

Modularity

"Modularity refers to a system that can be divided into sub-systems each with a defined function." The design of modularity can reduce the complexity of synthetic systems, simplifying the experiment design, verification and optimization while independent on the functions is one of the principles of modularity, the modules are not connected to each other and the communication among the modules is necessary.

The 1st week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JAN 1 JAN 2 JAN 3 JAN 4 JAN 5

Orthogonality

"Orthogonality in systems design refers to parts that do not interfere with one another, which amounts to a lack of crosstalk between the parts. The orthogonal design is an essential part of the achievement of complex systems to function. The orthogonal design is also applied to the containment of synthetic organisms, which ensures safety."

The 2nd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JAN 6 JAN 7 JAN 8 JAN 9 JAN 10 JAN 11 JAN 12

standardization

Standardization is the process of defining the definition of biological function, the methods to produce biological modules and the capacity of standard synthesis parts. The standardization is not only about the theory of naming rules and data characterization, but also about the standard definition of the connection between the parts and the basic measurement criteria which will promote the communication and collaboration among laboratories.

The 3rd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JAN 13 JAN 14 JAN 15 JAN 16 JAN 17 JAN 18 JAN 19

composability

"A key challenge to engineering complex systems is the ability to connect the parts to achieve predictable behavior. Composability allows predictable interaction of biological parts, and an important step towards the modular programming of new tissues, organs, or even organisms. Composability is the ability to connect the parts to achieve predictable behavior. Composability allows predictable interaction of biological parts, and an important step towards the modular programming of new tissues, organs, or even organisms."

The 4th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JAN 20 JAN 21 JAN 22 JAN 23 JAN 24 JAN 25 JAN 26

Semi-synthetic organisms

Semi-synthetic organisms are created through the import of the genetic information in the same synthetic organisms can be stored in six-letter alphabet and translated into many more natural amino acids, opening the natural life to many more natural amino acids, opening the natural life to many more natural amino acids."

The 5th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JAN 27 JAN 28 JAN 29 JAN 30 JAN 31 FEB 1 FEB 2

Single-chromosome yeast

By successive and low-level chromosome reduction, the yeast *Saccharomyces cerevisiae* was reduced to a single-chromosome yeast. The organism containing 16 chromosomes and 6,000 genes. The reduction of chromosomes and the function of cells was explored. The reduction of chromosomes and the function of cells was explored."

The 6th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
FEB 3 FEB 4 FEB 5 FEB 6 FEB 7 FEB 8 FEB 9

Syn 3.0

With genome built from chemically synthesized oligonucleotides, iCVY3.0 was created. The first artificial life. To get further knowledge of the most basic genes in the genome in the bacteria were added and knocked out, and the essential genes were built. The simplest life-span 3.0 can be the origin of certain artificial life in the future."

The 7th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
FEB 10 FEB 11 FEB 12 FEB 13 FEB 14 FEB 15 FEB 16

Make bacteria 'see' light

Based on the split-gate DNA polymerase system, the bacteria can "see" the colorful light and produce different outputs according to the receiving color in the cell are divided into three pathways according to the light, thus achieving the long-distance communication between the electronic and biological system."

The 8th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
FEB 17 FEB 18 FEB 19 FEB 20 FEB 21 FEB 22 FEB 23

Ethics

With rapid development of bioengineering, more and more people are trying to make ethical thoughts. In 1999, Eduardo Kohn created a synthetic chromosome with 16 chromosomes, and used UV light to mutate DNA in the transgenic organism to recover and decode the mutated plasmids that would contain altered biological function."

The 9th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
FEB 24 FEB 25 FEB 26 FEB 27 FEB 28 MAR 1 MAR 2

Biosafety

The wide use of gene editing technologies even in a world leads to a large amount of modified organisms, which may harm the environment and cause illness once enter the uncontrolled environment. On the other hand, with the cost of gene editing decreasing, individuals can do simple experiments in their garages, increasing the risks of biological leakage and raising worries about biosafety."

The 11th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAR 10 MAR 11 MAR 12 MAR 13 MAR 14 MAR 15 MAR 16

Laws

In our environment and society caused by potentially harmful biological factors in microorganisms or other biological organisms, everyone needs to have a clear understanding of the biological safety of the research subject, to take the necessary instrument measures to protect themselves and to prevent them from leaking out, when interacting with the public, researchers should pre-process the samples to fully protect the public safety."

The 12th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAR 17 MAR 18 MAR 19 MAR 20 MAR 21 MAR 22 MAR 23

Factory

Biological cell is a kind of special factory itself. While manufacturing products from raw materials, cells function like a factory. Cells not only need any extra monitoring. What's more, cells function like a factory. Cells not only need any extra monitoring. What's more, cells function like a factory. Cells not only need any extra monitoring. What's more, cells function like a factory."

The 13th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAR 24 MAR 25 MAR 26 MAR 27 MAR 28 MAR 29 MAR 30

Experiment

An organism, what we are doing is building a better world by solving problems with the help of technology. Organisms and microbes are our soldiers, our partners are our records. Our dreams are in the future. Our opportunities hide behind the door that is closed. We did our best to push the boundaries of biology by tackling everyday issues facing the world."

The 14th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAR 31 APR 1 APR 2 APR 3 APR 4 APR 5 APR 6

HP

Driven by the responsibility for us creates also communication of synthetic biology, what we do are firmly connected with the society. And we should always think about and do research actively to find out which problems require biological best help solve and explore the impacts of our work in the world. "Human Practices is the study of how your work affects the world, and how the world affects your work." - Peter Carr, Director of Judging.

The 15th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
APR 7 APR 8 APR 9 APR 10 APR 11 APR 12 APR 13

Art Design

A good designer is another important creator for a successful iGEM team. Their work is to make a good design and all-round understanding and all-round understanding of the team's phenomena, data, principles and disciplines in artistic ways. Artistic design is the bridge between iGEMers and the public, bringing life to the project and catch people's eyes with these adorable ideas."

The 16th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
APR 14 APR 15 APR 16 APR 17 APR 18 APR 19 APR 20

Modeling

Models and computer simulations provide a great way to describe the functioning and operation of biological systems before design building or in conjunction with experiments in the wetlab. Teams may explore the physical modeling of a single component within a system or utilize mathematical modeling for predicting function of a more complex device."

The 17th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
APR 21 APR 22 APR 23 APR 24 APR 25 APR 26 APR 27

Wiki

The team Wiki is the "heart" of every iGEM project. The team Wiki contains the most precious information resource for future iGEM students and teams, as well as the most valuable collection of background, design and team members, getting every iGEMer's effort, wisdom and enthusiasm. A good Wiki offers a guidance of what the following year's Wikis should strive for."

The 18th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
APR 28 APR 29 APR 30 MAY 1 MAY 2 MAY 3 MAY 4

Modeling

Modeling is all about dealing with unknown parameters. If there is one or two, do a curve-fitting. If there are three or four, apply an optimization with initial-guess. If there are five or six, abstract its principal components. If there are seven or eight, substitute some by other papers' constants. If there are nine or ten, focus on trend instead of values. If it is iGEM model, forget about it."

The 19th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAY 5 MAY 6 MAY 7 MAY 8 MAY 9 MAY 10 MAY 11

Protocol of Happiness Preparation

1. Make up and go to lab.
2. Mix buffer, inducer and target cell, and wait 30 hours.
3. Make sure you and your partner's agenda, repeat the experiment.
4. Use flow cytometer to measure protein expression.
5. Every cell have fluorescence signal, nice!

The 20th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAY 12 MAY 13 MAY 14 MAY 15 MAY 16 MAY 17 MAY 18

HP

The only way to do a good Human Practice, is to call some body whose voice you don't expect to hear, to believe, to people who you would rather talk to, to talk to the people who you don't talk to, and to introduce a iGEM project which you are that you had never engaged in."

The 21st week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAY 19 MAY 20 MAY 21 MAY 22 MAY 23 MAY 24 MAY 25

Modeling

Modeling is all about dealing with unknown parameters. If there is one or two, do a curve-fitting. If there are three or four, apply an optimization with initial-guess. If there are five or six, abstract its principal components. If there are seven or eight, substitute some by other papers' constants. If there are nine or ten, focus on trend instead of values. If it is iGEM model, forget about it."

The 22nd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
MAY 26 MAY 27 MAY 28 MAY 29 MAY 30 MAY 31 JUN 1

The Schemas

Team leader asked me to make three schemas for iGEM team's wiki. I checked of the first schema with help of designed the second one in two hours, and started the third one in ten minutes. Guess what? Team leader choose the one drawn by himself."

The 23rd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUN 2 JUN 3 JUN 4 JUN 5 JUN 6 JUN 7 JUN 8

Modeling

Hardcore is never hard to learn. If the Repertoire of bacteria is not green, get it replaced to blue, to believe, to people who you would rather talk to, to talk to the people who you don't talk to, and to introduce a iGEM project which you are that you had never engaged in."

The 24th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUN 9 JUN 10 JUN 11 JUN 12 JUN 13 JUN 14 JUN 15

Modeling

Modeling is all about dealing with unknown parameters. If there is one or two, do a curve-fitting. If there are three or four, apply an optimization with initial-guess. If there are five or six, abstract its principal components. If there are seven or eight, substitute some by other papers' constants. If there are nine or ten, focus on trend instead of values. If it is iGEM model, forget about it."

The 25th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUN 16 JUN 17 JUN 18 JUN 19 JUN 20 JUN 21 JUN 22

How programmers tell genome how to delay iGEM cell

It will be easily accomplished in the wetlab. I already have a plan, but it makes sense. Some fancy trails I want to add, they are time consuming, but they will be done. These are not temporary lanes, I will design a better look right now."

The 26th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUN 23 JUN 24 JUN 25 JUN 26 JUN 27 JUN 28 JUN 29

E. coli Pen

Kit invented a new tool for art into a pen using not ink, but modified recombinant E. coli are cultured. Under regulation of a promoter with various sensibility to include drug. If the pen can express more than four colors with different sensibilities responding to the gradient of hydrogen peroxide trend. This work constructs a bridge between art and science and offers a new method and novel tool to enjoy the Art with the help of technology."

The 27th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUN 30 JUL 1 JUL 2 JUL 3 JUL 4 JUL 5 JUL 6

Enzyme-labeled instrument

UCI did a significant collaborative work focusing on the enzyme-labeled instrument. Engineering methods to produce specific enzymes to show their own solution, as for the bigger ones, they plan to aggregate the enzymes in the area. The enzyme-labeled instrument can be used to detect, degrade them and aggregate them. Looking from a new perspective and offer a new method. Always accomplished such pioneering work bravely."

The 29th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
JUL 14 JUL 15 JUL 16 JUL 17 JUL 18 JUL 19 JUL 20

PCR

Polymerase chain reaction (PCR) is a technique used in molecular biology to amplify a single copy or a few copies of a segment of DNA across several orders of magnitude, generating thousands to millions of copies of a particular DNA sequence."

The 32nd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
AUG 4 AUG 5 AUG 6 AUG 7 AUG 8 AUG 9 AUG 10

Gel electrophoresis

Gel electrophoresis is an approach for analysis and separation of macromolecules (DNA, RNA, proteins etc.). Based on the size and charge of molecules, they will migrate at different speeds in an electric field, thus enabling us to analyze and separate them."

The 33rd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
AUG 11 AUG 12 AUG 13 AUG 14 AUG 15 AUG 16 AUG 17

Gibson Assembly

Gibson Assembly is a method based on homologous recombination that allows for assembling multiple DNA fragments via a single reaction which includes DNA polymerase and DNA ligase. The reaction requires about 20-40bp overlap with adjacent DNA fragments."

The 34th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
AUG 18 AUG 19 AUG 20 AUG 21 AUG 22 AUG 23 AUG 24

Transformation

Transformation is a natural process of horizontal gene transfer and is employed in laboratory to transfer desired genes into bacteria. To make genes into bacteria, orthogonal DNA polymerase and orthogonal ribosomes, which can be induced in laboratory in chemical (Electroporation) ways."

The 35th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
AUG 25 AUG 26 AUG 27 AUG 28 AUG 29 AUG 30 AUG 31

Flow cytometry

Used for analyzing, sorting cells automatically and measuring cellular properties for experimental, biological and biochemical analysis. Besides, it can sort the heterogeneous cell subpopulations based on pre-selected parameters. It works by fluorescent antibodies that are attached to cell membrane. How flow cytometry works. How flow cytometry works. How flow cytometry works. How flow cytometry works."

The 36th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
SEP 1 SEP 2 SEP 3 SEP 4 SEP 5 SEP 6 SEP 7

Enzyme-labeled instrument

Mainly used in the detection of absorbance values in enzyme-linked immunosorbent assay. At a specific wavelength, the absorbance of the enzyme-labeled instrument is quantitatively related to the absorbance, and the absorbance of the enzyme-labeled instrument can be used to detect, degrade them and aggregate them. Looking from a new perspective and offer a new method. Always accomplished such pioneering work bravely."

The 37th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
SEP 8 SEP 9 SEP 10 SEP 11 SEP 12 SEP 13 SEP 14

Microscope

Mainly divided into optical microscope and electron microscope. The optical microscope currently in use is made of a set of lenses. Ordinary optical microscopes usually magnify, and electron microscope is a microscope that uses a high-speed moving electron beam instead of a light wave. The resolution of the electron microscope is much higher, which is currently up to 0.2 nm and the magnification is up to 800,000 times."

The 38th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
SEP 15 SEP 16 SEP 17 SEP 18 SEP 19 SEP 20 SEP 21

Clean bench

Clean bench can provide a sterile and clean working environment for experiments. The air can be sucked into the filter by the fan, which can remove the original air in the work area and take away the dust particles and microorganisms. It is usually also equipped with ultraviolet light to better meet the sterility requirements."

The 39th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
SEP 22 SEP 23 SEP 24 SEP 25 SEP 26 SEP 27 SEP 28

Auxotroph

There are some genes that regulate the produce of some molecules necessary for cells. The auxotrophic cell is transformed into the bacteria which can absorb these essential biological molecules from the medium. When the genes are transformed into another cell in the uncontrolled environment, the auxotrophic cell will not grow and survive due to the lack of essential molecules."

The 40th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
SEP 29 SEP 30 OCT 1 OCT 2 OCT 3 OCT 4 OCT 5

simple kill switches

The genome of the bacteria was modified to contain the kill switches controlled by inducer promoters. In the controlled environment exist some molecules which can repress the expression of the kill genes, and the cells can grow and reproduce. However, if the bacteria escape into the environment, the kill switches will be activated and kill themselves."

The 41st week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
OCT 6 OCT 7 OCT 8 OCT 9 OCT 10 OCT 11 OCT 12

inducible gene switch to control essential gene

Some genes in the genome are inducible to be controlled by inducer promoters. In the controlled environment exist the molecules which activate the gene expression and provide the cell with basic substance, while in the uncontrolled environment the essential genes can not express and produce the basic substance and the bacteria cannot survive and the bacteria cannot survive."

The 42nd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
OCT 13 OCT 14 OCT 15 OCT 16 OCT 17 OCT 18 OCT 19

gene flow barrier

To avoid lateral gene transfer, the gene flow barrier is introduced into the bacteria. A plasmid with the gene flow barrier is transformed into the bacteria which can resist the gene transfer when the genes are transformed into another cell in the uncontrolled environment, the gene flow barrier will not grow and survive due to the lack of essential molecules."

The 43rd week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
OCT 20 OCT 21 OCT 22 OCT 23 OCT 24 OCT 25 OCT 26

orthogonal central dogma

The orthogonal central dogma is another biocontainment strategy. The orthogonal central dogma includes two aspects, the introduction of non-natural chemicals into nucleic acids and proteins, and the orthogonalization of the translation machinery, such as orthogonal DNA polymerase and orthogonal ribosomes. The orthogonal system is employed in laboratory to transfer the information transfer among bacteria to control and non-controlled genes."

The 44th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
OCT 27 OCT 28 OCT 29 OCT 30 OCT 31 NOV 1 NOV 2

story

There was a freezing winter night, all roads had closed. After a long time searching in the wild and raw bushes, I finally found the prey I was looking for. Touched by his true love, a righteous man who understood his work, all night under the cold moonlight with the wild moonlight. Finally, just before dawn, a rose shined with blood of the nightingale, blossoms long and bright. This year we UCAS-China also want to present every one of your great idea."

The 45th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
NOV 3 NOV 4 NOV 5 NOV 6 NOV 7 NOV 8 NOV 9

circuit

Our team recently consists of 3 subteams. They are: 1. Subteam 1: They are responsible for the genetic circuit. 2. Subteam 2: They are responsible for the protein expression. 3. Subteam 3: They are responsible for the cell growth. The circuit is a genetic circuit that can be used to detect, degrade them and aggregate them. Looking from a new perspective and offer a new method. Always accomplished such pioneering work bravely."

The 46th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
NOV 10 NOV 11 NOV 12 NOV 13 NOV 14 NOV 15 NOV 16

OUC-China: OUC-CHINA Hope every iGEMers become better in the competition.

NEU-China: Ai Maybe we can save someone's life.

XJTU-China: Always believe that something wonderful is about to happen.

Jiangnan: If you wish to succeed, you should use persistence as your good friend, experience as your reference, prudence as your brother and hope as your sentry.

The 49th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
DEC 1 DEC 2 DEC 3 DEC 4 DEC 5 DEC 6 DEC 7

Nanjing-China: Nanjing-China: We share the same dream.

ZJU-China: Buy a cat, hide the fish, seek for truth.

XMU-China: Keep learning, keep researching, keep innovating. It's our permanent mission to explore the essence of synthetic biology.

TJU-China: As the constant of the moon, as the rising of the sun.

The 50th week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
DEC 8 DEC 9 DEC 10 DEC 11 DEC 12 DEC 13 DEC 14

NUDT_CHINA: To design, to build, to learn, to recreate life out of life.

IGEM is a game, but it is a story that makes up the bits and pieces of China.

SCAU-CHINA: It is not until you fail that you fly.

TJU-China: As the constant of the moon, as the rising of the sun.

The 51st week
Sun. Mon. Tue. Wed. Thu. Fri. Sat.
DEC 15 DEC 16 DEC 17 DEC 18 DEC 19 DEC 20 DEC 21