ELIXIO: a synthetic microbial consortium for sustainable violet fragrances

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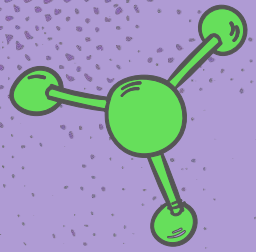
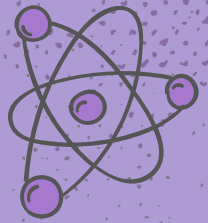
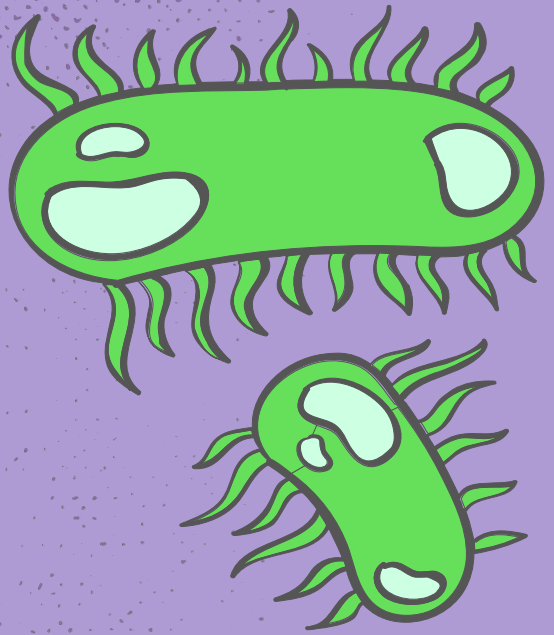


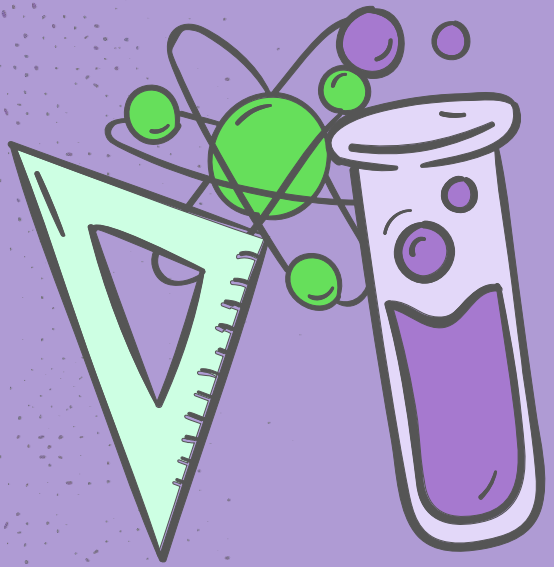




01 Overview

What it is ELIXIO?


Elixio has developed a synthetic microbial consortium to produce the odorous molecules composing the smell of the violet, Toulouse's emblematic flower.



02

Module A

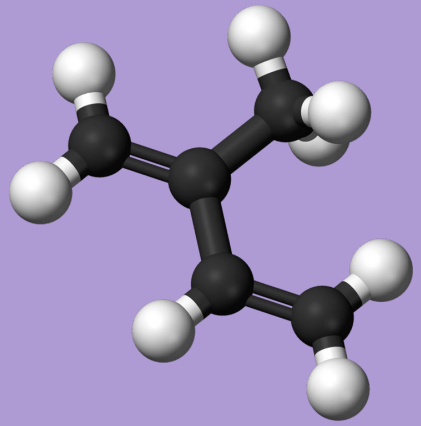
Production of the violet terpenes

Our mission

Terpenes

A wide family of compounds: Vitamin A, industrial resins...

They are produced by plants, but we are using bacteria to streamline the process



Violet Molecules

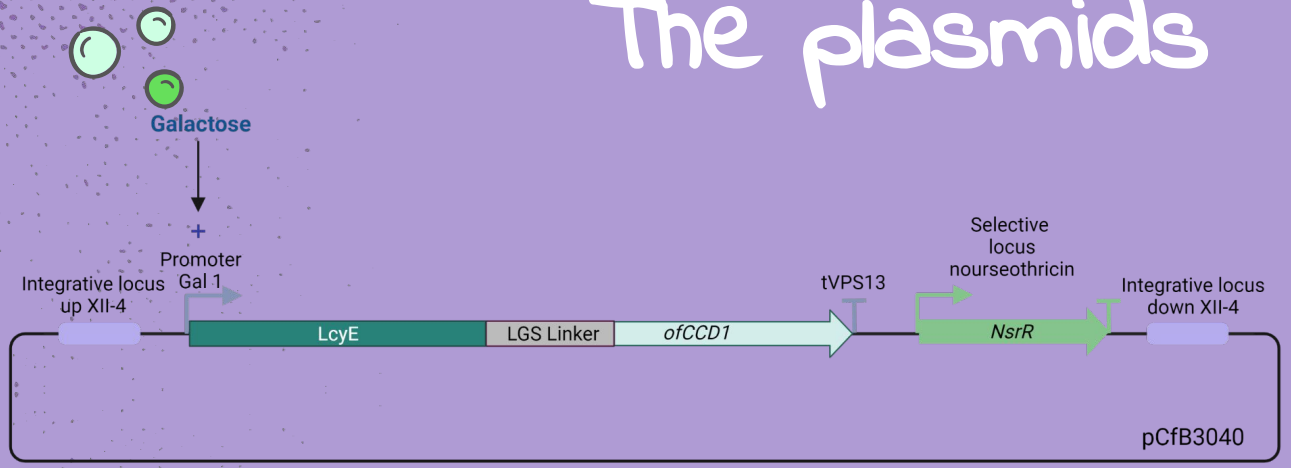
They have identified:

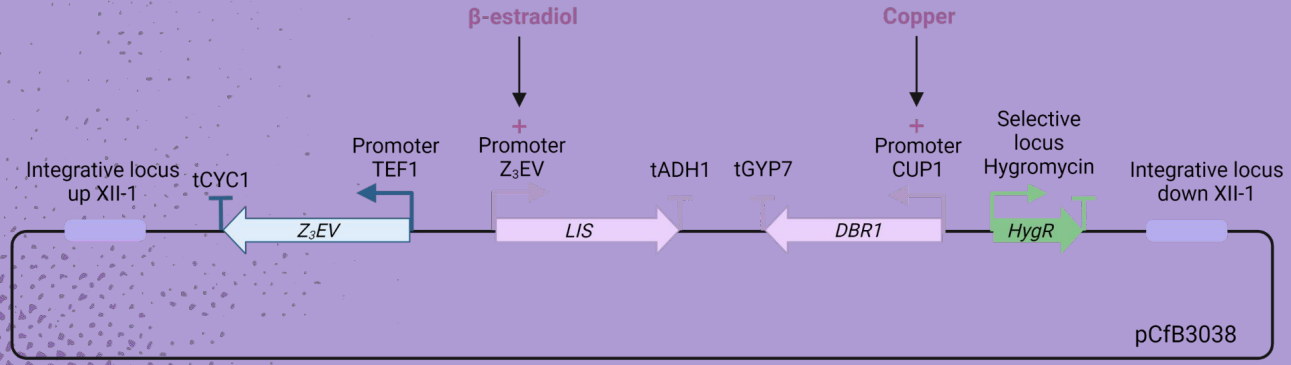
- A-ionone
- B-ionone
- Dihydro-β-ionone
- Linalool

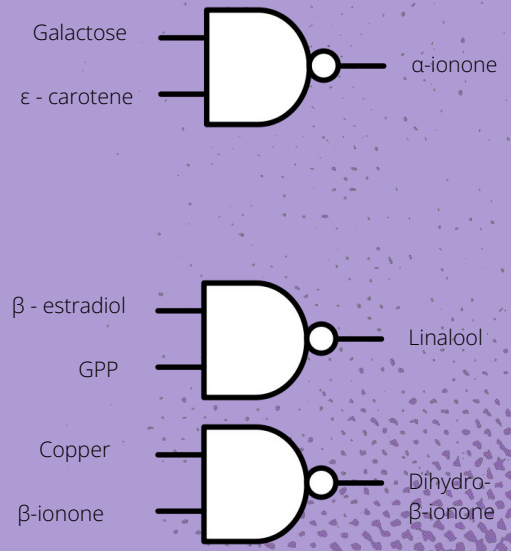
As the molecules, and yeast as target organism

Since yeast does not have this molecules, we have to engineer them into it:

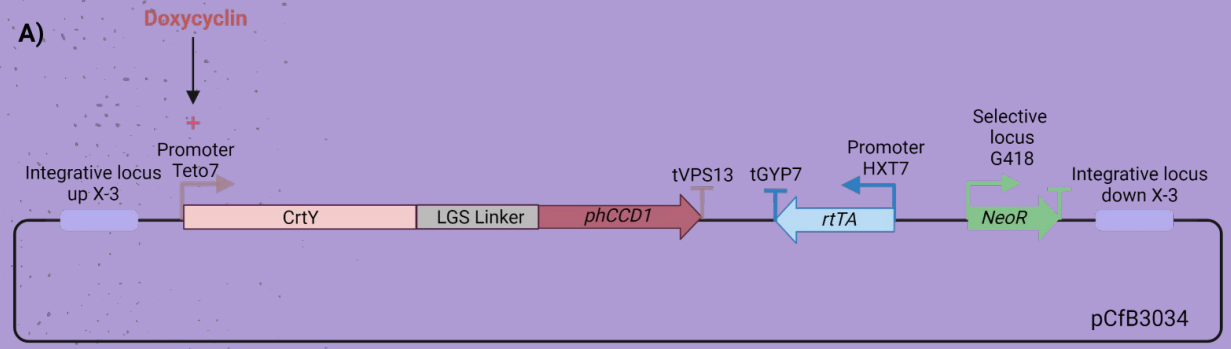
The plasmids

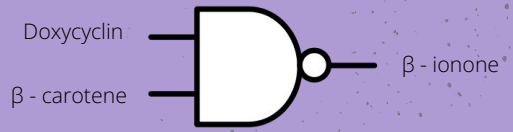


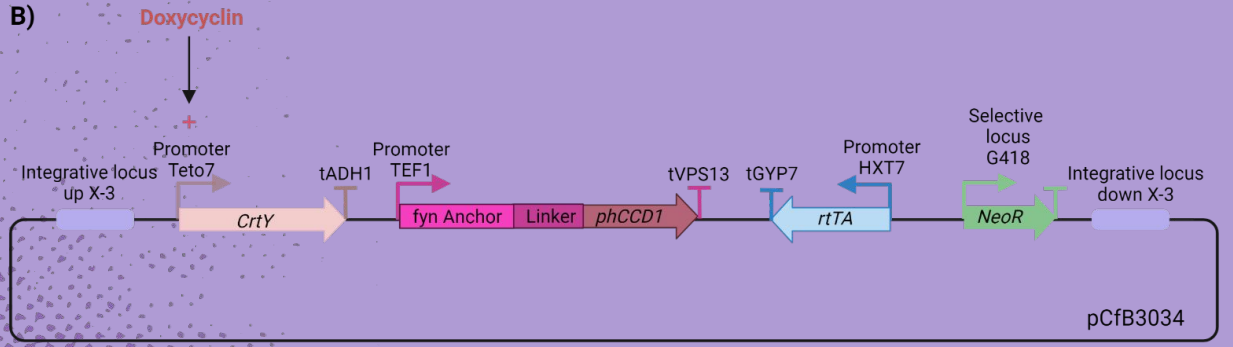


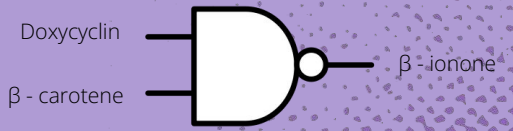


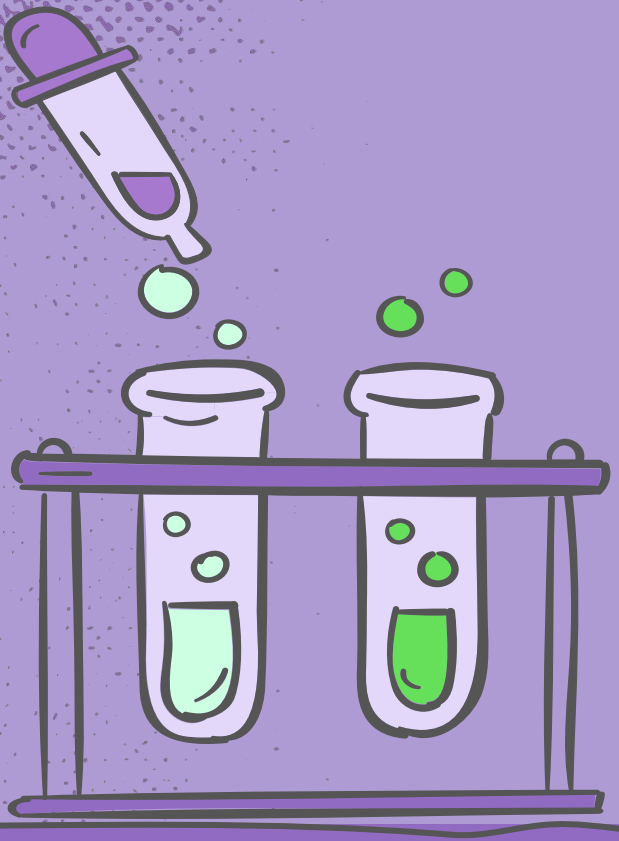
The plasmids







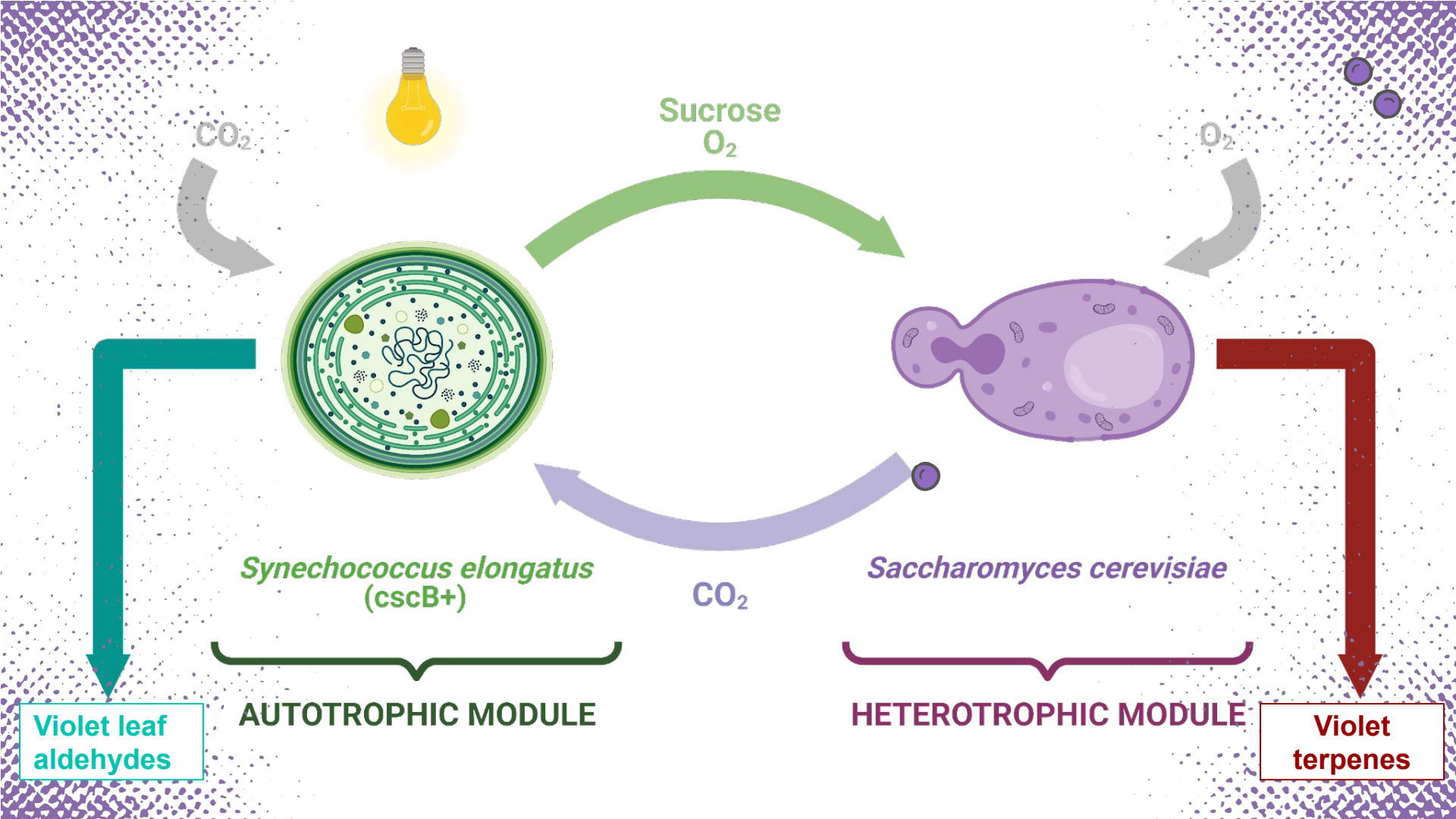




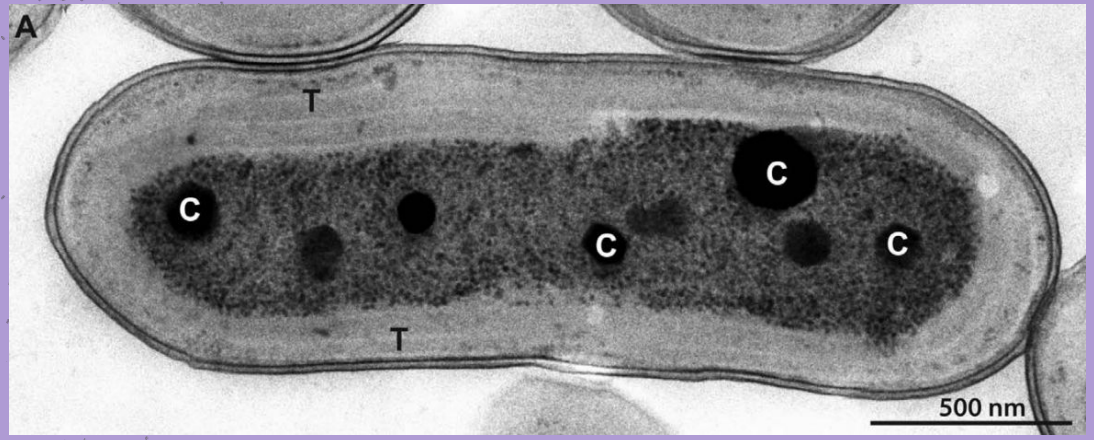
03

Module B

Engineering *S. elongatus* for the sustainable production of violet green scents


CO_2
Sucrose
O_2
O_2
Synechococcus elongatus
(cscB+)
CO_2
Saccharomyces cerevisiae
AUTOTROPHIC MODULE
HETEROTROPHIC MODULE
Violet leaf aldehydes
Violet terpenes

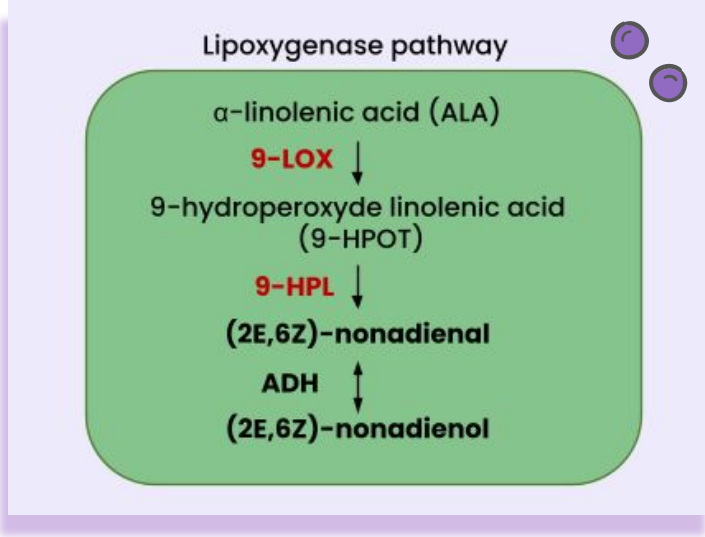
Engineered sucrose-secreting cyanobacterium

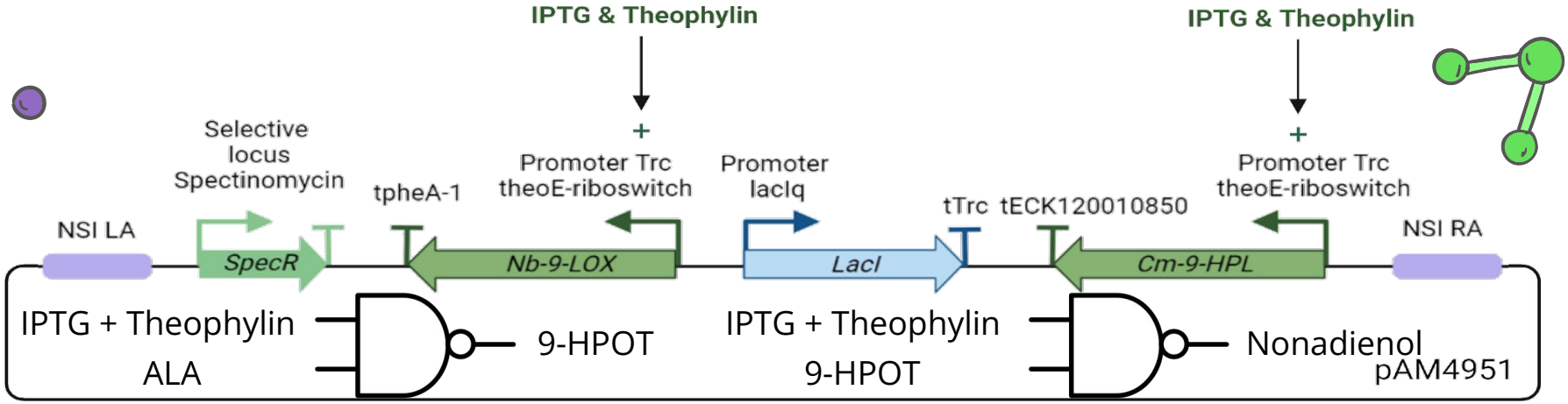


S. elongatus

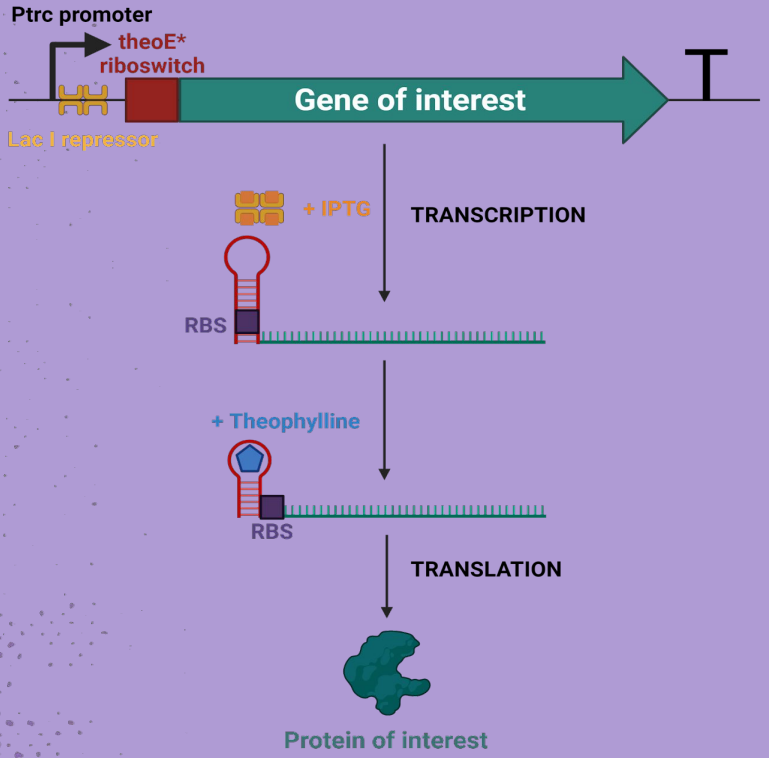
To provide a carbon source to the yeast, we need to modify cyanobacterium *S. elongatus*

Violet leaf aldehydes production through the Lipoxygenase pathway





Violet leaf aldehydes production through the Lipoxygenase pathway



The transcription of the gene of interest is induced by IPTG. Translation initiation is dependent on the presence of theophylline.

04

Conclusion

Why this project is interesting?

Conclusions

Sustainability
Produced from CO_2

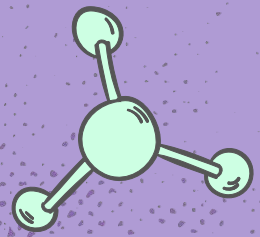
Cost-price ratio
Cheaper and easier to collect

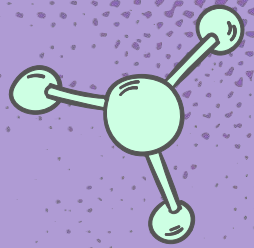
Innovation
A completely new method

Ethics
GMOs might be controversial

Programmable Biology
A promising field

Reproducible
Easy to imitate and patentable





You can get more information on the official ELIX10 page


Thanks!