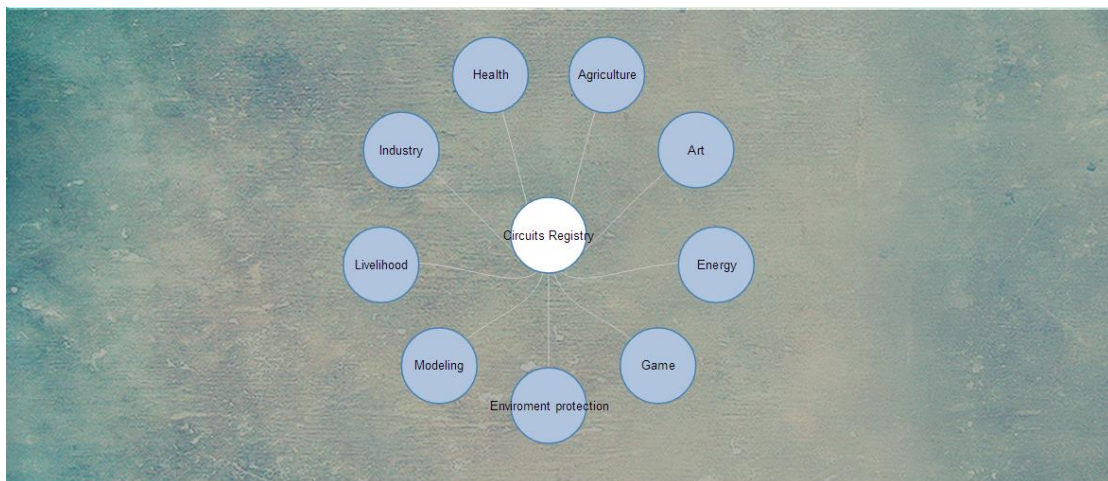


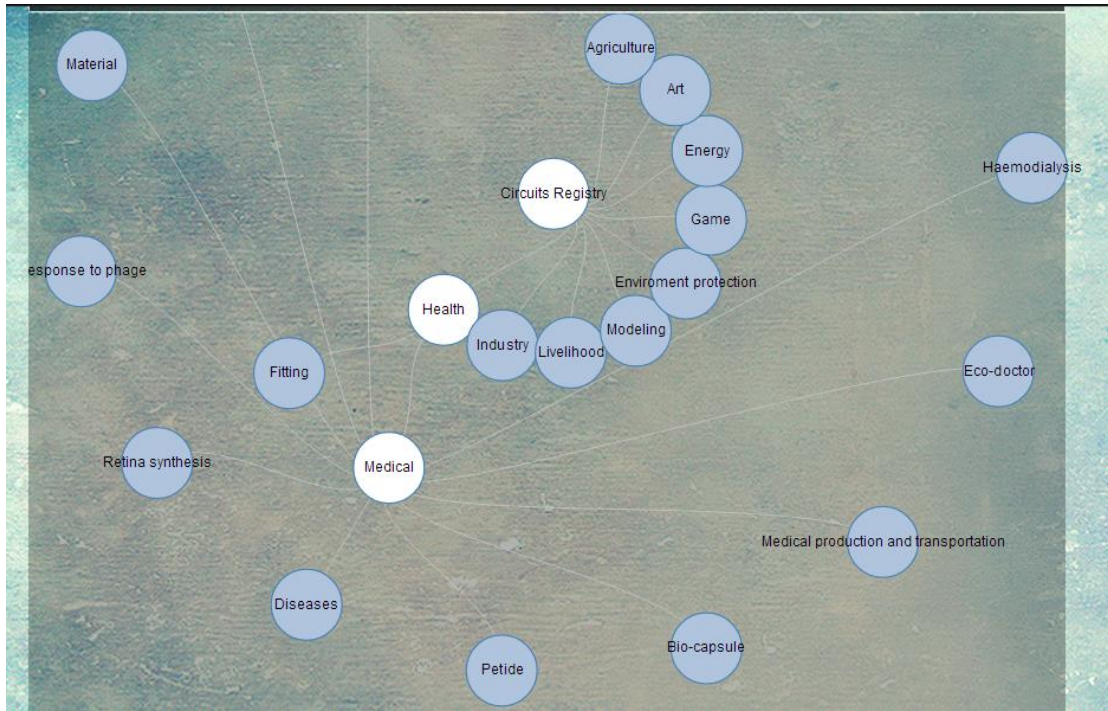
Circuit Registry (Mind Road):

1. Introduction

The Circuit Registry (Mind Road) is a collection of genetic circuits designed and published in either peer-reviewed journals or iGEM competition. We realized that there is no website or database that has systematically record all existing synthetic biology projects. Inspired by the Registry of Standard Biological Part database, we came up with an ambitious plan that we should make the Registry of Standard Genetic Circuit. Our goal is to collect all previous iGEM projects and all published synthetic biology projects. The documentation of genetic circuits follows the general principle of biobrick foundation: Standardization, all description of genetic circuits should adopt the same format.

Mind Road is the visualization interface of circuit registry. All the circuits that have successfully submitted can be found there. This web application aims at assisting people to find the synthetic biological projects they are interested in. We build up the Mind Road network through scanning for over a hundred of projects that designed and functioned (partially) the genetic circuits as well as simulating a brainstorm so as to establish the Mind Road more practical and realistic.





Description Protocol Circuit Reference Comment

Eco900_00 in project **A Synthetic Genetic EdgeDetection Program**
 By **Howard M. Salis, etc.(2009)**
 Evidence level: ★★★

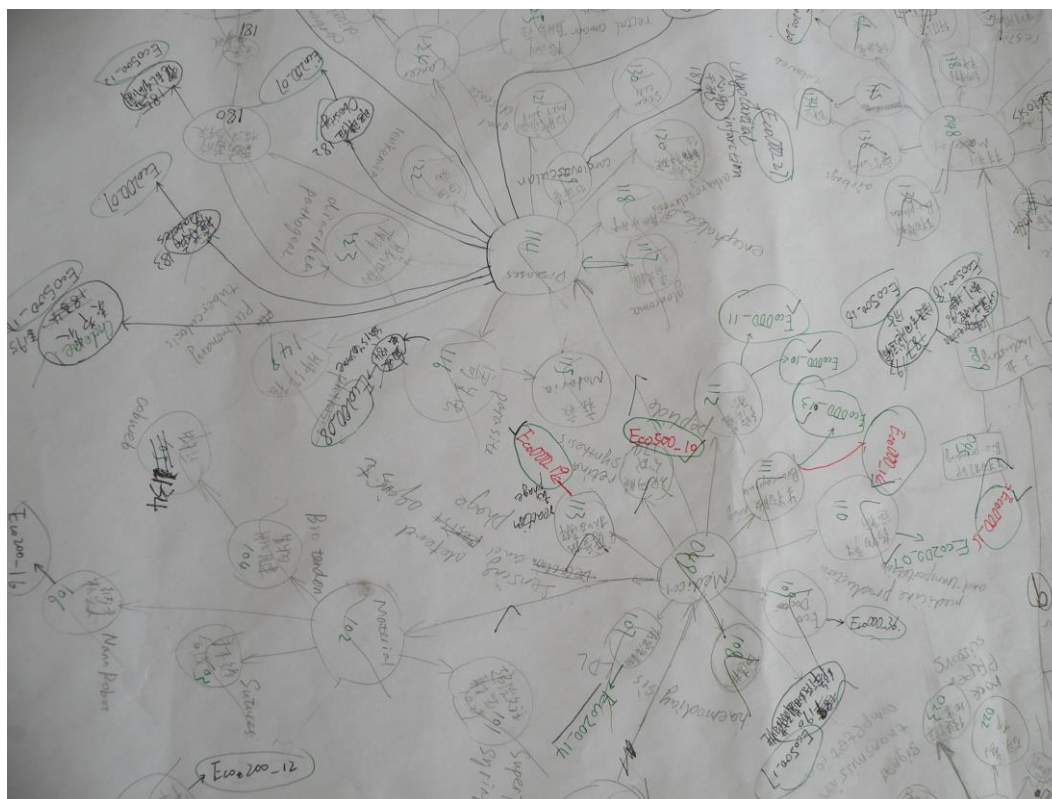
Mask	in vivo	in silico

This project aimed at constructing a genetically encoded edge detection algorithm that programs an isogenic community of E.coli which can sense an image of light. The E.coli can identify the edge of the dark-light edges through a series of communication and as a result present the outcome of the computation visually. An engineered light sensor helps the bacteria to distinguish whether it's in the dark or light surroundings. Several genetic logic gates in the cell can

Submitted by SUSTC-ShenzhenB

2. The database

All the data is stored in our MySQL server database. In order to dynamically update data in a safer way, we choose MyISAM to be the engine of our database. The synthetic biological projects in Mind Road is classified level by level. All the classification is listed in the end of this page:



We try to establish a technique standard for the data structure. A complete project on Biomiao must contain following essential information:

Part-I: Basic information

Project name, Author(s), Year, Wiki (paper) –Link, Description [Around 150 words], Project result [representative diagram or some other images (enclosed in the annex)], Reference [Write all the relative papers you’ve referenced].

Part-II: Genetic Circuit information

Circuit description [How your circuit works and what are the subunits (promoter, operon, RBS, coding, domain, terminator...) of this circuit, Circuit diagram [enclosed in the annex], Subparts information: [Give us a brief description about the parts you designed or used in this project like the Biobrick ID, the subparts (if have), the functions)].

Part-III: Lab process / Major methods

Equipment [List the machines or devices you used while processing the experiment], Material [List all the medium (each component should be listed out), strains & plasmids you have used in the experiment], Procedure [List the procedures as simple as possible in order. Or you can just write some key processes (or methods) of your experiments].

How to submit your project:

The information that mention above is also the submit format. You can go to the [submit page](#) to upload your projects.

You can submit your circuit to us here. And we will record your circuit on the website after validation. You have to fill all the blanks with *.

Basic Information

Project name*

Author(s)*

Year*

Description*

References*

List the article or wiki site.

If you have pictures about this project, you can send to IGEM2013@sustc.edu.cn.

Lab Protocol

Project evaluation system

We understand that there are many unfunctional biobrick parts and device uploaded to partsregistry database, and it is a big issue to identify these really working circuits. To avoid this situation in our system, we developed an evaluation system and classified all projects into three categories:

3 stars-- (The circuit is reported to be functional in peer-reviewed journals.)

2 stars-- (The circuit is reported by one iGEM team and independently successfully reproduced by another iGEM team)

1 star -- (The circuit is reported by one iGEM team)

3. Results

So far, we've uploaded the information approximately 80 projects. Most projects are coming from previous iGEM team. And we've invited some 2013 iGEM teams to submit their projects on the Biomiao platform and received active response from Peking, Shenzhen-BGI, SYSU, XMU, HKUST, and other teams. We eagerly expect all the 2013 iGEMers to join in this platform and share their projects. We are now still sending more and more invitation Email to the 2013 iGEM teams.

4. An Introduction about the Circuit List

The Circuit List is another way to present all the projects to user. In this way, the user can directly check all the project in a list.

Circuit List SORT Random Latest Project

ECO-FUELE.COLINE
this project aims to increase the production of isobutanol.

Pepdex
This project aims to quick deliver peptides of specific therapeutic use.This circuit was named Fatty Acid Inducible.

Pepdex
This project aims to quick deliver peptides of specific therapeutic use.

Biowave
This project aims to utiliz a biological system with the properties of negative feedback and time delay to perform a synchronized oscillation.And they use this system to simulate e.g.traffic jams between cities.

Bio-capsule E.coli
This project aims to make bio-capsules formed by aggregation of E. coli through cell-cell interaction via adhesion molecule, Ag43, located on the surface of outer membrane.This circuit is a process about producing P(3HB).

Bio-capsule E.coli
This project aims to make bio-capsules formed by aggregation of E. coli through cell-cell interaction via adhesion molecule, Ag43, located on the surface of outer membrane.This circuit is aggregation and characterization module.

The structure of the database:

- 1. Art
 - 1.1 Luminous
 - 1.2 Music
 - 1.2.1 Singing Bacteria
 - 1.3 Painting
 - 1.3.1 Postponed painting
 - 1.3.2 Concentration sensing
 - 1.3.3 Pressure drawing board
 - 1.3.4 Doodle
 - 1.4 Photography
- 2. Agriculture-
 - 2.1 Regulator
 - 2.1.1 Blossom
 - 2.2 Fertilizer
 - 2.3 Detection
 - 2.4 Improvement
 - 2.4.1 iRice
- 3. Energy
 - 3.1 Bio fuel
 - 3.1.1 Butanol
 - 3.1.2 Limonene
 - 3.1.3 Sorbitol
 - 3.1.4 Ethanol
 - 3.2 Degradation

- 3.2.1 Lignin
 - 3.2.2 Cellulose
- 3.3 Charging by induction
- 3.4 Battery
- 4. Game
 - 4.1 Rock paper scissors
 - 4.2 Signal transmission competition
 - 4.3 Breaking symmetry
 - 4.4 Domino effect
- 5. Environment protection
 - 5.1 Pollution
 - 5.1.1 Land pollution
 - 5.1.2 Water pollution
 - 5.1.2.1 Petroleum
 - 5.1.2.2 DDT
 - 5.1.2.3 Benzene
 - 5.1.2.4 Metal sulfide
 - 5.1.2.5 Quorum sensing
 - 5.1.2.6 Bio-pollution
 - Red tide
 - 5.1.2.7 Arsenic
 - 5.1.2.8 Heavy metal
 - Fe
 - Cd
 - Absorption
 - 5.1.2.9 Sulfur oxide
 - 5.1.2.10 Nitric oxide
 - 5.1.3 Gas pollution
 - 5.1.3.1 CO gas
 - 5.2 Greenhouse effect
 - 5.3 Water quality monitoring
- 6. Modeling
 - 6.1 Traffic Light
 - 6.2 Math problem puzzle
 - 6.2.1 Sudoku
 - 6.2.2 Knapsack problem
 - 6.2.3 Hash problem
 - 6.3 Role play
 - 6.3.1 Chef and customer
 - 6.3.2 Romeo and Juliet
 - 6.3.3 predator-prey
 - 6.4 Conditional response
 - 6.5 traffic jams
 - 6.6 Gene pollution

- 6.7 Timer
- 6.8 Switch
 - 6.8.1 AND gate
 - 6.8.2 Toggle

- 7. Daily use
 - 7.1 Dress
 - 7.2 Cosmetic
 - 7.2.1 Collagen
 - 7.2.2 Moisturize
 - 7.3 Detergent
 - 7.3.1 Toilet cleaner
 - 7.3.2 Soap
 - 7.4 Diet
 - 7.4.1 Food Additive
 - 7.4.1.1 Beer
 - 7.4.1.2 Sweetener
 - 7.4.1.3 Limonene
 - 7.4.2 Fluorescent yogurt
 - 7.4.3 Food safety
 - 7.4.3.1 Meat Hormone detector
 - 7.4.3.2 Alcohol quality detector
 - 7.4.4 Spicy-level detector
 - 7.4.5 Food material
 - 7.4.5.1 Starch
 - 7.5 Safety
 - 7.5.1 Alcohol detector
 - 7.5.2 Toxicant detector
 - 7.6 Handy device
 - 7.6.1 Heater
 - 7.6.2 Timer
 - 7.6.3 Current detector
 - 7.6.4 Digital display

- 8. Industry
 - 8.1 Molecular transport
 - 8.2 Cybernation
 - 8.3 Bio-printer
 - 8.4 Material
 - 8.4.1 Limonene
 - 8.4.2 Waterproof
 - 8.4.3 Airbag
 - 8.4.4 Bio-plastic
 - 8.4.5 Parachute
 - 8.4.5.1 Cobweb

- 8.4.6 Plumber
- 8.4.7 Cellulose
- 8.4.8 Nano-material
- 8.4.9 Resin
 - Sorbital
- 8.4.10 Antibiosis
- 8.5 Food additives
 - 8.5.1 Beer
 - 8.5.2 Sweetener
 - 8.5.3 Limonene
- 8.6 Heating
- 9. Health
 - 9.1 Fitting
 - 9.1.1 Fitting Food
 - 9.1.2 Moisturize
 - 9.1.2.1 Sorbierite
 - 9.1.3 Sunscreen
 - 9.1.3.1 Sorbierite
 - 9.1.3.2 Ultraviolet-proof
 - 9.1.3.3 Sun cream
 - 9.1.4 Nutrition
 - 9.1.4.1 Vitamin C
 - 9.1.4.2 Life Extension
 - 9.1.4.3 health care
 - 9.1.4.4 Vitamin A
 - 9.1.4.5 Beta-carotene
 - 9.1.5 Smoking cessation
 - 9.2 Medical
 - 9.2.1 Antibiotic
 - 9.2.2 Material
 - 9.2.2.1 Bio-tendon
 - 9.2.2.2 Sutures
 - 9.2.2.3 Superfine syringe
 - 9.2.3 Detect & eliminate phage
 - 9.2.4 Retina synthesis
 - 9.2.5 Disease
 - 9.2.5.1 LAC lose intolerance
 - 9.2.5.2 Cholerae
 - 9.2.5.3 Diabetes
 - 9.2.5.4 Obesity
 - 9.2.5.5 Leucoderma
 - 9.2.5.6 Parasite
 - Schistosome
 - Malaria

- 9.2.5.7 Pulmonary tuberculosis
- 9.2.5.8 Pathogenic Bacterium cide
 - Vibrio cholera
 - Staphylococcus
- 9.2.5.9 Leuke mia
- 9.2.5.10 Cancer
 - Cervical cancer detector
 - Breast cancer detector
 - Cure
 - Rectal cancer detector
 - CO2 detector
- 9.2.5.11 Oral disease
 - Saprodontia
- 9.2.5.12 Atherosclerosis
- 9.2.5.13 Cardiovascular
 - Myocardial infarction
 - Stem cell
- 9.2.5.14 Encephaledema
- 9.2.5.15 Glaucoma
- 9.2.6 Petide
- 9.2.7 Bio-capsule
- 9.2.8 protein production
- 9.2.9 Eco-doctor