Co-funded by
the European Union

EA IE
Esports as Accelerator for Social Inclusive Education

LESSON
CELL MEMBRANE

AUTHOR
CAMILLA EGHOLM SØRENSEN
VUC STORSTRØM

CELL MEMBRANE

The purpose of the exercise is to test and improve the student's understanding of the structure and function of the cell membrane.

Subject and level
Biology - can be adapted to different levels with varying work questions.

Connection to curriculum
Cell structure and function.

Didactic and pedagogic considerations
For lower ranking students the game gives them a chance to test their understanding of the topic. Students with a greater understanding of the topic will to some degree be able to predict the changes in the game and through that achieve a higher score.
After the first two levels the game becomes a regular tower defense game. Students who finish quickly can play on for fun while the rest of the class gets through the required levels.

Time estimate
Approximately 30 minutes to plat the first to levels of the game.

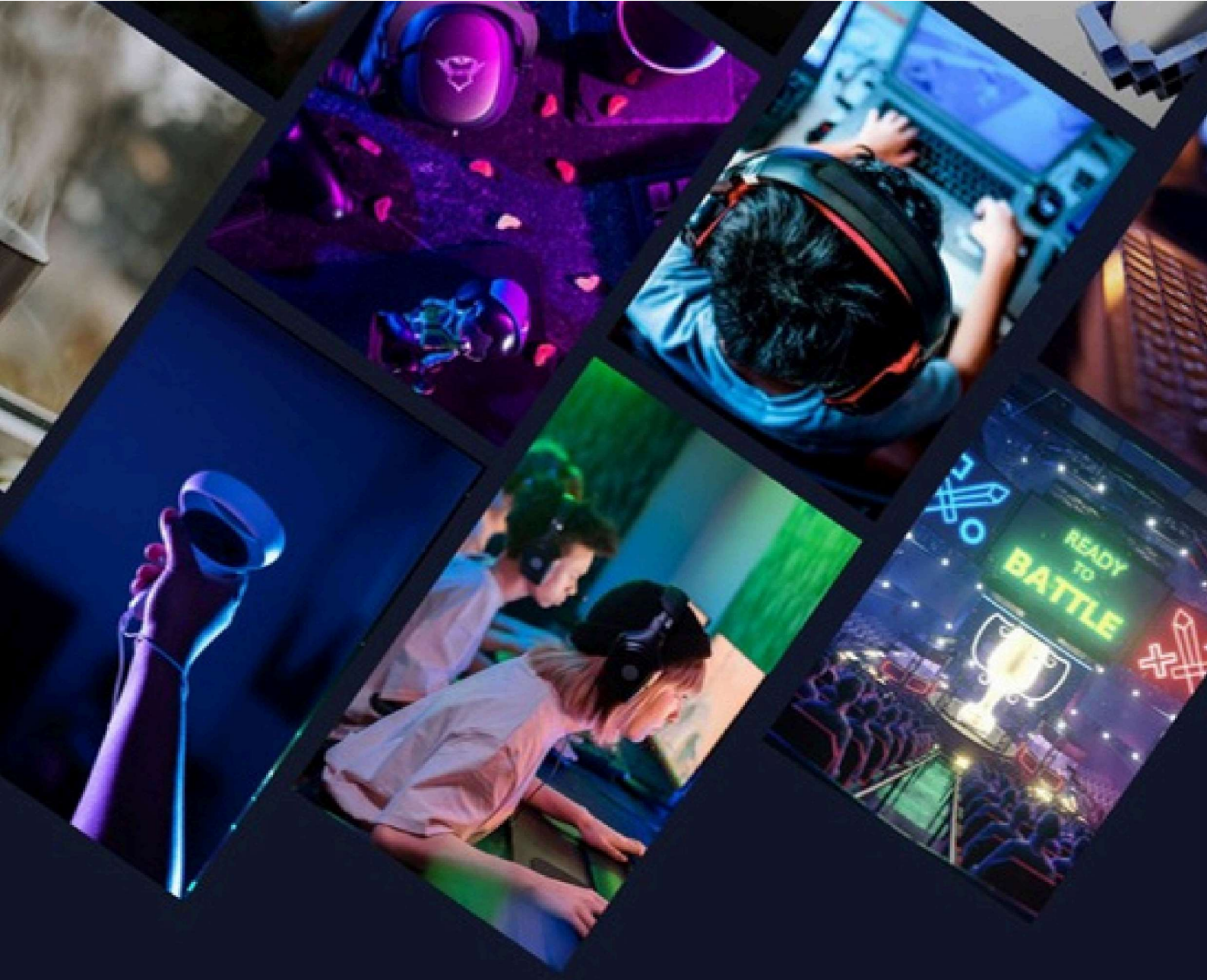
Group size
Preferably played alone, but will work in pairs or groups of three.

Overall introduction to exercise
Students will play the game "Life on the Edge", where they must design and maintain a cells membrane in chaning environments and withstand attacks from different bacteria. A basic knowledge of membrane structure and function will make the game easier, but is not nescesary for achieving a learning output.

CELL MEMBRANE

Exercise as presented to the students

- Start the game “Life on the Edge” on Steam.
- You must play through at least the first two levels of the game.
  - If you finish early, you can play on for fun.
- Follow the instructions in the game and try to keep your cell alive as long as possible.
- While you play, consider the following questions:
  - Where in the cell are new membrane lipids produced?
  - Which form of membrane transport is responsible for the uptake of water?
  - What is an auqaporin?
  - What is the role of the mitochondria?
  - Your cell releases toxins through exocytosis. What does that mean?
  - How should you adjust your cell when the environment changes between isotonic, hypotonic and hypertonic?



EASIE
Esports as Accelerator for Social Inclusive Education

E-SPORT AS ACCELERATOR FOR SOCIAL INCLUSIVE EDUCATION

WWW.EASIE.GG

Co-funded by
the European Union

FUNDED BY THE EUROPEAN UNION. VIEWS AND OPINIONS EXPRESSED ARE HOWEVER THOSE OF THE AUTHOR(S) ONLY AND DO NOT NECESSARILY REFLECT THOSE OF THE EUROPEAN UNION OR THE EUROPEAN EDUCATION AND CULTURE EXECUTIVE AGENCY (EACEA). NEITHER THE EUROPEAN UNION NOR EACEA CAN BE HELD RESPONSIBLE FOR THEM.