XII Apostles RCPS – Science Curriculum Outcomes Document

Year Group	Area of Science	Topic	Substantive Outcomes	Disciplinary Outcomes	Vocabulary	Further Vocabulary
Year 1	Biology	**Animals including humans**	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	• To ask simple questions. • To say what might happen (predictions) - with support. • To decide whether a test is fair or unfair (fair testing). • To perform simple tests (including comparative) • To observe closely using senses and simple equipment. • To use simple equipment. • To take some simple measurements. • To gather and record data with support – for example using simple tables or tallys. • To make simple comparisons and groupings. • To begin noticing patterns with support.	Human, body, sense, part, label	All basic external body part names
	Scientific enquiry	**Seasonal changes**	• Observe changes across the four seasons and describe weather associated with the seasons and how day length varies.		Season, Autumn, Summer, Winter, Spring	Seasons, Autumn, Winter, Spring, Summer, Month, Weather, Temperature, Rainfall, Wind, direction, thermometer, Signs, Leaves, Day, length, Day / Night, Blossoms, Buds, flowers, plants, clothes, warm, cold, sun, cloud, snow, ice, thunder, lightning, storm, Safe, Safety, change
	Physics	**Everyday materials**	• Distinguish between an object and the material from which it is made. • Identify, name and describe the properties a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.		Object, material, same, different, properties	Materials, Wood, Plastic, Glass, Metal, Water, Rock, Object, Common, Same, Different, Describe, Properties, Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, See through, Test, Record, Investigation, Prediction, Predict, Watch, Results, Sort, Compare, Group

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	Biology	**Plants**	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including trees.	• To identify and classify – e.g. types of leaves. • To draw simple conclusions. Key vocabulary: Look closely Test Sort Group Question	Plant, roots, leaves, flower, stem/trunk	Bean, Plant, Water, Grow, Soil, Sunlight, Fruit, Wild, Weed, Common, Tally, Garden, Seeds, Flower, Magnifying glass, Roots, Leaves, Petals, Stem, Bulb, tree, evergreen, deciduous, trunk, flower
	Biology	**Animals including humans**	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals, including comparing the structure. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores		Carnivore, herbivore, omnivore, mammal, animal	Senses- Sight, See, Sound, Hear, Touch, Feel, Taste, Smell, Eye, Nose, Mouth, Tongue, Fingers, Ears, Fish, Amphibian, Reptiles, Birds, Mammals, Tail, Claw, Hoof, Paw, Flipper, Antlers, Horn, Tusks, Skin, Fur, Feathers, Scales, Wings, Beak, Gills, Fin, Tentacles, Carnivore, Herbivore, Omnivore
Year Group	**Topic**	**Concepts**	**Substantive Outcomes**	**Disciplinary Outcomes**	**Key Vocabulary**	**Further Vocabulary**
Year 2	Biology	**Living things and their habitats**	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.	• To ask simple questions based on simple knowledge. • To say what might happen (prediction). • To carry out a fair test by deciding if it is fair or unfair. • To perform simple tests (including comparative). • To make close observations using	Habitat Herbivore Carnivore Omnivore Living Non-living	Life process, Dead, Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition Conditions, Survival, Urban, Woodland, Pond, Coast, Coastal, Minibeast, Microhabitat, Enquiry Survey, Pictogram,

			• Identify and name a variety of plants and animals in their habitats, including micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	senses and simple equipment. • To take measurements using a range of simple equipment. • To record data / observations using tables and graphs. • To make comparisons e.g. materials. • To collect evidence through researching, to answer questions. • To identify, classify and sort objects into categories. • To notice patterns and relationships with support. • To interpret results to draw a conclusion. Key vocabulary: Predict Table Identify Research Observe		Research, Ocean, Tropical rainforest, Arctic, Desert, Adaptation, Adapt, Depend, Food chain, Predator, Prey
	Biology	**Animals including humans**	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		Adult Basic needs Life cycle Survive Mammals	Birds, Reptiles, Amphibians, Womb, Egg, Chick, Hatching, Tadpole, Baby, Toddler, Child, Teenager, Elderly, Water, Food, Air, Lungs, Shelter, Gills, Exercise Physical activity, Heart, Muscles, Clean, Hygiene, Germs,
	Biology	**Plants**	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.		Root Stem Seed Bulb Germinate	Leaves, Flower, Trunk, Branches, Observation, Diagram, Seed, Bulb, Germinate, Scales, Bud, Sprout, Compare, Comparative test, Life cycle, Life process,

						Seedling, Prediction, Grow, Table, Bar chart
	Physics	**Everyday materials and their properties**	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		Material Transparent Opaque Waterproof Absorbent	Identify, Wood, Plastic, Glass, Metal, Rock, Brick, Paper, Cardboard, Uses, Properties, Hard / Soft, Shiny /Dull, Stretchy, Stiff / Bendy Rough / Smooth, Safe, Unusual, Compare, Suitability Purpose, Recycle Reuse, Biodegradable, Environment, Landfill Site, Melted, Greenhouse gasses, Change, Squash, Bend, Twist, Stretch
Year Group	**Topic**	**Concepts**	**Substantive Outcomes**	**Disciplinary Outcomes**	**Key Vocabulary**	**Further Vocabulary**
Year 3	Rocks	Chemistry	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	• To ask questions and suggest how to test them. • To make predictions.	Rocks, Igneous, Sedimentary, Metamorphic, Soil	Formation, Form, Volcano, Sea / Seabed, Changes, Compare, Types, Natural, Human-made, Group,

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			• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.	• To plan and carry out a fair test with support. • To carry out simple tests (including comparative). • To make systematic and careful observations. • To make simple comparisons. • To group and classify. • To use a range of appropriate equipment • To take accurate measurements using a range of equipment. • To record findings using simple scientific language. • To record results – for example using tables and bar charts • To present findings/data in a variety of ways. • To make generalisations and identify simple patterns. • To explain patterns that have been identified. • To draw simple conclusions.		Properties, Permeable, Impermeable, Hard, Soft, Durable, Buoyancy, Split, Fossil, Fossilisation, Bones, Chemicals, Change, Layers, Pressure, Footprints, Mary Anning, Ichthyosaur, Dinosaurs, Jurassic, Seaside, Beach, Organic matter, Top / Sub soil, Base rock, Parent material, compact.
	Animals including Humans	Biology	• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.		Animal, human, nutrition, skeleton, muscle	Skull, Cranium, Rib, Costal, Rib cage, Thoracic cage, Collar bone,Clavicle, Ankle, Talus, Funny bone, Upper arm, Humerus, Femur, Tibia, Fibula, Phalanges, Metacarpals, Scapular, Mandible, Wrist, Carpals, Pelvis, Hips, Patella, Knee, Metatarsals, Radium, Ulna, Sternum, Plants, Animals, Humans, Food, Nutrition, Food

				Key vocabulary: Bar chart Pattern spotting Conclusion Fair test Compare		groups, Nutrients, Vitamins, Minerals, Protein, Carbohydrates, Fibre, Water, Fats, Repair, Digest, Saturated, fats, Unsaturated fats, Carnivores, Omnivores, Herbivores, Skeleton, Endoskeleton, Exoskeleton, Hydrostatic skeleton, Invertebrate, Vertebrate, Protect, Move, Movement, Support, Joints, Hinge joint, Ball and socket, Gliding joint, Muscles, Muscle pairs, Contract, Relax, Contracted, Relaxed, Voluntary, Involuntary
	Forces and Magnets	Physics	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of		Force, Push, Pull, Friction, Magnet	Surface, Magnetic, Attract, Magnetic field, Pole, North, South, Repel, Compass, Direction

			whether they are attracted to a magnet, and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.			
	Plants	Biology	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.		Transport, nutrients, pollination, seed dispersal, seed formation	Roots, Stem, Trunk, Leaves, Flowers, Anchor, Nutrients, Transport, Seeds, Carbon dioxide, Sunlight, Absorb, Air, Light, Water, Soil, Investigate, Explore, Predict, Observe, Conclude, Evaporate, Compare, Temperature, Petals, Sepal, Stamen, Anther, Filament, Stigma, Style, Ovary, Ovule, Pollen tube, Pollen, Pollination, Fertilisation, Dispersal, Germination, Life cycle, Stages
	Light	Physics	• Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces.		Reflect, surfaces, opaque, transparent, translucent	Light, Source, Dark, Reflect, See, Illuminate, Visible, Reflect, Mirror, Smooth, Shiny, Rays,

			• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.			Rough, Scatter, Reverse, Beam, Sun, Beneficia, Dangerous, Glare, Bright, Damage, UV lights, UV rating, Spectrum, Pupil, Retina, Protect, Direct, Travel, Straight, Opaque, Translucent, Transparent, Block, Shadow, Observe, Size, Distance.
Year Group	**Topic**	**Concepts**	**Substantive Outcomes**	**Disciplinary Outcomes**	**Key Vocabulary**	**Further Vocabulary**
Year 4	Physics	**States of matter**	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	• To ask and answer scientific questions. • To suggest types of scientific enquiry to answer said questions. • To make predictions using some scientific knowledge. • To plan and carry out a fair test.	Solid, Liquid, Gas, Particles, State	Material, Properties, Carbon dioxide, Matter, Weight, Mass Melt, Freeze, Thermometer, Temperature, Condense, Evaporate Process, Water, Ice Water vapour, Dry Energy, Heat, Condensation, Precipitation, Collection, Clouds

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				• To plan and perform simple tests (including comparative). • To explain why measurements should be repeated to ensure accuracy. • To suggest and use a range of equipment. • To make careful, systematic and relevant observations. • To make relevant comparisons. • To take accurate measurements using a wide range of equipment. • To confidently record findings using scientific language. • To record data – e.g. using tables and line graphs. • To present findings/data in a variety of ways. • To identify simple trends and patterns. • To suggest explanations for patterns spotted.		Rain, Sleet, Hail, Snow
	Physics	**Sound**	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases. • Identify common appliances that run on electricity.		Sound Vibration Volume Pitch Soundwave	Amplitude, Loud, Quiet, Travel, Ear High, Low, Distance, Telephone Transmit, Soundproof Absorb
	Physical	**Electricity**	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.		Electricity Conductor / Insulator Mains / Battery Appliance Complete / incomplete Circuit	Electricity, Charge, Flow, Current, Generate, Power, Energy source, Renewable, Non-renewable, Safety, Danger, Precautions, Electrical, Cells, Battery holder,

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			• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.	• To make comparisons in order to group. • To draw conclusions and identify whether it supports a prediction. • To group, sort and classify. • To gather research and present findings.		Crocodile clips, Wires, Bulb, Bulb holder, Test, Materials, Switch, Buzzer, Motor, Switches: Slide, Push button, Pull, Selector, Key, Paddle, Toggle, Dimmer
	Biology	**Living things and their habitats**	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.	Key vocabulary: Classify Accurate measurements Record Graph Repeated results	Organism Vertebrates Invertebrates Habitat Endangered	Sort, Group, Criteria, Venn Diagram, Carrol, Diagram, Variation, Classification, Specimen, Thorax, Abdomen, Antenna, Segmented, Wing case, Characteristic, Key, Environment, Wildlife, Change, Danger, Extinct, Conserve, Conservation
	Biology	**Animals including humans**	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.		Digestion / digest All digestive system parts Different types of teeth	Mouth, Tongue, Teeth, Oesophagus, Stomach, Duodenum, Small intestine, Large intestine, Pancreas, Liver, Rectum, Anus Salivary glands, Gallbladder, Digestion, Digest,

						Digestive system, Functions, Glands, Enzymes, Acid, Incisors, Canines, Molars, Premolars, Humans, Animals Decay, Erode, Erosion
Year Group	**Topic**	**Concepts**	**Substantive Outcomes**	**Disciplinary Outcomes**	**Key Vocabulary**	**Further Vocabulary**
Year 5	**Physics**	**Properties of materials**	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	• To ask questions and develop a line of enquiry based on knowledge of the real world. • To make predictions based on scientific knowledge and understanding. • To plan and carry out a fair test using knowledge and understanding. • To plan and carry out comparative tests. • To group, sort and classify. • To recognise and control variables.	Conductor, Insulator, Soluble. Permeable, Particles	Material, Property, Magnetic, Hard, Transparent, Flexible, Thermal, Heat, Variable, Electric, Resistance, Circuit, Dissolve, Insoluble, Liquid, Solid, Gas, Separate, Mixture, Solution, Suspension, Evaporate, Filter, Sieve, Magnet, Attract, Reversible, Irreversible, Physical, Chemical, Reaction, Reactant, Product

			• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	• To take accurate and precise measurements using scientific equipment. • To make careful, systematic and relevant observations. • To repeat results and evaluate these, giving reasons as to why this is done. • To solve problems involving calculation and conversion. • To carry out research into phenomena. • To record data and results in a wide variety of ways with increasing complexity. • To write conclusions about results indicating whether these match predictions made. • To find patterns in data whilst interpreting. • To make predictions from patterns. • To begin to evaluate repeated results.		
	Physics	**Forces**	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers,		Friction, Air Resistance, Gravity, Mass, Water Resistance	Earth, Force, Push, Pull, Effects, Surfaces, Mechanisms, Lever, Pulley, Gear, Cog, Machine, Isaac Newton, Newton meter, Weight, Galileo Galilei, Prediction Investigation, Measure, Observe Variables, Results, Streamlined

			pulleys and gears, allow a smaller force to have a greater effect.	Key vocabulary: Hypothesis Controlled variable Dependent variable Independent variable Enquiry		
	Biology	**Living things and their habitats**	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals.		Pollination, Metamorphosis, Cycle, Fertilisation, Gestation	Ovule, Fusion, Cuttings, Roots, Gamete, Male, Female, Ovum, Fertilise, Pregnancy, Young, Family tree, Chimpanzee, Jane Goodall, Life cycle, Extinct, Endangered, Amphibian, Insect, Transform, Larvae, Pupa, Nymph, Egg, Yolk, Albumen, Embryo
	Physics	**Earth and space**	• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.		Planet, Orbit, Axis, Star, Rotate	Earth, Sun, Moon, Sphere, Circle, Evidence, Flat, Round, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, Celestial, Dwarf, Heliocentric, Geocentric, Day, Night, Shadow, Time, Countries, Daylight, Distance, Light, Dark

	Biology	**Animals including humans (RSE)** **This topic will be taught dependent on the whole school policy for RSE.**	• Describe the changes as humans develop to old age.		Puberty, Menstruation, Adolescence, Sperm, Egg	Height, Mass, Changes, Breasts, Pubic hair, Hips, Facial hair, Body hair, Genitals, Muscular development, Decreases, Penis, Vagina, Foetus, Baby, Toddler, Child, Teenager, Adult, Old age, Development, Growth (rate), Human, Infancy, Childhood, Adulthood, Prenatal, Data, Tables, Bar graph, Line graph
Year Group	**Topic**	**Concepts**	**Substantive Outcomes**	**Disciplinary Outcomes**	**Key Vocab**	**Further Vocabulary**
Year 6	**Biology**	**Living things and their habitats**	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics.	• To ask questions and develop a line of enquiry based on knowledge of the real world. • To turn questions into a form that can be tested. • To make predictions based on scientific knowledge and understanding.	Classification Vertebrates Invertebrates Microorganisms Carl Linnaeus	Classify, Sort, Group, Similarities, Differences, Compare, Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species, Microorganisms, Fungus, Bacteria, Virus, Microscopic, DNA, Organism, Species, Mammals,

				• To plan and carry out fair and comparative investigations. • To take repeat readings and understand why this is done. • To recognise and decide on the different variables. • To choose and use appropriate scientific equipment. • To make relevant, systematic and careful observations. • To group, sort and classify. • To take accurate and precise measurements using chosen appropriate equipment. • To solve increasingly difficult problems including calculation and conversions. • To carry out research into scientific evidence and phenomena, suggesting new ideas. • To record results and data with increasingly complexity in a wide range of ways including graphs and charts.		Birds, Amphibians, Reptiles, Fish, Insects, Arachnids, Molluscs, Crustaceans, Annelids
	Biology	**Evolution and inheritance**	• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.		Inheritance Characteristics Evolution Environment Adaptation	Animals, Humans, Parent, Offspring, Similarities, Variation, Differences, Habitat, DNA, Genes, Mutation, Theory, Fossil, Ancestor, Traits, Common ancestor, Apes, Mammals, Family, Genus, Species, Taxonomy, Selective breeding, Inherited traits, Genetic
	Physics	**Electricity**	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.		Voltage Resistance Parallel Circuit Series Circuit Circuit Diagram	Electricity, Thomas Edison, Battery, Cell, Bulb, Wires, Switch, Motor, Buzzer, C, Brightness, Loudness, Increase, Decrease, Investigation, Plan, Fair test, Comparative test, Practical enquiry, Length, Parallel Circuit, Series Circuit

			• Use recognised symbols when representing a simple circuit in a diagram.	• To draw conclusions which inform future investigations. • To confidently make comparisons. • To identify patterns in results including results that do not fit the pattern. • To independently plan scientific enquiries that include fair testing. All previously taught vocabulary		
	Physics	**Light**	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.		Reflection Photon Incidence Source Periscope	Light, Source, Travel, Straight line, Waves, Ray, Beam, Wave, Photon, Energy, Vacuum, Reflection, Angle, Incidence, Normal, Periscope, Refraction, Bend, Lens, Focus, Focal point, Transport, Refract, Visible, Transparent, Absorb
	Biology	**Animals including Humans**	• Identify and name the main parts of the human circulatory system and describe the heart's functions, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.		Circulatory System Atrium Ventricle Artery Vein	Circulation, Organs, Heart, Blood, Blood vessels, Aorta, Pulmonary, Superior vena cava, Inferior, Pulmonic, Aortic valve, Capillary, Lungs, Trachea, Bronchus, Bronchiole, Diaphragms, Air sacs,

			• Describe the ways in which nutrients and water are transported within animals, including humans.			Alveoli, Investigation, Intercostals muscles, Ribs, Healthy, Carbohydrates