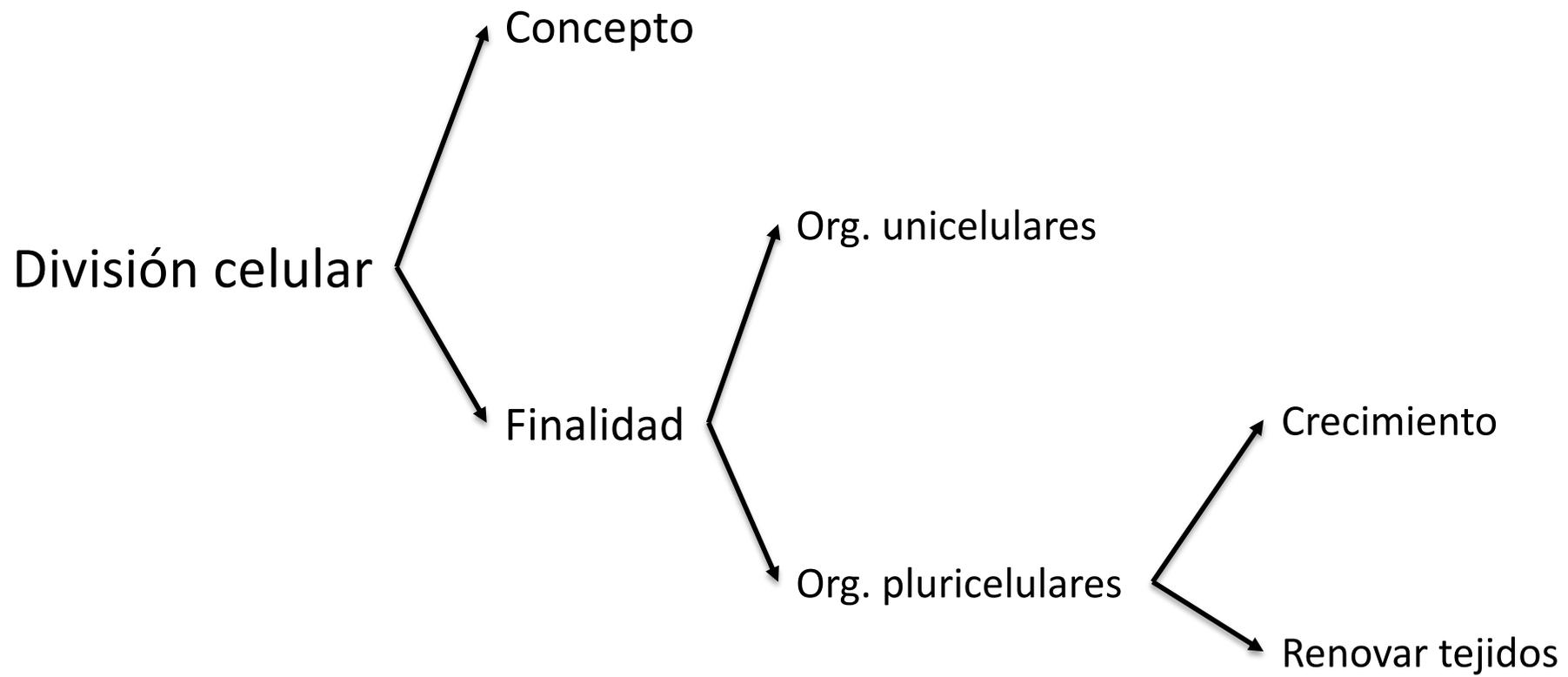
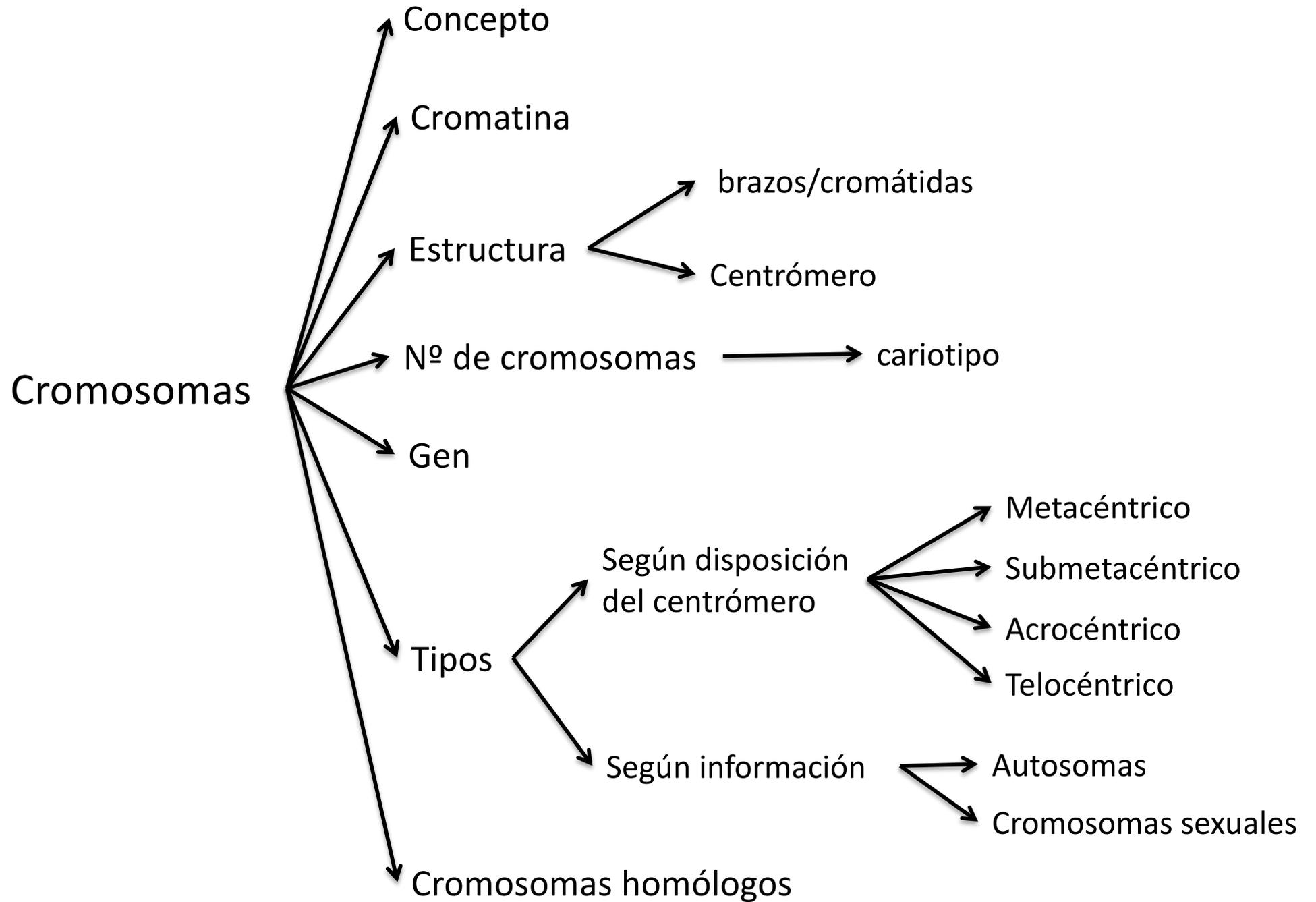


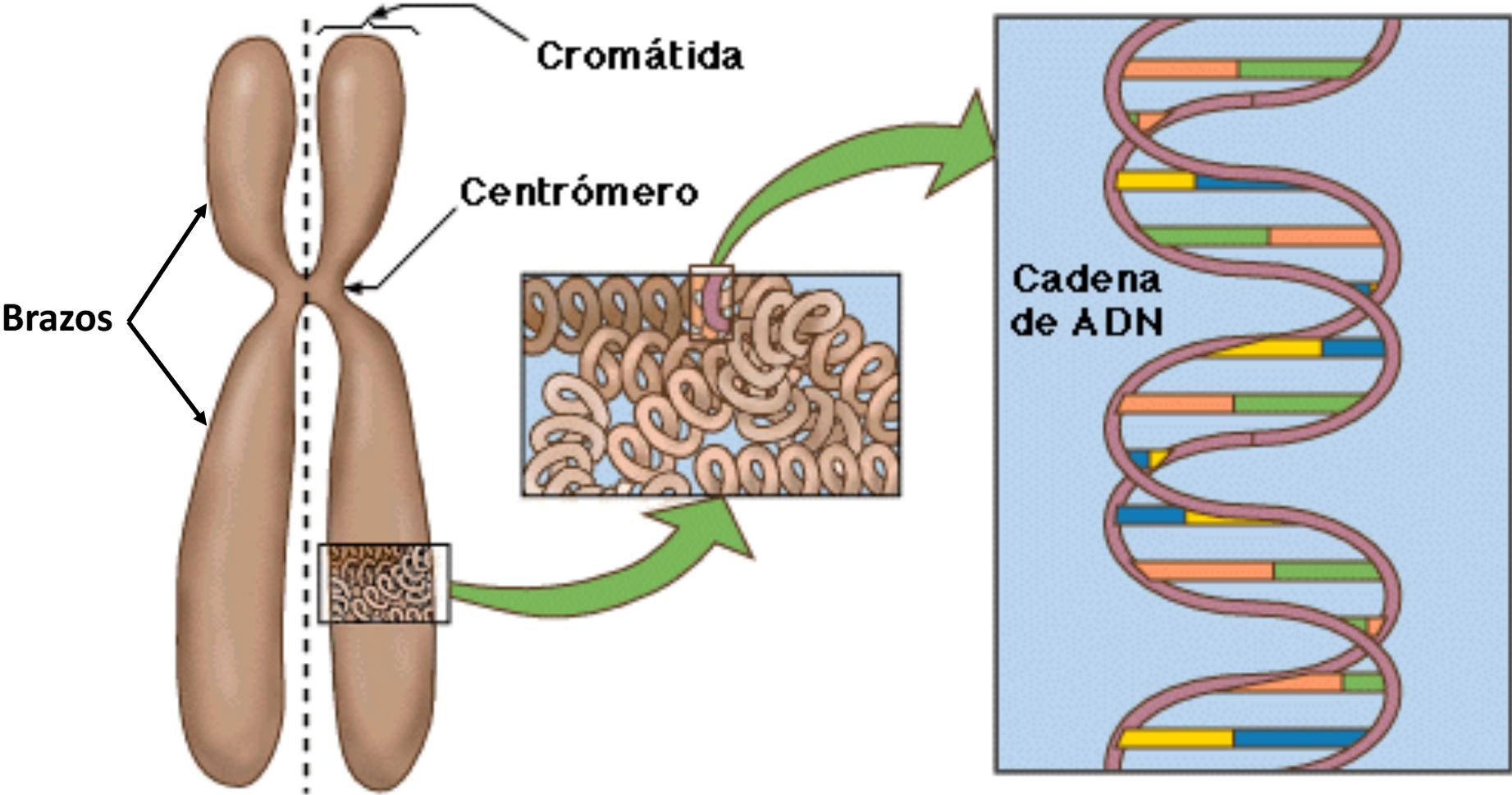
TEMA 2: LA DIVISIÓN CELULAR

- ❖ ¿Cómo se reproducen las células?
- ❖ Ciclo celular.
- ❖ División celular: mitosis y citocinesis.
- ❖ Meiosis: concepto, proceso y diferencias con la mitosis.
- ❖ Importancia biológica de mitosis y meiosis.
- ❖ La clonación y sus aplicaciones.

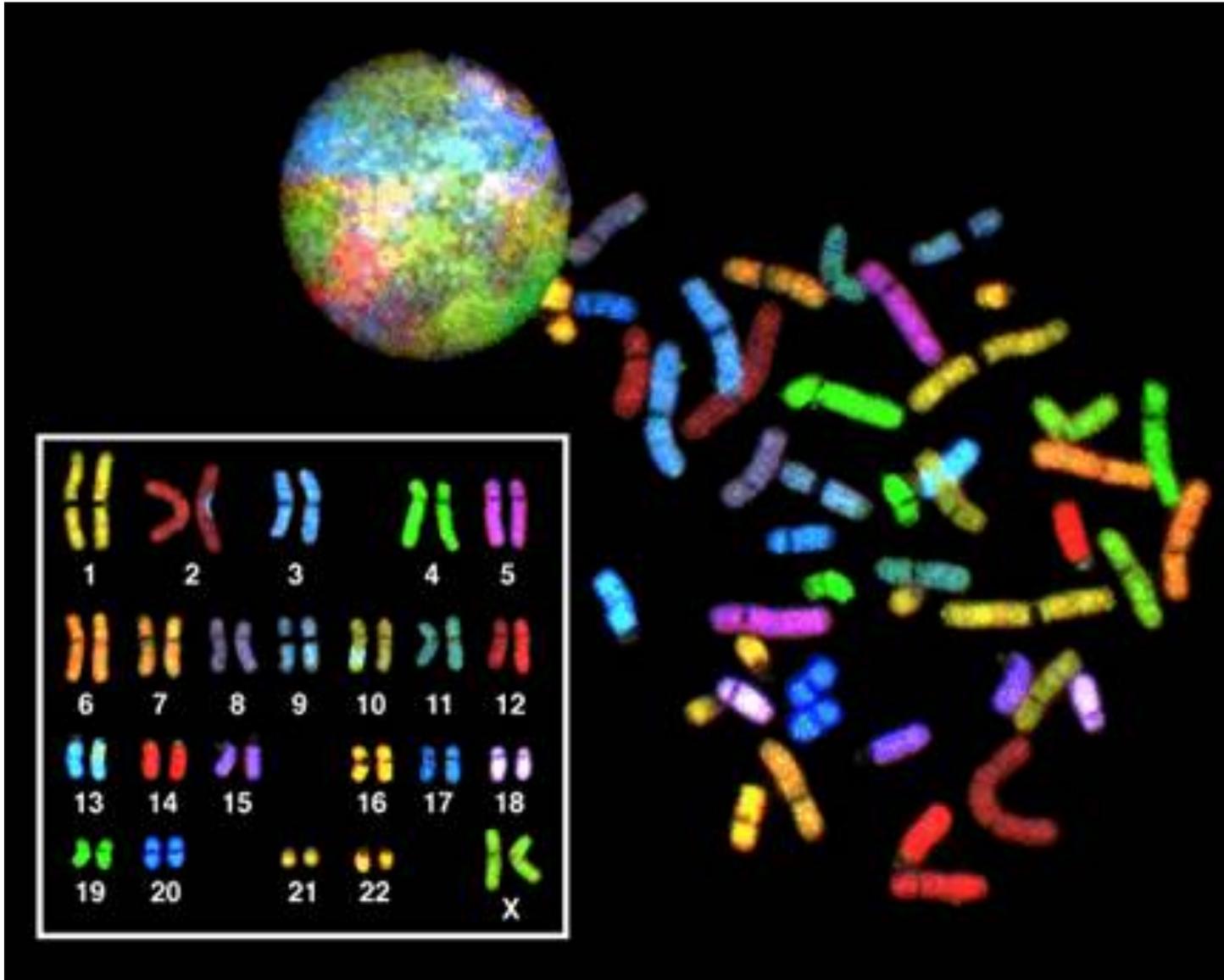




ESTRUCTURA DEL CROMOSOMA



NÚMERO DE CROMOSOMAS



TIPOS DE CROMOSOMAS según disposición del centrómero



METACÉNTRICO



SUBMETACÉNTRICO

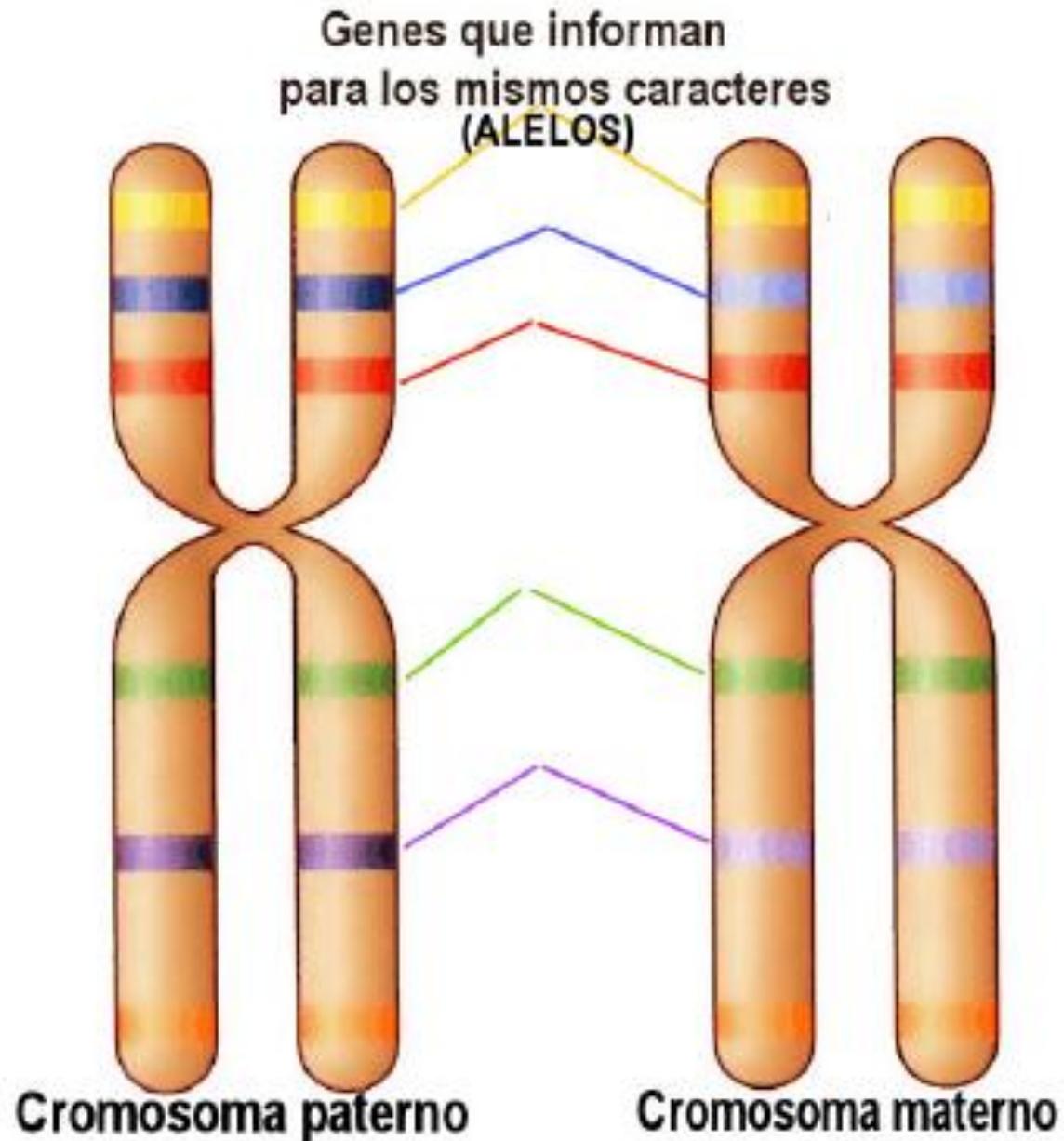


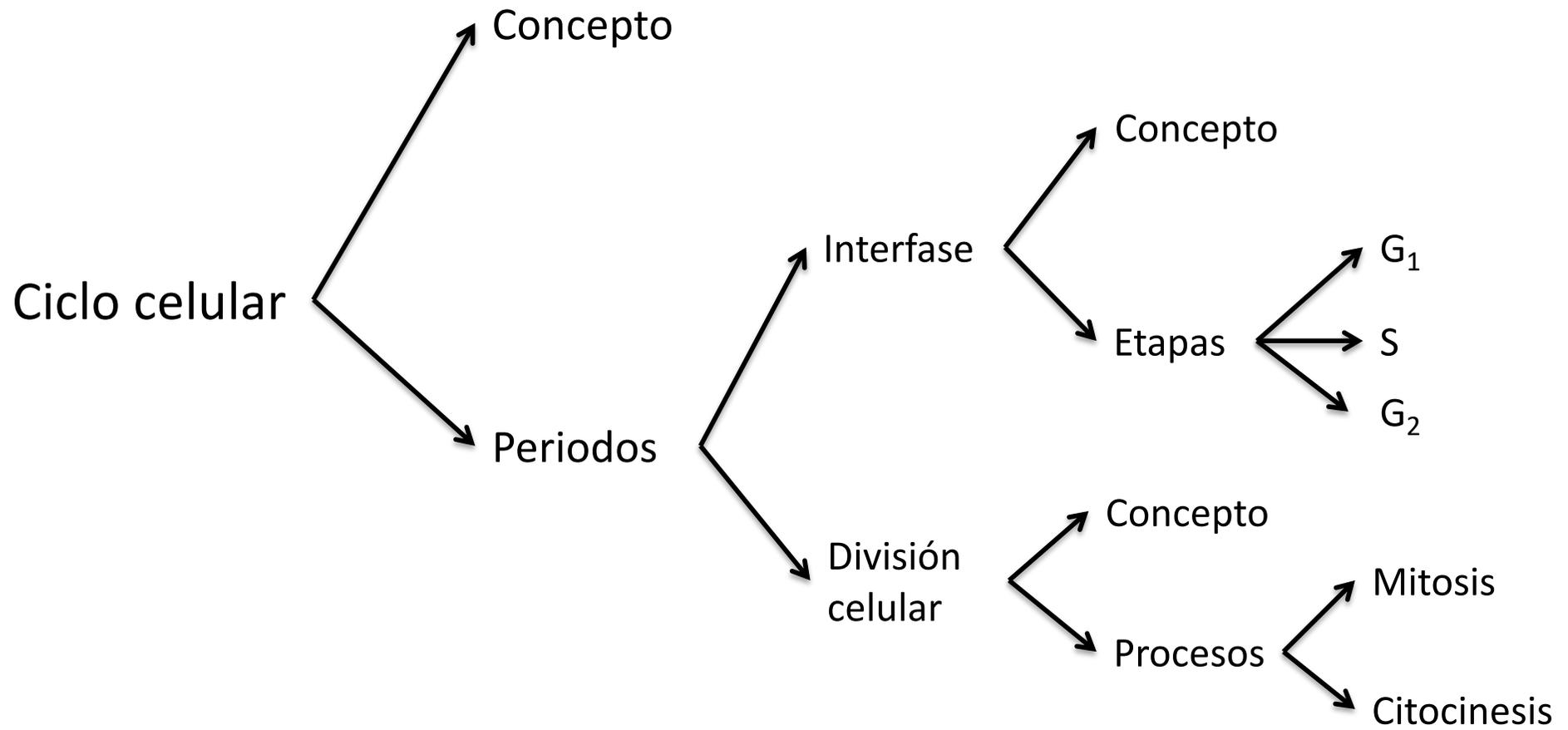
ACROCÉNTRICO



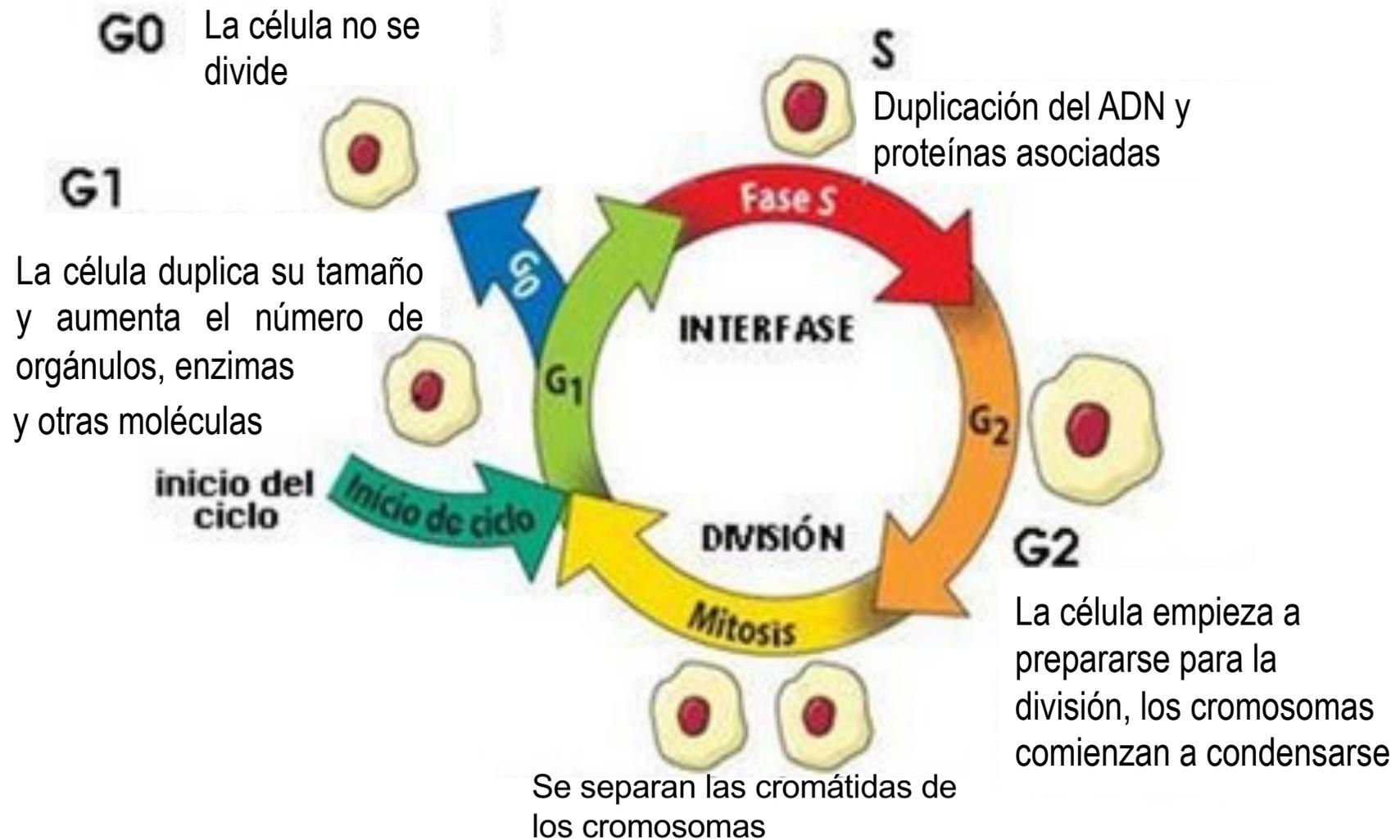
TELOCÉNTRICO

CROMOSOMAS HOMÓLOGOS

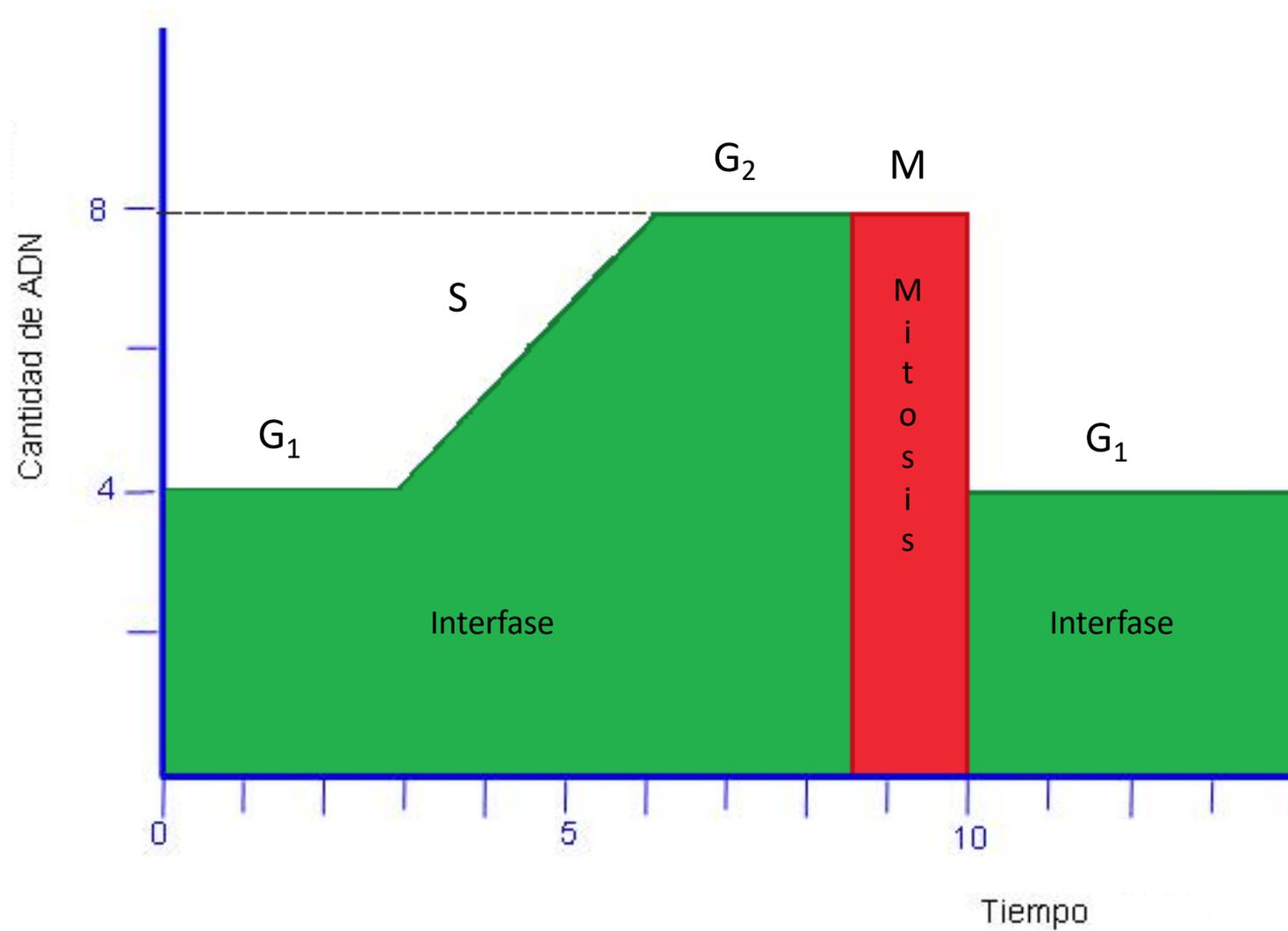




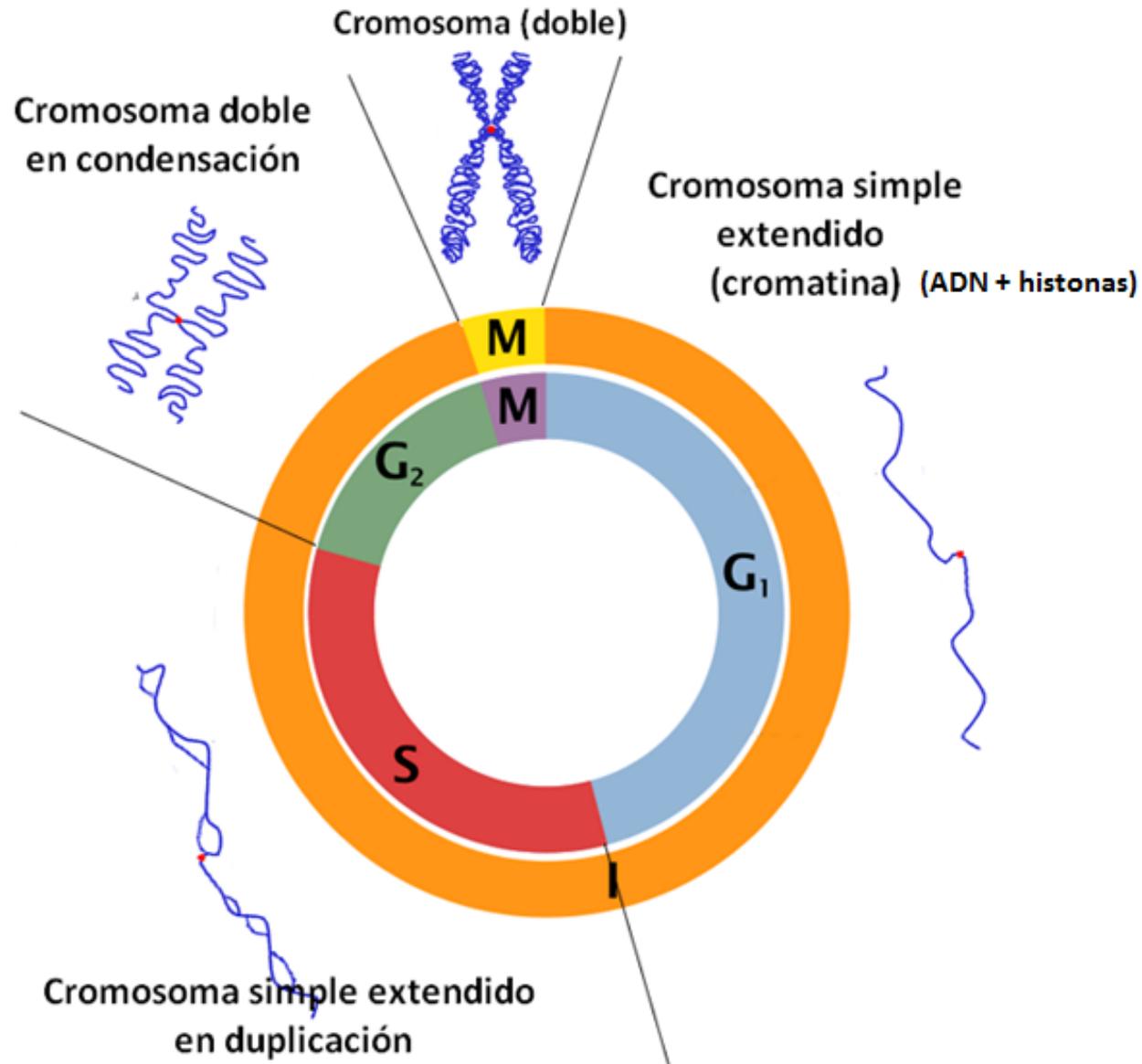
CICLO CELULAR

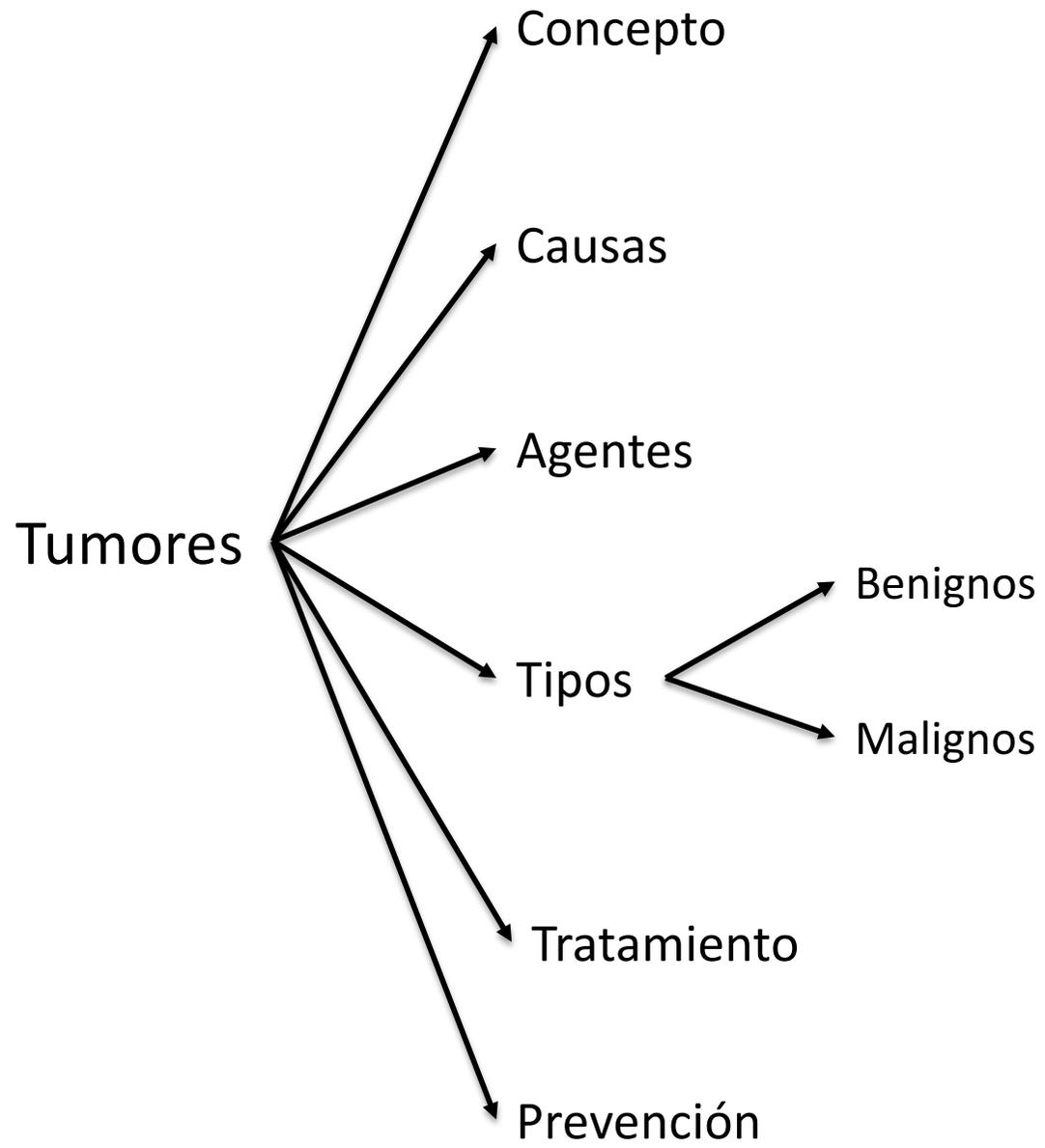


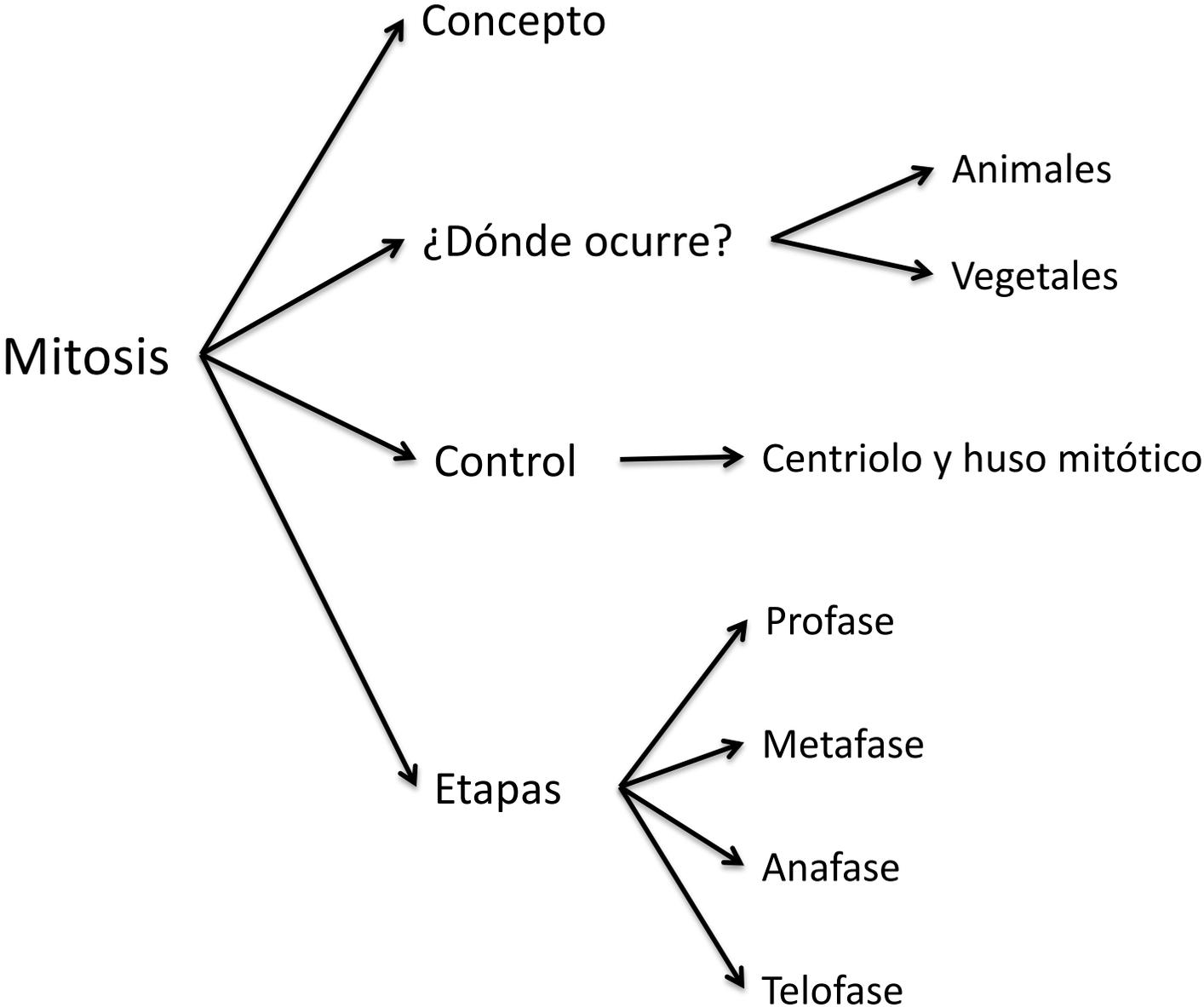
CANTIDAD DE ADN DURANTE EL CICLO CELULAR



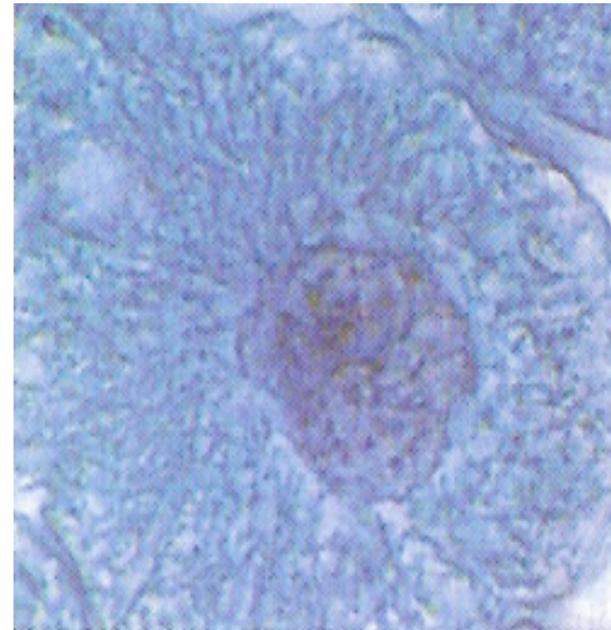
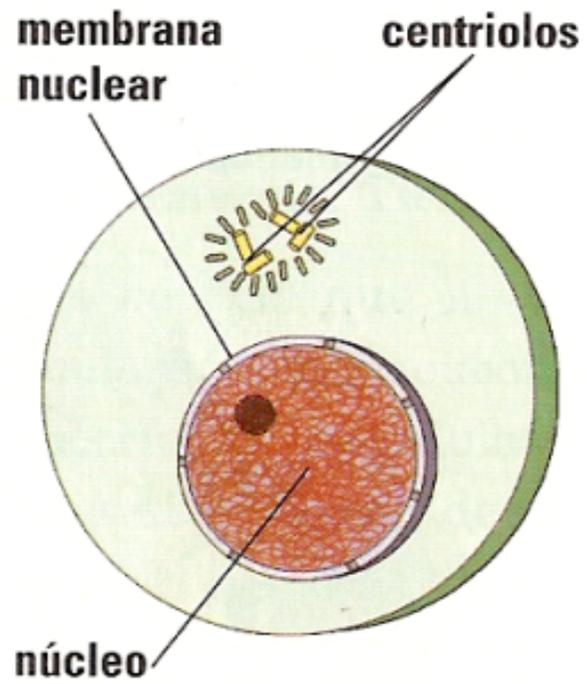
CROMOSOMAS DURANTE EL CICLO CELULAR





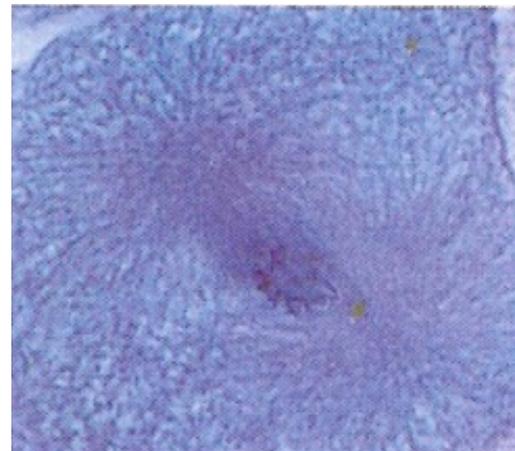
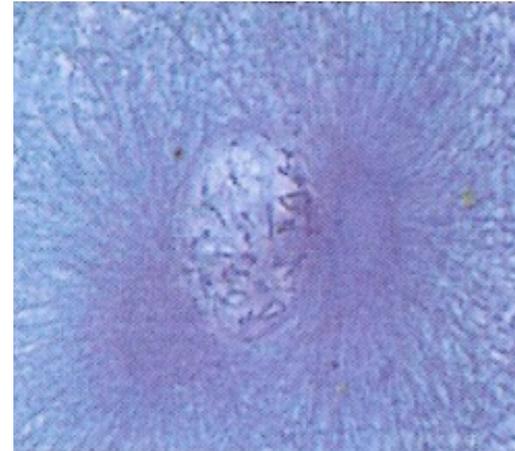
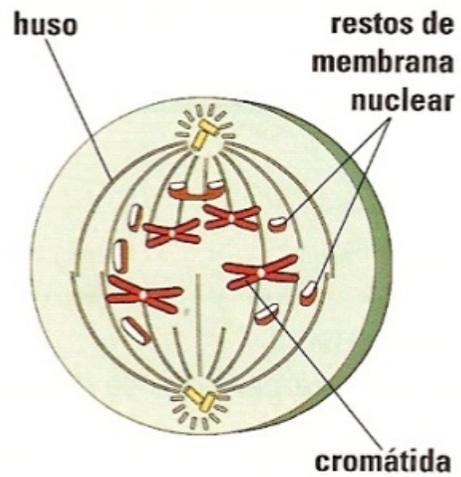
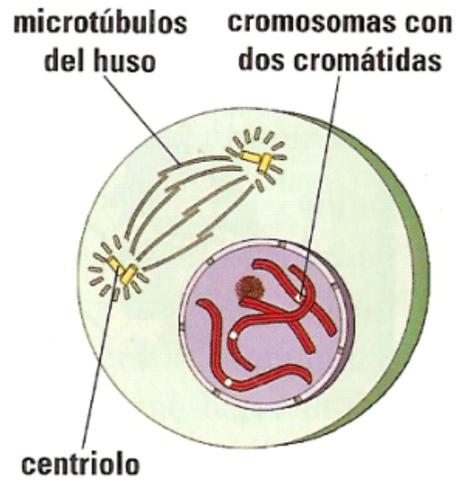


INTERFASE

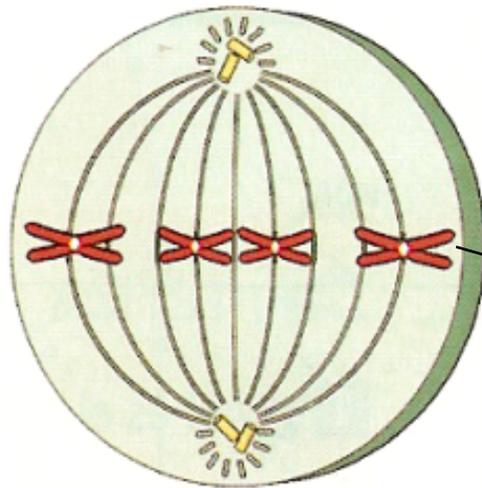


MITOSIS

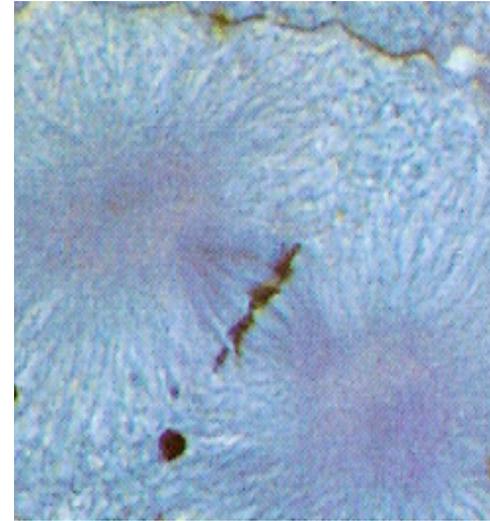
PROFASE



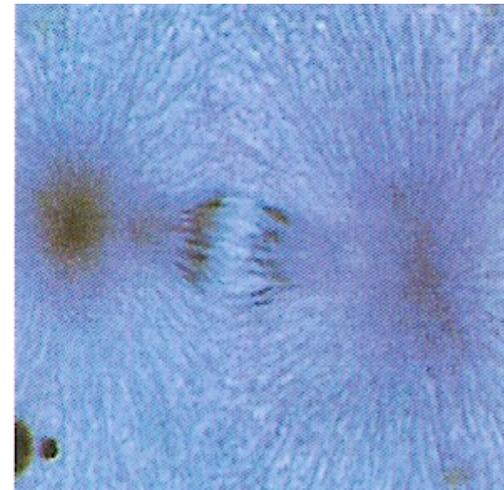
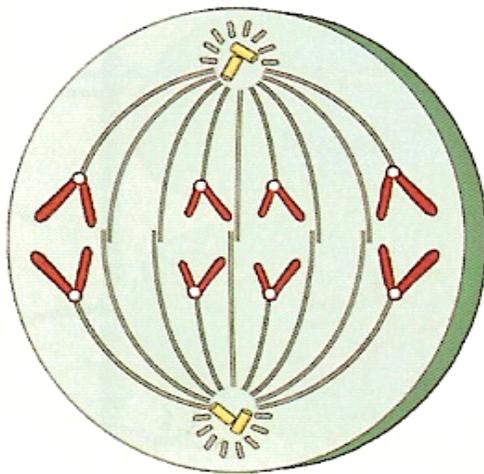
METAFASE



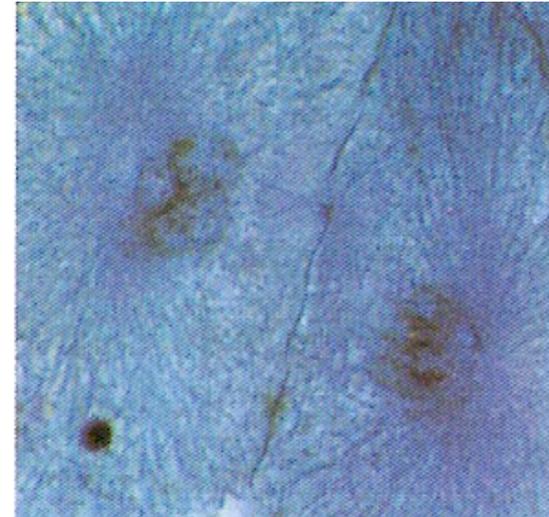
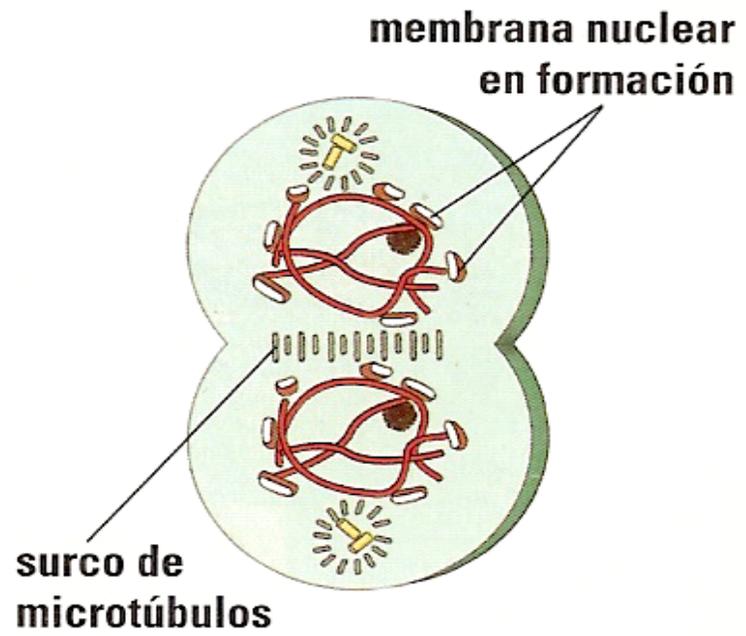
placa ecuatorial o
placa madre

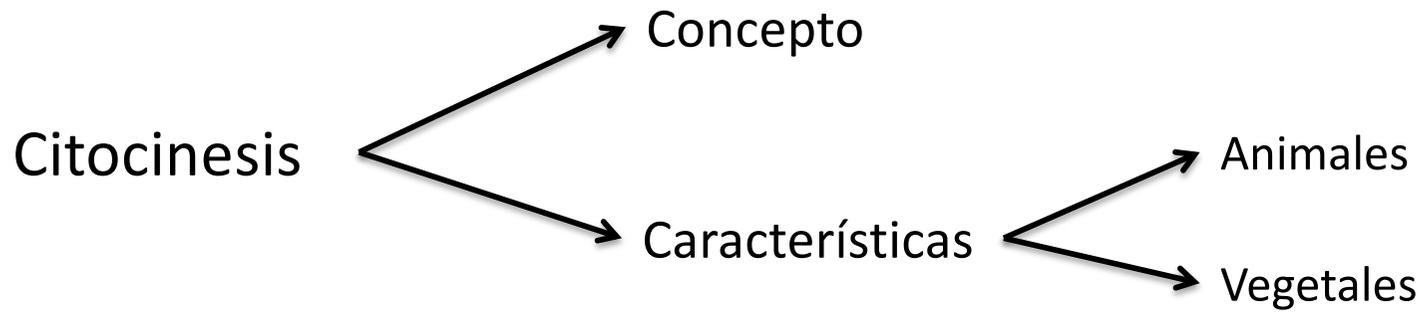


ANAFASE

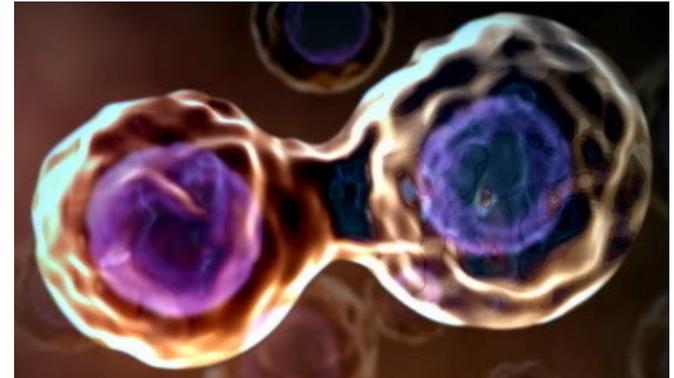
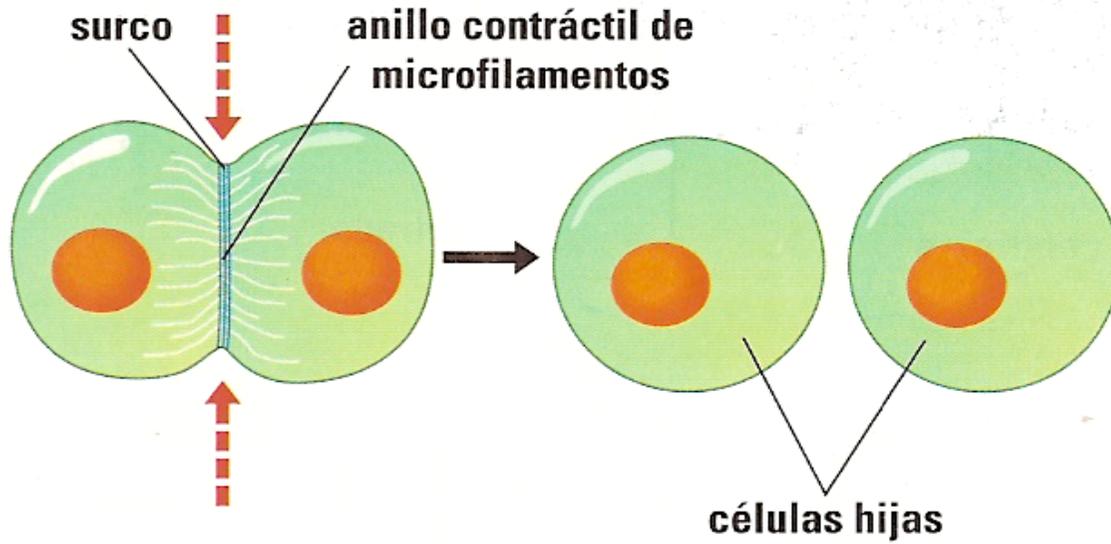


TELOFASE

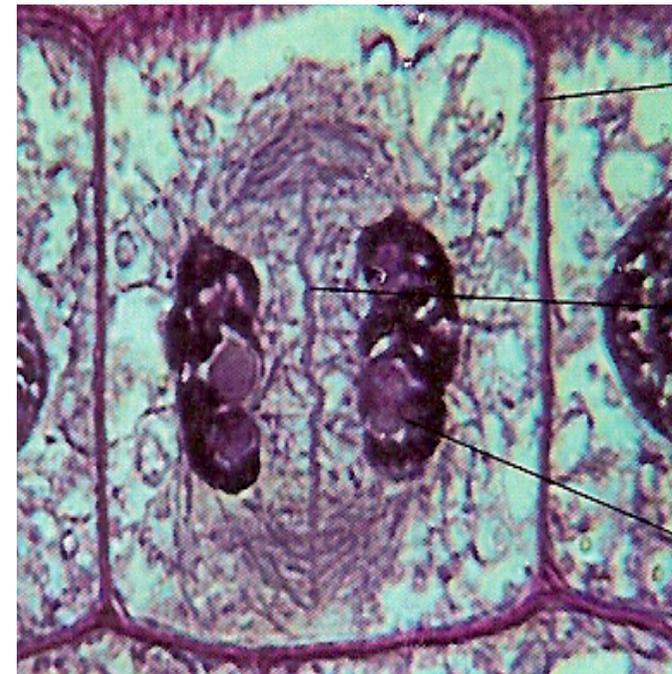
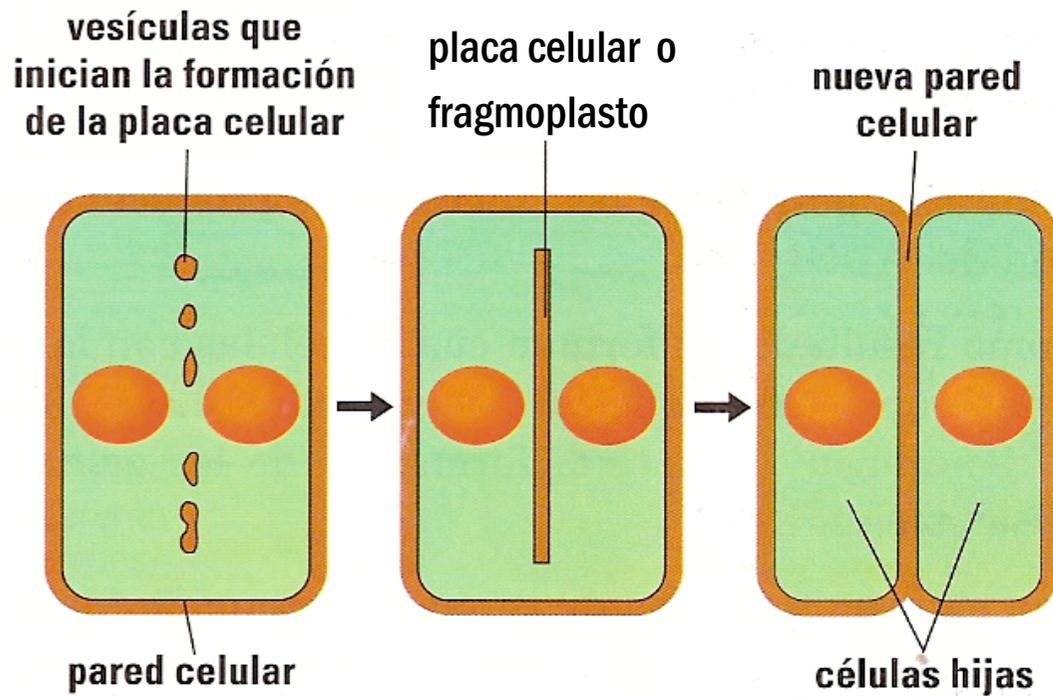




ANIMAL



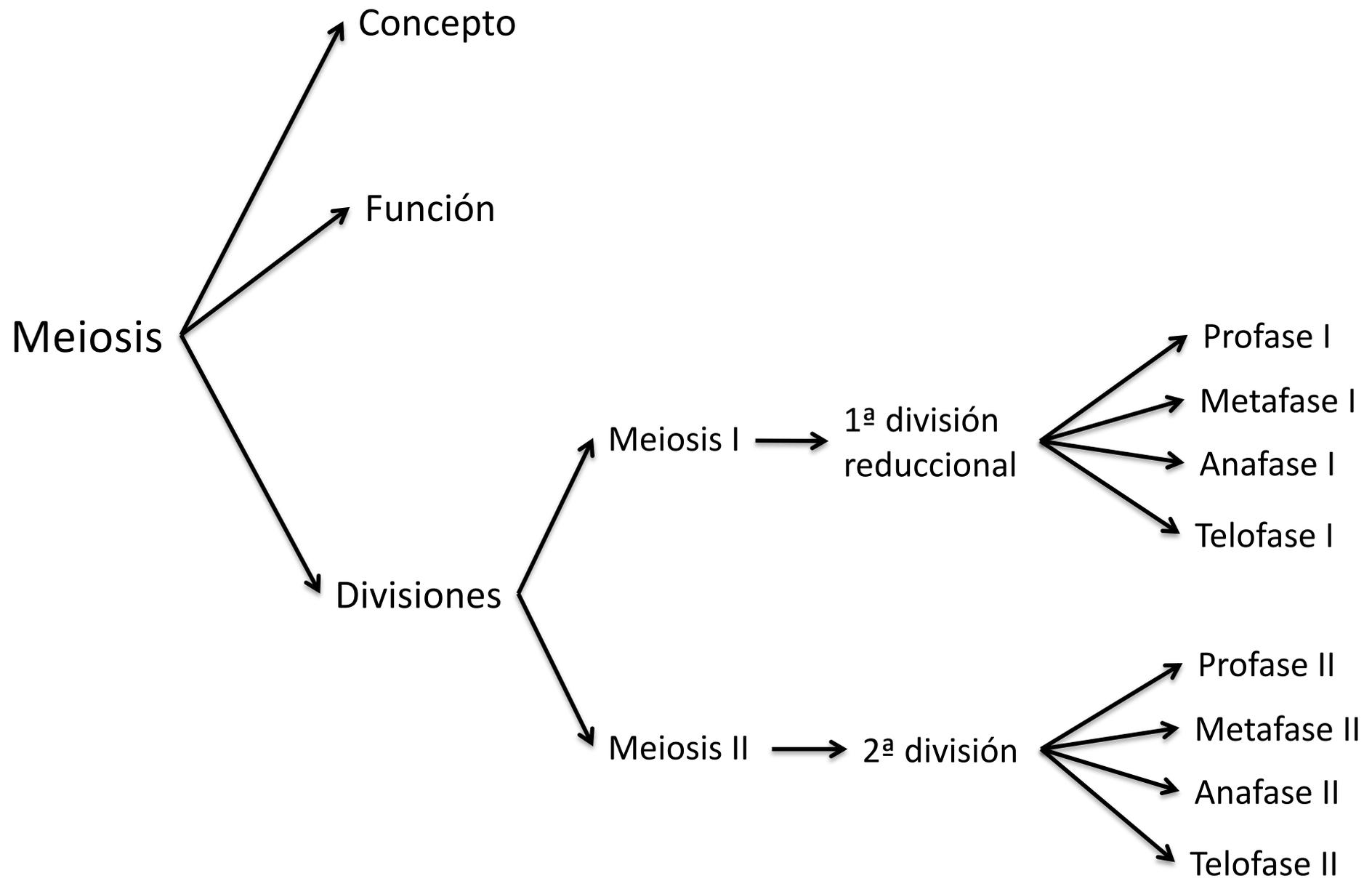
VEGETAL



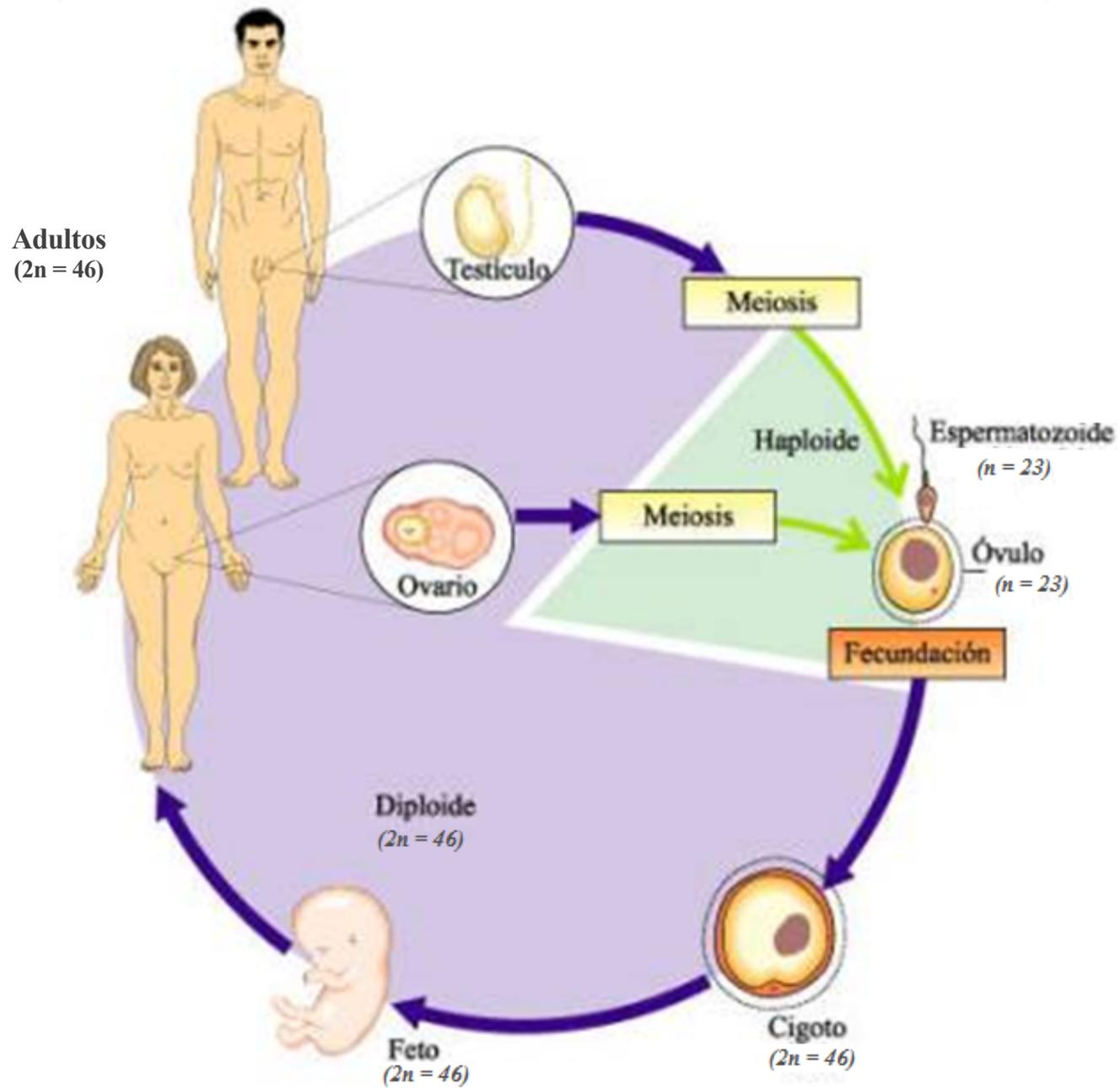
pared de la célula madre

placa celular en formación

núcleo de la célula hija



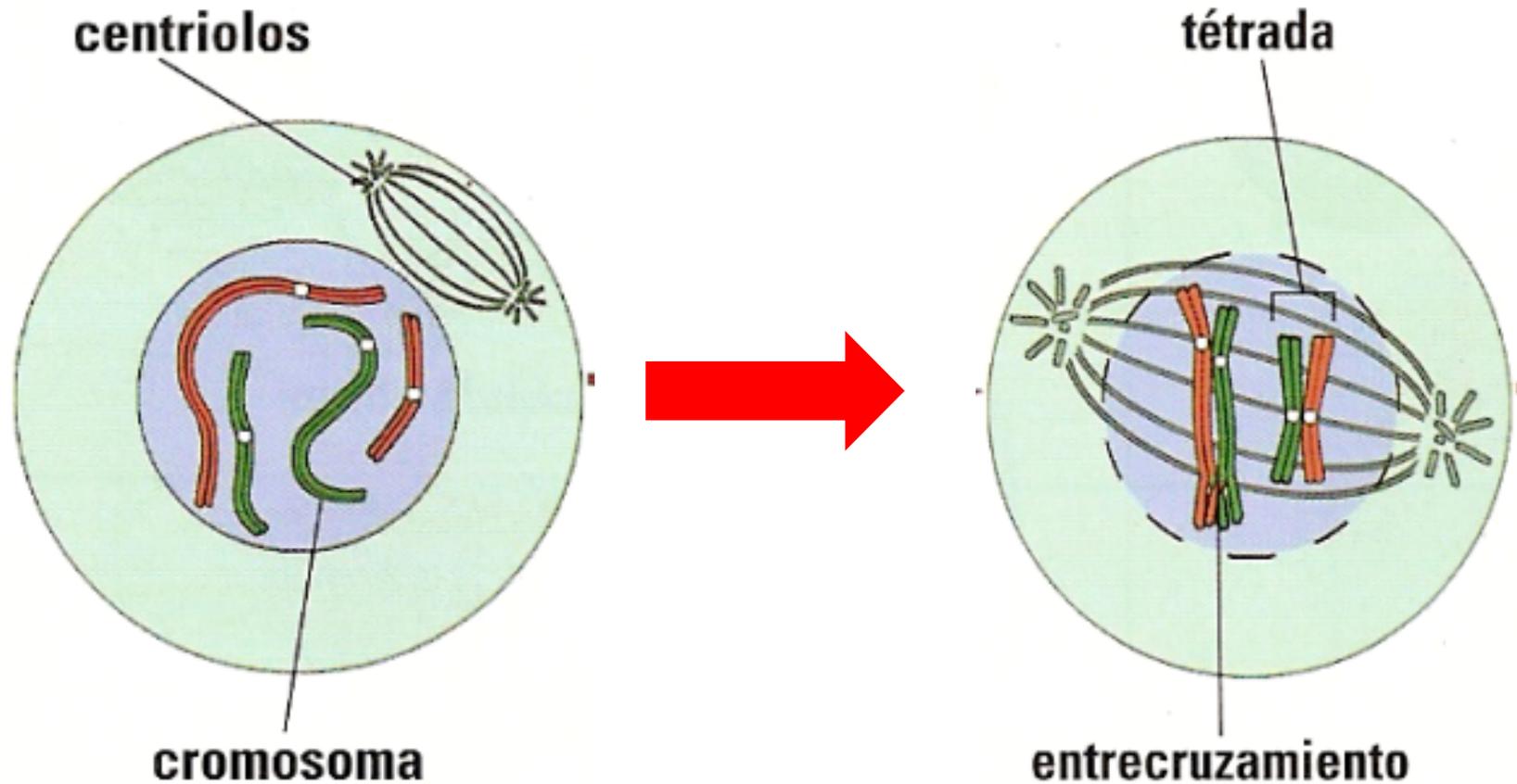
CICLO VITAL DE LA ESPECIE HUMANA



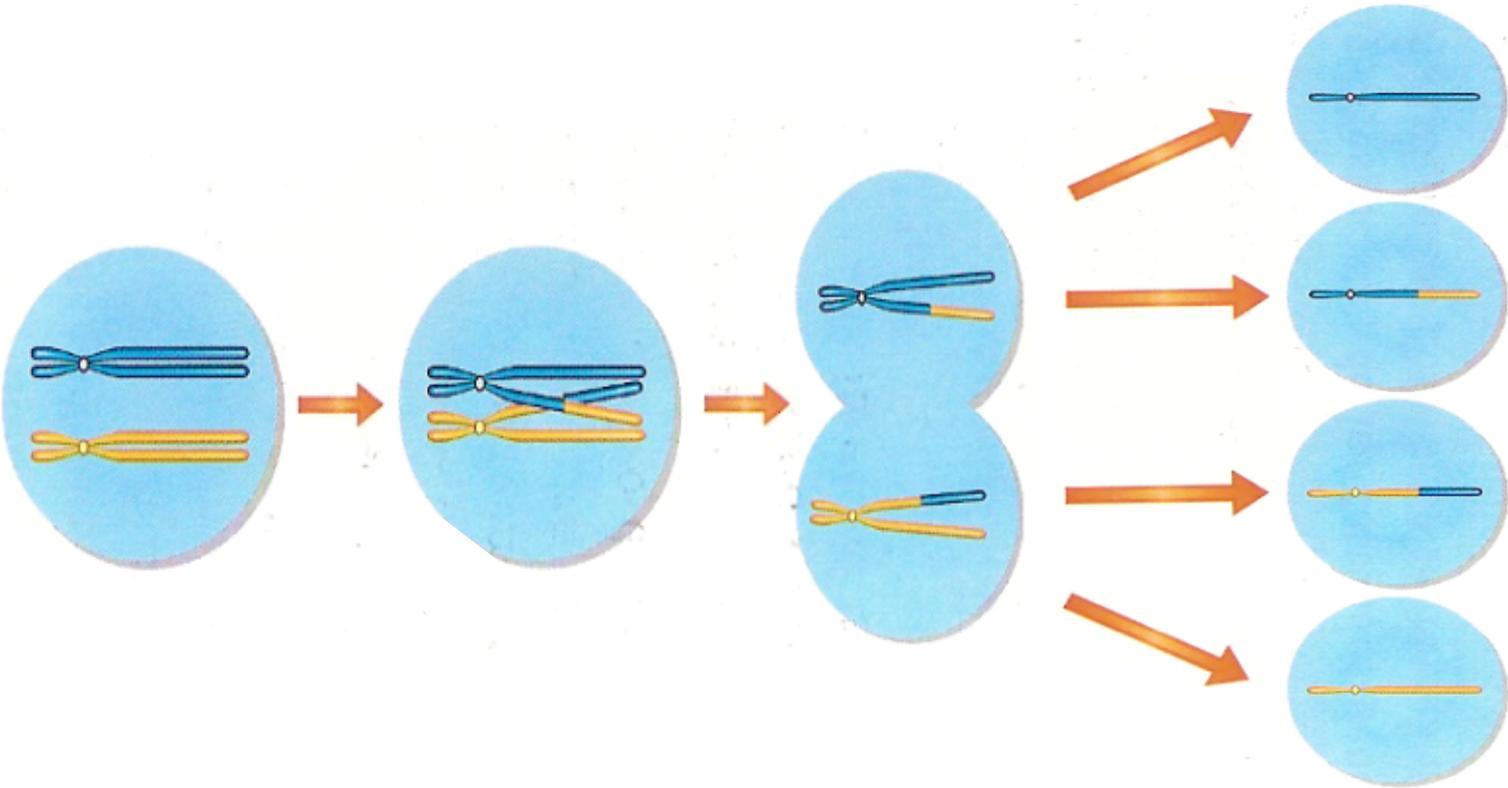
MEIOSIS

1º DIVISIÓN MEIÓTICA

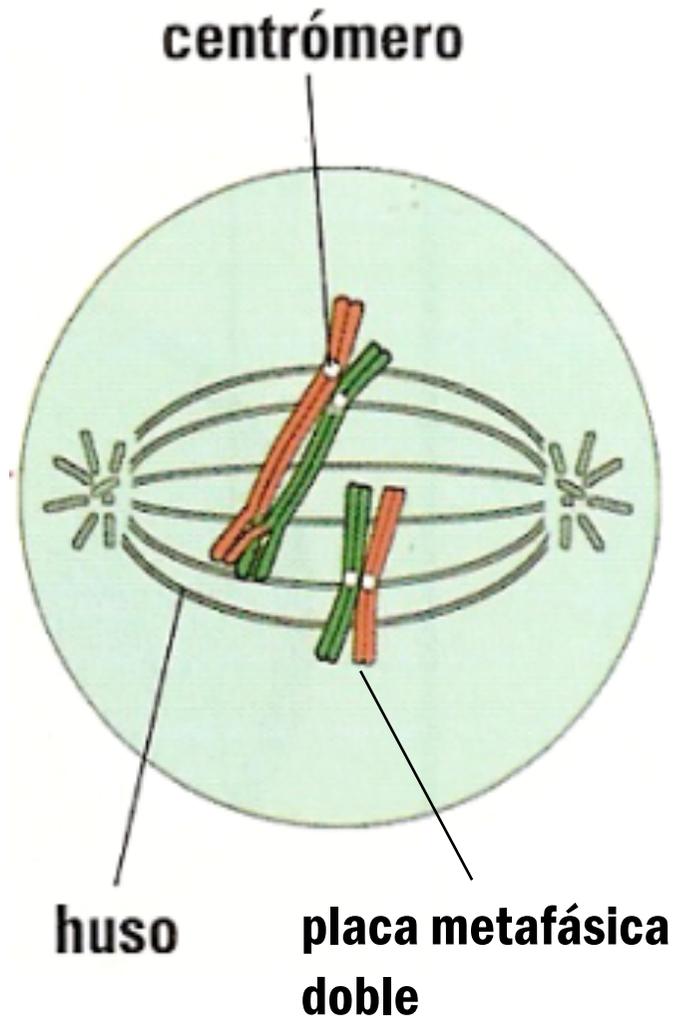
PROFASE I



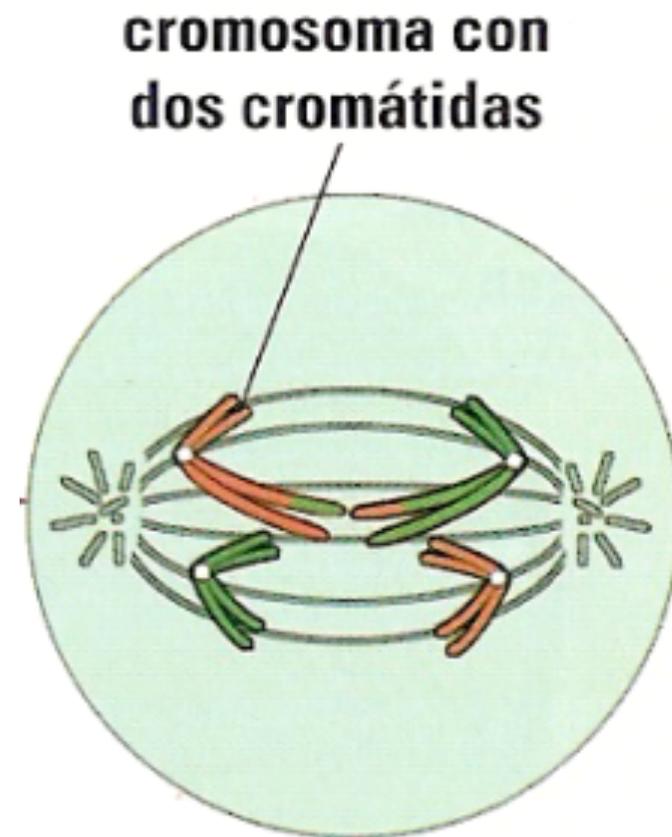
ENTRECRUZAMIENTO Y RECOMBINACIÓN GENÉTICA



METAFASE I

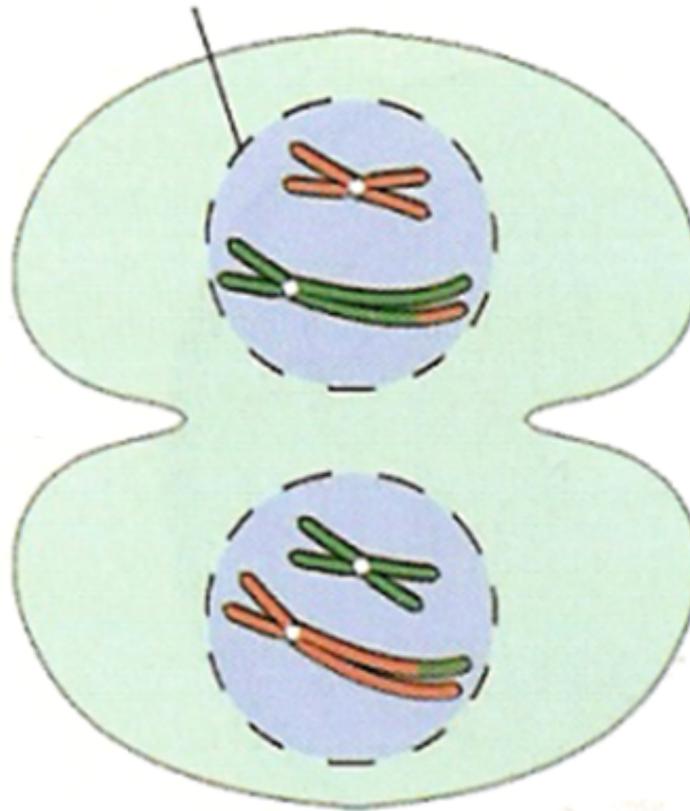


ANAFASE I



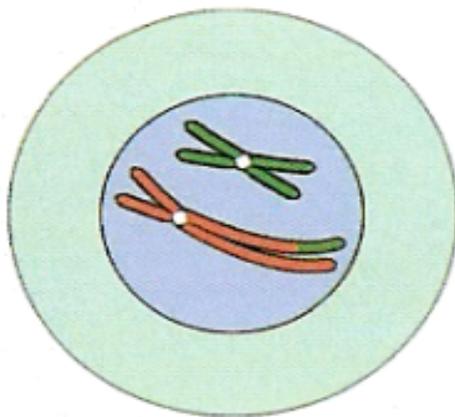
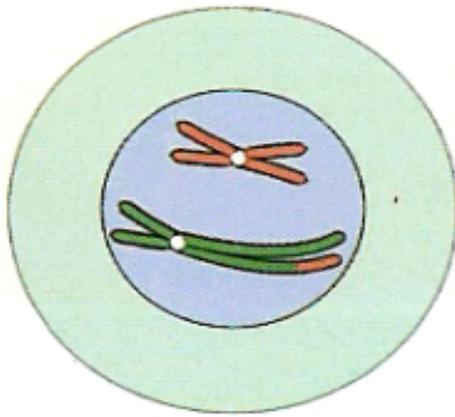
TELOFASE I

membrana
nuclear

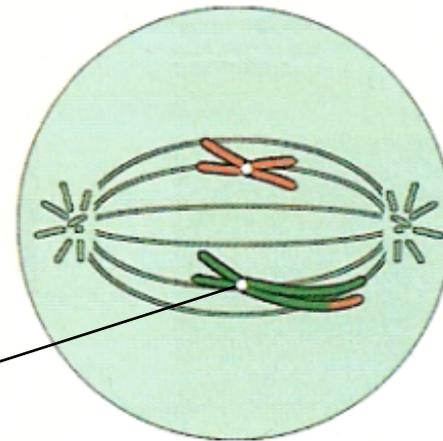


2ª DIVISIÓN MEIÓTICA

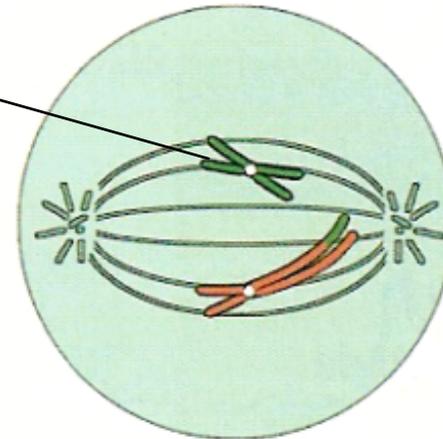
PROFASE II



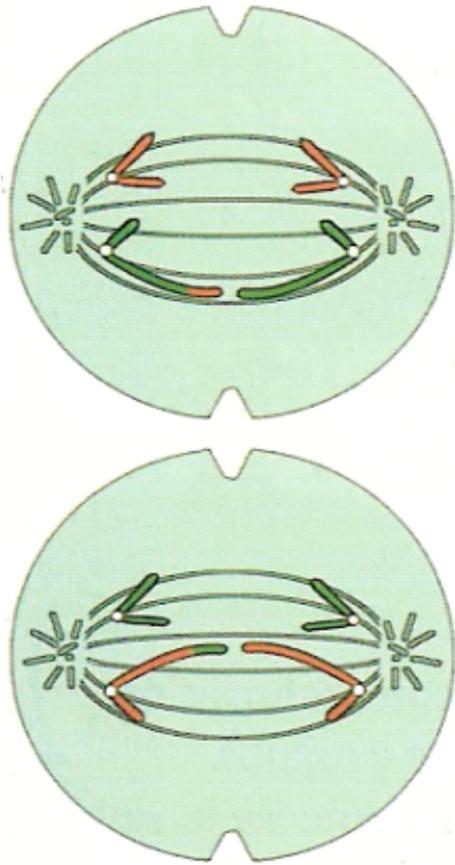
METAFASE II



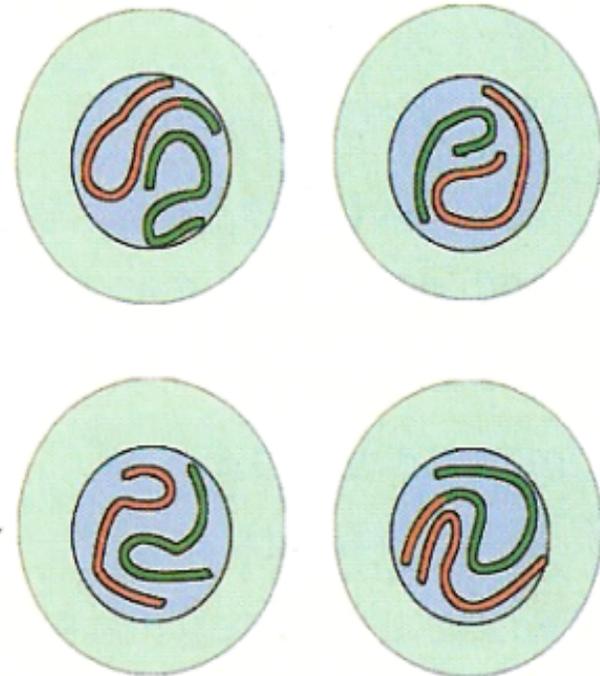
placa
metafásica



ANAFASE II



TELOFASE II



IMPORTANCIA BIOLÓGICA

```
graph TD; A[IMPORTANCIA BIOLÓGICA] --> B[MITOSIS]; A --> C[MEIOSIS]; B --> D["• Crecimiento del individuo<br>• Renovación de tejidos<br>• Reproducción asexual"]; C --> E["• Distribución independiente de los cromosomas<br>• Recombinación genética<br>• Fecundación al azar de gametos<br>• Gametogénesis"];
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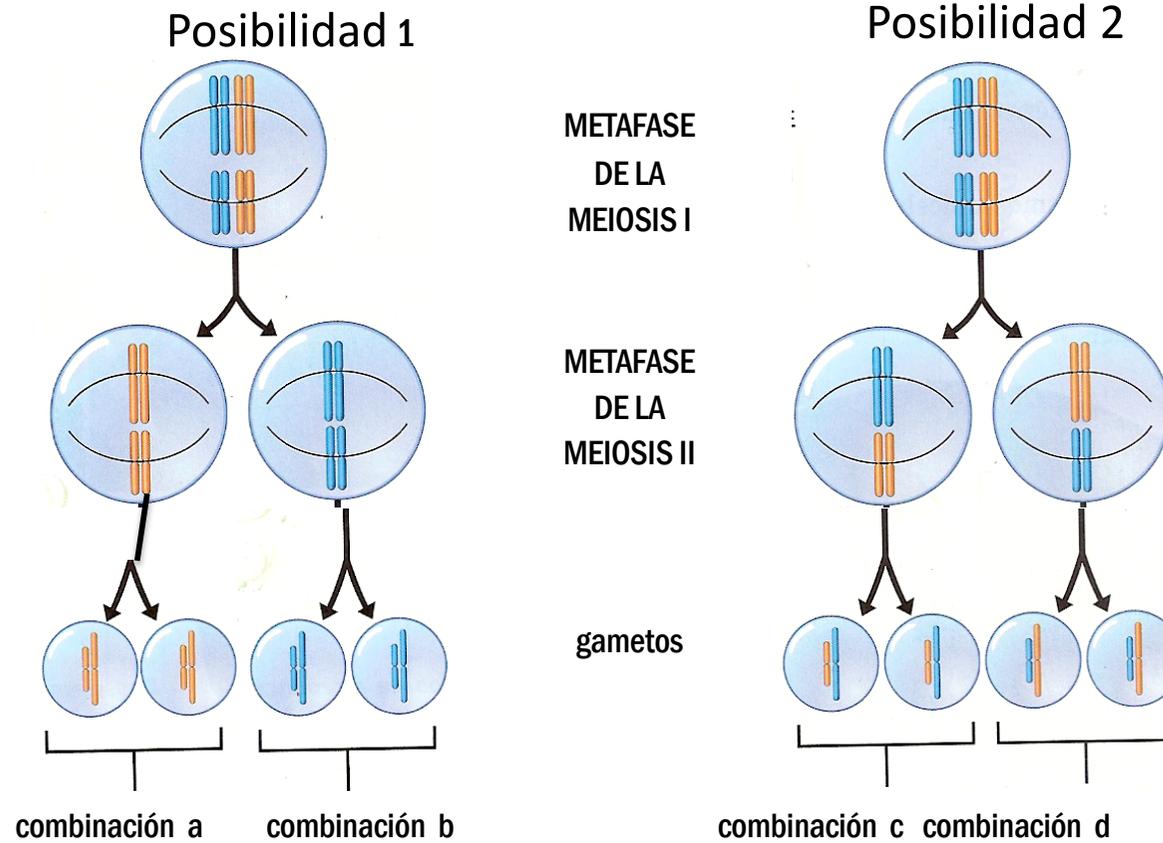
MITOSIS

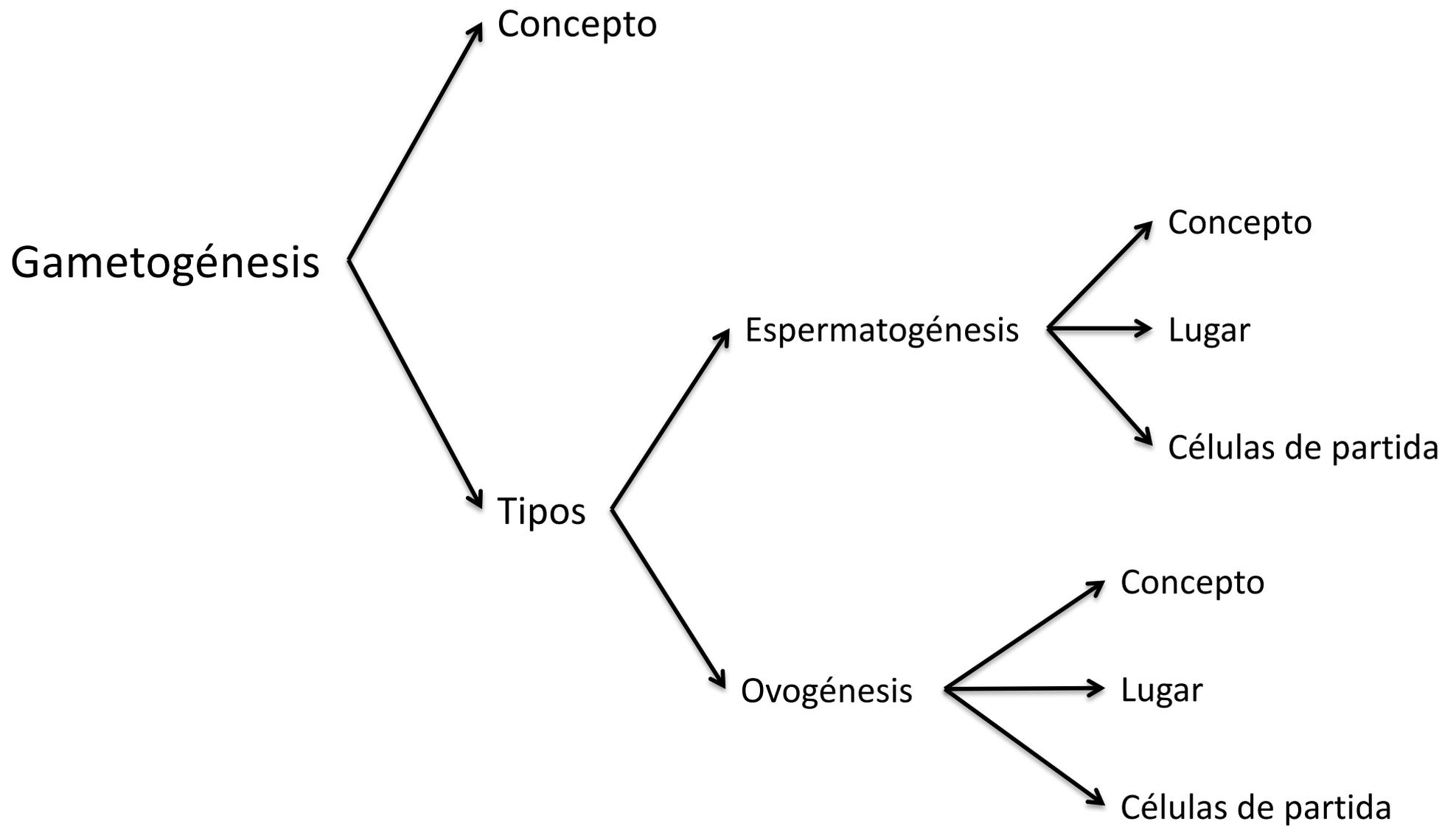
- Crecimiento del individuo
- Renovación de tejidos
- Reproducción asexual

MEIOSIS

- Distribución independiente de los cromosomas
- Recombinación genética
- Fecundación al azar de gametos
- Gametogénesis

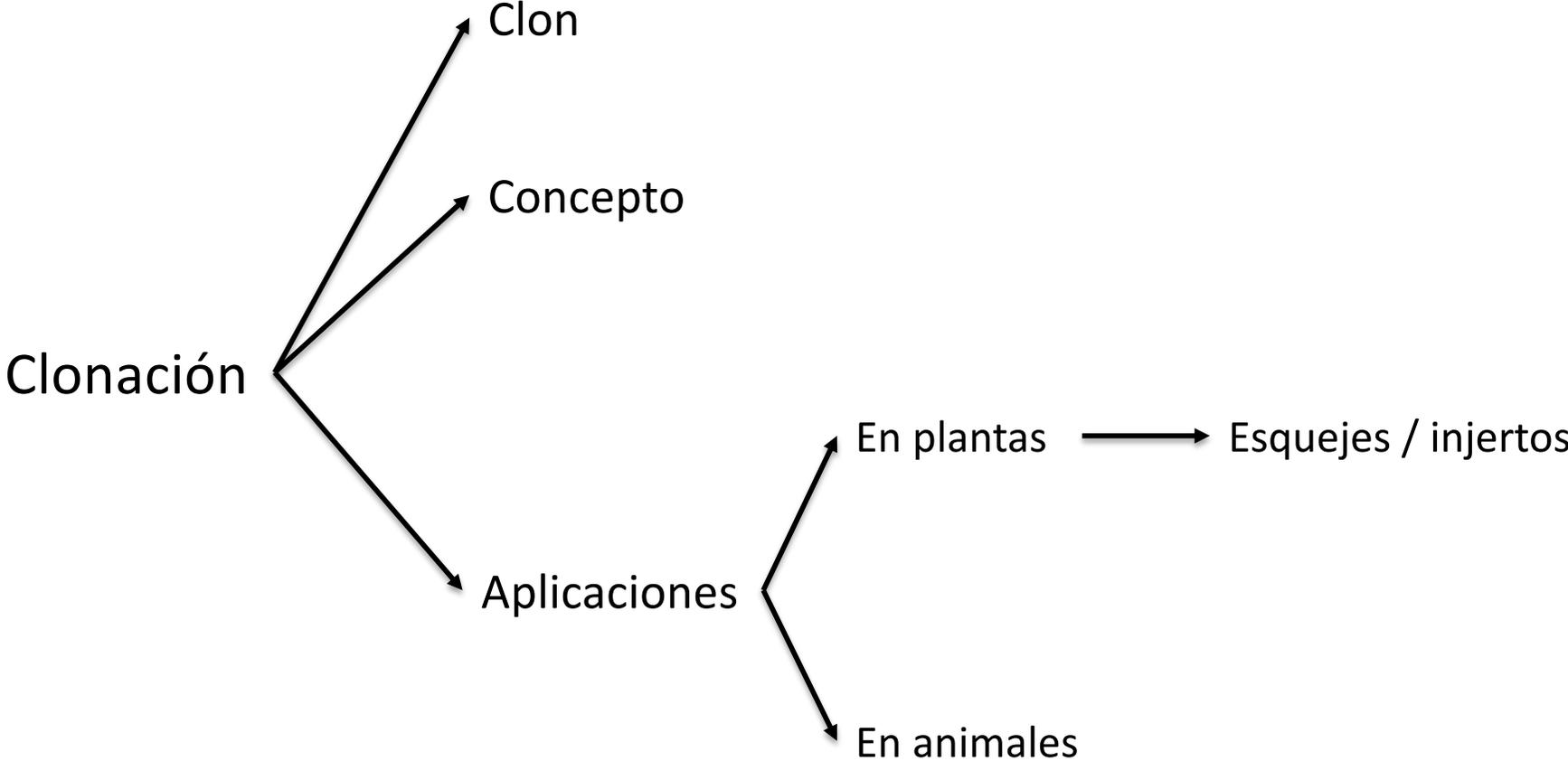
DISTRIBUCIÓN INDEPENDIENTE DE CROMOSOMAS





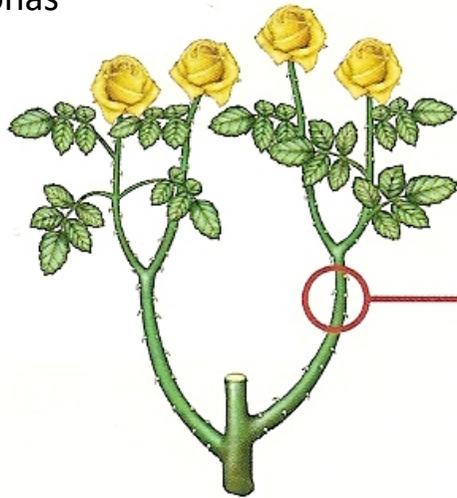
ALGUNAS DIFERENCIAS ENTRE MITOSIS Y MEIOSIS

	Mitosis	Meiosis
Tiene lugar	Todas las células del cuerpo	Células progenitoras de los gametos, en los órganos reproductores
Nº de células obtenidas por célula madre	Dos	Cuatro
Nº de cromosomas de la célula madre	Diploide (2n) Haploide (n)	Diploide (2n)
Nº de cromosomas de las células hijas	Diploide (2n) Haploide (n)	Haploide (n)
Función	Crecimiento, renovación de células y tejidos. Mantenimiento de la vida del individuo.	Continuidad de la especie. Aumento de la variabilidad genética.
División celular	Una	Dos
Recombinación genética	No existe	Sí
Células obtenidas	Todos los tipos celulares	Gametos

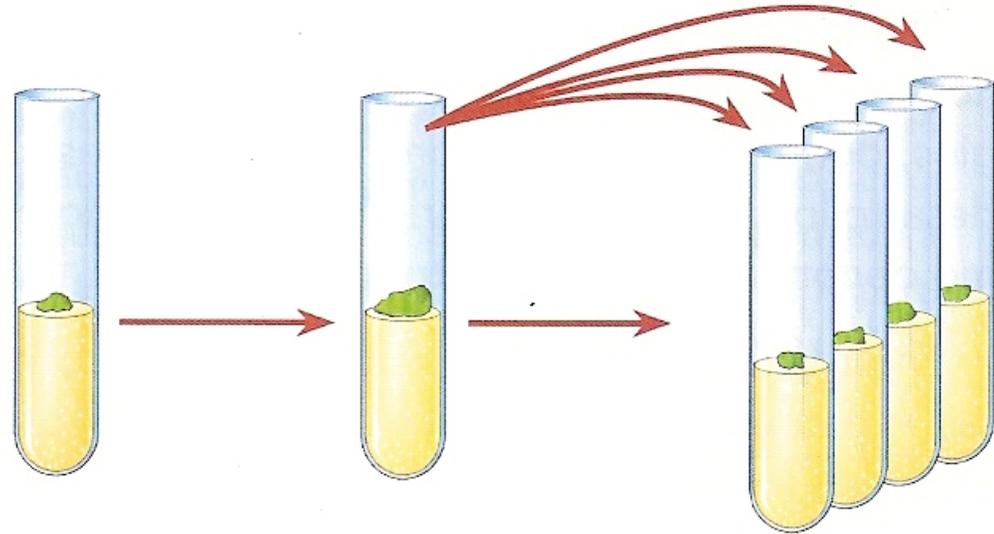


Cultivo in vitro de una planta

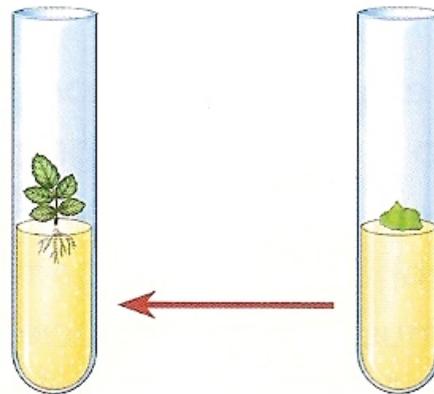
1.- Se extrae un fragmento de meristemo y se introduce en un medio con nutrientes y hormonas



2.- A las 4 semanas se obtiene un conjunto de células (callo), que se fragmentan → multiplicar la regeneración de la planta

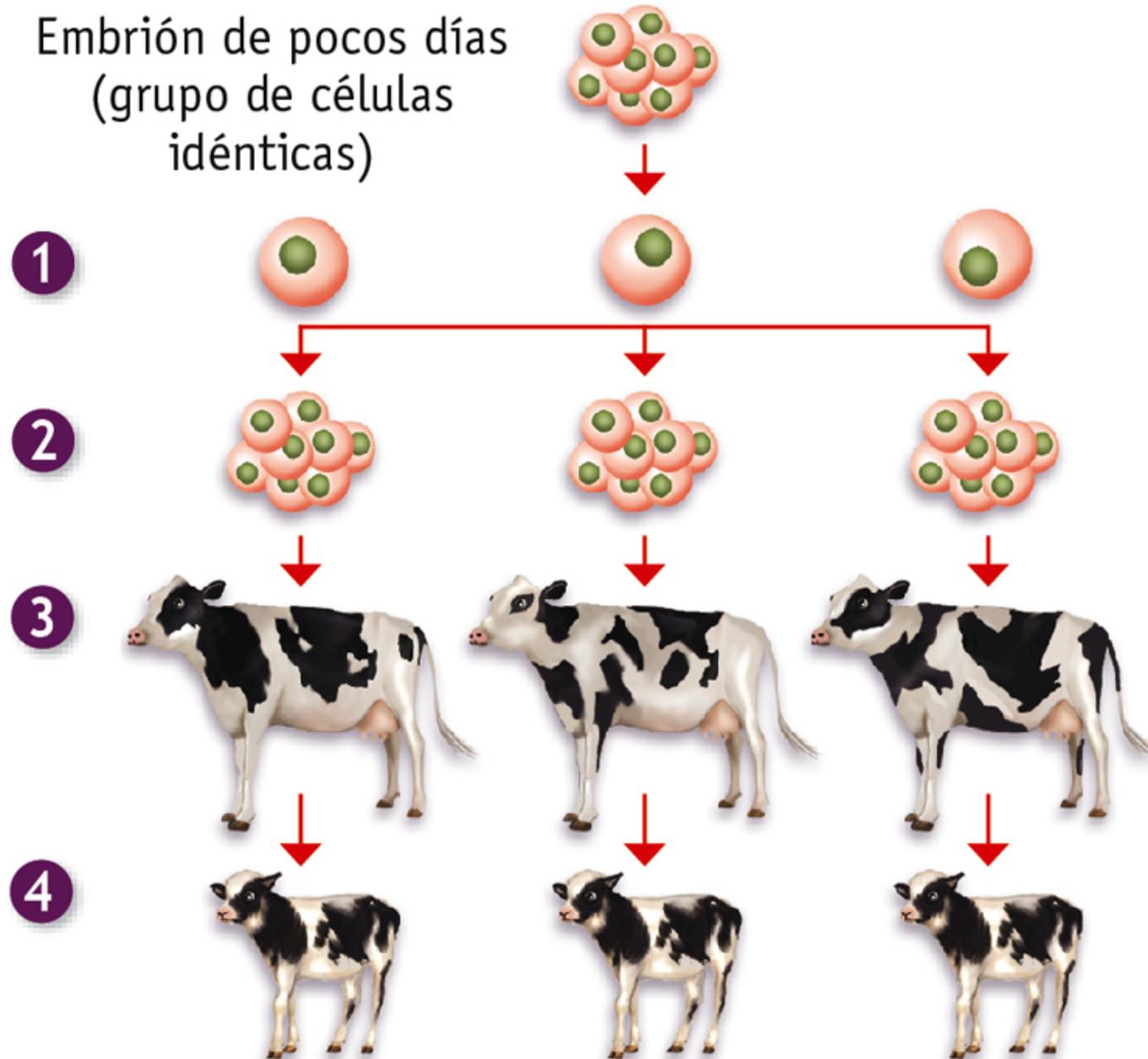


4.- Al mes se pasan a una maceta y dos meses después la planta ya ha prendido

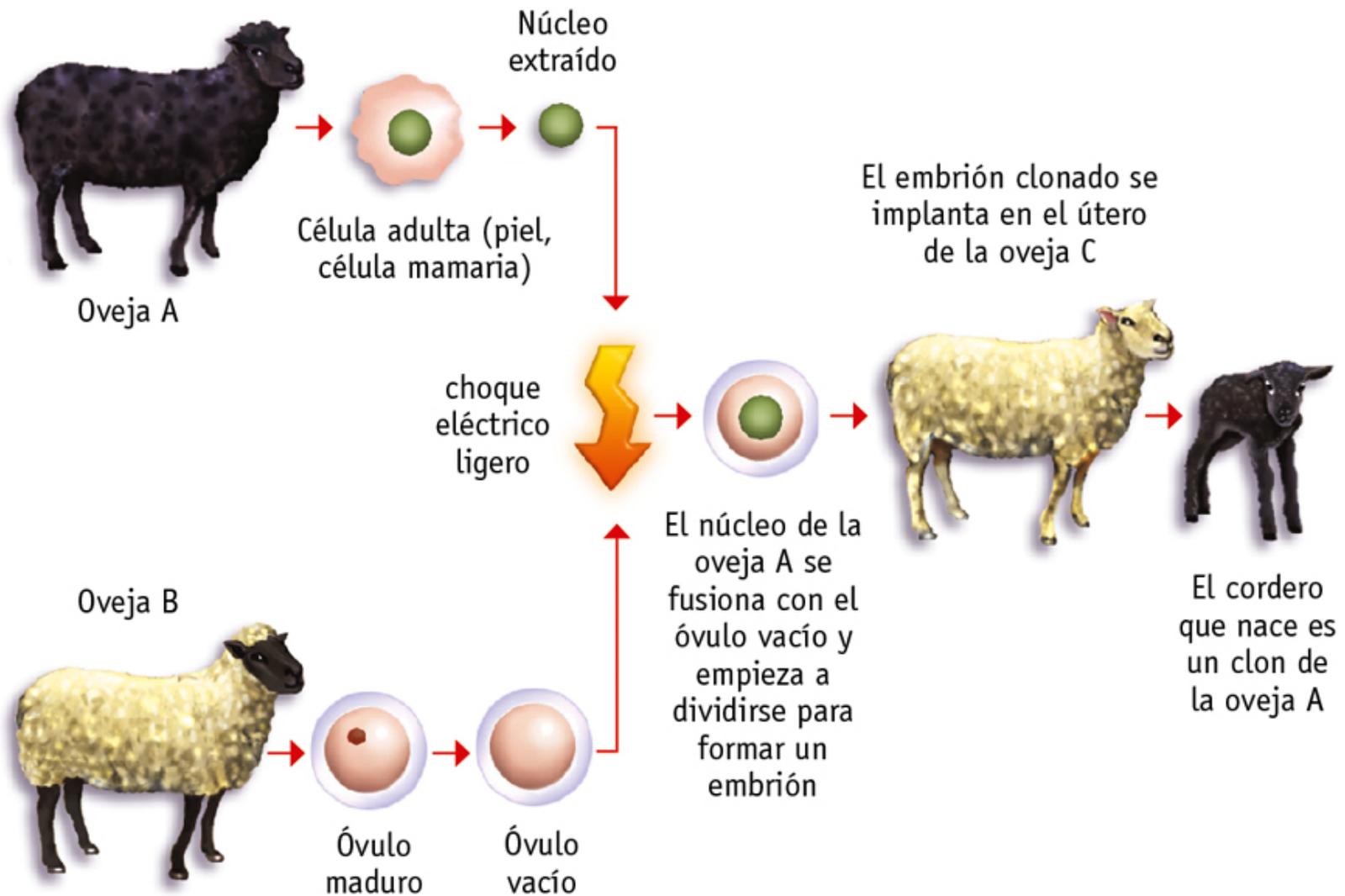


3.- Los fragmentos se introducen en hormonas → formación de tallos y raíces

Clonación reproductiva en animales



Clonación en animales mediante células adultas (oveja Dolly)



oveja Dolly, Museo de Edimburgo (Escocia)

