Untitled

IJ

2021 3 18

iGEM

주소: iGEM site

List

- · Team name
- Organization
- Title
- Track

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- · Wiki page
- Problem
- Strategy
- Used bioparts
- · Vector map

```
No <- c(1,2,3,4,5,6)
Team <- c("TU Kaiserlautern", "Leiden", "AFCM-Egypt", "EPFL", "Munich", "TU_Eindhoven")</pre>
Subject <- c("Environment", "Diagnosis", "Therapeutics", "Diagnosis", "Biology", "Therapeutics")
Strategy <- c("Enzymatic reaction", "Pathogenic gene detection", "Circuit for vaccine production", "Dia
iGEM_df <- data.frame(No,Team,Subject,Strategy)</pre>
iGEM df
##
    No
                    Team
                               Subject
                                                                            Strategy
## 1 1 TU Kaiserlautern Environment
                                                                  Enzymatic reaction
## 2 2
                  Leiden
                            Diagnosis
                                                          Pathogenic gene detection
```

Biology Analysis of transcripts via vesicular export

Circuit for vaccine production

Diagnosis kit for field usage

knitr::kable(iGEM_df, format="markdown")

EPFL

Munich

AFCM-Egypt Therapeutics

Diagnosis

No	Team	Subject	Strategy
1	TU Kaiserlautern	Environment	Enzymatic reaction
2	Leiden	Diagnosis	Pathogenic gene detection
3	AFCM-Egypt	Therapeutics	Circuit for vaccine production
4	EPFL	Diagnosis	Diagnosis kit for field usage
5	Munich	Biology	Analysis of transcripts via vesicular export
6	TU_Eindhoven	Therapeutics	precise diagnosis for needs for antibiotics

TU_Eindhoven Therapeutics precise diagnosis for needs for antibiotics

TU Kaiserlautern

- Year: 2019
- Organization: Technical University of Kaiserslautern / Germany
- Title: Chlamy Yummy Revolutionizing plastic degradation by introducing Chlamydomonas reinhardtii as a eukaryotic secretion platform
- Track: Environment
- wiki
- Subject: IPBES에 의한 동식물 멸종 / microtoxic pollutants에 의한 수질 오염
- Strategy: Green algae Chlamydomonas reinhardtii를 이용한 micropollutants 분해 효소 발현
- Used bioparts: MoClo system

```
Name <- c("BBa_K3589107", "BBa_K3589108", "BBa_K3589109", "BBa_K3589110", "BBa_K3589150", "BBa_K3589151"

Type <- c("Coding", "Intermediate/Coding", "Coding", "Coding", "Tag", "Tag", "Composite", "Com
```

Name	Туре
BBa_K3589107 BBa_K3589108 BBa_K3589109 BBa_K3589110 BBa_K3589150 BBa_K3589151 BBa_K3589201 BBa_K3589202 BBa_K3589202 BBa_K3589203 BBa_K3589204 BBa_K3589205 BBa_K3589206 BBa_K3589207 BBa_K3589207 BBa_K3589208 BBa_K3589210 BBa_K3589210 BBa_K3589211 BBa_K3589211	Coding Intermediate/Coding Coding Coding Tag Tag Tag Composite

Vector map: pGEX-6P-1 expression vector

Leiden

- Year: 2020
- Organization: Leiden university / The Netherlands
- Title: Rapidmic: A novel modular point-of-care diagnostic tool for rapid epidemic response
- wiki
- Subject : Pandemic 상황을 빠르게 해결하기 위해 global한 질병 진단 방법 필요

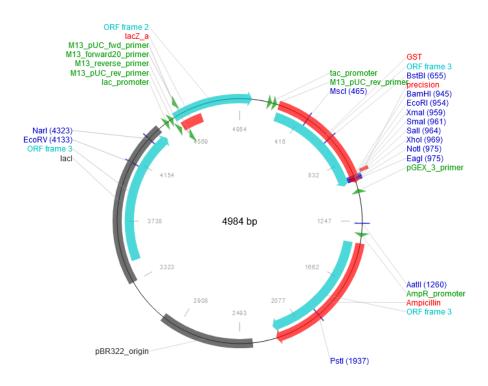


Figure 1: TU Kaiserslautern

- Strategy : Pathogenic species의 핵산을 빠르게 감지하기 위한 방법 개발isothermal DNA amplification method에 colorimetric readout을 병행함
- Method : Pathogen의 genome에 맞는 여러 세트의 프라이머를 사용, 다양한 pathogen에 적용될 수 있도록 함. (specificity 문제 고려 필요)
- Used bioparts

```
DNAzyme <- c("BBa_K1614007", "BBa_K3343001", "BBa_K3343000")

Description <- c("Original part, most widely used DNAzyme", "Improved part with additional adenine"

Table_Leiden <- data.frame(DNAzyme, Description)

knitr::kable(Table_Leiden, format="markdown")
```

DNAzyme	Description
BBa_K1614007	Original part, most widely used DNAzyme
BBa_K3343001	Improved part with additional adenine
BBa_K3343000	DNAzyme with highest activity reported in literature

AFCM-Egypt

- Year: 2020
- Organization: Armed Forces College of Medicine / Egypt
- Title: Neo-epitope discovery for DNA-launched RNA replicons: paving the way to efficient breast cancer vaccination
- wiki
- Subject: DNA-launched RNA replicons를 이용한 Breast cancer 백신 개발 연구
- Strategy: multi-epitope DNA vaccine 생산을 위한 DNA vaccine circuit 제작
- Used bioparts

Biobrick <- c("BBa_K3504000","BBa_K3504001","BBa_K3504002","BBa_K3504003","BBa_K3504004","BBa_K3504004","BBa_K3504004","BBa_K3504004","BBa_K3504002","BBa_K3504003","BBa_K3504004","BBa_K3504004","BBa_K3504002","BBa_K3504003","BBa_K3504004","BBa_K3504004","BBa_K3504002","BBa_K3504003","BBa_K3504004","BBa_K3504004","BBa_K3504002","BBa_K3504003","BBa_K3504004","BBA_K3504004","BBA_K3504004","BBA_K3504004","BBA_K3

Biobrick	Туре	Role
BBa_K3504017	Regulatory	SP6 Promoter
BBa_K3504018	Coding	P2A
BBa_K3504019	DNA	FF4 Binding Site
BBa_K3504020	Coding	Multi-Epitope TNBC Vaccine V2
BBa_K3504021	Coding	Multi-Epitope TNBC Vaccine V3

Vector map

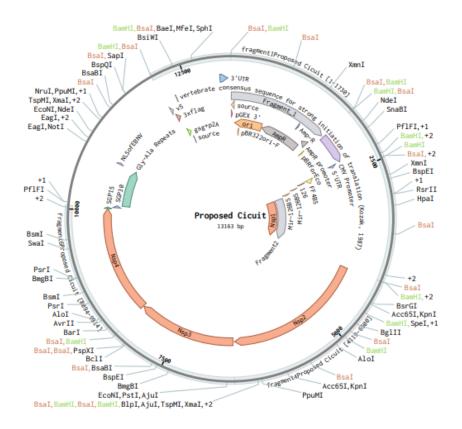
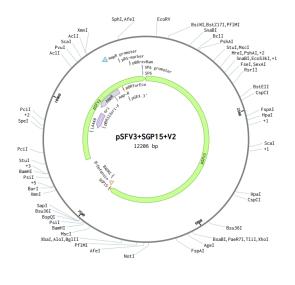
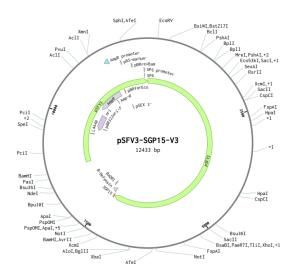


Figure 2: Finaldesign_AFCM-Egypt





EPFL

- Year: 2019
- Organization : Ecole Polytechnique Federale de Lausanne / Switzerland
- Title: ViTest A rapid field-based diagnostic tool to detect grapevine diseases
- wiki
- Subject: 전염성이 강한 식물 관련 질병을 빠르게, 현장에서 분석할 수 있는 진단 키트 개발
- Strategy : 수 주에서 수 시간으로 진단 시간 축소, 현장에서 진단 가능
- Method: 마이크로니들을 이용한 DNA 추출, RPA reaction 후 paper disc에 반응시키면 확인 가능
- Used bioparts:
- Vector map :

Munich

- Organization:
- Title:
- wiki
- Subject: 유전자 발현의 dynamics를 시간에 따라 모니터링하기 위한 기술 개발
- Strategy: ALiVE (Analysis of Living cells via Vesicular Export)
- Method : BioBrick에 기반하여 exosome 분비와 viral budding 과정을 조절해 특정 transcripts를 living cell에서 배출되도록 함.
- Used bioparts:
- Vector map :

TU_Eindhoven

- Organization:
- Title:
- · wiki
- Subject: AMR (항생제 저항성)을 감소시키고 항생제의 대체재를 찾고자 함
- Strategy : 필요한 항생제를 정확히 진단함으로써 항생제의 남용과 broad-spectrum 항생제의 사용을 방지함.
- Method: Bacterial infection을 치료하기 위해 박테리오파지와 dCas9 protein을 이용함.
- Used bioparts:
- Vector map :