

DIVERSITY OF LIVING WORLD

*LIVING WORLD

*CLASSIFICATION

*PLANT KINGDOM

*ANIMAL KINGDOM

LIVING WORLD - FEATURES

1. GROWTH – CELL / TISSUE / ORGANISM ---→ INCREASE IN MASS + INCREASE IN OVERALL SIZE (TWIN CHARACTER OF GROWTH)

2. REPRODUCTION

3. METABOLISM

4. CELLULAR ORGANISATION

5. REFLEX TO EXTERNAL STIMULI / CONSCIOUSNESS

GROWTH DEFN AS IRREVERSIBLE PERMANENT INCREASE IN SIZE OF AN ORGANISM OR ITS PART OR EVEN AN INDIVIDUAL CELL.

DEFINING CHARACTERISTICS OF GROWTH ARE 3,4&5 AND NOT 1&2 DUE TO EXCEPTIONS

2. REASON OF GROWTH –

- * **RESULT OF METABOLISM**-----ANABOLISM + CATABOLISM
- SYNTHESISING RXN CREATE ANABOLISM WHILE DEGRADING RXN LEAD TO CATABOLISM
- IN NATURE THERE IS A BALANCE OF BOTH FOR A STATE OF EQUILIBRIUM I.E. HOMEOSTASIS

TYPES OF GROWTH

- INTRINSIC – DEFINING FEATURE
- EXTRINSIC – NON DEFINING LIMITED TO NON LIVING

- GROWTH
- 1. INDETERMINANT --PLANTS
- 2. DETERMINANT ---ANIMALS

N.B. --GROWTH & REPRODUCTION ARE MUTUALLY EXCLUSIVE TO EACH OTHER OR NOT INFLUENCED BY THE OTHER OFTEN SEEN IN HIGHER FORMS OF PLANTS AND ALL ANIMALS

REPRODUCTION

- NEW COPY/ PROGENY
- UNICELLULAR ORGANISM VS MULTICELLULAR ORGANISM
- IN UNICELLULAR BOTH GROWTH & REPRODUCTION ARE SYNONYMOUS WITH INCREASE OF NUMBER AND INDIVIDUAL
- IN MULTICELLULAR ORGANISM PROGENY IS MORE OR LESS SIMILAR TO ITS PARENTS

REPRODUCTION

ASEXUAL MODE

- GAMETES ABSENT
- GAMETIC FUSION OR MEIOSIS ABSENT
- SPORES – FUNGI / ALGAE
- BUDDING – YEAST /HYDRA
- FRAGMENTATION- FUNGI / PROTONEMA OF MOSS PLANT
- TRUE REGENERATION - PLANARIA

SEXUAL MODE

- GAMETIC FUSION
- MEIOSIS
- FERTILIZATION
- HUMANS
- STERILE HUMANS ---YET LIVING / FEATURE

METABOLISM

- SUM OF ALL RXNS & ENERGY TRANSFORMATION CARRIED OUT IN AN ORGANISM.
- HIGHLY REGULATED PROCESS
- EMERGENT PROPERTY
- HOMEOSTASIS --- SAME BALANCE --- IN CELLS IRRESPECTIVE OF OUTER ENVIRONMENT.
- BALANCE CONTINUES IN INTERNAL ENVIRONMENT IRRESPECTIVE OF EXTERNAL ENVIRONMENT CHANGES.

METABOLISM--- TYPES

ANABOLISM

- ANABOLISM--- SYNTHESIS
- BUILDING UP FROM SIMPLER MOLECULES -- END PRODUCT COMPLEX MOLECULE
- ENDOTHERMIC

CATABOLISM

- CATABOLISM---- DEGRADATIVE PROCESS
- BREAKS UP COMPLEX MOLECULE TO SIMPLER
- RELEASES ENERGY
- EXOTHERMIC

METABOLISM - ENERGY

- ENERGY (E) CAPACITY TO DO WORK
- FORMS OF ENERGY – **KINETIC** (ENERGY OF MOTION) & **POTENTIAL** (STORED ENERGY)
- **LAWS OF THERMODYNAMICS**
 - 1ST LAW – ENERGY CANNOT BE CREATED OR DESTROYED BUT ONLY BE CONVERTED FROM ONE FORM TO ANOTHER
 - EXAMPLE – IN PHOTOSYNTHESIS SUNLIGHT ENERGY → CHEMICAL ENERGY
 - 2ND LAW – EVERY ENERGY TRANSFER INCREASES ENTROPY (MEASURE OF DISORDER ALWAYS INCREASES) OF UNIVERSE
 - ❖ **FOOD** ORGANISED ENERGY DECREASES BONDS –PEPTIDE , HYDROXYLLIC BONDS
 - ❖ LOW ENTROPY –RENDERS ENERGY USABLE FOR WORK
 - ❖ **HEAT** DISORGANISED ENERGY– KINETIC ENERGY OF MOLECULES – HIGH ENTROPY—MOVING MOLECULES– ENERGY DISPERSES INTO ENVIRONMENT
 - ❖ ENERGY CONVERSION IS NOT 100% EFFICIENT---C₆H₁₂O₆ CARBOHYDRATEEAT...> E/ ATP + E/ HEAT HIGH ENTROPY
 - ❖ ...COMBUSTION IN CAR – 70% ENERGY LOST AS HEAT

