

# The DNA Damage Game

Steve Chordas<sup>1</sup> and Caroline Breitenberger

<sup>1</sup>The Ohio State University, Center for Life Sciences Education, 1735 Neil Ave., Columbus OH 43210 USA

([chordas.2@osu.edu](mailto:chordas.2@osu.edu))

The “DNA Damage Game” was developed to improve students’ understanding of the effects (or lack thereof) of mutations. It has been used primarily in a required upper division course for biology majors at Ohio State. In the game, students start with a DNA sequence containing a proto-oncogene and a tumor suppressor gene encoded in opposite strands. Each student also picks a card specifying genetic and environmental factors that may influence the types and frequency of mutations their DNA will acquire over the course of the game. The instructor announces exposure to various mutagens, and rolls of the dice determine how much DNA is damaged, where the damage occurs, and whether it is repaired. At the end of the game, students receive the information needed to decode their DNA sequence and determine how the mutations have affected their proto-oncogene and tumor suppressor gene. Participants in this mini-workshop will have an opportunity to play an abbreviated version of the game, to analyze their results, and to discuss the impact and utility of the game.

**Keywords:** mutations, DNA, proto-oncogene

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