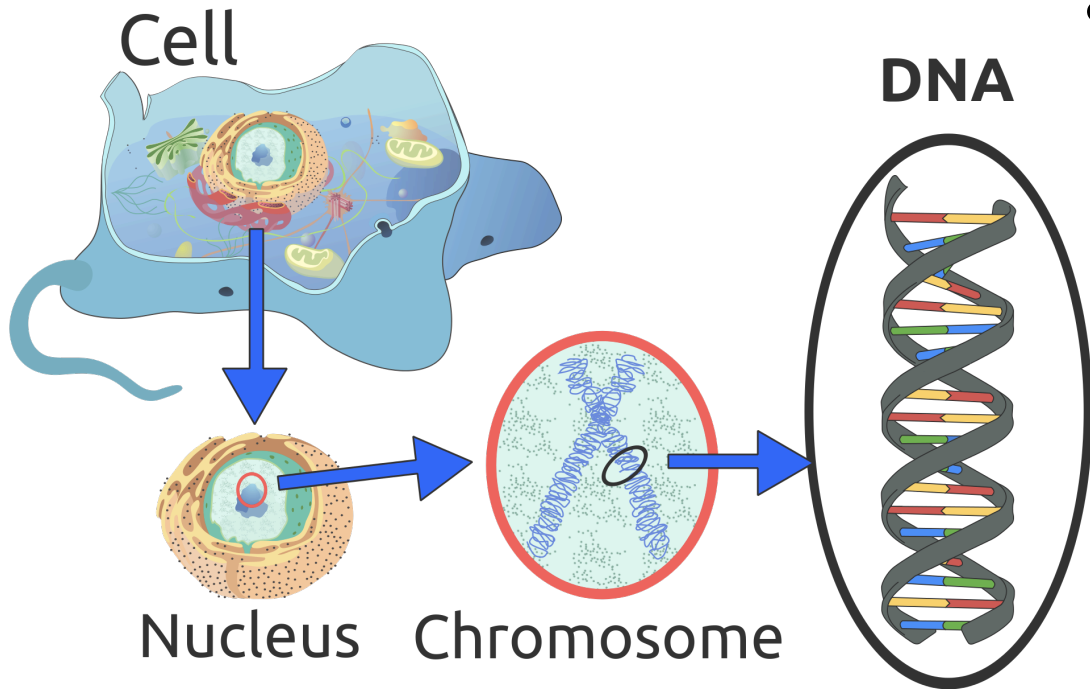


# DNA and Chromosome Notes

## (Cell Division Notes pt 1)

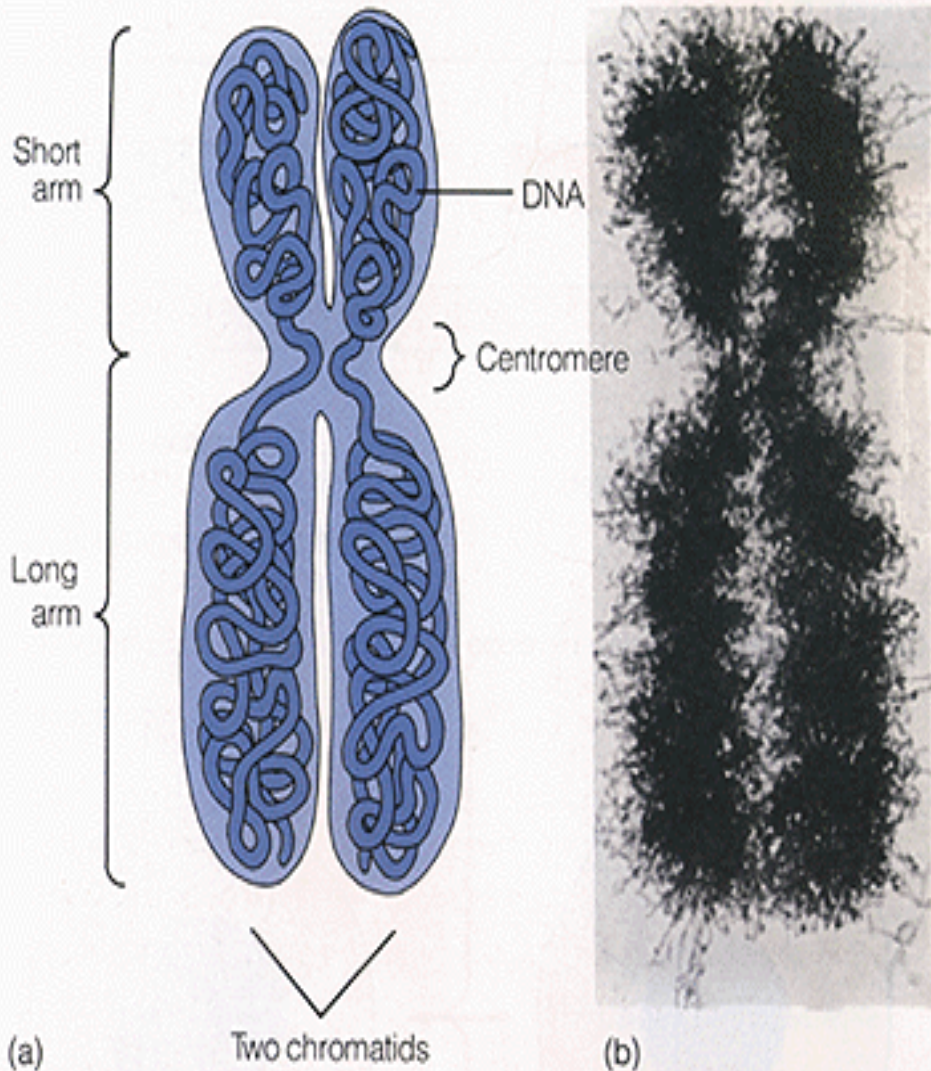
# What is DNA?



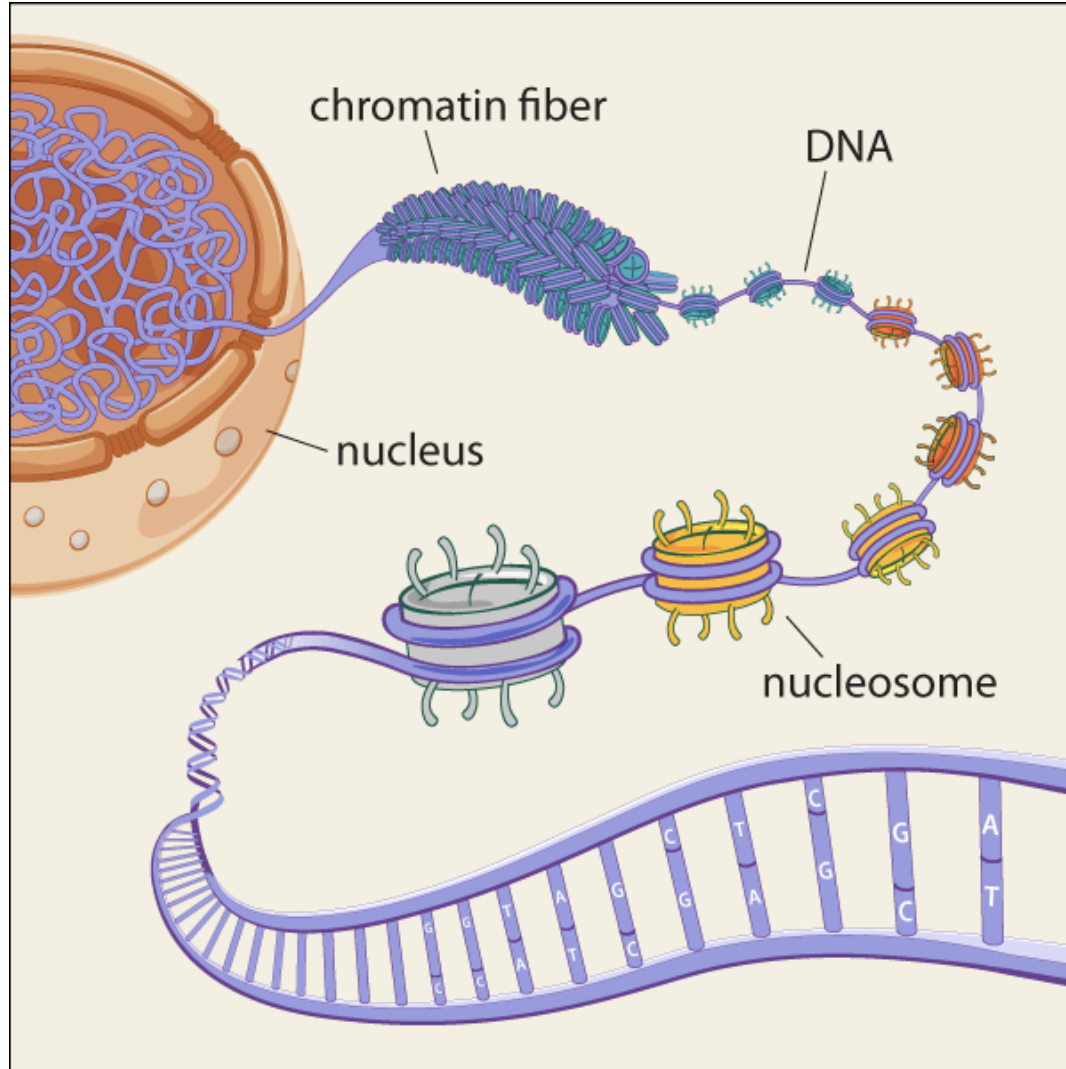
- DNA (deoxyribonucleic acid) determines the structure of proteins and serves as the genetic code of life.

# Chromosomes

- **Defined:** Tightly coiled DNA
- Form when cells divide
  - Chromosomes created for the new cells
- **2 Parts:**
  - 1) **Chromatids:** two identical parts of a chromosome
  - 2) **Centromere:** Joins chromatids together



# Chromatin



# Journey Into Your Cell...



[Let's take a look!](#)

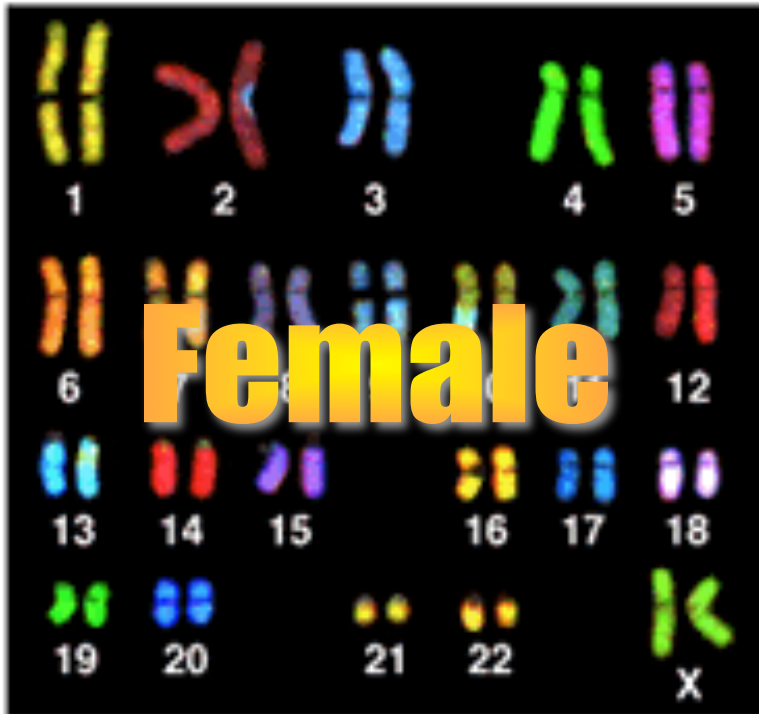
**KIDS**

# KARYOTYPE

Size of final pair identifies sex

- Same size: XX = female
- Different size: XY = male

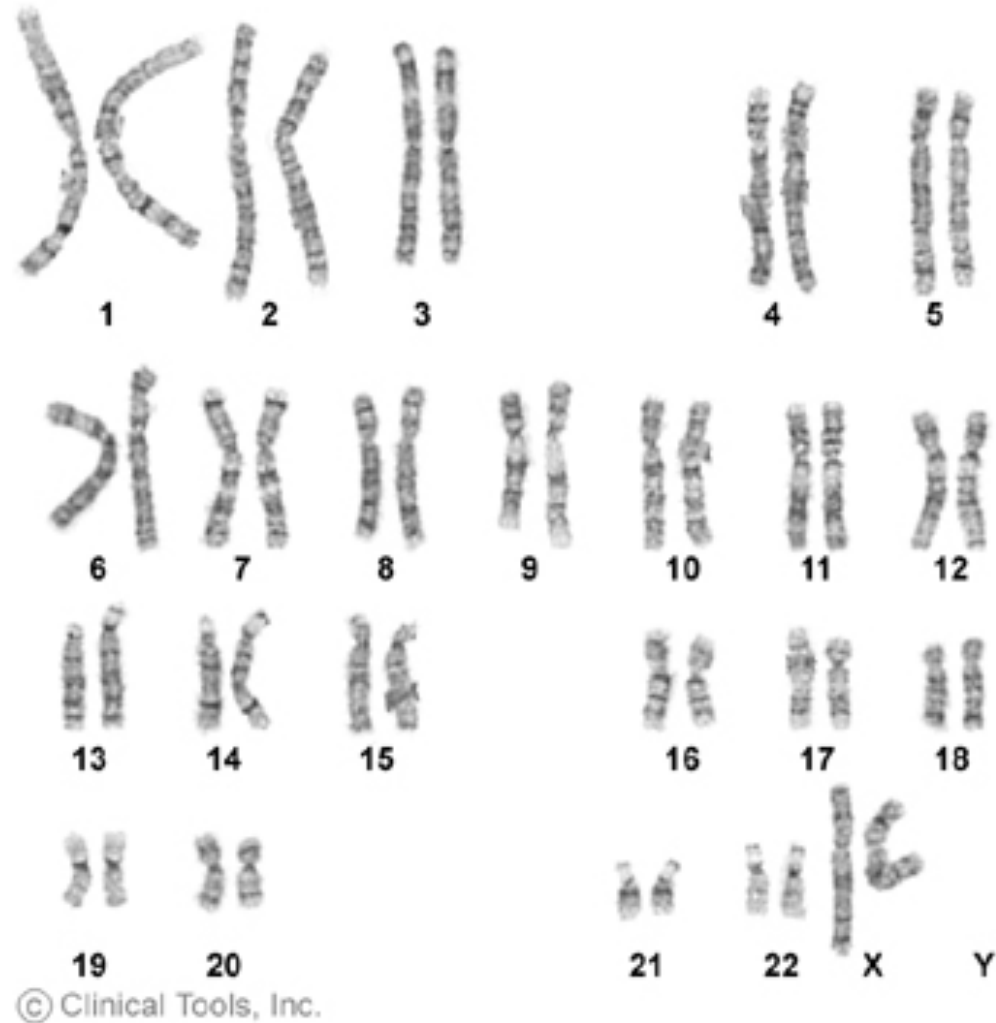
Normal human will have 46 chromosomes





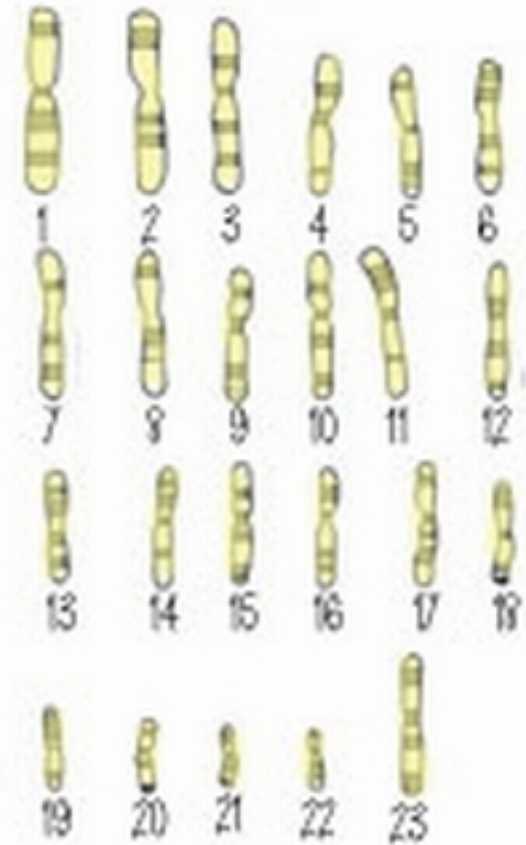
# Somatic Cells

- Somatic non-sex cells
- Ex: Skin, Muscle, Nerve, Blood Cells
- Created by mitosis
- 23 pairs = 46 total chromosomes



# Sex Cells

- **Gametes**: sex cells
- Ex: Sperm produced in Testis
- Ex. Egg produced in Ovaries
- Ex, Pollen
- Created by meiosis
  - Chromosome number reduced by 1/2
- **Zygote**: Cell formed when two gamete cells are joined. (before embryo stage)



Sperm cell (23) + Egg cell (23) = Zygote (46)



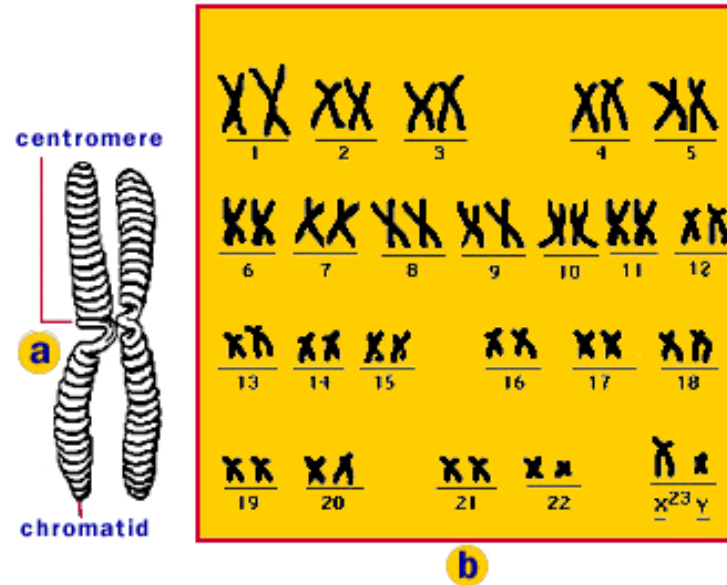
# Bill Nye: DNA and Chromosomes



- [Bill Nye Explains it!](#)

# How many chromosomes are in brain cells?

## Human chromosomes!



Remember...Brain cells are non-sex cells...

...Somatic cells are non-sex cells...

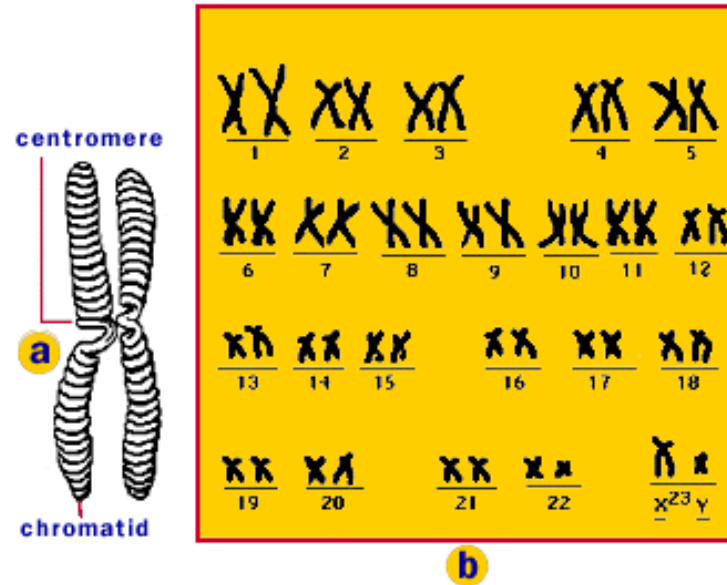
...Somatic cells 46 chromosomes...

...Somatic cells have the full set of chromosomes

Answer = 46

# How many chromosomes are in female egg cells?

## Human chromosomes!



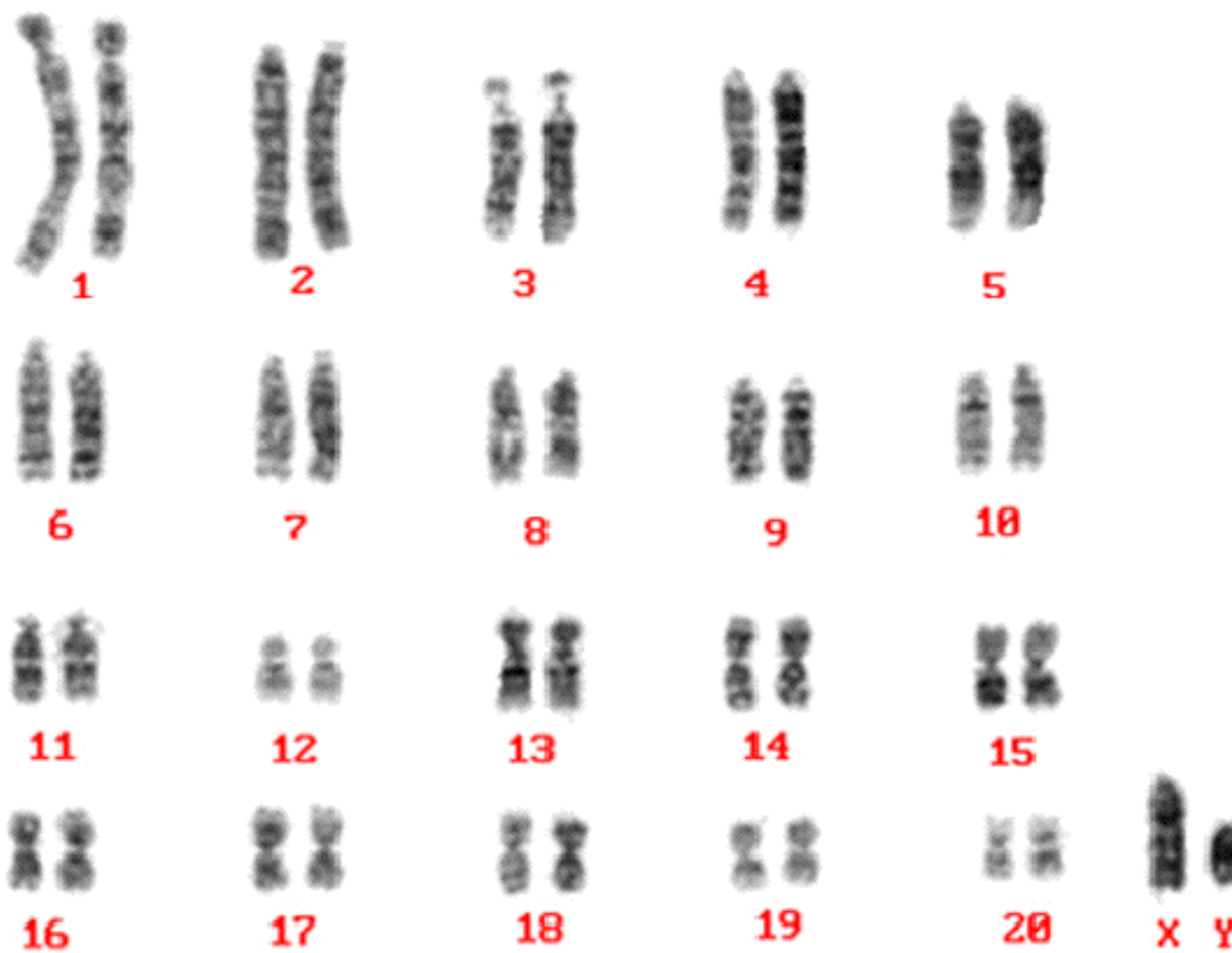
Remember...Egg cells are sex cells...

...Sex cells are gametes...

...Gamete cells have  $\frac{1}{2}$  the set of chromosomes

Answer = 23

# Rat

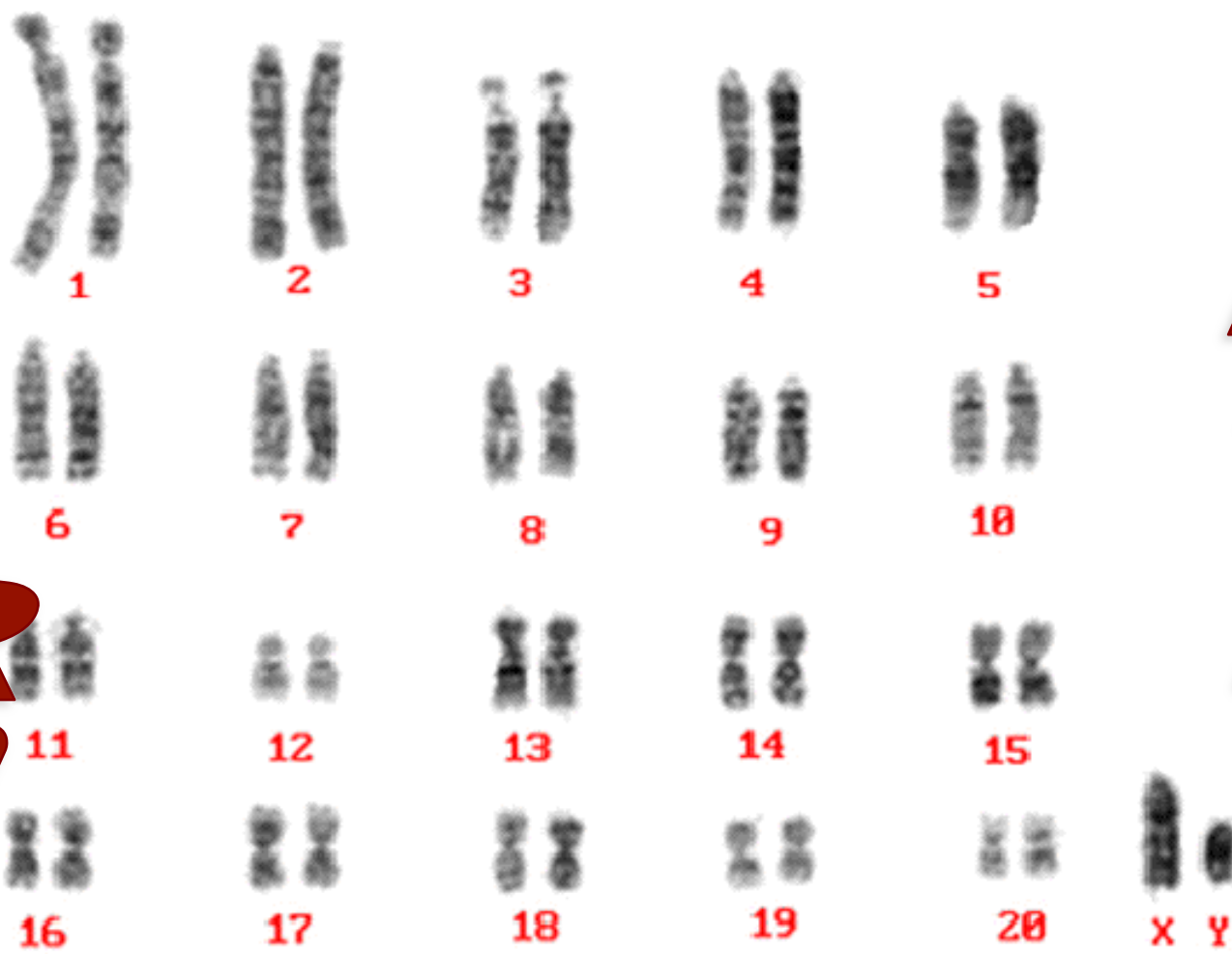


# Karyotype

- What is the somatic cell chromosome number?

42

# Rat



# Karyotype

- How many chromosomes would be in gamete cells?

**Fact**



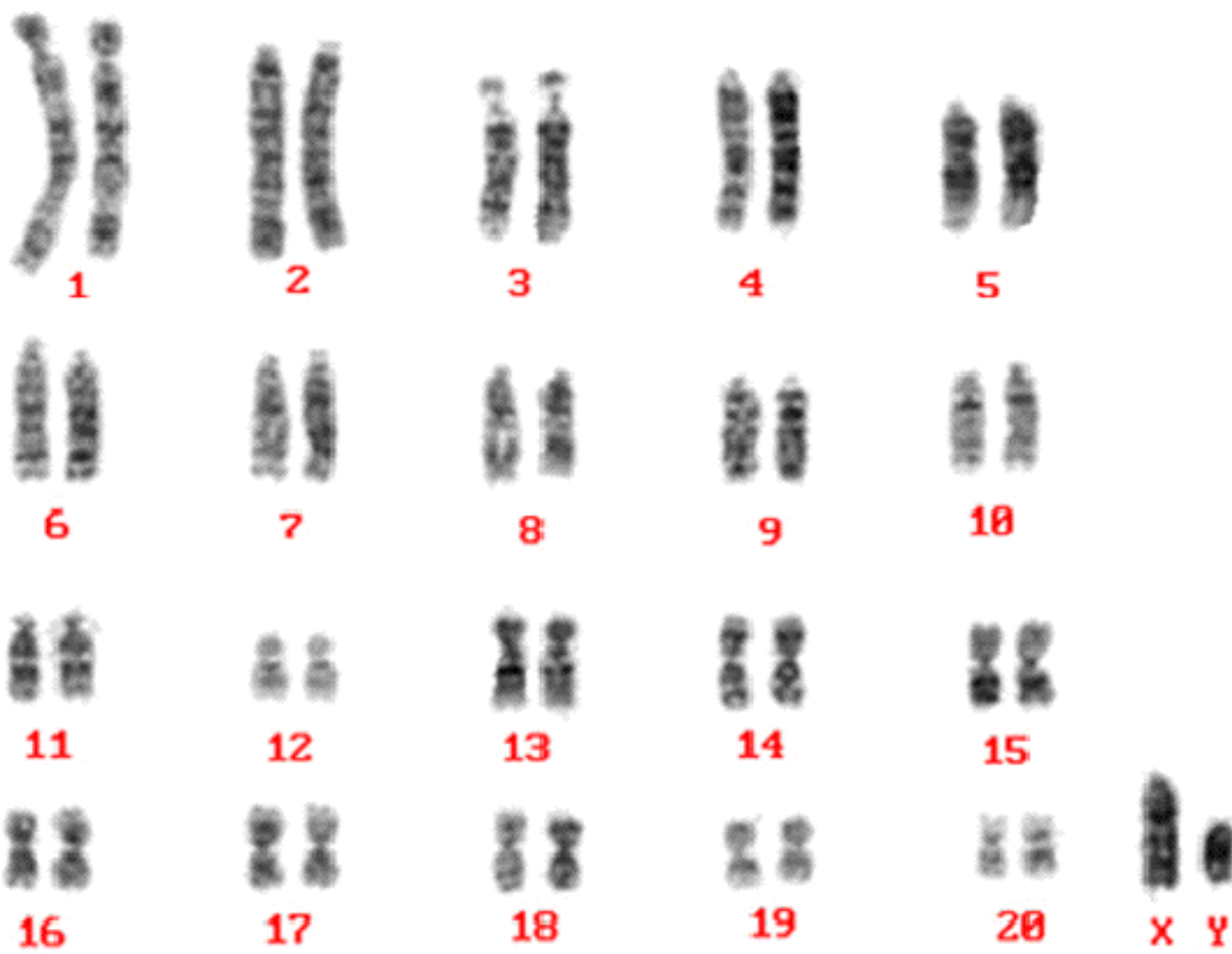
**Karyotype**

- How many chromosomes would be in muscle cells?

42



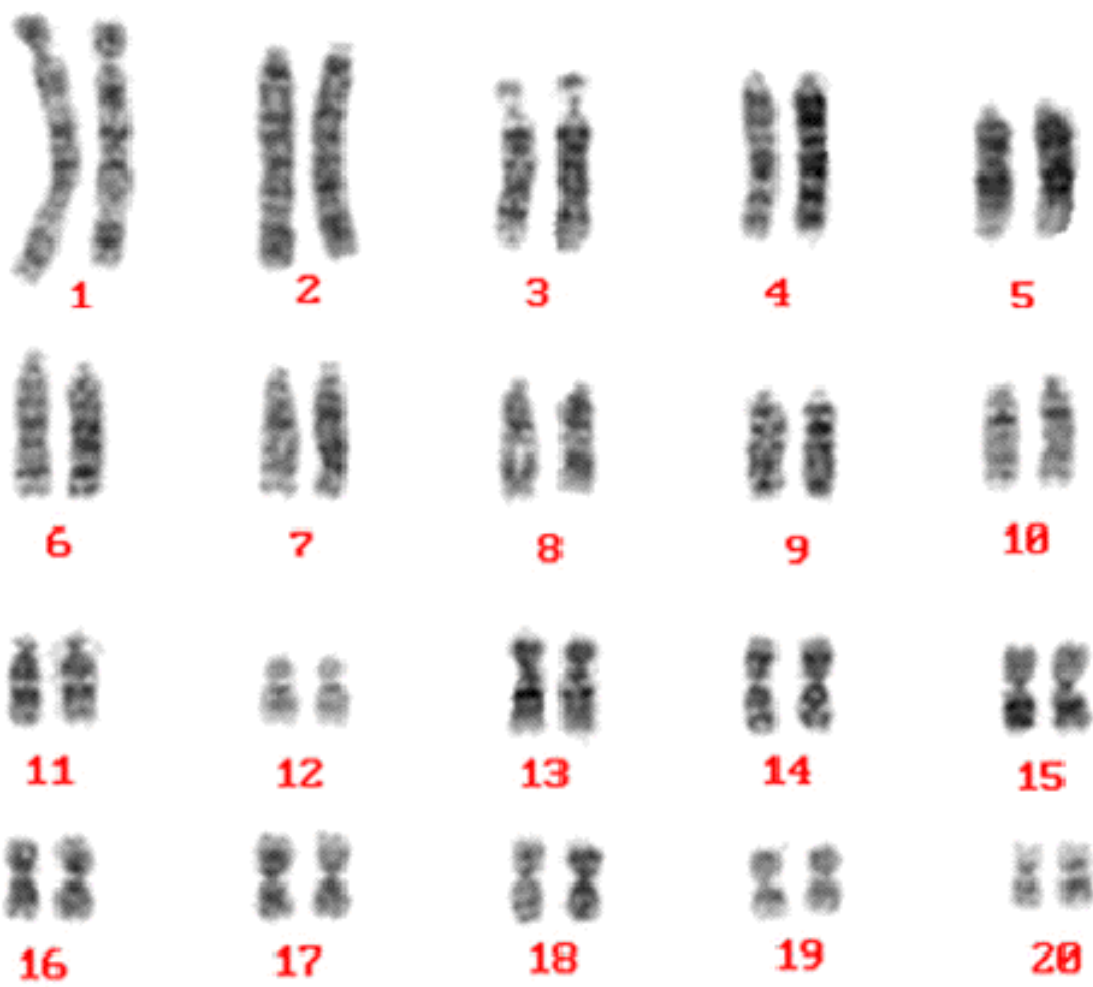
# Aa



# Karyotype

- How many chromosomes would be in sperm cells?

**Rat**



**Karyotype**

- Is this a male or female rat?

**male**