DAYTONA STATE COLLEGE

GENERAL BIOLOGY I LAB PRACTICAL II

REVIEW

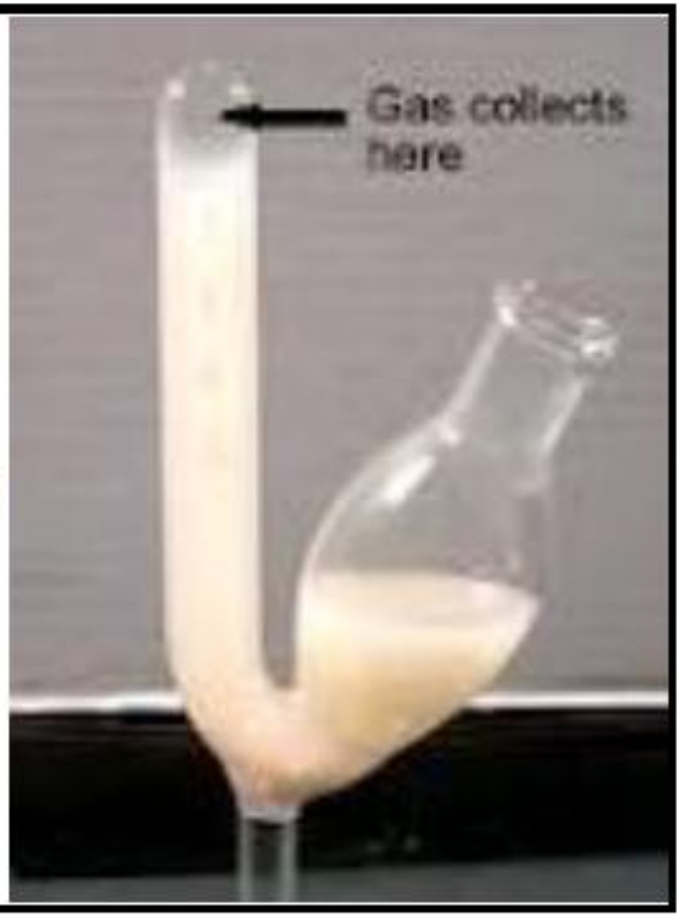
CELLULAR RESPIRATION

- Know terms
  - –Anaerobic respiration
  - –Aerobic respiration
  - –Fermentation

CELLULAR RESPIRATION

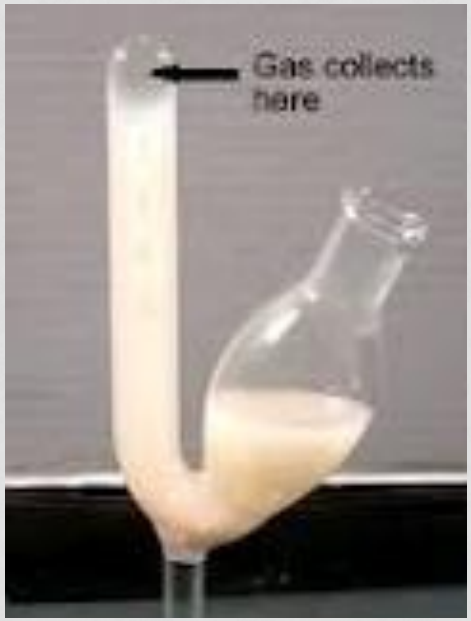
- Anaerobic respiration
  - a form of respiration using electron acceptors other than oxygen.
- Aerobic respiration
  - The process of generating energy by the full oxidation of nutrients through Krebs cycle where oxygen is the final electron acceptor.
- Fermentation
  - a metabolic process converting sugar to acids, gases and/or alcohol
  - Absence of the electron transport chain.

- Names gas accumulating at the top.
- Name the process occurring here
- Name the apparatus.



CELLULAR RESPIRATION

- Name gas accumulating at the top.
  - Carbon dioxide
- Name the process
  - Fermentation
- Name the apparatus.
  - Fermentation Tube

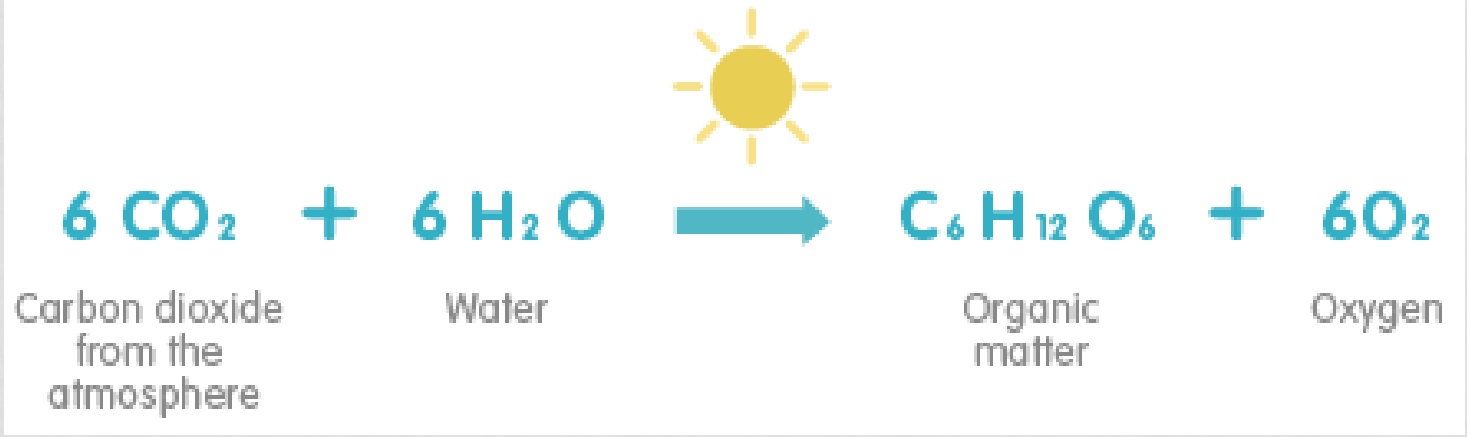


CELLULAR RESPIRATION

- Equipment
  - –Volumeter
    - an instrument for measuring the volumes of gases and liquids and of solids by the amount of gas or liquid they displace.
  - –Thermobarometer
    - an apparatus that provides an accurate measurement of pressure by observation of the change in the boiling point of a fluid

- Know
  - –Phenol red turns yellow with acid
  - –KOH absorbs CO_2

PHOTOSYNTHESIS



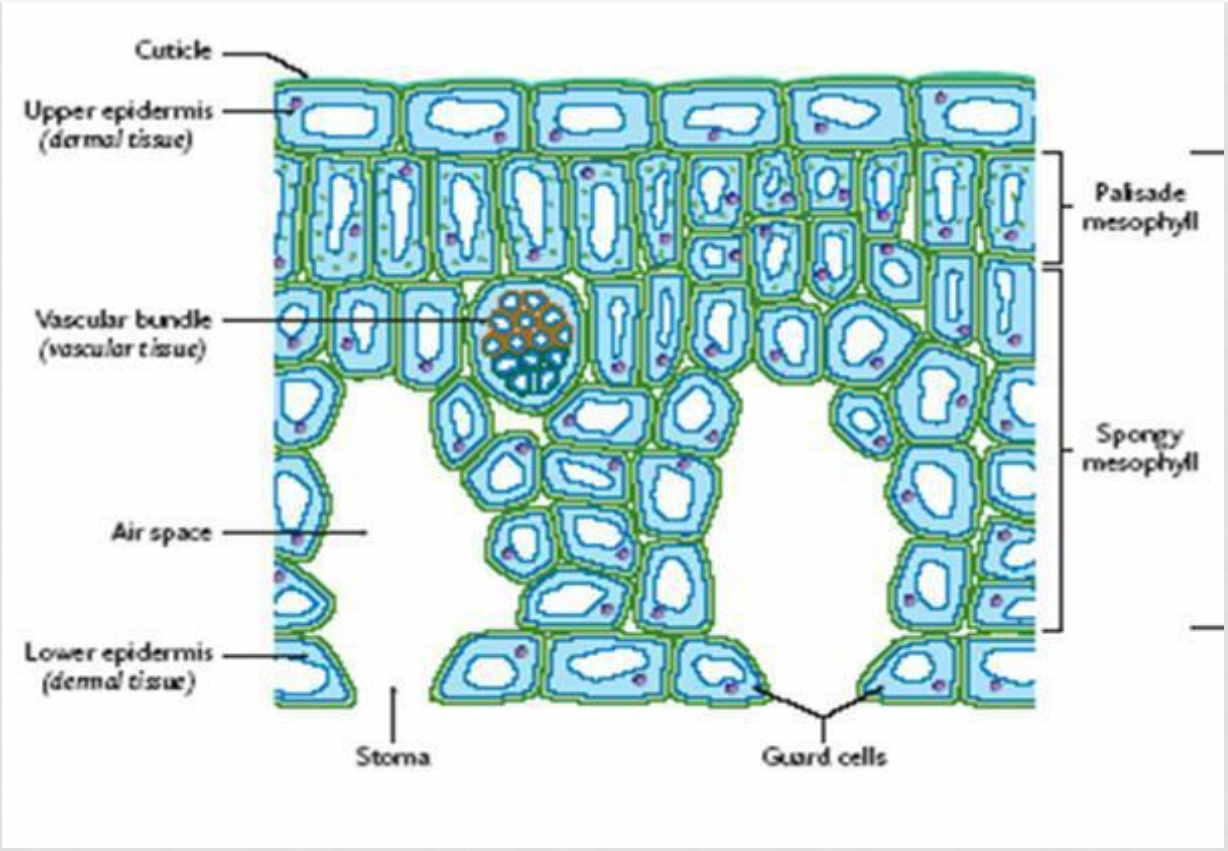
6 Carbon Dioxide + 6 Water → Glucose + 6 Oxygen

PHOTOSYNTHESIS

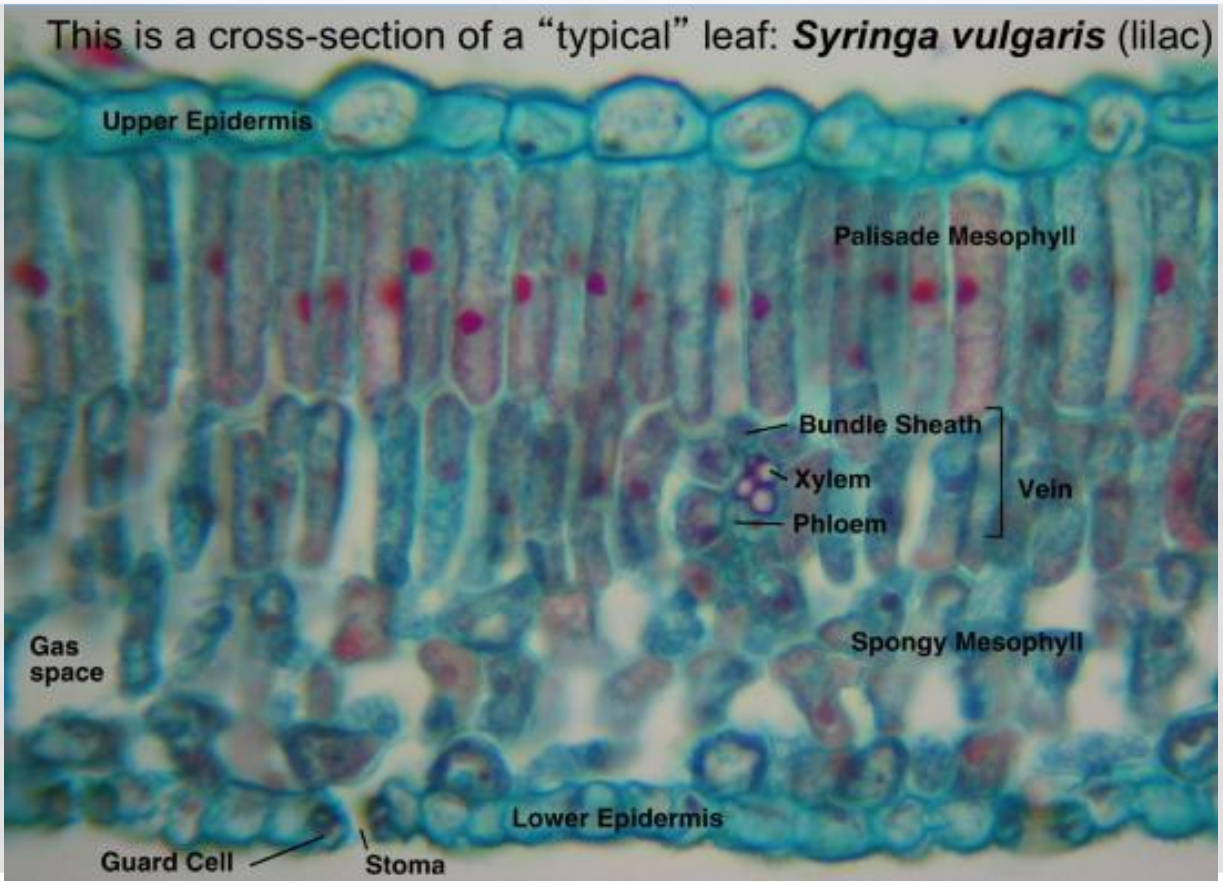
$$6CO_2 + 12H_2O \xrightarrow[\text{green plants}]{\text{light}} C_6H_{12}O_6 + 6O_2 + 6H_2O$$

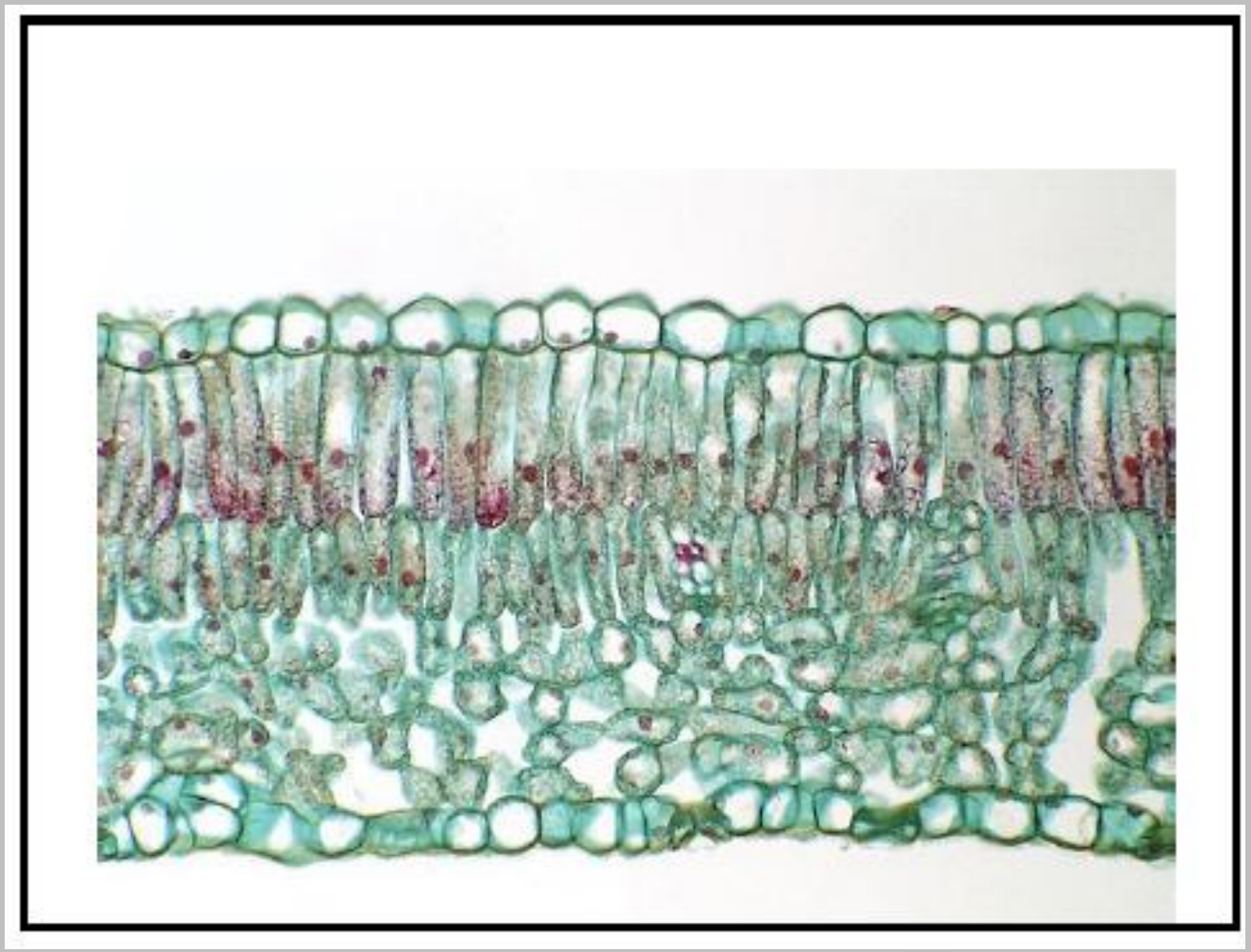
carbon dioxide | water | glucose | oxygen | water

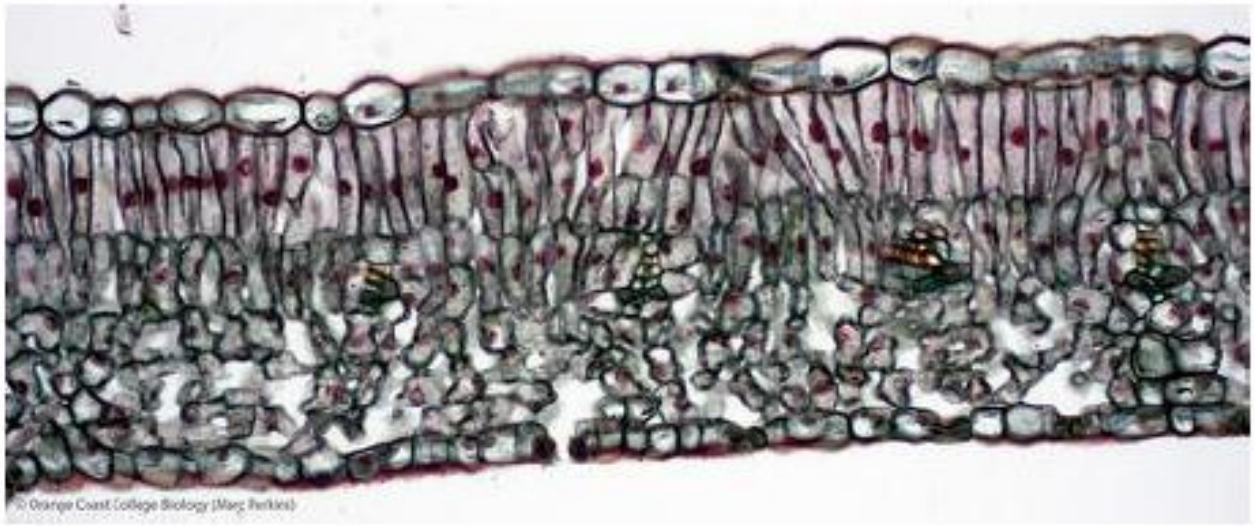
LEAF ANATOMY



LEAF CROSS-SECTION



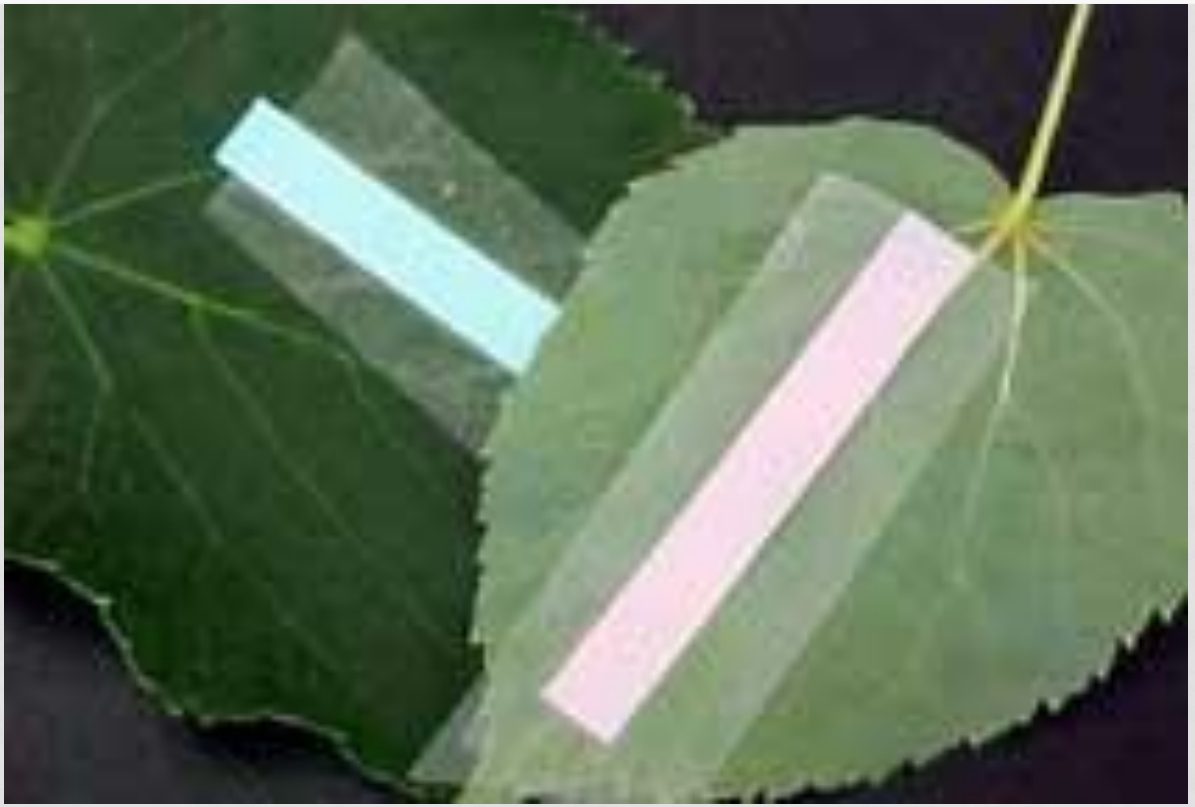



© Orange Coast College Biology (Marc Perkins)

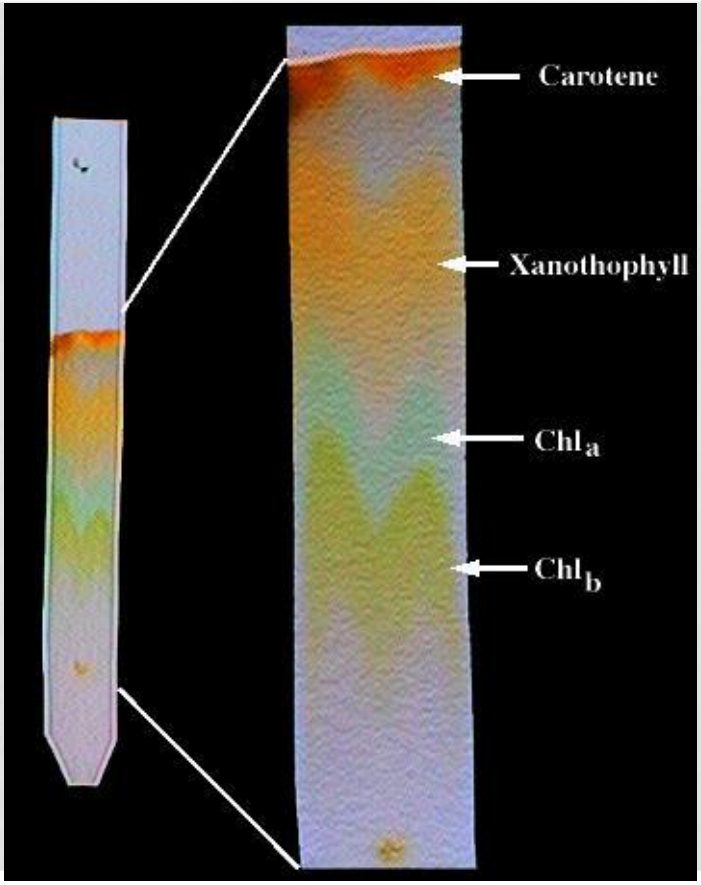

Dry is blue
Moist/wet is pink
COBALT CHLORIDE
TEST PAPER
www.indigo.com

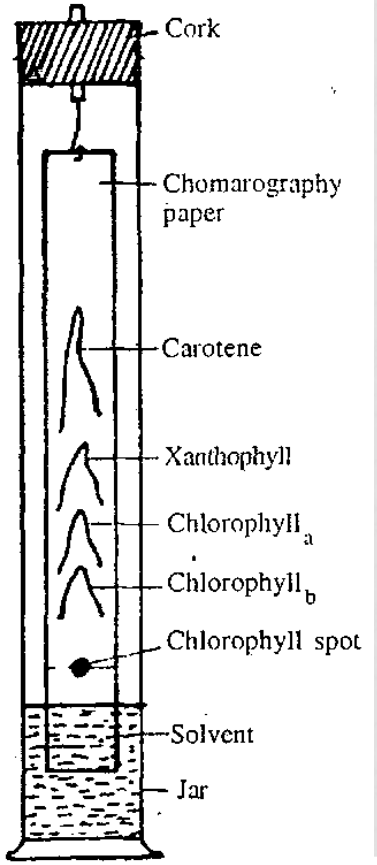
PHOTOSYNTHESIS

PHOTOSYNTHESIS

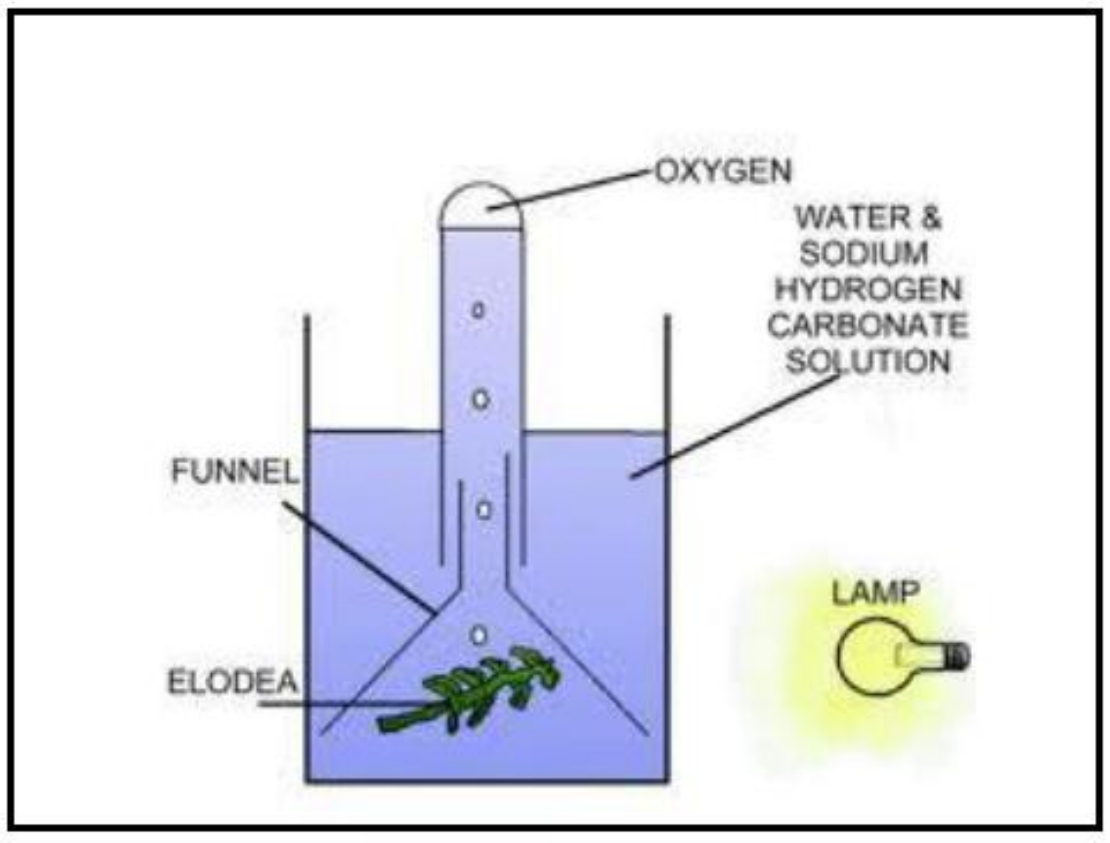


PAPER CHROMATOGRAPHY

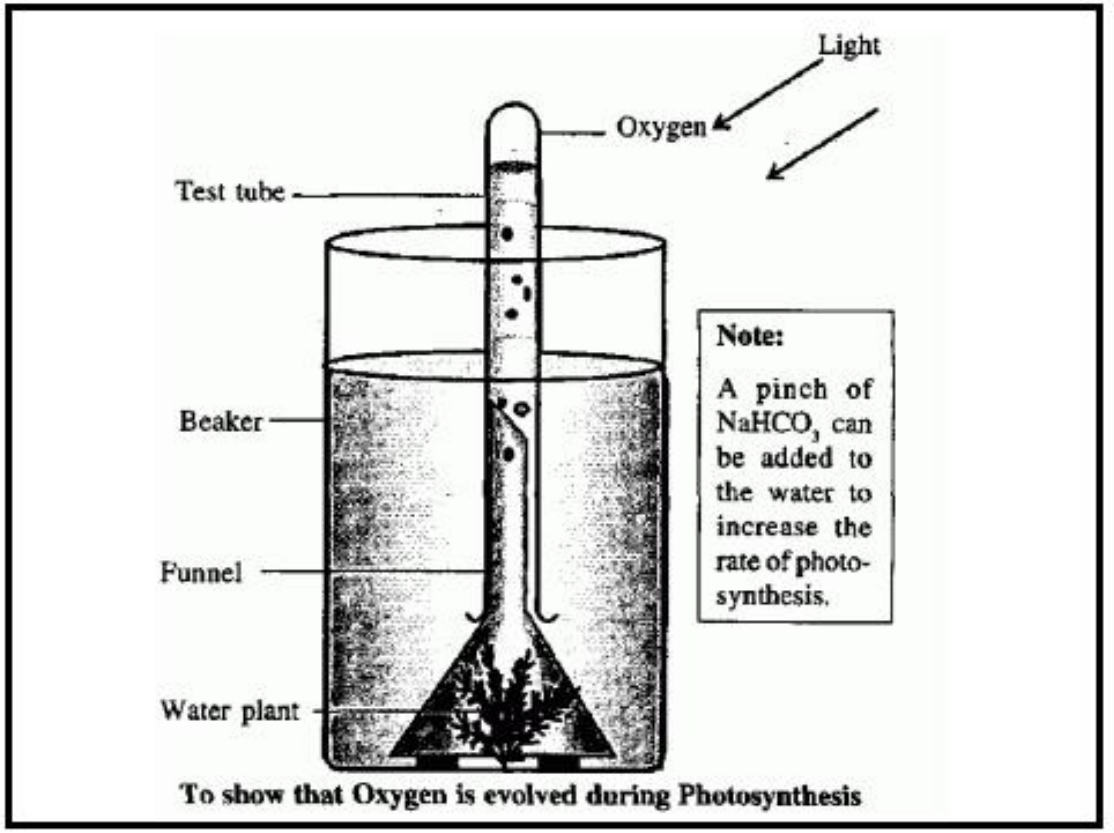




PHOTOSYNTHESIS



PHOTOSYNTHESIS



PHOTOSYNTHESIS

- Name that gas
- Hint: gas end product of photosynthesis

PHOTOSYNTHESIS

- What gas is given off at the end of photosynthesis?

  Oxygen

CELL CYCLE

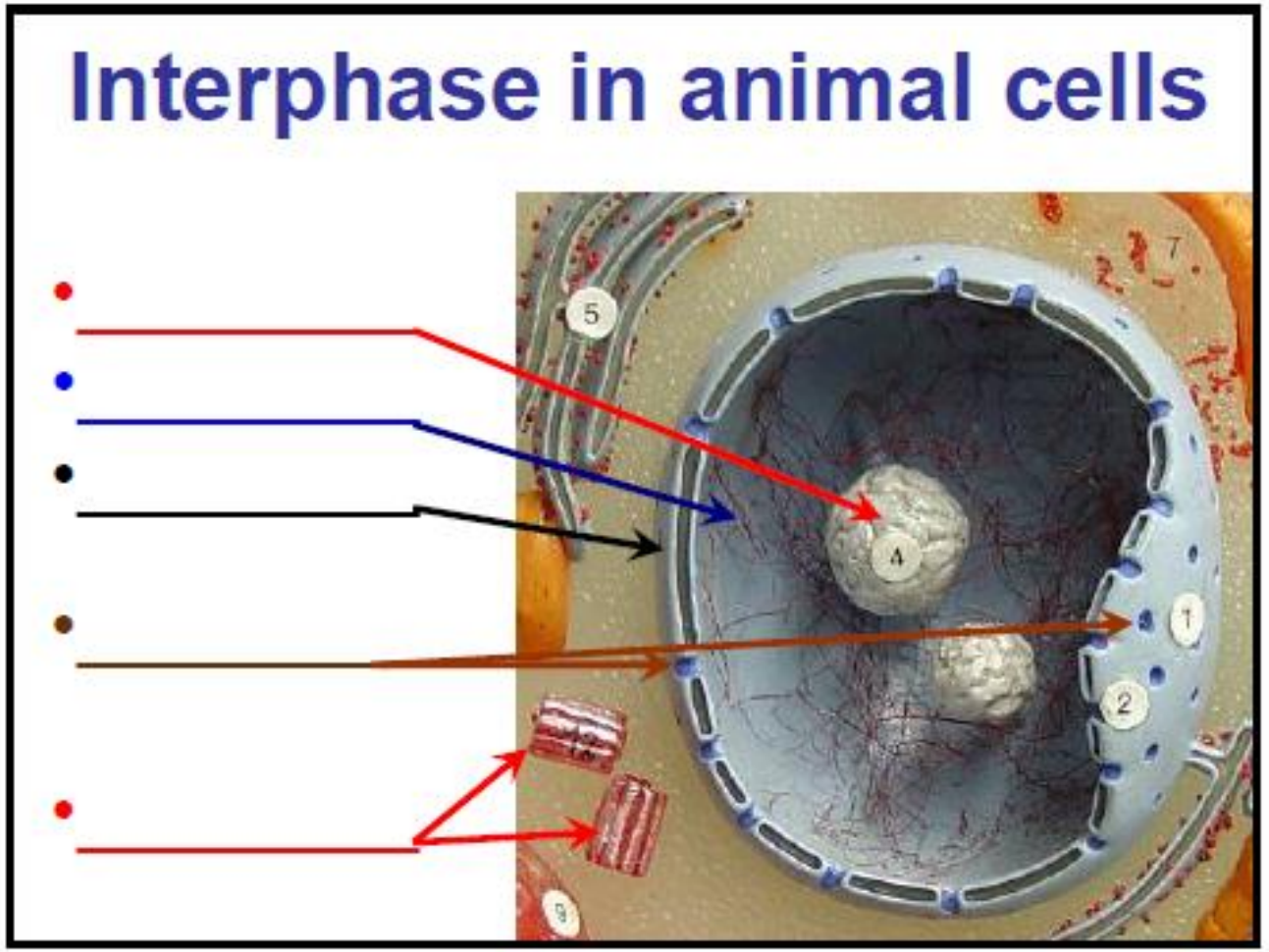
- Interphase
  - G1
  - S
  - G2
- Mitosis
  - Prophase
  - Metaphase
  - Anaphase
  - Telophase
  - Cytokinesis (usually during telophase).

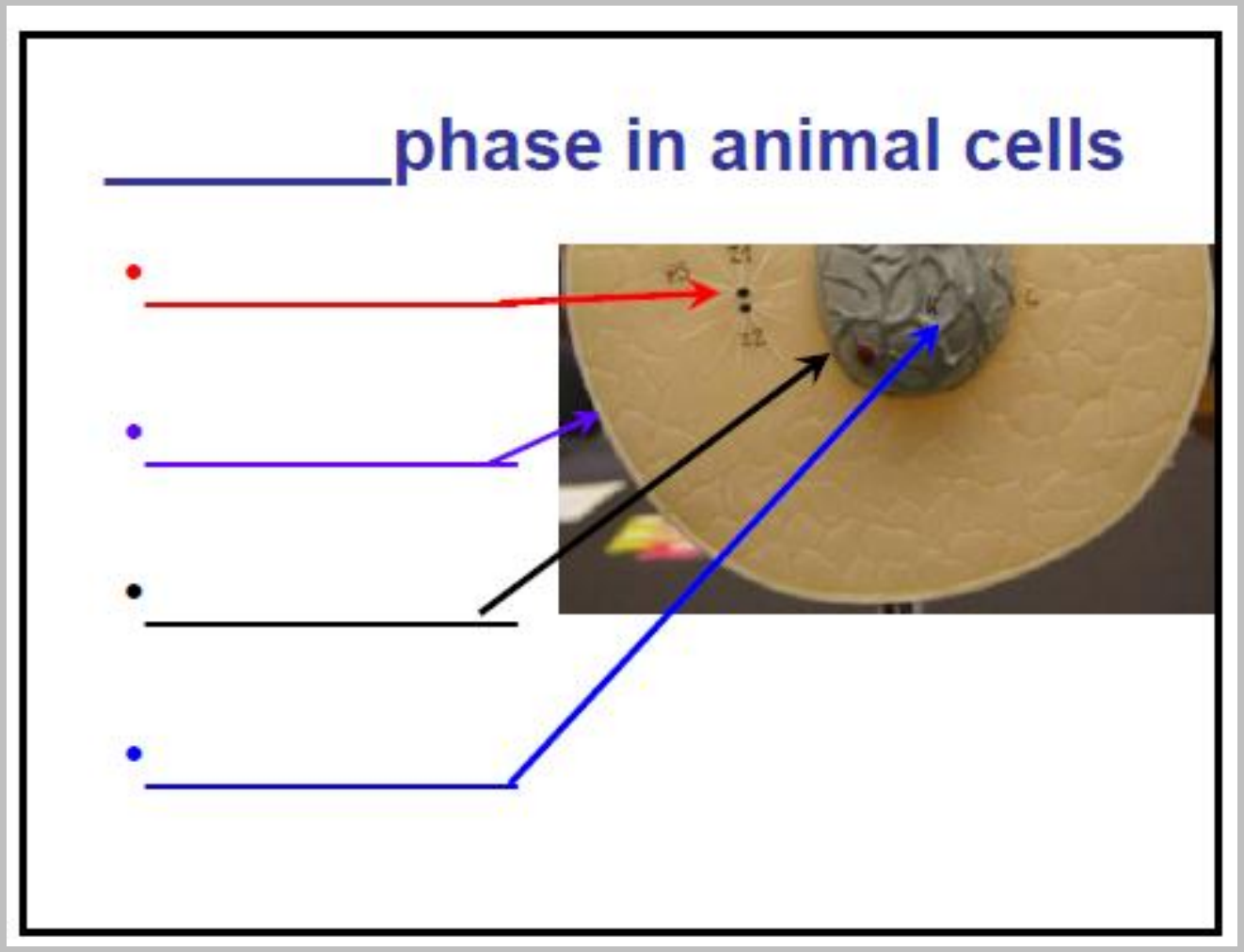
TERMS TO KNOW

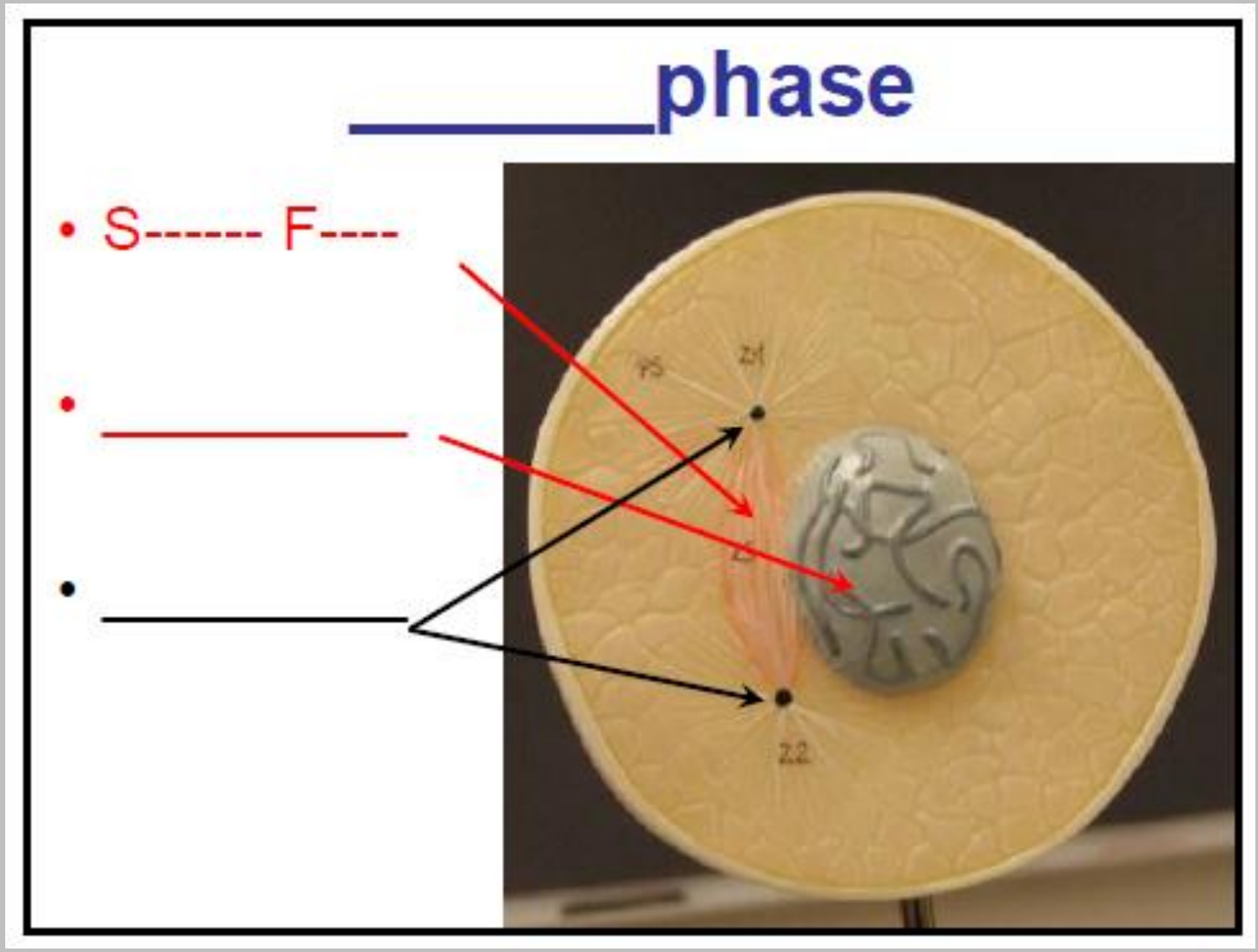
"**Chrom**"-- words

- **Chromatin**
  - Relaxed chromosomes in interphase.
- **Chromosome**
  - A structure within the cell that bears the genetic material as a threadlike linear strand of DNA bonded to various proteins in the nucleus of eukaryotic cells, or as a circular strand of DNA (or RNA in some viruses) in the cytoplasm of prokaryotes and in the mitochondrion and chloroplast of certain eukaryotes.
- **Chromatid**
  - Half of a duplicated chromosome (half of X shaped duplicated chromosome). When chromatids separate they are now called chromosomes.

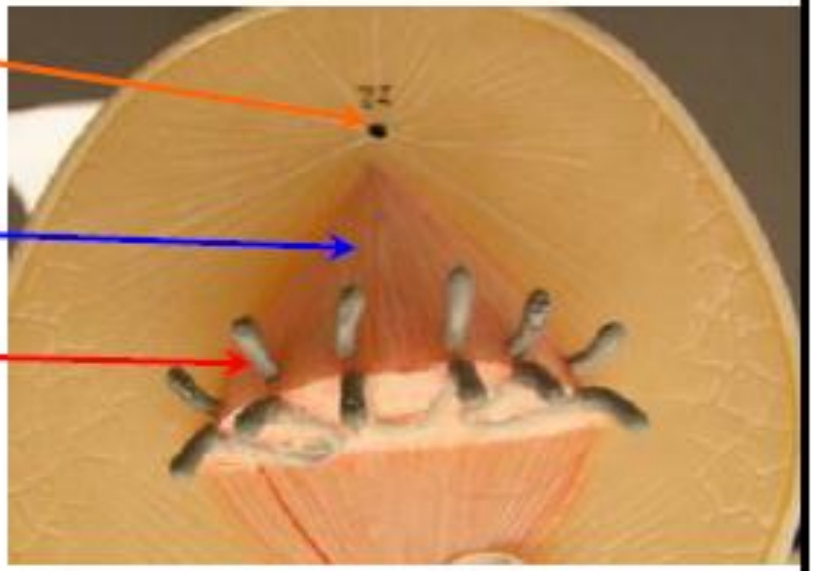
Interphase in animal cells



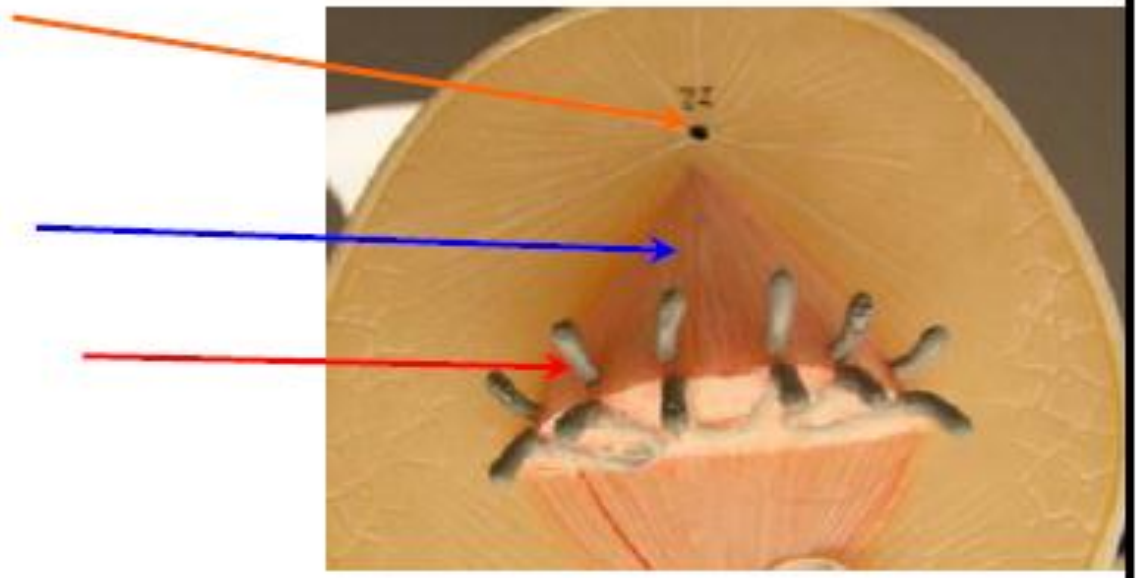

_____phase in animal cells


_____phase
• S------ F----
•
•

_____phase

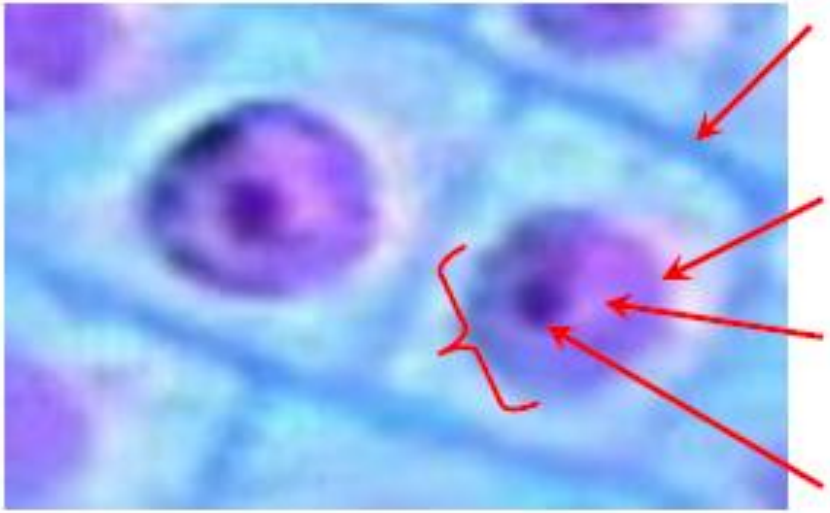


_____phase

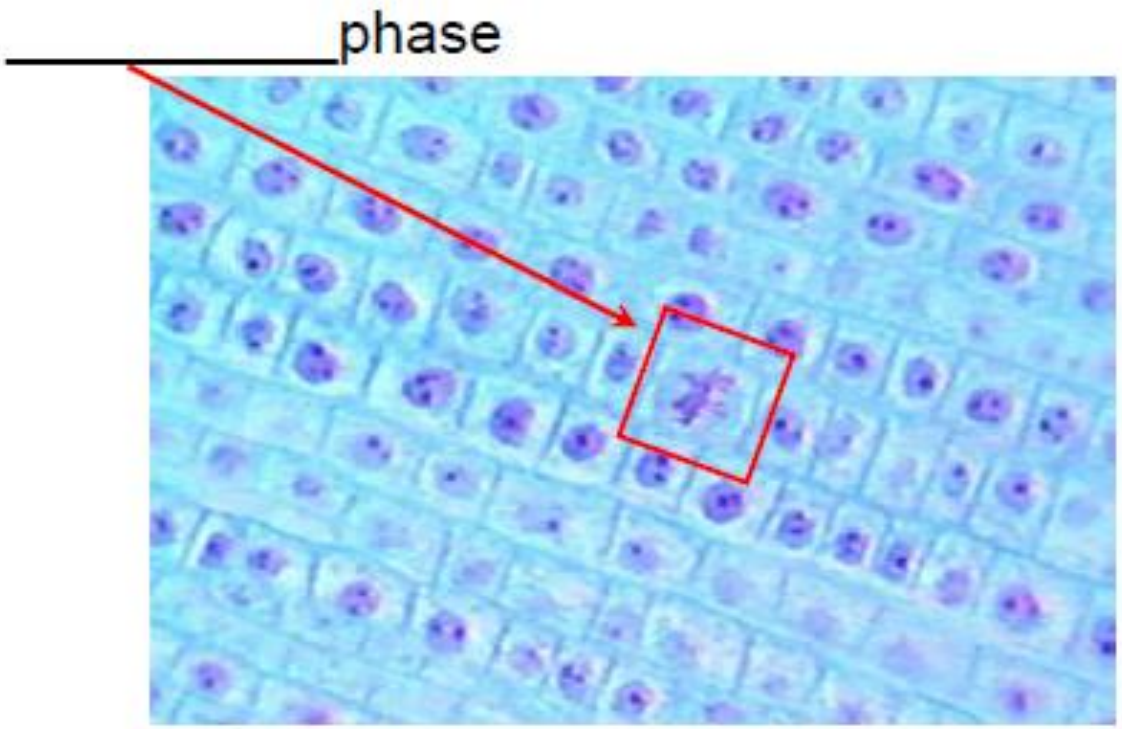


Onion root tip at 400X 

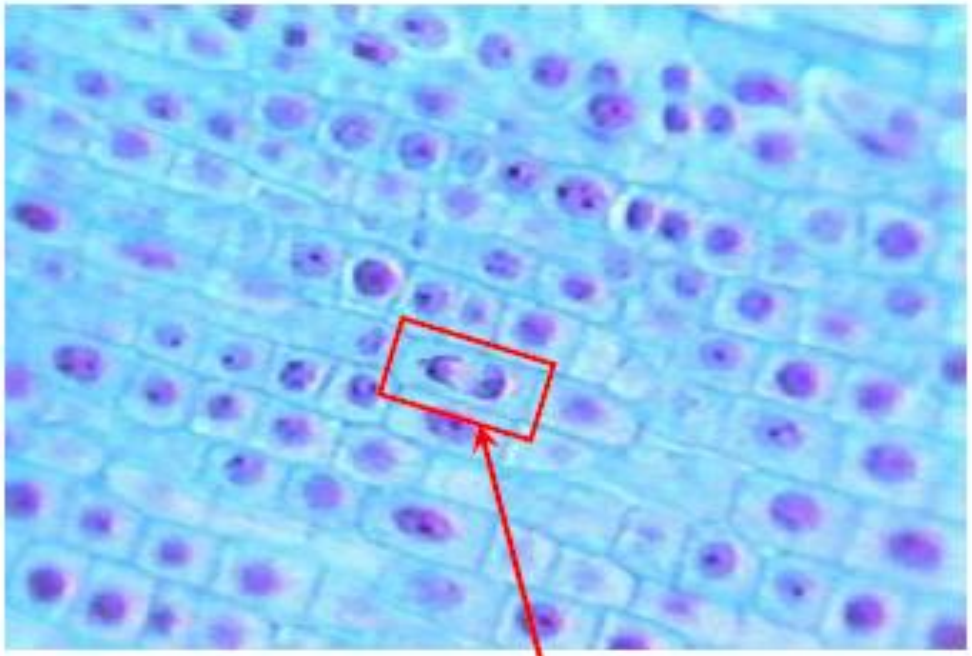
_____phase of mitosis



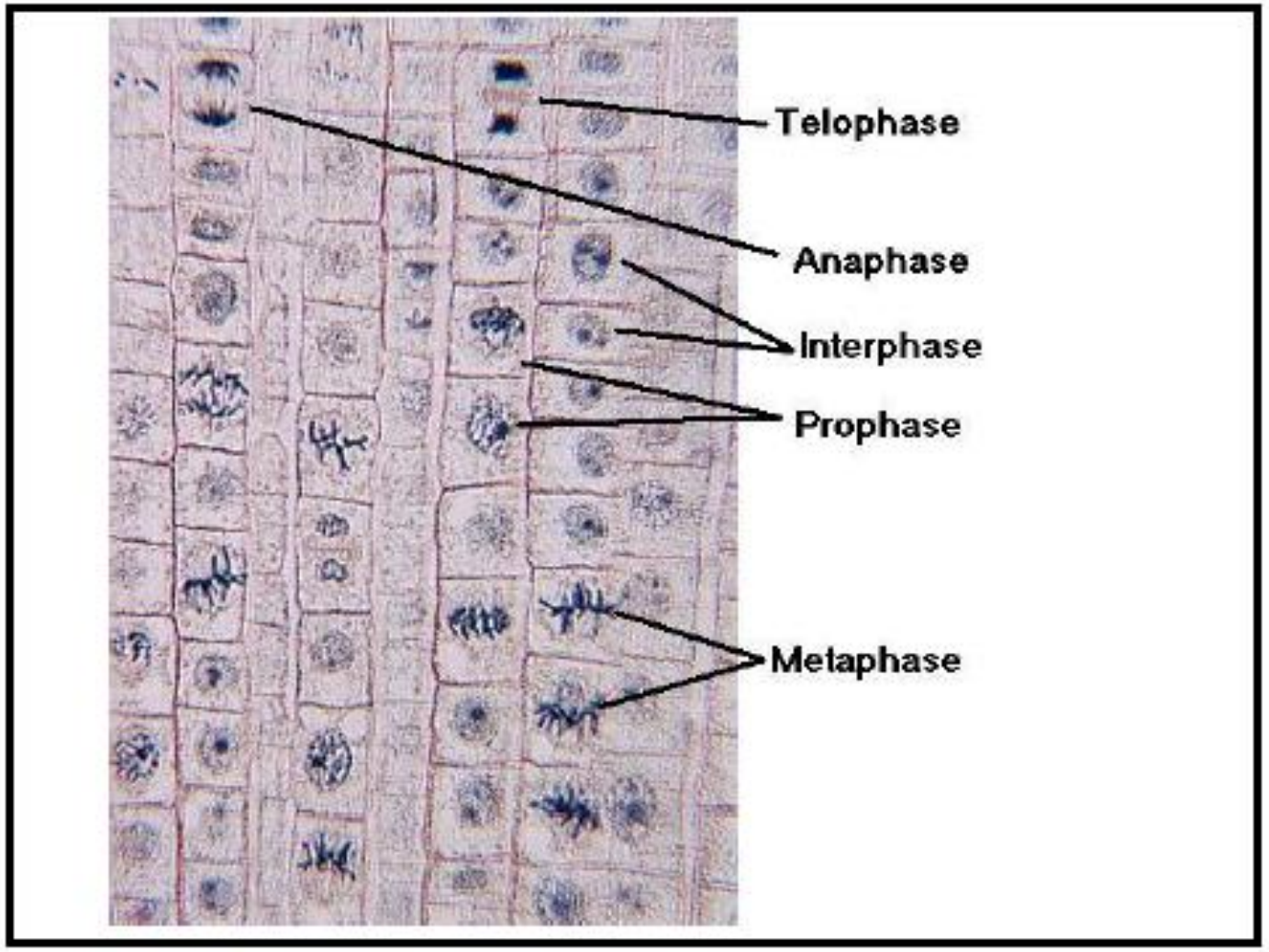
Onion root tip at 400X



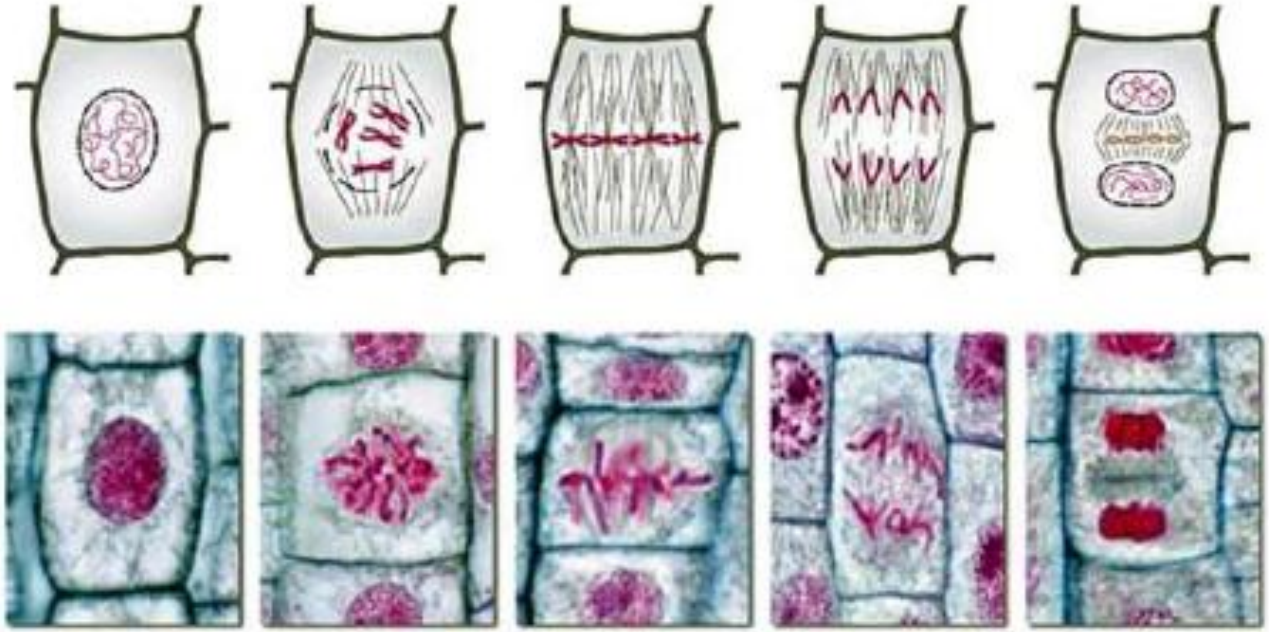
Onion root tip at 400X



_____phase


Telophase
Anaphase
Interphase
Prophase
Metaphase

- Name the phases.
- Name the parts of the cell.



Animal Cell at 400X

_____phase →

_____phase →

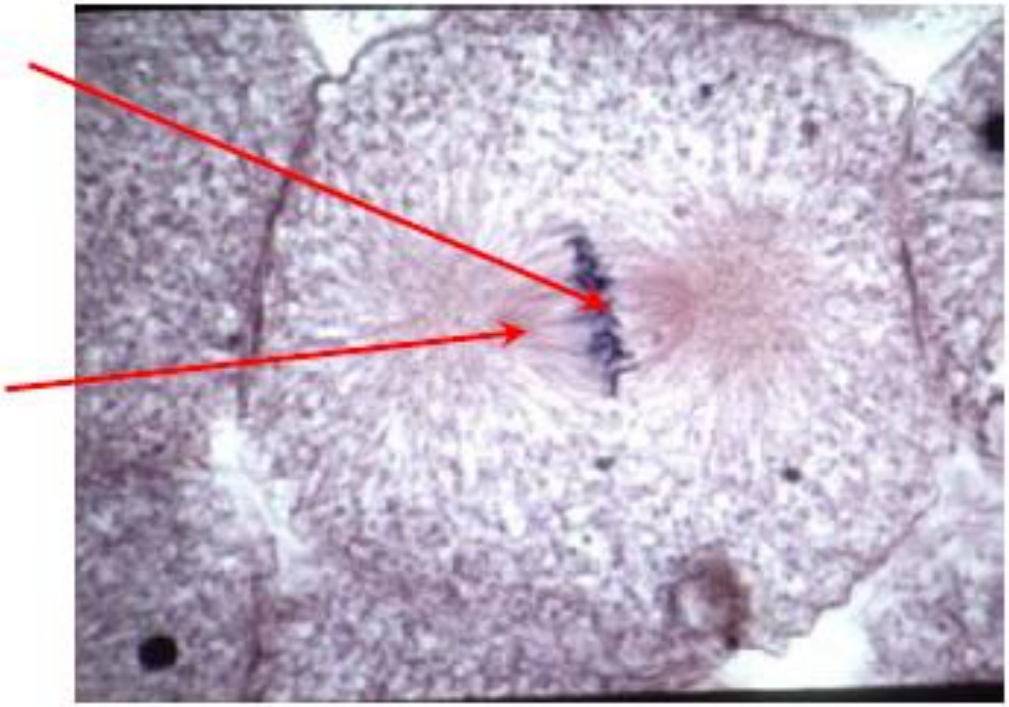
_____phase →

What type of Cytokinesis?

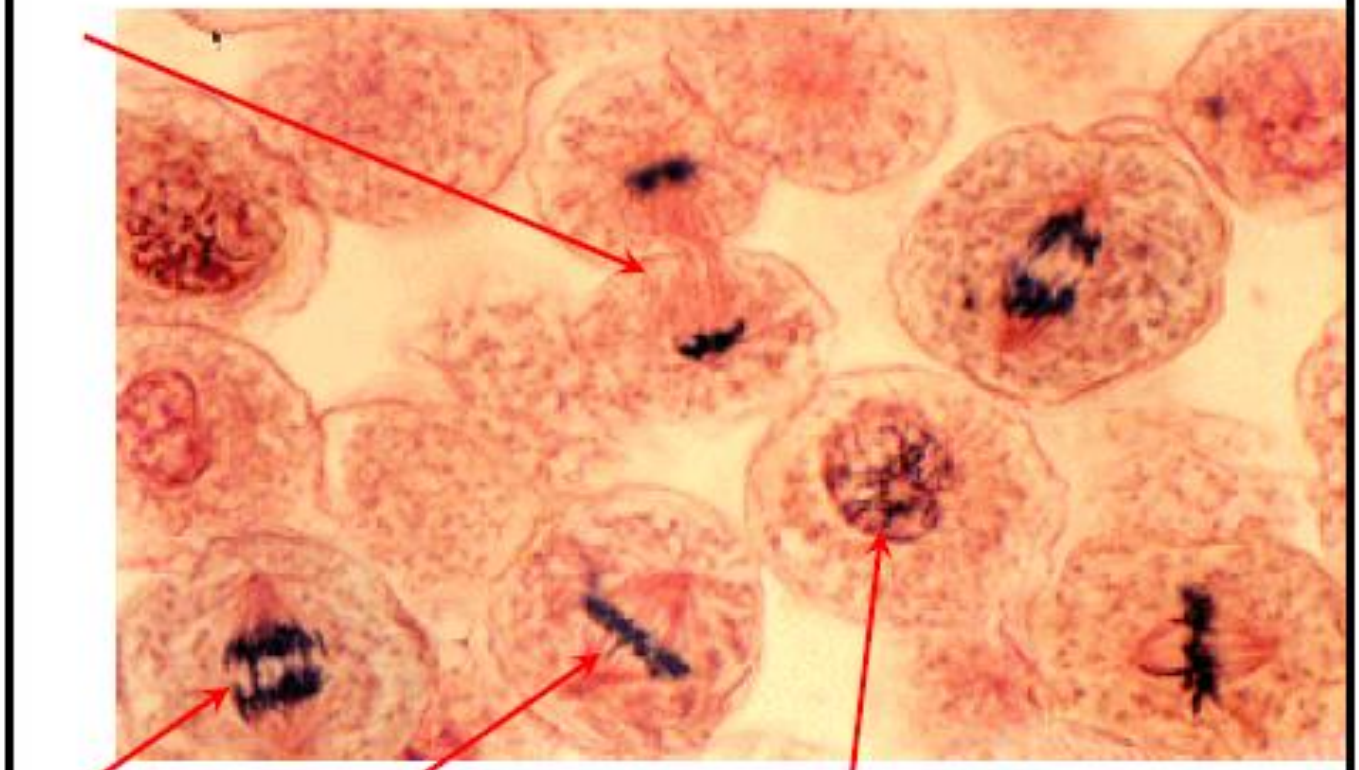
_____

Name the phase ___

Name the black and pink structures

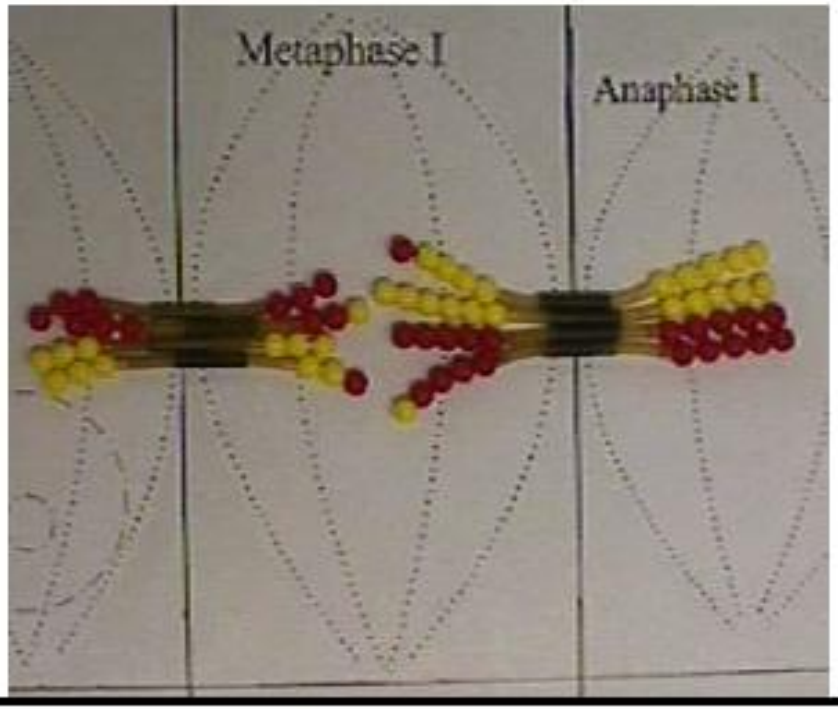


Name the phase ___

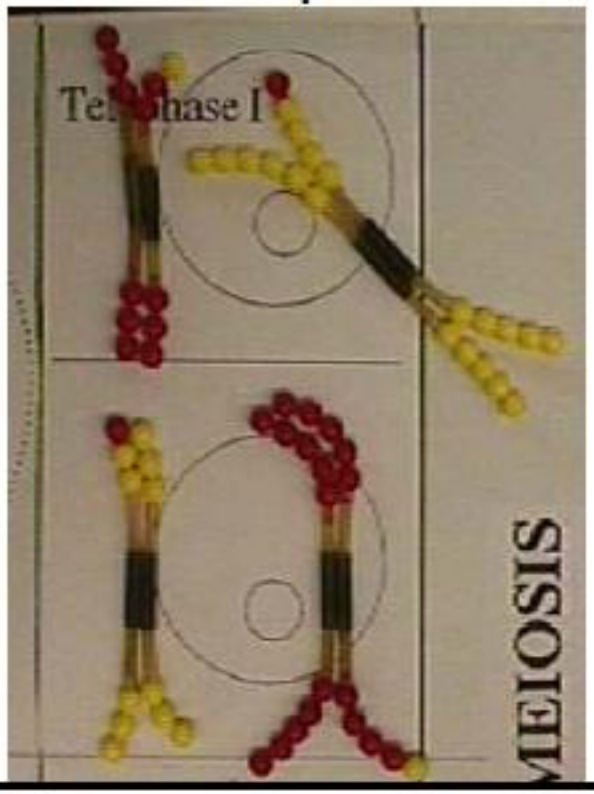


Prophase I (sort of)

Metaphase I

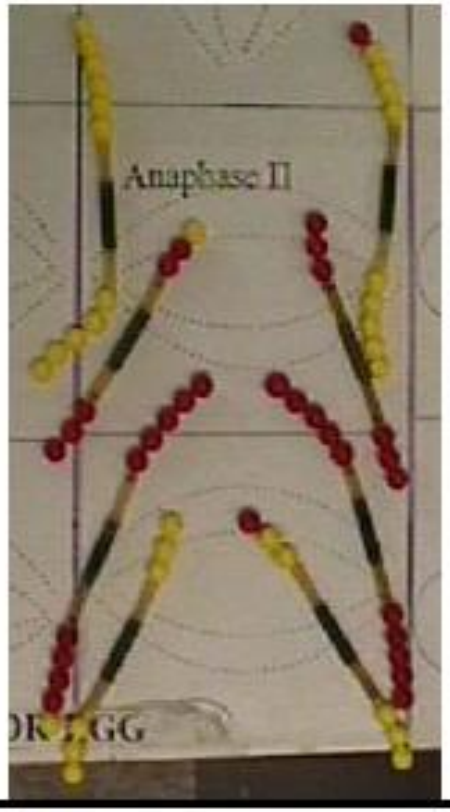


Telophase I



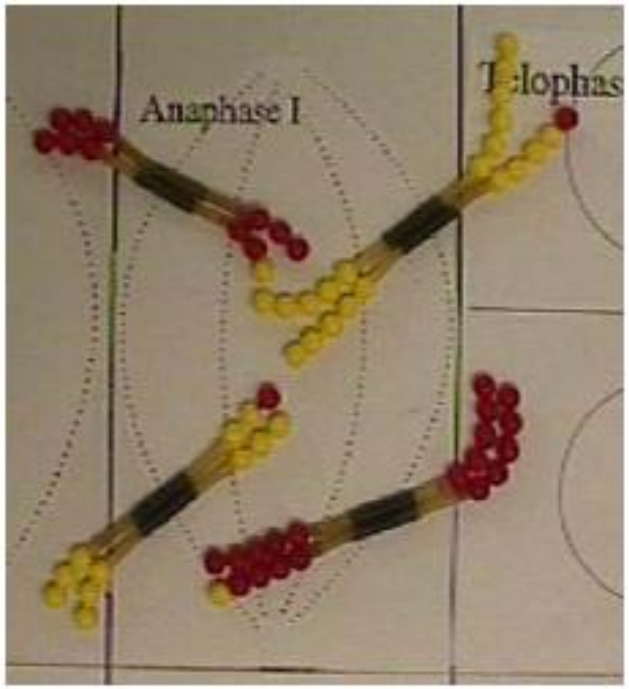
Metaphase II

Anaphase II



Telophase II

Anaphase I



Another example

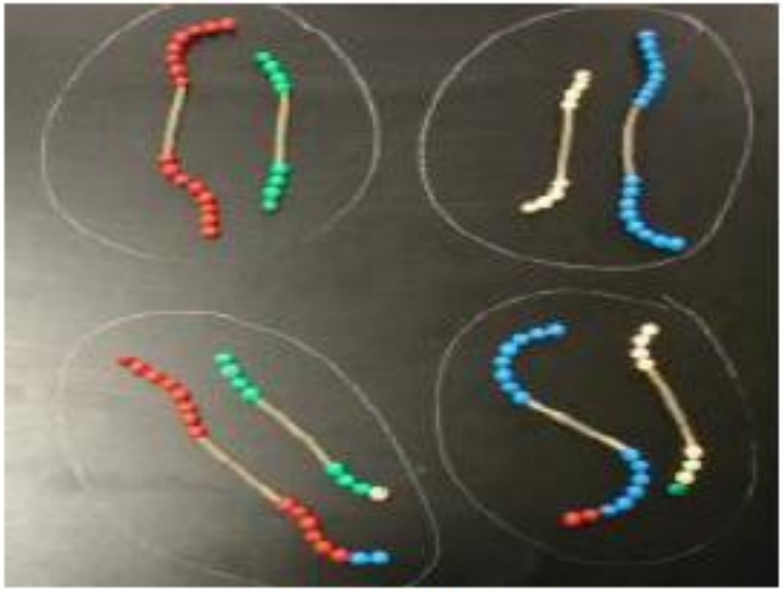
Diploid number of chromosomes during G1 phase

prophase I

metaphase I

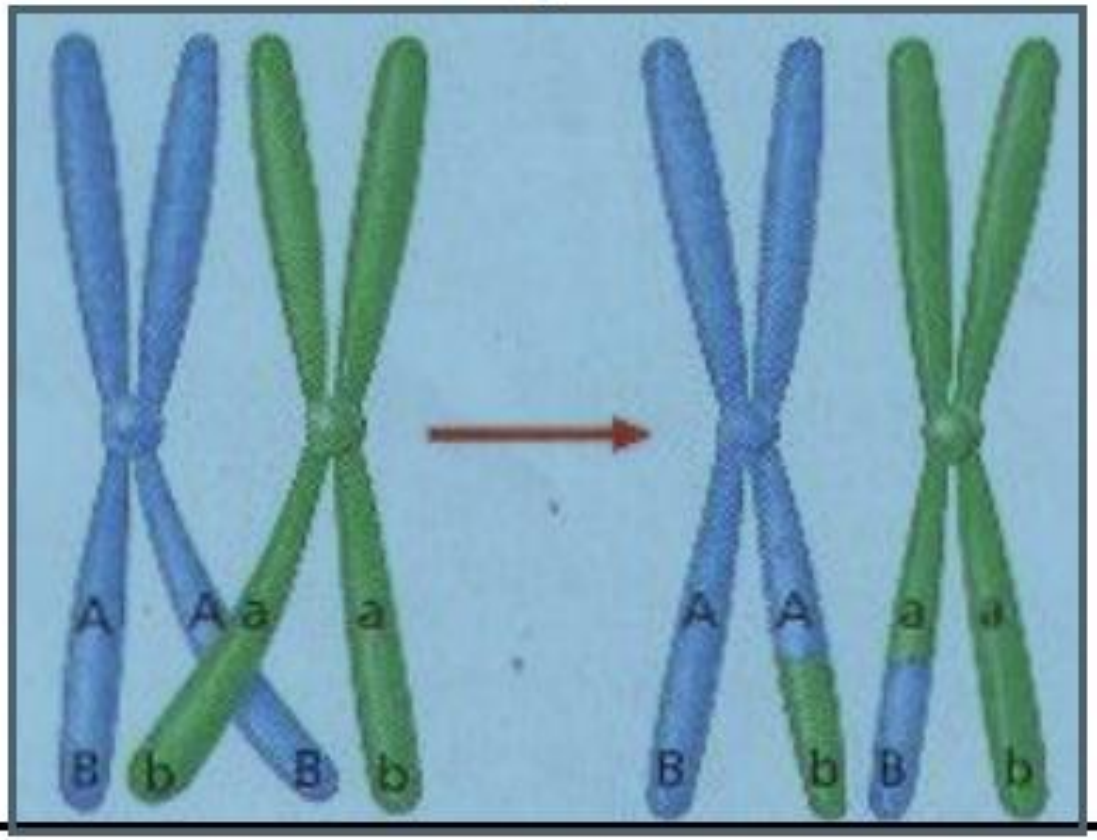
crossing over during synapsis

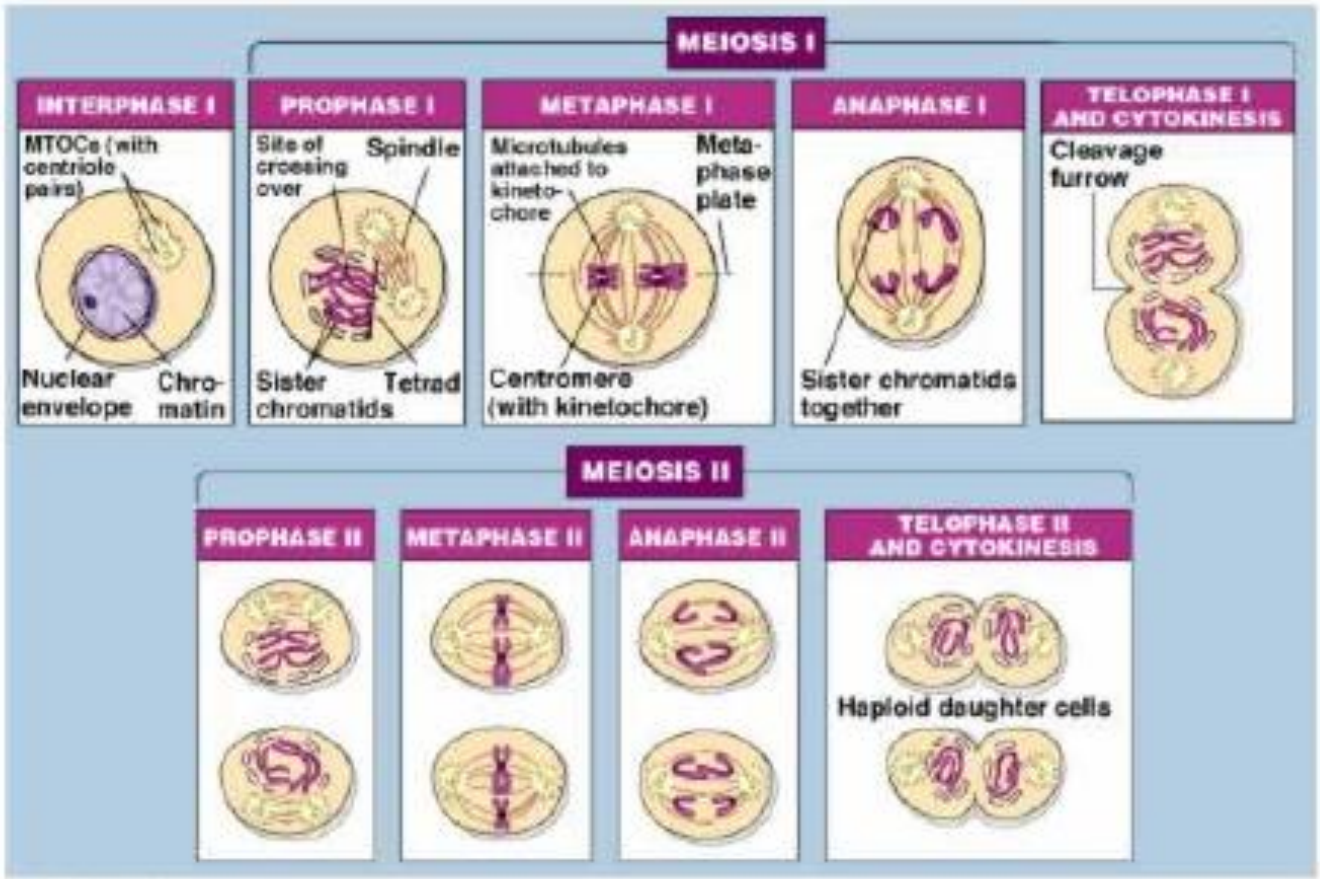
metaphse I after crossing over



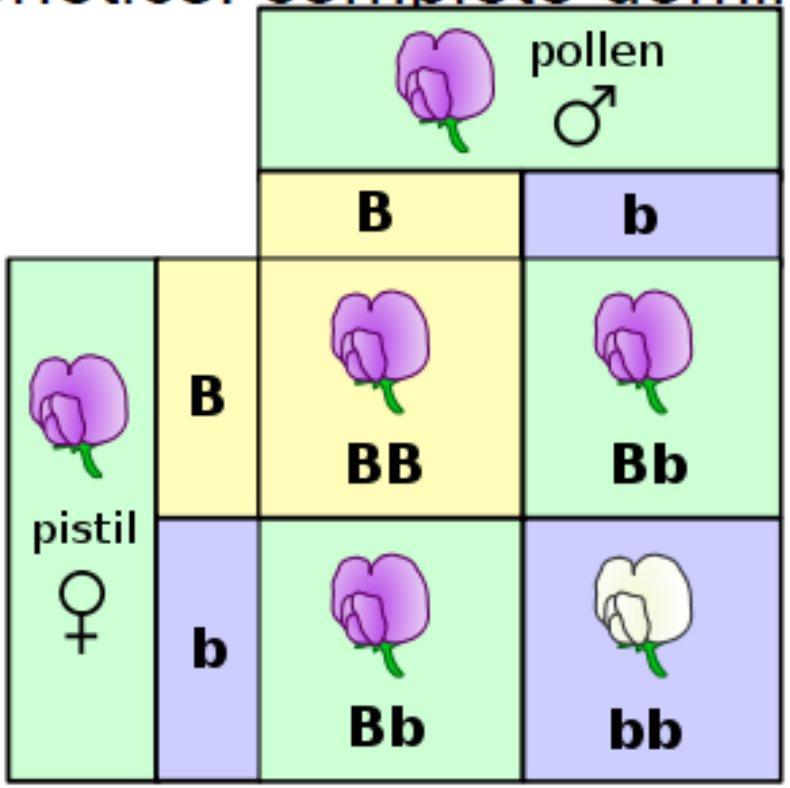
gametes after telophase II

Crossing over

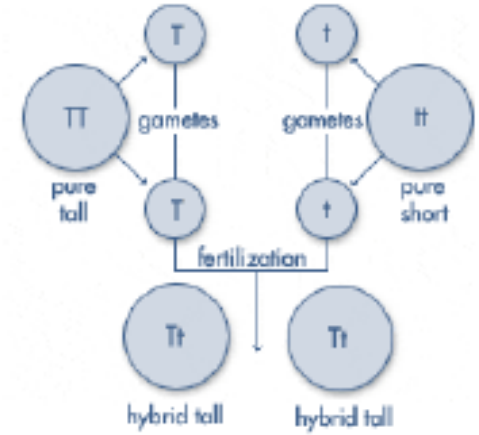


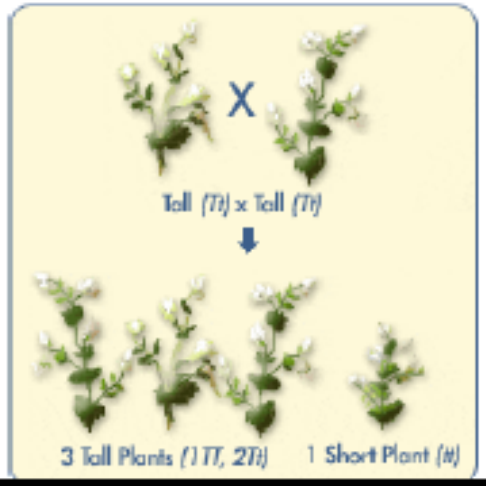

MEIOSIS I
INTERPHASE I
MTOCs (with centriole pairs)
Nuclear envelope
Chro-matin
PROPHASE I
Site of crossing over
Spindle
Sister chromatids
Tetrad
METAPHASE I
Microtubules attached to kineto-chore
Meta-phase plate
Centromere (with kinetochore)
ANAPHASE I
Sister chromatids together
TELOPHASE I AND CYTOKINESIS
Cleavage furrow
MEIOSIS II
PROPHASE II
METAPHASE II
ANAPHASE II
TELOPHASE II AND CYTOKINESIS
Haploid daughter cells
©Addison Wesley Longman, Inc.

Genetics: complete dominance

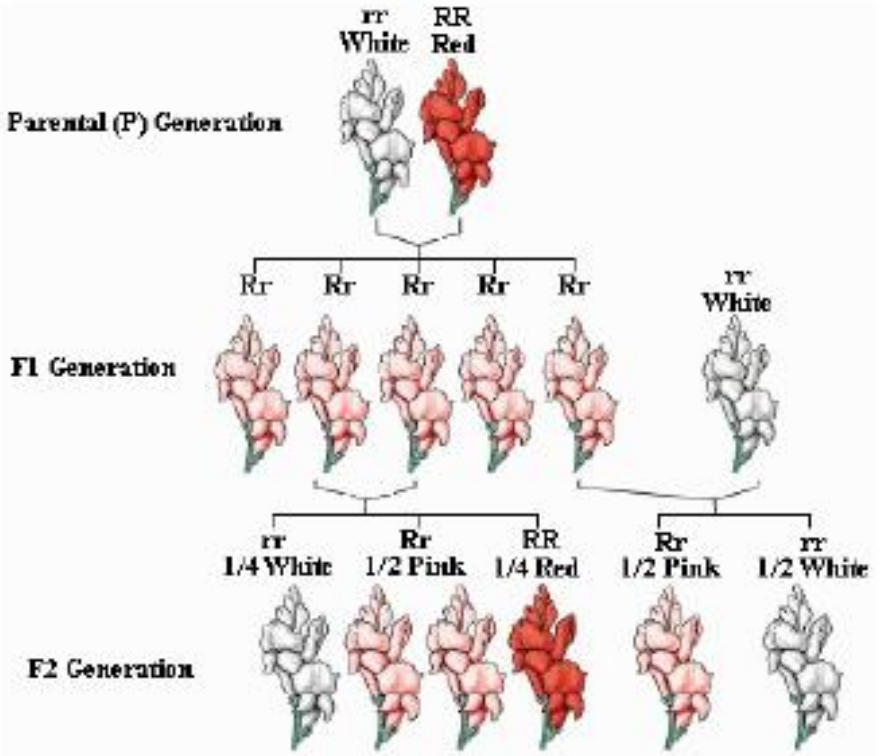


Genetics: complete dominance

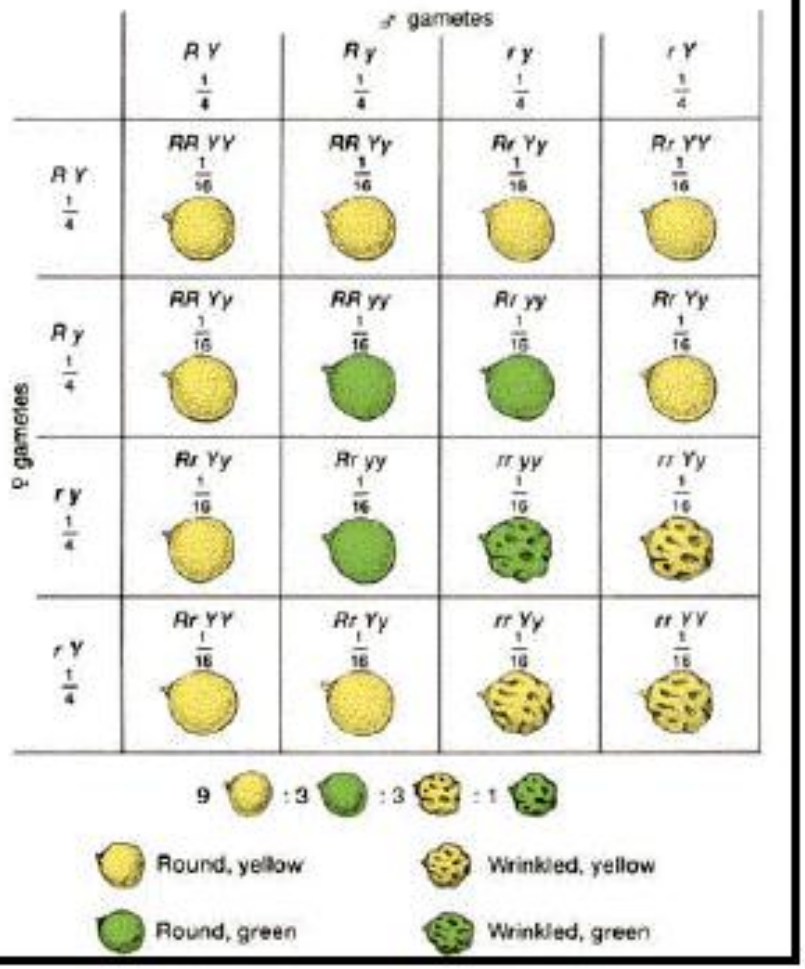




Genetics: Incomplete Dominance



Two gene complete dominance: Double heterozygous



- Two gene complete dominance: Double heterozygous

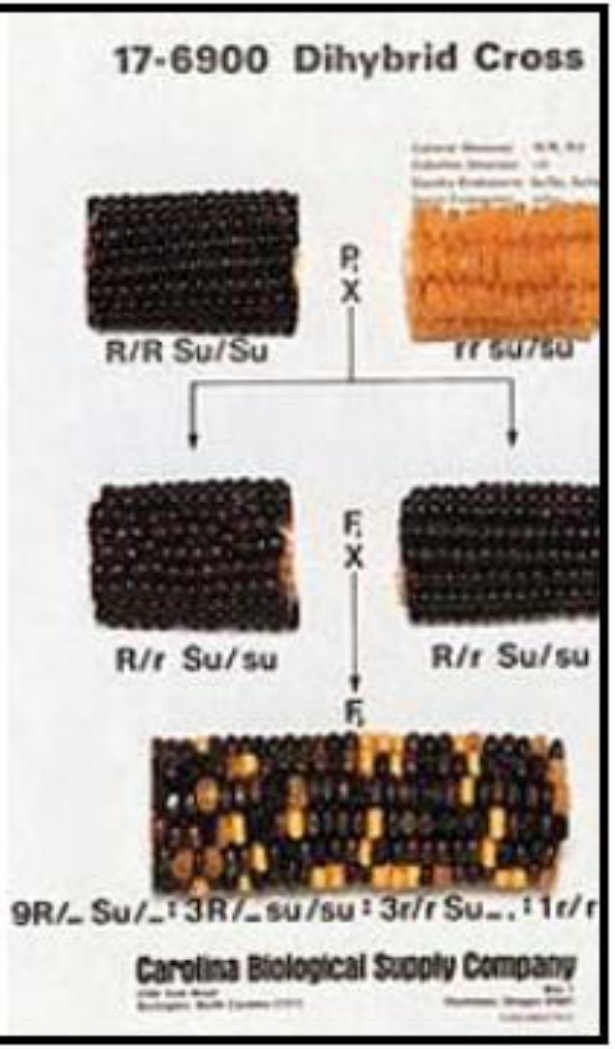
F1
GgYy

F1 GgYy

	GY	Gy	gY	gy
GY	GGYY	GGYy	GgYY	GgYy
Gy	GGYy	GGyy	GgYy	Ggyy
gY	GgYy	GgYy	ggYY	ggYy
gy	GgYy	Ggyy	ggYy	ggyy

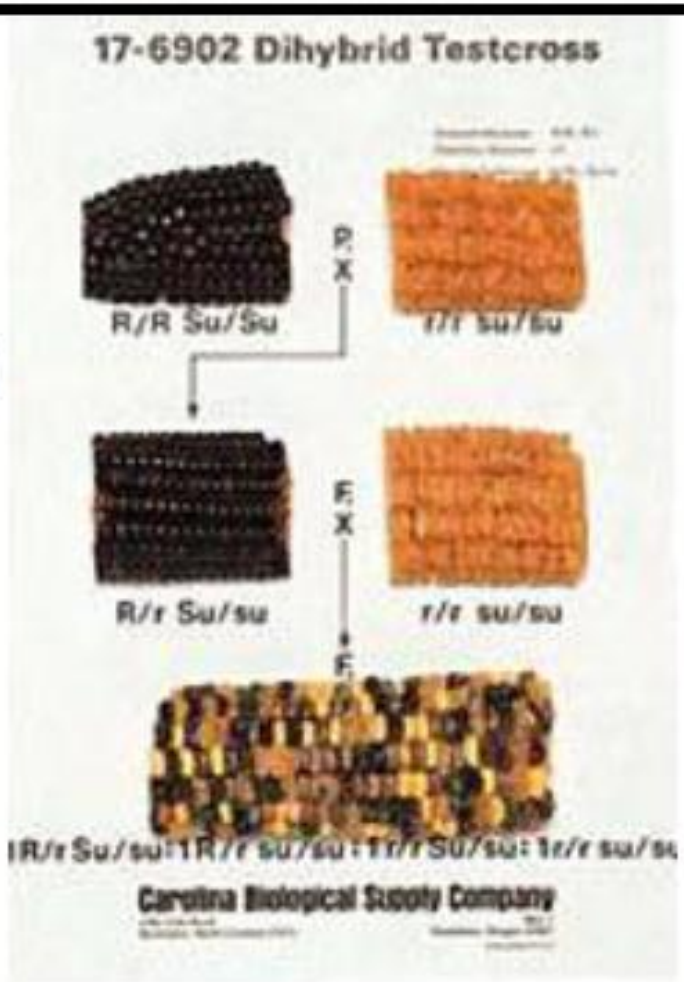
Dihybrid testcross

F1 xF1
(like: AaBb x AaBb)

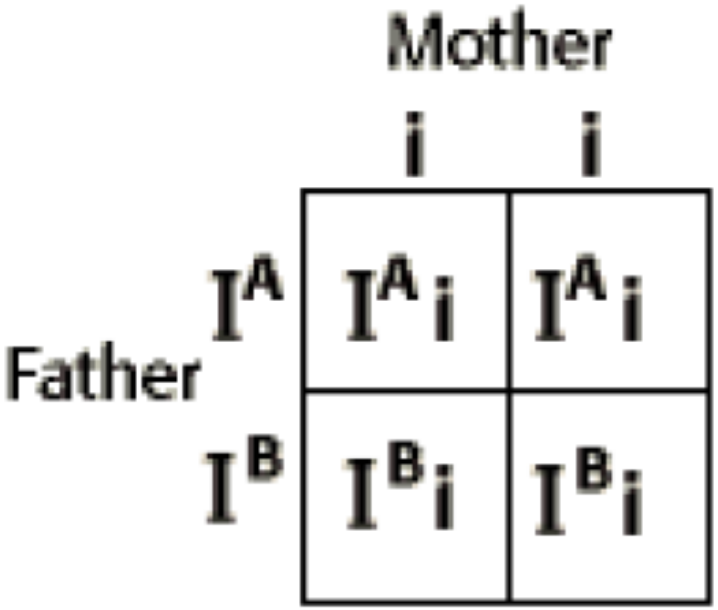


Dihybrid testcross

F1 (like: AaBb x aabb)



O mother and AB father



Half of the children predicted to be **Type A**, and half **Type B**.

Don't use A, B, and O as alleles

- Small case i for the O allele implies recessive and capital O implies dominance. Also I^A and I^B and i imply one gene the I gene with three alleles

AB X AO

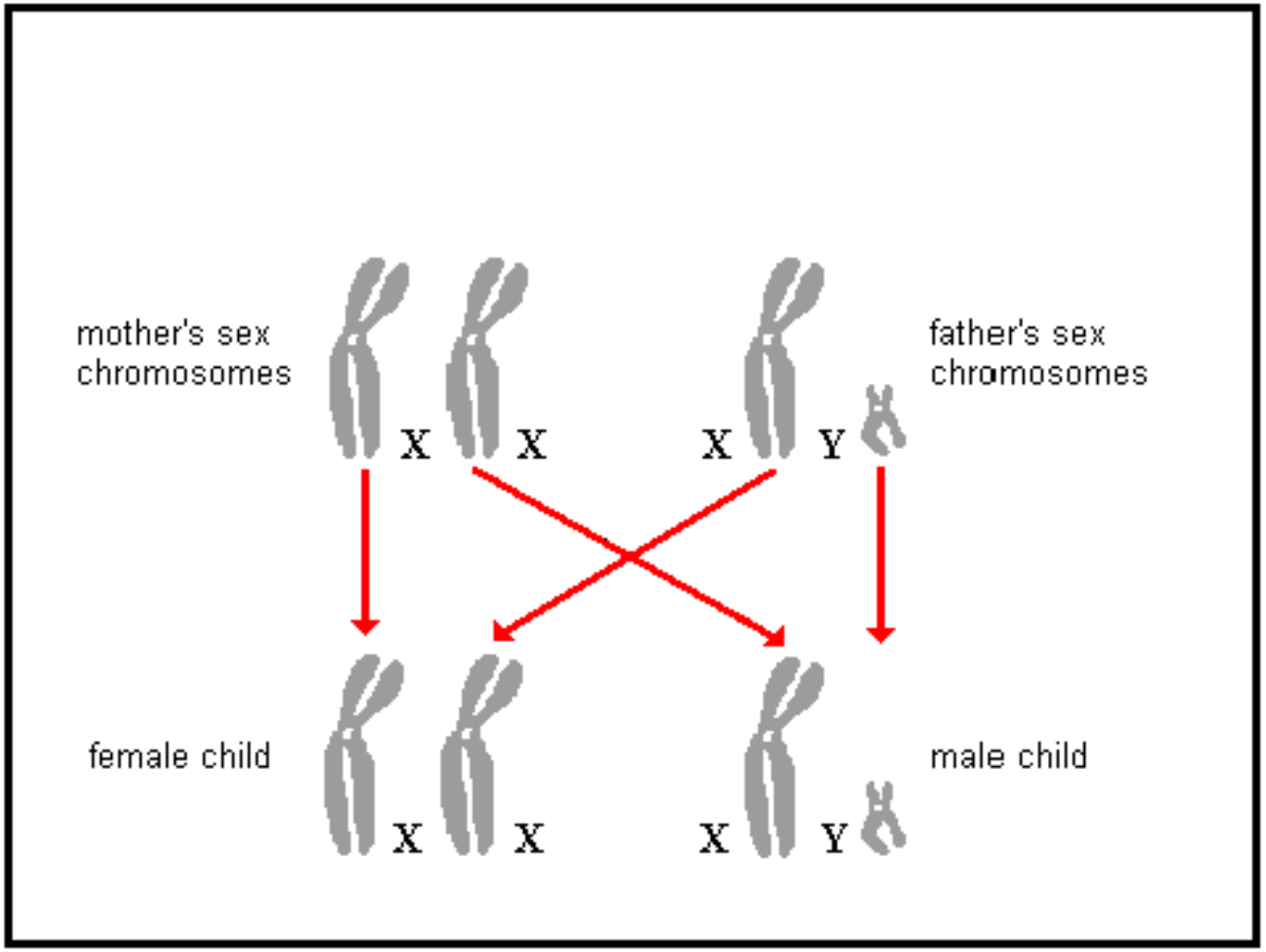
	A	B
A	AA	AB
O	AO	BO

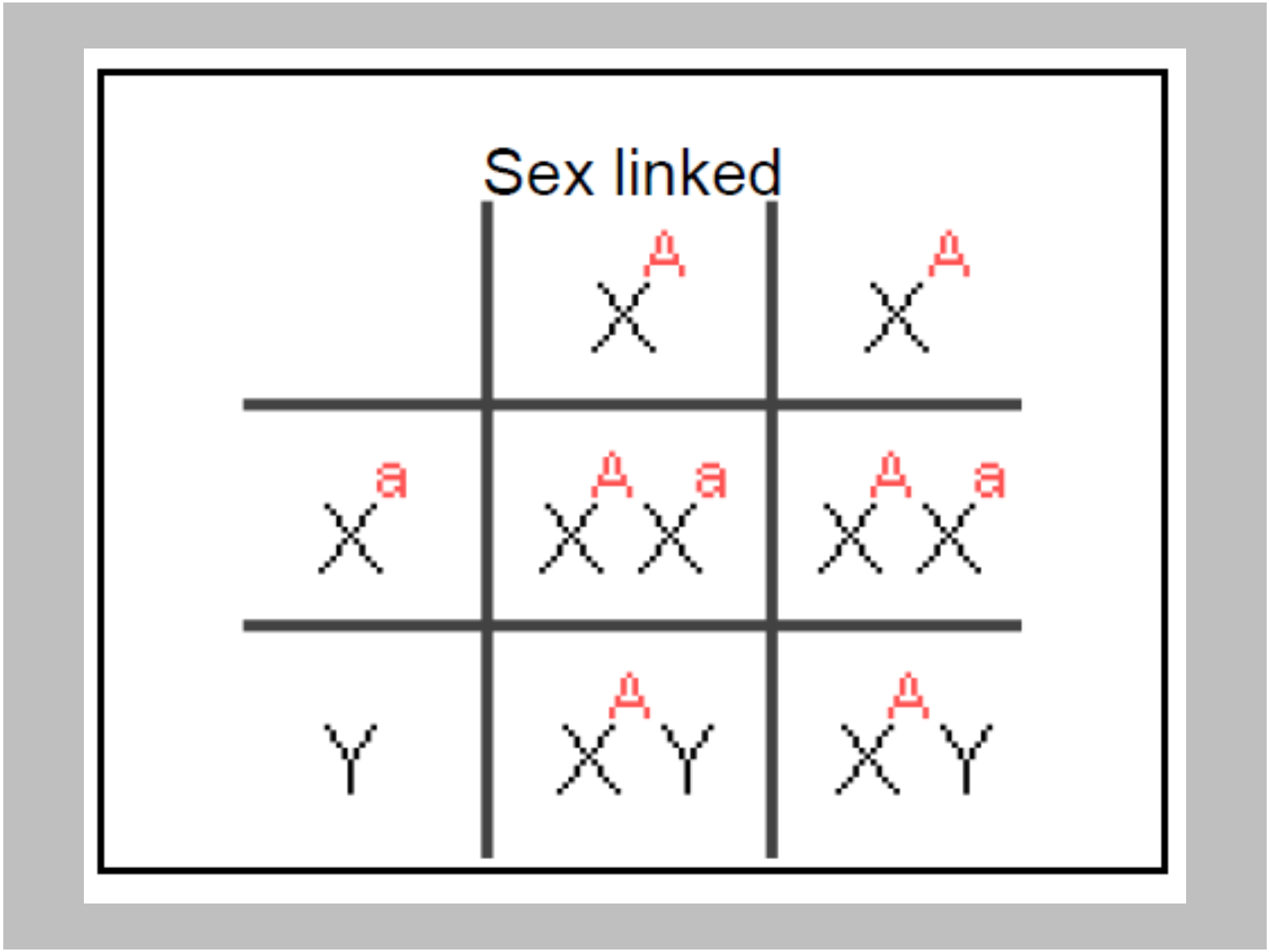
1/4 Type AB
1/4 Type B
1/2 Type A

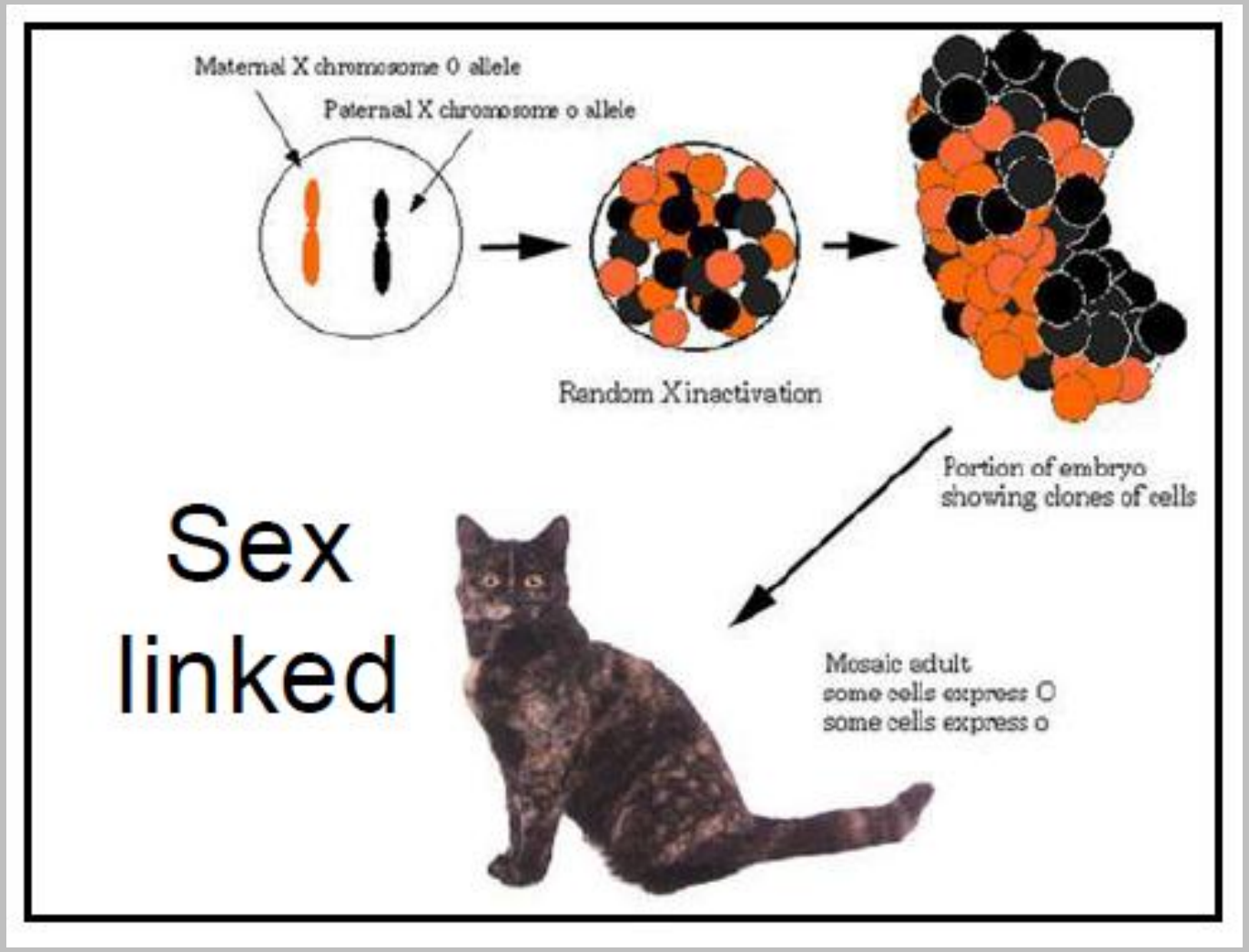
AO x BO

	A	O
B	AB	BO
O	AO	OO

1/4 Type AB
1/4 Type B
1/4 Type A
1/4 Type O


mother's sex chromosomes
X
X
X
Y
father's sex chromosomes
female child
X
X
X
Y
male child


Sex linked
A
A
a
A
a
A
a
Y
A
Y
A
Y


Maternal X chromosome O allele
Paternal X chromosome o allele
Random X inactivation
Portion of embryo showing clones of cells
Sex linked
Mosaic adult
some cells express O
some cells express o

DAYTONA STATE COLLEGE

Questions

Compiled by

D. Leonard – Learning Specialist
& K. Martin – Peer Tutor

The Academic Support Center @ Daytona State College
http://www.daytonastate.edu/asc/ascsciencehandouts.html