

Dear iGEM Team,

We are more than happy that you have participated in our postcard collaboration tradition! All of the postcards we have received from you are unique and beautiful in their own way. Thank you for all of your time and effort!

You will receive one postcard from each team, including your own. We have also included stickers from the iGEM Vilnius team that show interesting 3D models.

Thank you so much again for participating and designing those great postcards!

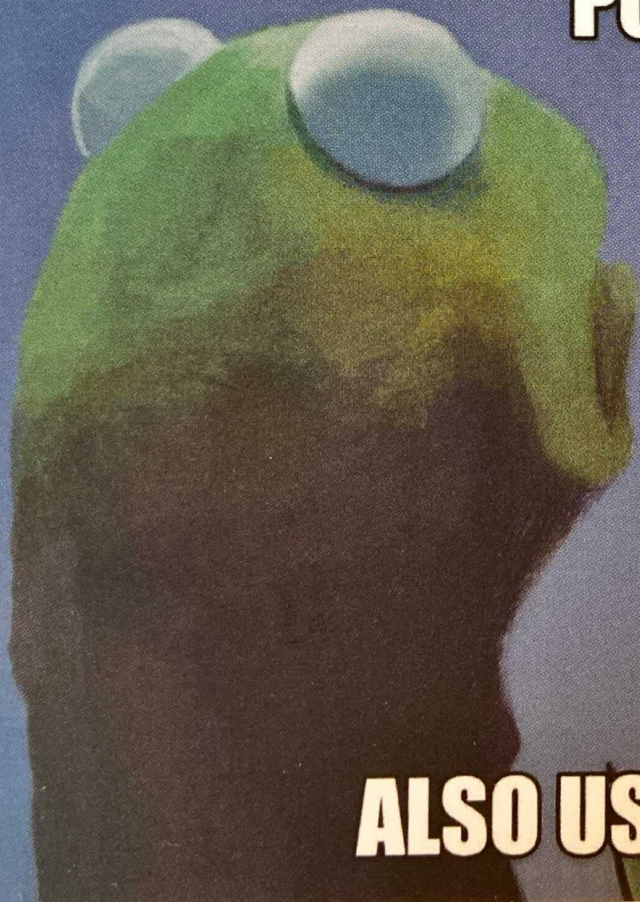
Hopefully, our teams will be able to meet at the Giant Jamboree next year.

Best wishes,

iGEM Team Düsseldorf

**US: WE SHOULD CAREFULLY DESIGN OUR
POSTCARD**

ALSO US: JUST MEME IT





C E R E X

Dear teams,

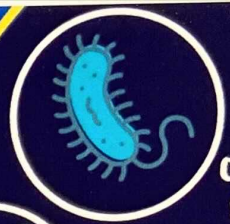
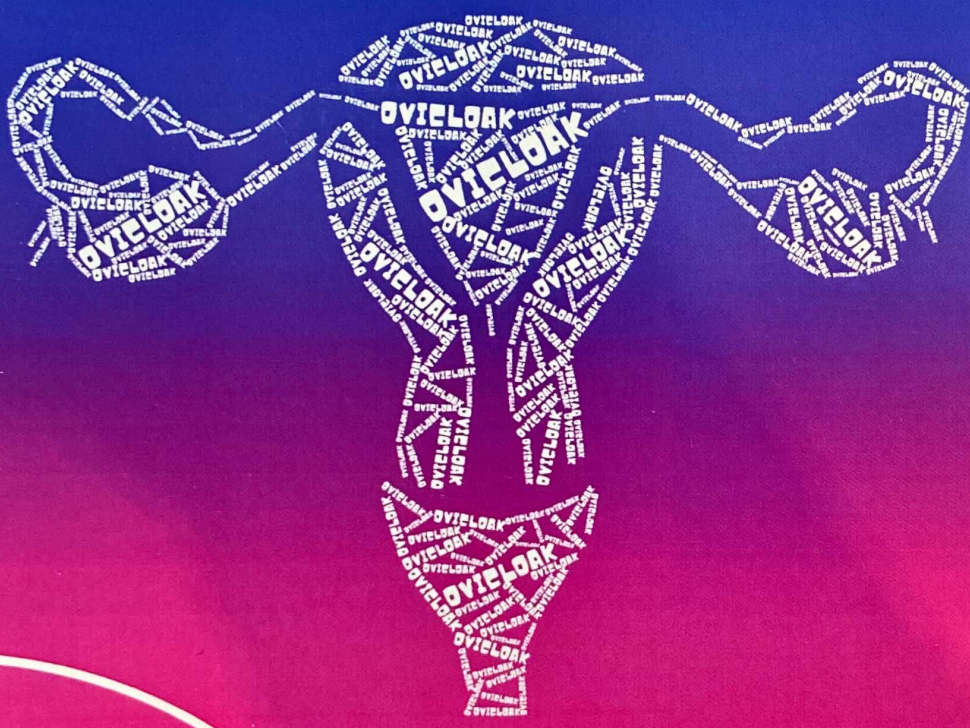
Thank you so much for participating in our collaboration tradition! We are really grateful and excited to be able to look at all of your creative designs and project descriptions. This is our postcard design and as you can see it features our project's mascot. Her name is Thalia and she is an *Arabidopsis thaliana* plant. *A. thaliana* plays an important part in our project since we're trying to detect different types of pathogens in it. With the help of aptamers we want to create a quick test that detects and differentiates between pathogens, so that farmers can initiate plant protective measures more quickly and efficiently to protect their crops. Our project also consists of a modelling part, in which we are trying to predict the spread of pathogens to create a forecast. Additionally, as a side project we are engineering an *A. thaliana*, to become a "traffic light plant", but what that means exactly will be a surprise, so stay tuned.

All the best from the members of iGEM Düsseldorf

www.igem.hhu.de/ | igem@hhu.de | Instagram: @igem_duesseldorf | Twitter: @iGEM_HHU

OviCloak

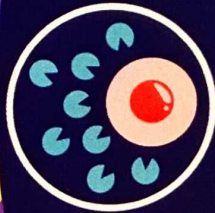
A Novel Female Contraceptive



Commensal is genetically modified



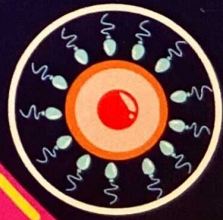
Produces protease



Protease acts on egg cell



Outer layer of egg cell hardens



No entry of sperm

EFFECTIVE CONTRACEPTION



Namaskar (Hello) iGEMers!

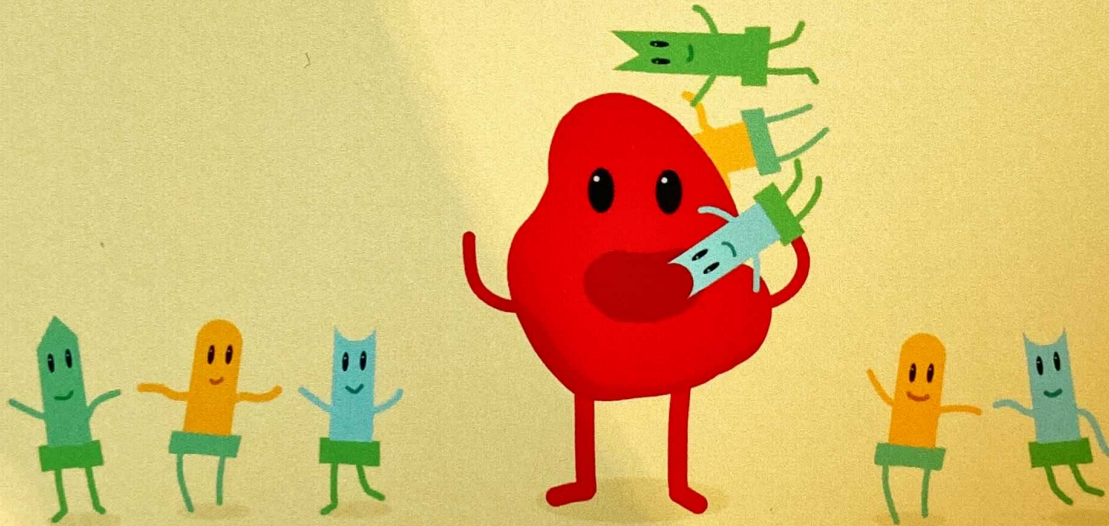
Being an integral part of our reproductive health, the lack of safe and sustainable contraceptives affects every individual.

Team IISER Tirupati is designing an ovum-specific, non-hormonal, reversible and long-term female contraceptive, OviCloak using the commensals of the fallopian tube, which has less to no side effects.



TdT.

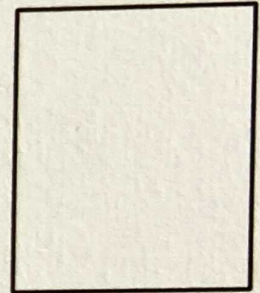
Nucleotides are on the menu



Stⁱragene

The TdT (Terminal deoxynucleotidyl Transferase) is an enzyme elongating ssDNA with given nucleotides. It creates our DNA data storage.

IGEM
AACHEN 2021

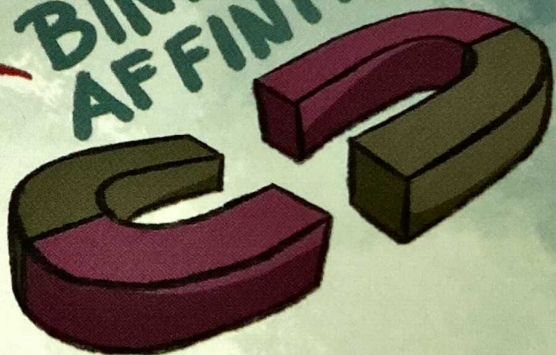


HEAT
RESISTANCE

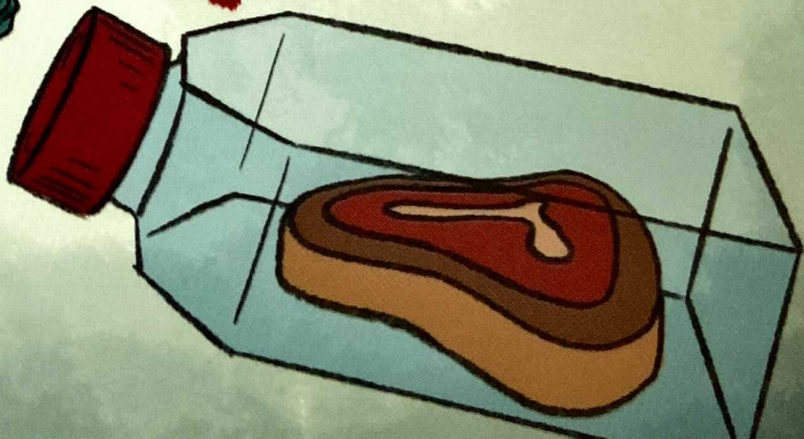


BETTER
FGF2

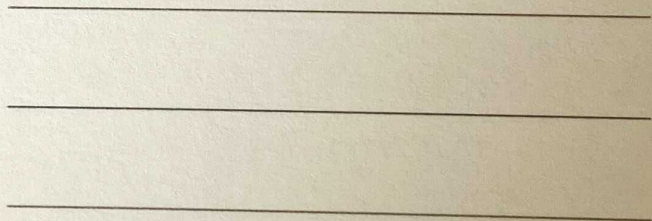
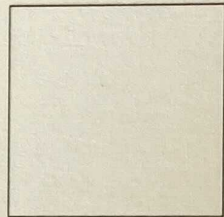
BINDING
AFFINITY



SOLUBILITY



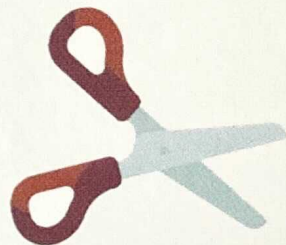
We aim to optimize FGF2, a growth factor used in serum-free media for cultivated meat by making it more heat resistant, soluble and increase the binding affinity.





SALSA

SMILE



UVA

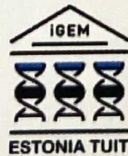
UVA

UVA

Pathogenic bacteria form biofilms on the teeth' surface and cause caries. Our product (spray, chewing gum, mouth wash, etc.) would contain protease that cleaves pathogenic bacteria from the teeth surface. We will genetically engineer protease to target the SALSA protein, which is used by bacteria to attach to the tooth surface. Cleaving SALSA protein is expected to remove bacteria even from areas difficult to reach, making regular oral hygiene easier and more efficient.

Children, people with orthodontic cases, or disabled individuals could use it instead of or in addition to classical tooth brushing. Also, everyone could use it while traveling and for additional care.

SALSA  SMILE - your shortcut to healthy teeth!



@igemestonia



Have you ever heard about

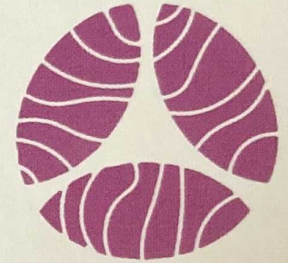
MINICELLS



Cellular division in prokaryotes is slightly different from eukaryotes. Since its objective is to generate two clones of the cell, the whole process is called binary fission

When the bacteria is splitting to formate the two cells, the FtsZ ring appears as an important structure which presents a tubulin-like FtsZ protein that has GTPase activity, enabling the contractile movement to promote the division

A minicell is formed when a mutation occurs in the genes that encode the bacterial Min system, which is responsible for the location of the site for cytokinesis. What happens is that the cell doesn't find the midpoint for partitioning and ends up with a normal cell, but also generates a smaller one without any chromosomal DNA...that means that it can't form daughter cells anymore, however is still metabolically active.



**iGEM Paris
Bettencourt**

This year, the iGEM Paris Bettencourt team will work with these amazing cells and explore a little bit their huge biosafety potential! We are aiming to create a minicell generating machine, so that the synthetic biology community can start discovering more about them without having to rely on complicated protocols!

If you want to find out more about what we'll be doing this summer, visit our instagram:
[@bettencourt.igem](https://www.instagram.com/bettencourt.igem)

Gotcha!
**Upper
Tract
Urothelial
Carcinoma**



iGEM CSMU_Taiwan



CSMU Taiwan

Hi! Our project is about using the techniques of FP-RCA to detect UTUC. "Gotcha" is the name of our kit!

How you can reach us

Instagram @igem_csmu

Facebook: iGEM CSMU Taiwan

iGEM NAWI Graz



a project about saving phos4us



Hello, we are the team iGEM NAWI Graz and our project is called Phos4us.

As you may know, Phosphorus is an essential element: it is part of the DNA, ATP, phospholipids and many other molecules.

Plants need free Phosphate to grow; however, because of the rapid infiltration of free Phosphate into the groundwater and the formation of salts and organic compounds, the percentage of free Phosphate in the soil is low.

To ensure the supply of nutrients, there is an increasing demand for Phosphate-containing fertilizers.

But there is a problem: Phosphorus is a finite resource.

Our strategy: we want to lower the percentage of Phosphate in fertilizers and fix free Phosphate in the rhizosphere for as long as possible - with a modified E.coli.



MUCHO BUBUR

Jean-Henry '21

RUBochum2021, the first iGEM-Team at Ruhr-University Bochum,
produces platypus yogurt.

Instagram: igem.bochum

Cover design by Lea Hellwig

Wouldn't it be perfect if in the future milk proteins could be produced without exploiting animals? This is exactly the question we have been working on, and so we want to produce vegan milk products that are identical in structure to their animal equivalents. The goal is to use microbes to produce yogurt with different flavors, such as vanilla. But the genetic basis for these proteins comes not only from the cow but also from the platypus, one of the most fascinating milk-producing animals there is.

Greetings From...

REARLAND





iGEM Guelph

564 Roselawn Ave.
M5N1K4 Toronto ON, Canada
Sofia Finley
igem@uoguelph.ca

The university of Guelph is a school that was founded on agriculture, and our iGEM team continues that tradition. The aim of our project is to develop food sources that are better able to survive the harsh and ever-changing environmental stresses caused by climate change. In order to reach this goal, we are producing a proof-of-concept project using the organism *Arabidopsis thaliana*, a small flowering plant that is commonly used as a model organism in plant biology studies. We use CRISPR systems in conjunction with the inactive dCas9 protein to affect the expression of genes responsible for tolerating droughts, extreme cold, and extreme heat. We also aim to place our CRISPR system under the control of an ethanol-inducible promoter, in order to provide the grower with control over our system, for use only when they feel it is needed.

If successful, our technology would not only permit human-directed alteration of gene expression to aid plants in surviving difficult climatic conditions, but also promise a wide range of applications throughout the agriculture and horticulture industries. This project seeks to make improvements in the food and agriculture industry on a local, national, and global level.



OIL TOGETHER PAINTING





We biorremediate the waste cooking oil (WCO) to generate sustainable paint, involving the new generations in the adoption of a circular economy model

Ensuring biosafety, being toxic-free and non-polluting

Entrepreneurship + Science + Art = Personal growth to actively contribute to improve the world

ATG X iGEM

@atg_igem

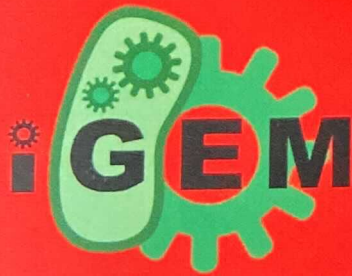
atg.igem.uma@gmail.com

www.atgigem.com

D O P L C K

**A Double Plasmid system
for enhanced biosafety**

– Leiden 2021 –





Team iGEM Leiden 2021 hopes that you have a great summer!

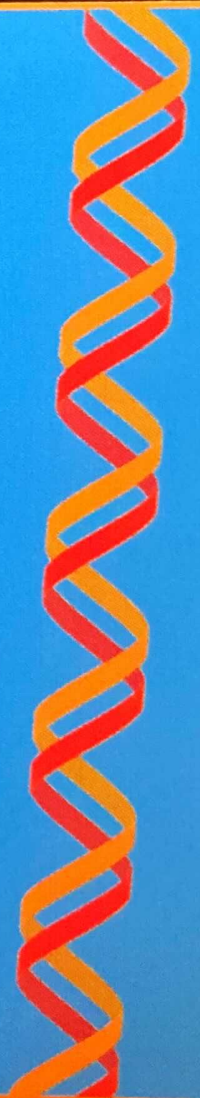
We are stoked to present: DOPL Lock, or Double Plasmid Lock.

Our project is based on two plasmids which share two toxin/antitoxin

systems. This decreases the chances of horizontal gene transfer of

the plasmids, and the genes that they carry. In this way, we hope to

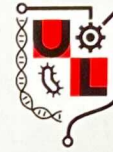
make a robust and safe biocontainment system.





STICKY SITUATIONS DON'T SCARE US

Maple syrup may be sticky, but we're still here to give it some love!



Team iGEM ULaval 2021

Maple syrup is very sweet. It's produced mostly in Canada, by boiling the sweet spring sap of a sugar maple.

Did you know?

You can harvest this sap best when the it is -4 to -6 °C in the night, and 2 to 7 °C in the day.

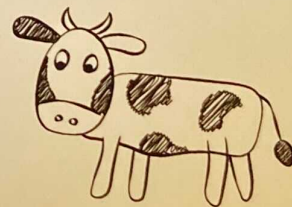
cattlekust
WAGENINGEN 2021

ammonia

N_2

CO_2

methane



Dear iGEM team,

Nice to meet you! We are Cattlelyst, the Wageningen team

We aim to convert methane and ammonia to CO₂ and N₂, which are emissions from cows

Cows are everywhere around the world, just like iGEM teams!

Cows are social animals, somewhat resembling us it seems

We like to get to know many iGEM teams, which this card allows!

Therefore, we are happy for this card to find you and yours to find us
And if we meet in the future again, it will be something for us to discuss (:



Wageningen team 2021 | Cattlelyst | igem@wur.nl



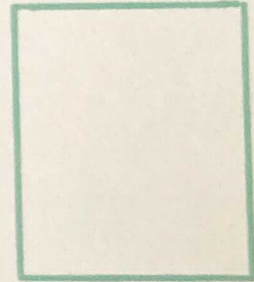
CyaSalt

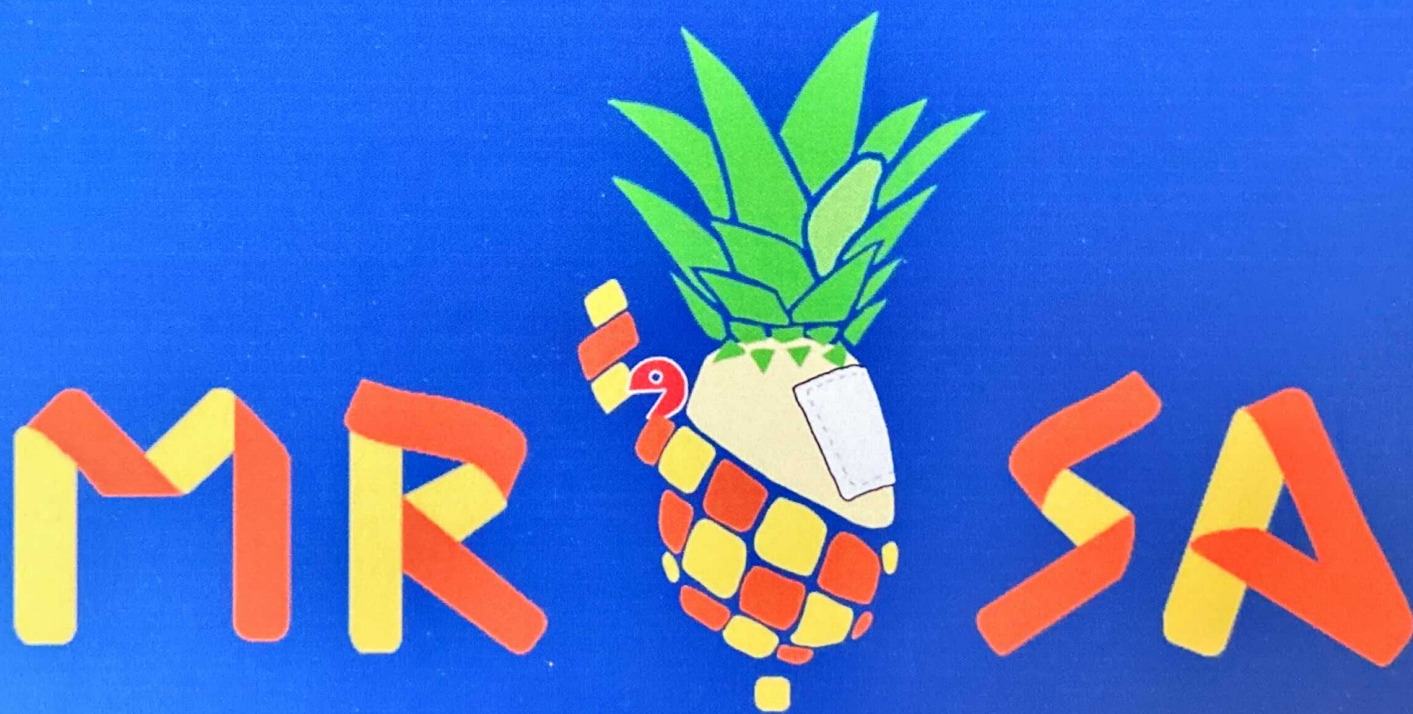
Biodesalination



CyaSalt

Although our planet provides us with an abundance of water, we can only utilize roughly 2,7% of it as drinking water. Many people suffer from water shortage and it is bound to get worse if nothing changes. Our solution is to exploit the photosynthetic and halophilic properties of the cyanobacterium *Synechocystis* sp. PCC 6803 to desalinate seawater. We will genetically modify the bacteria to express inward-directed chloride- and sodium pumps in a light-dependent manner. Furthermore, we want to present an easy solution for separating cyanobacteria from the desalinated water. To achieve this, we will modify them to express a carbohydrate-binding domain on the outer membrane. This will allow easy separation by filtering the water through a cellulose membrane leading to covalent binding of the bacteria to the cellulose. This ensures that no modified microorganism is released in the environment while still being able to serve its purpose. Ultimately, we aim to make our approach work on an industrial scale, which would be more sustainable and save a lot of money compared to current desalination methods, as they are highly energy and resource consuming. This would be beneficial for the water that is needed for humans to survive and supply a good source for agricultural and plumbing needs.





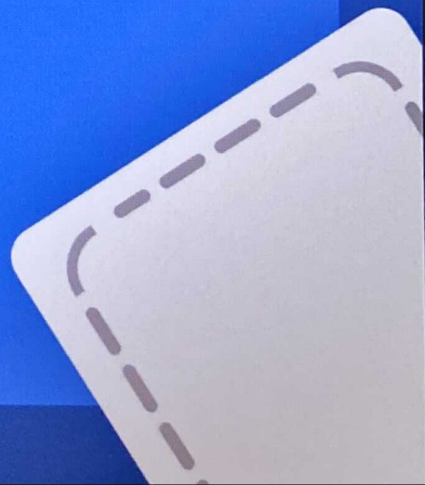
CCU Taiwan

Fight MRSA With MR.SA

Pineapple is one of the local specialty in Minhsiung, Chiayi, Taiwan - where CCU is located.

MR. Superbug Assassin (MR. SA) from CCU_Taiwan is a multidisciplinary team consists of 25 students from 7 departments.

Our project uses TAT/ Penetratin to compensate the defects of AMPs in curing superbugs infection.



SuperBacillus
is here to save the day!

MASARYKOVA UNIVERZITA



In a world where **toxic cyanobacteria** plagued the lives of innocent animals, plants and people, there seemed to be no hope. But they have a weakness. They are dependent on phosphorus. And here is where our **hero *Bacillus subtilis*** steps in!

We designed this bacterium **to accumulate phosphates in bacterial microcompartments (BMCs)**. The walls of BMCs allows small phosphates to pass through. But inside, phosphates are polymerized and therefore trapped. The expression of BMCs is regulated by phosphate concentration-dependent **signalling path called PHO**. This protects our hero from unnecessary exhaustion. Finally, accumulated **polyphosphates can be recycled** in fertilizers!

And that is how our hero *Bacillus subtilis* could **change the world for the better!**



iGEM 2021 Lab Table

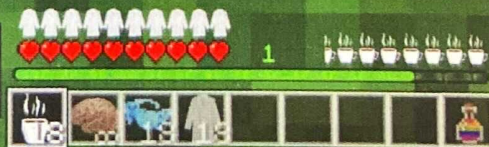


Combine

Inventory



iGEM NU Kazakhstan 2021 joined the game
<iGEM NU Kazakhstan 2021> Hi there



Remi Du Et!

iGEM NU Kazakhstan 2021
wishes you all the best

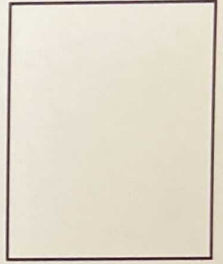


New task!

Make some new friends



igem@nu.edu.kz



ASTR



YEAST



Project Description

iGEM Concordia is working together to bioengineer a strain of yeast that can manufacture nutrients and flavored molecules in microgravity conditions. For this purpose, we are designing a bioreactor to culture our modified yeast strain in a controlled environment. A sustainable source of nutrition in space will reduce the costs associated with supplies and is one of the first steps for long-term space travel. AstroYeast will offer a reliable chassis for the production of useful molecules in space.



GEM Mühly 2021 ~~Culture Project~~
Open Plast

Dear fellow scientists, iGEMers and other humans,

Climate change is threatening many of the crops we rely on. To ensure stable food supply, engineered crops will play a major role in our future agriculture, but crop development currently takes about a decade. In our project OpenPlast, we develop cell free systems (CFS) from chloroplasts of different plants, including various crops. Showing that they can be employed as prototyping platforms to characterize genetic constructs, these systems drastically reduce testing times.

We use a machine learning guided approach to optimize reaction mixture composition and create a collection of GoldenGate based chloroplast parts to be characterized in our CFS. This toolbox includes regulatory elements for chloroplasts of plants so far heavily underrepresented in the registry.

After successful chloroplast transformation, we want to show that data generated in our systems is comparable to in vivo data, proving that our systems can efficiently be used as prototyping platforms for plant SynBio.

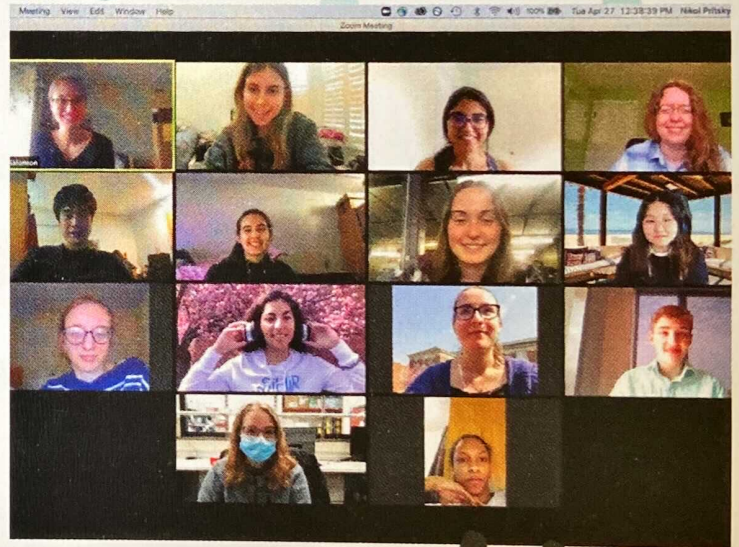
We are OpenPlast and we aim to revolutionize plant engineering through our Cell-Free prototyping platform from chloroplasts.

We hope to encourage other scientists to dive more into plant synthetic biology and help shape a greener future!
Let's move science forward!

Best,
Your iGEM Team Marburg 2021



GREETINGS FROM



Rochester, NY



CONTACT US



UOFR.IGEM@GMAIL.COM



@UR.IGEM.2021

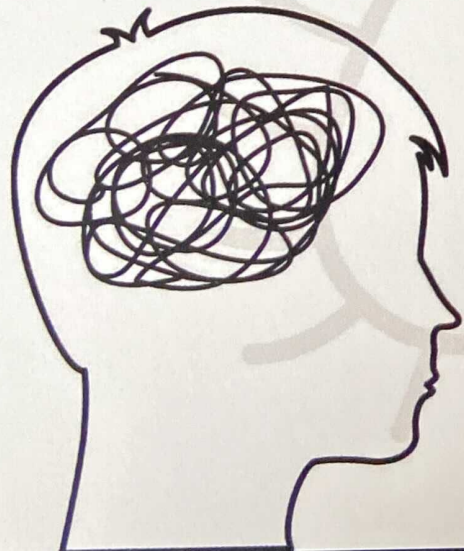


University of Rochester iGem 2021

“Continuous monitoring for sepsis biochemical markers in sweat in a noninvasive way--
Rochester Bio-Spire”

SDU

Treating depression with
psilocybin produced in *E. coli*

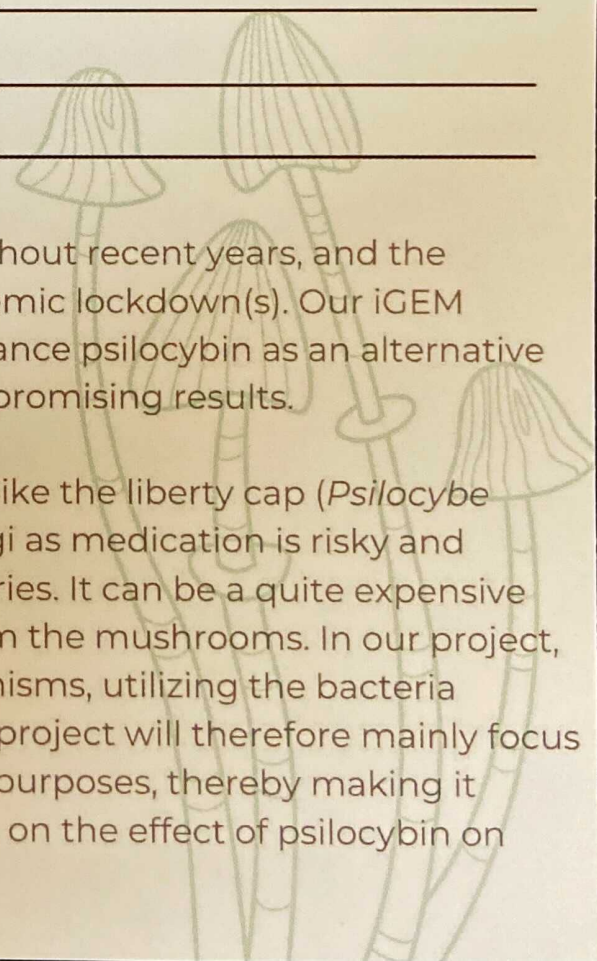


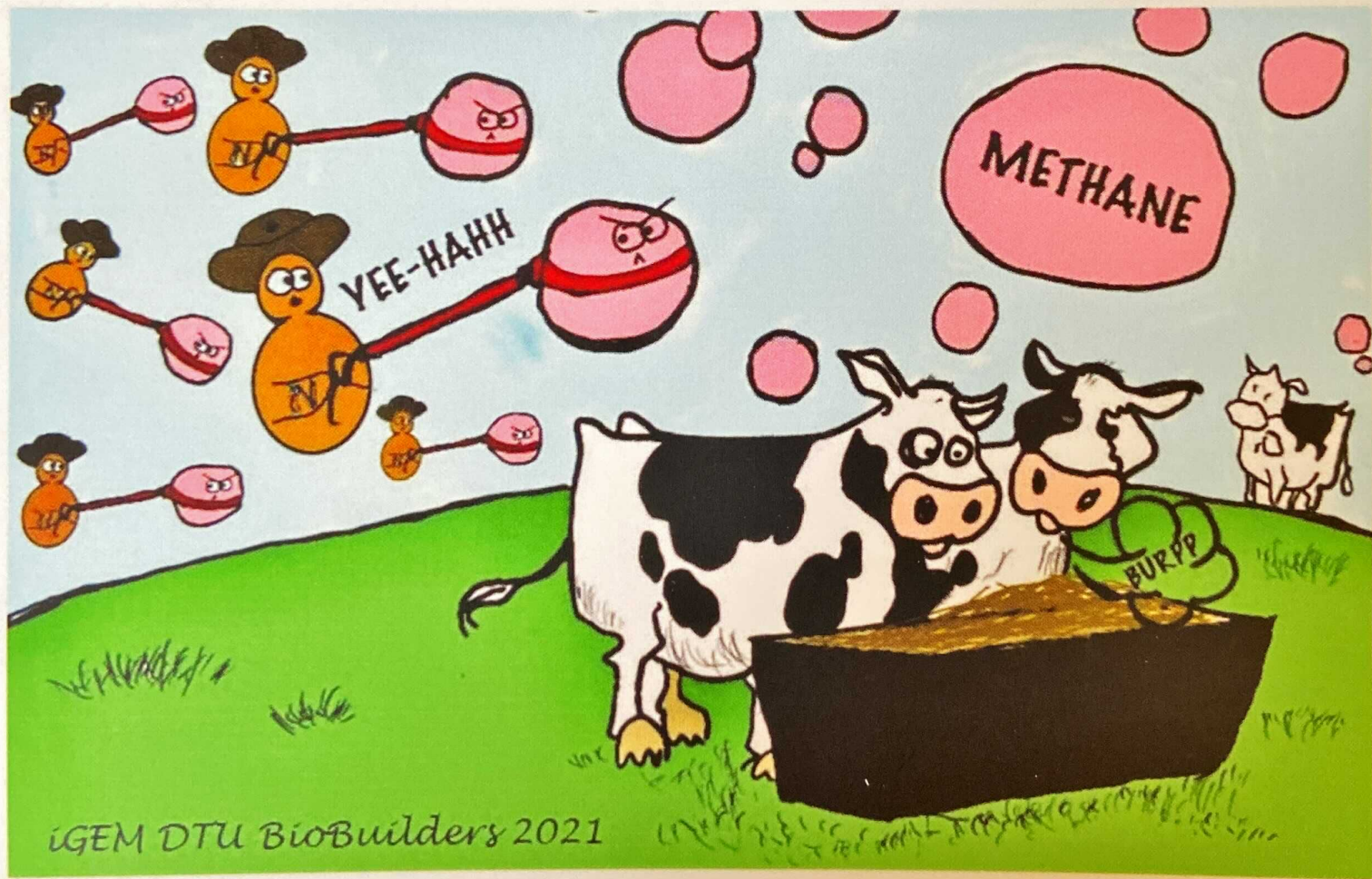
iGEM

~~The University of Southern Denmark
Campusvej 55, 5230 Odense M
Denmark, Europe~~

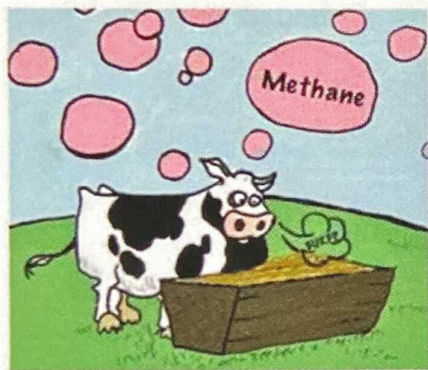
New cases of depression have steadily increased throughout recent years, and the situation has only worsened during the COVID-19 pandemic lockdown(s). Our iGEM project will focus on synthesizing the psychedelic substance psilocybin as an alternative treatment to depression, as recent studies have shown promising results.

Psilocybin is produced naturally in certain mushrooms, like the liberty cap (*Psilocybe Semilanceata*). However, administrating the whole fungi as medication is risky and difficult to control, because the amount of psilocybin varies. It can be a quite expensive and difficult process to extract and purify psilocybin from the mushrooms. In our project, we are planning to use biosynthetic production mechanisms, utilizing the bacteria *Escherichia coli* as a chassis, to produce psilocybin. Our project will therefore mainly focus on synthesizing psilocybin more efficiently for research purposes, thereby making it cheaper and more available for scientists to do research on the effect of psilocybin on mental health as treatment.





iGEM DTU BioBuilders 2021



Methane is a potent greenhouse gas that contributes to global warming, with meat production being responsible for a large fraction of methane emissions.



*On behalf of
DTU BioBuilders*

DTU BioBuilders are working on methane assimilation in yeast, while producing hemoglobin as the protein product to counteract the methane emissions.



LET THE PHEAST BEGIN!!



2021 iGEM_Korea_HS

We want to design cell-penetrating peptides that specifically target cancer cells for cancer treatment.

TEAM KOREA HS

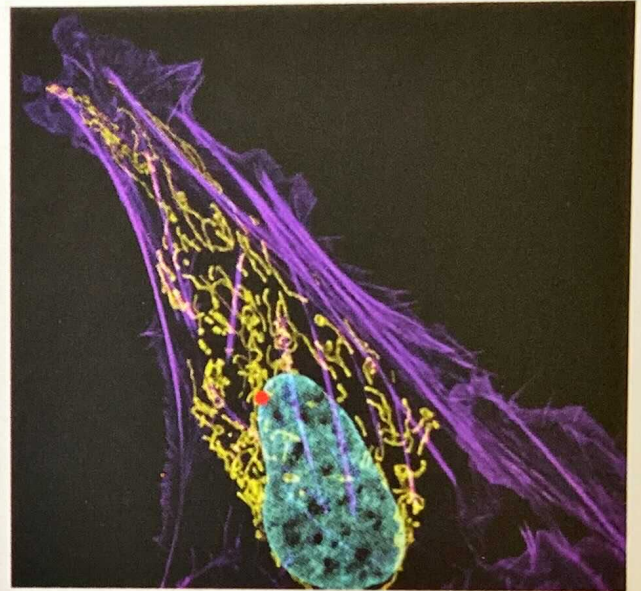


Our project aims to design a cancer-specific cell-penetrating peptide for the efficient delivery of siRNA into cancer cells.

Let's collaborate

e-mail: igem.koreahs@gmail.com

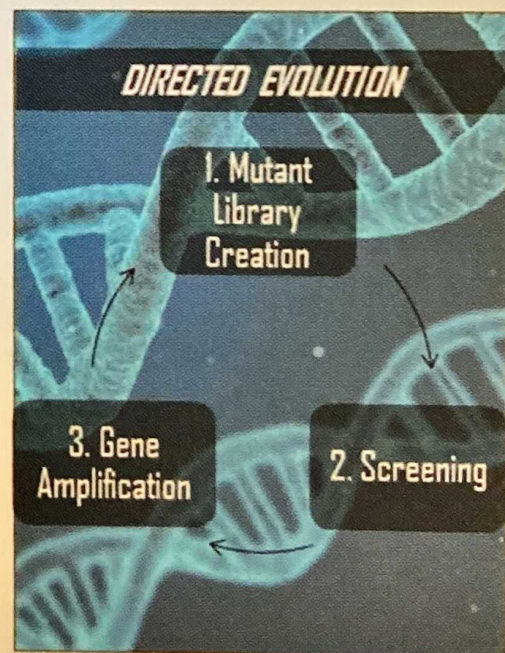
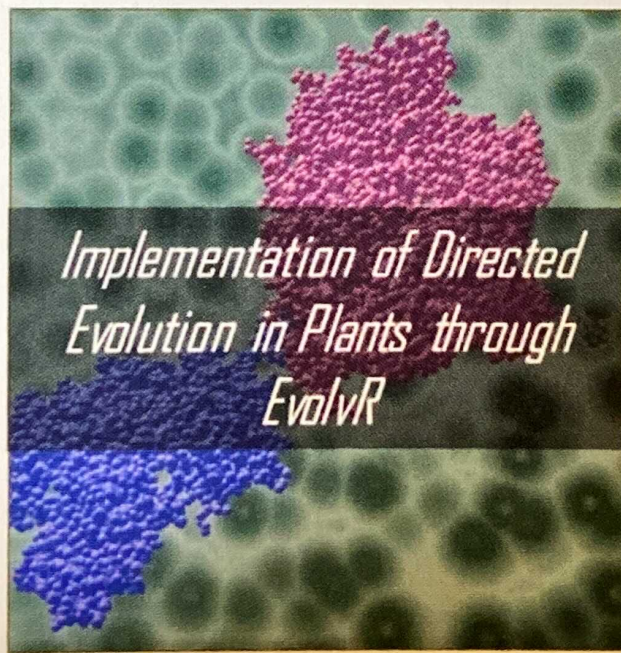
Instagram: [@igem2021_koreahs](https://www.instagram.com/igem2021_koreahs)



Specific aims

- I. Attach fluorescence to CPP to ensure good application in scanner cells
- II. Put siRNA into DNA --> Find out if cell death induces in cancer cells
- III. Verification of cell death in cancer cells

BLADEN



Team iGEM KU Leuven 2021 presents: BLADEN

BLADEN stands for Botanical Accelerated Directed Evolution

Our team will be working on implementing directed evolution in plant cells to improve the performance of commercially important proteins that they produce. We will use a newly developed technique called EvolvR which is based on the more widely known Crispr mechanism.

Follow @kuleuvenigem for more updates on our work!



KU LEUVEN



THRACE
iGEM

We are a team of ambitious undergraduate and postgraduate students as well as doctoral candidates of the Democritus University of Thrace and the National and Kapodistrian University of Athens, Greece.

The aim of our project **Salica** is the construction of an innovative and easy-to-use modular device for rapid prognosis of diseases, such as colon cancer or others. This tool will detect biological indicators in the most accessible biological material: saliva.

Impact: Early prognosis equals life expectancy extension!





iGEM

2021

Acibadem Istanbul

ACIBADEM_ISTANBUL

REP Diagnostics

Rapid Easy Point of Care Diagnostics by Combining Antigen Tests and Nucleic Acid Amplification

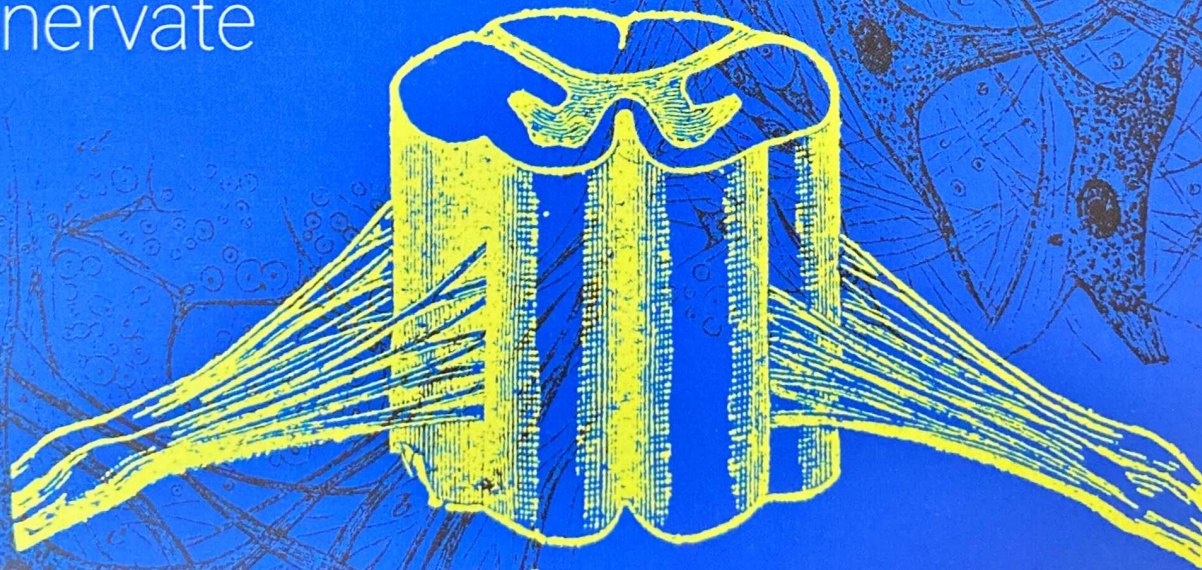


Istanbul, Turkey

Renervate Renervate

Renervate

Renervate



KCL IGEM 2021

KCL IGEM 2021

Therapeutics Therapeutics

Therapeutics Therapeutics

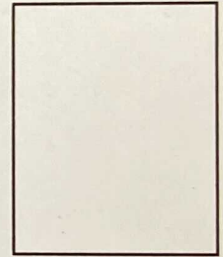


Hello!

We are Renervate Therapeutics, a phase II iGEM team from King's College London. Our project is focused on developing a novel treatment for spinal cord injury (SCI) through the design and modelling of a 3D-bioprinted polycaprolactone (PCL)-based scaffold, which is coated by a novel mussel-foot protein (MFP)-based bioadhesive.

If you would like to learn more about our project, make sure to follow us on our social media!

Twitter: KCL_iGEM21 | LinkedIn: King's College London iGEM



MOO

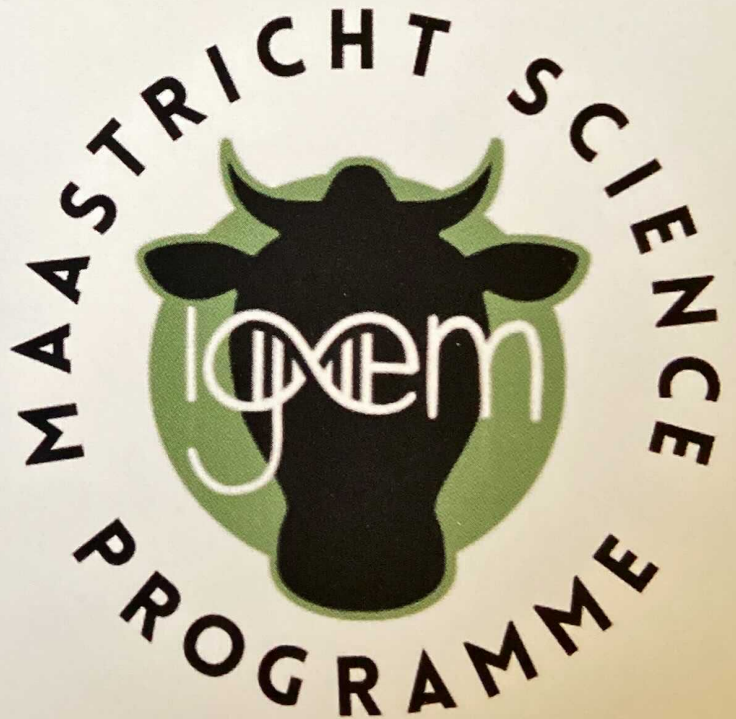
- to methane



'Synthetic biology to clean up the fart? This genetic solution is a true piece of art.' or how about this one: 'Our genetic constructions to redesign rumen, is a very cool project that in the meantime safes human.'

MethaGone

msh-
igem@maastrichtuniversity.nl







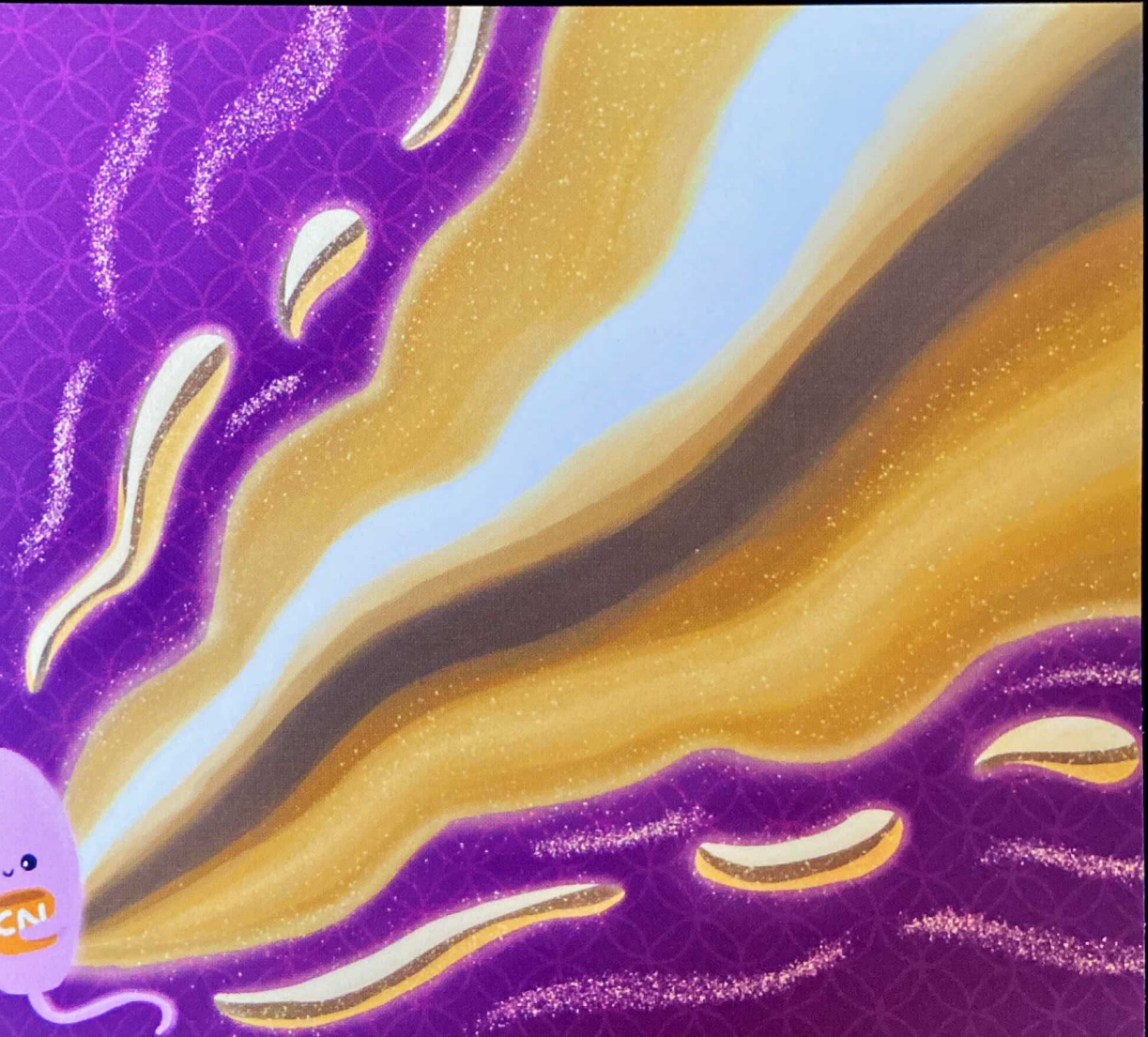
Cellulophile

The project involves cellulase enzymes used in wastewater treatment plants (which are cellulases taken from microscopic fungi called *Trichoderma reesei*) will be developed to enhance the efficiency of paper waste degradation.

Team Saint Joseph




Dr Esat Işık Cad.
No:62 34710
Kadıköy
Istanbul, Turkey
igem@sj.k12.tr

gotta catch
'em all!





The AUVIOLA project uses bacteria called *Chromobacterium violaceum* to take over the gold bioleaching process. Not only to improve the yield of gold bioleaching by optimally producing Hydrogen cyanide, but we are also aimed to prevent and minimize the negative impact of Hydrogen cyanide leak in the environment.

 @igem_ugm  @igem_ugm  igemugm@gmail.com



UGM UGM

Hello!

We are UGM iGEM Team 2021 from Indonesia. We are so excited to introduce our project called Auviola. Please follow our social media account to stay in touch with us! Cheers :)

**Universitas Gadjah
Mada**

55281 Yogyakarta

MER-NITE TO THE RESCUE

VIEQUES, PR



IGEM RUM UPRM



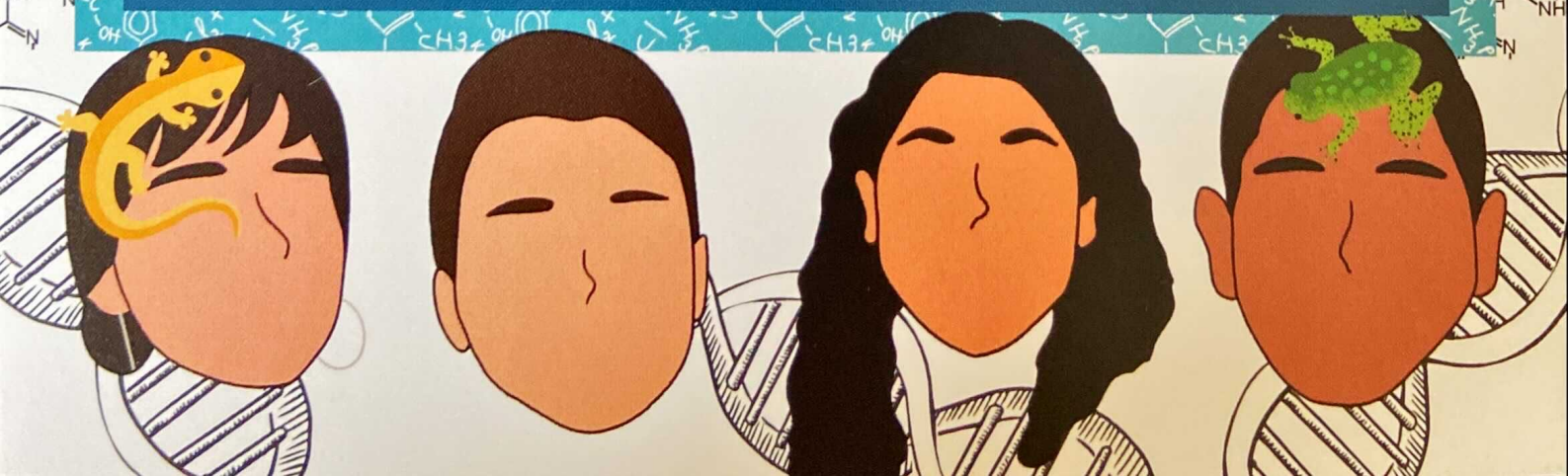
MER-NITE TO THE RESCUE

University of Puerto Rico -
Mayagüez Campus
PO Box 1769
Moca, PR 00676

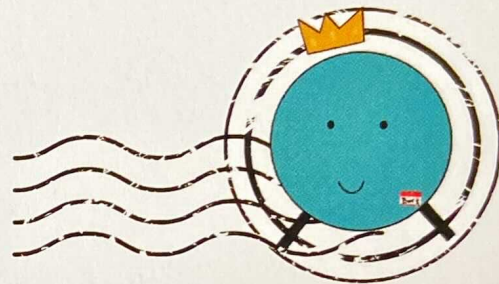
Vieques, an island-municipality of Puerto Rico, was utilized for military practices for over 60 years. The materials and explosives used caused an increase in health risk and devastating effects on the biodiversity. Currently, there are clean up initiatives that are too expensive and time-consuming. Therefore, our project, "Mer-nite to the Rescue", aims to create a genetic circuit capable of fulfilling the biodegradation of RDX, an explosive found in many of its water sources, specially in the Anones Lagoon located in Vieques, Puerto Rico.



iGEM Raiders
33.584443 , -101.870631



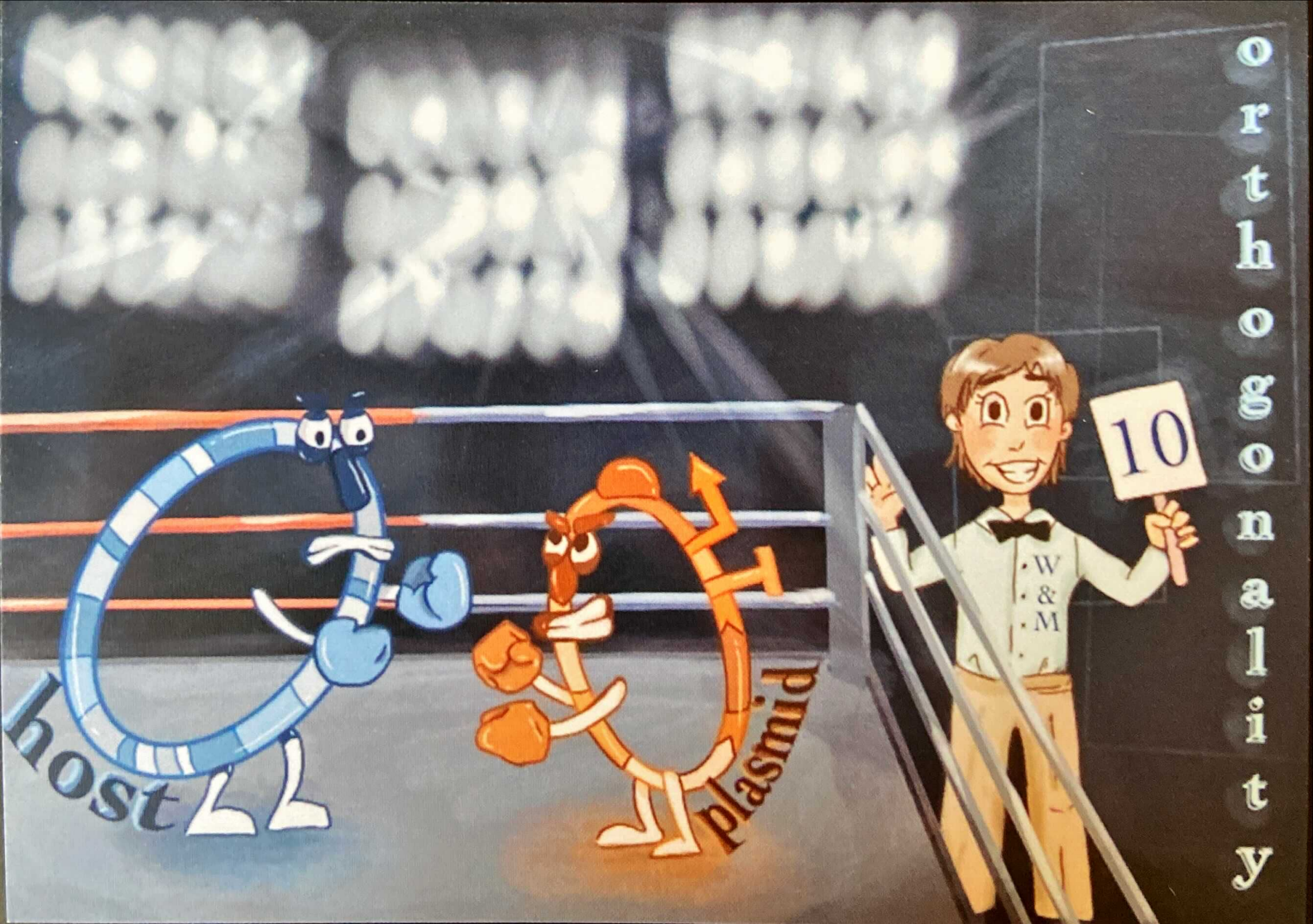
HEY Y'ALL! GREETINGS
FROM **LUBBOCK, TX!**
WE'RE A TEAM OF **EIGHT**
MEMBERS WORKING ON
THE **AMPHIBIAN**
PANDEMIC
CHYTRIDIOMYCOSIS.



WE'RE VERY EXCITED TO
CHANGE THE WORLD
ALONG YOUR SIDE IN THIS
AMAZING COMPETITION,
BEST OF THE LUCK!



[Handwritten signatures]
A collection of eight handwritten signatures in black ink, arranged in a cluster. The signatures are stylized and difficult to read, but some appear to include names like 'Sylvia', 'Amie', and 'Lynn'.



o
r
t
h
o
g
o
n
a
l
i
t
y

host

plasmid

10

W
&
M

William and Mary



**WILLIAM
AND
MARY
IGEM**

Project Description

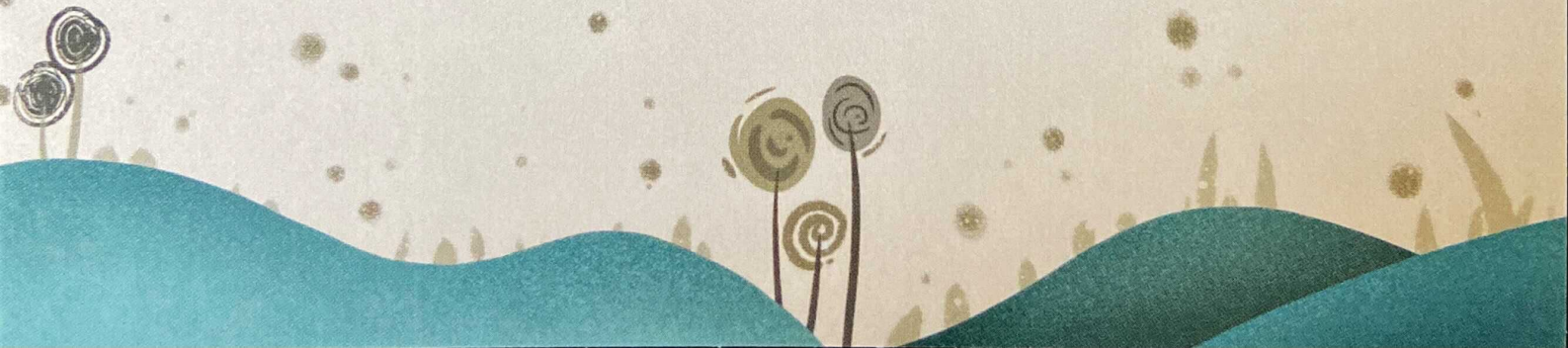
Orthogonality is a measure of unwanted interactions between a circuit and other cellular processes and constitutes an essential pillar of synthetic biology. Although required for circuit design safety, currently there is no standardized method for assessing orthogonality more readily available. The 2021 William and Mary iGEM team aims to create a model to quantify orthogonality and provide a metric to measure orthogonality. The model will use circuit-specific inputs from individual circuits to produce a circuit-specific orthogonality score. By using this model, future synthetic biologists can optimize their circuit's orthogonality and build not only more efficient circuits, but also safer ones. Finally, we will apply this model to the development of a diagnostic circuit that will help other teams to utilize our model and determine the orthogonality of their circuits.

Email: igem@wm.edu | Instagram: [@igem_wm](https://www.instagram.com/igem_wm) | TikTok: [@igem_wm](https://www.tiktok.com/@igem_wm)

IISER TVM

iGEM

GUTEN TAG!



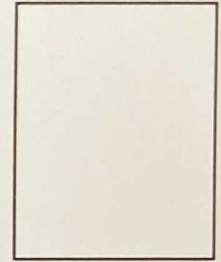


Greetings from team iGEM IISER Thiruvananthapuram.

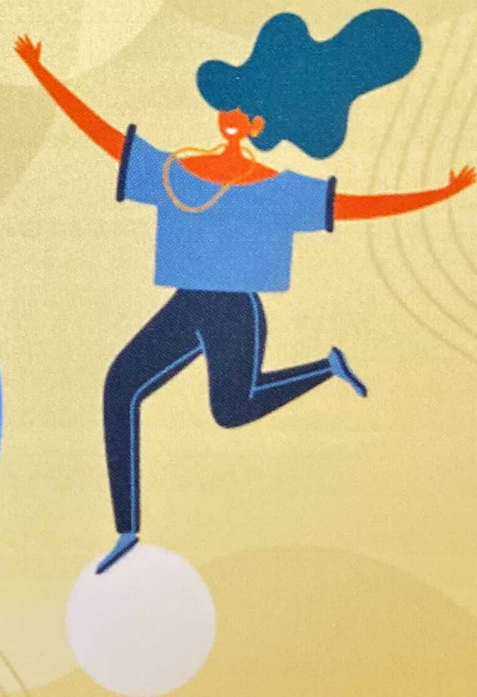
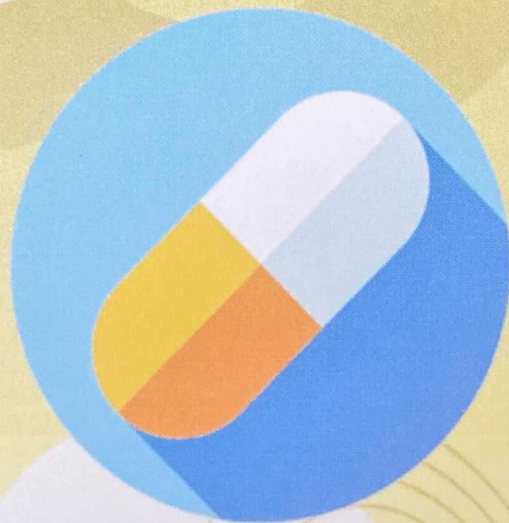
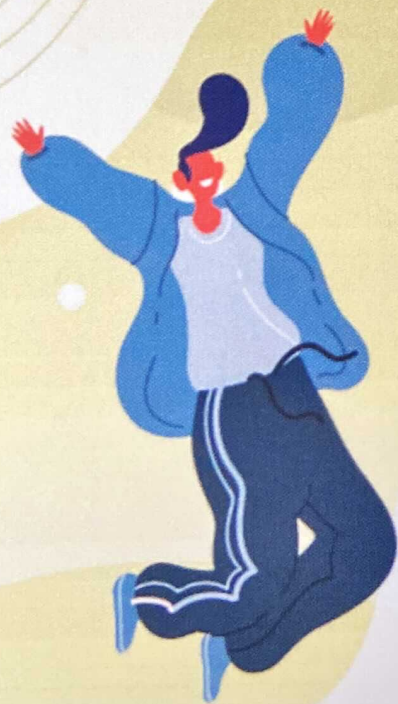
Our team from *Kerala, India* is developing broad-spectrum, protein-engineered therapeutics against a range of invasive fungal infections. Our design allows the application of the same principles to any other scenario where fungal contamination is an issue.

We are pretty sure you are doing cool stuff as well. Can't wait to see y'all at the Jamboree!

igem@iisertvm.ac.in



AMALTHEA 



IGGA
THESSALY

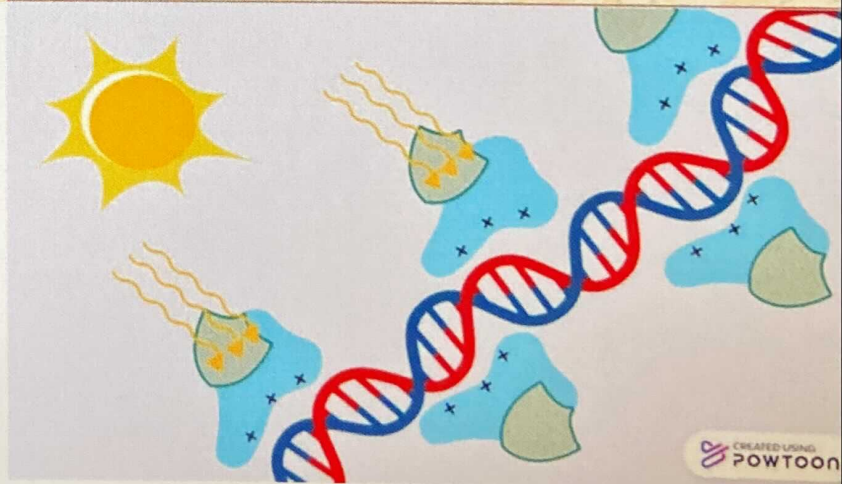
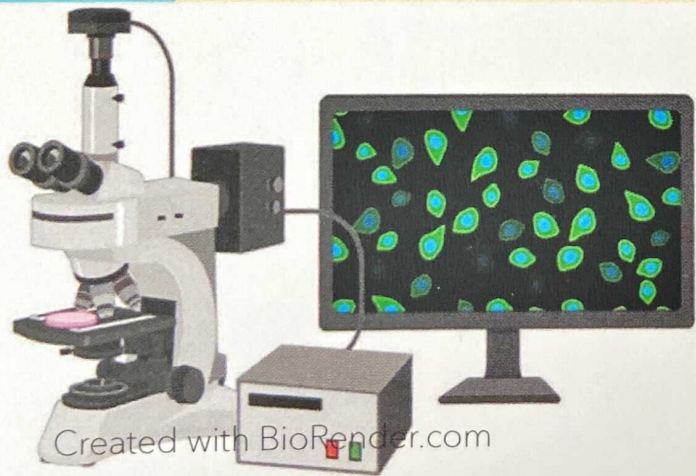
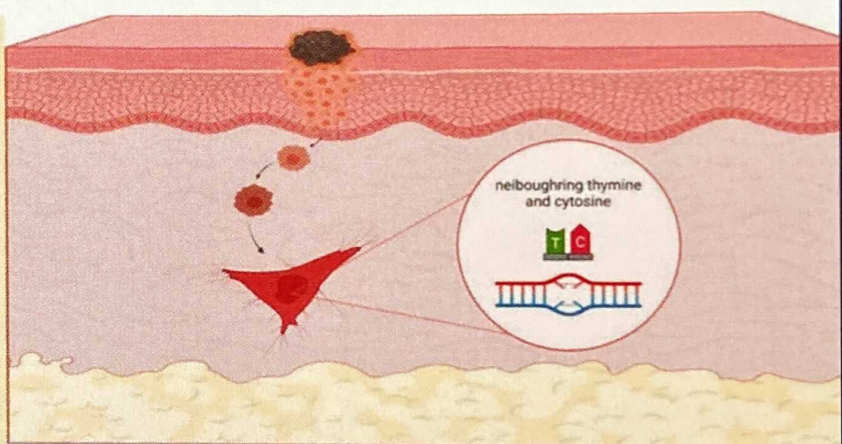
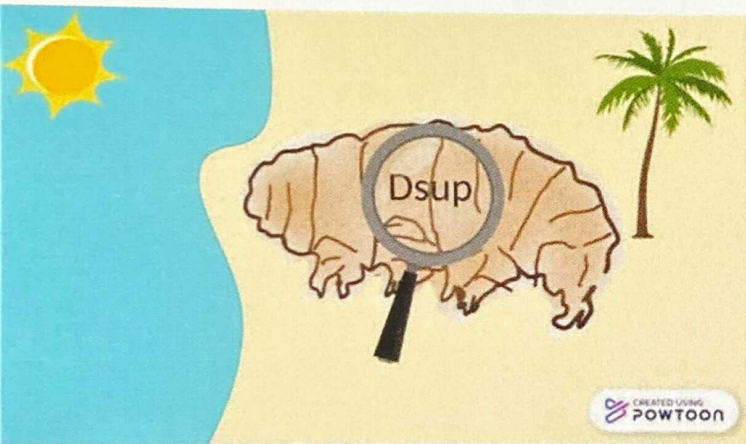
"We are team iGEM Thessaly 2021 and this year we continue our last year's project, AMALTHEA, as we expand from the detection of IBD's to the more general evaluation of the gut microbiome.

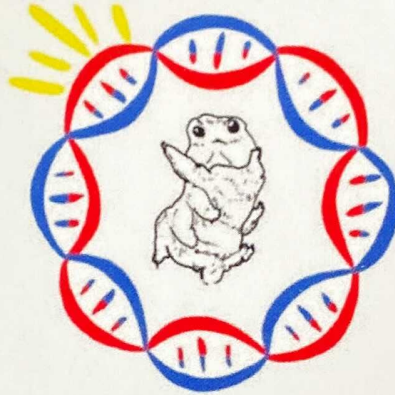
In order to detect the gut dysbiosis, we've designed a capsule that sends data to the patients smartphone, utilising a genetic circuit that we created in the lab that acts as a NOT gate for SCFA's - one of the most abundant metabolites of the gut flora, acting as an ideal biomarker.

This whole system, accompanied by a probiotic supplement that we are designing, could potentially act as a solution that many people are looking for a better well-being.

A solution that is both more convenient, as well as non-invasive."





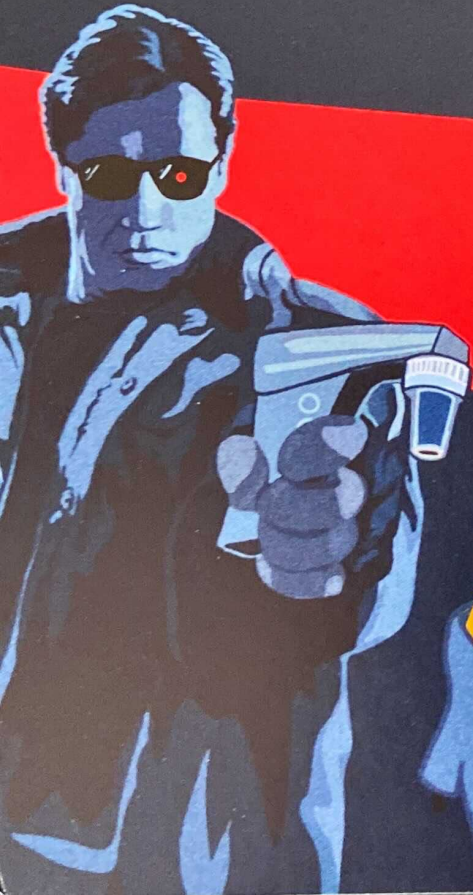
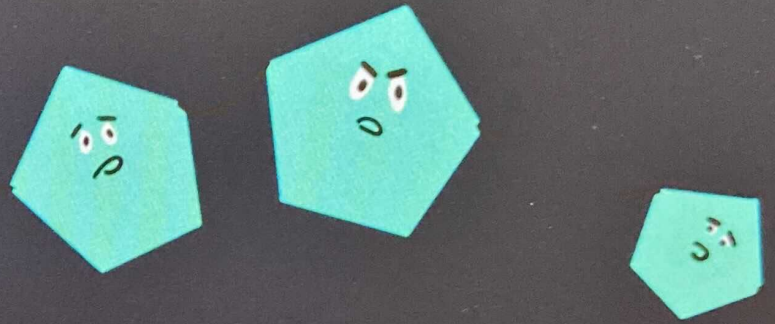


TardiSun - Innovative UV protection

First of all the iGEM Team of the University of Stuttgart greets you all and wishes you a lovely day.

This years inspiration for our project is the Dsup protein from the tardigrades. With this protein we want to create a efficient cell and surface protectant. We're looking forward to hear about all the other interesting projects!

Yours sincerely,
iGEM Team Stuttgart



HASTA LA
VISTA,
FRUCTAÑS!

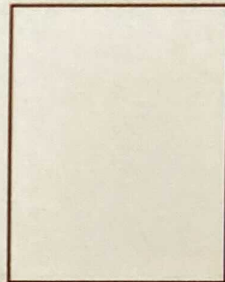


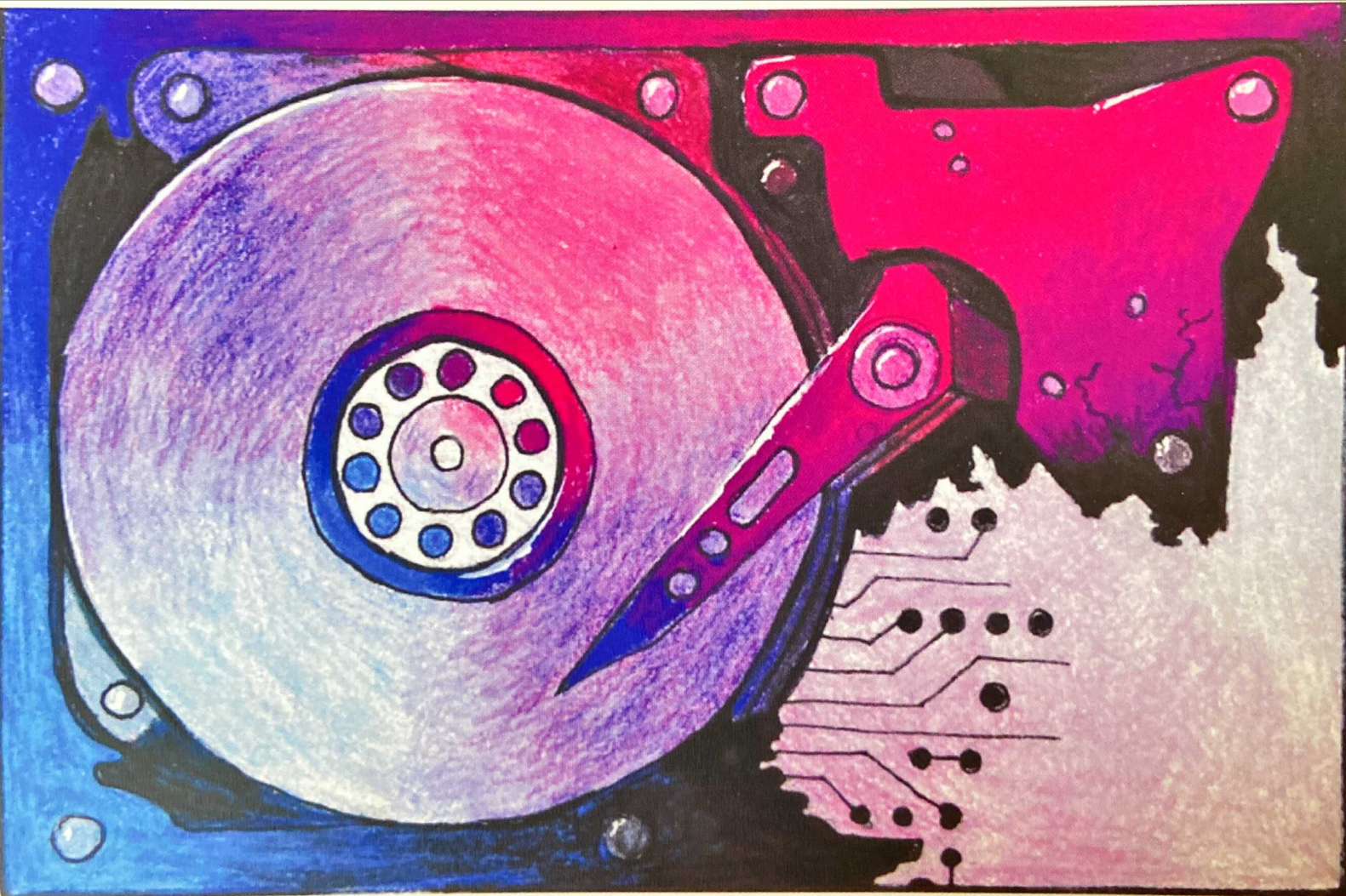


Scientific Greetings from the iGEM Team Vienna 2021

PS: TAKE CARE OF YOUR BELLIES ;)

Department of Biotechnology MUG1 Muthgasse 18 | 1190 Vienna Austria |
igem.vienna2021@boku.ac.at







iGEM Calgary

Hello from Canada! We are iGEM Calgary and we are proud to introduce our project NEOCYCLE. This project is focused on recycling rare earth elements (REEs) from electronic waste. We strive to develop a novel approach to REE extraction, separation, and measurement that is economically viable and environmentally friendly. Using bioleaching, we plan to extract REEs from e-waste. After, REEs will be separated by using a highly selective REE-binding protein, lanmodulin. We also plan on developing an REE ion measurement system to be used for solutions. We wish you the best of luck on your project.

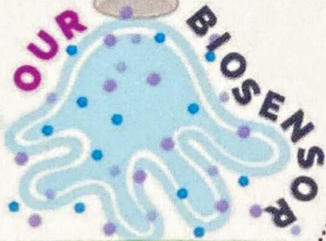




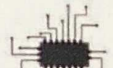
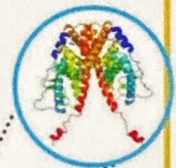
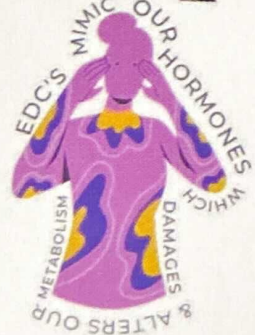
BUT HOW?
ENDOCRINE-DISRUPTING CHEMICALS



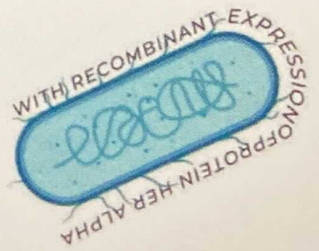
EDC'S affect from the **MICRO** to the **MACRO**



IGEM TEC CEM DISRUPTING DISRUPTORS



- TO QUANTIFY THE AMOUNT OF EDC'S IN DRINKING WATER
- TO IDENTIFY HEALTH RISKS
- TO GUARANTEE A SAFE SOURCE OF WATER FOR OUR COMMUNITY



Disrupting Disruptors



The Mexican team 'iGEM TEC CEM' here,

we are fourteen science lovers and three doctors who enjoy a wide range of stuff, but that have one thing in common... We are very happy with these experiences. We are really excited to know all of you and of your interesting projects. We are sure you are working on something phenomenal.

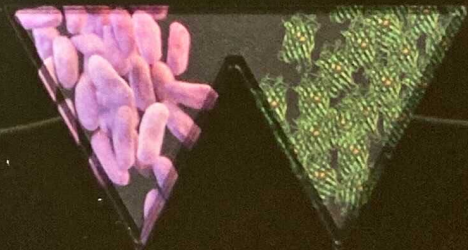
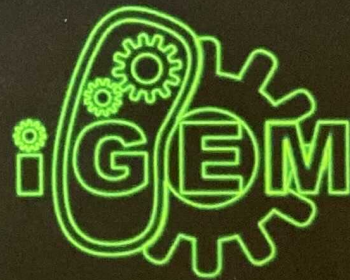
Talking about our project, we are focusing on the Endocrine Disruptors, because they are so small, but their effects are so big! They come from plastic bottles, bags, clothes, pesticides, and glues, among other sources. Humans (and animals) in touch with these pollutants can get affected. They mimic our hormones and disrupt the activities that depend on hormones, which leads to metabolic, neuronal, and sexual damages. For today and for tomorrow, we must start working on the problem. We are using recombinant hER alpha expressed in 'E. coli'. This protein traps EDCs from water samples and, through a hydrogel and a piezoelectric sensor, it senses and measures the amount of these compounds, quantifying them. Additionally, we are designing a microbial degradation and assimilation module of EDCs. So, we also invite you to become aware of these harmful chemicals.

We want to know about your team; so, if you contact us via e-mail (@igemteccecm), we'll be happy to learn about you! Hope to see you all in person...

¡Abrazos!

iGEM TecCEM | Carretera, Av Lago de Guadalupe Km.3.5, Margarita Maza de Juárez | 52926 López Mateos | Internet: @igemteccecm

100% Efficient



The Kean



Warwick iGEM Team 2021



Hi iGEMers,

We are Warwick CREscent!

Through our project we aim to develop a fast fluorescent detection system for carbapenem-resistance Enterobacteriaceae (CRE). During the modern age, the overuse of antibiotics has caused a drastic increase in the number of antibiotic resistant bacterial strains. These bacteria are devastating to sick patients in hospitals as they cannot be treated through regular means. CRE are the most common antibiotic resistant bacteria seen in hospitals. They are resistant to carbapenems, a class of antibiotic agents used commonly to treat severe or high-risk bacterial infections. In order to prevent CRE's from spreading, quarantining to contain the spread has been found to be most effective. However, in order to successfully quarantine, you must locate the reservoirs of bacteria (commonly sinks and faucets) before they spread. Current detection methods are slow and ineffective, used only when the patient is suspected to be infected by CRE. Instead, we aim to create a biosensor which is sensitive to the presence of live CRE, which causes visible fluorescence through the expression of enhanced GFP (Green fluorescent protein) when live CRE is detected. The aim is that this biosensor can be used by staff without training and can produce a result in a few hours. We hope that our biosensor helps to sink the spread of CRE's in hospitals.

If you are interested in collaborating with us on our outreach project or want to talk, please DM us on twitter, instagram or facebook.



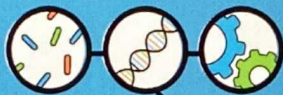
igem_warwick



warwickigem

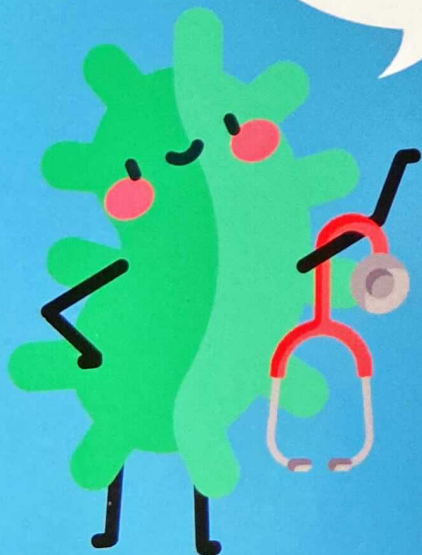


Warwick iGEM



IGEM IONIS

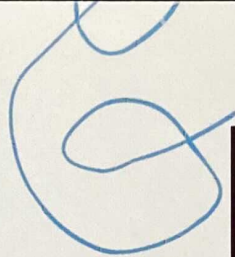
You seriously
lack B12 sir!



made in part by flatiron
designs in new york city



cobatect



Cobatect aims to detect the B12 level easily at home ! We are using a co culture of two bacteria to sense the B12 and trigger a proportional electric signal !

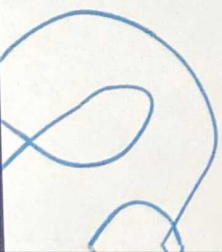
CONTACT US

66 rue Guy Môquet

94800 Villejuif

@IGEM_IONIS

igemionis2021@gmail.com





In this year's project, we are working with cytochrome P450 enzymes, also known as CYPs. CYPs play an important role in the metabolism of drugs and thus for basic pharmaceutical research. They also have the potential to synthesize various organic compounds within microorganisms. Our goal is to design a modular toolbox for different electron donor/acceptor pairs that will make the synthesis of organic compounds in microorganisms easier and faster. For this purpose, we fuse cytochrome P450 with a reductase and ferredoxin, respectively, in two systems, E. Coli and a cyanobacterium. These electron donors provide electrons for the reduction (electron transfer) that takes place at cytochrome P450. Through our research, we hope to gain new insights and to contribute to sustainable science.





B

A

D

Y

Beer

Antioxidation

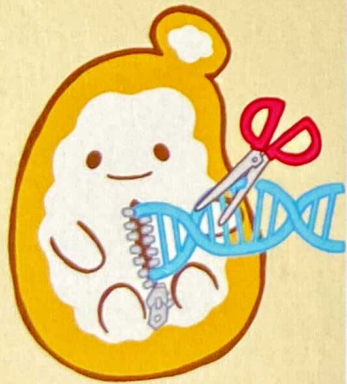
and

Depurination

Yeast

We edited *Saccharomyces cerevisiae* to secrete purine nucleoside phosphorylase (PNP), superoxide dismutase (SOD) and endochitinase in beer production. PNP plays a role in reducing purine content in beer, thus reducing the risk of gout caused by beer drinking.

SOD and endochitinase directly or indirectly play an antioxidant role to preserve the flavor of beer and extend the shelf life of beer.



Team: UM_Macau
E-mail: igemum_macau@outlook.com

THE LAC CASE

iGEM Aboa 2021



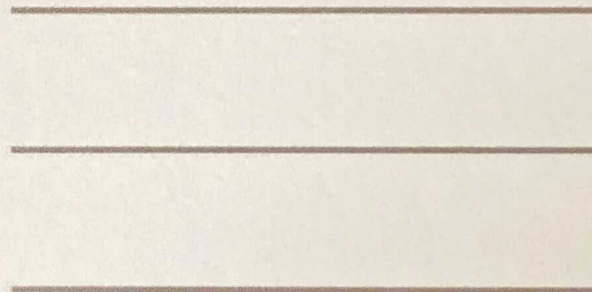
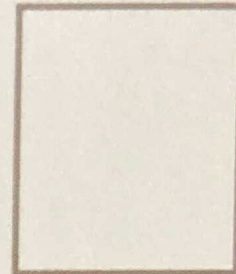
Cyanobacteria and *E. coli* protecting the Baltic Sea from pharmaceutical waste such as diclofenac by producing laccase enzymes.



The objective of our project is to aid the situation of the Baltic Sea by contributing to the development of a microbial wastewater treatment system for the degradation of pharmaceutical waste.

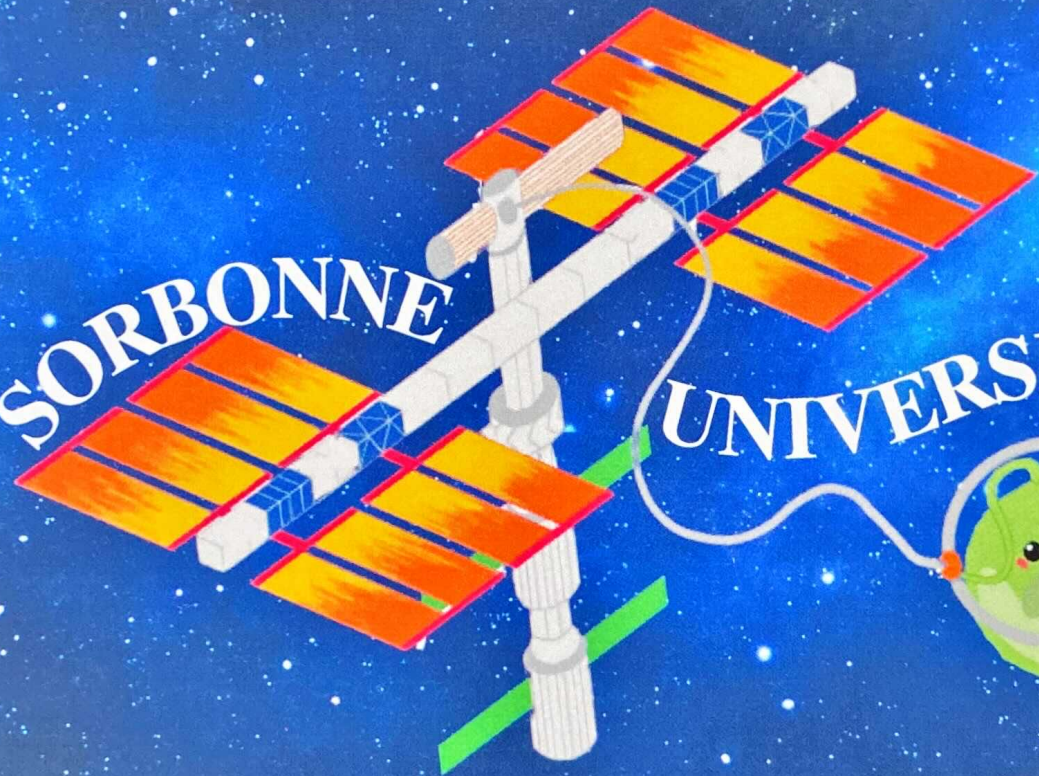
We are particularly focusing on the nonsteroidal anti-inflammatory drug diclofenac, which causes major environmental stress when released into bodies of water.

Our project involves the detoxification of diclofenac to a less harmful compound through the synthetic production of laccase enzymes in modified microbes.



SORBONNE

UNIVERSITÉ



Hello, fellow iGEMERs ,

We hope that your project is going well and that you are enjoying this unique adventure. Our team had to face challenges to finalize our project but in the end, we had a lot of fun and learned so much during these last few months.

This year we decided to tackle the challenge of long-duration space travel. Did you know that 30 tonnes of supplies (oxygen, food, water) would be needed for going to Mars and back? Thus, space agencies around the world are working on closed systems able to produce food and oxygen as well a recycling liquid wastes. Photosynthetic organisms such a *Chlamydomonas reinhardtii* are used to produce oxygen in those systems. In order to ensure a better life-span for Chlamydomonas, we aim to it resistant to cosmic radiations responsible for the production of ROS that can damage its photosystem.

We hope that you'll follow our project and we can't wait to hear about yours!

The Sorbonne University team.



ProCF

Programmable Cell Factory



Using three induction systems we aim to regulate the production profile of fatty acids in a high-oleaginous strain of *Saccharomyces cerevisiae* in a programmable fashion. The induction systems are linked to the expression of different enzymes (thioesterases). Newly formed fatty acids are linked to a molecule called Coenzyme A (CoA) through a thioester bond. Thioesterases cleave the thioester bond and stop the elongation of the fatty acid chain at specific lengths. Our goal is to flexibly regulate the fatty acid profiles in *S. cerevisiae* to provide base materials for the production of both high- and low molecular weight derivatives. These can be used for production of for example biofuels, chemical precursors, food, and pharmaceuticals.



igemgothenburg@gmail.com
Instagram @igem_chalmers



**DON'T GET FOOLED BY
THESE LOVELY AMOEBAS**

Hi there,

it's Vilnius-Lithuania iGEM 2021 team! This year we're combating *Entamoeba histolytica* - a microorganism that causes an infectious disease called **amoebiasis**. It infects around 50 million people worldwide and causes up to 100 000 deaths every year. Our goal is to create a **therapeutic compound** that will diminish the virulence and viability of our target amoeba. In addition, we're developing a specific low-cost and rapid diagnostic **test** for the detection of an invasive amoeba infection.

We hope that the combination of a rapid diagnostic test and probiotics is going to decrease the mortality caused by this silent killer hiding in our closest environment.

AmeBye, guys!

P.S. enjoy our AR project "6th SynBio sense" - just scan the QR code on a sticker sent together with this postcard.



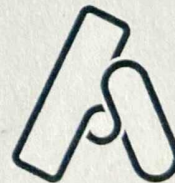
Vilnius iGEM



igem_vilnius

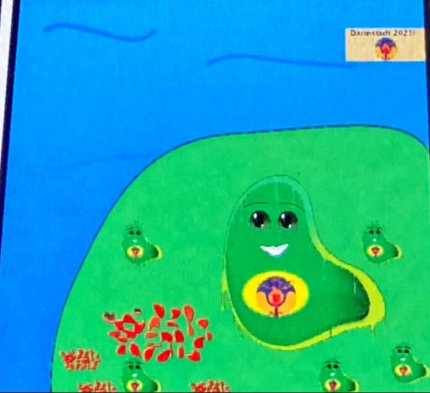
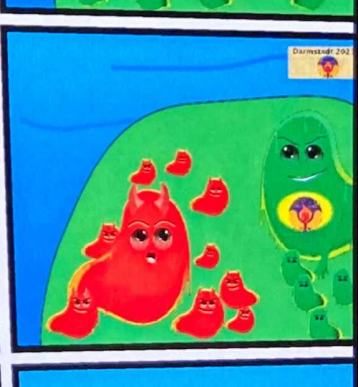
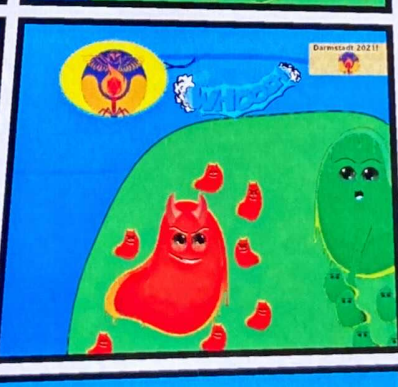
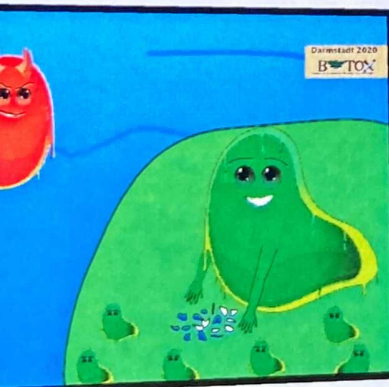
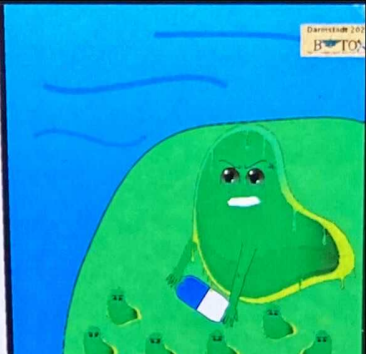
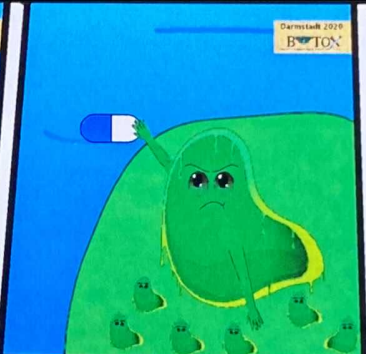


Vilnius-Lithuania iGEM



AmeBye

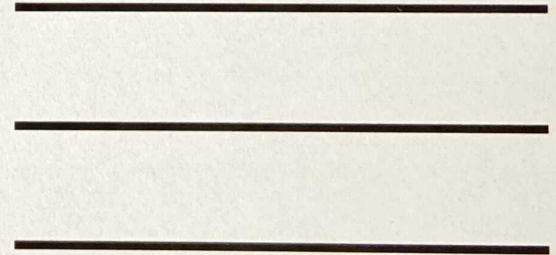




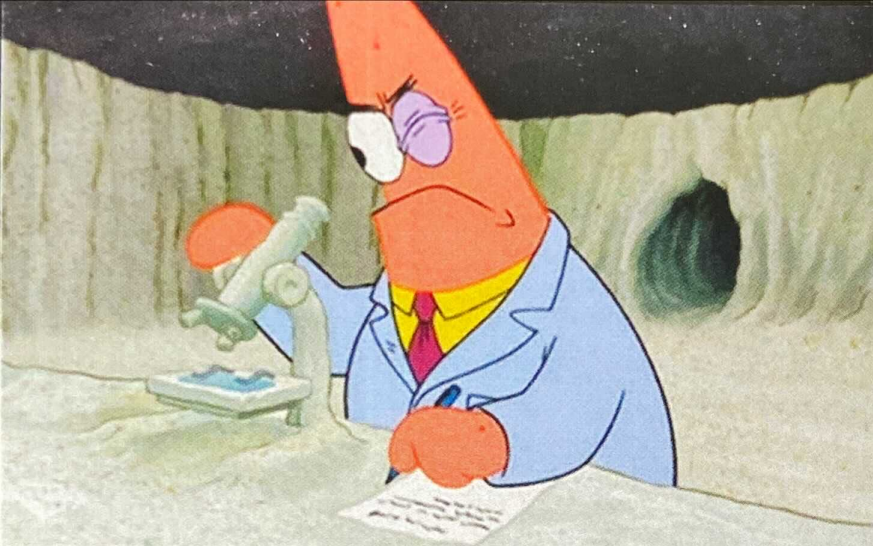
Greetings from Darmstadt!



PHIRE BYRD



This year's iGEM Darmstadt team is working on project **PHIRE BYRD - Phage mediated Immune Response by Recognizing Defensive Sleeper Cells**. Multi drug resistant pathogens are becoming an increasing problem in multiple areas, especially when combined with resilient biofilms. Our main achievement is to add an additional safety layer to existing, non-pathogenic biofilms: We want to biologically engineer our biofilm-forming host organism *B. subtilis* to automatically sense pathogens threatening the biofilm using quorum sensing (QS) signaling molecules. This genetic circuit triggers the production of lytic bacteriophages targeting the pathogenic bacteria. This way we want to create a modular system that is easily expandable to multiple pathogenic bacteria. Additionally, we are working on a QS based kill-switch to tackle the problem of unintentional release of GMOs into the environment. Finally, we are working on software solutions to greatly simplify the expansion of existing biotechnological biofilm applications with our additional safety layer.



**Me writing
the perfect
postcard**



**Me doing my
best building
biobricks**