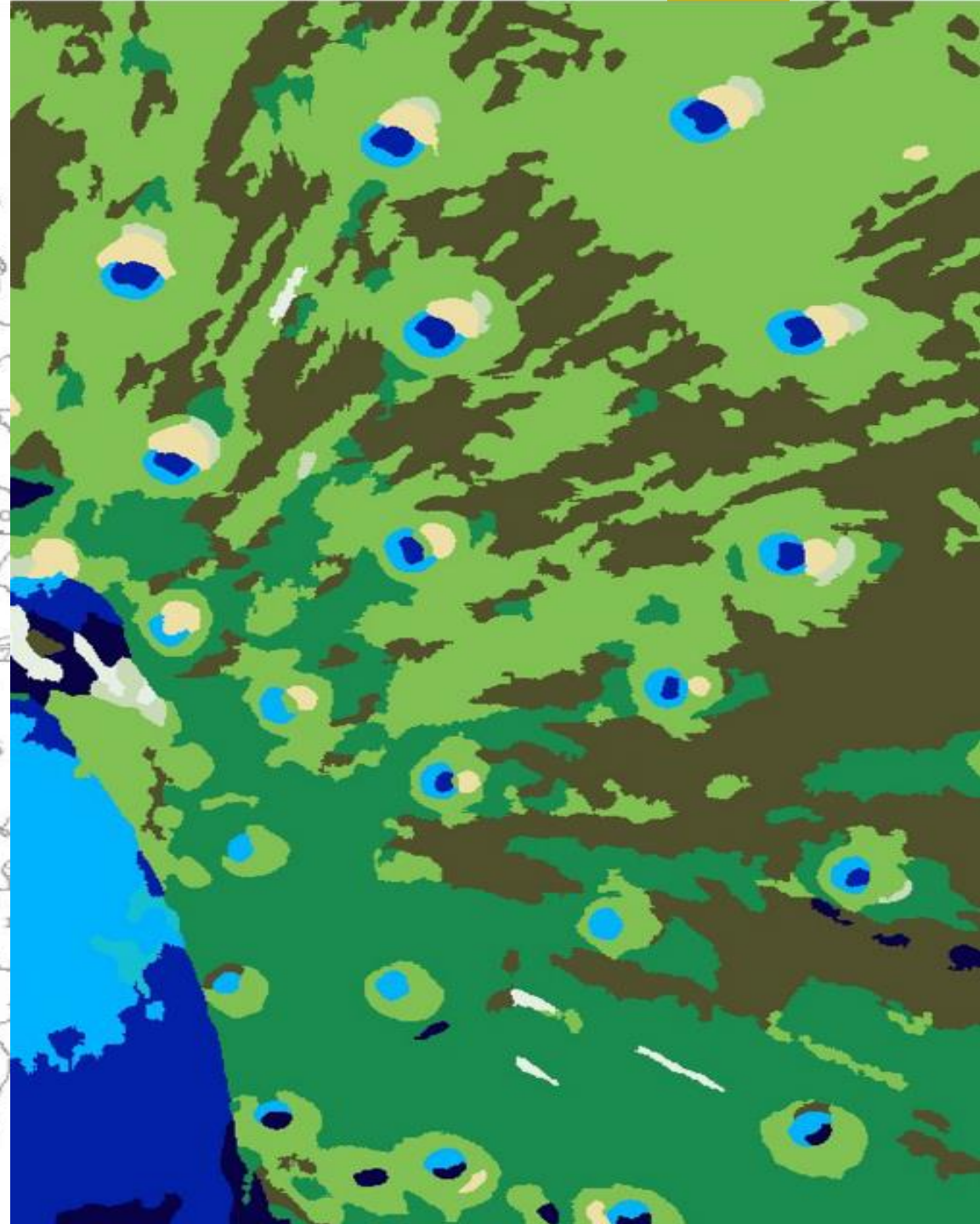


BIOLOGY-3

SWIFTY

500



1. Both DNA and RNA contain Adenine, Guanine and Cytosine. The fourth base is **Thymine** in **DNA** and **Uracil** in **RNA**.
2. 3 types of RNA: mRNA, rRNA and tRNA (**RTM**) which do protein synthesis in the cell
3. Ester: An organic compound made by replacing the hydrogen of an acid by an alkyl or other organic group. (COOH; **H** with **R**)
4. **Somatic** Neural System → Brain to **Voluntary** muscles.
Autonomic Neural System → Brain to **Involuntary** muscles.
5. **Cells** of the **human** body exhibit three main types of movements: **amoeboid**, **ciliary** and **muscular**.

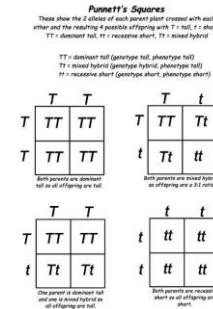
1. **Endocrine** glands lack ducts and are hence, called **ductless** glands. They secrete hormones. E.g. *Pituitary, pineal, thyroid, adrenal, pancreas, parathyroid, thymus* and *gonads* (testis in males & ovary in females)
2. **Pancreas** is a **composite gland** which acts as both **exocrine** and **endocrine** gland.
3. **Emphysema**: It is a chronic disorder in which **alveolar walls** are damaged due to which respiratory surface is decreased.

1. Metabolic pathways that lead to a more complex structure from a simpler structure are called **biosynthetic pathways** or **anabolic pathways**.
Example: acetic acid becomes cholesterol. (*Anabolic = Building-up*)
2. Metabolic pathways that lead to a simpler structure from a complex structure are called catabolic pathways. Example: glucose becomes lactic acid in our skeletal muscle. (*Catabolic = Break-down*)
3. **Prophase** = Chromosomes condense [chromatids to chromosomes], centrioles move to the opposite poles, nuclear envelope and the nucleolus disappear and the spindle fibres start appearing.
4. **Metaphase** = alignment of chromosomes at the equatorial plate.
5. **Anaphase** = centromeres divide, chromatids start moving towards the two opposite poles.

1. **Telophase** = chromosomal elongation starts, nucleolus and the nuclear membrane reappear.

2. Cytokinesis = cytoplasmic division.

3. **Punnett Square** is done for **Monohybrid Cross**



4. Both males and females bear same number of **autosomes (22 Pairs)**.

Hence, the **males** have autosomes + **XY**, **female** have **XX** (allosomes).

5. Broadly, **genetic disorders** may be grouped into two categories –

Mendelian disorders and **Chromosomal** disorders. **Mendelian:**

Hemophilia, Cystic fibrosis, Sickle-cell anemia, Colour blindness, Phenylketonuria,

*Thalassemia, etc. **Chromosomal** : Down's syndrome, (Trisomy @ 21, T-T-T),*

Turner's syndrome (girls -X) and Klinefelter's syndrome (Boys +X)

1. Allergy is due to the release of chemicals like histamine and serotonin from the mast cells.
2. AIDS was first reported in 1981, and is caused by member of a group of viruses (Retrovirus). A widely used diagnostic test for AIDS is Enzyme Linked Immuno-Sorbent Assay (ELISA).
3. Tumors are of 2 types: Benign and Malignant. Benign do not spread to other parts of the body.
4. Heroin, commonly called smack is chemically diacetylmorphine.
5. Coca alkaloid or cocaine is obtained from coca plant *Erythroxylum coca*.

1. Robert Köch (1876) discovered the bacterium (*Bacillus anthracis*) which causes anthrax. (*Supported germ theory of disease*)
2. Mendel gained posthumous recognition as the founder of the modern science of genetics..
3. RBCs have an average life span of 120 days after which they are destroyed in the spleen (graveyard of RBCs).
4. T H Morgan got Nobel Prize (Medicine) in 1933 for discoveries elucidating the role that the chromosome plays in heredity (Fruit fly).
5. Malpighian tubules are the excretory structures of most of the insects including cockroaches.
6. The process of release of urine is called micturition.

1. **Carrot** → Modified root & **Coconut** → Modified seed.
2. During his journey, Charles **Darwin** went to Galapagos Islands in HMS Beagle ship (1831). Charles Darwin first described this idea of evolution in 1859 in his book, 'The Origin of Species'.
3. **Evolution** = Singlecellular → Multicellular → Fishes → Amphibians → Reptiles → Birds → Mammals.
4. The classification **Whittaker** proposed has five kingdoms and is widely used: Monera, Protista, Fungi, Plantae and Animalia. **Linnaeus** classified organisms into 2 kingdoms – Plantae & Animalia.
5. **Stapes** is the smallest bone (also small muscle is alongside).

1. Fungi + Bluegreen algae (Cyanobacteria) = Lichens (*they are very good pollution indicators*)
2. Fusion of two nuclei called **Karyogamy**.
3. In swampy areas vertical roots, called pneumatophores, help to get oxygen for respiration.
4. Underground **stems** of *potato, ginger, turmeric, zaminkand, colocasia* are modified to **store food** in them. **Root Modification**: Carrot and Sweet Potato. **Leaf Modification**: Onion & Garlic.
5. If a fruit is formed **without fertilisation** of the ovary, it is called a **parthenocarpic** fruit.

1. The members of **rhodophyceae** are commonly called red algae because of the predominance of the **red** pigment, **r-phycoerythrin**.
2. **Agar**, one of the commercial products obtained from **Gelidium** and **Gracilaria** are used to grow **microbes** and in preparations of **ice-creams** and **jellies**.
3. **Chlorella** a unicellular alga, **rich** in **proteins** is used as food supplement even by **space travellers**.
4. **Bryophytes** are called **amphibians** of the plant kingdom because these plants can **live** in **soil** but are **dependent** on **water** for **sexual reproduction**.
5. The male sex organ in a flower is the **stamen** & female sex organ is the **pistil** or the **carpel**.

1. Various **plant tissues** can be classified as growing or **meristematic** tissue and **permanent** tissue.
2. In aquatic plants, large **air cavities** are present in **parenchyma** to give them **buoyancy** to float.
3. **Phloem** is made of: **sieve** tubes, **companion** cells, **phloem** fibres & **phloem parenchyma**.
4. **Cold-blooded** (poikilotherms) animals, **lack** the **capacity** to **regulate** their **body temperature**. **Warm-blooded** (homoiotherms) animals, are able to maintain a constant body temperature.
5. Delivery of the baby is called parturition.
6. The cutting of **DNA** at **specific locations** became possible with the discovery of the so-called '**molecular scissors**'- **restriction enzymes**.



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