

## ***Mutagens and Experimental lab* card games: innovative and alternative resources for introducing gamification within education in bioscience**

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In the field of education, particularly in the sciences, conveying complex concepts in an engaging and comprehensible manner is a persistent challenge. A couple of educational resources designed to address this challenge have been developed in our group: “Mutagens” and “Experimental lab” card games.

The primary objective of these card games is to simplify and elucidate intricate scientific concepts, making them accessible and enjoyable for students and, even, for the general population.

*Experimental lab* card game guides players through the steps of conducting an experiment in a laboratory setting. It introduces basic concepts about experimental research and integrates several research project situations with classical card games mechanics. *Mutagens* card game introduces players to the concept of mutagenesis, where the genetic information of an organism is changed. Through interactive gameplay, players learn about different types of mutagenic agents and how to prevent or repair their actions while emphasizing the presence of mutations in natural populations.

By integrating gameplay into the learning process, these resources aim to enhance classroom engagement and motivation in students while improving conceptual understanding. They also aim to awaken scientific curiosity and facilitate effective communication of scientific activities.

The *Mutagens* and *Experimental lab* card games represent a novel approach to science education and communication. By transforming complex concepts into engaging gameplay, these resources not only aid in classroom as a complementary tool but also improve the communication of scientific activities by triggering interest in science among the general population, making scientific knowledge more accessible and appealing.

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