R.K.
GROUP OF COLLEGE

Behind Kalwar Police Station, Kalwar, Jaipur (Raj.)

ASSIGNMENT

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Q-1 RNA Structure and its Function short note and its type.

Q-2 write a note on different type of Algae habitat.

Q-3 write a note on Nutretion of Fungi

Q-4 Difference between Plant Cell And Animal Cell

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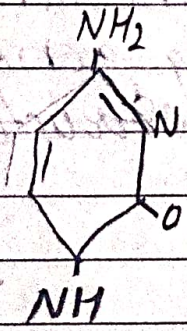
Q-1 RNA Structure and Its Function short Note and Its type.

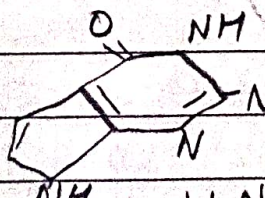
RNA (Ribonucleic Acid)

Structure :-

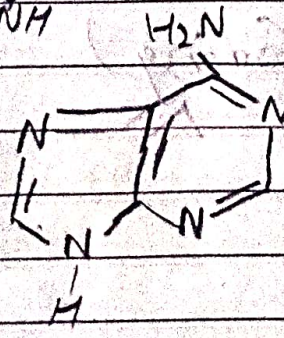
RNA is almost similar to DNA in structure RNA is usually a single standard and unbranched chain made of Polynucletides RNA standards are arranged in a linear sequence of hundred of Nucleotids linked together by 3'-5' bonds of Ribose Sugar is found in RNA and these are combined with bases to form ribonucletides



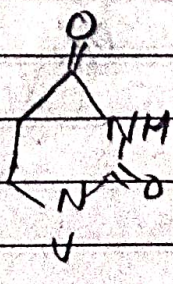
Cytosin



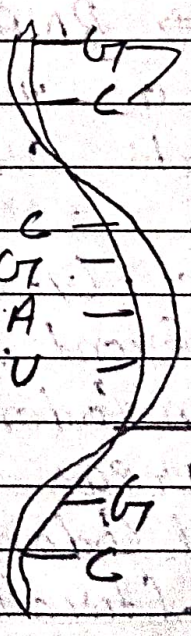
Guanine



Adenine



Uracil



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R.N.A Containes four bases named adenine Cytosin, guaine, Uracil All the base in RNA are Some as DNA Except thymine Uracil to found in RNA Place of thymine in DNA

Type of R.N.A ⇒ R.N.A is divided into the following 3 types

Messenger R.N.A Ribosomal R.N.A Tranfer R.N.A

(1) M-RNA ⇒ RNA is farmed after the Removal of introns from noncoding genes Major Parts are Present in the Structure of RNA.

(i) Methylate - G - Cape
(ii) Leader (Front region - Non Coding)
(iii) initation Codon
(iv) Coded areas
(v) Terminal Codon
(vi) Trailer. (trailing field. Non Coding)
(vii) Poly A Tail

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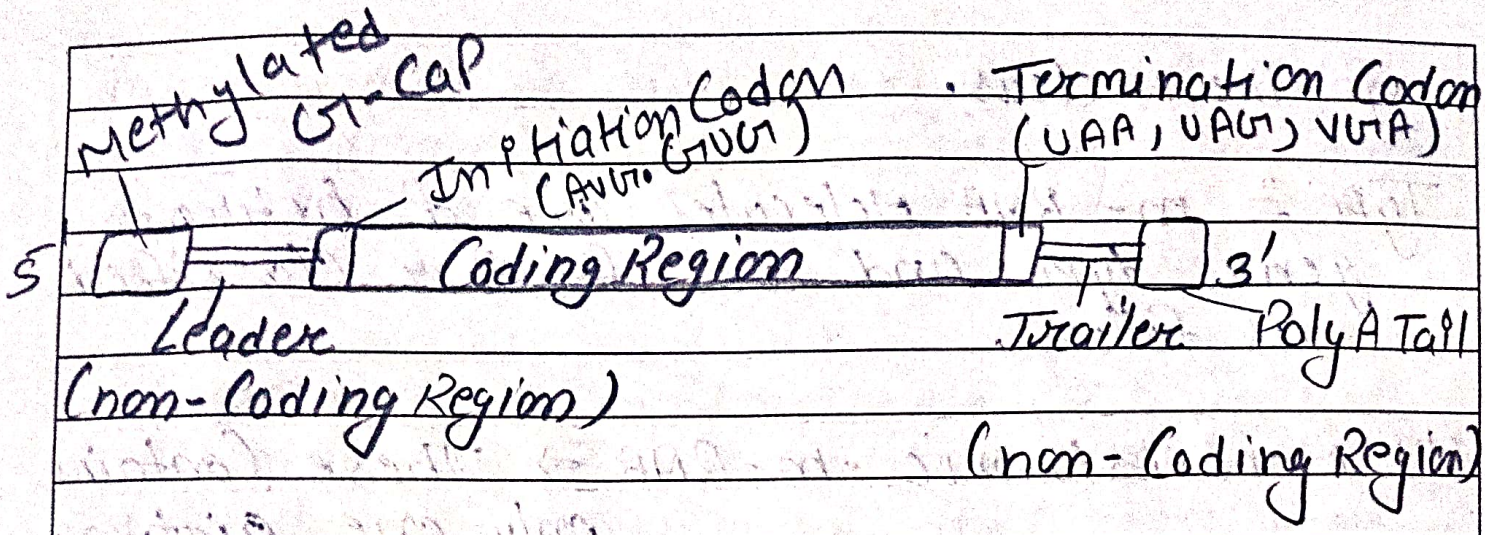

Fig :- M-RNA Structure

- All these Parts are Presents Sequentially from 5' end to 3' and In m-RNA. A long Coding Zone Is Present In It. which Called the Start Codon (AUG or GUG) and terminal Codon (UAA, UAG or UGA) are Present at the 3' end to A 100 base long leader Is Present from the Start Codon toward the 5' end a trailer Region is Present ahead to the terminal Site the leader is Methylated at the 5' and the trailer is Sourrended by a Poly A tail at the 3' end The CaP Present at the 5' end of M-RNA. Protects It form being destroyed by histrolytica enzyme. It also Protects m-RNA from disintegeration And helps In bringing m-RNA out

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of the Nucleus.

Type :- m-RNA Molecules are of hetro-genus type and are fruther Classified as follows.

(i) Monocistronic -m-RNA => These Contains only one cistron of M-RNA and hence Produce only one type of Protein Monocistronic RNA is found in eukaryotic organism

(ii) Polycistronic m-RNA :- This type of m-RNA Produces more than one Protein Chain. Due to its Great length it Contains More than one Cistron This type of m-RNA is Called Polygenic M-RNA Prokaryotic m-RNA is Polycistronic They form α-Group with Proteines In 1965 Spirin named them informes This is a Relatively Stable.

Biosynthesis of m-RNA

m-RNA Can be Syenthesis using one of the two standards DNA-Synthesis occurs from the 5' end to 3' end. The RNA Polymerise enzyme binds to the

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Initiation Site of Promotor end of the Strong Gene or DNA Cistron and Catalyz RNA Syenthesis The Process of Syenthesis of m-RNA from DNA is Called

2. Ribosomal RNA / R-RNA ⇒ RNA was first discoverd by Tissieres and Waston (1958) It is not the necessary that the ratio of bases in it be A=G=U=C it is the Made by the Genes found in the nuclear Organiser and its formation is Completed in the Nucleus after which the ribosome goes out into the Cytoplasm in the form of two units Small 30S and large 50S the Majority of Cellals RNA and ribosomal RNA or s^{RNA} it is found in ribosome which are nucleoProtein Molecules

R-RNA ⇒ RNA is actually the RNA Component of the ribosome which helps in Protein Systhesis

→ Ribosomal RNA is a Souluble RNA. It Constitut 80% of the total RNA of the Cell it is a Pelical Structure.

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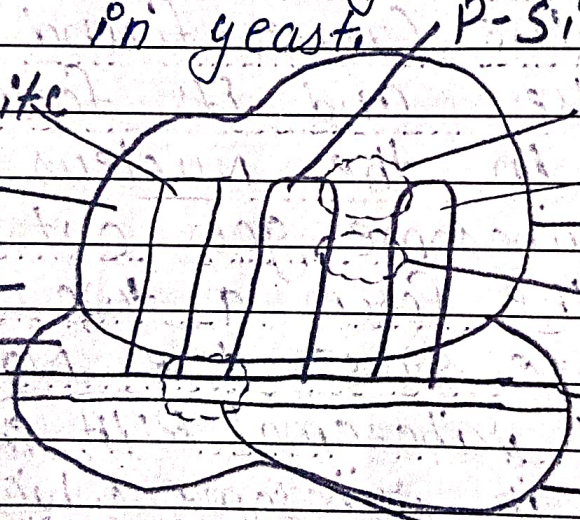
Structure :- Ribosomal RNA two sub units one is a large sub unit (LSU) and other small sub unit (SSU) The sub unit is arranged above the large one and m-RNA is found in the b/w two them. The r-forms a peptide bond b/w two A.A is R.N.A - Single or double standard RNA has been Reported in virus and segmented RNA has been Reported in yeast.



Prokaryotic RNA ⇒ Prokaryotic Cell Contains 23, 16 and 5S r-RNAs. The large 50S unit of Prokaryotic Ribosome Contains 23, 16 S-RNA This type of r-RNA is used for Polymerization of A.A and stability of Polipeptide

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Eukaryotic RNA ⇒ The different size of the RNA are found in eukaryotic cells. These are 28S, 18S, and 5S. These are 28S, 18S, 5S types of RNA are found in the large unit of 80S ribosome. The small 40S unit contains 18S type of RNA.

Importance of r-RNA ⇒ r-RNA helps in protein synthesis because of its 3' end there is a binding site for m-RNA and a binding site for t-RNA is also found on its 5S r-RNA. Apart from this small Nuclear RNA helps in processing r-RNA and m-RNA in the Nucleus.

3. Transfer - RNA

The RNA Molecule which has the ability to bind to only one specific A.A and the action is carried out by an A.A specific ternary RNA synthesis is called transfer t-RNA helps in protein synthesis by a very complex function T-RNA or t-RNA is small in size and is formed by about 60-types of Ribonucleic acids. These Remain free in the Cytoplasm. They help in the Formation

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And Joining of Poly Peptide Chain by attaching Amino acid Molecule in the Cytoplasm and Joing Them in the Presence of m-RNA.

→ The Ratio of Au and G:C bases in the RNA is always almost the same It is Chain by about 70-75 nucleotides but It has been observed that UP to 80% of it is double standard. G is Present at Its C-5' and C-C-A found It C-5' end some unusal bases are also Present Such as

(i) 5' Riboasyl uracil
(ii) Dihydrouridylic acid
(iii) Pseudouridine (Psi)
(iv) Methylated bases of the A or C the total weight of theses bases has been Reported to be 10 to 20

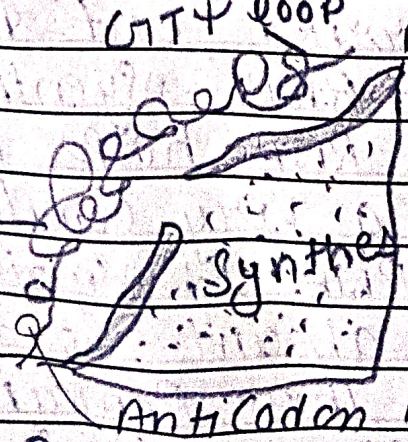

Fig:- Design of Three dimensonal Str. of t-RNA

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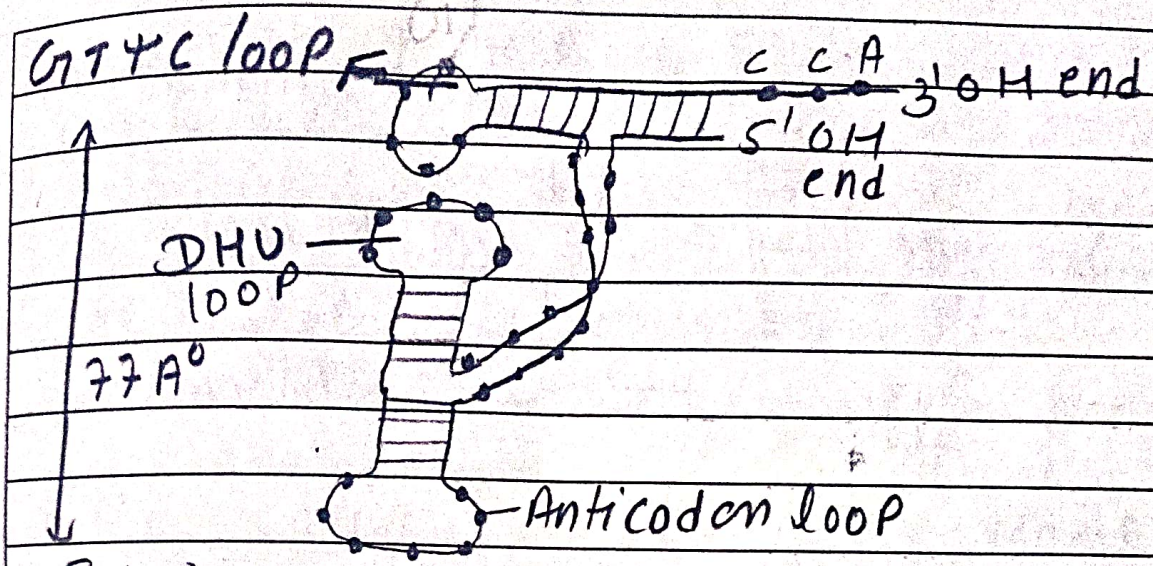

Fig:- L-Shaped three-dimensonal (3D) Str. of t-RNA

Structure :- To understand Str. and the function of t-RNA a three dimensonal Model was Created with the help of x-ray Crystallography. Nobel Prize winners S.H Kim (1973) and A Klug Madesignficent Contribution in Making Pt. him Made a Model of Greatest allenin RNA which Forms like the english letter 'L' and its thickness was 20 A°. the Following Regions are found Pt him Made a Model of Greatest allenin RNA which forms like the English letter 'L' and Pts thickness was 20 A° the Following Regions are found it

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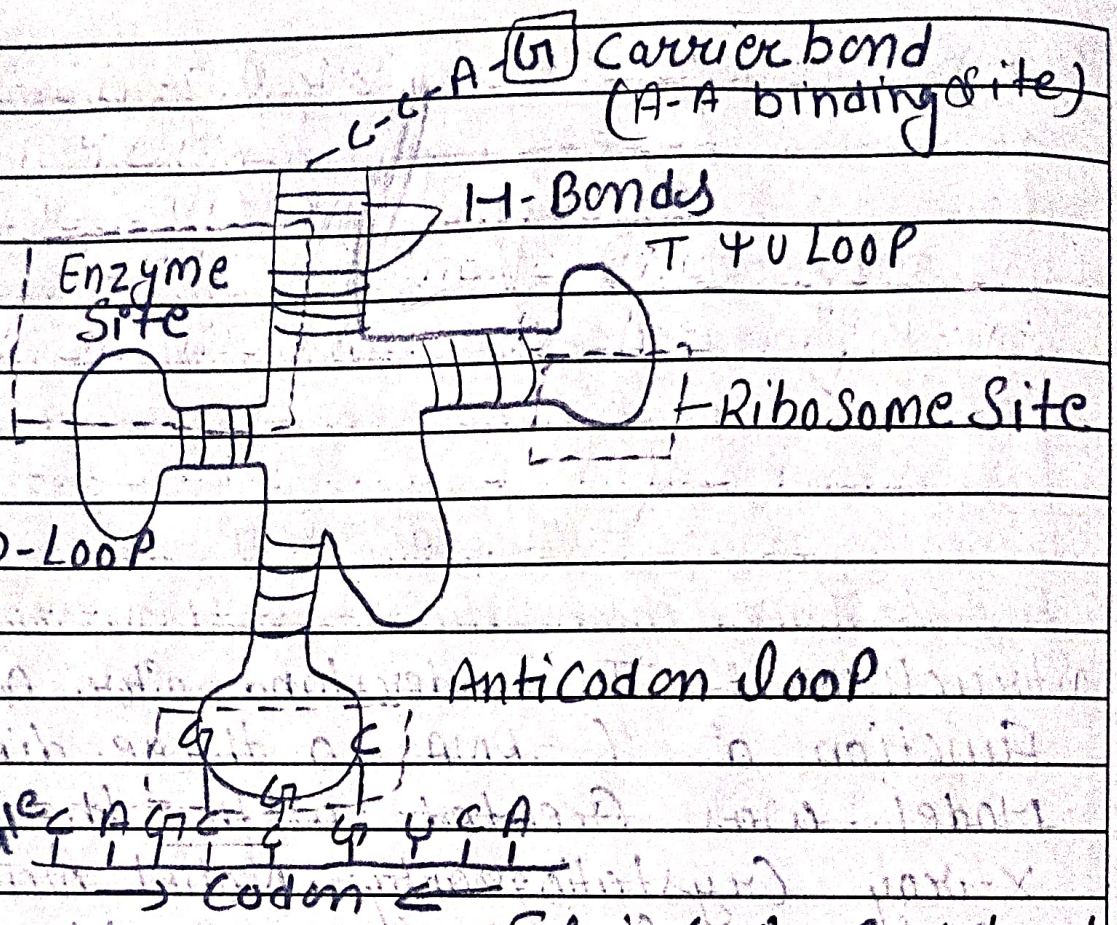

Fig :- t-RNA Molecule

1 Amino acid Attachment Site at 3' End :- There is an amino acid attachment site at the 3' end which is Receptor Region of 7 or 9 base Pairs At the 3' end there is a nucleotide C-C-A base Sequence. In this Group in the Presence of ATP and Specific amino acid

2 5' end :- Guanine base and Phosphate Group are Present at the extreme 5' end of the Chain

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(3) Ricognition site :- The CCA tail is a Cytosin ademasine sequence present at the 3' end of the RNA Molecule AA are added to the B-RNA by Aminoacid RNA synthesis and are joined to form A-RNA

(4) Anticodon or Codon Recognition site :- Anticodon loop Contains 6 base Pairs in which anti-codon is present. Anticodon is a Group of 3 Nucleotides which are Complementary to the three bases sequence of the Codon Present at the m-base.

(5) Ribosome Recognition site :- This Region Forms The TΨC arm Containing the loop It Contains 7 unpaired bases in which Pseudouridine is also Present The Function of TYC Mucosa is to Connect to RNA of the Ribosome

(6) DHU loop :- This loop Consists of 6 base Pairs which bind amino acid synthesis Dishidrouridine are found it

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Functions :- t-RNA Plays a Major Role in Protein Synthesis

→ It transfer specific activated A.A to the site of Protein Synthesis the Cytoplasm.

→ It transfer the A.A to the Polypeptide-de chain

Q-2 Write a note diff. type of Algae habitat

Ans(2)

Habit And Habitat

→ More than 30,000 species of algae are Found in Different habitats

→ Most of the species of algae are e.g. aquatic,

→ which are usually found in the fresh water bodies like ponds, ditches River, springes.

→ The habitat of algae may be Classified into three groups

(1) Aquatic habitat
(2) Terrestial habitat
(3) Special habitat

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Aquatic Habitat

On the basis of nature of water, Aquatic algae are of two kinds

(1) Fresh water algae - Most members of Chlorophycae, Charophycae, Cyanophyceae and Xenthophycae. Eg. Chara, volvox, ulothrix etc.

(2) Marine water algae - most of the members of the class Phaeophyceae and Rhodophyceae, Eg - ectocarpus, Sagassum Fucus, laminaria.

Terrestrial Algae

Some of the Algae are found on moist and water logged soil.

These Algae are called edaphophytes

Eg. Vaucheria, botrydium

Fristschellia is an Algae which is found in Moist Acidic Soil.

Special Habitat

It is also observed that some species of Algae are found in some special Habitat.

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(1) Epiphytic Algae - eg- Ulthorix, Oedogonium
(2) Symbiotic algae eg- nostoc and anabaena.
(3) Parasitic algae eg- Cephaleurous.
(4) Thermal Algae eg- Phormidium. Mastigocladus.
(5) Cryphytic algae eg - Chlamydomonas
(6) endophytic Algae eg - nostoc and Anabaena.
(7) Endozoic algae eg - Chlorella.

Q-3 Write a note on Nutrition of Fungi

Fungal Nutrition

→ They are chlorophyll deficent organism hence cannot Manufacture carbohydrates
→ So all Fungi are CHEMOHETEROTROPHIC And they need Pre-existing organic source in their environment.
→ They are dependent on degradation of Dedd or living organic matter for their energy Requirements.
→ Small Molecule (Simple sugars, amino acid And Soluble Compounds can be absorbed directly across the Fungal wall And Plasma membrane.

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Larger, More Complex Molecules (Polymers such as Poly Saccharides and Protein) must be First broken down into Smaller Molecules, which Can be Formed be absorbed

on the basis of Mode of Nutrition they are classified into Four Groups

(i) Saprophytes
(ii) Parasites
(iii) Symbionts
(iv) Predaceous

Saprophytic Fungi

Saprophytic Fungi Obtain their Nutrition From dead organic matter may be both animal or plant origin.

These Fungi Mainly Produce exo-enzyme For Release of Simple organic matter

They May Grow on the Surface of Organic matter Grow insides the Organic matter

Ex: Mucar, Rhizopus

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Parasitic Fungi

These Fungi take food from other living Plants and Animals.

The living organism on which fungi grow are called Host

Such Relation ship is known as PARASITISM.

Some Parasitic Fungi Possess Specialized Structures called Haustoria for absorption of nutrition from host

Ex:- Erysiphae, Phytophthora

The Parasitic Fungi are three types

(i) obligate Parasites

(ii) Facultative Saprophytes

(iii) Faculative Parasites

obligate Parasites:- Essentially Require living host, not able to live on dead organic matter

Faculative Saprophytes:- These are Parasite but can live on dead organic matter when specific host is not available

Faculative Parasities:- These are usually Saprophytes but Under certain condition the Parasitized living host.

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Symbiotic Fungi

These Fungi Grow on or with living organism but both of them are Mutually benefited

Ex :- Lichen and Mycorrhiza

Lichens are Symbiotic association of Algae and Fungi

Mycorrhiza are Symbiotic association of Fungi and Roots of higher Plants

Predacious Fungi

These are Animal Capturing fungi
These Fungi usually inhabbit in the Soil.
Some of them also produce Sticky Secretion for Capturing their Prey

Ex :- Arthobotrys, Dactylaria

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Q-4 Difference b/w Plant Cell and Animal Cell

S.NO.	Plant Cell	Animal Cell
(a)	Plant Cell is Covered by a Rigid Cell Wall	Animal Cell lacks Cell Wall
(b)	Nucleus is present in the peripheral Cytoplasm	Nucleus is present in the Centre
(c)	Reserve food Material is Starch in Plant	Reserve food Material is glycogen in Animal Cell
(d)	Plastid are present	Plastid are absent
(e)	Plant Cell is has less Number of Mitochondria	Animal Cell Contains numerous Mito-Chondria
(f)	Centrosome is absent except in some lower forms	Centrosome is present

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S.NO	Plant Cell	Animal Cell
(g)	Cell division occures by Cell Plate method.	Cell division occurs by cleavage Method
(h)	Orlyoxysomes are present in some Plant Cells	Orlyoxysomes are Absent in all Animals Cells.

S.NO	Plant Cell	Animal Cell
(i)	A Plant Cell has a Rigid Cell wall on the outside	A cell wall is Absent Cell is enclosed by Plasma Membrane
(ii)	Plastid are found in Plant Cells	Plastid are usually Absent
(iii)	A Mature Plant Cell Contains a large Central vacule	An Animal Cell often Possess Many Small Vacoul-es

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S. No	Plant Cell	Animal Cell
(iv)	Centrioles are usually Absent except in lower Plants.	Centrioles are found in Animal Cell
(v)	Golgi apperatus Consist of a Number of distinct or unconnected units Called dictyosomes	Golgi apperatus is either to ca-lised or Consists of a well Connected Single Complex

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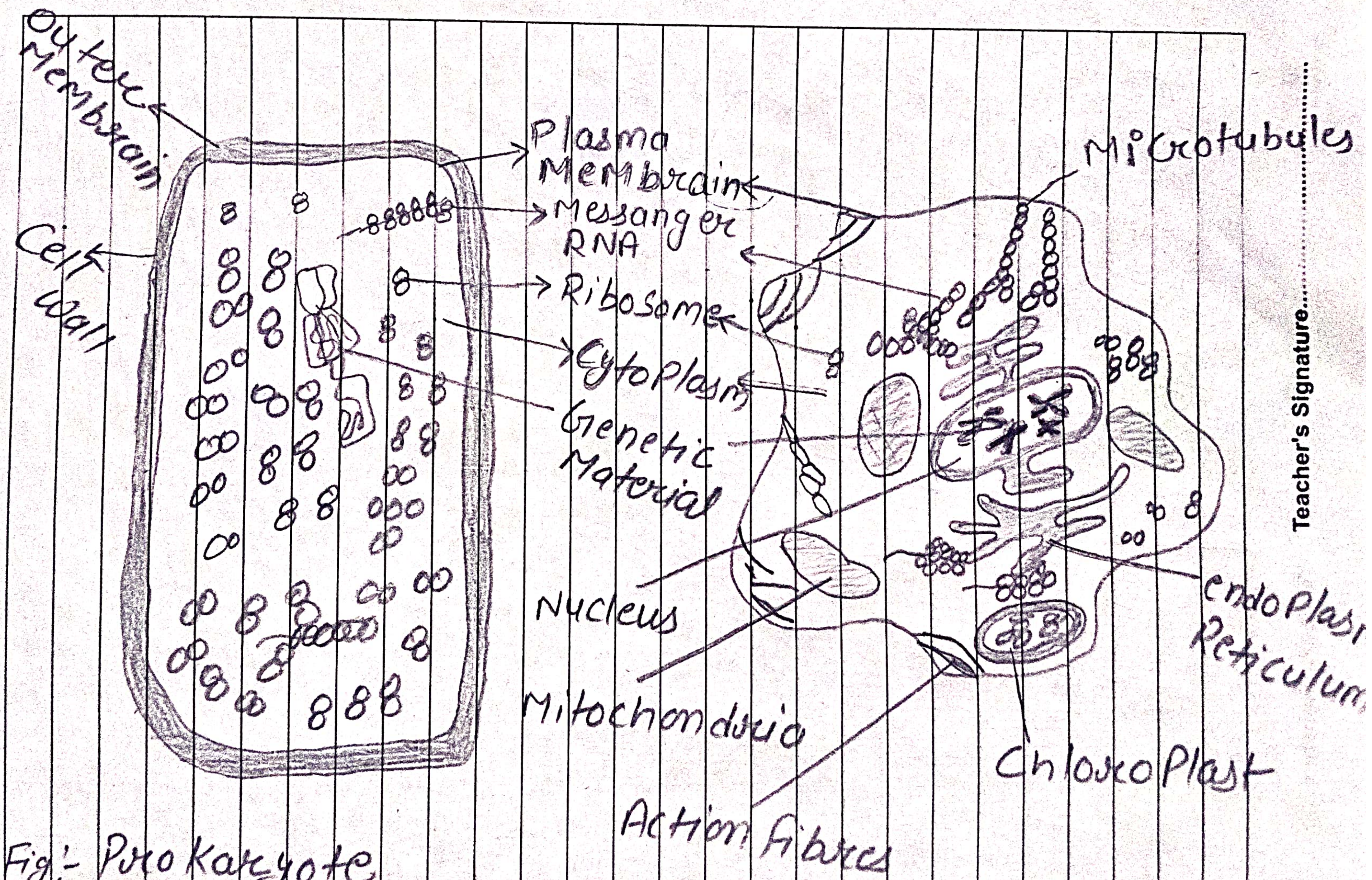

Fig:- Prokaryote

Fig:- Eukaryote