

# Interviews with teachers which lead us to the conception of iGEMINI

Our objective was to create vocations in biotechnology among young people and to introduce them to certain biotechnology techniques to help them discover this field. We knew that with the epidemic it would not be easy to achieve our goals through a format that did not respect social distancing. We therefore agreed that a video game would be a good educational support in this time of crisis. A fun way to learn at home. We turned to high school biology teachers in order to build a pedagogical tool in line with their curriculum and scientific background. Here is a summary of the two interviews that made us decide to build the iGEMINI game.

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## Interview of Mr. Carbonne - 07/21

- **Who is Mr. Carbonne?**

Philippe Carbon is a professor of science of life and earth at the high school “Lycée Général et Technologique Jean Moulin de Pézenas” in the city of Pézenas.

- **Why did we contact him?**

We finished the first draft storyboard of our video game. The aim of this video game is to introduce synthetic biology and orientation possibilities after the baccalaureate to high school students.

We need to have some comments on the storyboard about if the addressed concepts are understandable for high school students. We also need to know:

- At what grade level could this game be aimed at?
- Should it be part of the curriculum or could it be part of an opening module?

- His answers to our questions

According to him, this video game corresponds to the program of the grade “1<sup>ère</sup> scientifique option Science de la Vie et de la Terre”. He gave me the list of the competence a student should have in biology for this grade level.

Because the students have to do a PCR experiment, it would be nice to have two play modes: one which is about our project and which will give an overview of what is synthetic biology and another which is a game in relation about the PCR experiment done in class.

He will read the storyboard and will give me some comments on it for next week.

He can also give me the contact of an inspector of the national education if needed

Students of “1<sup>ère</sup> scientifique option Science de la Vie et de la Terre” have to:

- Understand the notion of clone from various examples from agriculture or the health field (cancer cells, B lymphocytes producing a single antibody, bacterial clones).
- Studying historical experiences that highlight the bacterial transformation. To understand how knowledge of the mechanisms of horizontal transfers enables biotechnological applications (in particular the production of molecules of interest in bacterial lines).
- Extract and organize information on mutations and their phenotypic effects, especially on a regulatory site for gene expression.
- Design and/or perform a PCR reaction by determining the duration of each step in the PCR cycle. Calculate the number of copies obtained after each cycle.
- Know what is a DNA polymerase and how it works.

According to Mr. Carbonne, it is therefore relevant and useful to have a visual and interactive pedagogical support about synthetic biology for the grade of “1ère scientifique option Science de la Vie et de la Terre”.

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#### Interview of Mrs. Gratien - 03/08

- Who is Mrs Gratien?

She is a french high school biology teacher in the city of Villes Franche de Lauragais

- Why did we contact him?

We finished the first draft storyboard of our video game and we already interviewed Mr Carbonne. The aim of this video game is to introduce synthetic biology and orientation possibilities after the baccalaureate to high school students.

We need to have some comments on the storyboard about if the addressed concepts are understandable for high school students, so we let it be the file. We also need to know:

- At what grade level could this game be aimed at?
- Should it be part of the curriculum or could it be part of an opening module?

Thanks to Mr Carbonne, we know that high school students have to do a PCR lab. We want to know her opinion on this lab and if the video game could be useful to this lab.

- His answers to our questions

Cloning techniques are learned in the beginning of the last year of high school in the speciality science of life and of earth.

According to her, our video game is directly in relation with the program. She likes the fact that it is in english for the european section.

She thinks that the PCR lab is not manipulated enough for high school students, the notion is also too abstract and this lab is too expensive compared to the profit for students. She thinks that our video game is a nice option to address these complicated concepts.

She told us that we should add an ethical approach. It could be useful for an oral for baccalaureate. This oral is about introducing a topic and it has to add ethical thinking and critical approach.

She will have a look to our storyboard, add comments and link each notion to a part of the program. She can test the video game in class at the end of september.