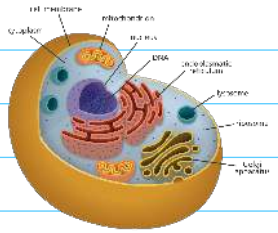
CELLS & SYSTEMS: WHAT DOES IT MEAN TO BE ALIVE?

All living things have a few common characteristics:

LIVING
- Made of cells
- Need energy
- Respond & adapt to environment
- Reproduce
- Grow
- Produce waste

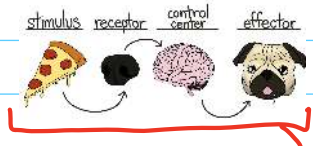


CELLS - basic unit of life
- → All living things have AT LEAST 1 cell.
- → EVERY cell comes from ANOTHER cell.

ENERGY - All living things need energy
- → How they GET energy is different
  - PRODUCER vs. CONSUMER
  - → need NUTRIENTS (ENERGY)

Organisms need a BALANCE between energy usage & creation

the sum of the differences = METABOLISM



ENVIRONMENT & ADAPTATION
- All living things respond to events called a STIMULUS
  - (EX: - Temp change
  - Injury)
- Adaptations → physical/behavioural difference that increases survivability

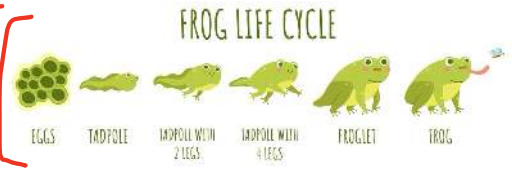
REPRODUCTION → All living things must reproduce in some way
WATERMELON vs. WOLF

GROWTH → not just a matter of size → over time structures & parts breakdown & need to be replaced

- changes can be dramatic → ex: frog
  - egg → tadpole → frog

Skin → always replacing itself

Hair →



WASTE - all living things require waste removal system

- Plants: their "waste" = O_2
- Humans: CO_2 and POO



All living things must do the following to be living

GREEW

1. G: Grow and develop
2. R: Reproduce
3. E: Respond to environment
4. E: Consume energy
5. W: Produce waste

Identity	Living vs. Non-Living	Life Criteria	
		Met	Not Met
Fire	Not-Living	Moves, Consumes O_2, Grows	No cells

Put these in the table & explain: Fire, viruses, mushrooms, coral, crystals, seeds, robots/AI, dead animals/plants, water