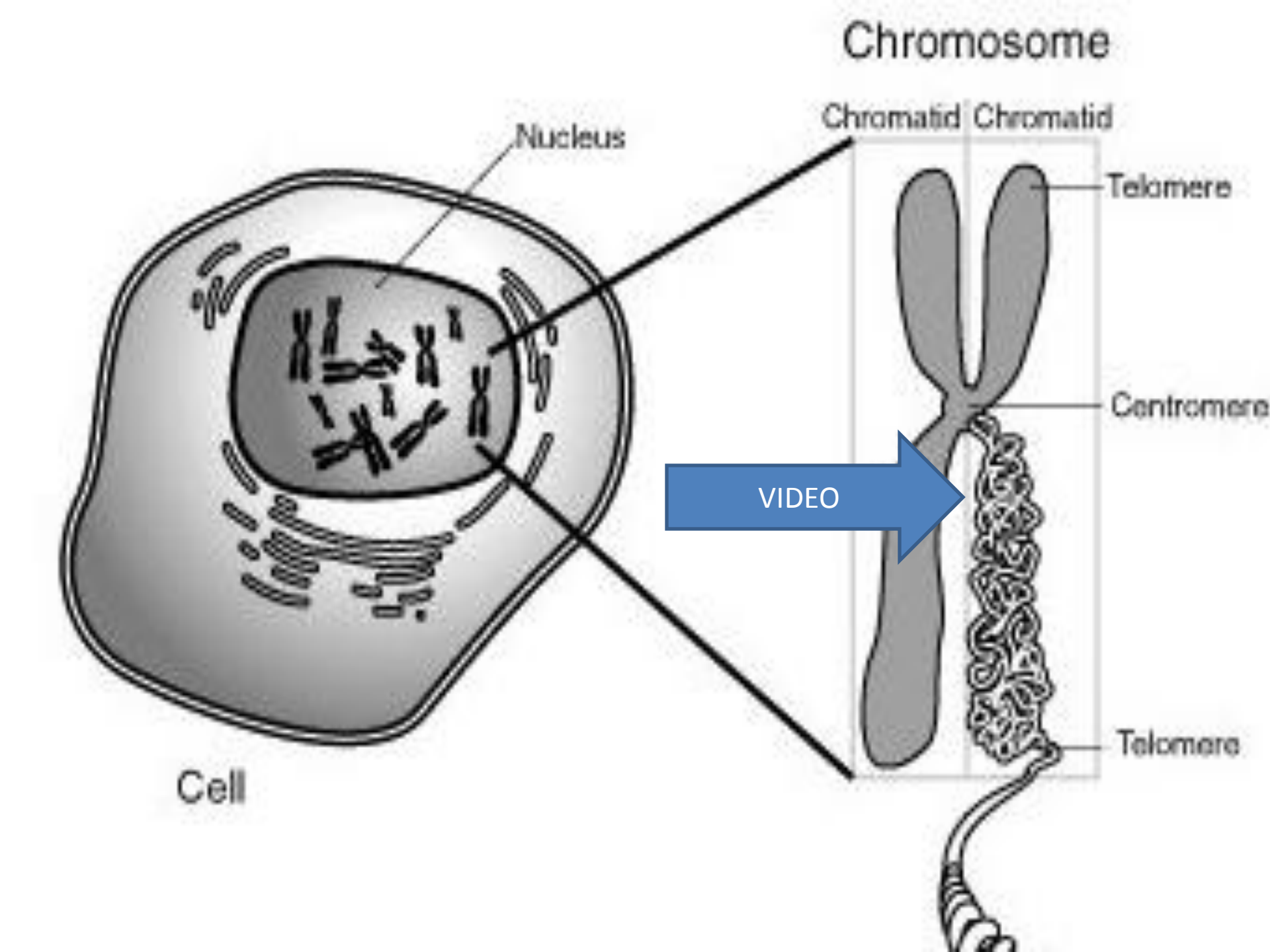
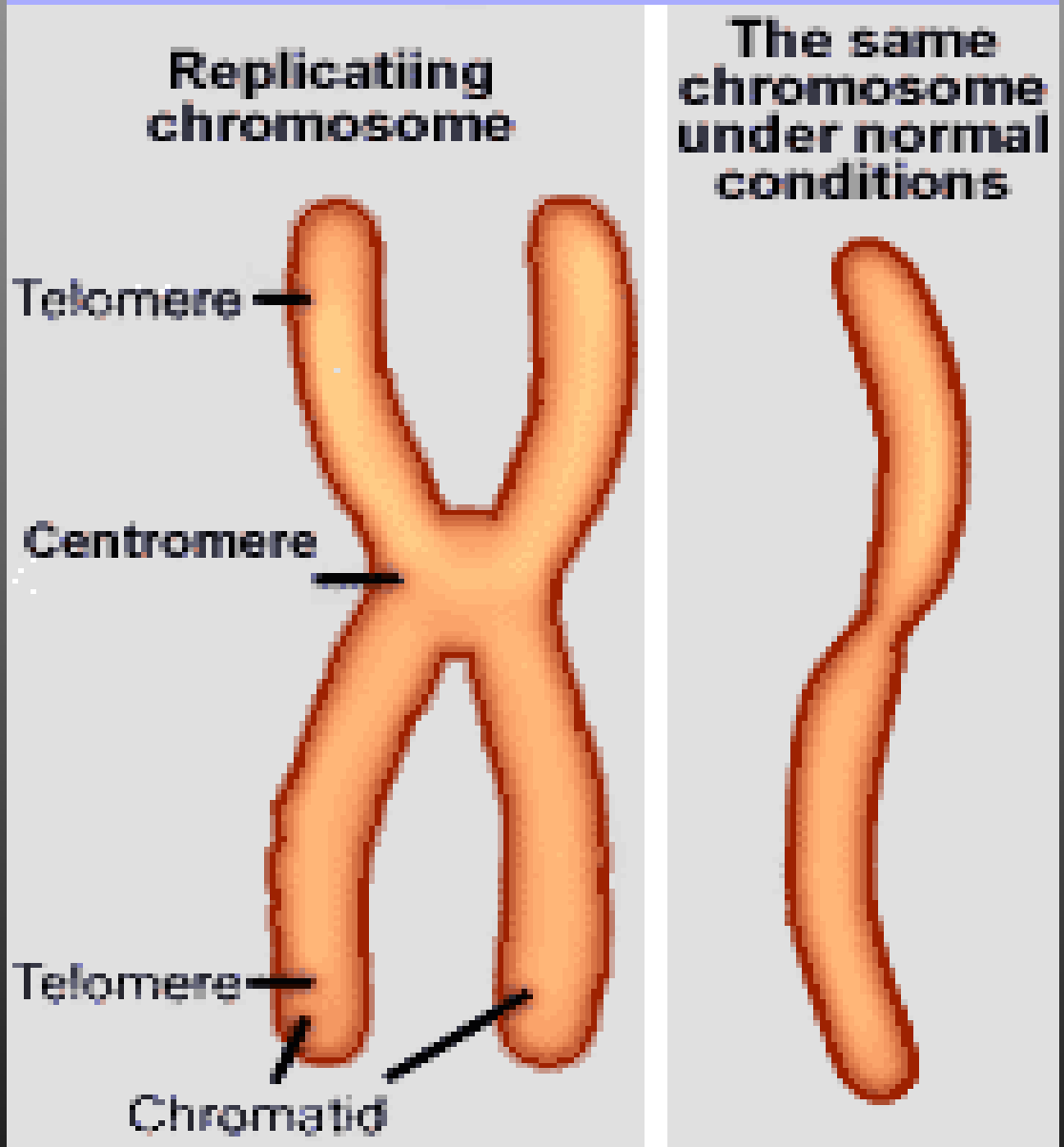
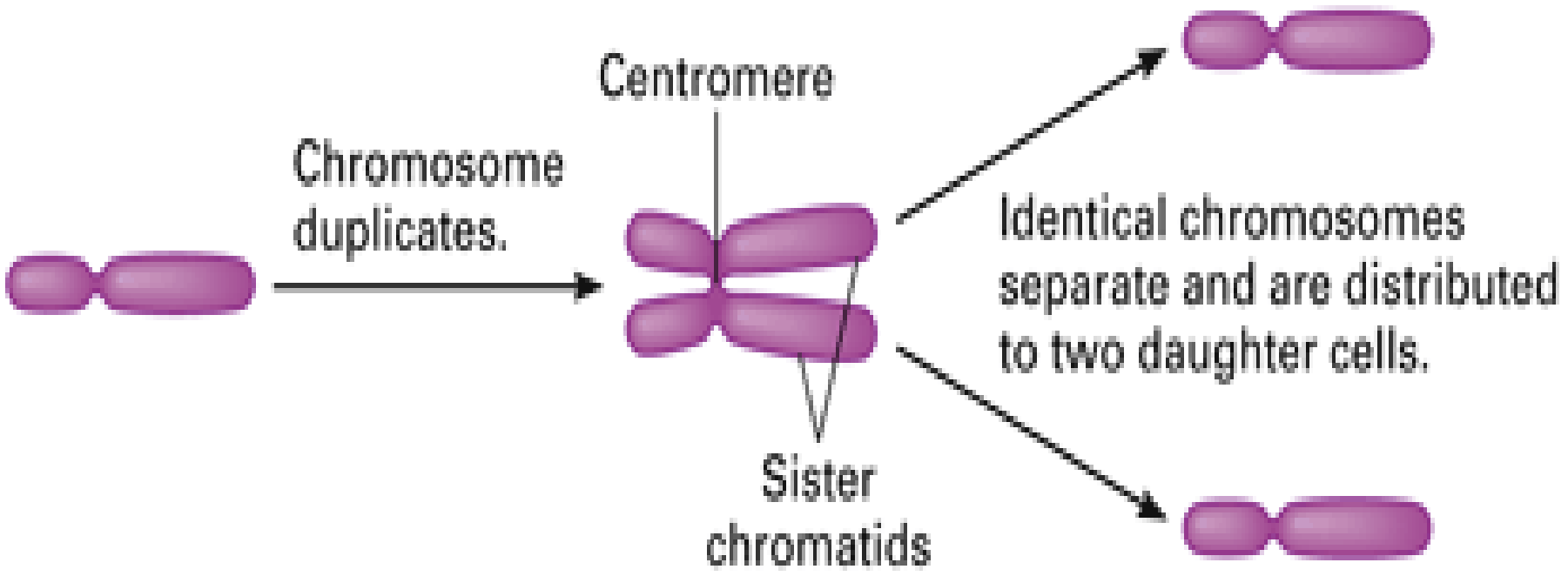
CHROMOSOMES

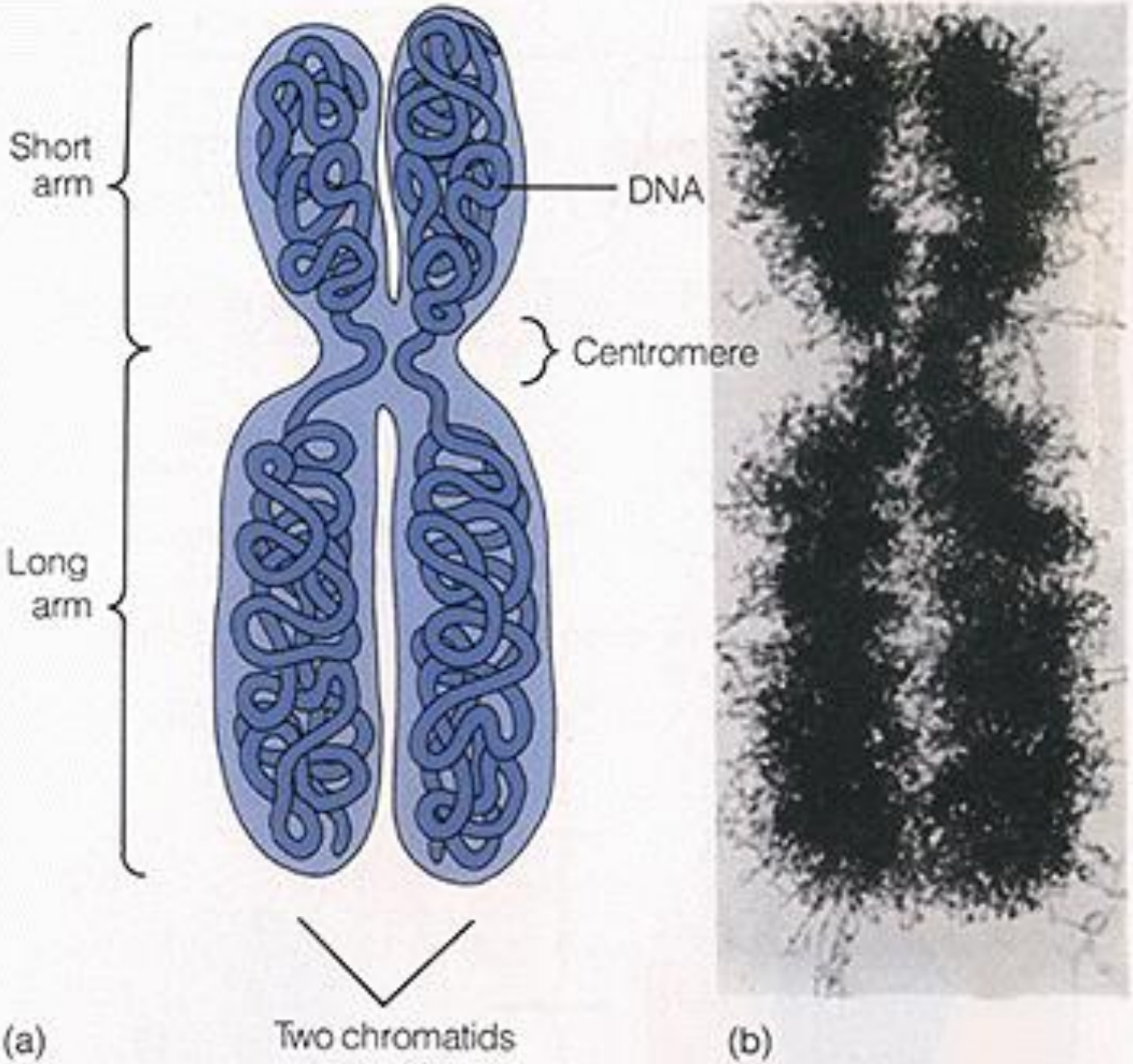
- DNA IS CONDENSED INTO CHROMOSOMES (AND COILED AROUND PROTEINS)
- THE DNA IS THE GENETIC MATERIAL.
- DNA DETERMINES YOUR PHYSICAL TRAITS AND ABILITIES

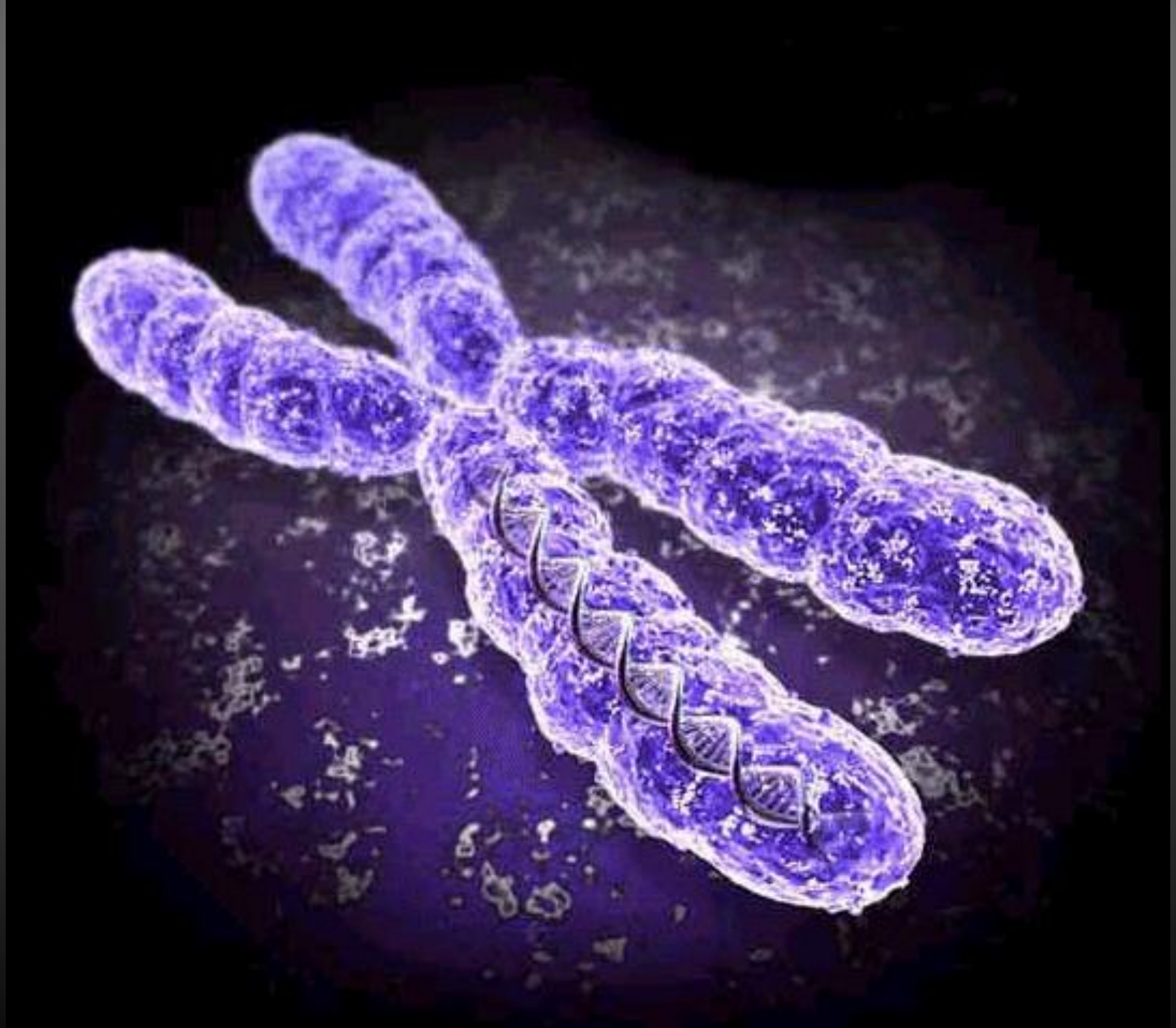

Chromosome
Chromatid
Chromatid
Nucleus
Telomere
Centromere
VIDEO
Telomere
Cell

When chromosomes are preparing to divide the DNA replicates itself into two strands called chromatids




Centromere
Chromosome duplicates.
Identical chromosomes separate and are distributed to two daughter cells.
Sister chromatids

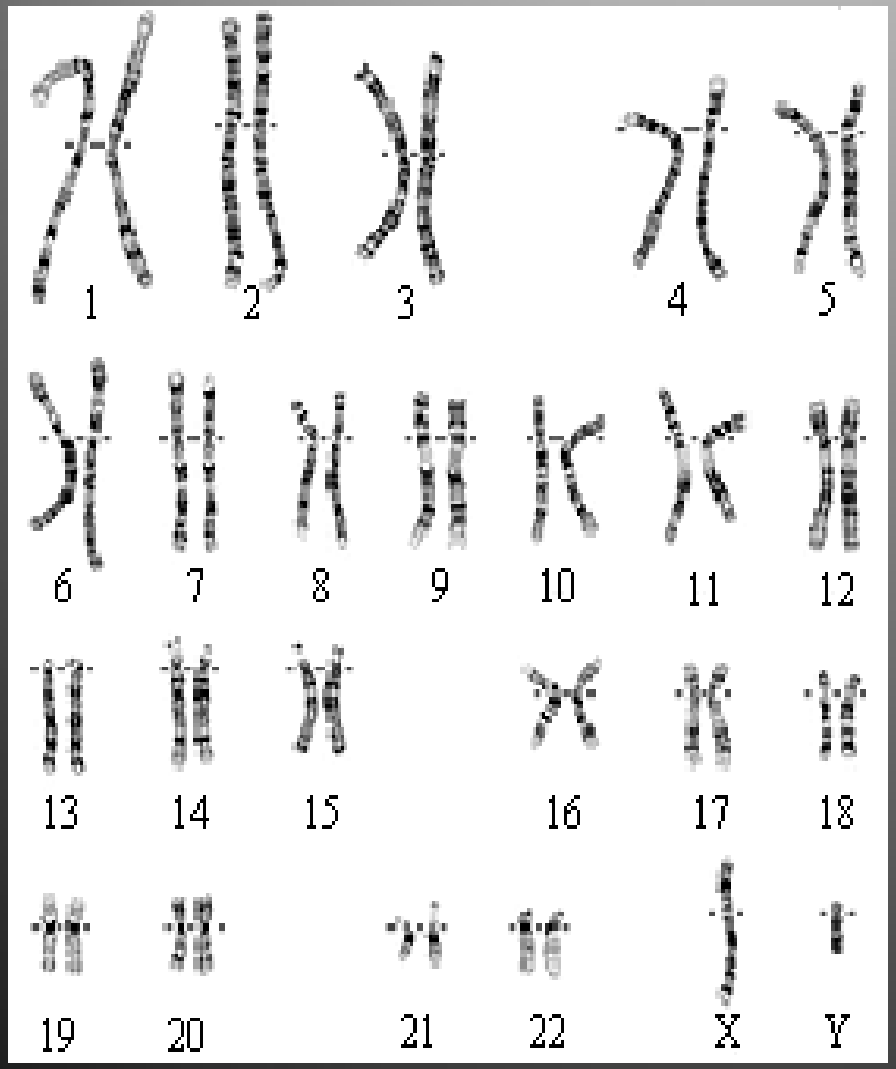

Short arm
Long arm
DNA
Centromere
Two chromatids
(a)
(b)



Chromosome Numbers in Different Species

Common Name	Genus and Species	Chromosome Number
Buffalo	*Bison bison*	30 PAIRS OR 60
Cat	*Felis catus*	19 PAIRS OR 38
Cattle	*Bos taurus, B. indicus*	30 PAIRS OR 60
Dog	*Canis familiaris*	39 PAIRS OR 78
Donkey	*E. asinus*	31 PAIRS OR 62
Goat	*Capra hircus*	30 PAIRS OR 60
Horse	*Equus caballus*	32 PAIRS OR 64
Human	*Homo sapiens*	23 PAIRS OR 46
Pig	*Sus scrofa*	19 PAIRS OR 38
Sheep	*Ovis aries*	27 PAIRS OR 54

Chromosome Numbers



A human *karyotype*

- The number of chromosomes in a *eukaryotic* cell depends on the species. For example, human body cells generally each have **46** chromosomes.
- **23** come from mom, **23** come from dad.

The Cell Cycle

How often a cell divides depends on the type of cell:

- Skin cell → 24 hours
- GI tract cells → 24 hours
- Liver cells → 1 year
- Nerve &
  mature muscle cells → never!

Prokaryotic cells → 20 minutes