CLIL Module Plan

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School Grade	○ Primary		○ Middle		◉ High
School Year	○ 1	○ 2	◉ 3	○ 4	○ 5
Subject	Biologia		**Topic**	Biology	
CLIL Language	◉ English		○ Deutsch		

Personal and social-cultural preconditions of all people involved	The content is designed for a 3rd year class of a science lyceum. The class consists of 20 students, 12 males and 8 females. There are no pupils with special educational needs. Science in the third year includes a period of about 3 months in which biology is studied, in particular: cell division, DNA structure and replication, protein synthesis and regulation of gene expression. Pupils are generally curious and interested in science, so it was not difficult to get them involved. They are also particularly active, so they agreed to take part in the working groups. Their average English level is B1 with inhomogeneous competence in the four skills, i.e. their speaking skills are generally less developed than their reading and writing skills. The class has not been exposed to CLIL teaching before, so they were initially sceptical and a little anxious about being exposed to science teaching using this methodology. However, they remain curious and motivated. On average, the class is good in both biology and English.

Students' prior knowledge, skills, competencies	Subject	Language
	BASIC BIOLOGY KNOWLEDGE_Cell structure and function (differences between prokaryotic and eukaryotic cell); chemical basis of life (main characteristics and differences between macromolecules such as proteins, nucleic acids, lipids and carbohydrates); principles of molecular biology (structure of DNA and genes, DNA replication, transcription and translation). SKILLS_Understand a scientific topic supported by a ppt presentation and video; answer some questions related to a scientific ppt presentation and video; work in pairs. COMPETENCES_Critical thinking: analysing and evaluating information; communication skills: present arguments using appropriate scientific language; collaboration: working in pairs, discussing concepts, sharing ideas.	Topic-based scientific language; present tense, modals, conditionals, comparatives, giving opinions, giving instructions, agreeing and disagreeing.

Timetable fit	◉ Module	Length 2 lessons

Description of teaching and learning strategies	Heterogeneous learning resources (ppt slides, videos, worksheets). Language support: provide language scaffolding with vocabulary lists and contextualised examples. Interactive discussions: engage students in discussions with open-ended questions to promote critical thinking and collaboration; using strategies such as think-pair-share. Create connections to real-world scenarios, discussing its influence on diseases and recent discoveries. Formative assessment: monitor understanding through quizzes, encourage self-assessment.

Overall Module Plan

Unit: 1 Unit 1 **Unit length:** 50 + 50	**Lesson 1** The regulation of gene expression in prokaryotes
	Lesson 2 The regulation of gene expression in eukaryotes

CLIL Lesson Plan

Unit number	1	**Lesson number**	1	**Title**	The regulation of gene expression in prokaryotes

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	10'	To revise the flux of genetic information and connect it to gene expression. To understand the process of gene expression.	The teacher introduces the topic and its importance. She uses supportive slides and a short animation to illustrate the flow of genetic information; she provides language scaffolding with vocabulary lists and contextualised examples. The teacher uses questioning techniques to assess prior knowledge and stimulate interest. Students actively listen and engage with the introductory information. Pupils pay attention, take notes and participate. They may also ask questions to clarify their understanding.	**Skills** L S R W **Key vocabulary** DNA, RNA, nucleic acids, transcription, translation, gene, regulation, protein. **Communicative structures** Do you remember...? What are the main processes...? How it is possibile...? Can you revise...?	☑ Whole class ☐ Group work ☐ Pair work ☐ Individual work	• The regulation of gene expression .pdf Supporting presentation (slides 1- 4) and video (see slide 2).	/

2	30'	To recognize the importance of gene expression in determining cellular functions. To explain the structure of an operon and its mechanisms. To recognize the differences between an inducible and a repressible operon.	The teacher explains the different mechanisms of gene expression regulation in prokaryotes, such as operons. She uses pictures and animations to illustrate each regulatory mechanism and how it works at the molecular level. To provide clear explanations of complex concepts, the teacher provides examples and ensures student understanding through questioning and discussion. Students take part in activities that allow them to apply their understanding, about gene expression regulation in prokaryotes.	**Skills** L S R W **Key vocabulary** Prokaryotes, operon, transcriptional unit, promoter, operator, repressor, repressible, lactose, trypthophan. **Communicative structures** How is...? What is/are...? Could you list...? Could you explani...?	☑ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• The regulation of gene expression .pdf Supporting presentation (slides 5-9) + video (see slides 6-7-8).	At the end of the section, students receive a multiple-choice quiz to be completed individually (Worksheet A).

3	10'	To understand the process of gene expression and its significance in biology. To recognize the importance of gene expression in determining cellular functions and traits. To revise the mechanisms involved in gene expression regulation in prokaryotes.	Students are divided into pairs and discuss their answers to the quiz.	**Skills** L S R W **Key vocabulary** See above. **Communicative structures** Giving opinions, agreeing and disagreeing, comparatives, modals	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• WORKSHEET_A.pdf	While the students discuss in pairs, the teacher moves around to listen to parts of the conversation and provide support if necessary (formative assessment).

CLIL Lesson Plan

Unit number	1	**Lesson number**	2	**Title**	The regulation of gene expression in eukaryotes

Activity	**Timing**	**Learning Outcomes**	**Activity Procedure**	**Language**	**Interaction**	**Materials**	**Assessment**
1	10'	To revise the key concepts of gene expression and its importance in biology. To revise the gene expression regulation in prokaryotes.	The teacher reviews orally the information from the previous lesson ("Gene expression in prokaryotes"). She provides language scaffolding with vocabulary lists and contextualised examples. The teacher uses questioning techniques to assess prior knowledge and stimulate interest. Students actively answer the questions. The teacher introduces the new topic and its importance in biology.	**Skills** L S R W **Key vocabulary** Eukaryotes, chromatin remodeling, RNA processing, post-transcription. **Communicative structures** Do you remember...? What are the main processes...? How is...? Can you revise...?	☑ Whole class ☐ Group work ☐ Pair work ☐ Individual work	• The regulation of gene expression .pdf Supporting presentation (9-11).	/

2	25'	To understand the main mechanisms involved in gene expression regulation in eukaryotes. To recognize the importance of gene expression in determining cellular functions and traits in eukaryotes.	The teacher explains the different mechanisms of gene expression regulation in eukaryotes, highlighting the differences between them. She uses pictures to illustrate each regulatory mechanism and how it works at the molecular level. She gives examples and ensures students' understanding through questions and discussion. Students take part in activities that allow them to apply their understanding of the regulation of gene expression in eukaryotes. In particular, they complete a multiple-choice quiz.	**Skills** L S R W **Key vocabulary** Eukaryotes, chromatin, post-transcription, RNA processing, post-translation **Communicative structures** How is...? What are...? Could you list...? Could you explain...?	☑ Whole class ☐ Group work ☐ Pair work ☑ Individual work	• The regulation of gene expression .pdf • WORKSHEET_B.pdf Supporting presentation (slides 12-19).	At the end of the section, students will receive a multiple choice quiz to be completed individually (Worksheet B).

3	10'	To understand the process of gene expression regulation in eukaryotes. To recognize the importance of gene expression in determining cellular functions and traits. To revise the mechanisms involved in gene expression regulation in eukaryotes.	The students are divided into pairs and discuss their answers to the quiz.	**Skills** L S R W **Key vocabulary** Eukaryotes, chromatin, post-transcription, RNA processing, post-translation. **Communicative structures** Giving opinions, agreeing and disagreeing, comparatives, modals	☐ Whole class ☐ Group work ☑ Pair work ☐ Individual work	• WORKSHEET_B.pdf	While the students discuss in pairs, the teacher moves around to listen to parts of the conversation and provide support if needed.

4	5'	To explain and justify hypotheses about gene expression in prokaryotes and eukaryotes. Communicative skills.	Final plenary where the students share their idea and opinion about the topic. They also give personal feedback on the methodology used for both the lesson and the assessment.	**Skills** L S R W **Key vocabulary** see above **Communicative structures** see above	☒ Whole class ☐ Group work ☐ Pair work ☐ Individual work	/	The teacher listens to the students and collects elements for summative assessment: level of understanding of phenomena, reasoning, hypothesising and communication skills. The final summative assessment will be based on: structured tests (worksheets A and B), pair work and general participation.