Welwyn St. Mary's Progression Ladder for Science 1

	Animals, including humans	Living things and their habitats	Plants
Reception	Identify something as an animal Name some places animals live Identify and locate parts of their body Identify and locate parts of animals bodies Use their observations to describe humans and other animals Name a very limited range of food Can identify types of exercise Name baby, child, adult and the young of some other animals	See 'Animals including humans'	Identify something as a plant Name some common plants, identify leaf, root, stem and flower Recognise that plants need water to grow Name some places plants live Identify the seeds in a fruit
Year 1	**Different Animals** Identify and name a selection of animals Identify and sort animals into different groups Name the different groups of animals **Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals** Make observations of animals Know that animals eat different types of food Identify the food of some common animals Recall and use the words: carnivore, herbivore and omnivore **Identify and name a variety of common animals that are carnivores, herbivores and omnivores** Group animals that belong to: carnivores, herbivores and omnivores Use their observations to point out differences between humans and other animals and between animals and non-living things **Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)** Identify and locate the sense organs Use senses to describe textures, sounds and smells Compare differences in texture, sounds and smells Name and locate the basic parts of the human body Draw and label a simple body outline Describe differences between the different animal groups (e.g. birds have feathers but mammals have fur) Identify animals which are more likely to be seen in different seasons Explain why some animals are only seen at night	**Seasonal changes** **Observe changes across the four seasons** Identify what to observe Use descriptive words, photos and pictures to record changes Collect evidence of changes (e.g. leaves, seeds, flowers) Name the four seasons Recall simple changes associated with each season **Observe and name types of weather (e.g. rain, sun, wind, clouds)** Observe and describe weather associated with the seasons and how day length varies Identify what to measure about the weather Use prepared tables and charts to record data Use secondary data to describe weather in another setting Explain why animals are easier to spot at different times of year (e.g. migrating birds, hibernating animals)	**In the Garden** Make observations of plants, including flowers and vegetables they have planted Identify the leaf, root, stem and flower of a plant Identify the trunk, branch, roots and leaves of a tree Know that plants produce seeds Identify differences between plants **Identify and describe the basic structure of a variety of common flowering plants, including trees** Name some common plants Name some plants that live in the garden Name some plants that live in the wild Name some trees in the local environment Recognise that different plants live in the local environment Use simple identification guides to name plants in the local environment **Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees** *Compare and contrast different plants* *Sequence pictures of how plants changes over time* *Describe how deciduous trees changes throughout the year* *Explain why some plants are only seen at certain times of the year*

Year 2	**<u>Growth and Survival</u>** Recognise that animals produce young **Notice that animals, including humans, have offspring which grow into adults** Recognise changes that take place as animals get older Explain that adult animals no longer grow Describe some differences they observe between babies and toddler Make comparisons of the differences they observe between babies and toddlers Identify the offspring of a selection of different animals Use evidence to show that adult animals no longer grow Use evidence to show that children of the same age are not all the same size Use evidence to show that older children are generally taller than younger children **Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)** Explain how to look after a pet describing what it needs to survive **Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene** Recognise that exercise is important Name some types of food Identify some types of food that make up their diet and name some examples of each Recognise that an adequate diet and exercise are necessary for them to grow and stay healthy Describe some of the types of food that they eat	**<u>Habitats</u>** With help, use keys to identify some animals and plants Recognise that different plants live in the local environment Identify some local habitats Describe the simple features of habitats Recognise a microhabitat as a small habitat (e.g. leaf litter, woodlice under stones) Describe some microhabitats Identify and name a variety of plants and animals in their habitats, including micro- habitats Recognise similarities and differences between plants and animals Explore and compare the differences between things that are living, dead, and things that have never been alive Explain differences between living and non-living things in terms of characteristics such as movement and growth Use their observations to point out differences between animals, plants and non-living things Recognise that plants provide food for humans and other animals within an environment Construct a simple food chain (e.g. grass, cow, human) 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 Name a few of the organisms that live in a particular habitat Suggest reasons why different plants and animals are found in the different environments **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** *Compare animals found in familiar habitats with unfamiliar habitats* *Compare plants found in familiar habitats with unfamiliar habitats* *Use different factors to compare a range of habitats (e.g. water, light, temperature)*	**<u>Growing Plants</u>** Know that flowering plants produce seeds which grow into new plants Know that some plants have bulbs from which they grow Make observations of plants over time Explore how plants from seeds and bulbs grow Describe what happens to bulbs during the plant cycle as they grow Describe what happens to a seed as it grows and develops Describe what they observe as new plants grow **Observe and describe how seeds and bulbs grow into mature plants** *Compare the plant cycle for a plant from a seed with that from a bulb* Suggest how to find out about what plants need in order to grow well Recognise that plants are living and need water, light and warmth to grow Describe differences between plants grown in the light and in the dark **Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy** *Explain how to look after a variety of plants* *Know that a seed and bulb both contain everything a plant needs to grow* *Explain that seeds and bulbs do not need light to germinate and identify how this is different to the needs of a plant* *Explain how plants in the desert survive with little water and plants in the rainforest survive with little light*
Year 3	**<u>Healthy Eating and Healthy Bodies</u>** Identify some foods needed for a healthy and varied diet Name the components of a healthy and varied diet Describe how their diet is balanced **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**		**<u>Investigating Plants</u>** Identify parts of flowering plants **Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers** Describe why healthy roots and a healthy stem are needed for plants to grow

	Describe the role of different food groups *Compare and contrast diets of animals including pets* *Describe an adequate and varied diet for humans, recognising that there are many ways of achieving this* Know they have bones and muscles in their body State that they and other animals have skeletons Identify animals that do not have an internal skeleton (invertebrates) Group animals with and without an internal skeleton *Describe some advantages of having an internal skeleton over no skeleton or an exoskeleton* Describe some observable characteristics of bones Describe the main functions of their skeletons State that movement depends on both skeleton and muscles State that when one muscle contracts another relaxes **Identify that humans and some other animals have skeletons and muscles for support, protection and movement** Recognise that their skeletons grow as they grow *Describe problems associated with broken bones or bones diseases*		Recognise that the leaves of a plant are associated with healthy growth and more specifically nutrition Recognise that plants need light, water and warmth and healthy leaves, roots and stems in order to grow well Know that water travels from the roots up the stem **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** Know that plants make their own food Know that fertilisers contain minerals Understand that plants absorb minerals from the soil (Teacher Note: plants create their own food using sunlight, water and carbon dioxide, they do not absorb food from the soil) Describe how changes to light and fertiliser affect plant growth *Explain that differences in plant growth are due to the amount of light and/or water* **Investigate the way in which water is transported within plants** Describe how the stem has a role in support and nutrition (transport of water) *Explain why healthy roots and a healthy stem are needed for plants to grow* **Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal** Describe why plants need flowers Sequence pictures to show the life cycle of a plant Describe how pollen and seeds are dispersed Explain the role of bees and insects in pollination *Describe the processes of pollination, seed formation and seed dispersal* *Compare the roots of different plants (e.g. desert plants or rainforest trees* *(Teacher Note: rainforest trees have very shallow roots as the quality of the soil is poor and most of the nutrients are near the surface*
Year 4	**<u>Teeth and Digestion</u>** Identify a wider range of body parts, including some internal organs (large intestine, small intestine, brain, lungs, heart, stomach, oesophagus) Locate and name the different organs in the digestive system Describe the role of each organ in the digestive system	**<u>Classification and Interdependence</u>** **Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment** **Recognise that living things can be grouped in a variety of ways**	

	Describe the simple functions of the basic parts of the digestive system in humans *Explain why food needs to be broken down* Recognise they need to take care of their teeth Name the different types of teeth Describe the role of each type of teeth in digestion **Identify the different types of teeth in humans and their simple functions** Explain how they should look after their teeth and recognise why they need to do so *Explain why dentists are concerned about the amount of sugar children have* State that animals have different diets and may have different kinds of teeth *Explain how fossilised teeth give us clues about an animals' diet* *Explain why the teeth of certain types of animals need to be different* *Explain why humans do not have a full set of adult teeth at birth*	Explore ways of grouping living things including animals and plants (flowering and non-flowering) Recognise that animals can be grouped into vertebrates and invertebrates Describe some of the characteristics of the vertebrate (fish, mammals, amphibians, reptiles and birds) groups (e.g. warm-blooded, have fur, lay eggs) Group animals into vertebrate (fish, mammals, amphibians, reptiles and birds) and invertebrates groups (snails, slugs, spiders, worms and insects) *Explain why some animals are hard to classify (e.g. platypus, echidna, bat, flightless birds)* Identify that some animals feed on other animals and some on plants Represent feeding relationships with simple food chains Recognise that a food chain must always start with a green plant (a producer) Represent feeding relationships within a habitat with food chains beginning with a green plant which 'produces' food for the other organisms Recognise that green plants are the ultimate source of food for all animals Use and understand the terms: producer, predator and prey **Construct and interpret a variety of food chains, identifying producers, predators and prey** (Teacher Note: statement moved from NC 'Animals including humans' to improve progression within topics) *Use food chains to predict what might happen to the numbers of an organism if there are suddenly more predators or less prey*	
Year 5	**<u>Life Cycles</u>** **Describe the changes as humans develop to old age** Identify ways in which the appearance of humans changes as they get older Identify some characteristics that will not change with age Recognise stages in growth and development of humans including puberty	**<u>Life Cycles</u>** Sequence the life cycles of a variety of plants and animals Recognise the similarities in the life cycles of plants, animals and humans ***Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird*** Name the parts of a flower Describe the functions of some parts of a flower Describe the main functions of parts of a plant involved in reproduction Describe the processes of sexual and asexual reproduction in plants Name the parts of the human reproductive system Describe the simple functions of parts of the human reproductive system	

		Describe the life process of reproduction in some plants and animals Compare methods of seed dispersal Know that most animals reproduce by sexual reproduction *Compare internal and external fertilisation in animals* *Explain that living things need to reproduce if the species is to survive* *Compare gestation periods (pregnancy) of different animals* *Explain what is unusual about the life cycle of a kangaroo or koala*	
Year 6	**<u>Humans and Health</u>** Identify and name the parts of the circulatory system Know that the heart is made of muscle Describe what the heart and blood vessels do **Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood** State how to measure pulse rate Recognise that pulse rate is a measure of how fast the heart is beating Discover that during exercise the heart beats faster to take blood more rapidly to the muscles Make careful measurements of pulse rate Describe the different functions of the blood (e.g. transporting and protecting) Know that the blood comes from the heart in arteries and returns to the heart in veins Know that blood carries oxygen and other essential materials around the body Explain how ideas about the circulatory system have changed over time Identify some of the harmful effects of smoking **Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans** Recognise that care needs to be taken with medicines and that they can be dangerous Give several reasons why it is sometimes necessary to take medicines Identify some harmful effects of drugs Identify food as a fuel for the body Name the major groups into which food is categorised and identify sources for each group Describe the main function of organs of the human body	**<u>Classification</u>** Recognise that there is a wide variety of living things Understand why classification is important Identify vertebrates and invertebrates Name and describe the five vertebrate groups **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** *Devise own keys to classify organisms and objects* **Give reasons for classifying plants and animals based on specific characteristics** *Describe early ideas about classification (e.g. Aristotle)* Understand there are living things that are too small to be seen and these can affect our lives Recognise that there are many micro-organisms, some which can cause illness or decay Recognise that there are useful micro-organisms which can be used in food production Describe how micro-organisms feed, grow and reproduce like other organisms Describe evidence, from investigations, that yeast is living Explain how micro-organisms can move from one food source to another or from one animal to another *Compare the rate of reproduction in microorganisms to other animals* *Describe how the development of the microscope has contributed to our understanding of microorganisms* *Describe how ideas about hygiene have changed over time (e.g. Semmelweis)* **<u>Evolution and Inheritance</u>** Recognise variation in different species (e.g. dogs, horses)	

	Explain the effect of diet on particular organs of the body/aspects of health Explain the effect of exercise on particular organs of the body/aspects of health Explain how ideas about smoking have changed over time Explain why advice on diet changes (e.g. butter vs margarine, five a day, tax on sugary drinks)	Recognise that offspring have some of the features of their parents **Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents** Recognise that animals have to compete for food Describe how animals avoid predators (e.g. speed, camouflage) Describe how animals and plants are adapted to their environments **Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution** Explain how being well adapted to an environment means an organism is more likely to survive *Explain that animals which are better adapted to an environment are more likely to survive, reproduce and pass on characteristics to their offspring meaning the animal species will gradually change and evolve (giraffe with the tallest neck could reach more leaves to feed on)* **Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago** Explain why we do not have a complete fossil record *Describe the story of the peppered moth and how this provides evidence for natural selection* *Explain how antibiotic resistant bacteria provide evidence for natural selection* *Explain why we can see evidence for natural selection in fast reproducing organisms like bacteria (e.g. antibiotic resistant bacteria and pesticide resistant insects)* *Explain how the introduction of a new species to an isolated environment can effect native species (e.g. Dodo, Kakapo or Stephen's island wren)* *Compare the ideas of Darwin and Lamarck on evolution*	