

## Chemistry Department

### Microbial contribution to biofuels by-product valorization

Chemical and Biochemical Engineering/  
Microbial Ecology and Technology Lab.



**requimte**

rede de química e tecnologia



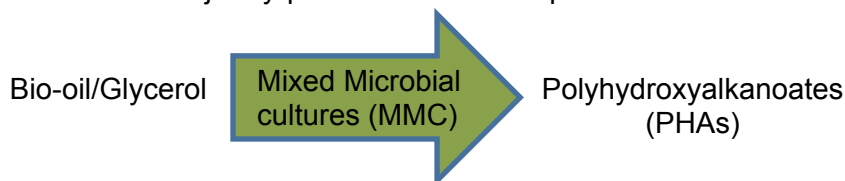
## Rita Moita Fidalgo

(pH Student)

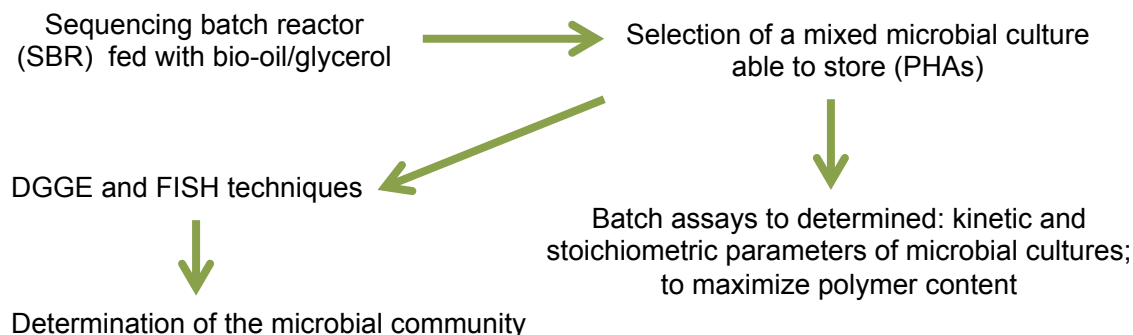
- Degree in Biotechnological Engineering
- Participation in 9 conferences (5 oral + 4 poster presentations)
- 3 papers in international peer-review journals

## Objectives

The aim of this work was to evaluate the contribution of microbial cultures for the valorisation of two biofuels manufacture waste/by-products, bio-oil and glycerol. Bio-oil is the resulting liquid phase from fast-pyrolysis of biomass and glycerol is considered as the major by-product of biodiesel production.



## Methodology



## Expected Results

### Bio-oil

A co-polymer of HB-co-HV (HB=70%/HV=30%) was accumulated by the selected mixed culture.

### Glycerol

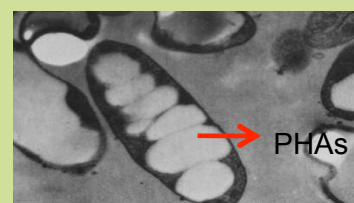
Two biopolymers were produced: HB and glycogen

### DGGE and FISH

FISH and sequencing of specific bands from the DGGE gel will allow the identification of different species involved on PHA accumulation

Substrate	Bio-oil	Glycerol
$Y_{PHA/S}$	0.30	0.15
Max PHA content	10	10
$Y_{Gly/S}$	-	0.45
Max Glycogen content	-	30

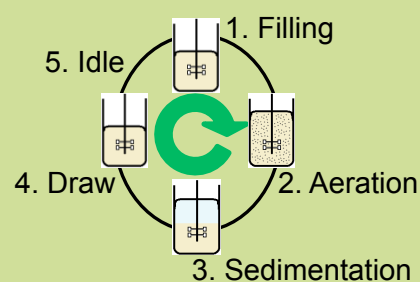
Yields in C-mmol/C-mmol and contents in % g/g cell dry weight



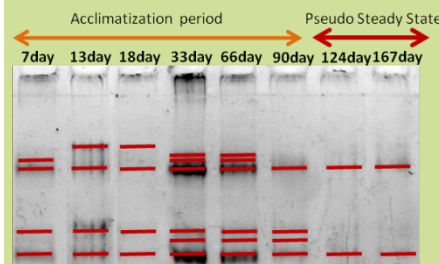
Biodegradable biopolymers with multiple application.



### SBRs operation



### DGGE



### FISH

