

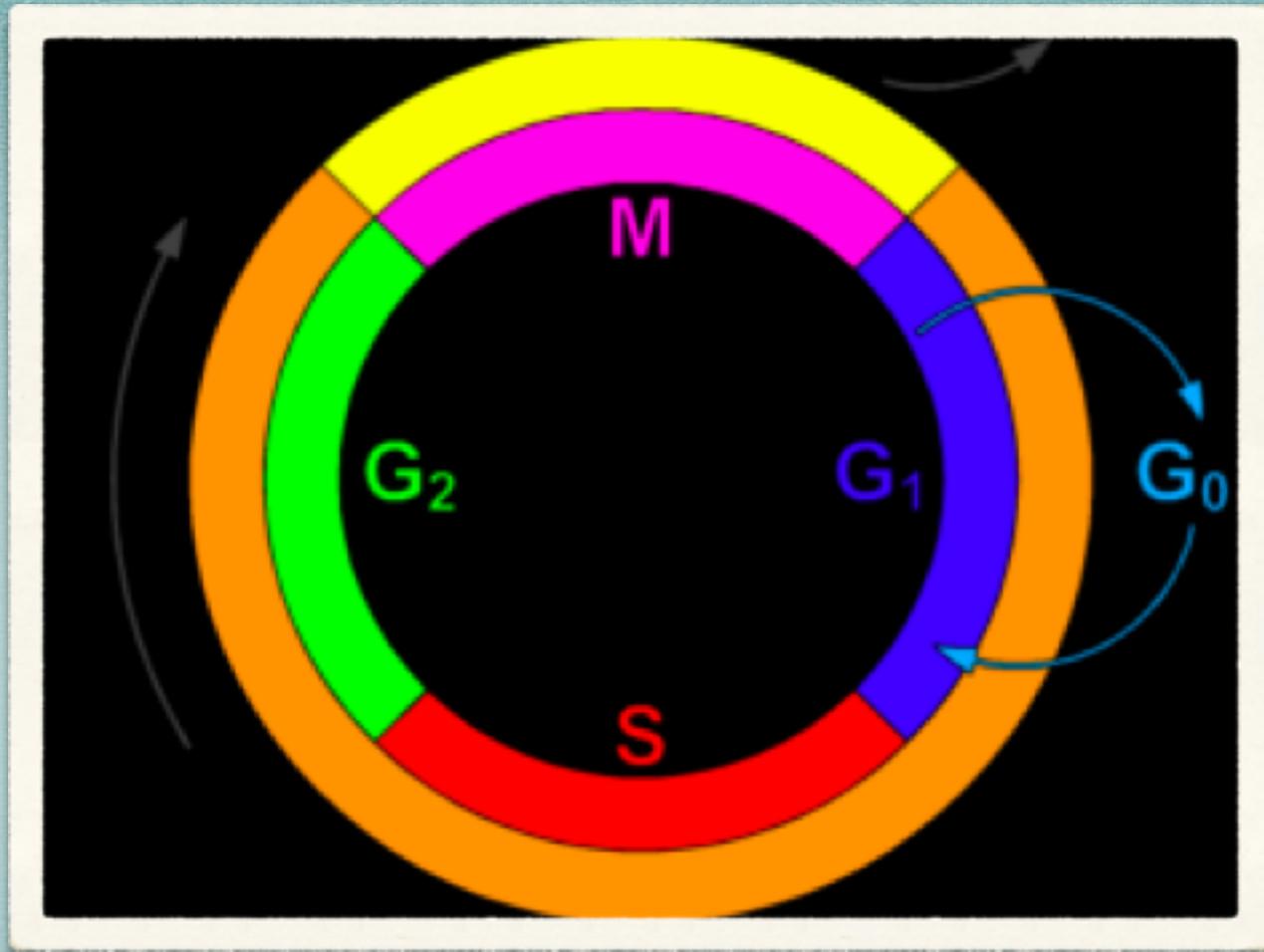
Cell cycle

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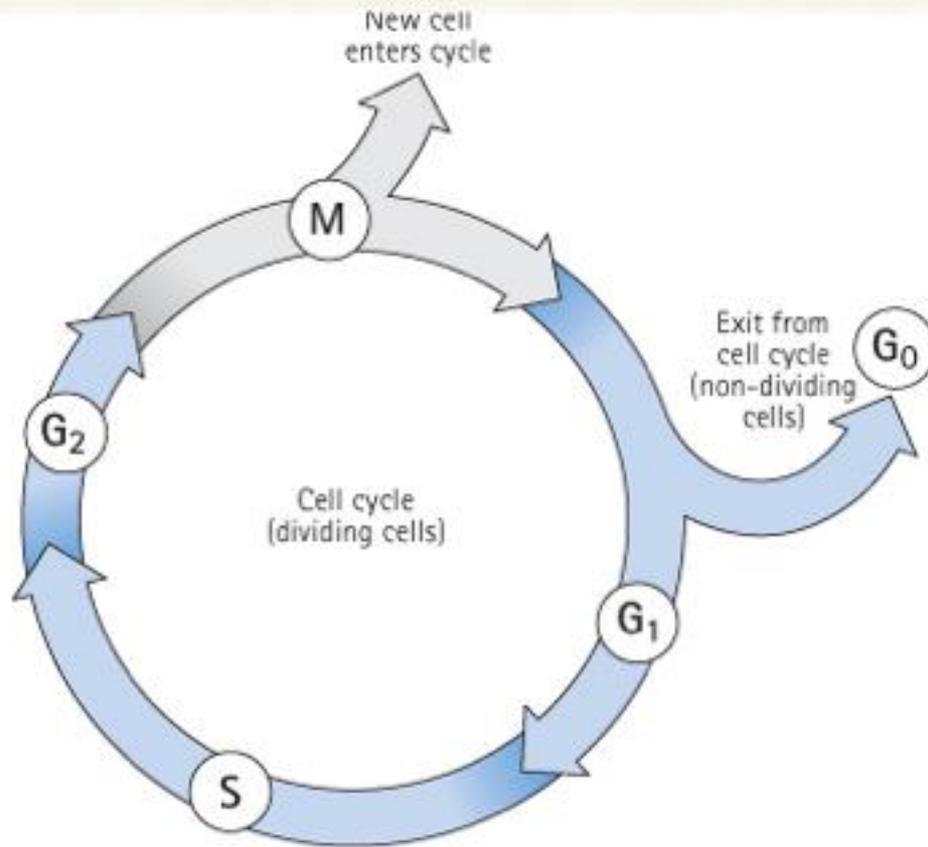
- The period between successive mitoses is known as the interphase of the cell cycle.
- In rapidly dividing cells this lasts for between 16 and 24 hours.
- Interphase start with the G1 (G = gap) phase during which the chromosomes become thin and extended.
- This phase of the cycle is very variable in length and is responsible for the variation in generation time between different cell populations.

Cell cycle

- Cells which have stopped dividing, such as neurons, usually arrest in this phase and are said to have entered a non-cyclic stage known as *G₀*.
- The *G₁* phase is followed by the *S* phase (*S* = synthesis), when *DNA replication* occurs and the chromatin of each chromosome is replicated.
- This results in the formation of two chromatids which give each chromosome its characteristic X-shaped.
- Interphase is completed by a relatively short *G₂* phase during which the chromosomes begin to *condense* in preparation for the *next mitotic division*.

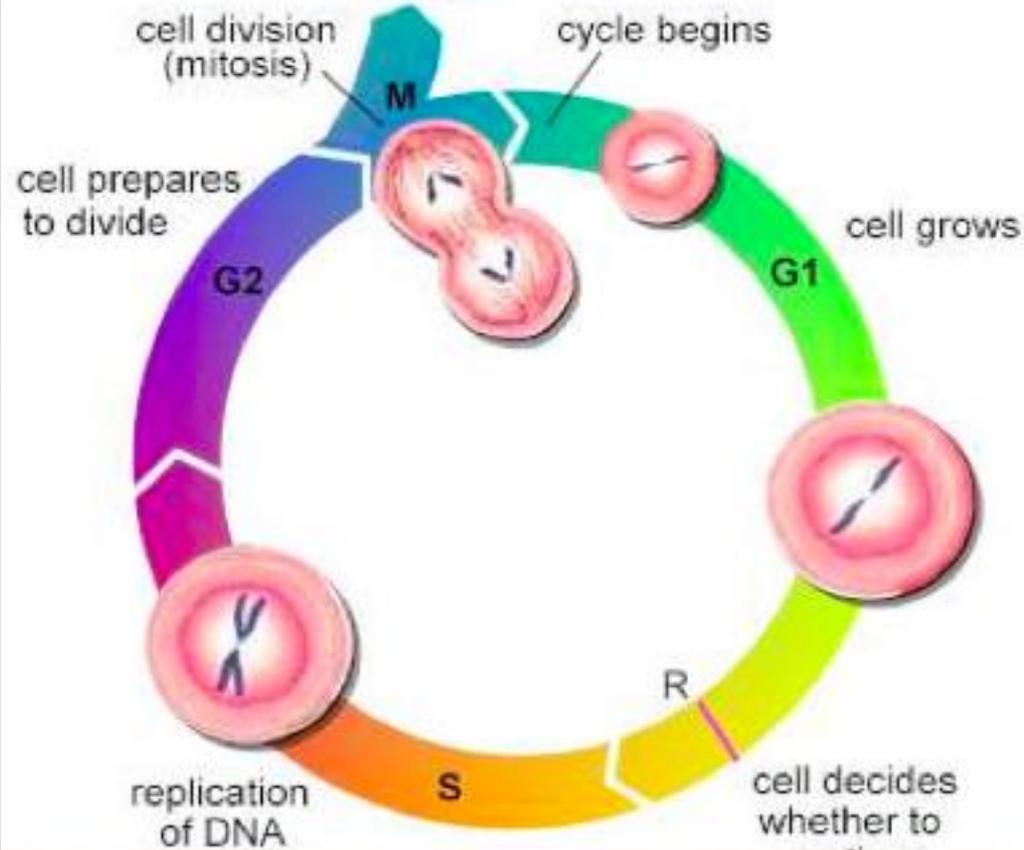


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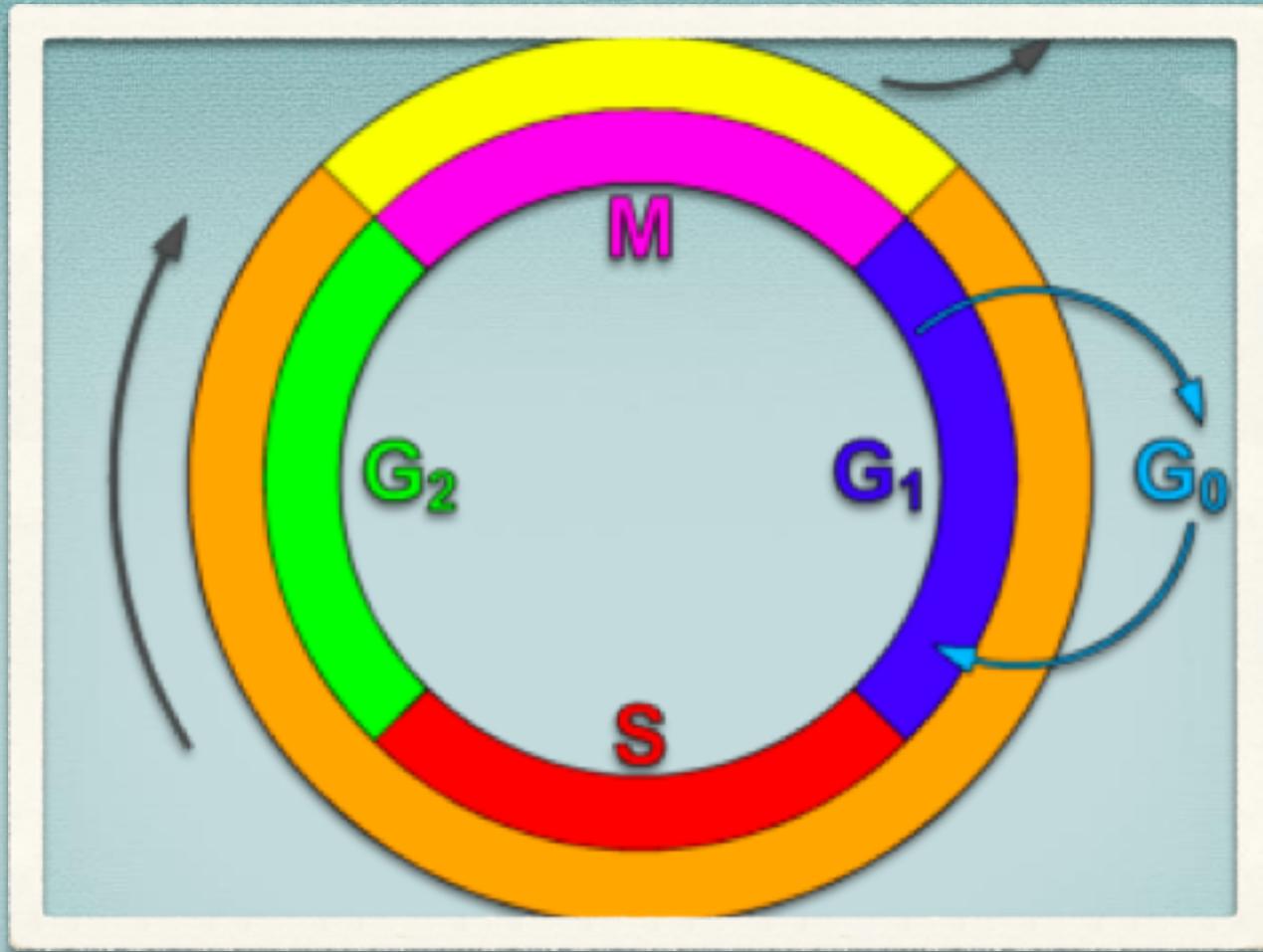


td. Tumpenny & Ellard: Emery's Elements of Medical Genetics 12E www.student

Cell Cycle



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State	Phase	Description
quiescent/senescent	Gap 0 (G0)	A resting phase where the cell has left the cycle and has stopped dividing.
Interphase	Gap 1 (G1)	Cells increase in size in Gap 1. The G1 checkpoint control mechanism ensures that everything is ready for DNA synthesis.
	Synthesis (S)	DNA replication occurs during this phase.
	Gap 2 (G2)	During the gap between DNA synthesis and mitosis, the cell will continue to grow. The G2 checkpoint control mechanism ensures that everything is ready to enter the M (mitosis) phase and divide.
Cell division	Mitosis (M)	Cell growth stops at this stage and cellular energy is focused on the orderly division into two daughter cells. A checkpoint in the middle of mitosis (Metaphase Checkpoint) ensures that the cell is ready to complete cell division.