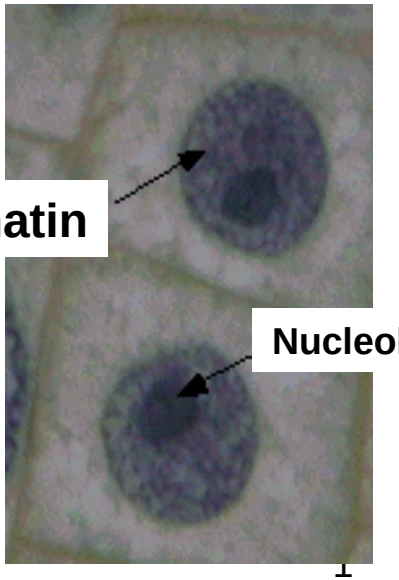
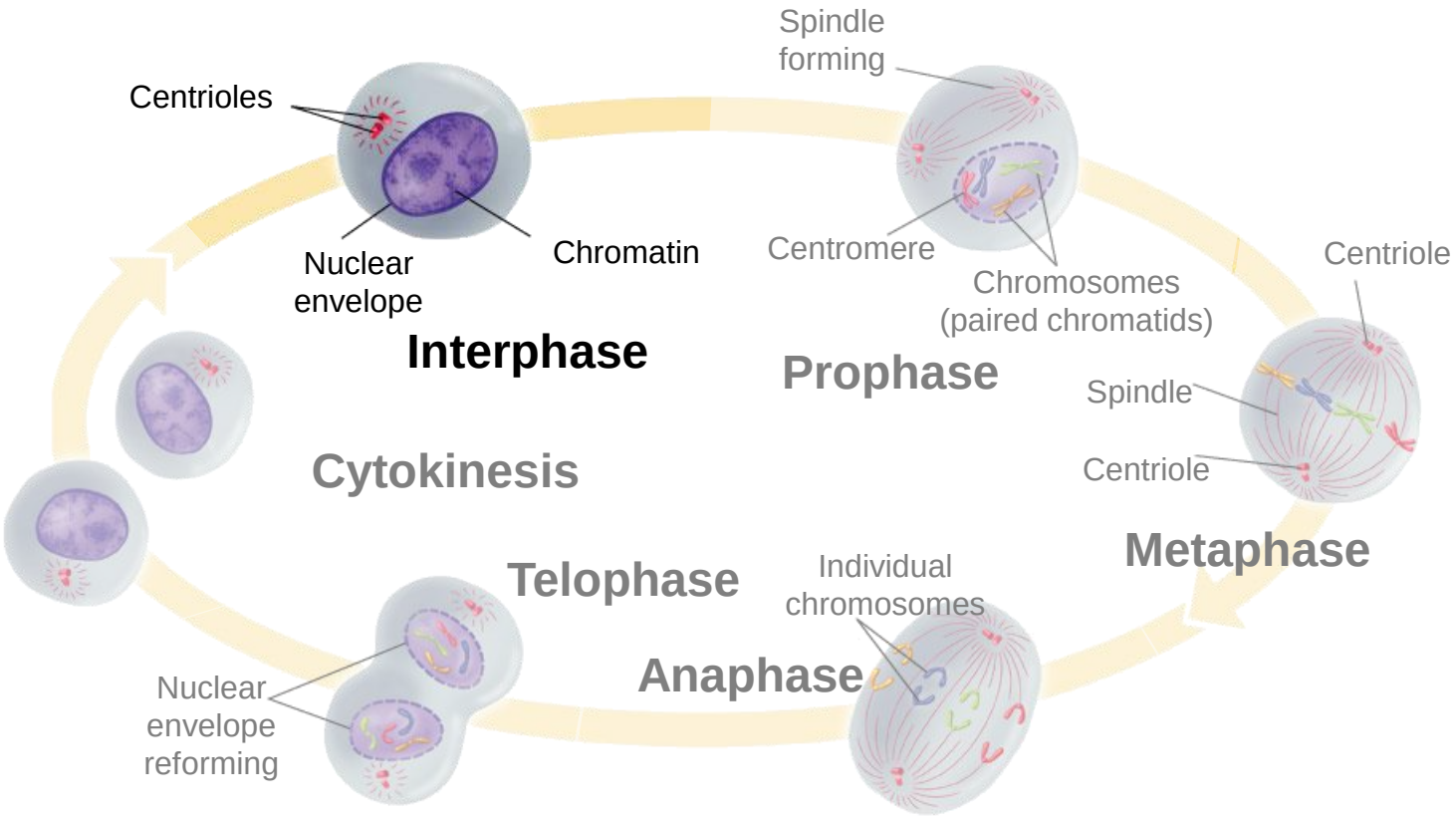
Interphase

- Interphase is the "holding" stage or the stage between two successive cell divisions.
- 90% of a cell's time in the normal cellular cycle may be spent in interphase.
- 3 phases:
  - G_1 = Growth
  - S = Synthesis of DNA
  - G_2 = Prep for Mitosis



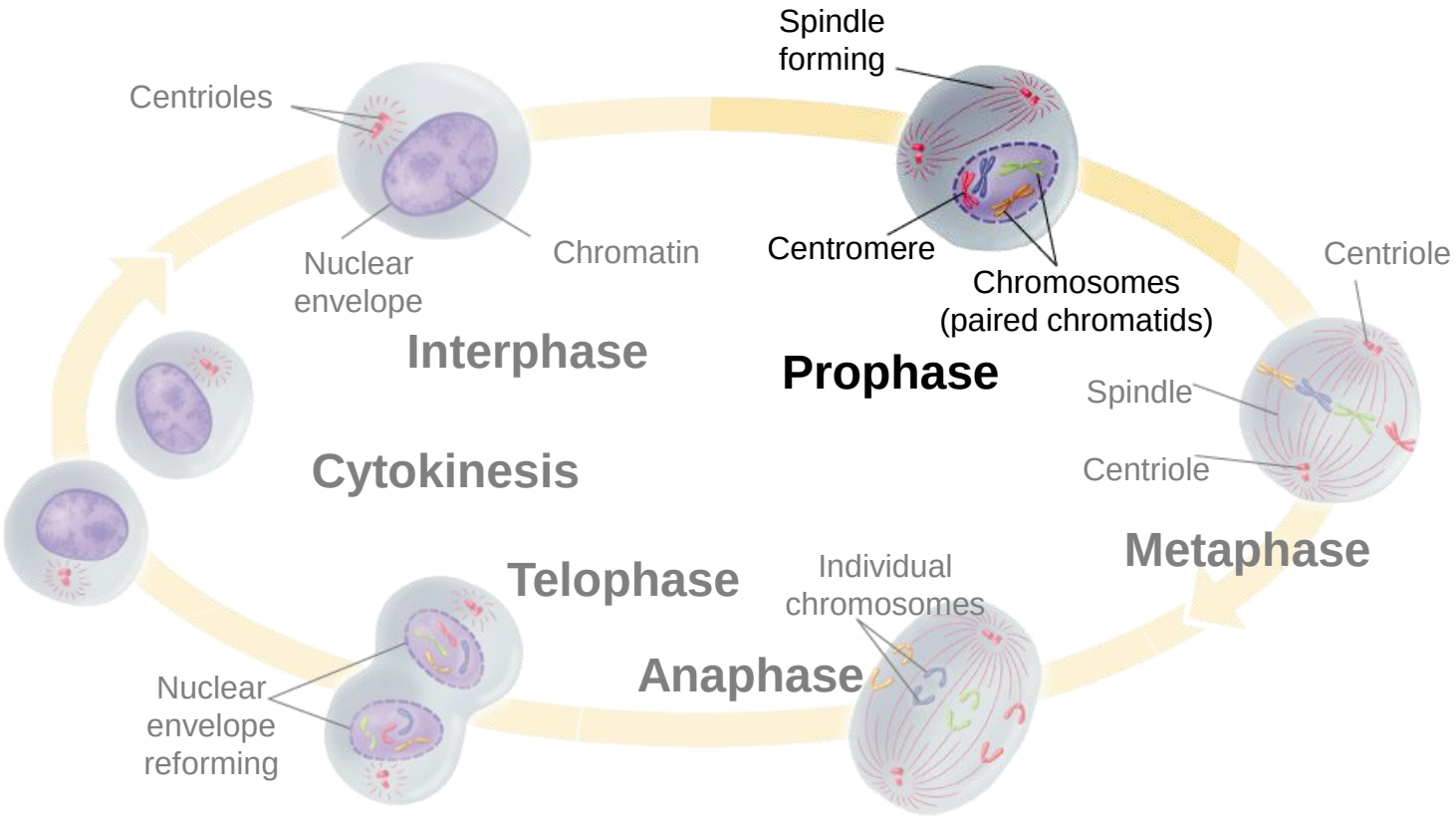
Interphase


Centrioles
Nuclear envelope
Chromatin
Interphase
Spindle forming
Centromere
Chromosomes (paired chromatids)
Prophase
Centriole
Spindle
Centriole
Metaphase
Individual chromosomes
Anaphase
Telophase
Nuclear envelope reforming
Cytokinesis

Prophase

- Prophase is the first and longest phase of mitosis (50-60% of the total time)
- Chromosomes are visible
- Centrioles separate and move to opposite side of the nucleus
- Spindle, a fanlike microtubule helps to separate the chromosomes
- Chromosomes attach to spindle fibers at the centromere of each chromatid
- At the end, chromosomes coil tightly, nucleolus disappears, nuclear envelope breaks down.

Prophase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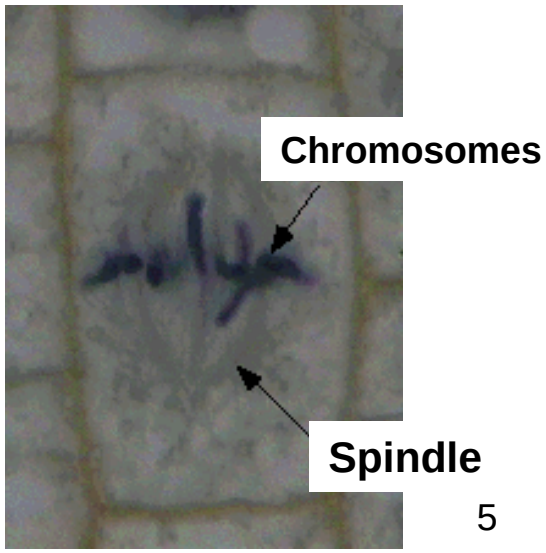
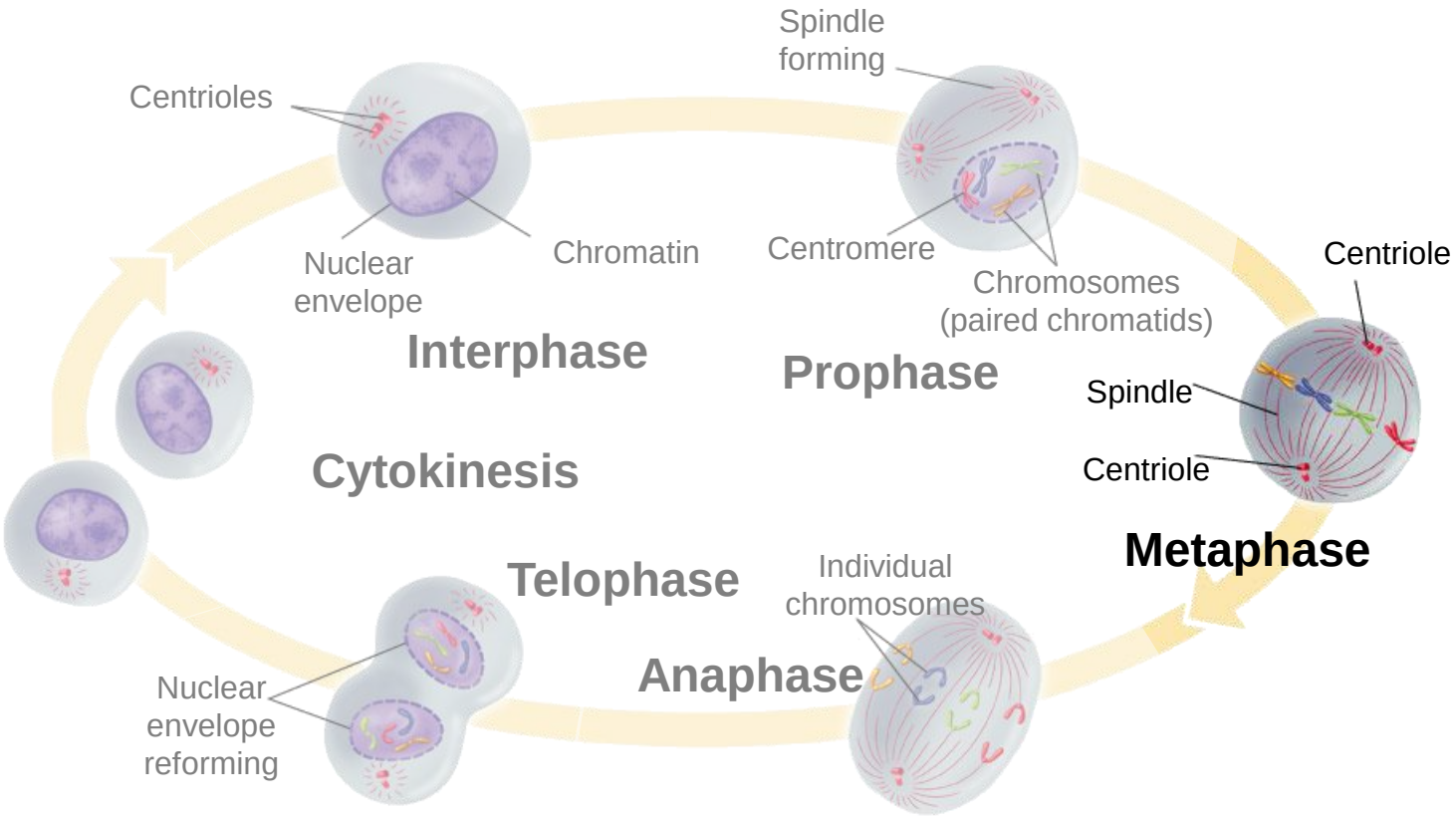
Metaphase

- During metaphase, chromosomes line up across the center of the cell.
- Only lasts a few minutes
- Microtubules connect the centromere to the poles of the spindle.



Metaphase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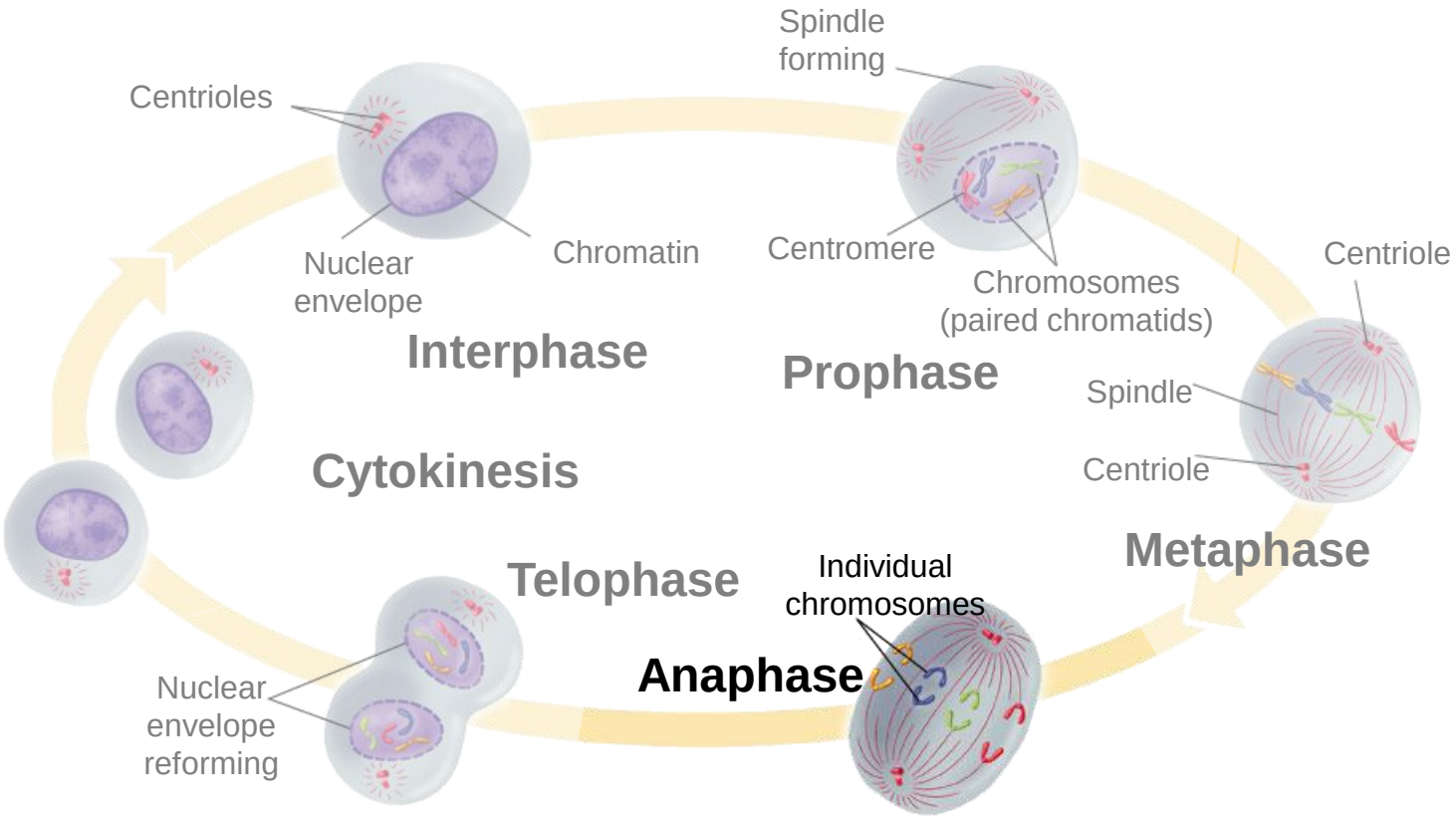
Anaphase

- During anaphase, the centromeres that join the sister chromatids split, allowing the sister chromatids to separate and become individual chromosomes.
- Chromosomes move until they have separated into two groups near the poles of the spindle.
- Ends when the chromosomes stop moving.

Anaphase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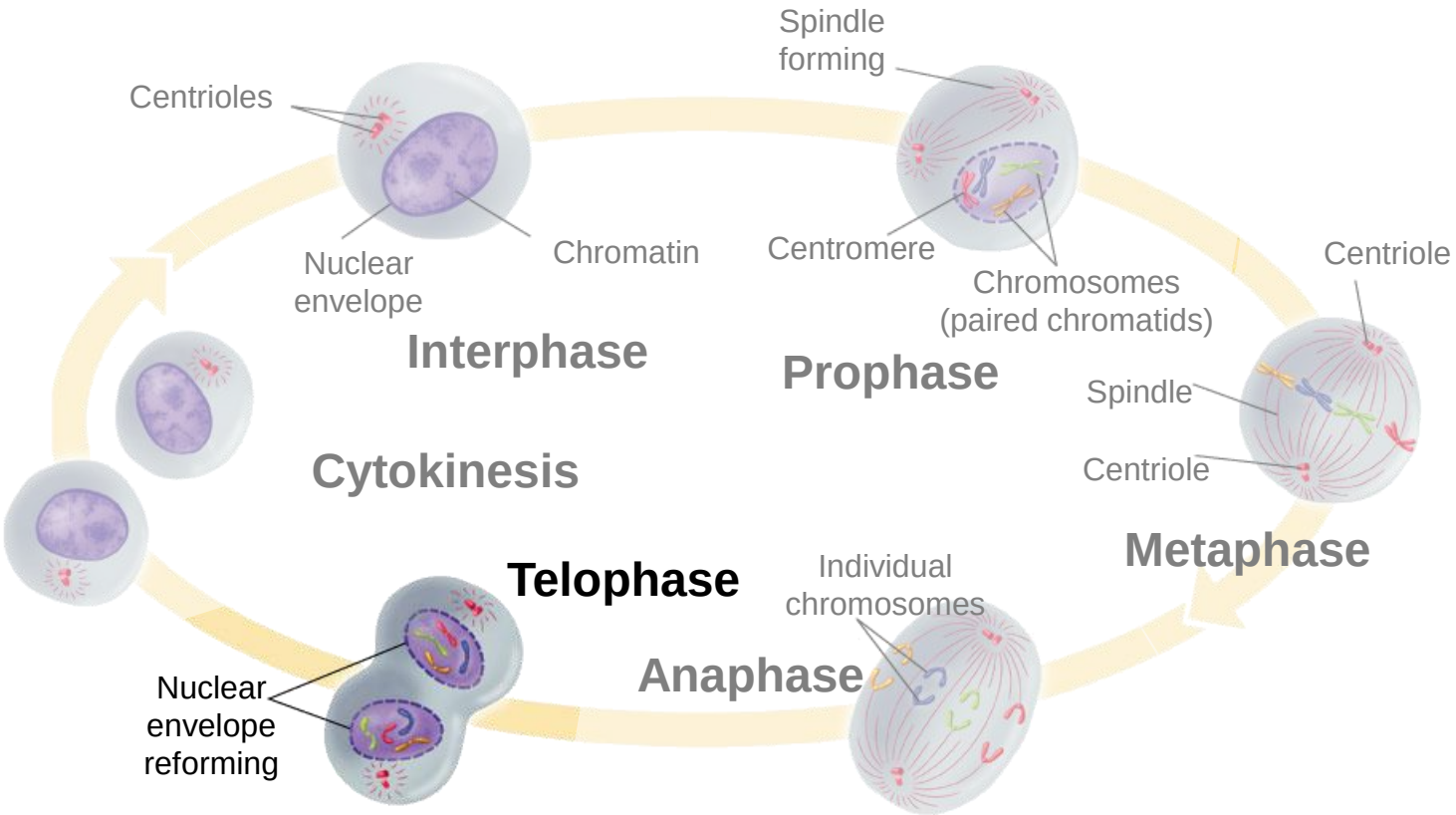
Telophase

- During telophase, the chromosomes begin to disperse into a tangle of dense material.
- A nuclear envelope re-forms around each cluster of chromosomes.
- The spindle breaks apart, a nucleolus becomes visible in each daughter nucleus making mitosis almost complete.

Telophase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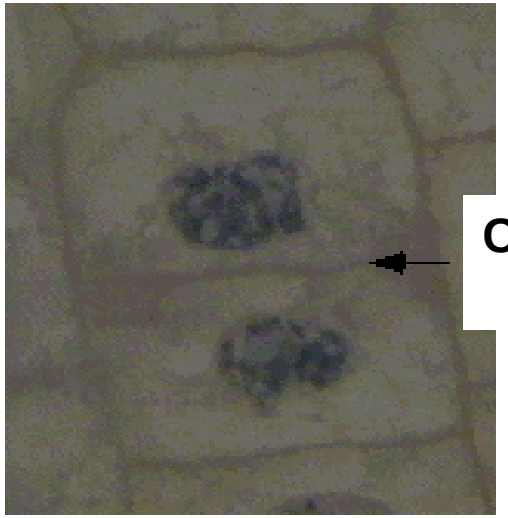
Cytokinesis

- As a result of mitosis, two nuclei are formed, usually within the cytoplasm of a single cell.
- The final step is the division of the cytoplasm itself.
- Cytokinesis usually occurs at the same time as telophase.

- In animal cells, the cell membrane is drawn inward until the cytoplasm is pinched into two nearly equal parts.



Cytokinesis