

BB101

Tutorial

Beautiful world around us



Mandarian Fish



Sea Dragon



Jelly Fish



Coral Snake

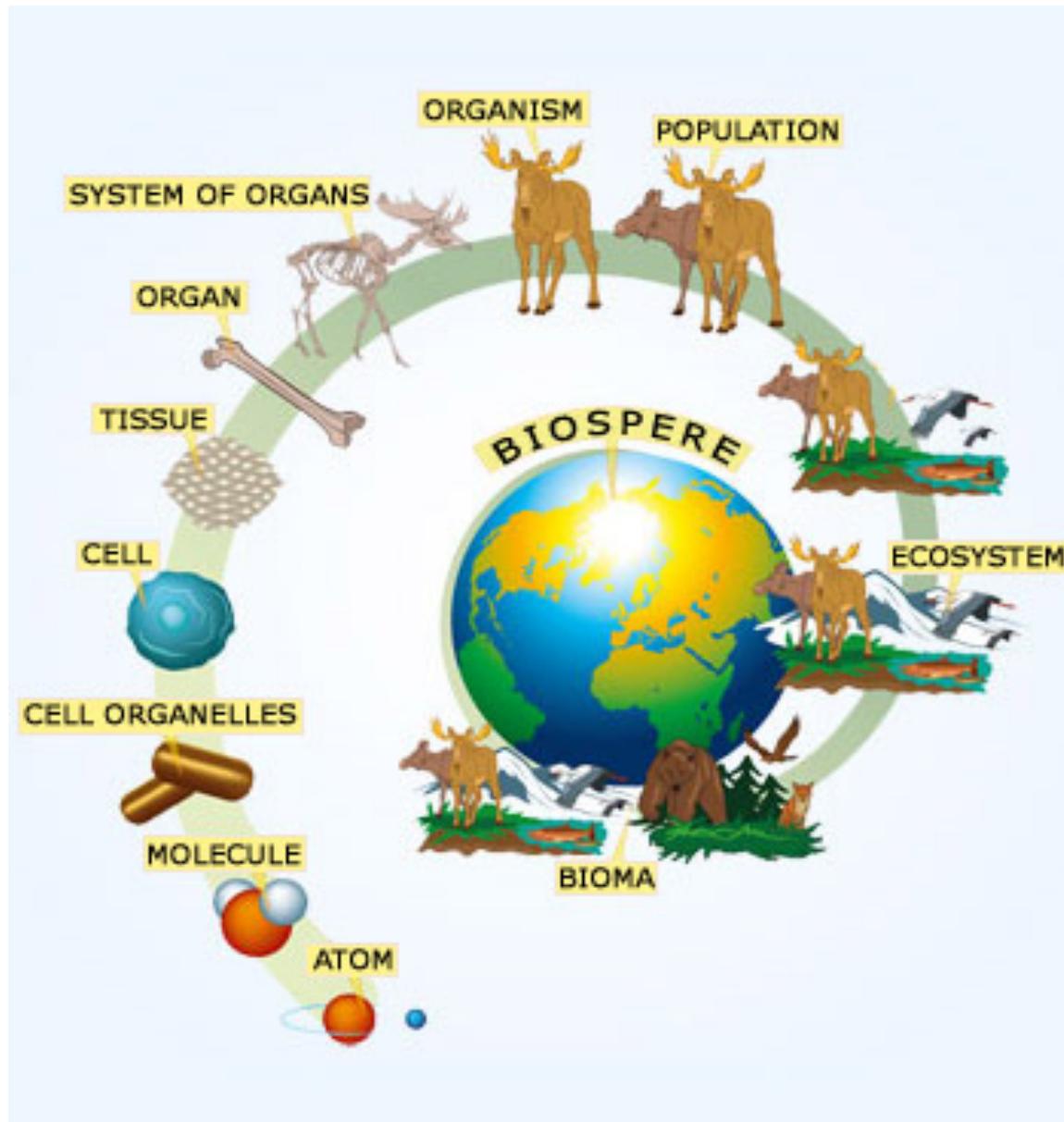


European Bee-eaters

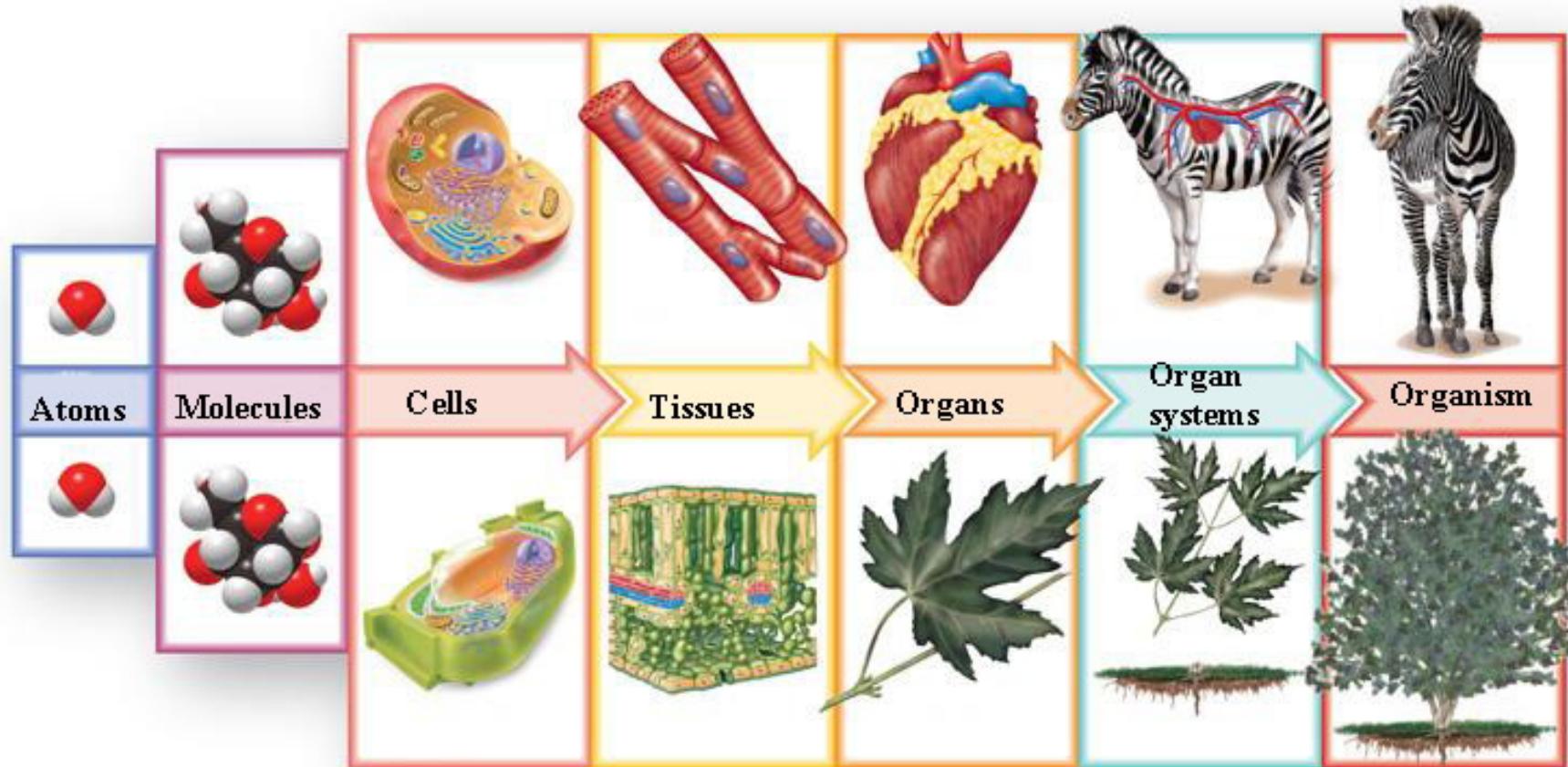


Sleeping Owl

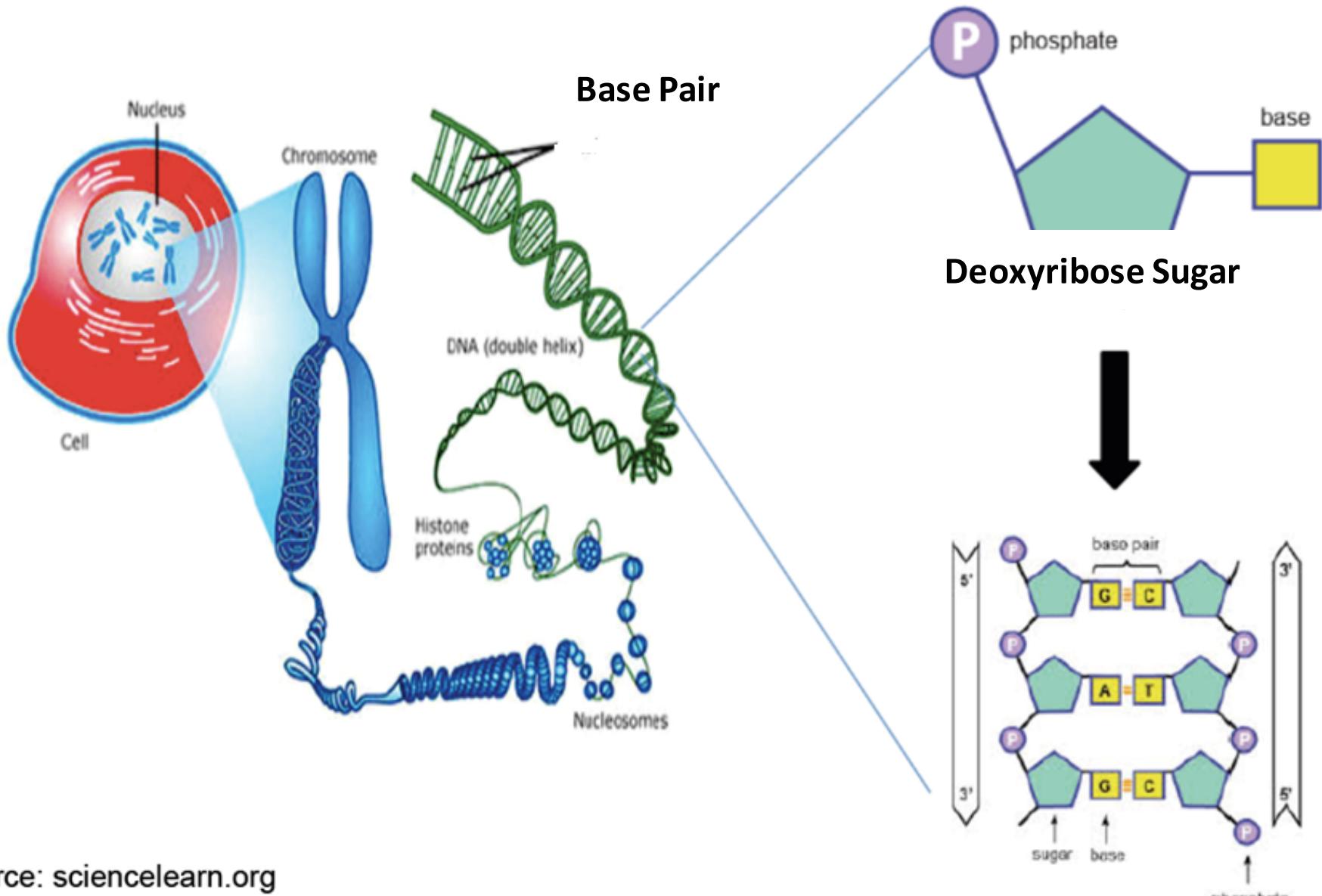
Beautiful world around us



Joining bits to generate back the whole model



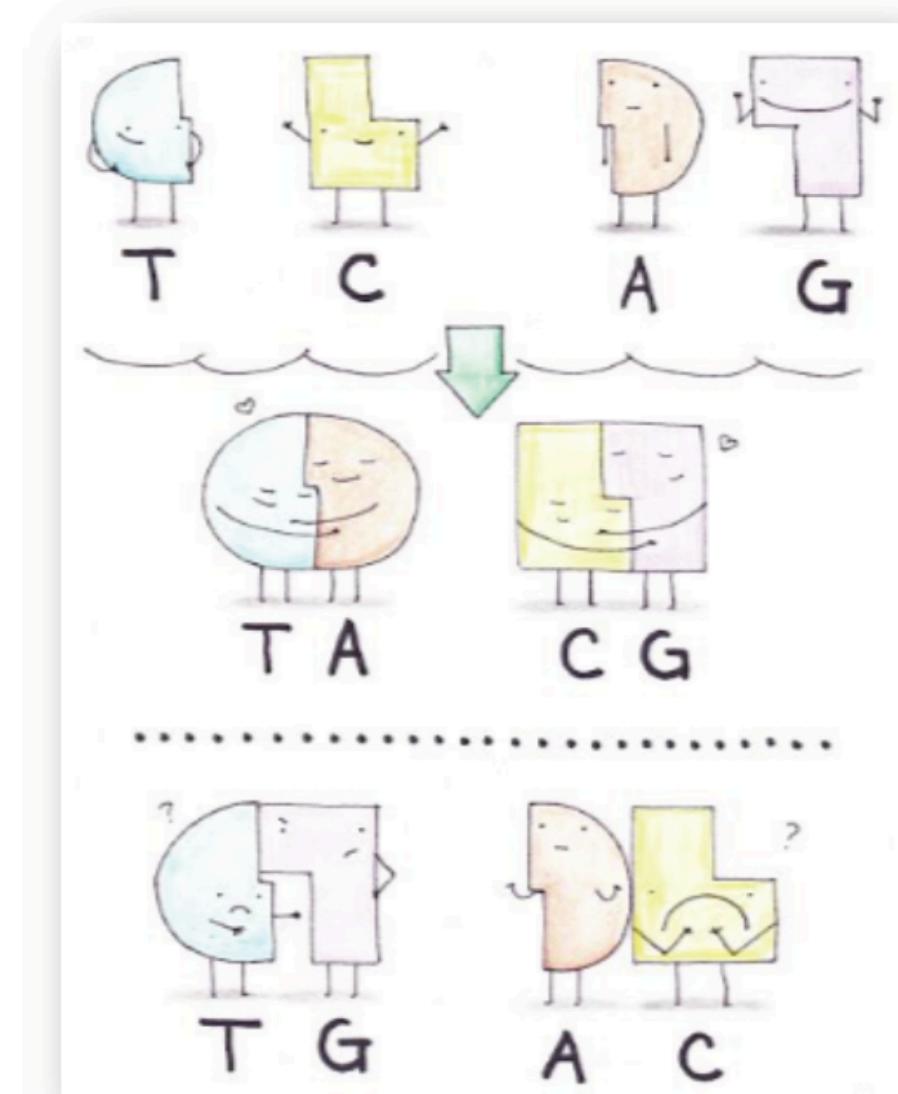
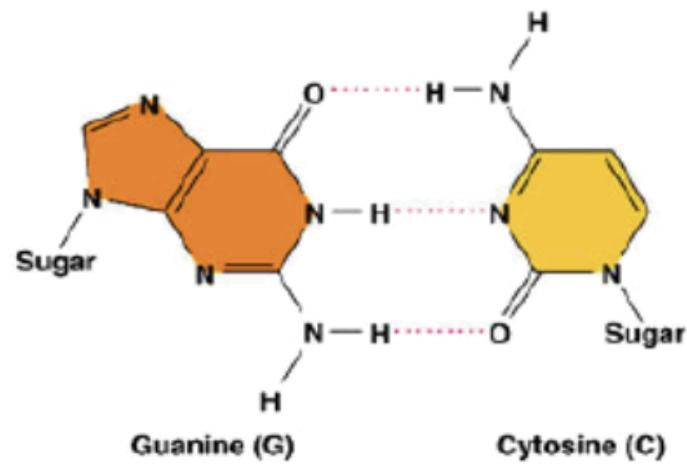
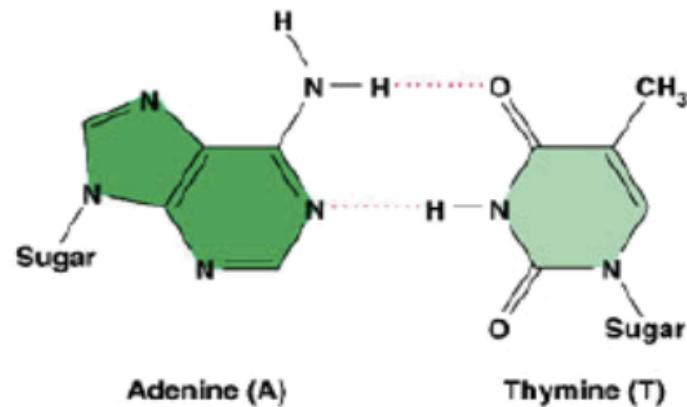
Deoxyribonucleic acid (DNA)



Source: sciencelearn.org

5

Nitrogen bases and base pairing

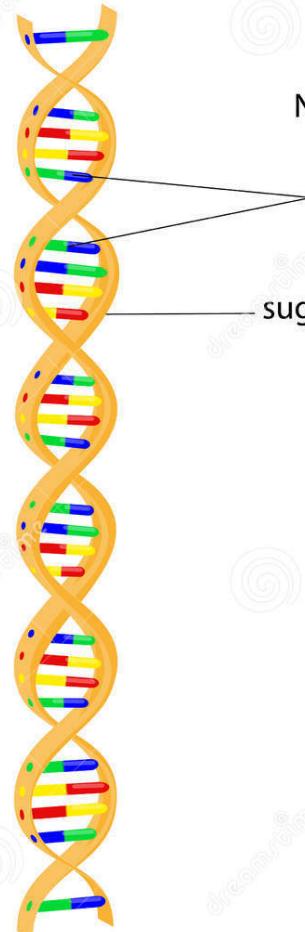


Source: pinterest.com

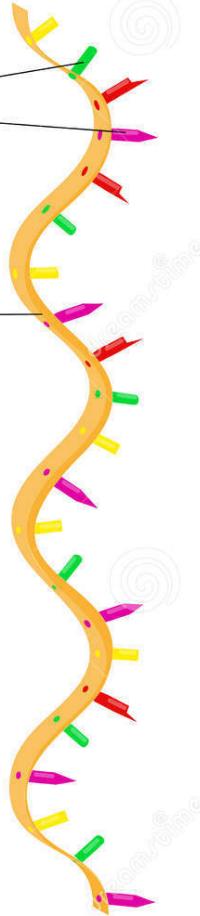
6

DNA and RNA: Differences

Structure of DNA & RNA



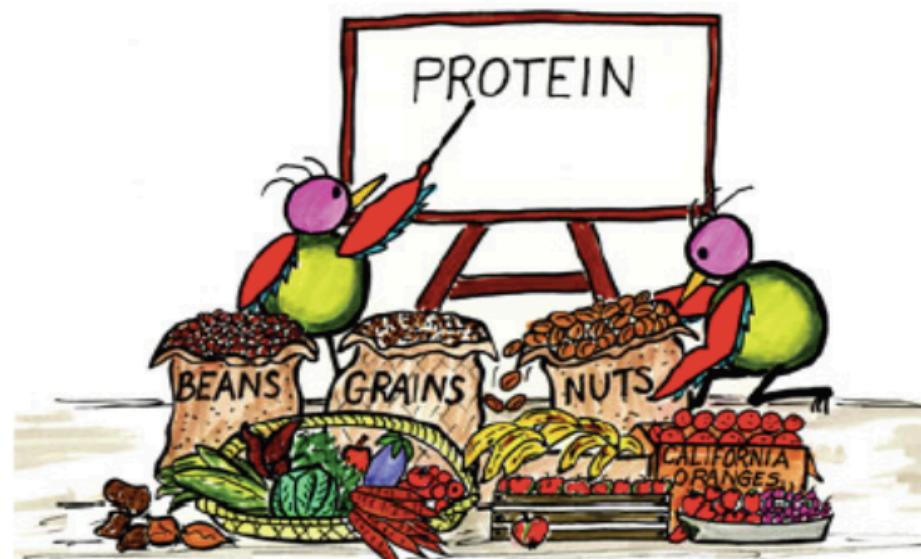
- [Green square] Adenine
- [Yellow square] Cytosine
- [Red square] Guanine
- [Pink square] Uracil
- [Blue square] Thymine



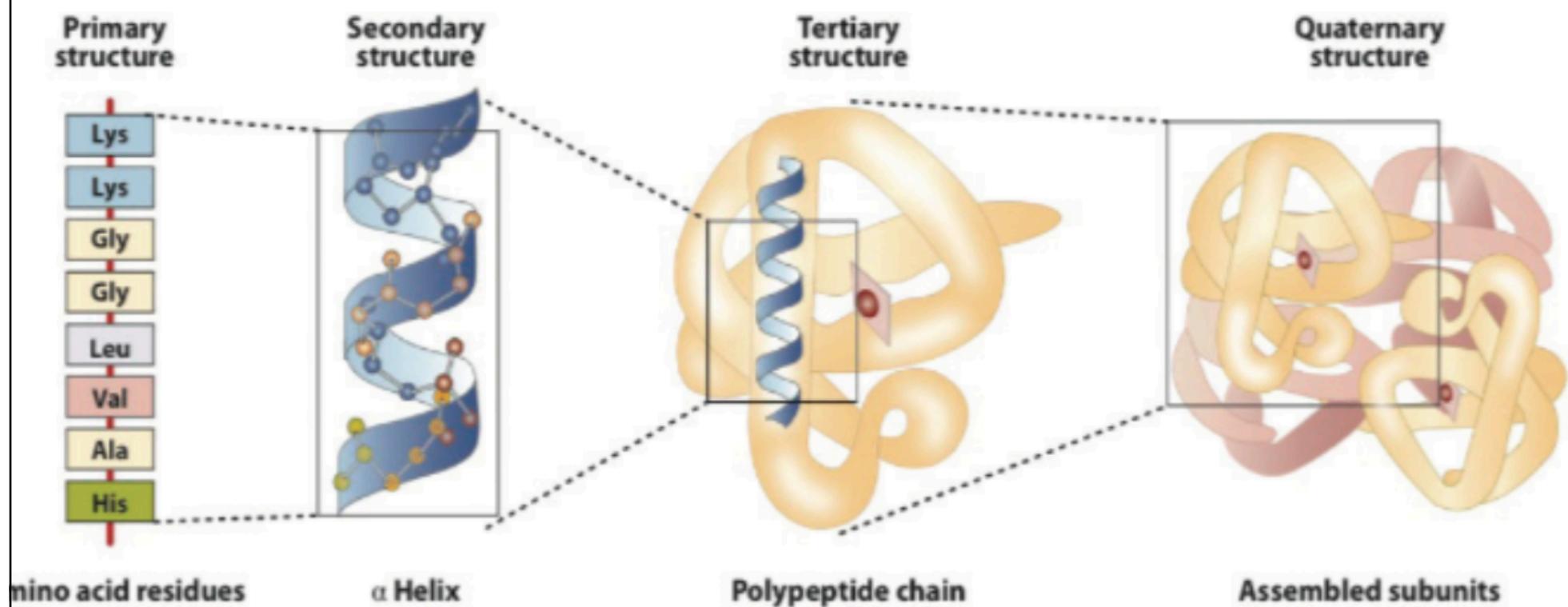
Parameter	DNA	RNA
Strands	Double (Few viruses exception)	Single
Sugar	2-deoxyribose	ribose
Bases	ATGC	AUGC
Life	Long lived	Short lived
Self replication	Yes	No

Proteins

- Made up of amino acids.
- They are coded for by genes and form the basis of living tissues.
- They are required for maintaining the structure, function and regulation of the body's tissues and organs.

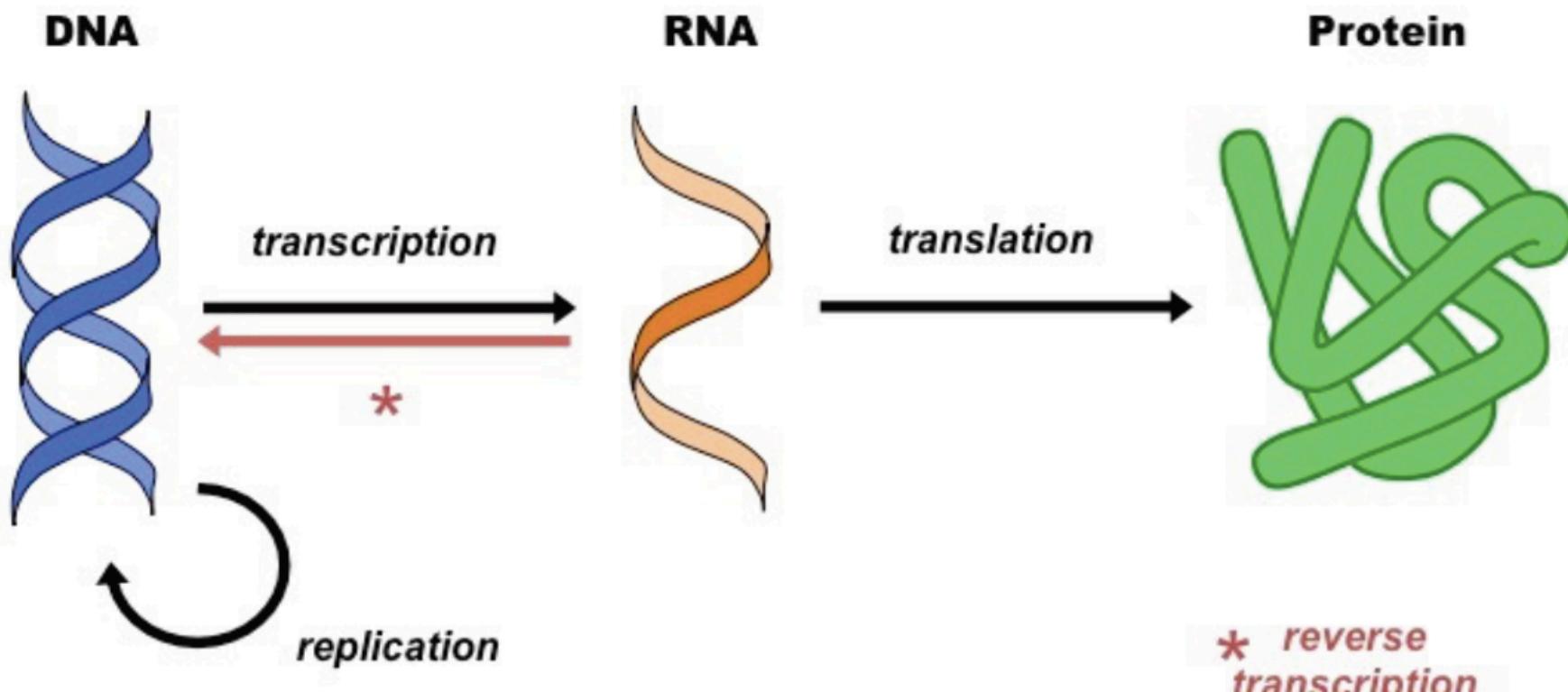


Different levels of Protein



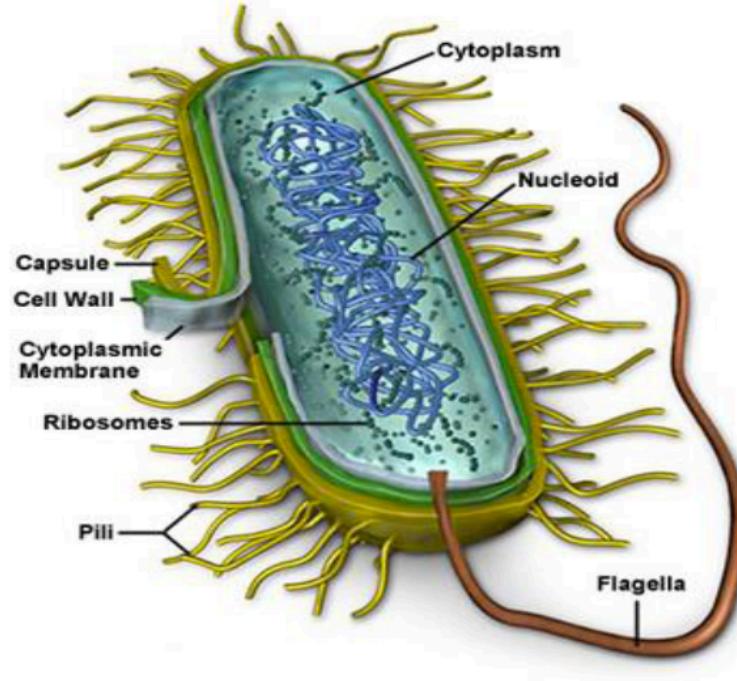
Source: Introduction to Chemistry: General, Organic, and Biological

Central Dogma of Life

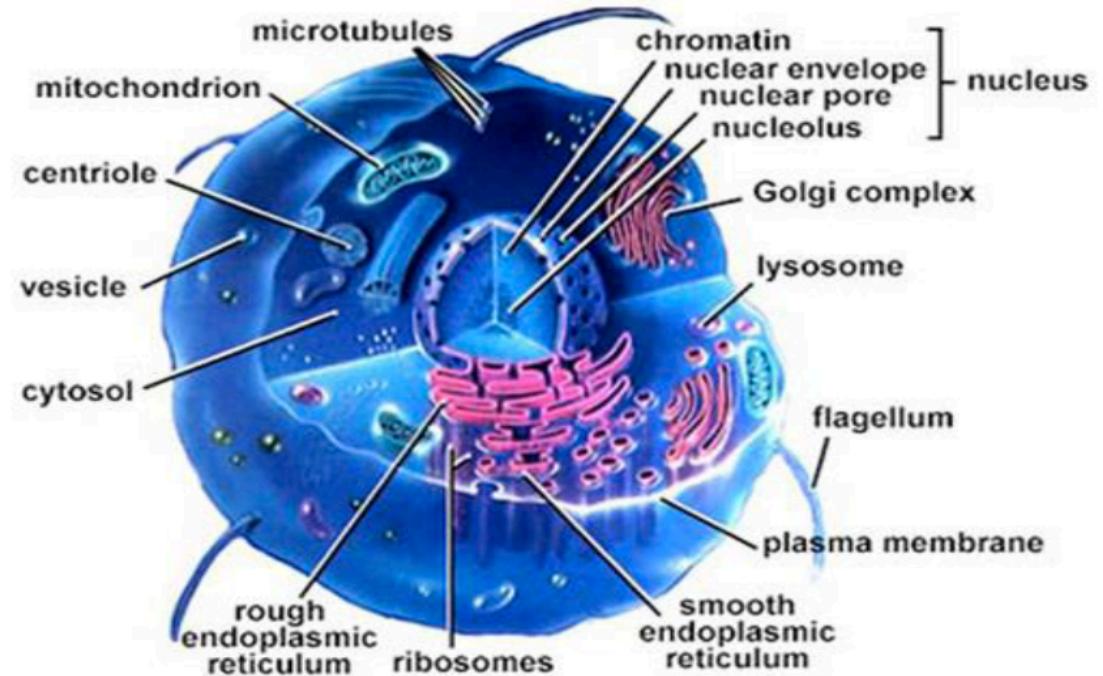


Source: <http://ib.bioninja.com.au>

Types of cells



Prokaryotic Cell

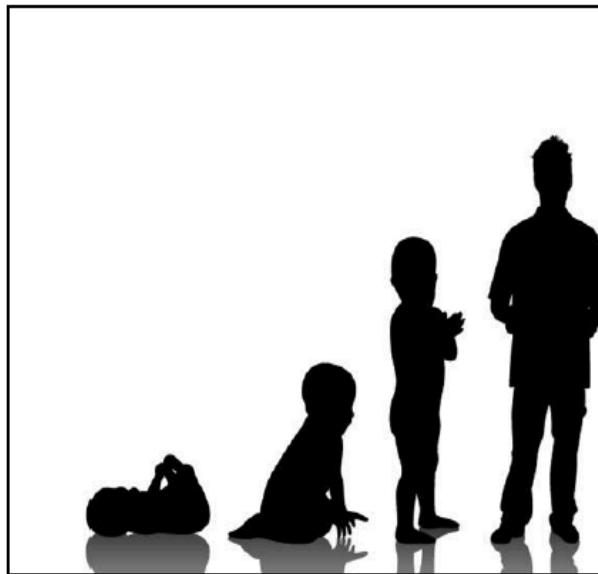


Eukaryotic Cell

Cell Division

Cell Division is essential for:

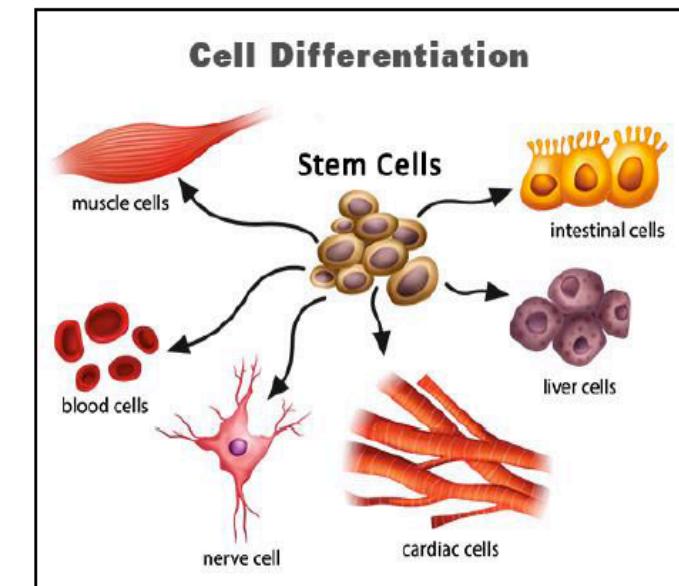
GROWTH



REPAIR



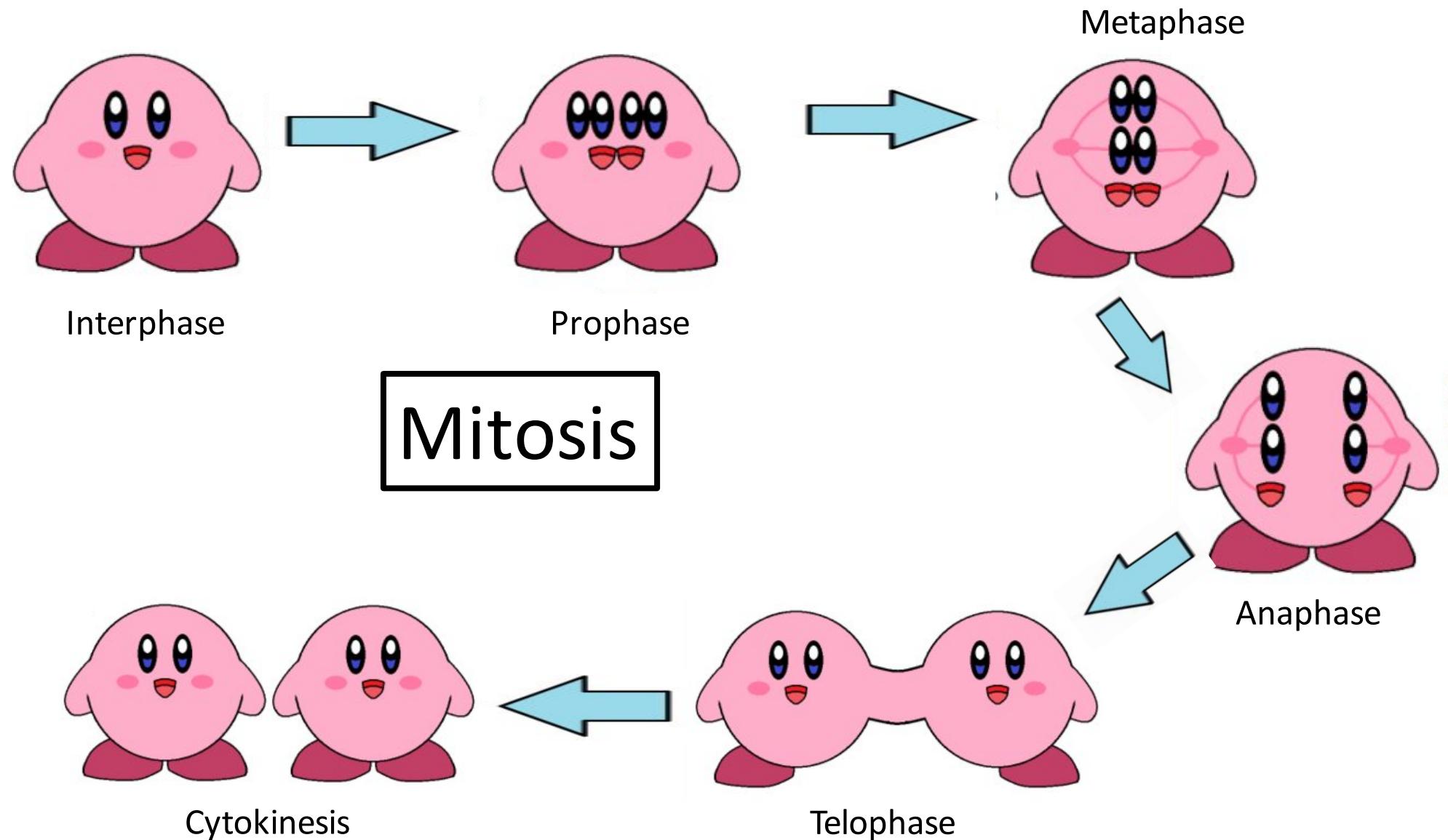
DIFFERENTIATION



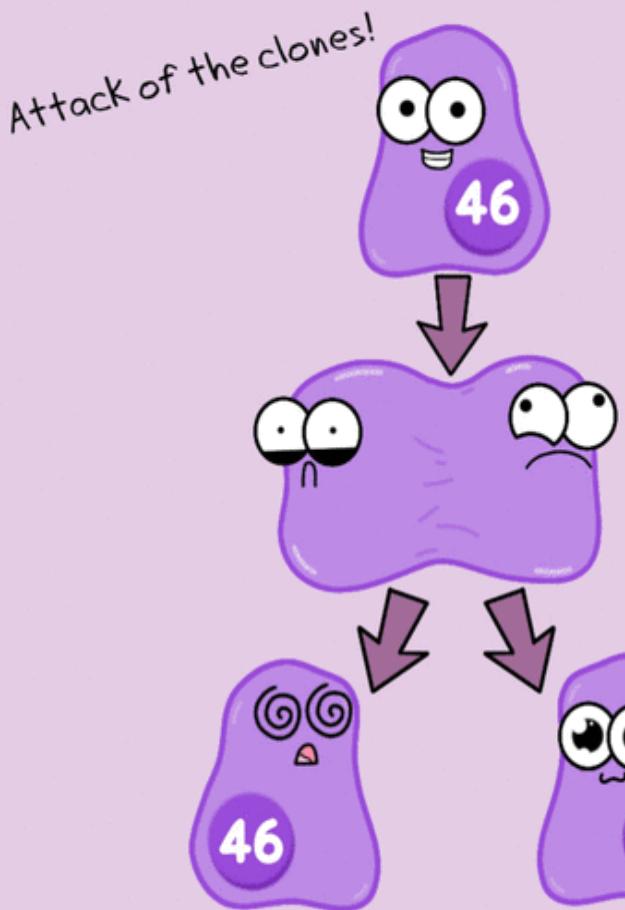
Types of Cell Division –

- Mitosis
- Meiosis

Mitosis



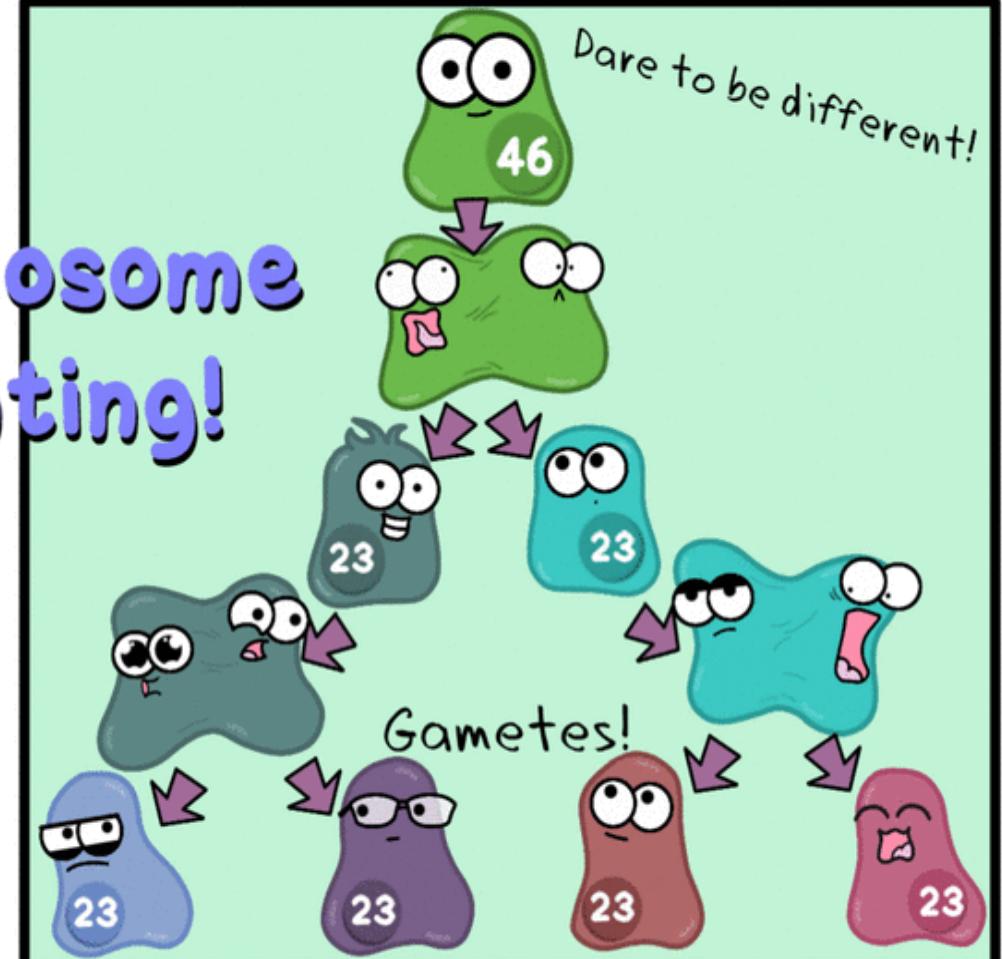
Mitosis



Chromosome Counting!

vs

Meiosis

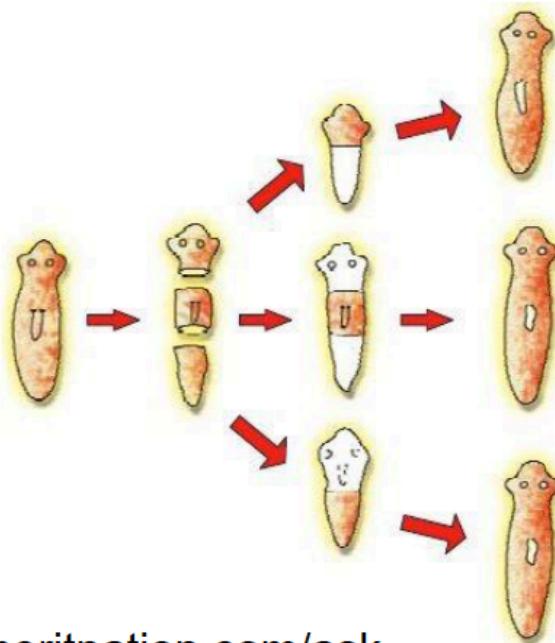


@AmoebaSisters

#AmoebaGIFs

Importance of mitosis - Regeneration in Organisms

Planaria



<http://www.meritnation.com/ask-answer/question/regeneration-in-planaria-labelled-diagram/how-do-organisms-reproduce/3241087>

Salamander



<https://www.youtube.com/watch?v=byLDgtSMI0w>

Application: Recent advances with knowledge of cell Division

Scientists Plan Regeneration Of Lost Limbs For Humans



<http://humanlimbregeneration.com/>
<https://www.scientificamerican.com/article/new-limb-regeneration-ins/>

Problems

Q 1. DNA and RNA do differ in:

- 1) Nitrogenous base composition
- 2) Stability
- 3) Sugar
- 4) All of these

Q2. Rabbits and Elephants have big ears for:

- 1)To listen distant sounds
- 2)To look bigger
- 3)To regulate body temperature
- 4)None of these

References

- Campbell Biology -Reece, Urry, Cain, Wasserman, Minorsky, Jackson 10th Edition, Cummings
- <http://www.newhealthadvisor.com/Cancer-Cells-vs-Normal-Cells.html>
- <http://humanlimbregeneration.com/>
- <https://www.scientificamerican.com/article/new-limb-regeneration-ins/>
- <http://www.meritnation.com/ask-answer/question/regeneration-in-planaria-labelled-diagram/how-do-organisms-reproduce/3241087>