

Participant Information Sheet and Informed Consent Form

Study Title: Gamification Using the BioMan Cell Platform to Enhance Cell Biology Learning Among First-Year Medical Students

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Universidad de La Sabana
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This study was reviewed and approved by the Research Ethics Committee of Universidad de La Sabana before participant recruitment.

Invitation to Participate

You are invited to participate in a research study evaluating an educational strategy based on gamification. Before deciding whether to participate, please read the following information carefully. Feel free to ask any questions before signing this consent form.

Your participation is entirely voluntary.

Purpose of the Study

The purpose of this study is to evaluate medical students' learning experience after participating in a gamified educational activity using the BioMan Cell platform.

The study aims to explore students' perceptions regarding engagement, motivation, challenge, enjoyment, immersion, and overall learning experience during a digital game designed to reinforce Cell Biology concepts.

The findings may contribute to improving innovative teaching strategies in undergraduate medical education and may be published in scientific journals or presented at academic conferences.

What Will Participation Involve?

If you agree to participate, your involvement will include three consecutive steps:

Step 1. Informed Consent

You will receive information about the study, have the opportunity to ask questions, and decide whether you wish to participate.

Step 2. Gamified Learning Activity

Following the instructor's guidance, you will complete a learning activity using the BioMan Cell educational platform.

This activity is designed to reinforce Cell Biology concepts through interactive gameplay.

Step 3. Online Questionnaire

Immediately after completing the activity, you will be invited to complete an anonymous online questionnaire using Google Forms.

The questionnaire consists of approximately 64 multiple-choice items and requires about 20 minutes to complete.

The survey evaluates your learning experience and perceptions of the gamified activity. It is **not** an academic examination and does not assess your knowledge or affect your course grade

Voluntary Participation

Your participation is completely voluntary.

You may:

- decline to participate;
- withdraw from the study at any time;
- choose not to answer any question.

Your decision will not affect:

- your academic standing;
- your grades;
- your relationship with instructors;
- your access to course activities;
- any academic benefits.

Participation or non-participation will not influence your academic evaluation in any way.

Relationship Between the Educational Activity and the Research

The BioMan Cell activity forms part of an educational innovation implemented within the course.

However, participation in the research component is entirely independent of the educational activity.

Only data from students who voluntarily provide informed consent will be included in the research analyses.

Possible Risks

This study involves no more than minimal risk.

Potential minor inconveniences may include:

- temporary visual fatigue associated with computer use;
- cognitive fatigue after completing the activity;
- brief frustration when facing challenging game levels;
- mild discomfort while completing the questionnaire.

You may discontinue participation at any time without academic consequences.

Potential Benefits

Although no individual benefit can be guaranteed, participation may provide opportunities to:

- reinforce Cell Biology concepts;
- increase learning motivation;
- engage actively with innovative educational methodologies;
- contribute to the improvement of future medical education practices.

Confidentiality

All information collected during this study will remain confidential.

To protect your privacy:

- your name will not appear in the research database;
- each participant will be assigned a study identification code;
- only de-identified data will be analyzed;
- results will be reported in aggregate form.

No individual participant will be identifiable in publications or presentations arising from this research.

Data Protection

Electronic data will be securely stored on password-protected institutional computers accessible only to the research team.

Personal information will be managed according to Colombian data protection legislation and the institutional policies of Universidad de La Sabana.

Data will be used exclusively for scientific and educational research purposes.

Publication of Results

The results of this study may be published in peer-reviewed journals, presented at scientific conferences, or included in academic theses.

No personally identifiable information will be disclosed.

Compensation

Participation in this study is voluntary.

You will not incur any costs and will not receive financial compensation or other material incentives.

Questions About the Study

If you have questions about this research, you may contact the Principal Investigator.

If you have questions regarding your rights as a research participant, you may contact the Research Ethics Committee of Universidad de La Sabana.

Statement of Consent

Please read the statements below carefully.

By signing this form, I confirm that:

- ☐ I have read and understood the information provided above.
- ☐ I have had the opportunity to ask questions, and all my questions have been answered satisfactorily.
- ☐ I understand that participation is voluntary.
- ☐ I understand that I may withdraw from the study at any time without academic consequences.
- ☐ I understand how my data will be collected, stored, and used.
- ☐ I consent to the anonymous use of my data for scientific publications and educational research.
- ☐ I voluntarily agree to participate in this study.

Participant Name: _____

Student ID: _____

Signature: _____

Date: _____

Person Obtaining Consent

Name: _____

Position: _____

Signature: _____

Date: _____

Ethical Consent Procedure

Prior to participation, all eligible first-year medical students received verbal and written information describing the objectives of the study, study procedures, potential benefits and minimal risks, confidentiality measures, and participants' rights.

Students were explicitly informed that participation was voluntary, independent of course assessment, and that refusal or withdrawal would not affect academic performance, grades, or relationships with faculty members.

Written informed consent was obtained before students accessed the BioMan Cell platform. Following completion of the gamified learning activity under faculty guidance, participants completed an anonymous online questionnaire administered through Google Forms.

Only de-identified data from participants who had provided written informed consent were included in the final analyses.