Introduction

Our “Bio capsule system” is a smart system for industrial production of high-value macromolecules. The method of centrifugation takes time and is costly, especially if you think of manufacturing scale. Our bio capsule system enables to harvest bacteria by filtration or decantation.

Conclusions

We have optimized bio-plastic production conditions using operon originated from *R. eutropha* in *E. coli*. We have biobricked these genes for mash-up experimenting with other biobricks. Parallelly we have made an aggregation device and characterized it. Upon combining these two modules we found out that aggregated cell clusters became substantially rigid. We thought that registry catalog was difficult to use so we developed “Biobrick Review” to encourage improvement of biobrick catalog entries.

Bio-plastic Producing Module

We optimized conditions for bio-plastic Poly(3HB) synthesis, and Biobricked the genes.

What Is Poly(3HB)?

Poly(3HB) is bio-plastic synthesized by bacteria as a part of carbon metabolism. It is stored inside of a cell as energy storage molecule. Poly(3HB) can be easily bio-degraded in natural environment, so it is environmentally friendly.

Condition For Efficient Bio-plastic Production

We analyzed Poly(3HB) production with pGEM(phcAB) by changing cultivating conditions.

Poly(3HB) Production Was Qualified By GC/ MS

We successfully identified the product as Poly(3HB) by Gas Chromatography/ Mass Spectrometry.

Lots Of Biobricks

We submitted lots of biobricks (red) to make further bio-plastic development possible!

Bio Capsule System

Co-expression of both modules results in an attractive bio-capsule system!

Bio Capsule Overview

Bio capsule system is made by co-expression of “Aggregation module” and “Plastic producing” module. The “Aggregation module” is induced by addition of arabinose. “Plastic producing module” is constitutively expressed and supplemented with addition of glucose; the source of Poly(3HB).

Precipitation Tests

With both modules precipitation was even faster!

Confirmed Poly(3HB) Production

The production of Poly(3HB) inside of bio-capsule was confirmed by Nile red staining and HPLC.

Discussion

We found that co-transformed cells aggregated to clusters rigid enough to keep their form. This was substantial improvement of cluster stability compared to the strain with aggregation module only.

Human Practice: The “Biobrick Review”

Play with Biobricks.

The Biobrick Review offers you very exciting biobrick ranking events. Post your reviews of favorite biobricks! Your votes put up their rank, and your favorites will become more famous. You only have to sign up and get your account. And you can participate in the fantastic iGEMers’s social network RIGHT NOW! Please visit http://www.bbreview.net

Future planning:
We are working hard to make this website more exciting. Our future plans are posted on the website.