# CLASSIFICATION

# For this activity, develop a document that will assist your understanding of classification.

|  |
| --- |
| **The inventor of modern scientific classification was Carolus Linnaeus (1707-1778) a Swedish botanist who classified and described more than 4,400 species of animals and 7,700 species of plants.** |

# Type directly into this document

# Copy and paste activities when asked

# Watch video clips

# Provide a copy via Edmodo to your teacher when completed

There are **billions of different kinds** of living things (or **organisms**) on earth. To help study them, biologists have devised ways of naming and classifying them according to their similarities and differences.

It is important that living organisms can be accurately identified because:

1. Can identify harmful organisms
2. Can identify organisms that have medicinal properties
3. Conservation
4. **Can you think of another one? Add it here**

The system most scientists use puts each living thing into [**EIGHT groups**](http://www.factmonster.com/ipka/A0193009.html) (or **taxons**), organized from most general to most specific. Therefore, each species belongs to a genus, each genus belongs to a family, each family belongs to an order, etc.

From largest to smallest, these groups are:

|  |  |
| --- | --- |
| 1. Domain | 1. Order |
| 2. Kingdom | 1. Family |
| 3. Phylum | 7. Genus |
| 4. Class | 1. Species |

**Domains** The domains are Archaea, Bacteria, and Eukarya. The **Archaea** and **Bacteria** **DOMAINS** contain prokaryotic organisms. These are organisms that do not have a membrane bound nucleus. The **Eukarya** domain includes eukaryotes, or organisms that have a membrane bound nucleus. This domain is further subdivided into the kingdoms Protista, Fungi, Plantae, and Animalia.

**Kingdoms** are huge groups, encompassing millions of kinds of organisms each. All animals are in one kingdom (called Kingdom *Animalia*); all plants are in another (Kingdom *Plantae*). In the most widely-used system, there are **five kingdoms:** containing animals (ANIMALIA), plants (PLANTAE), fungi (FUNGI), [prokaryotes](http://www.factmonster.com/cgi-bin/id/A0605548) (MONERA), and protists (PROTISTA).

**Species** are the smallest groups. A species consists of all the animals of the same type, who are **able to breed** and **produce young** that are also able to breed (**VIABLE)**. For example, while any two tigers are in the same species, as are any two lions, tigers and lions are in different species (since they cannot interbreed and produce viable offspring).

### **A Sample Classification**

### The lion belongs to the following groups:

* Domain: **Eukarya**
* Kingdom **Animalia** (includes all animals)
* Phylum **Chordata** (includes all vertebrate animals, as well as some other more primitive ones)
* Class **Mammalia** (includes all mammals)
* Order **Carnivora** (includes carnivorous mammals, from bears to seals)
* Family **Felidae** (includes all cats)
* Genus **Panthera** (includes the great cats: lions, tigers, jaguars, and leopards)
* Species **leo** (lions!)

As we go down the classification, the number of organisms in each group decreases and they become **MORE** alike.

**Time for one of your own**



The snow leopard belongs to the following groups:

|  |
| --- |
| Domain: **Eukarya** |
| Kingdom: |
| Phylum: **Chordata** |
| Class: |
| Order: **Carnivora** |
| Family: |
| Genus: **Uncia** |
| Species: |

**Complete the classification by filling in the table**

**Now for us!**



What are the 8 levels of classification for humans? Type into table

|  |
| --- |
| Domain: **Eukarya** |
| Kingdom: |
| Phylum: |
| Class: |
| Order: |
| Family: |
| Genus: |
| Species: |

**What do you know? Answer the questions below**

1. The 5 Kingdoms are:
2. Humans belong to the Phylum Chordata which tells us that organisms in this group **have a backbone**. Based on this fact name 3 other organisms that would belong to this group
3. There are 5 classes within the Phylum Chordata.

These are **reptiles, fish, birds, amphibians and mammals.**

All of them have a backbone but their classes are different, so they must have different characteristics so that they can be separated.

Using a table, name some differences in terms of reproduction, how they breathe or their outer layer.

|  |  |  |  |
| --- | --- | --- | --- |
| ORGANISM | OUTER COVERING | REPRODUCTION | GAS EXCHANGE |
| e.g. **REPTILE** | **SCALES** |  |  |
|  |  |  |  |
|  |  |  | **GILLS** |
|  | **FEATHERS** |  |  |
|  |  |  |  |

1. Name the order the humans belong to: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What other organisms belong to this order and what characteristics allow them to share this order with humans. List below

**Binomial Names**

Linnaeus used the GENUS (always **CAPITAL**) and SPECIES (always **lowercase**) names of organisms to develop the two type part scientific name. This is known as the **Binomial name** of an organism. e.g. **Kangaroo is Macropus macropodidae**

All biologists use this system today. The advantages to using scientific names are:

1. Common names vary from one language to another. Dog in English but Cane in Italian and Hund in German
2. Words can be used to name many things. E.g. Butterfly? Which one?
3. Scientific names can tell us about how closely related something is as they share the same genus.

E.g. Canis lupus familiaris is a DOG while Canis lupus is a WOLF.

Question: What is the Binomial name for Humans?

What materials can be used for **IDENTIFICATION?**

It is not always necessary to have an entire organism in order to identify it. Identification can be made using:

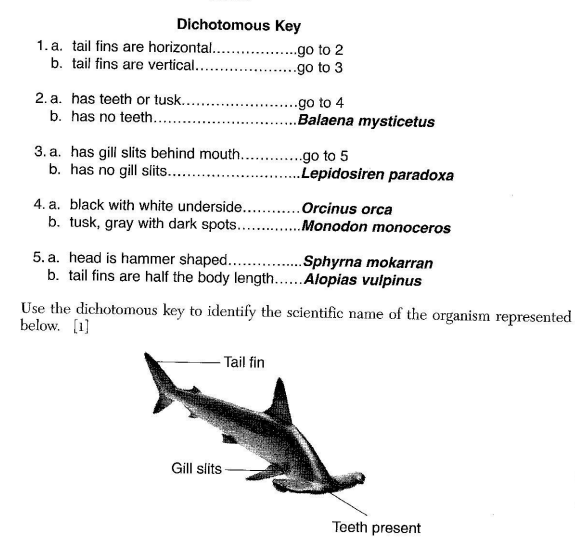
1. Image
2. Genetic material e.g. DNA
3. Macroscopic fragments: e.g. Bone or feathers
4. Microscopic fragments: e.g. pollen grains
5. Indirect evidence e.g. tracks, nests
6. And of course the entire organism

A means of identifying specimens is through the use of **KEYS**. Keys involve making a decision about the presence or absence of certain features. The types of keys we use are called **DICHOTOMOUS KEYS**

**ACTIVITY:** How to use a dichotomous key. Please watch the video below and answer the following questions

<https://www.youtube.com/watch?v=M51AKJqx-7s>

1. How many choices are there for every question in a dichotomous key?
2. Do we start at the same question for each bird that was classified? Why/Why not
3. What type of name do we end up with for each bird? Hint: 2 parts to the name
4. Name the organism below using the dichotomous key



# Dichotomous Keys Using Smiley Faces

Instructions: Use the key below to identify the species name of each of the smileys below.

1. Teeth visible ....................go to 2   
 Teeth not visible .................go to 4

2. Has a wide, toothy smile .......Smilus toothyus  
 Is not smiling ......................go to 3

3. Visibly crying .................Smilus dramaticus  
 Frowning .......................Smilus upsettus

4. Eyes are symmetrical .... go to 5  
....Eyes not symmetrical .....go to 8

5. Eyes shaped like hearts ..... Smilus valentinus  
....Eyes are shaped as ovals .....go to 6

6. Smiling, happy face ...... Smilus traditionalis  
.....Not happy, frowning or other .....go to 7

7. Mouth curved down, frowning .... Smilus saddus  
.... Mouth is a small circle .................Smilus suprisus

8. Has a pirate eye patch ...............Smilus piratus  
....Does not have eye patch ............ go to 9

9. One eye is much larger than the other eye Smilus mutatus  
One eye is winking .................Smilus winkus

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| smile h \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile b \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile c \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile f \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| smile g \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile j \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile d \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile i \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | smile e \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

## Extension:

A. The names of the smilies give you another bit of information about their taxonomy. Each of these smilies belongs to the same genus. What is their genus? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. Names are often given to an organism by the person who discovers it, though they follow certain conventions, often they are named after the person, or where the organism was found, or given a name that describes the creature. Which convention was used in naming these smilies?

Read Chapter 12 and using this and the work you have completed make a glossary for the topic CLASSIFICATION.

Complete Biozone pages 220-222 and 227-228 and stick into your notebook

Work through the revision to check your understanding of classification

<http://www.bbc.co.uk/schools/gcsebitesize/science/edexcel/classification_inheritance/classificationrev1.shtml>

At the bottom of page 6, you will find a [TEST BITE](http://www.bbc.co.uk/bitesize/quiz/q46780907). Complete and copy and paste your corrected test below.

EXTENSION (How many of you will watch this?)

<https://www.youtube.com/watch?v=F38BmgPcZ_I>