

Anchorage Dependence cells → describes the need for cells to attach to a solid substrate in order to exert their activities indicated.

Anchorage Independence cells

Describes the property of transformed cells to form colonies in semi-solid agar medium without adherence to the substrate.

Some cells do not depend on their attachment to a surface.

Examples:- Hematopoietic cells (cells that give rise to blood cells)
Cancer cells

These cells continue to divide uncontrollably, since their integrins are not anchored to a surface. Integrins mainly controls the cell division rate and its death (apoptosis).

Anchoring dependent cells:-

→ cells need to be 'grounded' to divide. That is, if they aren't anchored to a surface - such as tissue in your body or a jar in a laboratory - they won't produce. Cells that aren't anchored may undergo apoptosis, which is basically programmed cell death.

Mitosis

- Reproduction
- Growth
- Repair

progeny identical to parent.

Mutation - environment

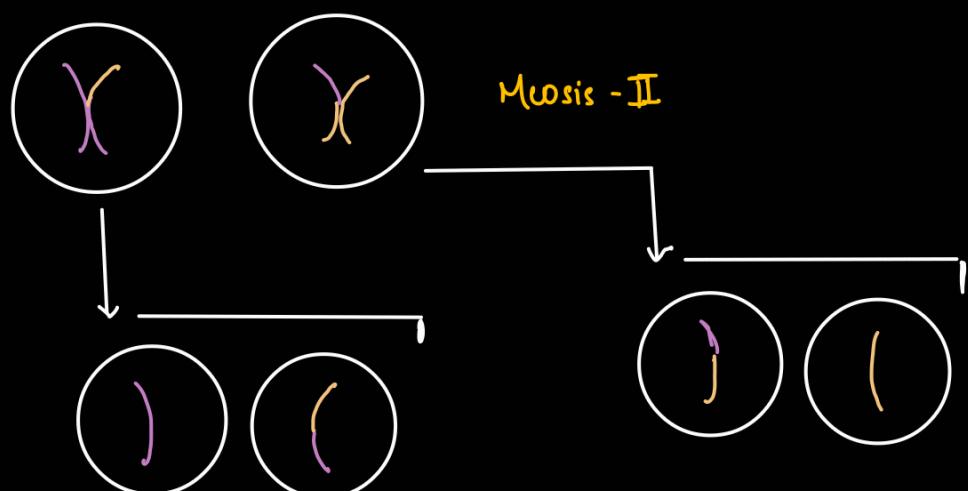
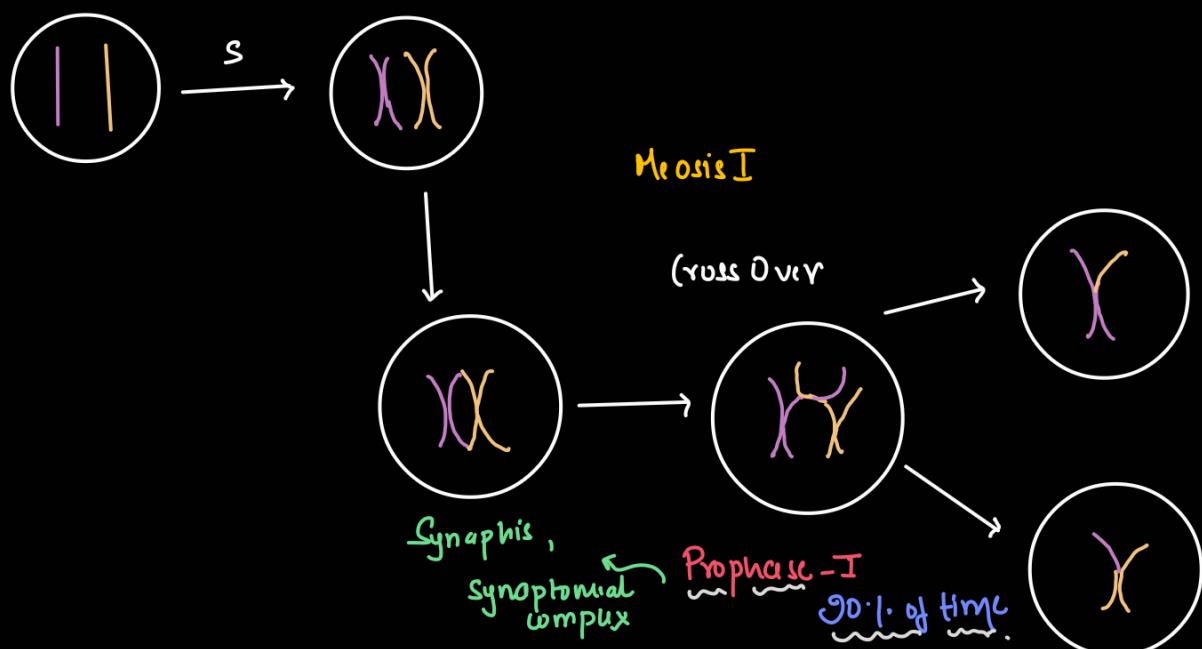
- spontaneous.

Nature

- Preservation
- Evolution [changing]
[Sexual Reproduction]

Diploid \rightarrow Haploid.

MESOSIG



Generating diversity
1. Cross over

2. Independent Assortment!

Haploid can divide by Mitosis

Diploid can divide by Mitosis

[Diploid]

Miosis

Separation of homologous chromosomes.

Interphase - S → Prophase I → Metaphase I → Anaphase → Telophase I

|
G.O.I.

↳ Synapsis formation
↳ Chiasmata
(cross over)

tetrad

of
2 replicated
homologous
chromosomes

Miosis - I

Cytokinesis

Prophase II

Metaphase II

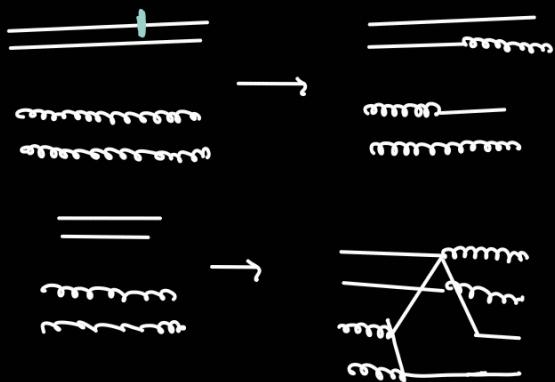
Anaphase II

Telophase II

Miosis
- I

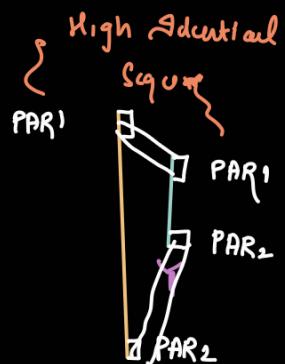
Sep of
Sister chromatides. Cytokinesis

Prophase - I

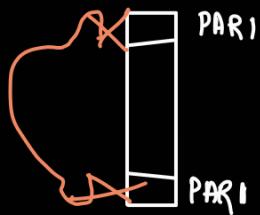


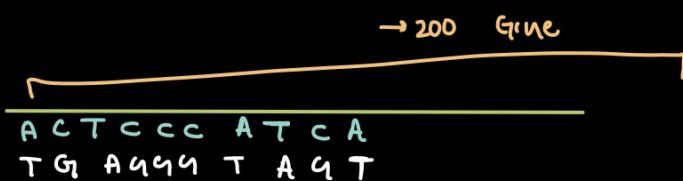
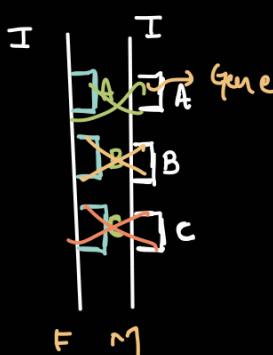
End of prophase
↳ They undergo.

pairs
23 chromosomes
22 autosomes
1 sex chromosome
4b
44
2 XY or YY

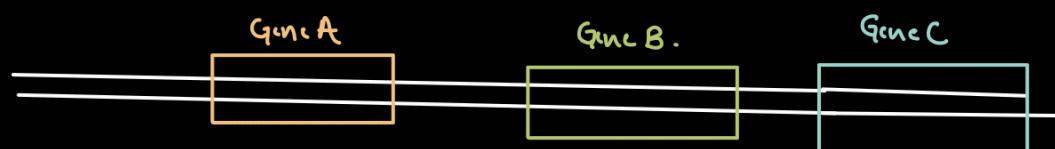


pseudoautosomal region





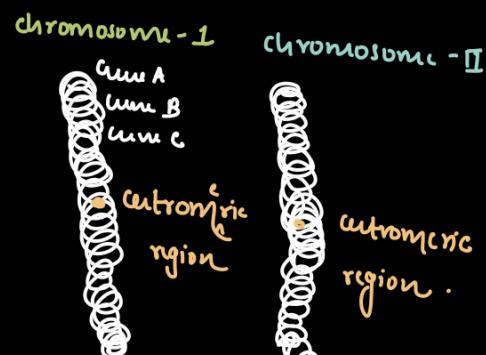
Today's Lecture!



DNA - Double strand

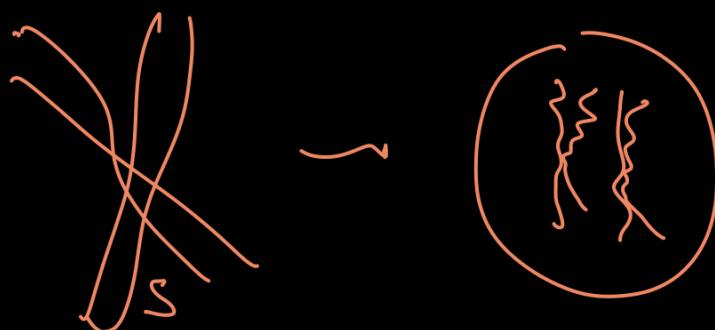
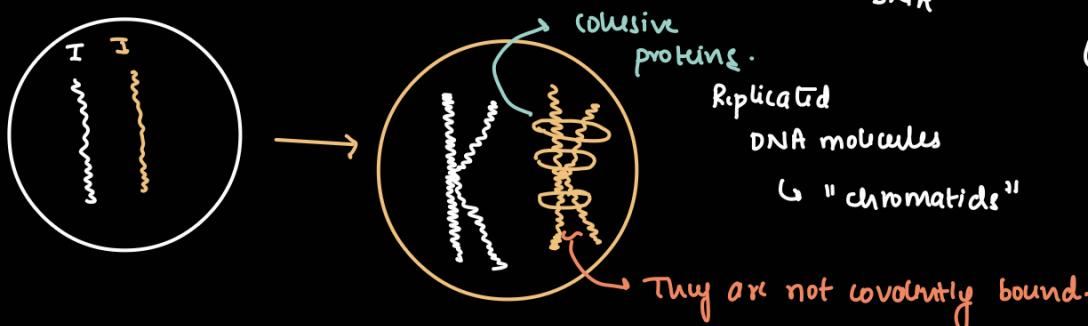
↓ Representation
" " "

Gene - Encodes RNA → Encodes protein.



↳ DNA which is loosely packed.

"It is not extremely condensed"

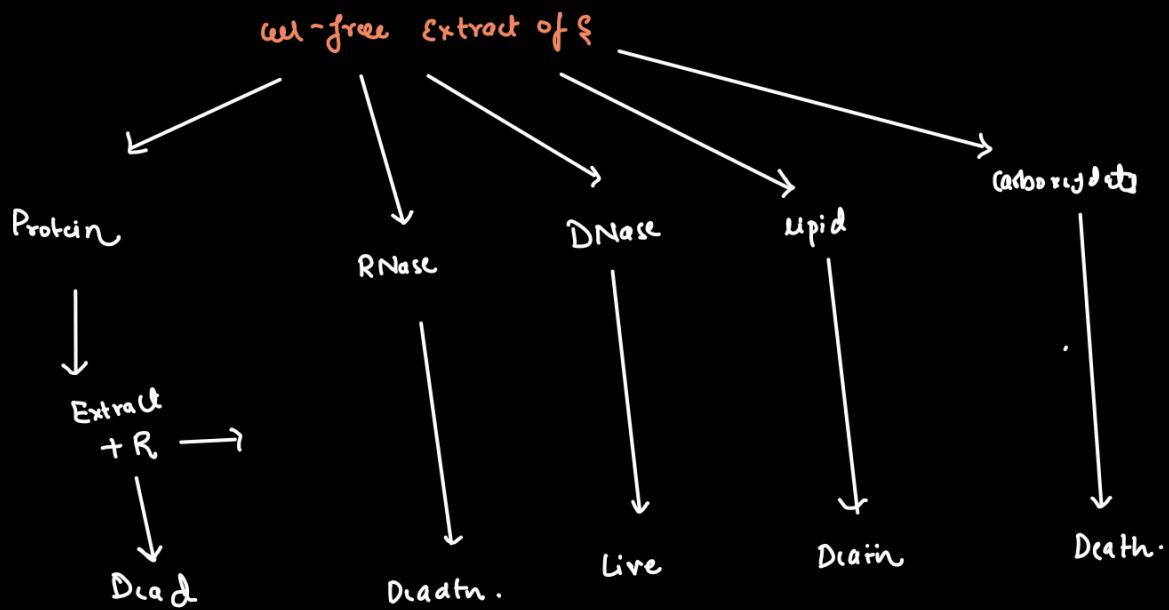
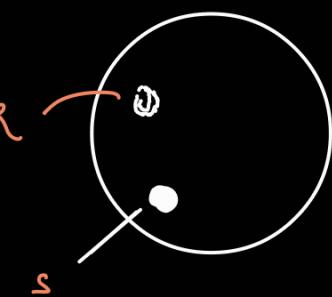


Fredrick Griffiths

Streptococcus pneumoniae

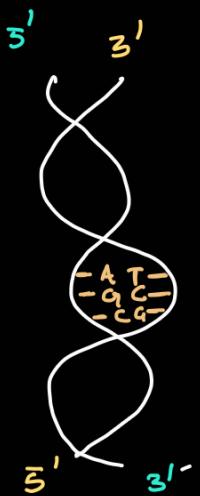
- R Rough

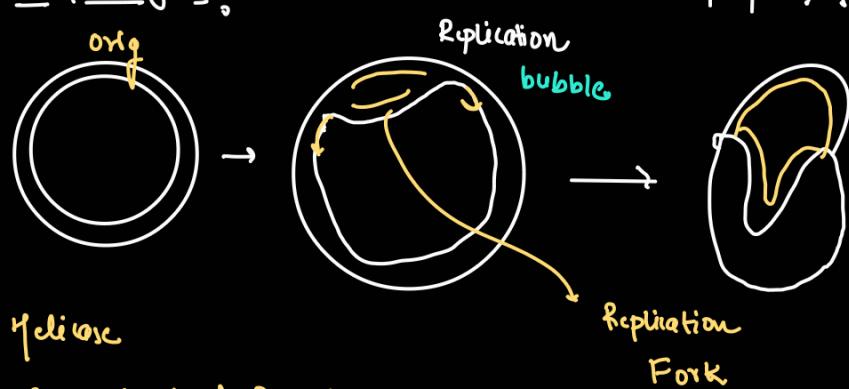
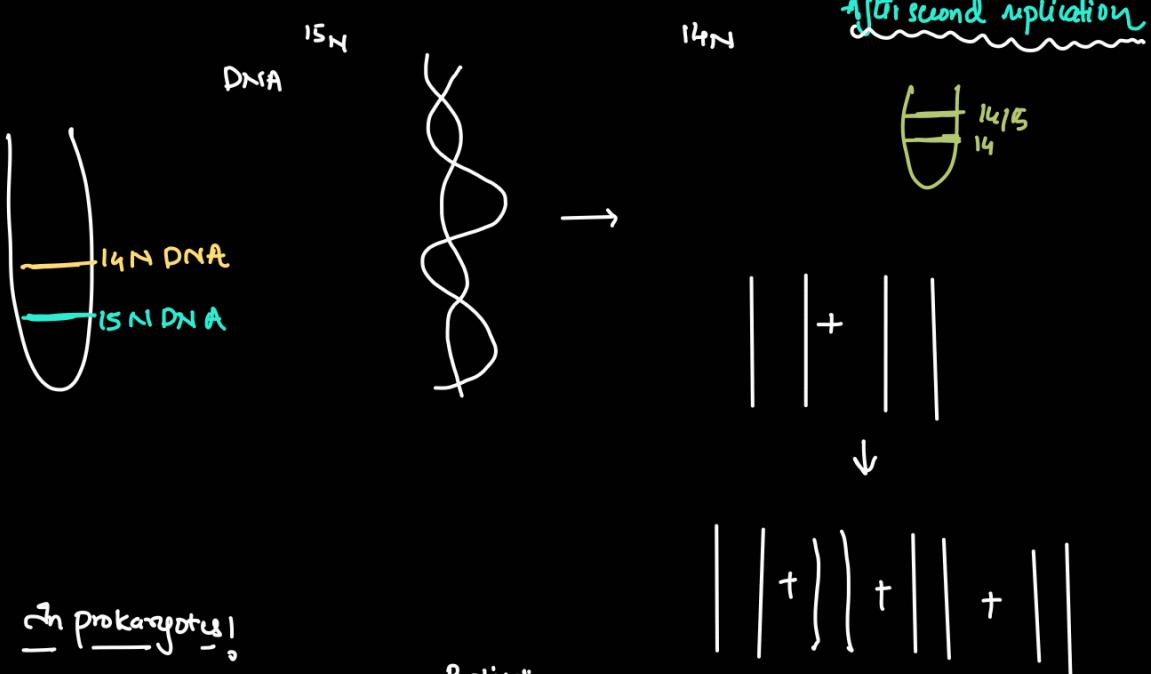
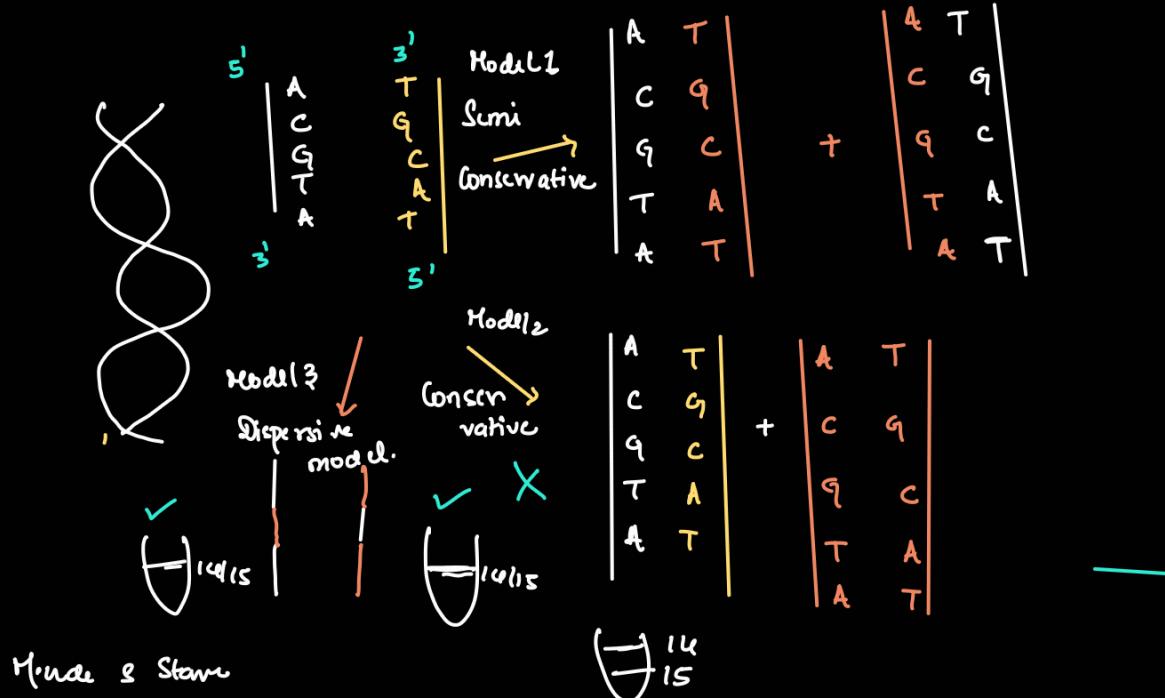
- S Smooth.



DNA structure.

1. Antiparallel

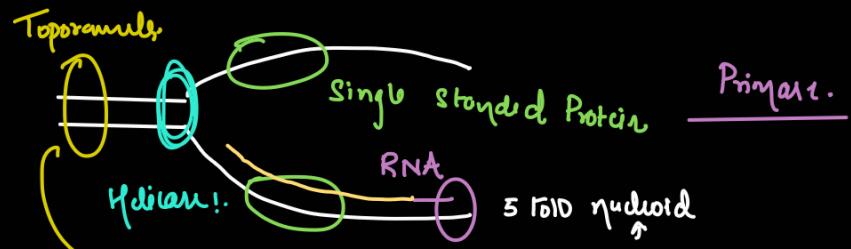




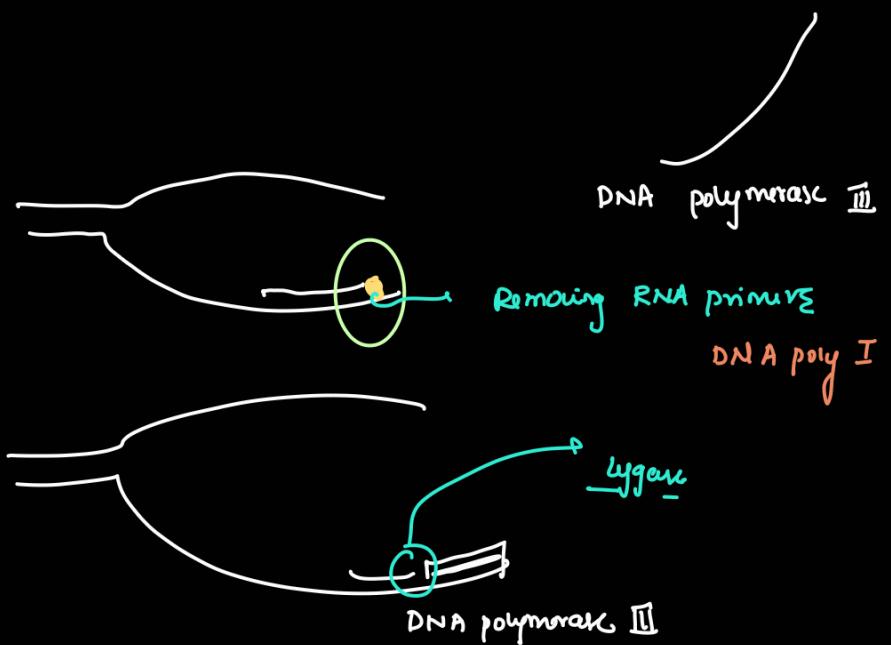
Single standard Binded proteins.

To
Proteins
DNA phi
DNA pol II

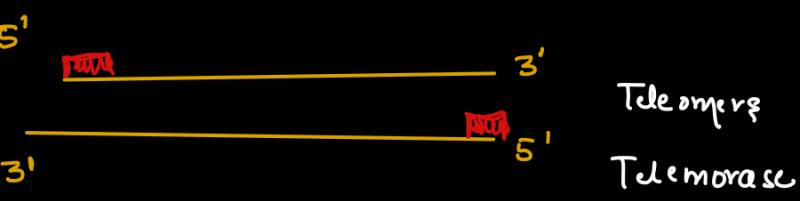
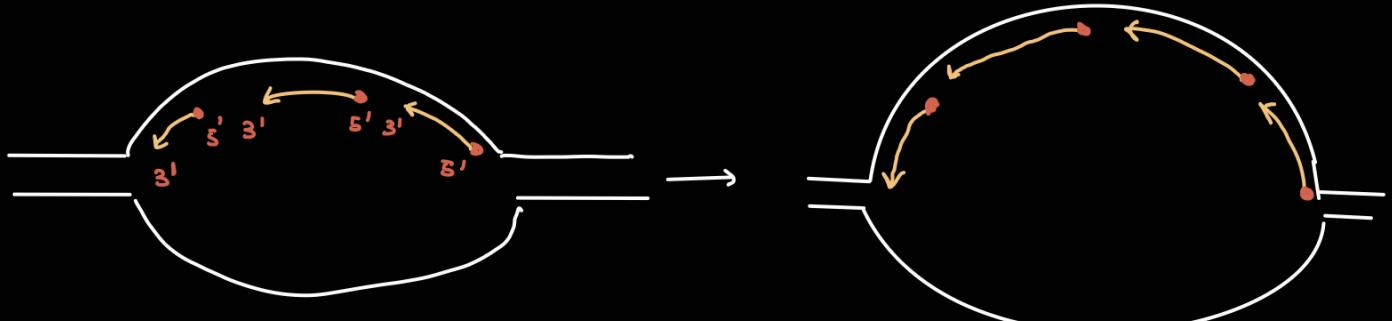
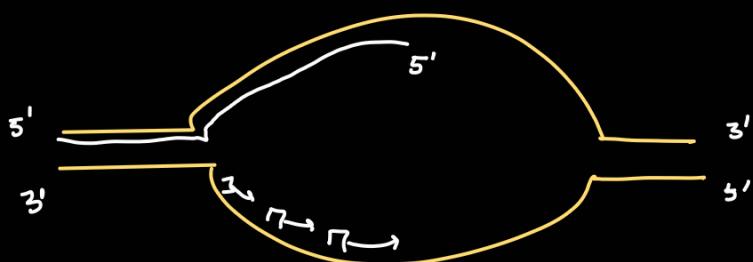
Replication is Extremely
Accurate!



Relaxes some tension!
or stress on DNA!



↳ needs a primary to start!
↳ Enzyme acts in 5' to 3' dirn!



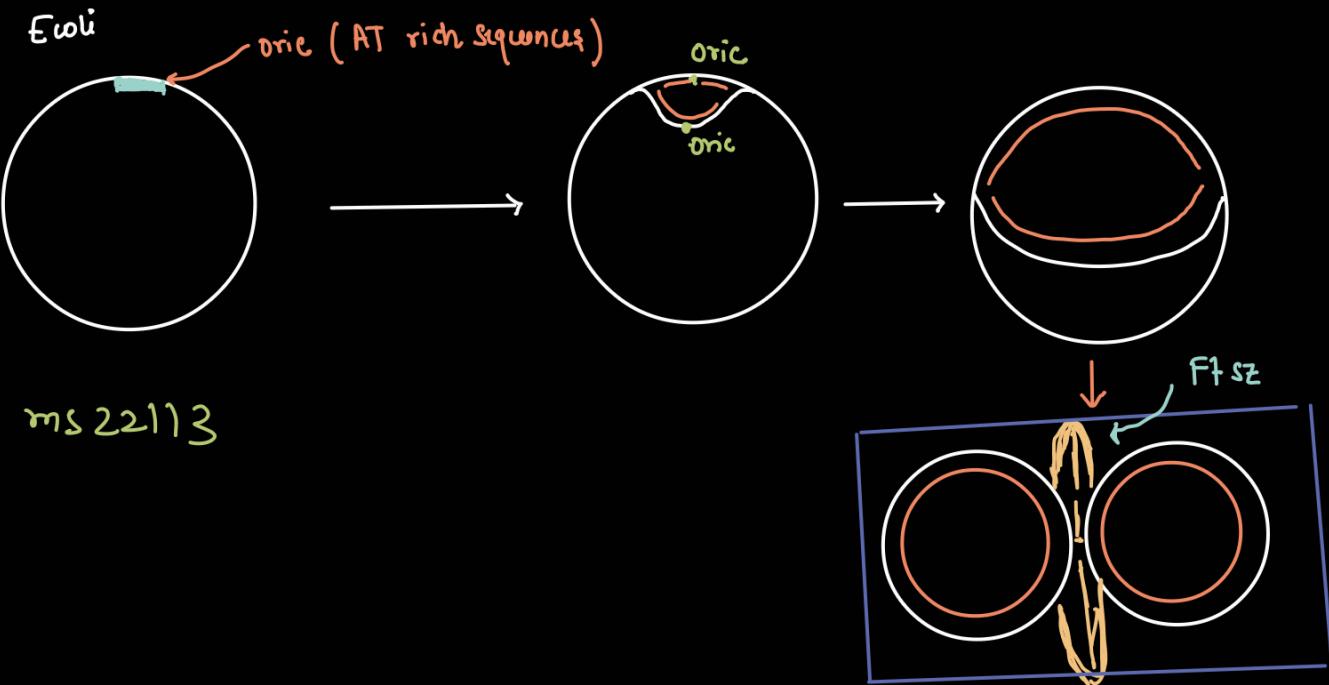
TTAGGG TTAAAC...

Telomerase.

All division in prokaryotes

- Signal
- Replication of DNA
- Segregation of DNA into 2 regions
- Cytokinesis

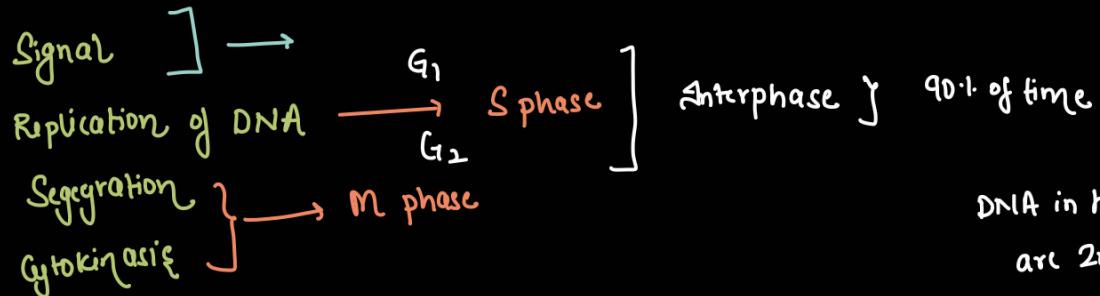
Mitosis



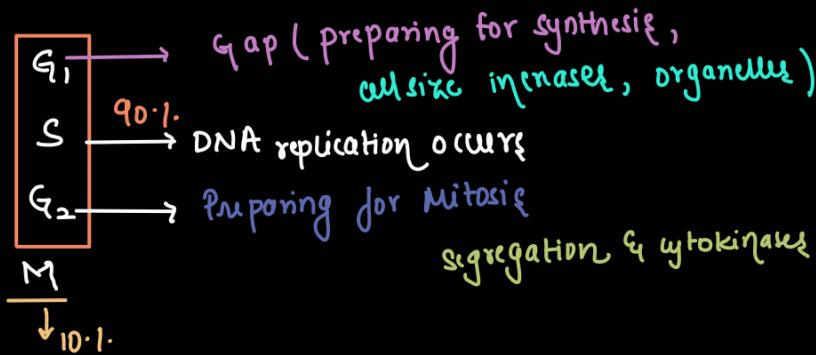
ms 22113

Eukaryotic cell division

- more chromosomes
- Nucleus (other organelles)



DNA in human cells
are 2 meters.

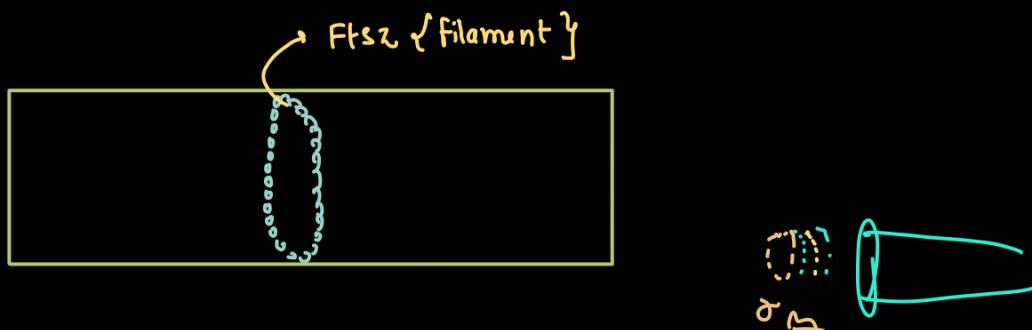


Using -g filaments

proteins that can form a filament. $\bullet \rightarrow$



Prokaryotic cell division

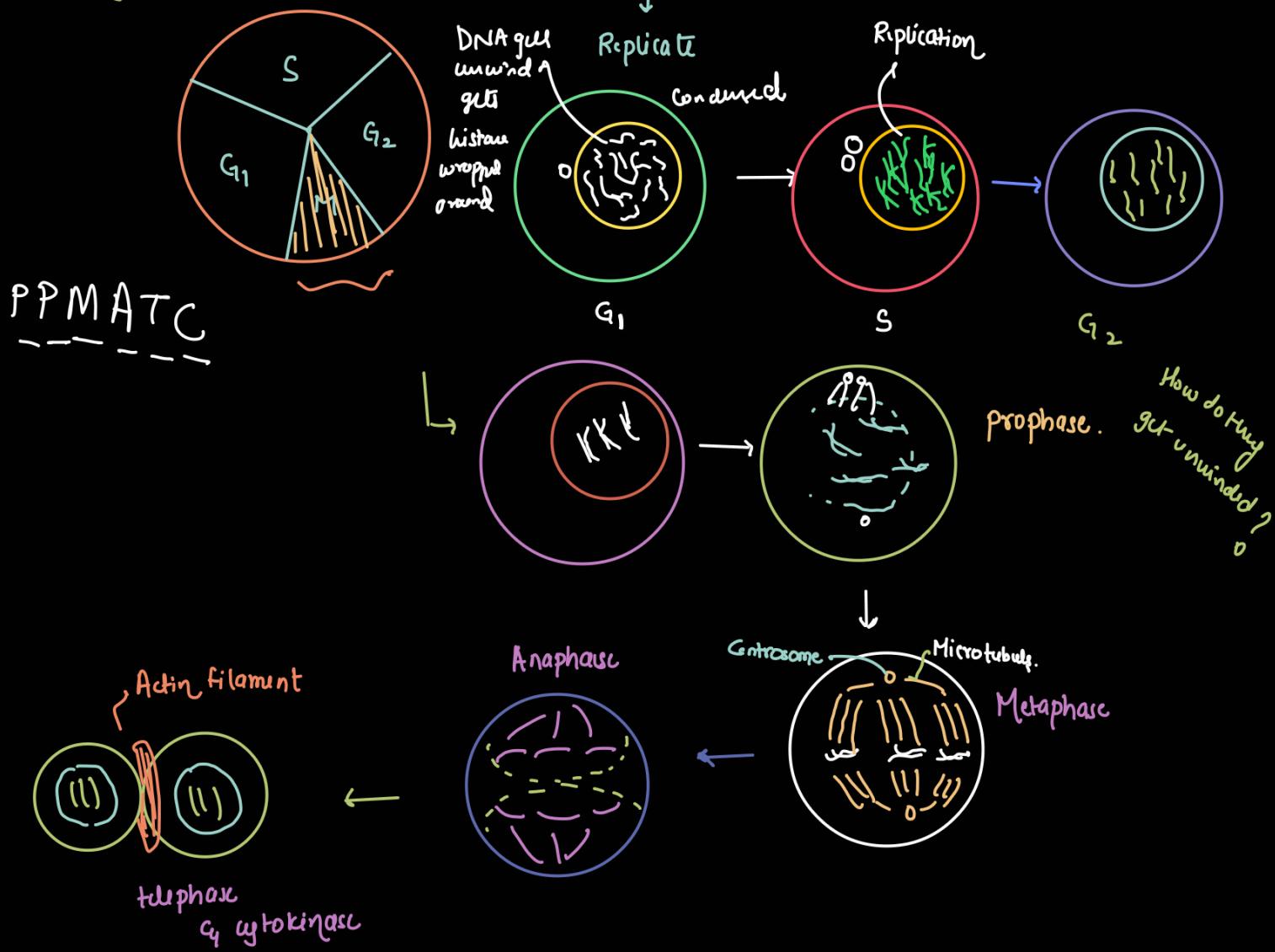


An Eukaryotes.

Large Tubulins \rightsquigarrow microtubules
Small Actins \rightsquigarrow cytokinines.
Intermediate Intermediate filaments

protofilaments
 \downarrow
filaments.

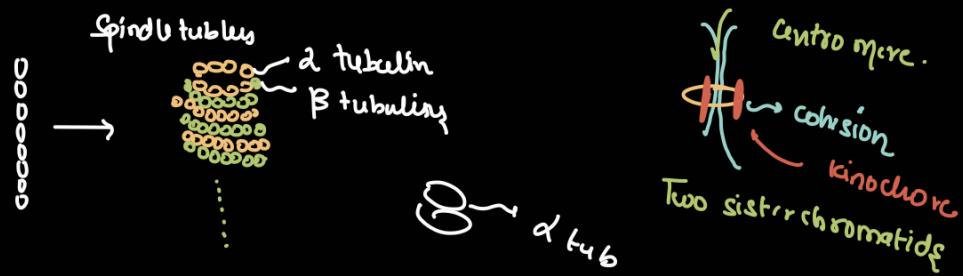
Cell cycle:



microtubules

α tubulin

β tubulin



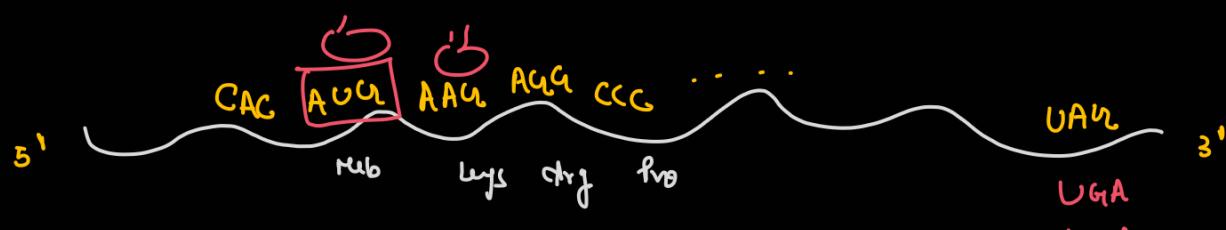
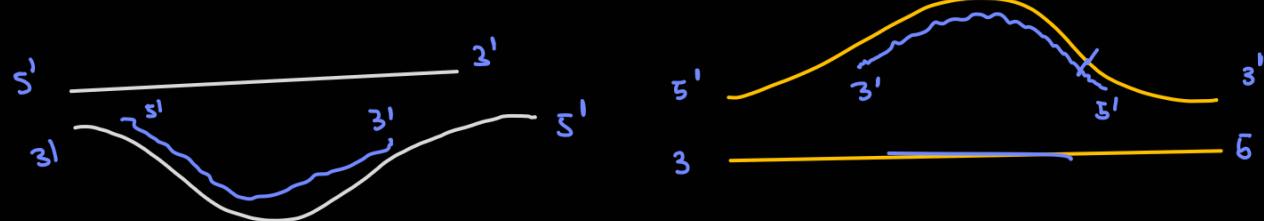
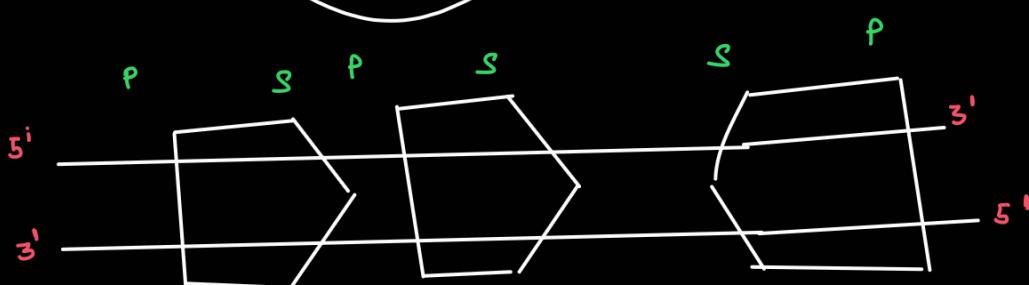
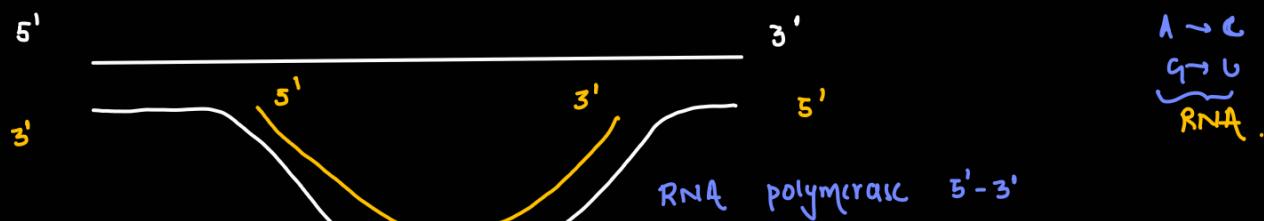
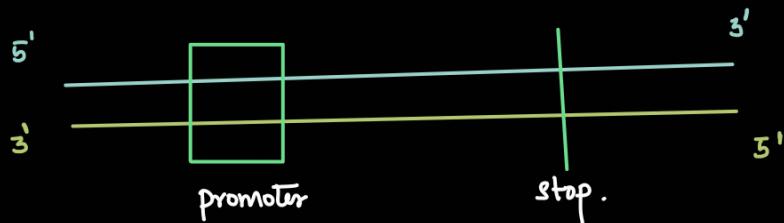
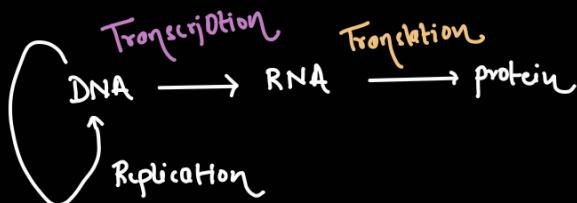
In human cell;

Mitosis occurs by dissolution of nuclear membrane.

In yeast

nuclear membrane don't dissolve

Skipped action.



Discovery of Genetic code.

Cell extract + DNase.
 artificial RNA
 purified mRNA

5' - T A C G G G C A - 3' - coding strand.

3' - A T G C C C G T - 5' — Template.

5' - U A C G G G C A - 3'

In RNA: always codes from 5' - 3'

3' - T A C G G G C A - 5' ^{unt} template

5' - A T G C C C G T - 3' ^{→ coding}

mRNA :- A U G C C C G U

RNA polymerase. At promoter of gene.

