angles in degrees followed by a plus or minus to indicate an upward or downward slope. Complete with product guide. Size: 140mm diameter.	
BIO/153	6	Mineral content test kit for N, P or K. Soil test kit containing sufficient materials to carry out 60 tests on soil for pH, Nitrogen, Phosphorous and Potassium. Detailed instructions included.	

BIO/154	1	Gel electrophoresis lab station (to allow 6 groups of 4 students) including power supply, agarose gel, buffer solution and DNA testing kit.	
BIO/155	6	Pooters. Safely collect live insects. Safety filter. Easy to handle twist on lid. Crystal clear collecting pot. Economical. Easy to clean. Pack of 2.	
BIO/156	24	Clip boards. Ideal for field surveying work. Foolsap clipboard with strong pad clip and pen holder.	
BIO/157	1	Tullgren funnel Supplied with coarse and fine meshes, lamp.	
BIO/158	24	Show me boards, write/wipe A3 size plain and graphed or double sided	
BIO/159	24	White board markers, variety of blue, black, red and green	
BIO/160	1	Rope, for line transect, coloured nylon, lightweight, roll 50 m long	
		Section 2: Anatomical models, charts and sets	
BIO/200	5	Charts, colour, 660 x 510mm, plastic lamination: human digestive system, human respiratory system, human heart, human etc, human skin OR Alternative five charts selected by the school	
BIO/201	1	Pelvis with foetus, life size, 9th month of pregnancy, complete with separate model showing 3rd month of pregnancy for comparison. In 3 parts, mounted on base. Dimensions c.38 x 25 x 40 cm.	
BIO/202	1	Skull of carnivore, dog or equivalent, removable parts, dentition complete.	
BIO/203	1	Skull of herbivore	
BIO/204	6	Human brain model, 4 parts, 14 ' 16 ' 14 cm with storage box	
BIO/205	12	Model of the heart, two parts, front heart wall removed to reveal the chambers and valves inside, removable base and English key card	
BIO/206	12	Human kidney model, x3 normal size, ls of right kidney, displaying renal pelvis, renal calix, renal pyramid, Henle's loop, blood vessels, on base, dimensions 20 x 33 x 10 cm	
BIO/207	1	Dicot root model, showing all tissues, radius 170 mm, thickness 60 mm	
BIO/208	1	Dicot stem model (Helianthus or equivalent), showing all tissues, 380 ' 300 ' 80 mm	
BIO/209	1	Dicot leaf model showing epidermis, palisade and spongy mesophyll, vascular bundle and stomata, size 150 x 100 x 60 mm.	
BIO/210	1	Animal Cell Model, Detailed Animal cell model, enlarged 20,000 times., Featuring nucleus, nuclear pores, endoplasmatic reticulum, mitochondria, ribosomes, Golgi apparatus, centrioles, ribosomes and fat and vacuoles.	

BIO/211	1	Plant cell model. Detailed plant cell model, enlarged 20,000 times, featuring: nucleus, cell wall, vacuole, chloroplast, mitochondria, chromosomes, ribosomes, endoplasmatic reticulum, golgi apparatus, centrioles etc.	
BIO/212		Model chloroplasts, detailed, brightly coloured 3D. Key features include: ribosomes, DNA, starch granule, outer membrane, inner membrane, stroma, thylakoids, granum, lamellae, lumen. All features are coloured and numbered for comparison with the key that is included. Base Dimensions: 254mm x 178mm x 26mm. Model Dimensions: 254mm x 153mm. Overall, Height: 267mm.	
BIO/213	12	Flower model. Detachable petals, sepals and stamen with anther section, pollen tube. Mounted with key card. c. 430 x 360 x 250 mm.	
BIO/214	1	Human skin section, desk model, enlarged x40 approx., shows 3 layers of scalp and hairless skin with radix pili, sweat glands, Meissners corpuscle, mounted on base, 24 x 3.5 x 15 cm approx.	
BIO/215	1	Simulated Blood typing kit This activity provides the most procedurally accurate simulation of the blood typing technique available. Students test and determine the ABO/Rh blood types of four different simulated blood samples. Using Innovating Science's new simulated blood, the students combine blood samples and antisera, gently agitate the blood typing tray, and observe the results. No toothpicks, no stirring, and no waiting for results required. Kit contains enough materials for 10 groups. Teacher's Manual and Student Study Guide copymasters included.	
BIO/216	1	Lung Model This model dispalys all the major internal structures of the lung with its open, cutaway view of the inside of the lung. Trachea, bronchus, lymph nodes, pulmonary artery and veins are some of the structures identified.	
BIO/217	6	Model neuron It is an extraordinarily enlarged model to show the parts of a mitochondria. The model is mounted on a base with numbered Key Card	
BIO/218	6	Fossil kit Fossil boxed set detailing some of the various ways in which pre-historic animals are preserved or fossilised. A collection of fine quality fossil specimens. Specimens are picked to ensure that key morphological features can clearly be seen. A photo data sheet is present on the inside lid which correlates to each individual specimen. A flow chart (key) is included to support fossil identification.	

		Section 3: Dissecting Equipment – Biology	
BIO/300	12	Dissecting kit, comprising: 2 scalpel handles, nickel alloy, slotted to accept blades, size no. 4, length 100mm Scalpel blades, surgical quality steel, for use with no. 4 handles, type no. 22, one pack of 5 blades, foil wrapped Scalpel blades, surgical quality steel, for use with no. 4 handles, type no. 21, one pack of 5 blades, foil wrapped 2 needles, aluminium handle 1 seeker, aluminium handle 1 stainless steel forceps, blunt, 125 mm 1 stainless steel forceps, sharp, 125 mm 1 stainless steel scissors, fine, 112 mm 1 stainless steel scissors, blunt, 125 mm 1 instrument tidy roll, canvas or PVC, 13 pockets.	
BIO/301	12	Dissecting board, softwood, raised edges and draining grooves, 450 x 300 mm approx.	
BIO/302	2	Cork, sheets, 5 mm thick, 250 x 100 mm, pack 10	
BIO/303	1	Dissecting pin, plated steel, length 50 mm, pack 100	
		Section 4: Prepared Microscope slides Biology	
BIO/400	1	Artery and vein (combined), ts (stained)	
BIO/401	1	Normal human blood	
BIO/402	1	Allium (onion) epidermis	
BIO/403	1	Mammalian lung tissue	
BIO/404	1	Intestine (large), ts	
BIO/405	1	Kidney, ts	
BIO/406	1	Kidney, entire, ls	
BIO/407	1	Liver, glandular tissue	
BIO/408	1	Mammalian columnar epithelium cell tissue	
BIO/409	1	Nerve, ganglion, ts	
BIO/410	1	Nerve, spinal cord, ts, nerve cells, white and grey matter	
BIO/411	1	Oesophagus, ts	
BIO/412	1	Ovary, ts, mammal	
BIO/413	1	Stomach wall, cardiac end, vs	
BIO/414	1	Spermatozoa, human sperm smear	
BIO/415	1	Testis, ts, rat	
BIO/416	1	Amoeba, entire, stained	
BIO/417	1	Mammalian ciliated epithelium cell tissue	
BIO/418	1	Chromosomes, male, human, normal	
BIO/419	1	Chromosomes, female, human, normal	
BIO/420	1	Mitosis, onion root tip	
BIO/421	1	Dicot Stem, T.S.	
BIO/422	1	Lilium, anthers, T.S. with mature pollen grains	
BIO/423	1	Leaf, dicot angiosperm, T.S.	

BIO/424	1	Leaf, monocot and dicot, T.S. with stomata	
BIO/425	1	Cardiac muscle tissue	
BIO/426	1	Phloem, Curcubita, ts stem (sieve tubes)	
BIO/427	1	Root, monocot, T.S.	
BIO/428	1	Root, dicot, mature ,T.S.	
BIO/429	1	Xylem, tracheids and vessels	
BIO/430	1	Bacillus, coccus and spirillum, comparative slide	
BIO/431	1	Bacteria, showing binary fission	
BIO/432	1	Saccharomyces cerevisiae, brewer's yeast, budding.	
BIO/433	1	Rhizopus stolonifer, w.m., with sporangia and with zygospores	
BIO/434	1	Selection of slides that show plant adaptations; sunken stomata, stinging cells, storage organs, etc	
BIO/435	1	Cancerous cells	
BIO/436	1	Human Skin Cells, stained	
BIO/437	1	Vicia, young root hairs	
BIO/438	1	Intestine (small), T.S.	
BIO/439	1	Sambucus (elderberry), T.S. stem lenticel	
BIO/440	1	Human oral epithelial smear, stained	
BIO/441	1	Monocot Stem,T.S.	
BIO/442	1	Human scalp LS stained, showing hair follicles, sebaceous and sweat glands	
		Section 5: Chemicals and Reagents	
BIO/500	4	Agar plates, prepared, starch, pack 10-delay delivery until requested	
BIO/501	4	Agar plates, prepared, malt, pack 10- delay delivery until requested	
BIO/502	4	Agar plates, prepared, skimmed milk, pack 10- delay delivery until requested	
BIO/503	4	Agar plates, prepared, nutrient agar, pack 10- delay delivery until requested	
BIO/504	1	Albumen, egg powder, 250 g	
BIO/505	2	Protein test strips, (qualitative) , pack 50	
BIO/506	1	Biuret reagent 500cm3	
BIO/507	1	Benedict's reagent, qualitative, 2000cm3	
BIO/508	1	Bicarbonate indicator, 500 cm3	
BIO/509	4	A range of buffer solutions (i.e. pH 4, 7, 9, 10, 11 and 13), 500ml of each.	
BIO/510	2	Glucose testing strips, quantitative pack 50	
BIO/511	1	Enzyme, diastase, 25 g	
BIO/512	1	Enzyme, pepsin, 250 g	
BIO/513	1	Enzyme, trypsin, 250 g	
BIO/514	1	Pond weed (delay delivery until school requests it)	
BIO/515	1	Agar, nutrient, all purpose, 500 g	
BIO/516	1	Yeast: variety to include active dry, instant, rapid, wild or brewers.	

BIO/517	1	Sodium alginate, 100 g	
BIO/518	1	Sach's water culture set (mineral deficiency)	
	20 kits in total	Section 6: Biology Inquiry Kits Twenty Student investigation inquiry kits to be chosen by the Science Department and the School Authorities. Schools will choose any twenty student investigation inquiry kits, guided by the indicative list below. Each kit should supply sufficient materials for at least twelve pairs of students. Each kit should have high quality, storage boxes with sealable lids	
BIO/600		Constructing Model Viruses kit Viruses appear to be alien life forms, with cage-like, helical and spaceship-like shapes. Students explore the biological niche of viruses by building model viruses and investigating their biochemistry	
BIO/601		Leaf Identification and leaf adaptation kit Twenty-six real tree leaves in a kit. The contents allow students to classifying objects, identifying leaves using a simple key, creating leaf art and exploring leaf morphology and adaptation.	
BIO/602		Plant Kingdom Survey Set This set allows students to explore diversity and learn about classification with this collection of 12 display mounts. Each display contains fully-labelled and easy-to-see specimens representing fungi, algae, lichens, and true plants. 47 specimens total are included. The entire set fits neatly into a sturdy box for convenient storage. Includes: algae, lichens, fungi, liverworts, mosses, seedless vascular plants, gymnosperms, dicot angiosperms, monocot angiosperms, seeds, as well as examples of leaf venation, parasites and epiphytes.	
BIO/603		Modelling kit for Pathogens, Antibodies and Vaccines. A microbes and health student investigation kit to examine metabolism, cellular chemistry, and the role of bacteria in both disease and food microbiology using Koch's postulates to identify the causative agent for disease, isolate and culture yogurt-causing bacteria and allows students to learn microbiology skills and sterile technique.	
BIO/604		Classifying Living Things Kit Students are introduced to the Kingdoms through the process of classification. Students view a set of illustrated cards and use simple, dichotomous keys to determine the appropriate Kingdom and phylum for each individual organism. In the process of classifying the organisms, students will develop an understanding of each individual's role in an ecosystem. Each is complete for 24 students working in pairs.	

BIO/605		Assessing biodiversity student investigation kit. Including a mini-Quadrat – a wire frame 0.25 m x 0.25 m, Key to plants, 1 Clipboard per pair, 1 dry erase marker per pair, 1 laminated, reusable Record sheet, 20m tape measure, Number cards, 20-sided dice, Pinboard, or sheet of cardboard (for step 1) with sticky tape or pins to attach plants to the board	
BIO/606		A set of 48 laminated biological debate cards	
BIO/607		Prokaryotic vs eukaryotic Microscopy Kit Every living organism consists of one of two types of cells—prokaryotic or eukaryotic. This kit allows students to discover the key features that differentiate living things as prokaryotes or eukaryotes and how these features benefit their survival. Students observe and analyze four different samples of cell types on microscope slides. Includes eight microscope slides, two of each sample to set up eight lab stations. Materials Included in Kit: Slide, Amphiuma—liver, section, 2 Slide, Cork section, 2 Slide, Spirulina, 2 Slide, stagnant watersmear, 2	
BIO/608		Nucleic Acid Molecular Structure Kit Students have the opportunity to construct and study the basic components of the DNA and RNA molecules. They assemble an individual nucleotide after first building its three component parts: a five-carbon sugar (ribose or deoxyribose), a phosphate group, and a nitrogen base. When each group has constructed their nucleotide they can link the models together. Components are durable and reusable. Kit includes: 12 complete sets of the following-10 carbon centers, 11 oxygen centers, 5 nitrogen centers, 1 phosphorus center, 19 hydrogen atoms, and 49 covalent bonds. Materials provided for 24 students working in pairs.	
BIO/609		Nucleotide Model Kit This kit provides learning about the atomic structure of DNA. Build models of each of the nucleotide bases—adenine, cytosine, guanine, thymine—and then pair them up. Model allows students to actually see the molecular and geometric structures of DNA and the hydrogen bonding that holds everything together. Base pairs are brightly coloured so everyone can easily see the chemical structure of this essential molecule. Sturdy, hands-on model invites students to manipulate the nucleotides to obtain a complete understanding of DNA's chemical detail and atomic structure. One kit includes materials to build one model of each of the four DNA bases.	

BIO/610		Genetic Flow of Information Kit A kit to allow student to learn about the formation of DNA and RNA. Students witness the complete process from gene to protein. Includes over 300 color-coded, foam pieces that can be mixed and matched for different activities. Model DNA replication, transcription of DNA into RNA and translation of RNA into proteins with a durable 3-D kit. Set includes 160 DNA nucleotides and 40 RNA nucleotides and is available separately. One kit per group of four students.	
BIO/611		Phospholipid and Membrane Transport Kit Students will gain a greater understanding as they discover the spontaneous formation of membranes with a 3-D kit. Students explore the chemical structures of a phospholipid and then use that knowledge to construct a phospholipid monolayer. Features the amphipathic structure of phospholipids with their hydrophilic heads and hydrophobic tails. Additional components of the kit allow students to construct lipid bilayers and consider the role of transport proteins in moving ions and small molecules across membranes.	
BIO/612		DNA Model Kit Students develop hands-on familiarity with the structure and function of the DNA molecule as they construct and interpret models of DNA segments, including the study of messenger RNA (mRNA) and transfer RNA (tRNA), and the process of protein synthesis. Materials provided for 12 pairs of students.	
BIO/613		Capture electron transfer during photosynthesis kit The kit allows students to monitor the colour change of an indicator to investigate the rate of photosynthesis and explore the actual reactions of the electron transfer chain during the light reactions of photosynthesis. Complete for 24 students working in pairs. Fresh spinach and a blender are required but not provided. Materials Included in Kit: Aluminum foil, regular, full roll, 12" x 25 feet roll, 2, 6 Dichloroindophenol sodium salt, 1 g, Phosphate buffer concentrate, 10x, 250 mL, 2 Cheesecloth, 1 sq yd Parafilm, 2" wide x 12 feet long	

BIO/614		The Cell Cycle – Simulations of Chromosome Behaviours Students model the two processes of meiosis and mitosis with hands-on chromosome simulation materials. The kit requires chromosome models with magnetic centromeres and pop bead arms allow students to easily visualize and compare the two processes. The chromosome models are built by students and can be physically manipulated through the various stages of the cell cycle on their tabletop. With this kit, chromosomes and their behaviors will be easily understood by the students. Includes centrioles, magnetic centromeres and pop beads. Materials Included in Kit for a class of 24 students: Centrioles, 60 Centromeres, 60 Pop beads, blue, 450 Pop beads, orange, 450 Thread, spool, white Zip lock plastic bags, 10" x 13", 15	
BIO/615		Genetic Code Kit A kit which allows students a hands-on activity on DNA, RNA and protein synthesis and involved in transcription and translation. The coded messages on the DNA and tRNA code cards in this kit will provide learning how the genetic code works. Students will get their individual DNA-coded message from the nucleus, leave the nucleus, travel to a ribosome and translate the code into a clear word message. If no mutations have occurred, the word message can be quickly verified as correctly decoded. Seven cell sites can be set up using the DNA and tRNA cards provided in the kit. Complete for 24 students working individually or in groups. Materials Included in Kit: DNA code strips, set 30, blue DNA code strips, set 30, gold DNA code strips, set 30, green DNA code strips, set 30, orange DNA code strips, set 30, purple DNA code strips, set 30, red DNA code strips, set 30, yellow RNA code cards, set 63, blue RNA code cards, set 63, gold RNA code cards, set 63, green RNA code cards, set 63, orange RNA code cards, set 63, purple RNA code cards, set 63, red RNA code cards, set 63, yellow	

BIO/616		Energy flow through the ecosystem biodegradability student investigation kit, 6 specially designed containers and a number of clips and cages to hold different materials in place. To include a quantity of metal, card and biodegradable plastic samples to experiment with. Container Dimensions: 145mm high x 12mm across corners, Substance classification student investigation kits. Physarum kit or similar to allow students follow through the life cycle observing the active plasmodial stage and the inactive sclerotial stage.	
BIO/617		Mendelian Genetics Kit Students work through a guided-inquiry activity to discover the principles of Mendelian genetics. The manipulative exercises allow students to visualize Mendel's laws of segregation and independent assortment. Students learn how probability plays a role in genetics as they simulate the process of gamete formation in a dihybrid cross using triangular-shaped dice. Additional genetics concepts, such as incomplete dominance and co-dominance, are also clarified. The kit is complete for 24 students working individually or in pairs. All materials are reusable. Materials Included in Kit: Bingo chips, blue, pkg/70 Bingo chips, green, pkg/70 Bingo chips, yellow, pkg/60 Cups, clear plastic, 9 oz, 15 Die, 4-sided polyhedral, 20 Labels, ½ round, letter "a", 60/sheet Labels, ½" round, letter "A", 60/sheet Nickels, pkg/100	

BIO/618		Cellular Respiration Student Inquiry Kit Plants create oxygen as a waste product of photosynthesis, but do they require oxygen to live? Does respiration occur in germinating seeds? Students investigate the amount of oxygen consumed by germinating mung bean seeds and control seeds. By recording and measuring any changes, students are able to calculate the respiration rate of those seedlings under specific conditions. Students to develop a testable hypothesis and then design an experiment that they can plan, discuss, evaluate, execute and justify. Materials Included in Kit: Manometer fluid, red, 100 mL Potassium hydroxide solution, 15%, 100 mL Barley seeds, 1 oz Bean-mung, seed, 4 oz Corn-sweet, seed, 4 oz Cotton balls, pkg/100 Cup, clear, 16 oz, 16 Fiberfill stuffing, 1 oz Hex nut, zinc plated steel, ¼"-20, 60 Pipet, Beral-type, graduated, 16 Syringe, disposable, 6 mL, 24 Tube, capillary, melting point, ends open 100 mm, pkg/100 A hot glue gun	
BIO/619		Protein synthesis Inquiry Kit Students assemble models to understand the roles of mRNA, tRNA, codons, anticodons, amino acids and ribosomes in the process of protein synthesis. Complete for 24 students working in pairs. Materials Included in Kit: Amino acid cards, set of 20, 15 MRNA strands, set of 15 Ribosome master sheet Transparent tape, matte finish TRNA cards, set of 20, 15	
BIO/620		Photosynthetic Chamber The Photosynthesis Chamber allows for fine control of water temperature and light exposure for aquatic photosynthesis experiments.	
BIO/621		Reproduction student investigation kits Cauliflower cloning kit to propagate small cauliflower plantlets from cauliflower curd. Each kit to supply enough materials for students to work in pairs.	

BIO/622		Evolution by natural selection inquiry kit 12 sets of Skeleton Cards 12 Fossil Chart 12 sets of five DNA Cards 1 Teacher's Guide with evolutionary Tree And comparison of Living Vertebrate Forelimbs	
BIO/623		DNA Model and DNA replication Kit The assembled models are flexible enough to twist into the double helix structure and can be “unzipped”-allowing the students to simulate the replication process. 12 assemblies are included and when completed they can all be linked together to form a DNA segment more than nine feet long. Components are durable and reusable. Kit includes: 12 complete sets of the following-four each of cytosine, thymine, adenine, and guanine (color-coded), eight hydrogen bonds, 16 phosphate groups, and 16 deoxyribose groups. Materials provided for 24 students working in pairs.	
BIO/624		Build a Brain kit A model of a brain with nine dissectible parts. Each of the brain halves can be further disassembled into frontal/parietal lobes, temporal/occipital lobes, brain stem, cerebellum and basilar artery. The result is a complete view of the brain's internal anatomy, structure, and functions. Dimensions are 19cm x 17cm x 18cm; furnished with display base and numbered key card.	
BIO/625		Amino Acid Advanced Kits. Models of the chemical properties of the 20 amino acid side chains using dynamic side chain models. dual-colouring schemes. To include a protein-folding activity/model.	
BIO/626		Constructing Model Viruses Despite their role in common infections, viruses appear to be alien life forms, with cage-like, helical and spaceship-like shapes. Explore the biological niche of viruses by building model viruses and investigating their biochemical make-up. Students construct two virus models using sturdy cardstock, one from each of the two main viral types, and relate the shape, structure and genome composition of viruses to their function. Using the information provided in the activity, they calculate the length of RNA or DNA in each virus and scale the genome proportionally to the size of the model. Inserting the model genome into the virus model completes the model and shows how simple, yet complex, a virus is. Complete for 30 students to make both types of viruses. Materials Included in Kit: Cloth stem wire, 18-gauge, 18", 30 Polio capsid sheet, set of 30 String, thin, ball of ¼ lb, 331 m TMV protein sheet, set of 30	

BIO/627		Antibodie 3D Model Kit A kit which allows students to make their own model of an antibody complete with antigen. A model to learn antibody structure and humoral immunity. Light chain, heavy chain, globular domains and antigen binding site are all modeled. Form an immune complex with all of the antibodies and antigens. Allows students to review tertiary and quaternary protein structure.	
BIO/628		Life Cycle of the Plant Model The life cycle of a flowering plant takes it from a seed to a fully grown plant and back to a seed again. Students assemble a model of each stage of a plant life cycle and identify what happens at each step. Students begin by making their models of a seed, seedling, tree, flower, bee, fruit and deer. Then they use them to learn about the germination, growth, flowering, pollination, fertilization, fruit formation and seed dispersal. The Model Making Kit includes enough materials for students to assemble up to 5 paper models working cooperatively.	
BIO/629		Lung 3D Model Kit Through the use of the hands-on model-making kit and the engaging process of assembly, students will learn about the structure and function of the lung. First, they'll assemble the model after which they can use it to study its components. The assembled model includes the larynx, trachea, bronchi and bronchioles. The kit should be suitable for assembly and study by either individual students or small groups. The Model Making Kit includes enough materials for students to assemble up to 5 paper models working cooperatively.	
BIO/630		Dual Sex Torso, 24 parts. The human torso model contains these removable parts and organs: 3-part head 2-part stomach - Female chest wall 2 lungs 2-part heart - Liver with gall bladder 4-part intestinal tract - Front half of kidney 4-part male genital insert 3-part female genital insert with fetus	

BIO/631		Kidney Function Model This kit allows students to create a functioning model of the kidney and observe how the model filters out wastes from simulated blood. Students build a model of the nephron, the filtering unit of the kidney, and investigate its ability to filter various substances out of simulated blood. The simulated urine is then analyzed using common urinalysis tests for color, clarity, pH, salt crystals and glucose. The results help students understand the role of the kidneys in maintaining chemical balance in the body and also teach them about the importance of urinalysis as a vital tool in diagnosing physiological health conditions. Kit includes enough chemicals and disposable equipment and supplies for 30 students working in pairs, along with reproducible student handouts and complete teachers notes. Specifications Materials Included in Kit: Benedict's qualitative solution, 200 mL Simulated blood A, 100 mL Simulated blood B, 100 mL Cup, clear plastic, 10 oz, 15 Dialysis tubing clamps, disposable, 30 Dialysis tubing, 10 feet Hydrion® 1–12 pH test strips Pipet, Beral-type, graduated, 30 Salt testing strips, bottle, 2 Tubes, culture, disposable, 13 x 100 mm, 15	
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BIO/632		Rate of transpiration in plants inquiry kit to include 12 sets for students to work in pairs: Plastic Tray Poly-Flat with Soil Bush Bean Seed Pipets (0.1 mL) Spray Bottle 12 × 24" Plastic Bags Tubing (1/8") Nut and Bolt Microtomes Paraffin Wax Glycerin, 50% Ethanol, 50% Toluidine Blue O Buffer Solution Petri Dishes (60 × 15 mm)* Forceps Petroleum Jelly Razor Blades Microscope Slides Coverslips Transfer Pipets Needed But Not Included: Ring Stands Clamps Fans Lamps Microscopes Thermometers	
BIO/633		Photosynthesis in Leaf Discs Inquiry Kit. 12 kits for students to work in pairs. Materials Included in Kit: Hydrochloric acid solution, 1 M, 100 mL students begin with a Baseline Activity to determine the rate of photosynthesis using disks of leaf tissue that are vacuum-infiltrated to replace intercellular air with liquid. Their observations provide the basis for the Opportunities for Inquiry section of the lab. Students to develop a testable hypothesis and then design an experiment that they can plan, discuss, evaluate, execute and finally justify to their peers. Soap solution with glycerin, 30 mL Sodium bicarbonate, 20 g	

BIO/634		Carbon Cycle Inquiry Kit The kit allows students to follow a single carbon atom throughout the cycle, students will gain insight into the ongoing process occurring around them. A simple roll of a specially designed colored die at each “carbon cycle station” determines the next step in the process: diffusing into water, being absorbed for photosynthesis or remaining in place. As they move from station to station, student awareness of the various mechanisms contributing to carbon’s movement increases. After traveling through the carbon cycle, students compare and contrast their experiences. Complete for 30 students working individually. Specifications: Materials Included in Kit: Carbon cycle dice (set/10), Carbon cycle station signs.	
		Summary: Equipment for Biology	
Section	Code	Description	Cost
Section 1	BIO/100-160	Basic Equipment	
Section 2	BIO/200-218	Anatomical Models and Charts	
Section 3	BIO/300-303	Dissecting Equipment – Biology	
Section 4	BIO/400-442	Prepared Microscope slides Biology	
Section 5	BIO/500-518	Chemicals and Reagents	
Section 6	BIO /600-634	Biology Inquiry Kits (Selection)	
		Total Cost	
		Standards, Specifications and Conditions	
		All Equipment shall be Durable and Safe for School Use.	
		Equipment wholly or partly funded from public funds is subject to Inspection by Officers from the Department of Education.	
		It is essential that tenders for equipment for School Use shall:	
		i) Comply fully with the specifications and be durable and safe for School Use.	
		ii) Comply fully with the standards as detailed and shall comply fully with European (EN) standards, both established and developing.	
		iii) Comply with European electrical standards and CE marking as appropriate.	

		iv) Fully comply with requirements in the Request for Tenders (RFT) document.	
		v) Be accompanied by documentation of sufficient detail for full evaluation.	
		vi) Include the completed and signed certificate of compliance.	
		<u>Award of a contract is conditional on the production of a current tax clearance certificate.</u> Failure to comply with the above may result in the tender being deemed null and void.	
		Certificate of Compliance with Standards, Specifications & Conditions:	
		I/We certify that the equipment tendered complies in all respects with the Standards, Specifications and other requirements/conditions specified in this tender document and in the Request for Tenders (RFT).	
		I/We hold a current tax clearance certificate.	
		Company:	
		Signed: Date:	
		Position:	
		Purposes of the list:	
		The equipment and quantity listed herein is primarily intended for use by the Department of Education for the purposes of funding new and upgraded laboratories and associated preparatory rooms in a school.	
		It can also be used by school leaders, teachers, and subject departments when managing their laboratory, as a reference to an indicative list of resources for the teaching and learning in the Leaving Certificate, Leaving Certificate Applied, Transition Year and Junior Cycle programmes, including Level 1 and Level 2 Learning Programmes. In line with the nature of curriculum design, including national specifications and locally designed curricula such as short courses, Transition Year modules and extra-curricular or co-curricular science activities, the list is neither prescriptive nor exhaustive for any one or all curricula.	

		School leaders and teachers have flexibility to consider how best to develop and manage the stock within the laboratories in accordance with their own school's context. These include the range of subjects, modules, short courses, and specialisms that might be introduced or are currently taught in the school, the demand placed on the laboratory and the layout of the laboratories and preparatory rooms throughout the school campus.	
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