

Life Science
Chapter 2
Classifying Living Things

2A: Why Classify?

classify: to arrange things into groups

taxonomy: (from Gk. taxis - arrangement, order) the science of classifying organisms into groups
the science of classifying living things

How does a good classification system help? (Benefits from Classifying Living Things)

1. Generalization: by learning about individual's you may also learn about the whole group.
2. It makes information about specific organisms easier to organize and find.

The Classification Hierarchy

Today scientists continue the work of Adam by classifying the living things of our planet and naming them.

First recorded classification of organisms was attempted by **Aristotle** the Greek scientist and philosopher. He classified living organisms into one of three plant or three animal groups.

Plants

(classified based on shape)

HERBS - if they lacked woody parts
SHRUBS - if they had several short woody stems
TREES - one large woody stem

Animals

(classified by where they lived)

FISH - swim
BIRDS - fly
LAND ANIMALS - walk

artificial classification system: based on appearance (physical characteristics)

Aristotle's system was used for approximately 2,000 years. (his system was used into the 1600's)

In the 1700's **Carolus Linnaeus**, a Swedish-naturalist, discovered problems in the systematic arrangement for botany and began to sketch his own classification method. He set forth a new classification system in his works (books he wrote).

Linnaeus' book, *Species Plantarum*, (1753) forms the basis for plant classification.

The 10th edition of his *Systema Naturae* (1758) covers animal classification.

Linnaeus is known as the father of modern biological classification or the father of taxonomy.

Linnaeus also established the modern scientific method of naming plants and animals.

His system is also an **artificial classification system** (based on physical characteristics).

It has more flexibility than the previous systems.

It is still used today.

His system has **7 basic levels** (largest ---> smallest)

kingdom

phylum (Technically, the 2nd classification level in the plant kingdom is called division instead of phylum)

class

order

family

genus

species

Some classification systems have an eighth level – domain – that is a level higher than kingdom.

Sometimes these levels are divided into groups such as subphyla and subclasses.

Species are often divided into sub-species (or varieties – like dogs).

(Examples of the classifications of some organisms is on page 23)

Kingdoms

Kingdom Archaeobacteria

Kingdom Eubacteria

Kingdom Protista

Kingdom Fungi
Kingdom Plantae
Kingdom Animalia.

----- QUIZ 2A -----

Scientific Names

Linnaeus established the modern scientific method of naming plants and animals in 1753.

Many organisms have common names, but these are often confusing.

The same organism can be known in different parts of the world by many various different common names.
The same common name can be applied to different species, depending on the geographical area.

Binomial nomenclature: a system of naming organisms
binomial means "two name"
nomenclature means "naming"

Each organism is given a generic name (*Genus*) and the specific name (*species*).
Carolus Linnaeus introduced this system of naming organisms in 1753 and consistently used it.
Linnaeus chose Latin for the language to use in naming organisms.

Reasons why Linnaeus chose Latin:

- unchanging
- descriptive
- a root of many modern languages

The **scientific name** of an organism is actually the name of the *Genus* to which it belongs and the *species* (referred to as the *specific epithet* when used in the scientific name) which it is.

Since it is a foreign term, it is printed in italics.

If written or typed - name is underlined.

Only the genus name is capitalized.

Every organism has one and only one scientific name.

A single scientific name applies to only one species.

(Sometimes scientific names are called Latin names, but they are not actually Latin. The terms that make up the scientific name can be from any language; however, they must conform to Latin grammar and are thereby Latinized.)

A scientific name is usually given to an organism by the first person to publish a description of the organism.

People don't always agree with the name because opinions differ and mistakes are made. Therefore scientific names are occasionally adjusted by international committees that meet periodically. There are different committees for plants, animals, etc. It is the responsibility of these committees to make scientific names and classifications as up-to-date as information allows.

Species and Biblical Kinds

biblical kind (not same as species): the grouping of organisms established by God

Species: a group of similar organisms established by man

2 main characteristics of biblical kind:

1. they can reproduce with other organisms in the kind
2. they produce offspring that look like themselves and that can also reproduce

----- QUIZ 2B -----