



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
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## **A Cell's Story - From Growth to Mitosis**

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by Monica Cohen

This unit is intended for high school biology students studying biology of the mammalian cell. The unit challenges students to model the cell cycle beyond the usual listing of basic stages; instead, students must explain the intricacies of cellular function and overall importance during each cycle phase. Rather than separating the cell cycle unit from topics of DNA structure, signal checkpoint, protein synthesis, and mitosis, students learn these topics concurrent with the overall cell cycle. Within the unit, students study DNA structure when discussing G1 phase, DNA replication in S phase, protein synthesis and signal checkpoints during G2 phase, and the stages of mitosis. As a finished product, students are asked to model and create a written response of the entire cell cycle and the importance of each phase. Literacy skills and 21<sup>st</sup> century skills, such as utilizing technology, collaborating, and critical thinking, are implemented throughout each component. Students utilize technology to receive content knowledge and graphic organizers to manage information. Activities include a DNA extraction lab with analysis questions, written responses based upon a rubric, whole class review activities, and individual formative assessments for instructor feedback.

(Developed for Biology, grade 10; recommended for Biology, grades 9-10)

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