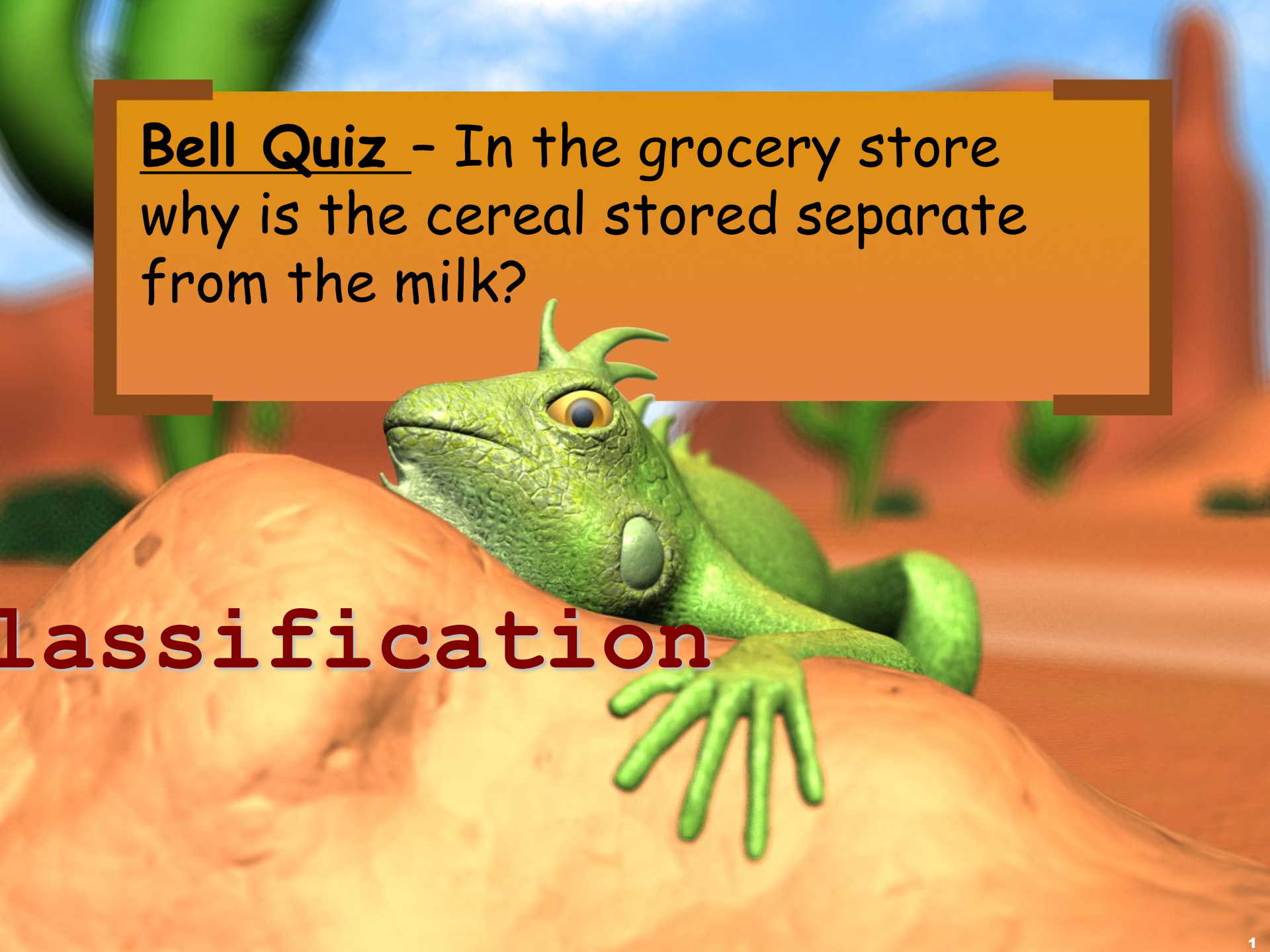
Bell Quiz - In the grocery store why is the cereal stored separate from the milk?



lassification

Early Taxonomists

- 2000 years ago, Aristotle was the first taxonomist

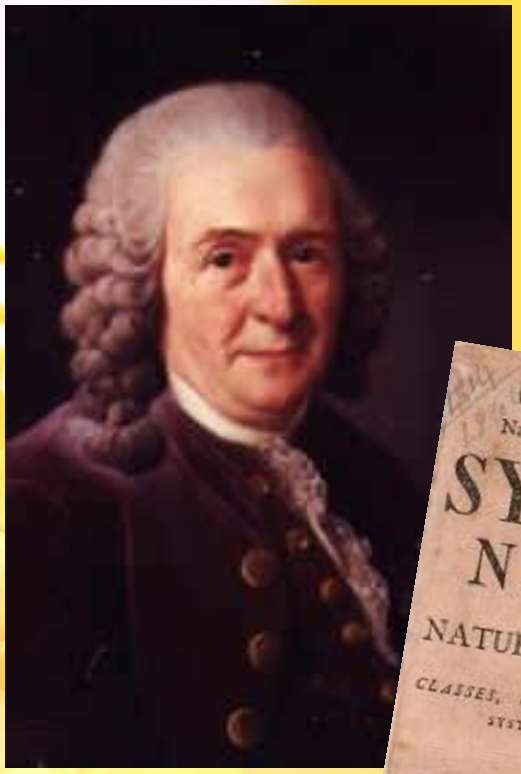
- Aristotle divided organisms into plants & animals

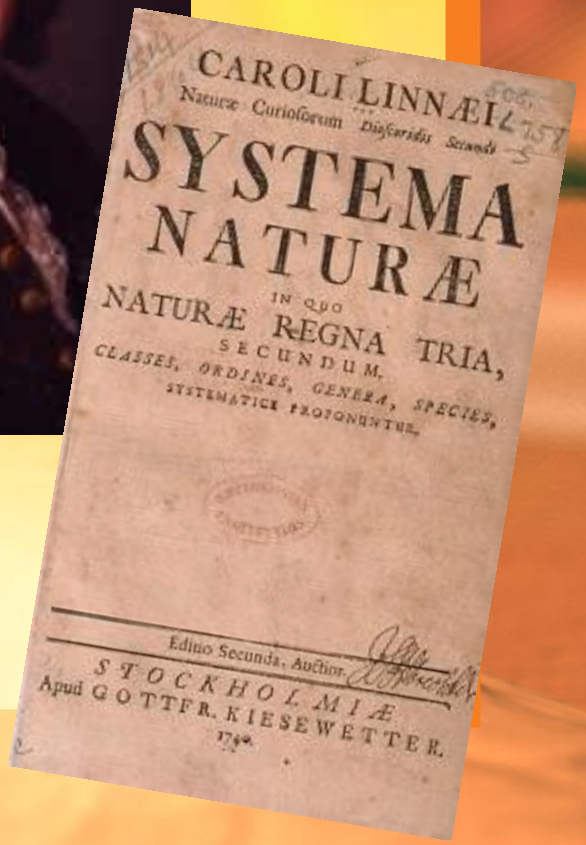
- He subdivided them by their habitat ---land, sea, or air dwellers

Carolus Linnaeus

1707 – 1778

- 18th century taxonomist
- Classified organisms by their structure
- Developed naming system still used today





- Carolus Linnaeus was called the "Father of Taxonomy"
- Developed the modern system of naming known as binomial nomenclature
- Two-word name (Genus & species)

Species of Organisms

- There are 13 billion known species of organisms
- This is only 5% of all organisms that ever lived!!!!!
- New organisms are still being found and identified

What is Classification?

Classification is the arrangement of organisms into orderly groups based on their similarities.

(Classification is also known as taxonomy)

Benefits of Classifying

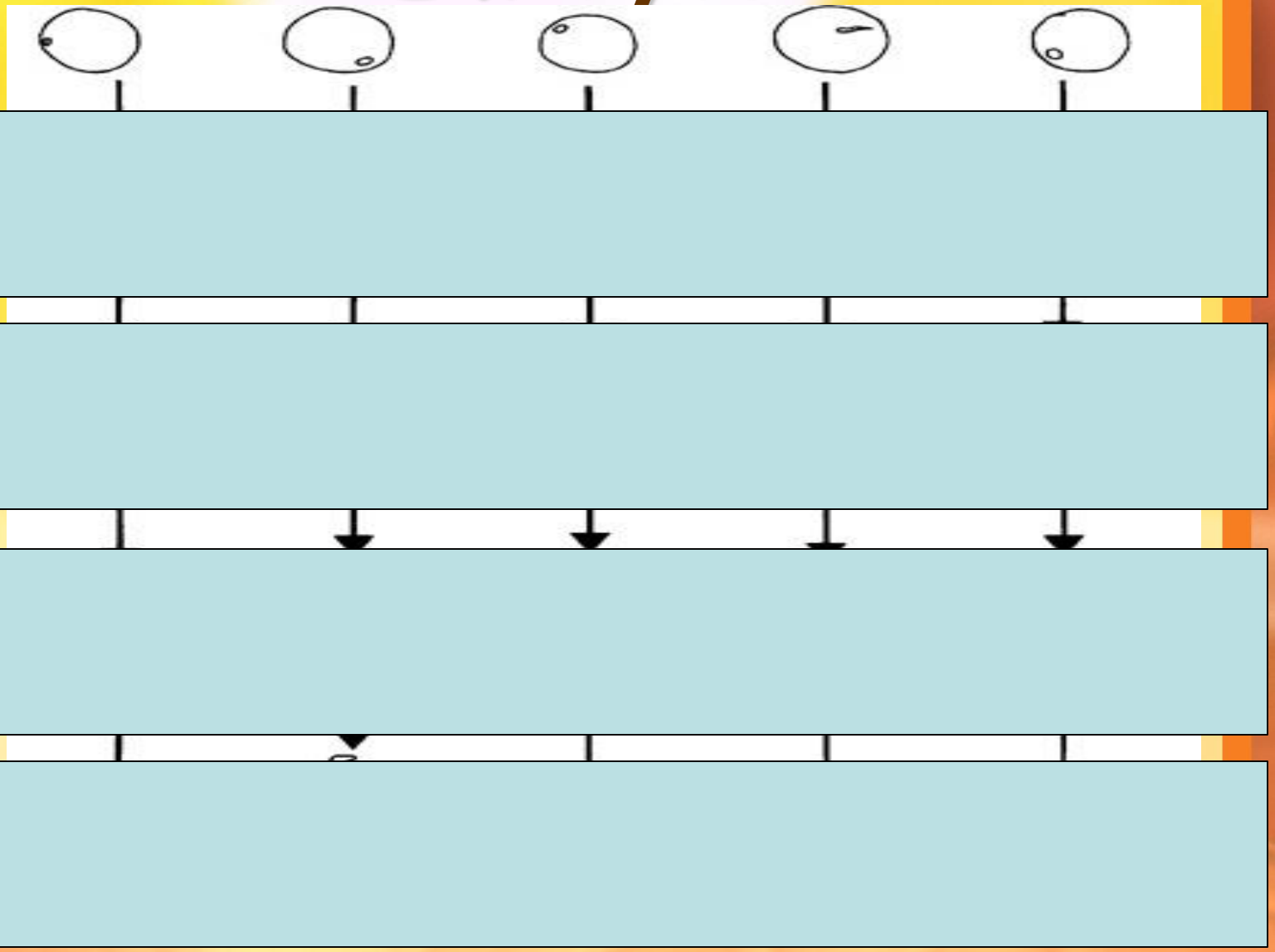
- Accurately & uniformly names organisms
- Prevents misnomers such as starfish & jellyfish that aren't really fish
- Uses same language (Latin or some Greek) for all names

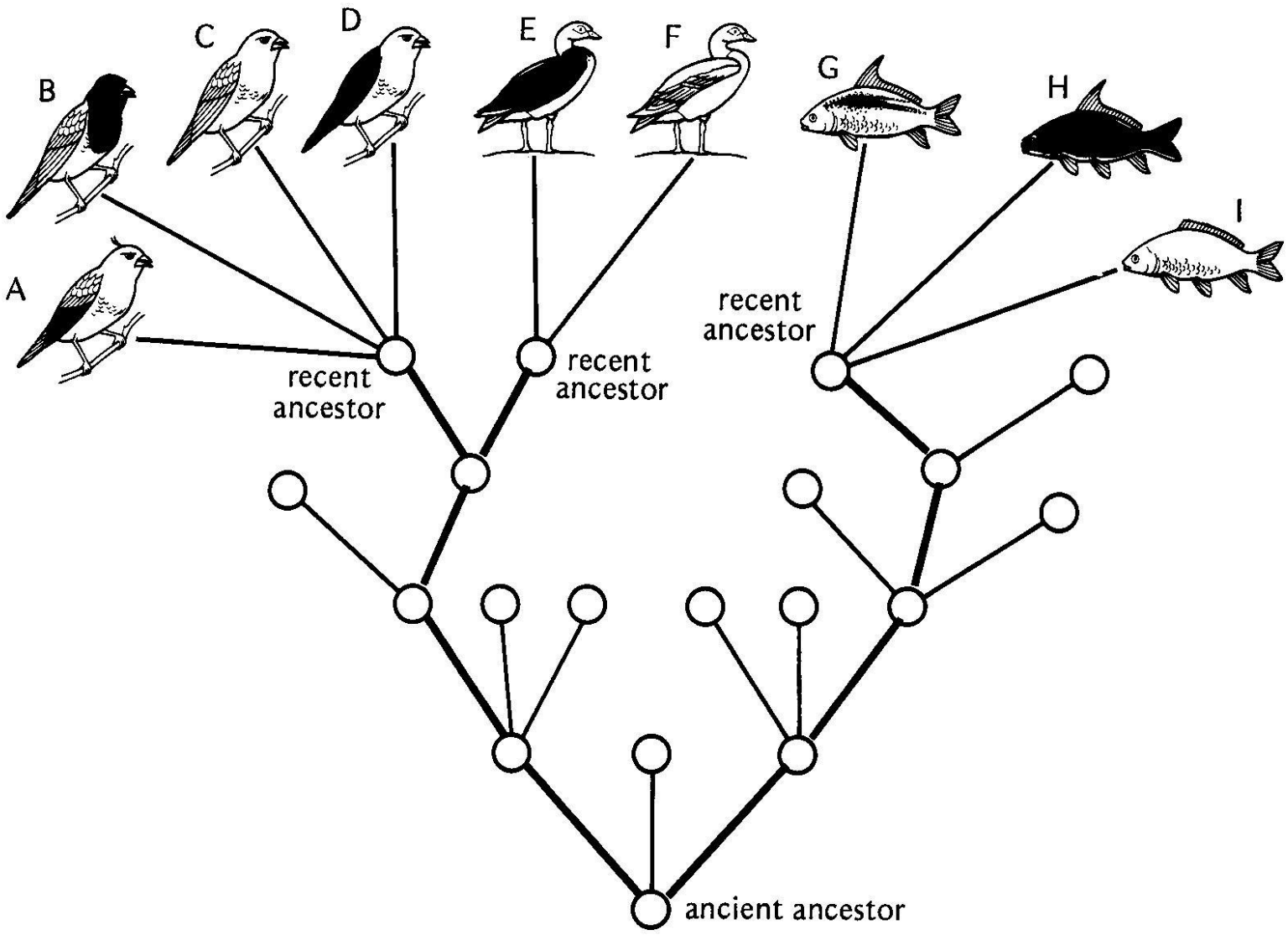
If organisms are similar in

- structure
- chemistry
- genetics
- embryology

then they are closely related
and they share a common ancestor.

Similarities in Vertebrate Embryos




A
B
C
D
E
F
G
H
I
recent ancestor
recent ancestor
recent ancestor
ancient ancestor

Hierarchy-Taxonomic Groups

Kingdom ← BROADEST GROUP

Phylum

Class

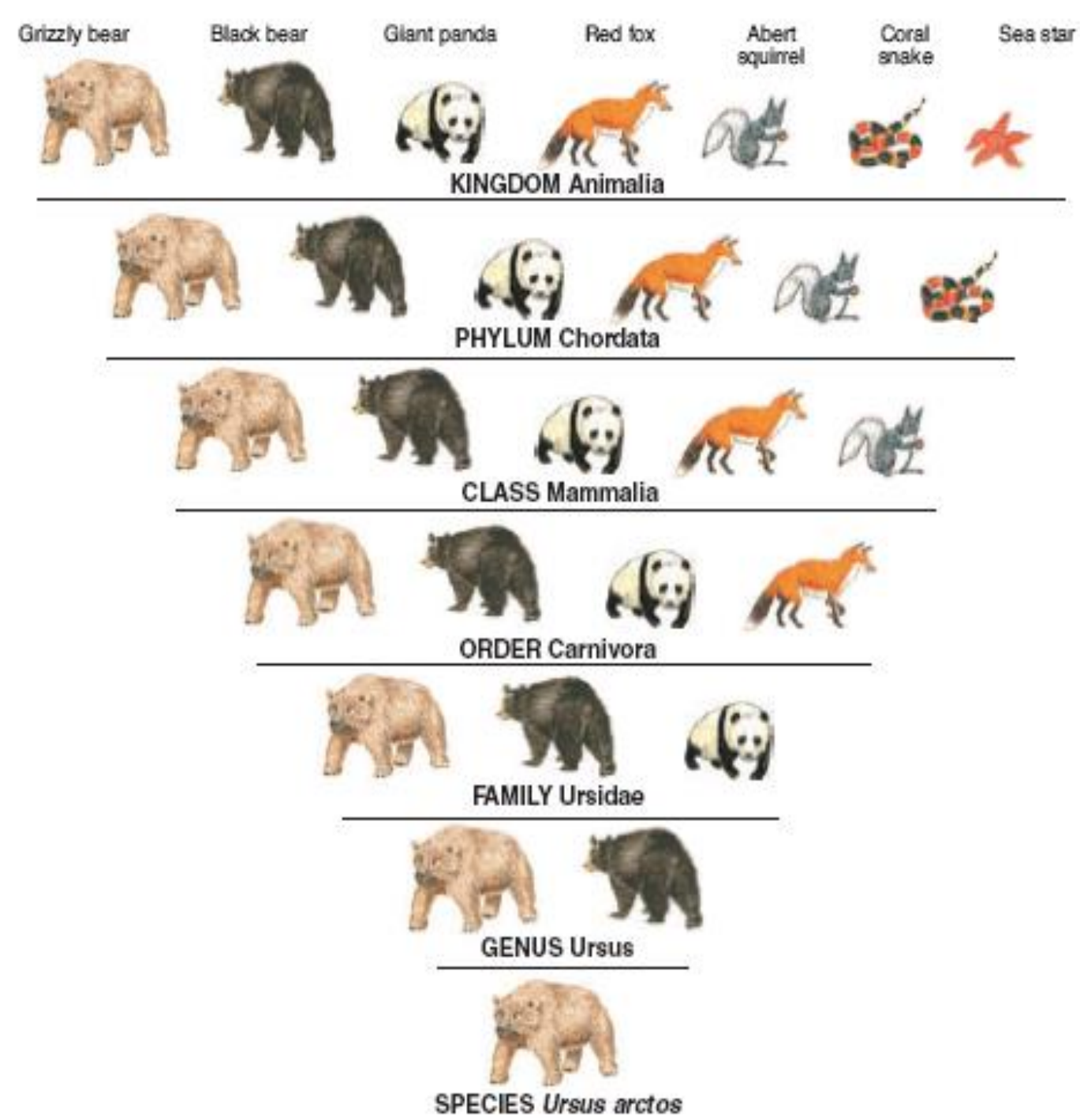
Order

Family

Genus

Species ← Most Specific

http://www.youtube.com/watch?v=L1leydN3xtI



King

Peter

Came

Over

For

Great

Spaghetti

ALL LIFE ON EARTH

KINGDOM: Animalia

PHYLUM: Chordata

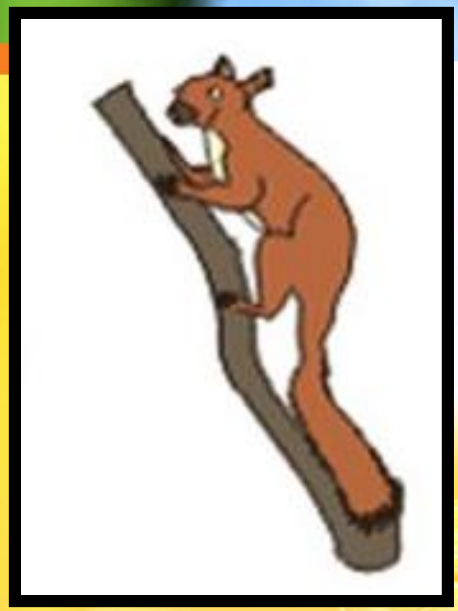
CLASS: Mammalia

ORDER: Rodentia

FAMILY: Sciuridae – the squirrels

GENUS: Sciurius – tree squirrels

SPECIES: Sciurius vulgaris – the red squirrel



This is the red squirrel.

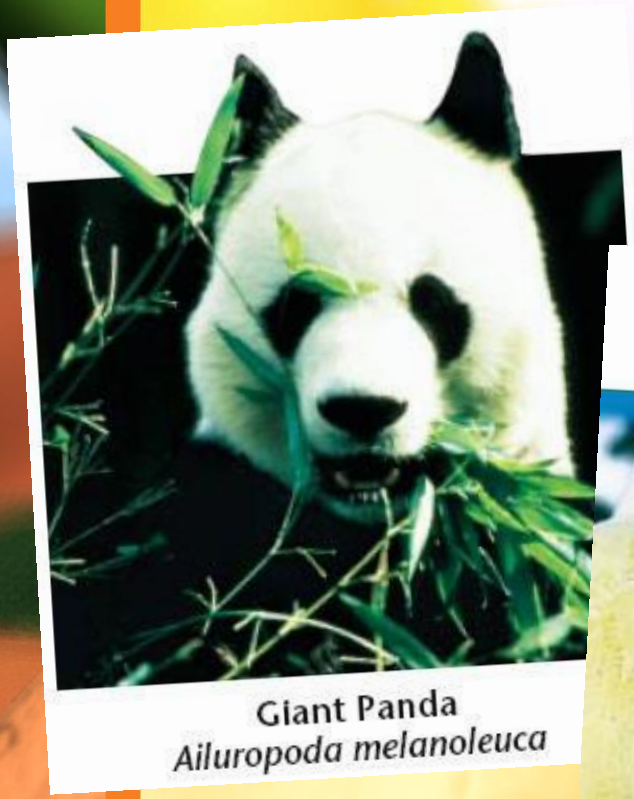
Its scientific name is

Sciurius vulgaris.

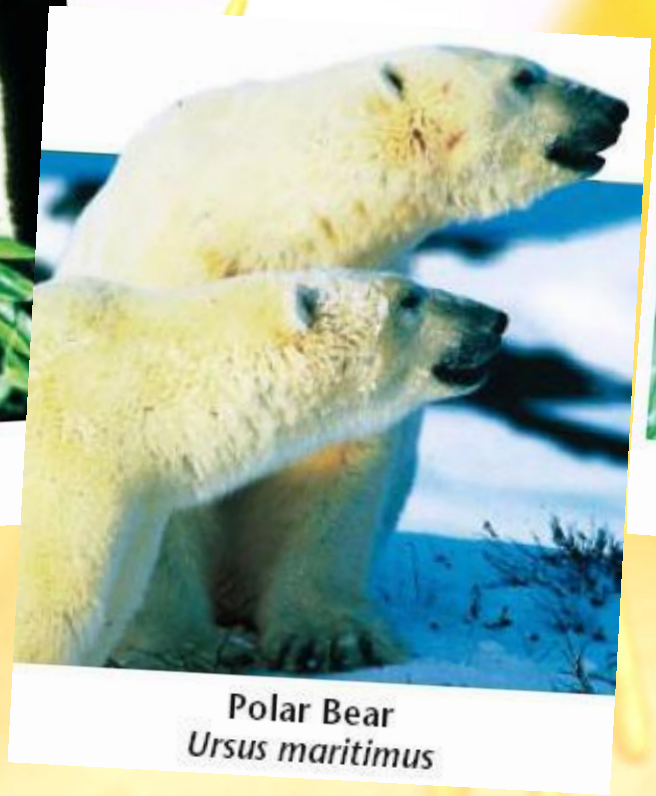
LINNAEUS invented the BINOMIAL NOMENCLATURE system for naming species.

A species' scientific name is derived from its GENUS and SPECIES classification categories.

Binomial Nomenclature



Giant Panda
Ailuropoda melanoleuca



Polar Bear
Ursus maritimus

Grizzly Bear
Ursus arctos

Which TWO are more closely related?

Domains

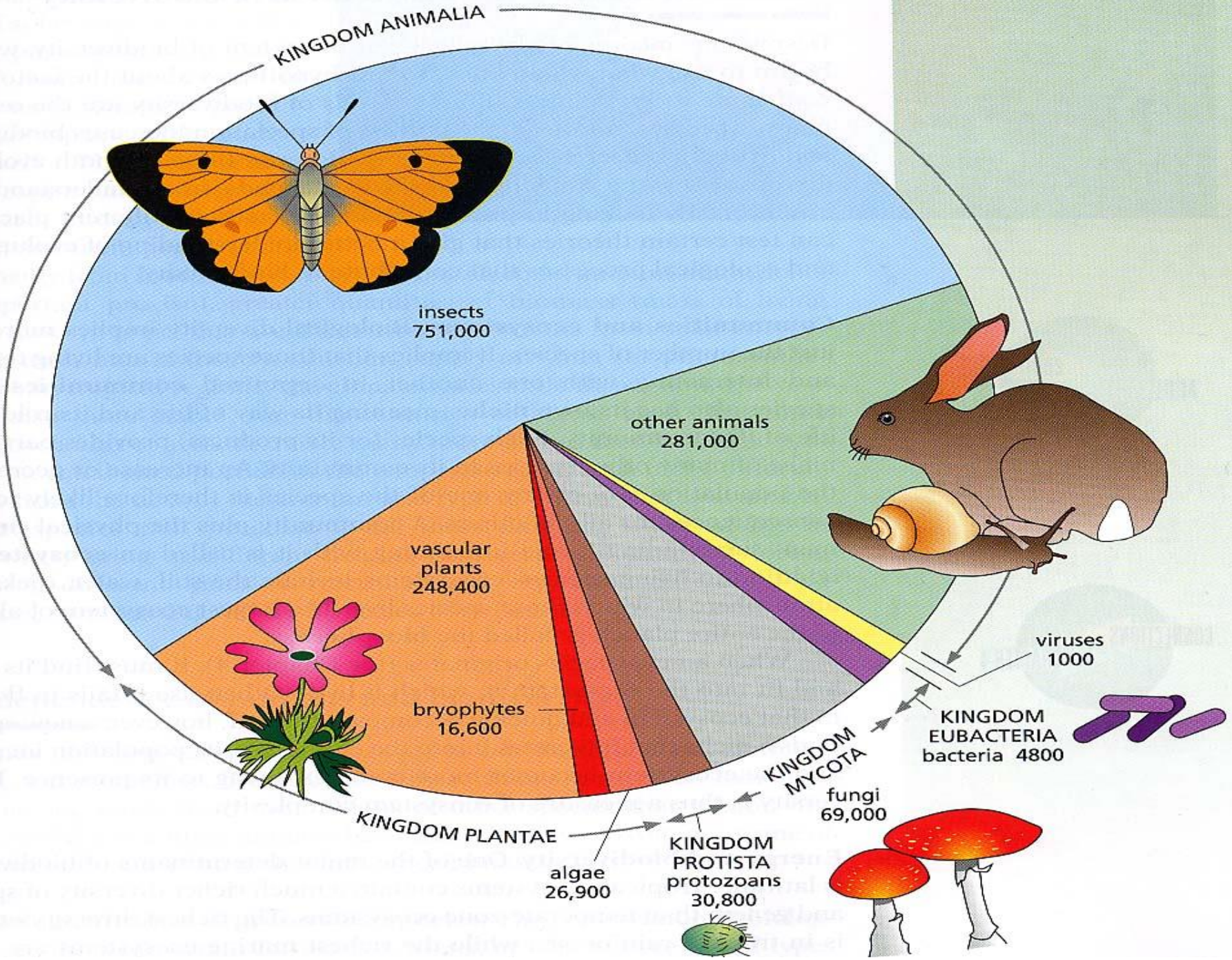
The criteria considered in grouping organisms in this five kingdom system are:

1.The number of cells the organism is composed of (Unicellular/Multicellular)

2. The presence or absence of a nucleus in each cell (Prokaryotic/Eukaryotic)

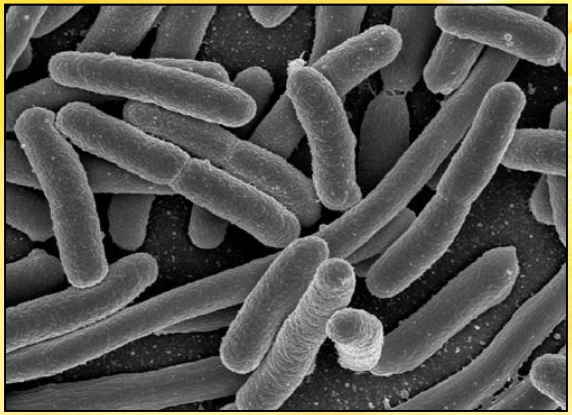
3. Type of nutrition the organism does (Autotrophic/heterotrophic)

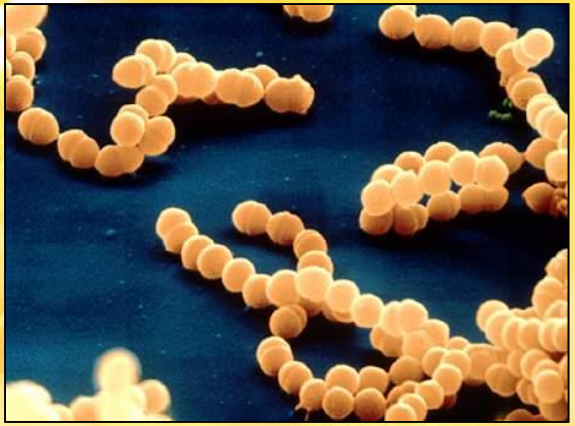
4. Its ability to move from place to place. (Motile/Sessile)


KINGDOM ANIMALIA
insects
751,000
other animals
281,000
vascular
plants
248,400
bryophytes
16,600
KINGDOM PLANTAE
algae
26,900
KINGDOM
PROTISTA
protozoans
30,800
KINGDOM
MYCOTA
fungi
69,000
KINGDOM
EUBACTERIA
bacteria 4800
viruses
1000

MONERA

- unicellular
- no nucleus or other internal cell structures
- A helpful and harmful species
- Prokaryotic





(Your body contains about 100 trillion bacteria -- more than 10 TIMES the number of cells you have in your entire body. Ideally, the ratio between the bacteria in your gut is 85 percent "good" and 15 percent "bad.")

Protist

- Most are unicellular
  - (Some are multicellular)
- Most are heterotrophic
  - (Some Autotrophic)
- Contains Nucleus
- Eukaryotic

Fungi

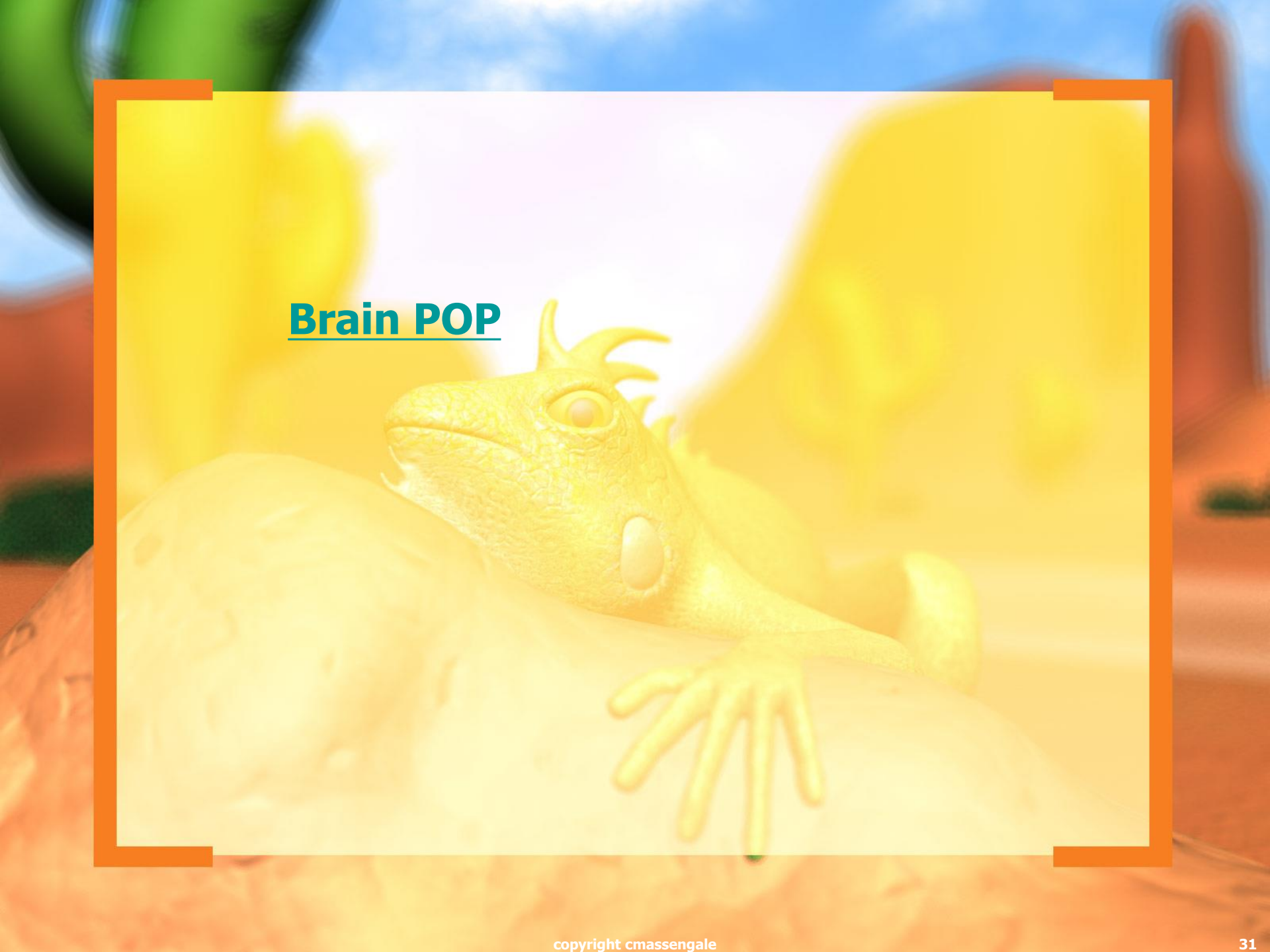
- Multicellular
- Sessile
- Absorptive heterotrophs
  - (Absorb food from dead or decaying matter)

Plants

- Multicellular
- Autotrophic
- Absorb sunlight to make glucose (Photosynthesis)

Animals

- Multicellular
- Heterotrophs (consume food & digest it inside their bodies)
- Feed on plants or animals
- Motile



Using a Dichotomous Key

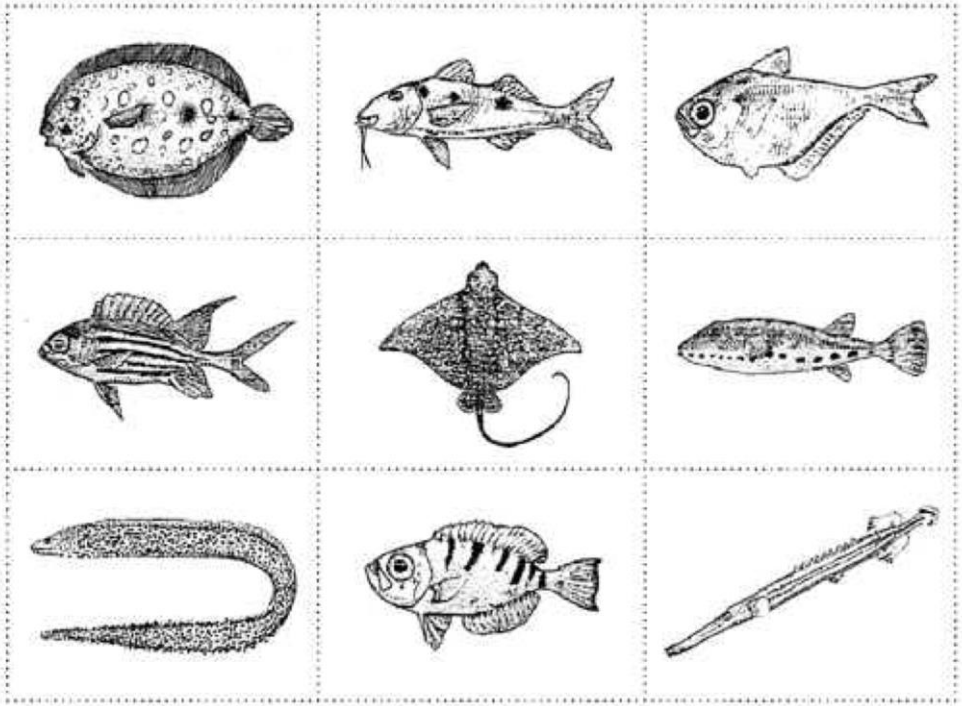
- Used to identify organisms
- Characteristics given in pairs
  - 1a
  - 1b
- Read both characteristics and either go to another set of characteristics OR identify the organism

Example of Dichotomous Key

1a Tentacles present – Go to 2
1b Tentacles absent – Go to 3
2a Eight Tentacles – Octopus
2b More than 8 tentacles – 3
3a Tentacles hang down – go to 4
3b Tentacles upright–Sea Anemone
4a Balloon-shaped body–Jellyfish
4b Body NOT balloon-shaped - 5

Name _____ Period _____ Date_____

Fish Dichotomous Key



Start with step 1 for each fish. Answer the question at each step and follow the directions. Write the name of each fish in the box.

ep 1 fish shape is long and skinny then go to step 2 fish shape is not long and skinny, then go to step 3	**Step 5** If fish has spots, then go to step 6 If fish does not have spots, then go to step 7
ep 2 fish has pointed fins, it is a trumpet fish fish has smooth fins, it is a spotted moray eel	**Step 6** If fish has chin "whiskers," it is a spotted goat fish If fish does not have chin "whiskers," it is a band-tail puffer
ep 3 fish has both eyes on top of the head, then go to step 4 fish has one eye on each side of the head, then go to step	**Step 7** If fish has stripes, then go to step 8 If fish does not have stripes, it is a glassy sweeper
ep 4 fish has long whip-like tail, it is a spotted eagle ray fish has short, blunt tail, it is a peacock flounder	**Step 8** If fish has a v-shaped tail, it is a squirrel fish If fish has a blunt tail, it is a glass-eye snapper

Name:

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

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?

_____

C. Suppose you discovered the new smiley pictured to the right.
What name would you give it? _____