cardbio

cardiovascular disease biomarkers

Team Brazil UFMG 2013

Human Practices Cardgame

UFMG

iGEM

Components

Chassis

- Bacteria x2
- Yeast x2
- Cianobacteria x2

Constitutive promoters

- Bass2 x1
- Bass3 x1
- Bass4 x1
- Bass5 x1

Regulated promoters

- rcna (cobalt) x1
- TorR (TMAO) x1
- pwapA (spoiled meat volatiles) x1
- psal (NAHR) x1

Components

Proteins

- GFP x1
- YFP x1
- RFP x1
- BetA x1
- otsA x1
- amorSyn x1
- Laccase x1
- NAHR x1
- ADH x1
- K-As x1

RBS

- Bacterian RBS 2,3,4,5 x1
- Cianobacterian RBS 2,3 x1
- Yeast RBS 3,4,5 x1

Terminators

- Terminator 1 x1
- Terminator 2 x1
- Terminator 3 x2
- Terminator 4 x2
- Terminator 5 x1

Solutions

Mission 1: CardBio

Bacteria + rcna + Bacterian RBS (3+) + GFP/YFP/RFP + Terminator (3+)
Bacteria + TorR + Bacterian RBS (2+) + GFP/YFP/RFP + Terminator (4+)

Mission 2: Space exploration

Bacteria + bass () + Bacterian RBS () + BetA + Terminator ()
Bacteria + bass () + Bacterian RBS () + otsA + Terminator ()

Mission 3: Artemisin and malaria

Levedura + bass () + Yeast RBS () + amorSyn + Terminator ()

Mission 4: Fuel from sunlight

Cianobacteria + bass () + Cianobacterian RBS () + ADH + Terminator ()

Mission 5: Celiac disease

Bacteria + bass () + Bacterian RBS () + K-As + Terminator ()

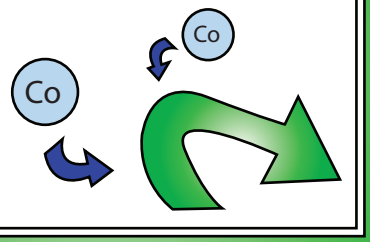
Mission 6: Microplastic

Bacteria + bass () + Bacterian RBS () + NAHR + Terminator ()
Bacteria + pSAL + Bacterian RBS (5+) + Laccase + Terminator (1+)

Mission 7: Spoiled meat

Bacteria + PwapA + Bacterian RBS (4+) + GFP/YFP/RFP + Terminator (2+)

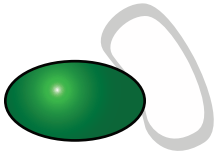
Promoter: rcna



Caracteristics

This promoter is activated by cobalt.

Bacterian RBS 3



Caracteristics

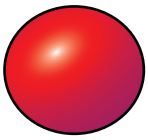
This RBS works in bacterias alongside promoters with strength 3 or more.

Gene: GFP

Caracteristics

This gene codifies for a protein that emits green fluorescence.

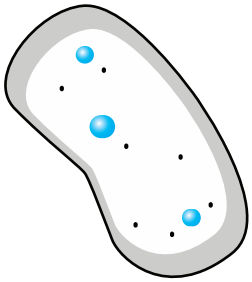
Terminator 4



Caracteristics

This terminator works alongside promoters with strength 4 or less.

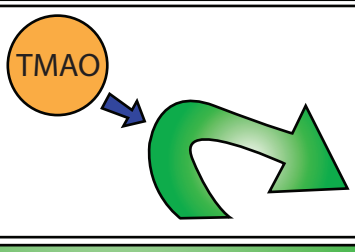
Chassis: Bacteria



Caracteristics

Microscopic organism formed by a single cell, without membrane-delimited organels (procaryotic). Its genetic material doesn't remain inside of a nucleus, but on the cell cytoplasm. Has naturally high reproductive rate, generally reproducing by dividing itselft into two new cells. It also has high natural plasticity, being able to incorporate genetic material from the surroundings (transformation) or from other bacteria (conjugation).

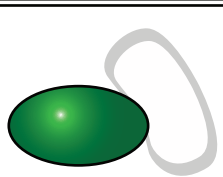
Promoter: TorR



Caracteristics

This promoter is activated by TMAO.

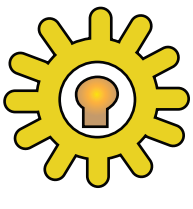
Bacterian RBS 2



Caracteristics

This RBS works in bacterias alongside promoters with strength 4 or more.

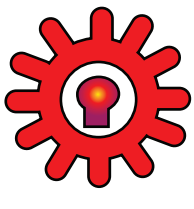
Gene: YFP



Caracteristics

This gene codifies for a protein that emits yellow fluorescence.

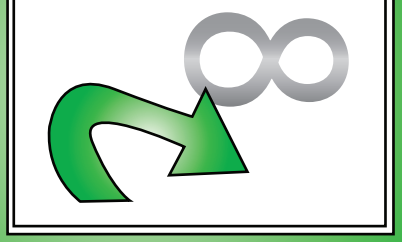
Gene: RFP



Caracteristics

This gene codifies for a protein that emits red fluorescence.

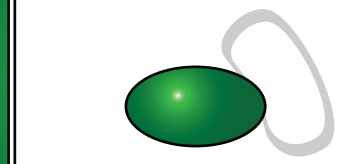
Promoter: bass5



Caracteristics

This promoter is always active.

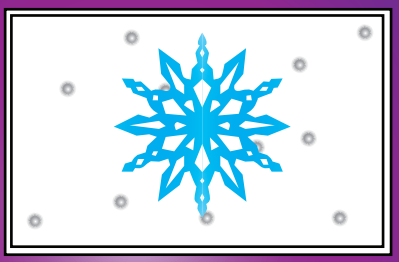
Bacterian RBS 4



Caracteristics

This RBS works in bacterias alongside promoters with strength 2 or more.

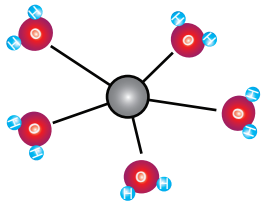
Gene: betA



Caracteristics

This gene codifies for a protein that prevents cell destruction by cold.

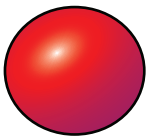
Gene: otsA



Caracteristics

This gene codifies for a protein that protects the cell against loss of water.

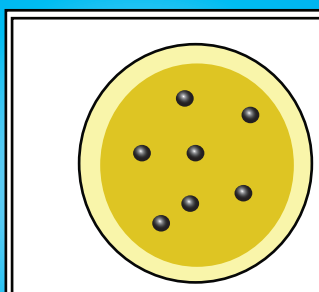
Terminator 5



Caracteristics

This terminator works alongside promoters with strength 5 or less.

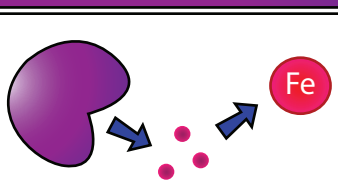
Chassis: Yeast



Caracteristics

Microscopic organism, formed by a single cell, with genetic material and organels delimited by membranes (eukaryotic). Belongs to the realm of fungi.

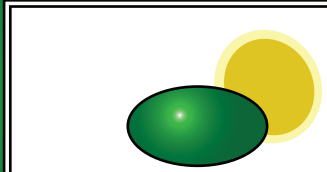
Gene: amorSyn



Caracteristics

This genes codifies for a protein that synthesizes the substance artemisin.

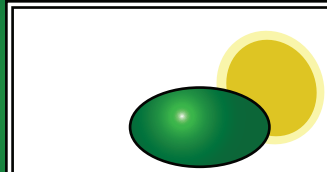
Yeast RBS 4



Caracteristics

This RBS works in yeasts alongside promoters with strength 2 or more.

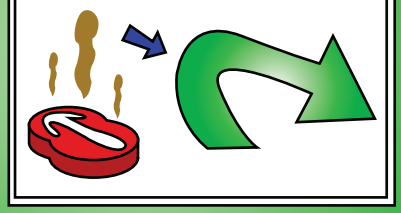
Yeast RBS 5



Caracteristics

This RBS works in yeasts alongside promoters with strength 1 or more.

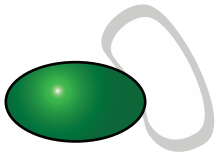
Promoter: PwapA



Caracteristics

This promoter is activated by volatile molecules liberated by bacterias growing on spoiled meat.

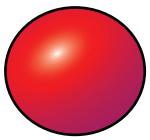
Bacterian RBS 5



Caracteristics

This RBS works in bacterias alongside promoters with strength 1 or more.

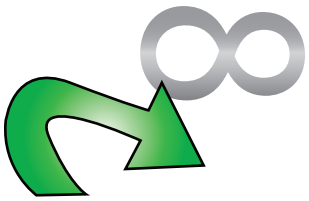
Terminator 2



Caracteristics

This terminator works alongside promoters with strength 2 or less.

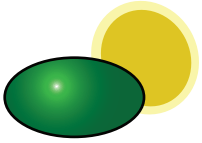
Promoter: bass3



Caracteristics

This promoter is always active.

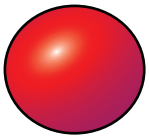
Yeast RBS 3



Caracteristics

This RBS works in yeasts alongside promoters with strength 3 or more.

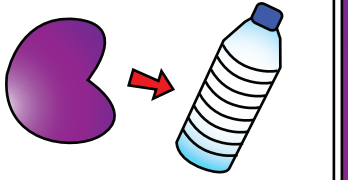
Terminator 3



Caracteristics

This terminator works alongside promoters with strength 3 or less.

Gene: Laccase



Caracteristics

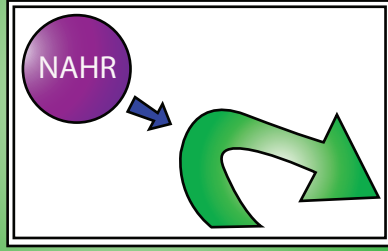
This gene codifies for a protein that destroys plastic.

Gene: NAHR

Caracteristics

Este gene codifies for a protein that activates some promoters when in contact with poluents.

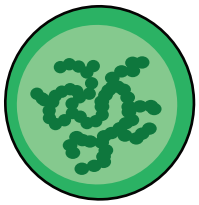
Promoter: pSAL



Caracteristics

This promoter is activated by NAHR.

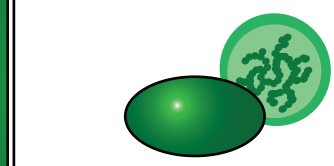
Chassis: Cianobacteria



Caracteristics

Bacteria capable of obtaining energy by producing sugar from sunlight (photosynthesis). It is very important for the releasing of oxygen to the atmosphere.

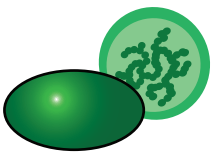
Cianobacterian RBS 2



Caracteristics

This RBS works in cianobacterias alongside promoters with strength 4 or more.

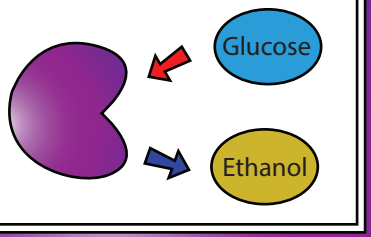
Cianobacterian RBS 3



Caracteristics

This RBS works in cianobacterias alongside promoters with strength 3 or more.

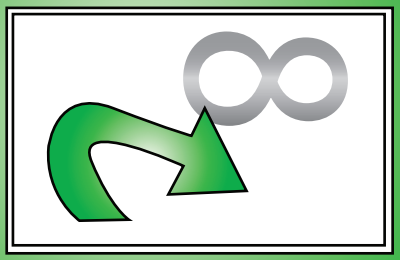
Gene: ADH



Caracteristics

This gene codifies for a protein that transforms glucose into ethanol.

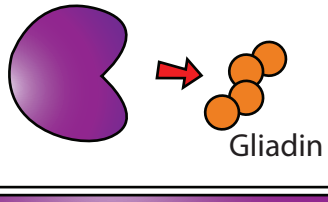
Promoter: bass4



Caracteristics

This promoter is always active.

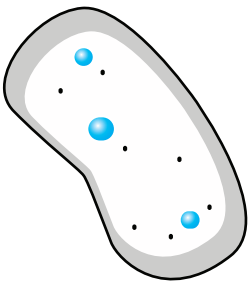
Gene: K-As



Caracteristics

This gene codifies for a protein that destroys gliadins.

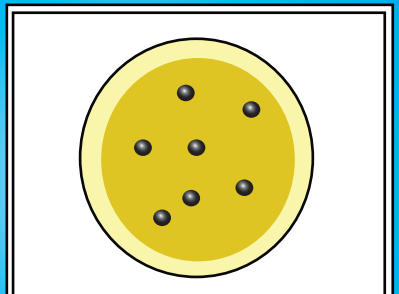
Chassis: Bacteria



Caracteristics

Microscopic organism formed by a single cell, without membrane-delimited organels (procaryotic). Its genetic material doesn't remain inside of a nucleus, but on the cell cytoplasm. Has naturally high reproductive rate, generally reproducing by dividing itselft into two new cells. It also has high natural plasticity, being able to incorporate genetic material from the surroundings (transformation) or from other bacteria (conjugation).

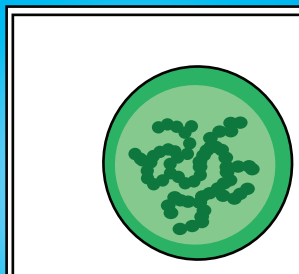
Chassis: Yeast



Caracteristics

Microscopic organism, formed by a single cell, with genetic material and organels delimited by membranes (eukaryotic). Belongs to the kingdom of fungi.

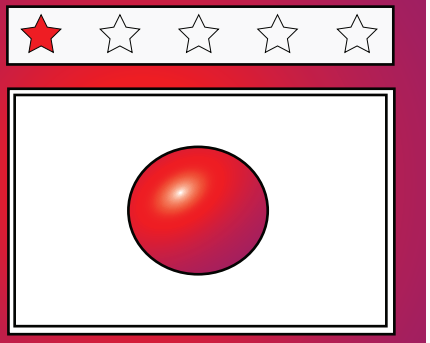
Chassis: Cianobacteria



Caracteristics

Bacteria capable of obtaining energy by producing sugar from sunlight (photosynthesis). It is very important for the releasing of oxygen to the atmosphere.

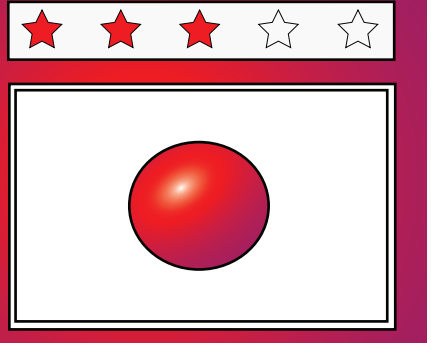
Terminator 1



Caracteristics

This terminator works alongside promoters with strength 1

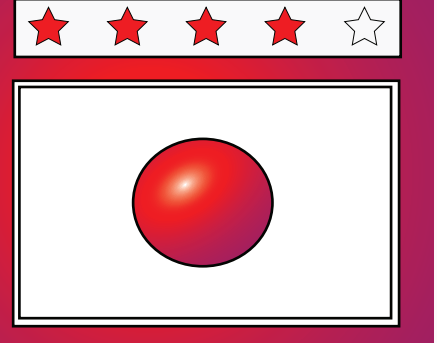
Terminator 3



Caracteristics

This terminator works alongside promoters with strength 3 or less.

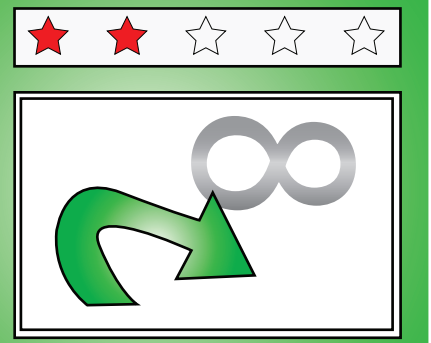
Terminator 4



Caracteristics

This terminator works alongside promoters with strength 4 or less.

Promoter: bass2



Caracteristics

This promoter is always active.