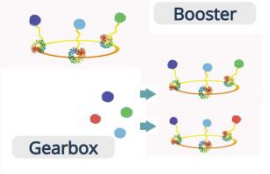
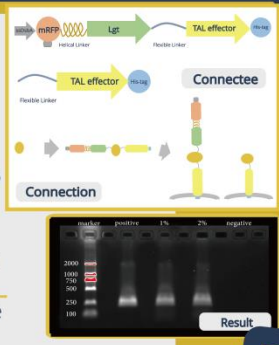


Connectee
Connectee is a fusion protein we designed to achieve our enzyme polymerization.

Connector
Connector is a plasmid DNA we used to let one or more connectees to bind with.

Connection
TAL protein can specifically recognize a target sequence on DNA and bind it.

Test Method
Protein precipitation → Formaldehyde cross-linking → Protein digestion → PCR



Booster

- Model of polymerization.
- A framework that makes enzyme complex easy to form.
- Have less restriction in the number or sort of enzymes.
- Allow users to construct the specific best enzyme system.

Gearbox

- Model of selectivity.
- Control the direction of pathway by transforming different Connectors.
- Increase the efficiency of different reactions in one system.

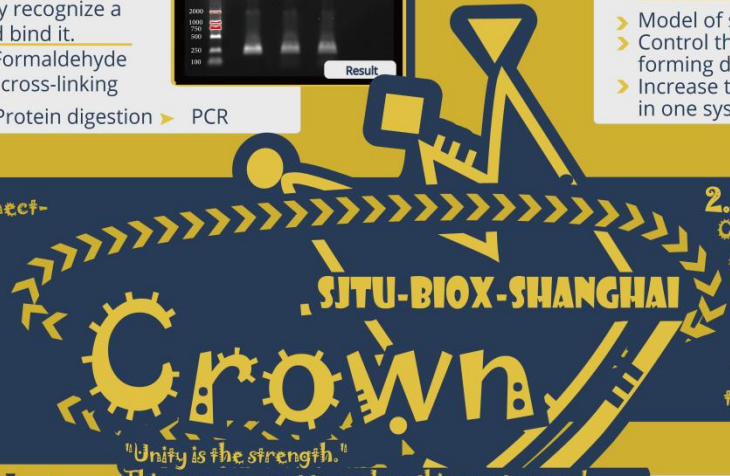
Basic Test

1. By connecting one connectee to the connector, we started to build the basic structure of the Crown.

4. By using modeling wisely, we estimated the future and the further usage of the Crown.

2. With more connectees on the Crown, it will help us achieve the goal of selective enzyme polymerization.

3. While constructing the Crown, we found a way to make the TALE more user-friendly.



"Unity is the strength."

Modeling & Simulation

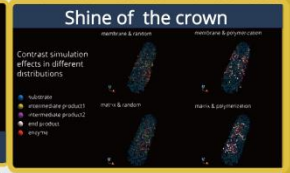
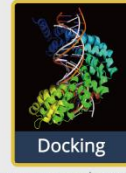
This year, we want to explore this great power by finding a method to increase enzyme polymerization.

Three Aspects

- Robustness of TAL effectors
- TAL improvement
- Cell performance

Used Method

- Simulated various enzyme systems
- Found optimized sequences
- Calculated docking of protein and DNA

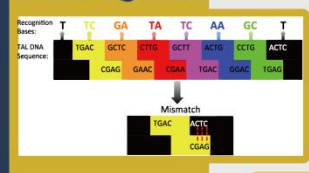


Motivation

At first, we failed to construct complete TAL protein.

Possible Reasons

The 7 sticky ends designed by 2012 Freiburg are too similar to mismatch others.



Connect Method

We wrote a scoring program to evaluate these 7 sticky ends and found out they are easy to mismatch.

Reform & improvement

We designed 7 more specific sticky ends. Our system can help design your own TALE or connect some components by Golden Gate method.

Score table of 2012 Freiburg Golden Gate sticky ends:

	TGAC	GCCT	CTTG	GCCT	ACTG	CTCG	ACTC
TGAC	1	1	2	1	2	2	2
GCCT	1	1	2	3	2	2	2
CTTG	2	2	1	3	2	3	2
GCCT	1	3	2	1	2	2	2
ACTG	2	2	2	2	1	3	2
CTCG	2	2	3	2	3	1	2
ACTC	2	3	2	2	2	2	1

Score table of Improved TALE sticky ends:

	AAAA	AGGG	GTAC	GTGC	TTTT	TGGA	CCCTC
AAAA	1	1	1	0	0	1	1
AGGG	1	1	1	1	0	1	0
GTAC	1	1	1	1	1	1	1
GTGC	0	1	1	1	1	1	1
TTTT	0	0	1	1	1	1	0
TGGA	1	1	1	1	1	1	0
CCCTC	0	0	1	1	0	1	1

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Team Introduction



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Attribution; Thanks for all your supports



Human Practice

- 2014/4/12 -SJTU Anniversary Carnival
- 2014/4/19 -The mini meeting in Tongji University
- 2014 /6- /7 -Shenzhen Foreign Languages School
- 2014/8/3-8/7 -The 2014 iGEM Formosa in NCTU
- 2014/8/14-8/15 -Software and Modeling track in USTC
- 2014/8/20 -Hosting Peking iGEM team

