

Character of living Being

GROWTH

* Increase $\begin{cases} \rightarrow \text{size/mass} \\ \rightarrow \text{no. of individual/cell} \end{cases}$

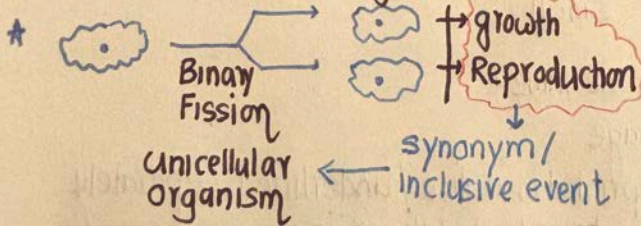
* Plant : indeterminate
animal : determinate

$\begin{cases} \rightarrow \text{defining property} \\ \rightarrow \text{shown by all living} \\ \text{not by non} \\ \text{living} \end{cases}$

* Living organisms : **Intrinsic growth**
: Irreversible

* Non-living : Extrinsic, Reversible
(Mountain, Boulders)
 \downarrow
snow deposition

* Fundamental property Not defining
(Shown by nonliving)



* Exclusive event in Multicellular.

* Bacteria no in petridish : Growth

Taxonomic categories

Taxon

Plantae

Category

Kingdom

Phylum (animal); Division (Plant)

Class : Dicotyledonae

ORDER : polymoniales

family : Solanaceae

genus : Solanum

species : Solanum melongena

- * Real/obligate category: 7
- * Classification represent many steps
- * each step is category
- * Ascending order of Taxonomic category from species to Kingdom:

Taxonomic hierarchy

* polymoniales	suffix	
poales		ales (order)
sapindales		
chlorophyceae		phyceae
Dicotyledonae		ae [class]
Bryopsida		opsida [class]
chlorophyta		Division (Phyta)
Solanaceae		family (aceae)
poaceae		

* wheat, maize, Rice	Taxon	level
Dog, Bryopsida, poales	Diff	same
Solanaceae, poaceae, Liliaceae	"	diff
Animal, mammals, dog	"	same
	"	diff

SPECIES

- * Basic/smallest unit
- * Term: John Ray
- * Biological concept: Mayr's (individual interbreeding Together, fundamental similarity But Reproductively isolated from other species)

Genus species

Panthera	tigris	Tiger
Panthera	leo	lion
Panthera	pardus	leopard
Solanum	tuberosum	potato
Solanum	melongena	Brijjal
Solanum	nyctagium	Makoi
Canis	familiaris	Dog
Canis	lupus	Wolf
Canis	aureus	Jackal

} show more similar character compare to species of another genera

GENUS

- * Different species in same genus (more similar character)

monotypic	polytypic
* one species	* contain more than one species
eg homosapiens	eg: Solanum

- * Felis catu (CAT)

↓
genus

FAMILY

- * group of Related genera

* Felis panthera } → Felidae

* Dog → Canidae

* Solanum tuberosum
Datura innoxia
Petunia inflata } → Solanaceae (family)
CRITERIA: Vegetative & Reproductive Character

- * sweet potato: Convolvulaceae

ORDER

- * Group of Related family.

* solanaceae } Polymoniales
Convolvulaceae } (floral character)

* Felidae } Carnivora
Canidae } (canine Teeth)

- * Mango: Sapindales (ORDER)

CLASS

* group of Related order

Polymoniales }
Sapindales } → Dicotyledonae

Rodentia (Rat) }
Carnivora } → Mammalia
Primata (Monkey, gorilla, Gibbon) }
(hair on skin, Mammary gland)

Phylum

* group of Related class

Dicotyledonae }
Monocotyledonae } → Angiospermae (Division)

Amphibian, Reptile, }
Mammals } → Chordata (Notochord, Dorsal Neural System)

KINGDOM

* Plantae : CW ✓

Animalia : CW X

* Category

family :

↑ Taxon at higher Rank
Solanaceae } → Different Taxon at different level

species : potato, Tomato

(Taxon) (Taxon)

→ Taxon at lower Rank
↓
Different Taxon at Same level

* Category can have more than one Taxon

* Category Represent Taxon

Similar character

Dissimilar character

Complexity of Classification

kingdom

Less

More

More

Phylum

↑

↑

↑

class

↑

↑

↑

Order

↑

↑

↑

family

↑

↑

↑

genus

↑

↑

↑

species

More

Less

Less

NOTE : Taxonomic category are distinct Biological entities
But not morphological aggregate

Q Maximum similarity

- Solanaceae (family)
- Solanum (genus)
- Polymoniales (order)
- Dog (species)

Q Minimum similarity

- Cat (sp)
- Panthera (genus)
- Poales (order)
- Dicotyledonae (class)

Q Complexity of classification

- Kingdom
- Phylum
- class
- family