This is not a lemon
This is not a lemon

FastLemon

When life gives you lemons, make lemonade.
Doctor Maher

Researcher at Paris-Sud University

Direction of the Synthetic food unit
Formation of indole

\[
\text{Tryptophan} + \text{H}_2\text{O} \xrightarrow{\text{inaA}} \text{Indole} + \text{NH}_4^+ + \text{Pyruvate}
\]
Odor Free

Donor strain

Recipient strain

Phage Preparation

Transduction

Recombination

Fastlemon strain

Flipase removing antibiotic resistance
Smell the difference

Before

After
The Lemon Scent

Limonene synthase

\[ \text{GPP} \]

\[ \text{Geraniol synthase} \]

\[ \text{β-pinene synthase} \]

S-Limonene

Geraniol

\[ \text{Cinnamyl alcohol dehydrogenase} \]

Citral

\[ \text{Geranial} \]

\[ \text{Neral} \]
Fragrance Pathway

* Coming soon

BBa_K517003
The color

Yellow  Stop  Stop  Blue

+ t-RNA suppressor  Step codon readthrough

- t-RNA suppressor  Translation ends

Salicylate
Romain, France (Picardie)
Doctor Chevallier

Infectious diseases Doctor
Would you like to try FastLemon?

Out of 39 people

YES 23%

NO 77%
Marie, Vietnam (Đồng bằng sông Cửu Long)
THE SMELL OF US

- iGEM Paris Bettencourt -

2014
Bacterial growth over time

\[ \frac{dN}{dt}(t) = \kappa \left( 1 - \frac{N(t)}{r} \right) \]
Events

French Meetup
Join the club now!
Limited stock, order now!
Will the food of tomorrow be synthetic?

Are modified « factory » organisms still alive?

Can modified organisms be used for art?
Will the food of tomorrow be synthetic?
Is Synthetic Biology a solution to feed an ever-increasing population?

Synthetic artificial food:

- Less energy
- Decrease pollution → Green effect
Psychological barriers

Frankensteak

- Yes, I eat: 9%
- No, I do not eat: 91%

Artificial lemon

- Yes, I eat: 23%
- No, I do not eat: 77%
Reasons for these barriers

Gustatory pleasure

Conviviality

Safety
Are modified « factory » organisms still alive?
Are modified « factory » organisms still alive?
Can modified organisms be used for art?

Do you think that using scientific techniques in order to do art is legitimate?

- Yes: 93%
- No: 7%

Do you agree with using living creatures in an artistic way?

- Yes: 77%
- No: 23%

Do you agree with transforming living creature in an artistic way?

- Yes: 69%
- No: 31%
Inspiration

René François Ghislain Magritte
1898-1967
Project realisation
iGEM Paris Saclay 2014

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Instagram.com/igemparis
L-Tryptophan + H₂O → tnaA → Indole + NH₄⁺ + Pyruvate

Formation of Indole
E. coli (tnaA Ω kan) → Phage Preparation → P1 → JW3686 E. coli strain → Phage Transduction → JW3686 (tna Ω kan) → JW3686 Δ tnaA → Flipase

JW3686 E. coli strain


- t-RNA suppressor

Translation ends

Stop codon
readthrough

+ t-RNA suppressor

Yellow

Stop

Stop

Blue
Particle density function

Oxygen density per particle

Measuring the penetration of oxygen.
<p>| Model 01 | 2a46.1.A | 99.50% | GFP-like fluorescent chromoprotein amFP488 |
| Model 02 | 4obs.1.A | 95.59% | FAR-RED FLUORESCENT PROTEIN AQ143 |
| Model 03 | 2a48.1.A | 99.12% | GFP-like fluorescent chromoprotein amFP488 |</p>
<table>
<thead>
<tr>
<th>Model</th>
<th>Seq Identity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>02_A</td>
<td>95.50%</td>
<td>FAR-RED FLUORESCENT PROTEIN AQ143</td>
</tr>
</tbody>
</table>

**Model-Template Alignment**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sequence Alignment</th>
</tr>
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<tbody>
<tr>
<td>02_A</td>
<td>AQLSNKFI0DDMKHTYHMGCVGNNYFTVKGEONKPYygQTSTFKVTHANGGPLAFSFDILSTVFKYGRNFCTAVPTSNFQVFKDAFFGQMSYERTFYYEDGQ 345</td>
</tr>
<tr>
<td>02_B</td>
<td>AQLSNKFI0DDMKHTYHMGCVGNNYFTVKGEONKPYygQTSTFKVTHANGGPLAFSFDILSTVFKYGRNFCTAVPTSNFQVFKDAFFGQMSYERTFYYEDGQ 345</td>
</tr>
<tr>
<td>02_C</td>
<td>AQLSNKFI0DDMKHTYHMGCVGNNYFTVKGEONKPYygQTSTFKVTHANGGPLAFSFDILSTVFKYGRNFCTAVPTSNFQVFKDAFFGQMSYERTFYYEDGQ 345</td>
</tr>
<tr>
<td>02_D</td>
<td>AQLSNKFI0DDMKHTYHMGCVGNNYFTVKGEONKPYygQTSTFKVTHANGGPLAFSFDILSTVFKYGRNFCTAVPTSNFQVFKDAFFGQMSYERTFYYEDGQ 345</td>
</tr>
<tr>
<td>02_E</td>
<td>AQLSNKFI0DDMKHTYHMGCVGNNYFTVKGEONKPYygQTSTFKVTHANGGPLAFSFDILSTVFKYGRNFCTAVPTSNFQVFKDAFFGQMSYERTFYYEDGQ 345</td>
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</table>

**OMOE & QMEAN4**

<table>
<thead>
<tr>
<th>OMEO</th>
<th>QMEAN4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.45</td>
<td>2.44</td>
</tr>
</tbody>
</table>
Not to Be Reproduced (1937)

— Indol

Leci n'est pas une pipe.
The Red Model (1935)

Are you accustomed to travel?

Whether you plan to hike, drive, fly, take a train or a boat, talk to Canada Customs first. Times change.