Vak: Laboratory Course Theme 9 — credits: 6

Vakcode	BOVH20RTHM9	**Werkvormen**	Practicum / Training
Naam	Laboratory Course Theme 9	**Toetsen**	Th. 9 - Praktijk - Overige toetsing
Studiejaar	2023-2024		
ECTS credits	6		
Taal	Engels		
Coördinator	P.M. Dammers		

Leeruitkomsten

1. Learning outcomes:
2. The ability to perform important molecular genetic techniques such as restriction analysis, DNA cloning (ligation and transformation of E. coli cells), and PCR.
3. Successfully demonstrate an understanding of CRISPR-Cas9 technology and the ability to apply CRISPR interference techniques in a laboratory setting to modify specific genes and analyse the effects on the target organism.
4. Analyse the research data of the experiment in a statistically responsible manner and discuss the data based on literature and draw a conclusion.
5. Create an English report about the performed experiment according to established guidelines.

Inhoud

Course content:
In this practical, emphasis will be placed on some general molecular genetic techniques, such as restriction analysis, DNA cloning (ligation and transformation of *E. coli* cells), and PCR.
The CRISPR-Cas9 technique, specifically CRISPR interference, will be used as a tool for genetic modification of *Bacillus subtilus*. CRISPR interference (CRISPRi) is a method used to downregulate specific genes in an organism. In the case of *Bacillus subtilis*, the AmyE and SunI genes can be targeted using CRISPRi to reduce their expression levels. This technology leverages the CRISPR-Cas9 system to bind to the promoter region of target genes and prevent transcription, leading to decreased gene expression. By downregulating the AmyE and SunI genes in *Bacillus subtilis*, you will be able to study the function of these genes and potential applications in biotechnology. You will complete this project by writing a report in English where the research results will be presented and discussed in an organized manner and according to established guidelines.

Opgenomen in opleiding(en)

Major Biologie en Medische Research

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