



A double plasmid system
for enhanced biosafety

What is iGEM?

Each year, high schools and universities from all over the world form a team of driven students to compete in the iGEM competition, where the goal is to tackle a problem using **synthetic biology**. Last year, the Leiden iGEM team achieved massive success by winning the Grand Prize with their project Rapidemic; now it is the turn of the fresh **Leiden iGEM team 2021** to try and defend this coveted title. This time, we take on the challenge of biocontainment, with our new project named **DOPL LOCK**.

Our Project

Over the course of the iGEM competition, many wonderful projects have been developed, tackling some of the world's most challenging issues, such as plastic pollution, the bleaching of coral reefs, or insect plagues. However, the solution to many of these problems require the release

of **genetically modified organisms (GMOs)** into the environment. When these bacteria start spreading, their synthetic genes have the potential of outcompeting the natural ones, which would result in the decline of biodiversity and could ultimately lead to catastrophic environmental damage.

To solve this problem, we have designed a system that utilizes two methods to diminish the spread of modified genes. At the basis of this system lies the use of **two interdependent plasmids**, preventing the transfer of them between unrelated bacteria. On top of that, a **'conditional promoter'** on the plasmids cause the cell to die when it leaves specific conditions. Combining these techniques, the proliferation of bacteria will be severely restricted by this double plasmid lock, or **DOPL LOCK** as we like to call it. With this project, we want to provide other iGEM teams with a **solid basis** to build their system upon, hopefully realizing some of the amazing solutions in the future.

Sponsoring

DOPL LOCK could be the next step towards safe release of GMOs, but first we need to confirm that our system works. To do this, we ask for **your help**: any form of support is much appreciated, be it a financial donation, discount on products, or lab supplies. In return, your company will be represented on our:

- **Academic poster**.
- **Official iGEM webpage**, which will remain accesible even after the competition has ended.
- **Team presentation**, which will be presented at the Giant Jamboree in front of all other teams.

This will expose your company to a **diverse audience**, ranging from students at the start of their careers to well-experienced academics from various universities, but also

from brand-new start-up businesses to reputable companies, active in disciplines such as applied medicine all the way to fundamental chemistry.

To reach out to an even **broader public**, we actively search for opportunities to promote our project. This can be in the form of a presentation at a scientific conference, a lecture at a high school, or an exhibition in a museum.

By sponsoring our project, your company will represent itself as one that cares about **solving critical real-world problems** whilst **supporting eager students** in their scientific endeavors.

Thank you for your time and consideration, we hope to welcome you to our team very soon! If you have any more questions, feel free to contact us at:

igem@science.leidenuniv.nl

