Interview with Mrs Lafforgue

WHO ARE WE INTERVIEWING? (job, studies…)

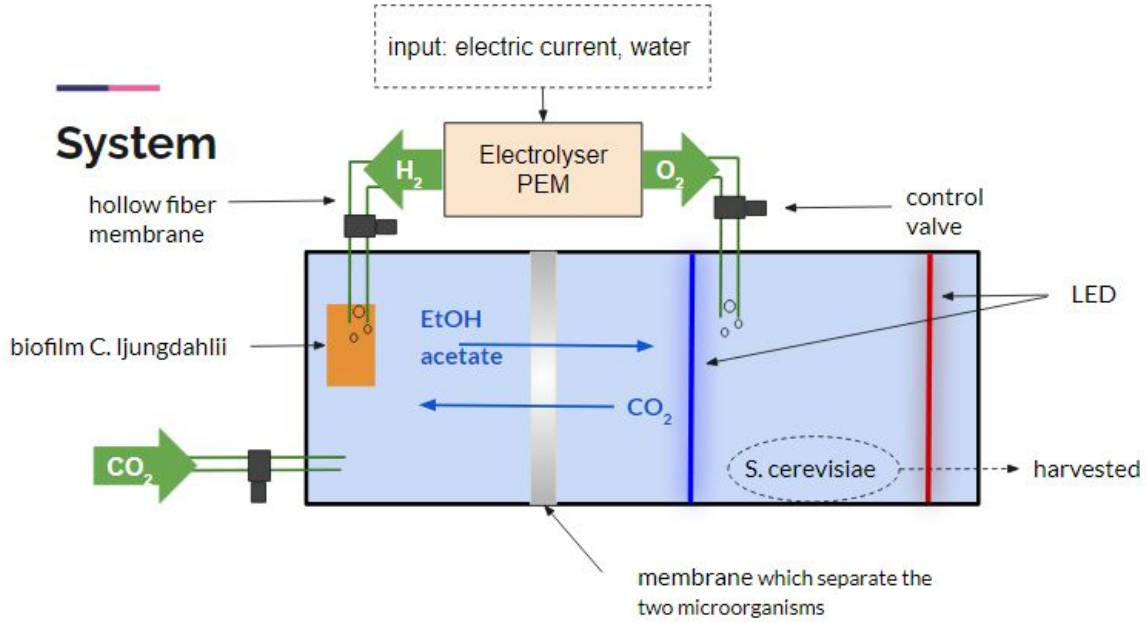
Christine Lafforgue is a teacher at the National Institute of Applied Science at Toulouse and researcher at the Toulouse Biotechnology Institute.

CONTEXT (Why did we do this interview?)

We contacted Mrs Lafforgue on the advice of Mr Cockx. Indeed, she has experience with cocultures. Mr Cockx wanted us to talk to her in order to be sure that our system is feasible.

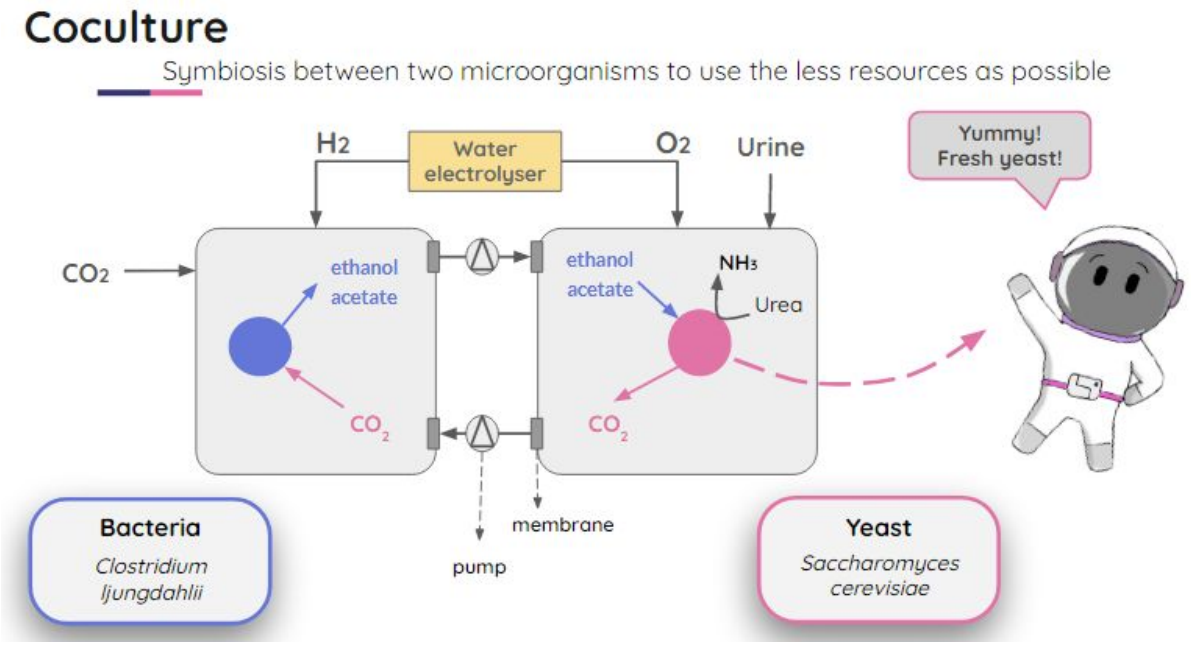
INTERVIEW (summary of the interview)

Before this interview, our system looked like the scheme below. It was one reactor separated by a membrane with *C. ljungdahlii* in one side and *S. cerevisiae* in the other without agitation. The gas transfer would be done by hollow fiber membrane and the culture mode would be a batch.



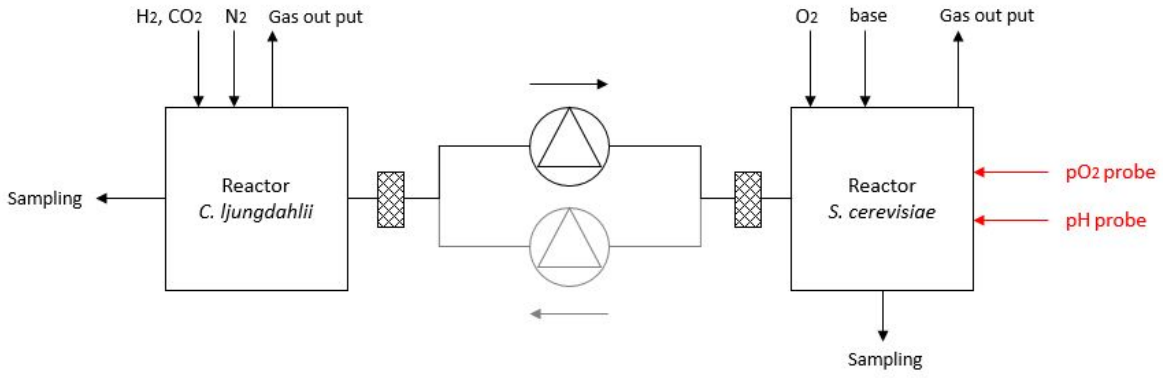
Scheme of coculture system between C. ljungdahlii and S. cerevisiae before the 26th of June 2020

She told us that if there is no flow through the membrane, the transfer of molecules from one side to the other would only be done by diffusion. It would be too slow… She advised us to design the system as two reactors with a circulation of media between both.



Scheme of coculture system between C. ljungdahlii and S. cerevisiae after the 26th of June 2020

After this interview, she continued to help us in the setting up of the coculture experiments. At first, we wanted to set up the system of reactors as the final scheme of the system, but our pumps are not precise enough to be used like we wanted. It would generate a variation of flow which would change the volume in each reactor. Finally, we decided to change the design of the proof of concept system:



Scheme of the proof of concept system

The exchange of medium from one reactor to the other will be done sequentially in one direction then the other. Filters will be used to prevent microorganisms from going into the other compartiment and the change of flux direction will prevent filters from clogging.

PRIOR WORK

Then, we had to know the volume ratio between the bacteria's reactor and the yeast's one. Eliot implemented these changes in the model to have the answer.

We also had to think about how to monitor the system and how to follow the culture… We asked a technician of our laboratory to train us to set up the reactor.