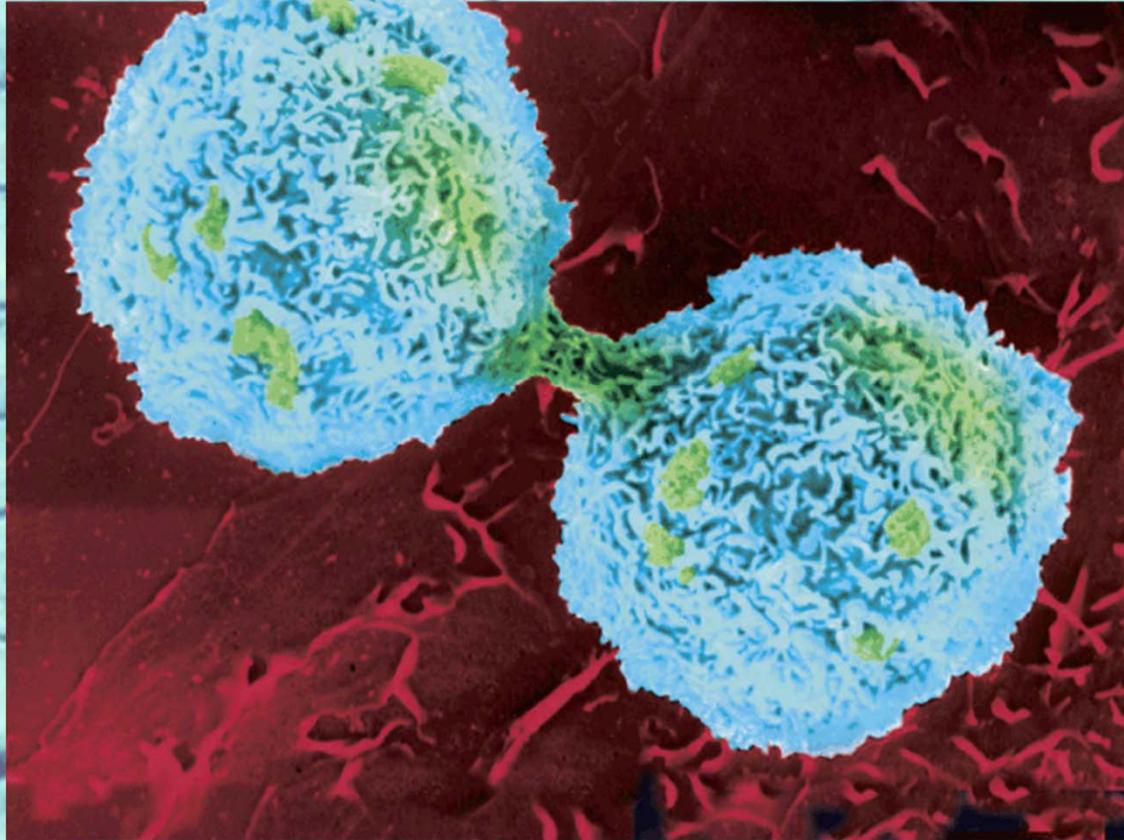


**START-UP FOR THURSDAY, OCTOBER 18, 2012
AS YOU WATCH THE FOLLOWING VIDEO ABOUT
MITOSIS, COMPLETE THE FOLLOWING:**

1. Why is cell division (mitosis) important?
(you should have at least 3 reasons)
2. What happens during each of the following stages: G1, S, G2 (Interphase), Prophase, Metaphase, Anaphase, and Telophase?

<http://www.youtube.com/watch?v=Q6ucKWlIFmg&feature=channel&list=UL>

MITOSIS



The nature of replicating cells

Pages 240 - 249



Objectives: Students will

- ▣ **A) List three reasons why cells divide**
- ▣ **B) Correlate surface area and volume with increasing cell size**
- ▣ **C) Identify the parts of a chromosome**
- ▣ **D) Identify the 4 stages of the cell cycle**
- ▣ **E) Summarize the role of each stage of interphase**

A) List three reasons why cells divide



1. DNA “Overload”
Like books in library

1000 books,
population?

1000, enough
10000, not



2. Nutrient
and waste
exchange

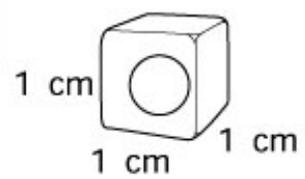
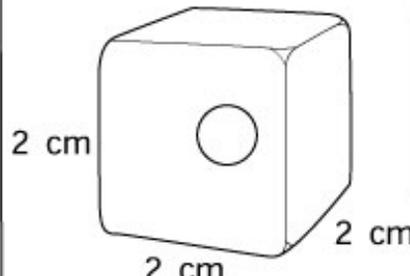
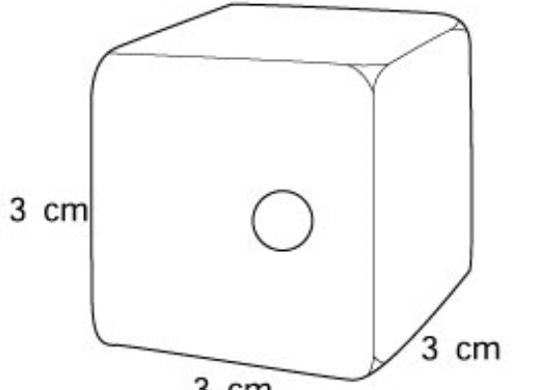


B) Correlate surface area and volume with increasing cell size

Surface area = Nutrient and waste movement, like roads of a city

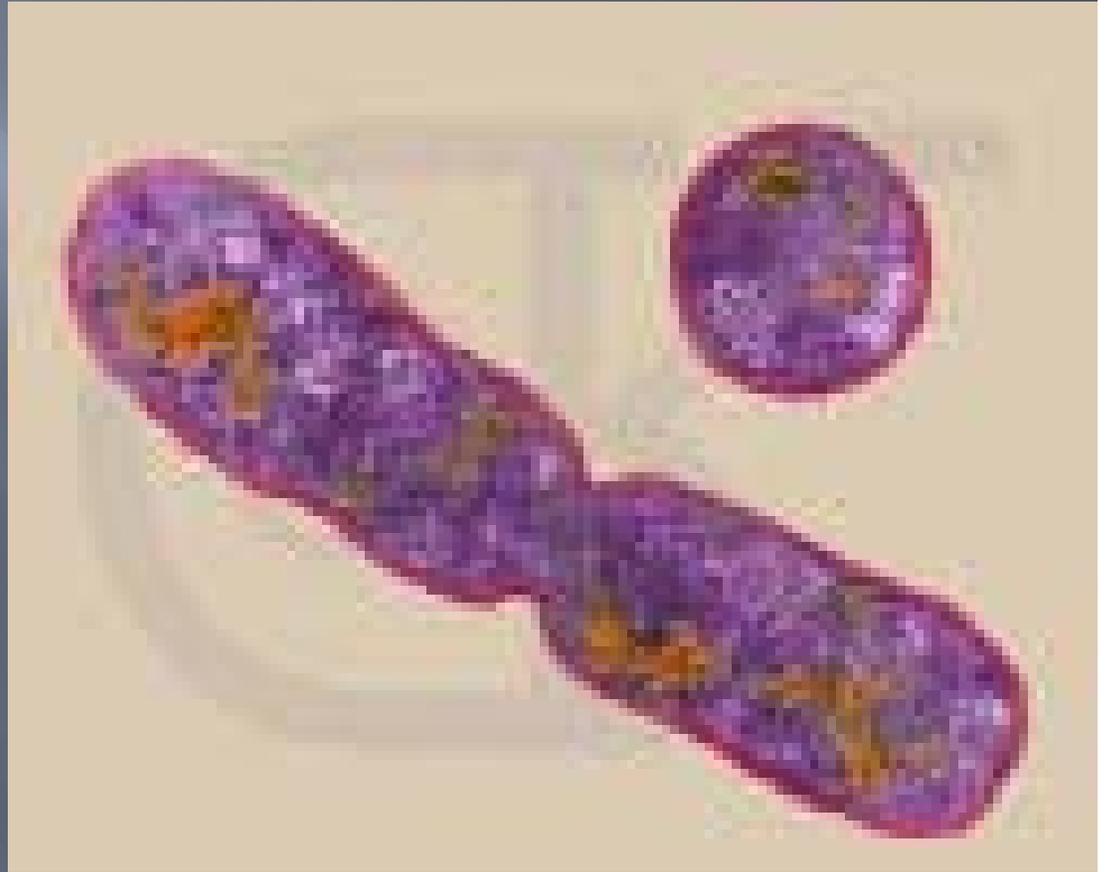
Volume = Nutrient and waste usage

Desired Ratio?
Big

			
Surface Area (length x width x 6)	[Green bar]	[Green bar]	[Green bar]
Volume (length x width x height)	[Green bar]	[Green bar]	[Green bar]
Ratio of Surface Area to Volume	[Green bar]	[Green bar]	[Green bar]

A) List three reasons why cells divide

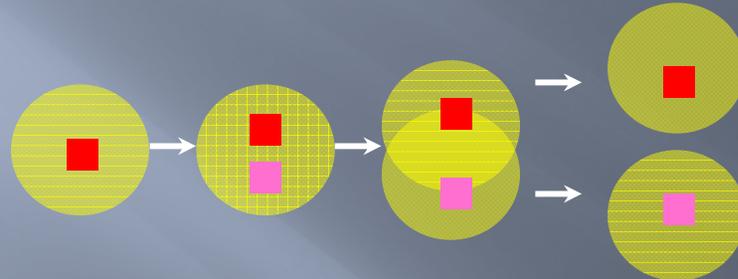
3. Reproduction: Not as simple as it looks.



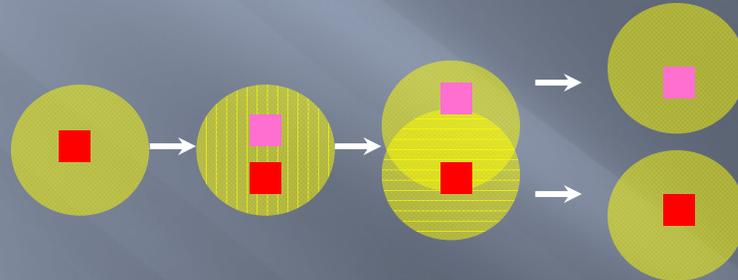
Reproduction presents a major problem for cells and organisms:
(how can information be transmitted faithfully to progeny)

■ = one bit of
genetic information

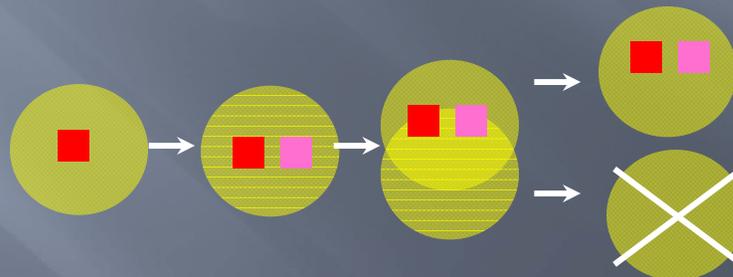
I



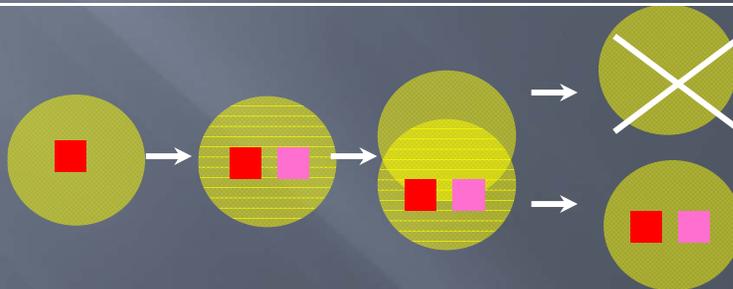
II



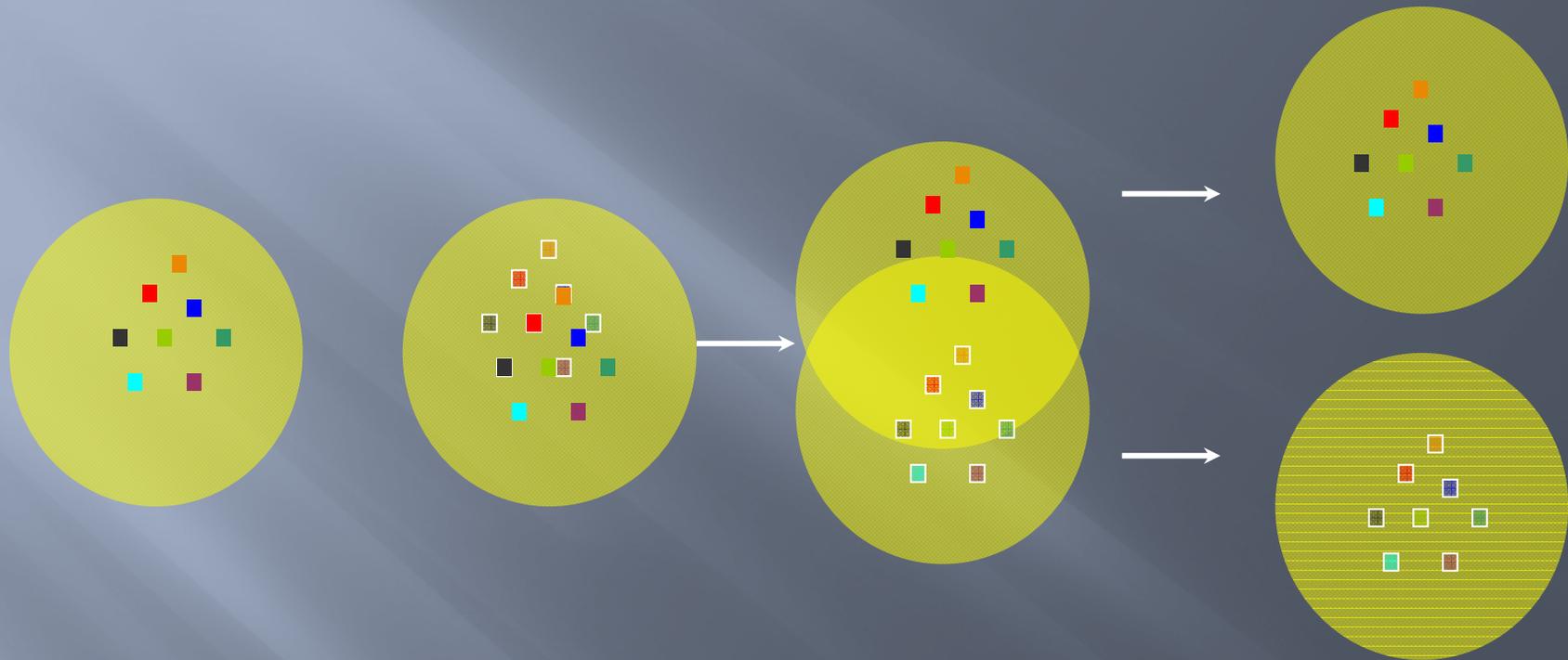
III



IV

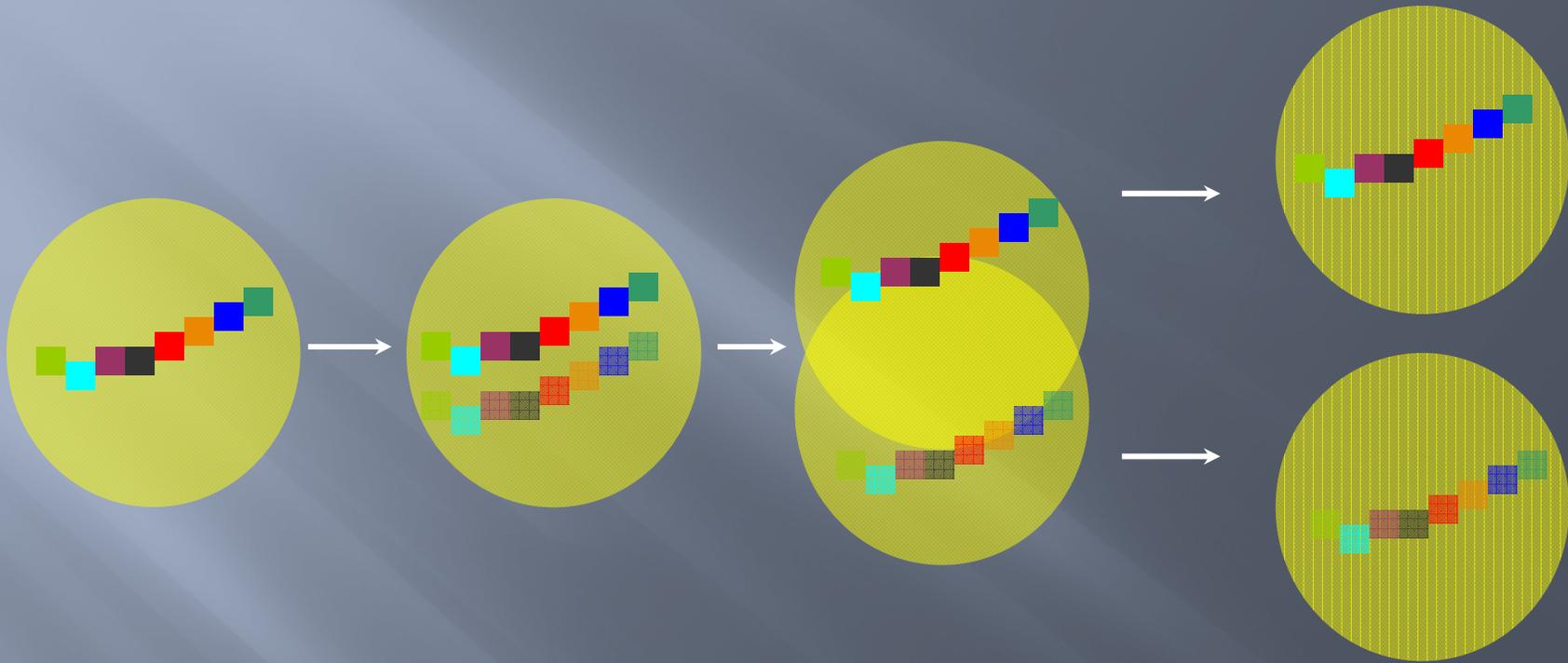


The information transfer problem becomes more challenging as more bits of information are incorporated into the organism



■ = one bit of genetic information

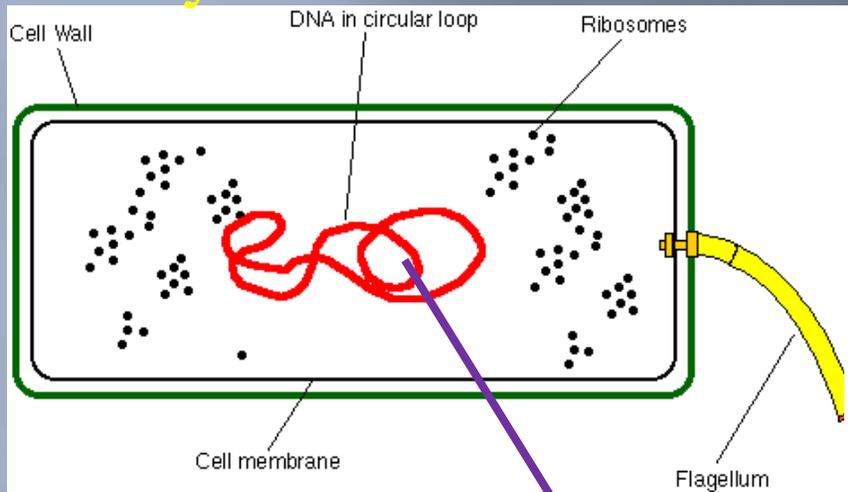
One of life's solutions to this challenge: "Package" the bits of information into single units called **chromosomes**



■ = one bit of genetic information

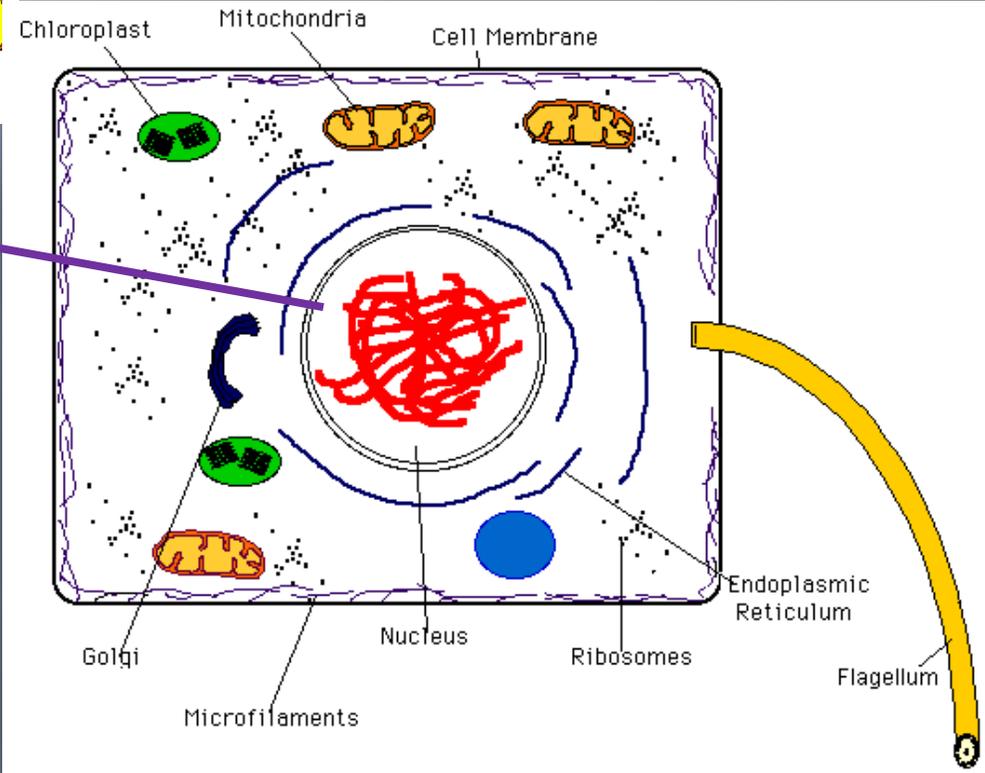
C) Identify the parts of a chromosome

Prokaryote cell = free DNA



Packaging of genetic material in prokaryotes and eukaryotes

Eukaryote cell



Chromosomes

How many in humans?

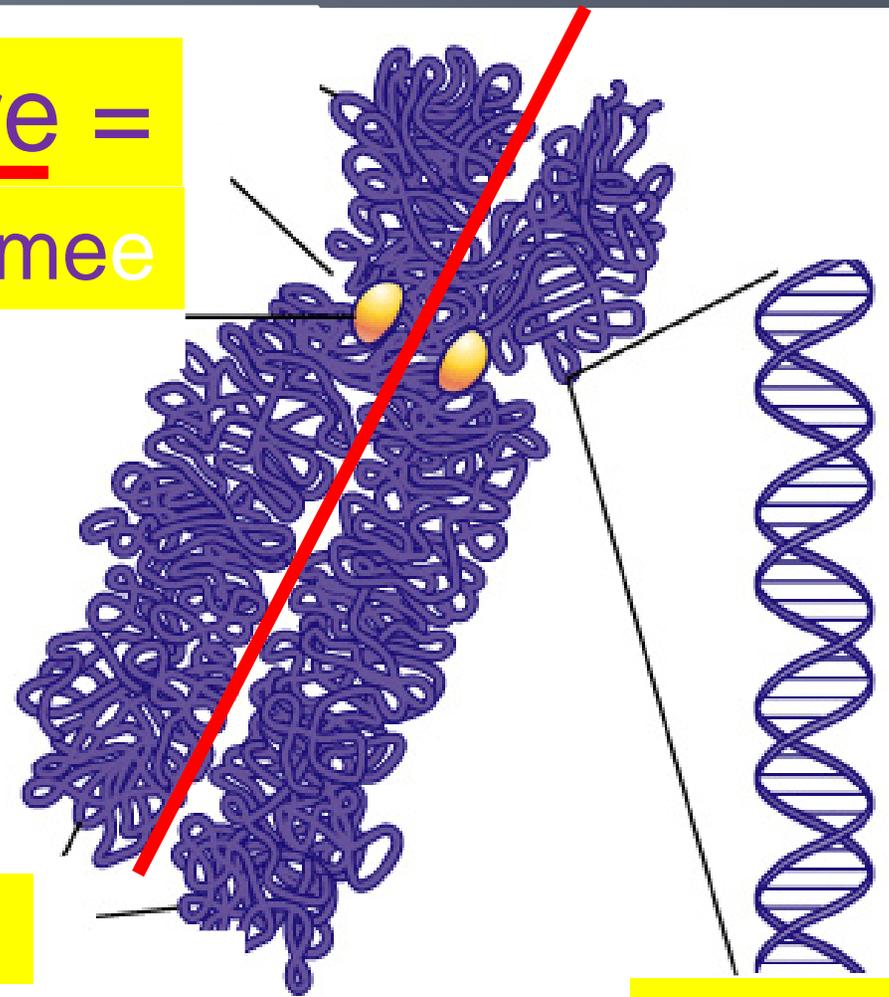
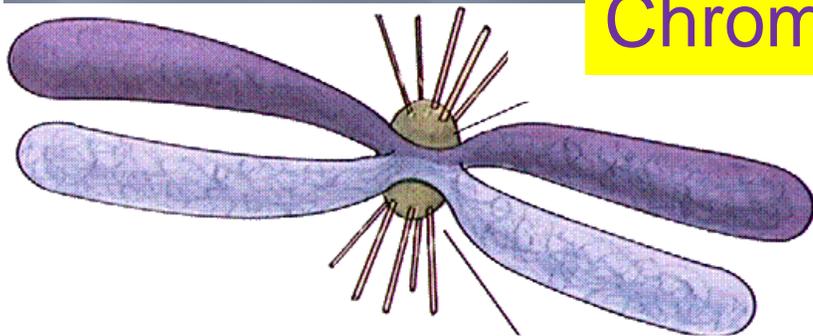
46 or 23 pair

C) Identify the parts of a chromosome

Centromere =
Center of chromosome

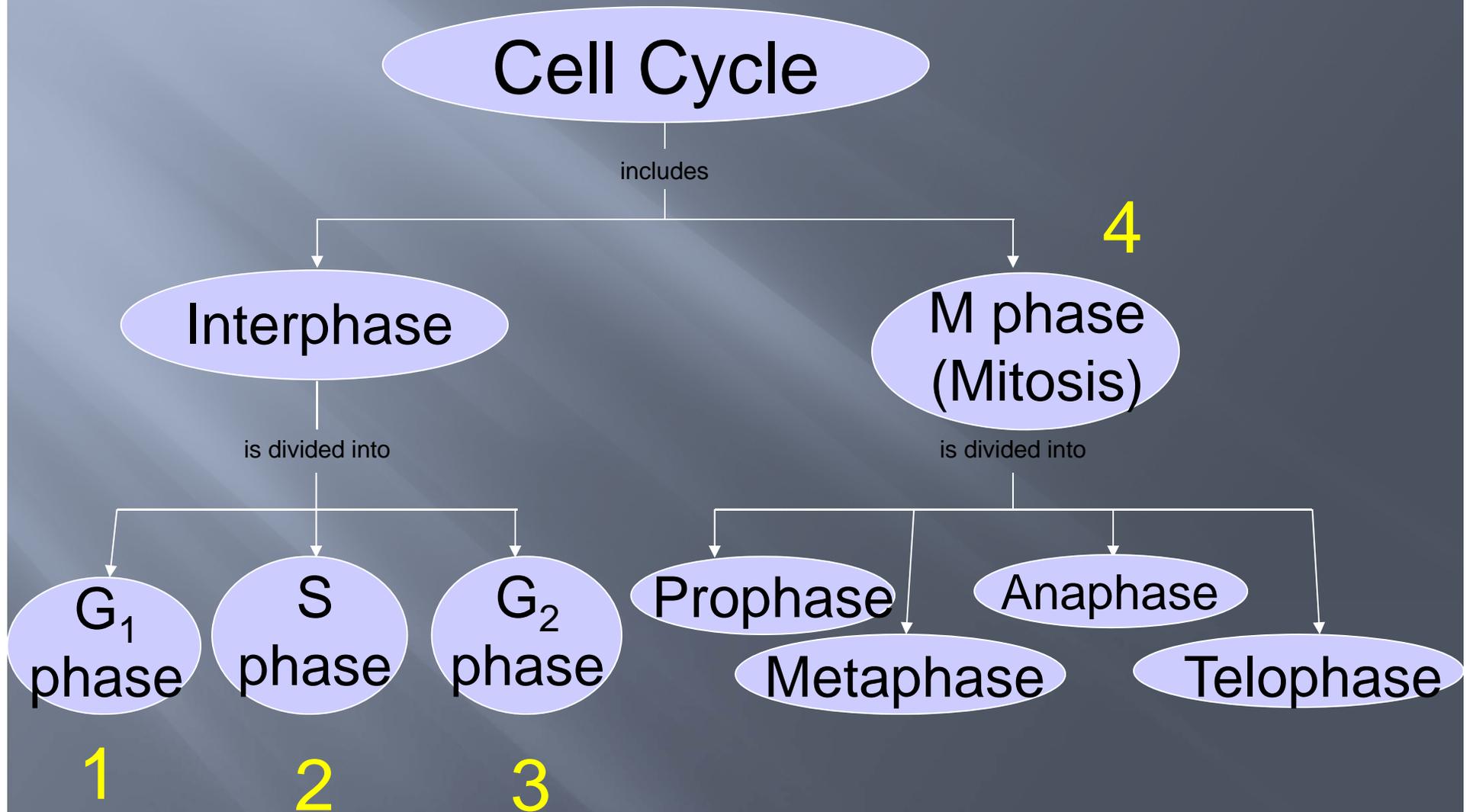
$\frac{1}{2}$ of a
chromosome, after
it doubles

Chromatid =



DNA

D) Identify the 4 stages of the cell cycle

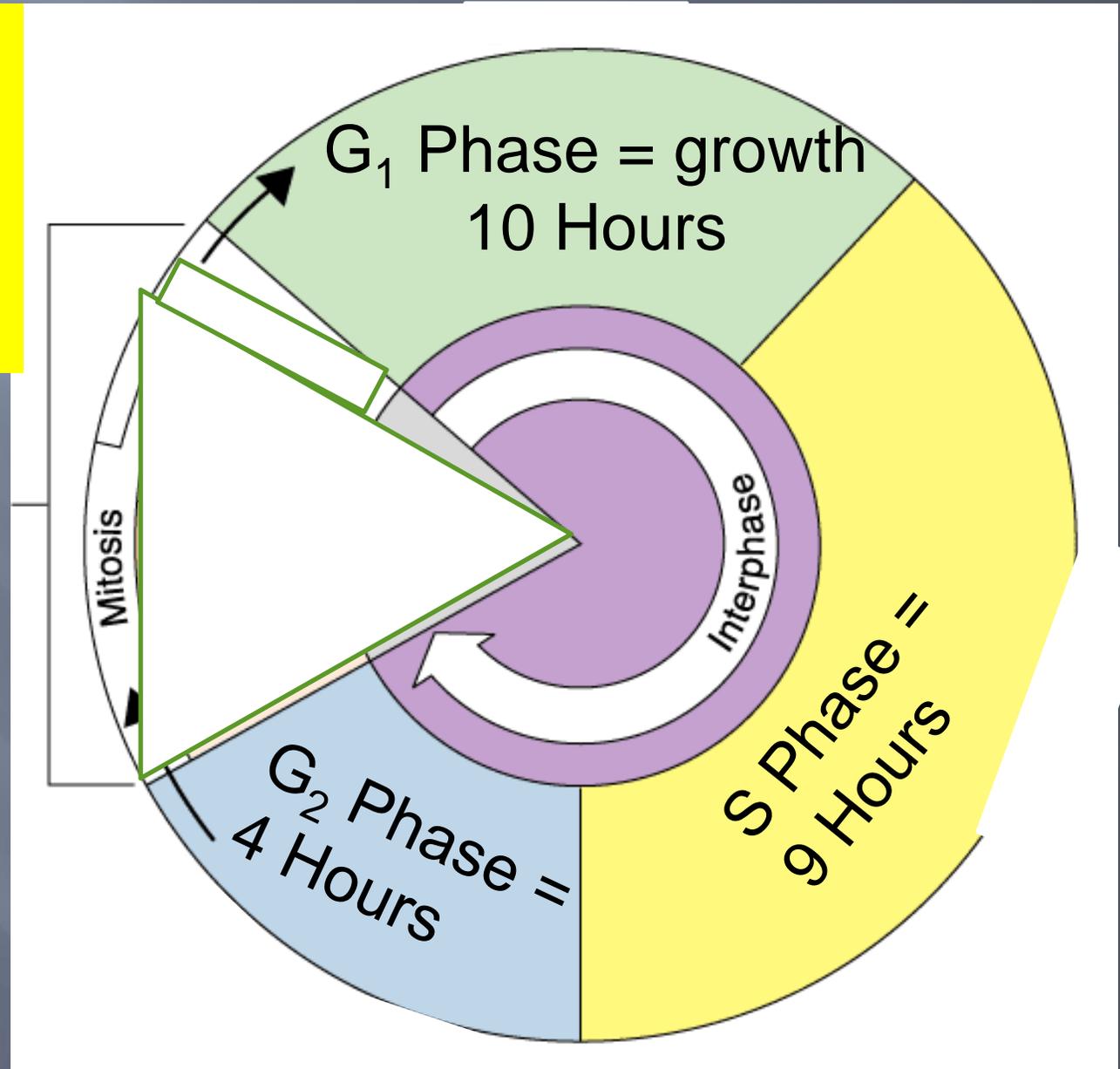


E) Summarize the role of each stage of interphase

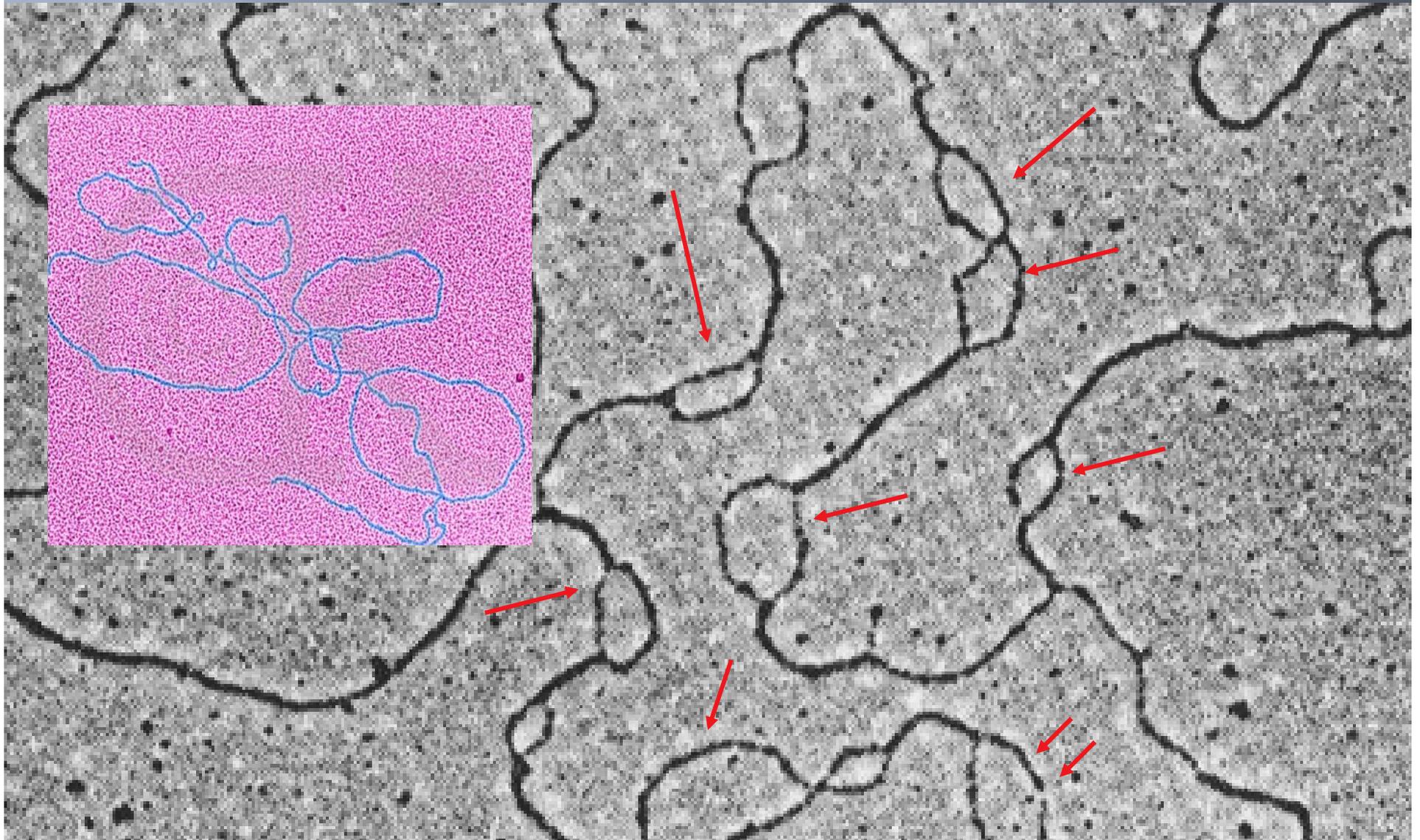
In what phase
do cells spend
most of their
life?

Interphase

M Phase =
Cell Division
1 Hour



Eukaryotic chromosome replicating during Interphase



Actual STAR Question.

Rewrite the question, underline key words, then choose your answer.

What causes tomatoes to ripen much more slowly in a refrigerator than they do if left on a table at room temperature?

- X Tomatoes need sunlight to ripen.
- X Humidity accelerates the ripening process.
- C Low temperatures reduce the action of ripening enzymes.
- D Enzymes produced by bacteria inhibit ripening.

Cross off answers that do not answer the question.

Standards-Based Understanding Check

Answer the following questions on the bottom of your notes. See me for a stamp.

1. List the three reasons cells divide.
2. Draw a chromosome and label the 2 main parts.
3. Why is a large surface area to volume ratio ideal in cells?
4. Name the four stages of the cell cycle.

Complete your link word for the rest of the period.