Proposition de stage M2 à l'UMR GenPhySE (INRA Toulouse)

Culturomics using microfluidics

Keywords : Microfluidic, culture

Context

Sequencing does not completly replaces culture approaches, which are still laying the basis needed when it comes to interpret sequences. However it is very time-consuming.

Here we aim to use the work of a postdoc working in microfluidics to generate hundreds of droplets containing a single bacterial cell, effectively generating hundreds of micro-cultures.

Aims of the master student

With the help of other INRA partners, the planning for the master student is the following :

1. Setup the microfluidic device in the NED team
2. Generate 30 um droplets containing a single bacterial cell
3. Try 5 different media and count the droplets displaying growth as an indicator of the percentage of cultivable cells through this technique
4. Sequence the growing cells using the Illumina technology and the pipelines available in the lab (no prior bioinformatics knowledge required)

Once the proof of concept achieved (estimated time=3 months), the student will continue the work by one or more of the following :
-automatisation with a pipetting robot for high throughput
- check for antibiotic resistance

Abilities

The student should understand english and be highly motivated. Previous knowledge about handling microbial communities would be appreciated but is not necessary.

Contact for more information

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Practical details

- 6 months from Jan to Jun 2016
- INRA Toulouse – UMR GenPhySE à Auzeville (31)
- paid about 550 €/mois – (lunch available on site for ~ 2.50 eur)