# All Linnean Learning Resources

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 Early Years  Primary  Secondary  Tertiary

**A Guide to Linnaeus' Sexual System for Plants (download link)**

Carl Linnaeus is famous for several things; one of which is his scandalous system for classifying plants: the Sexual System. He grouped plants by the number of pistils and stamens they had, which may seem not that controversial, but he went on to describe them as marital relationships ("Twenty husbands or more in the same bed with one woman").

This guide gives an overview of the 24 groups that Carl made, with illustrations and translations for your enjoyment. It also provides insight into the way we classify plants today.

**A portrait of Linnaeus (download link)**

Students are asked to collect 50 pieces of information and produce a portrait of the life, career and contributions to science of Carl Linnaeus.

They can use any combination of media for their presentation which should last about 10 minutes.

**Battle of the Beaks (download link)**

This practical activity explores beak adaptations in bird populations and looks at the way in which variation in beak shape is related to the available food sources within an environment.

Students simulate bird feeding by using a 'beak' to collect food and place it into a stomach. There are three different beak shapes and three food types to choose from (though you can add lots more!). Discussion points are provided to encourage evaluation of the scientific method, together with extension ideas. The activity can also be used to illustrate generalist versus specialist feeding strategies.

**Biomedia Meltdown Activity Book (download link)**

The BioMedia Meltdown Project was created to encourage students to take a broader interest in biology by demonstrating to them that a wide range of skills and passions are all of significant value to science and scientific careers. The project is aimed at Key Stage 3 students of all abilities.

This activity book has been developed to help educators teach aspects of the biology national curriculum through creative media, with each activity addressing a different topic via an artistic hands-on approach. The activities are divided into two types; starter activities will help introduce students to a topic, whereas main activities will explore a topic in much greater detail.

Did you know you can order this A4 book to your school for free? Just email learning@linnean.org

 Early Years  Primary  Secondary  Tertiary

**Brilliant Barnacles (download link)**

Brilliant Barnacles is one of three 'Darwin-Inspired' modules for post-16s, which include lessonplans, worksheets, activities and video interviews. Find out more here: https://www.linnean.org/darwin-inspired-learning

In this module students will study barnacle morphology, life histories and life styles as Darwin did. He based his classification and search for a common ancestor upon his studies. Recent work using genetic and molecular evidence and scanning electron microscopy shows how some of the key difficulties in drawing the phylogenetic tree of barnacles have been resolved very recently by systematists and how some new questions have been raised.

Artemia, the brine shrimp, is used to explore the body plan of arthropod crustaceans and to understand how the taxonomic hierarchy is worked out through simple microscope work.

This resources allows students to:

- Develop an understanding of the relationship of taxonomy to phylogeny.
- Understand that phylogenetic relationships are based on theories and depend on the data sources used and that new phylogenies develop as new sources of evidence and analysis are available.
- Apply practical skills to use a light microscope and prepare slides.
- Interpret scanning electron micrographs and know their limitations.
- Develop an appreciation of how scientists have built on Darwin's work using DNA evidence.
- Appreciate the significance of Darwin's work on barnacles and how it affected his theory of evolution.
- Observe Artemia, the brine shrimp, and understand the arthropod body plan, structure and life history.
- Understand how Artemia is similar to the barnacle.
- Develop confidence in naming organisms and familiarise themselves with binomial nomenclature.

**Careers if you love nature – COMING SOON**

This short booklet is designed for young people who are starting to think about future careers. The career profiles are broad and not only limited to a scientific disciplines.

The booklet is accompanied by a wealth of information on our website at www.linnean.org/ilovenaturecareers

Early Years Primary Secondary Tertiary

**Classification Activity Pack (download link)**

This Activity Pack is one of five Discovery Kit Activity Packs, designed for primary schools. Discovery Kits are full of resources and are free to hire. Visit www.linnean.org/discovery-kits to find out more information.

**Creating a year of taxonomy (download link)**

This activity challenges students to produce a calendar for the Linnean Society. The calendar should cover:

- Principles and importance of classification and taxonomy
- Understanding the importance of Linnaeus' contribution to science
- Understanding the importance of the Linnaean collection and the role of the Linnean Society

**Discovering DNA (download link)**

This resource provides both background information and a practical activity to help students to think about the structure of DNA, DNA replication, genetic engineering, cloning, genetic testing and DNA fingerprinting.

The activities for students include a practical activity where students extract their own DNA from cheek epithelial cells or plant cells, a research task about the history of DNA and building a model of DNA.

**Evolution Activity Pack (download link)**

This Activity Pack is one of five Discovery Kit Activity Packs, designed for primary schools. Discovery Kits are full of resources and are free to hire. Visit www.linnean.org/discovery-kits to find out more information.

**Famous Scientists Fact Sheets (Linnaeus, Darwin, Wallace, Hooker) (download link)**

These fact sheets give a quick overview of four prominent scientists who have helped shape our understanding of the natural world.

**Famous Scientists Posters (Linnaeus, Darwin, Wallace, Anning) (download link)**

These posters give a bright overview of four prominent scientists who have helped shape our understanding of the natural world.

Did you know you can also order these A1 posters to your school for free? Just email learning@linnean.org

**Funky Pigeons (download link)**

Funky Pigeons is one of three 'Darwin-Inspired' modules for post-16s, which include lessonplans, worksheets, activities and video interviews. Find out more here: https://www.linnean.org/darwin-inspired-learning

This module takes a look at Darwin's pigeon breeding experiments and how they revealed the biology of inheritance and selection.

Students will:

- Compare natural and artificial selection and be able to critically explain the difference between the two.
- Explore how Darwin used selective breeding to develop his model of species change.
- Investigate Mendelian genetics in the context of Darwin's pigeon breeding experiments and solve genetic problems.
- Investigate the effect of interactions between genetic loci in the context of Darwin's breeding experiments and solve genetic problems involving epistasis.
- Apply a statistical test to genetic data.
- Investigate the contribution of human activity on selection pressures.
- Investigate the role that geographical and reproductive isolation may play in the development of a new species and critically evaluate authentic data supporting speciation.
- Explain the effect inbreeding, immigration and genetic drift may have on gene allele frequencies.

**Habitats Activity Pack (download link)**

This Activity Pack is one of five Discovery Kit Activity Packs, designed for primary schools. Discovery Kits are full of resources and are free to hire. Visit www.linnean.org/discovery-kits to find out more information.

**How Rich is Your Habitat? (download link)**

This practical activity uses a simple and convenient model of the real environment in order to demonstrate the principles of random sampling and how to estimate biodiversity. Students use different coloured sugar balls to represent different species in order to put Simpson's Diversity Index to the test, which takes into account both species richness and species evenness.

**Life Cycles Activity Pack (download link)**

This Activity Pack is one of five Discovery Kit Activity Packs, designed for primary schools. Discovery Kits are full of resources and are free to hire. Visit www.linnean.org/discovery-kits to find out more information.

**Linnaeus at Home – COMING SOON**

This booklet is designed to help parents and educators explore the natural world at home just like Carl Linnaeus did. It offers simple ideas and tools to increase confidence in nature, discover more and nurture curiosity in little ones.

**Linnaeus' New Portrait Competition (download link)**

This is an annual competition for 8-11 year olds to create a new portrait of Carl Linnaeus to be hung in the Linnean Society of London for up to a year.

Carl Linnaeus was a world-famous biologist, a pioneer of classification, who came up with the naming system for all living things.

We are looking for a special piece of art that captures the essence of Linnaeus.

The end product must be flat, in a standard paper size (minimum A4) and portrait (i.e. not landscape). You can be as inventive as you like - digital art, collages, drawings, paintings... anything! You could even take a photo of a 3D object and enter that, although we cannot accept video format.

For more information, visit:

www.linnean.org/newportrait

**Linnean Society Video Activity Sheets (download link)**

The Curious Cases of Carl Linnaeus are designed for primary level (though enjoyable and educational for everyone). They tell funny stories about Linnaeus' journey of scientific exploration, and cover a variety of topics including classification, plants, habitats and evolution.

These activity sheets offer a simple accompaniment to each video in the series.

**Making Natural Paints (download link)**

We provide recipes to make Blue, Green, Purple, Red and Yellow dyes from natural products. This resource also contains fact sheets on the ingredients used.

**Murderous Plants (download link)**

Murderous Plants is one of three 'Darwin-Inspired' modules for post-16s, which include lessonplans, worksheets, activities and video interviews. Find out more here: https://www.linnean.org/darwin-inspired-learning

This module uses carnivorous plants and their habitats as a stepping-stone for exploring broader ecological concepts, in particular the structure of an ecosystem and predator-prey relationships. Students will engage in Darwin inspired activities with living specimens through inquiry-based learning.

Contemporary scientists, such as Aaron Ellison at Harvard University, continue to research these enigmatic plants and their extraordinary forms and behaviours. Students will engage with late Victorian botanical science in relation to how modern science works and consider the continuing role of evidence, theorising and peer-review.

Charles Darwin was fascinated by plant nutrition in relation to carnivorous plants. Both he and Treat conducted investigations through observation in the field and experimentation in their homes and gardens.

**Naming Animals Poster (download link)**

This poster highlights the sorts of problems found when discussing animal and plant species. With so many different common names, how do we know we're talking about the same thing?

In 1735, Carl Linnaeus came up with 'Linnaean classification' – a system where related species were grouped together. Through this he devised 'binomial naming', meaning 'two words'. This gives a Latin genus and species name, unique to that organism that scientists can safely use to communicate with each other.

The poster also indicates the meaning of some of the words within the full taxonomical name of the animals, showing how organisms are grouped by certain characteristics

Did you know you can also order this A1 poster to your school for free? Just email learning@linnean.org

**Naming Nature Worksheet (Colour In Linnaeus) (download link)**

Here's a quick overview of Carl Linnaeus and the Science of Classification. The resource includes a blank outline of Carl ready for some creative colouring-in!

**Plants Activity Pack (download link)**

This Activity Pack is one of five Discovery Kit Activity Packs, designed for primary schools. Discovery Kits are full of resources and are free to hire. Visit www.linnean.org/discovery-kits to find out more information.

**Pokemon Classification Game (download link)**

Pokémon are fictional creatures that live in a fictional world where humans capture them in the wild and train them to win battles against other trainers. This concept started off as a card game that quickly developed into several video games, a television series and several films. There are over 800 different types of Pokémon and past research has shown that many young people know more Pokémon characters than they do real species on Earth.

Many Pokémon look similar to real species on Earth, and so this game provides the opportunity to discuss classification within the context of the Pokémon world.

**Secondary Level Posters (Biodiversity, Classification, Conservation, Evolution) (download link)**

There are four posters in this resource covering the following areas of the biology curriculum:

- Biodiversity: gives an overview of what biodiversity is, how it is measured and the threats to biodiversity
- Classification: describes the main features of classification and the binomial system of nomenclature
- Conservation: looks at reasons for conservation, in situ and ex situ conservation, international conservation agreements and the role of zoos
- Evolution: describes the theory of evolution, continuous and discontinuous variation, adaptation and the evidence for evolution

These resources were produced by Linnean Learning, a part of the Linnean Society of London. Our vision is a world where curiosity in the natural world is shared by all ages and backgrounds.

Did you know you can also order these A1 posters to your school for free? Just email learning@linnean.org

**Special Species Game (download link)**

This activity requires a little bit of preparation to cut out all the cards, but it's well worth it.

Carl Linnaeus began the long-standing tradition of giving every species a two-part name (binomial) using Latin or Greek words. When a scientist discovers a new species, they get to pick the second half of its name which we call its species name. Use this card game to combine affixes and make your own special species.

**Species Squared – COMING SOON**

This activity requires a little bit of preparation to print out a large image and cut it into segments.

The 'Species' PDF has 350 different images of individual species drawn by Sue Mason and digitised by Linnean Learning. You can find out more information about each species in the 'Guide to Species Squared' PDF.

**The Biology Network Project – COMING SOON**

The Biology Network Project is a collision of art and science, illustrating how species have emerged over time. The core resource, a giant PDF timeline, is best visualised on a projector with a printed copy of the Information Booklet.

 Early Years  Primary  Secondary  Tertiary

**Tremendous Teeth Worksheet (download link)**

Here's a fun resource exploring how the shape of any animal's teeth relates to what they eat. Includes a word-search and a recipe of shark tooth cookies!

**'What is a ladybird?' Poster (download link)**

This poster highlights the problem with using a common name to refer to lots of different animals.

The Family, 'Coccinellidae' is home to '*Coccinella septempunctata*', the most common European ladybird. However, Coccinellidae is home to 360 different Genera (groups) of animals, many of which look very similar to our friend *C. septempunctata*. This causes problems when scientists need to report a sighting of a specific organism and they accidentally refer to something else.

In 1735, Carl Linnaeus came up with 'Linnaean classification' – a system where related species were grouped together. Through this he devised 'binomial naming', meaning 'two words'. This gives a Latin genus and species name, unique to that organism, which scientists can safely use to communicate with each other.

It seems all of our ladybird problems are solved!

Did you know you can also order this A1 poster to your school for free? Just email learning@linnean.org

**What's in a Name? (download link)**

This worksheet in this resource introduces students to the topics of classification and binomial nomenclature. The idea of hierarchy is illustrated, before explaining Linnaeus's system of classification and the terms kingdom, phylum, class, order, family, genus and species. There is also a useful introduction to the use of Greek and Latin vocabulary in science. Suggestions are made for more activity-based lessons in the detailed teachers' notes.

**What's so important about names? (download link)**

These student handouts contain text and questions about:

- Classification and taxonomy
- Understanding the importance of Linnaeus's contribution to science
- Making and using keys

 Early Years  Primary  Secondary  Tertiary

**Who's Who? (download link)**

This worksheet looks at speciation, dimorphic and polymorphic species and Batesian mimicry.

In Batesian mimicry, a palatable species mimics an unpalatable one thus protecting itself from predation. Through a series of questions based on the text, the resource aims to explore this in detail and looks at the following areas:

- the principles of evolution by natural selection
- the importance of Bates, Wallace and Darwin's contributions to science
- the influence of genetic and environmental factors on variation
- the effect of linkage on variation

**Who Are You? (download link)**

The Linnaean collections hold many 'type specimens' (the official specimen that represents that species). These type specimens are important for figuring out if an organism you find in the field is a new species or one that's already described. Making use of the Linnaean collection online, this worksheet focuses on Hymenoptera (including bees, wasps and ants). It looks at the importance of the hymenopterans, particularly the honey bee, both ecologically and economically, and studies their taxonomic rank.