



Interphase, Mitosis, and Cytokinesis: This figure shows the phases of the cell cycle, starting with interphase and progressing through to telophase and cytokinesis. Note the changes in the chromosomes as the cell cycle progresses.

gap 2 (G₂). During G₁, the cell carries out cellular functions that may vary, depending on the type of cell. For example, an osteoblast would secrete matrix to build bone. The length of G₁ is variable, depending on the type of cell and conditions.

Once the cell is ready to divide, it must make appropriate preparations. One of these preparations includes copying all the DNA, so the resulting two daughter cells will each have a copy. The copying of the DNA is known as DNA replication or DNA synthesis, and this occurs in the S phase of interphase. Once the DNA is correctly copied, the cell is ready to progress into G₂. It is during this phase that the cell checks to see if any errors occurred in DNA replication and gets ready to enter

mitosis or M phase. These are the final preparations before the cell divides.⁴⁸

Mitosis (Prophase, Prometaphase, Metaphase, Anaphase, Telophase) and Cytokinesis

Once the DNA is copied and all preparations have been made for a cell to divide, it will enter mitosis or M phase, which involves nuclear division. Recall that the DNA is located inside the nucleus. Mitosis is broken down into the subphases prophase, prometaphase, metaphase, anaphase, and telophase. During prophase, the nuclear envelope (the double membrane) surrounding the nucleus begins to disappear. The chromatin that was spread out