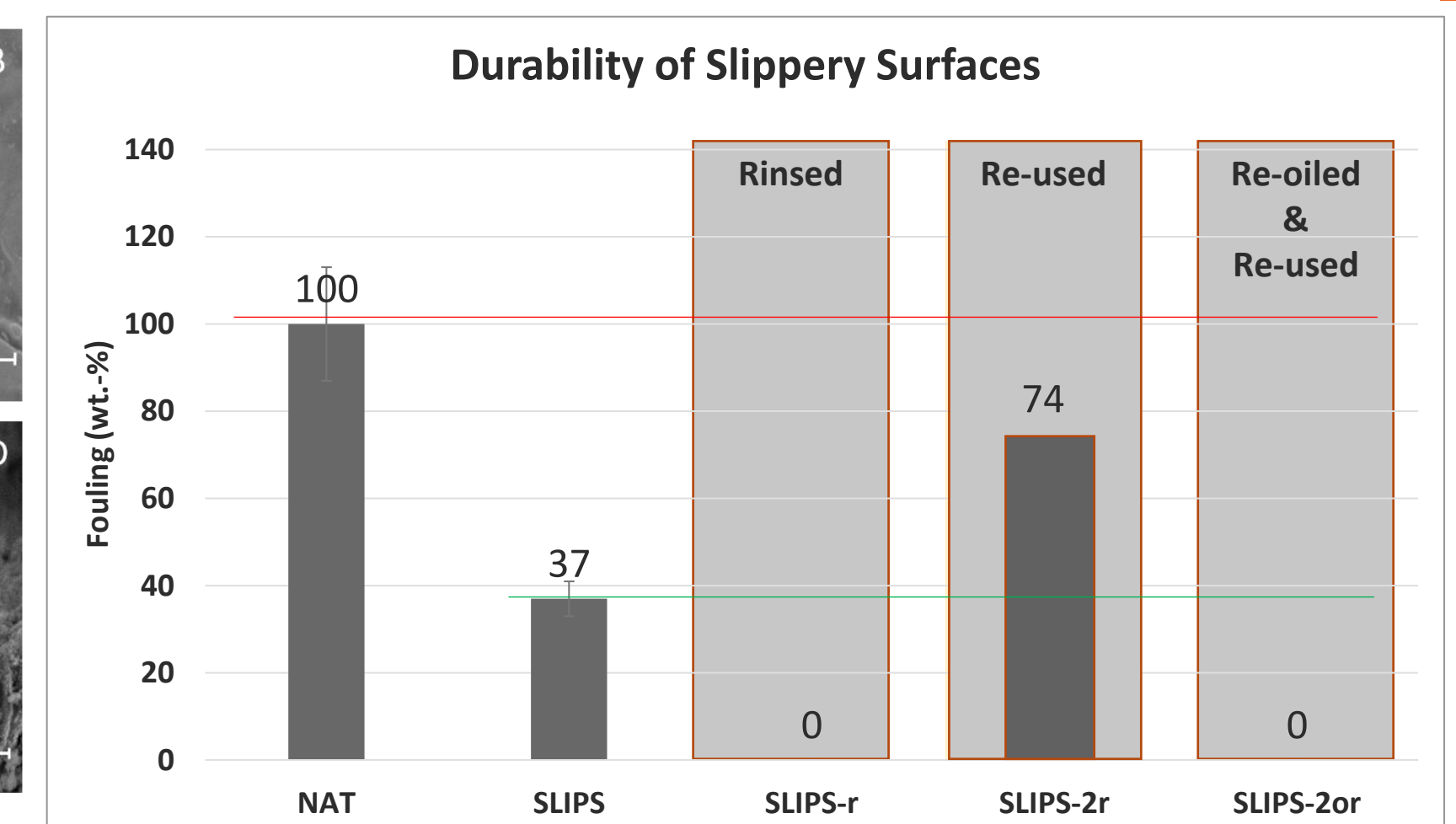
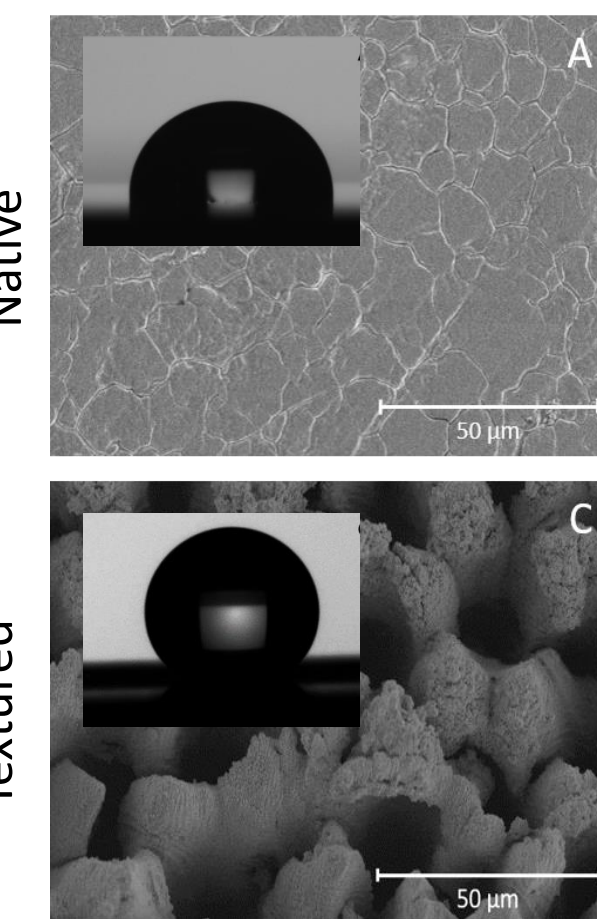
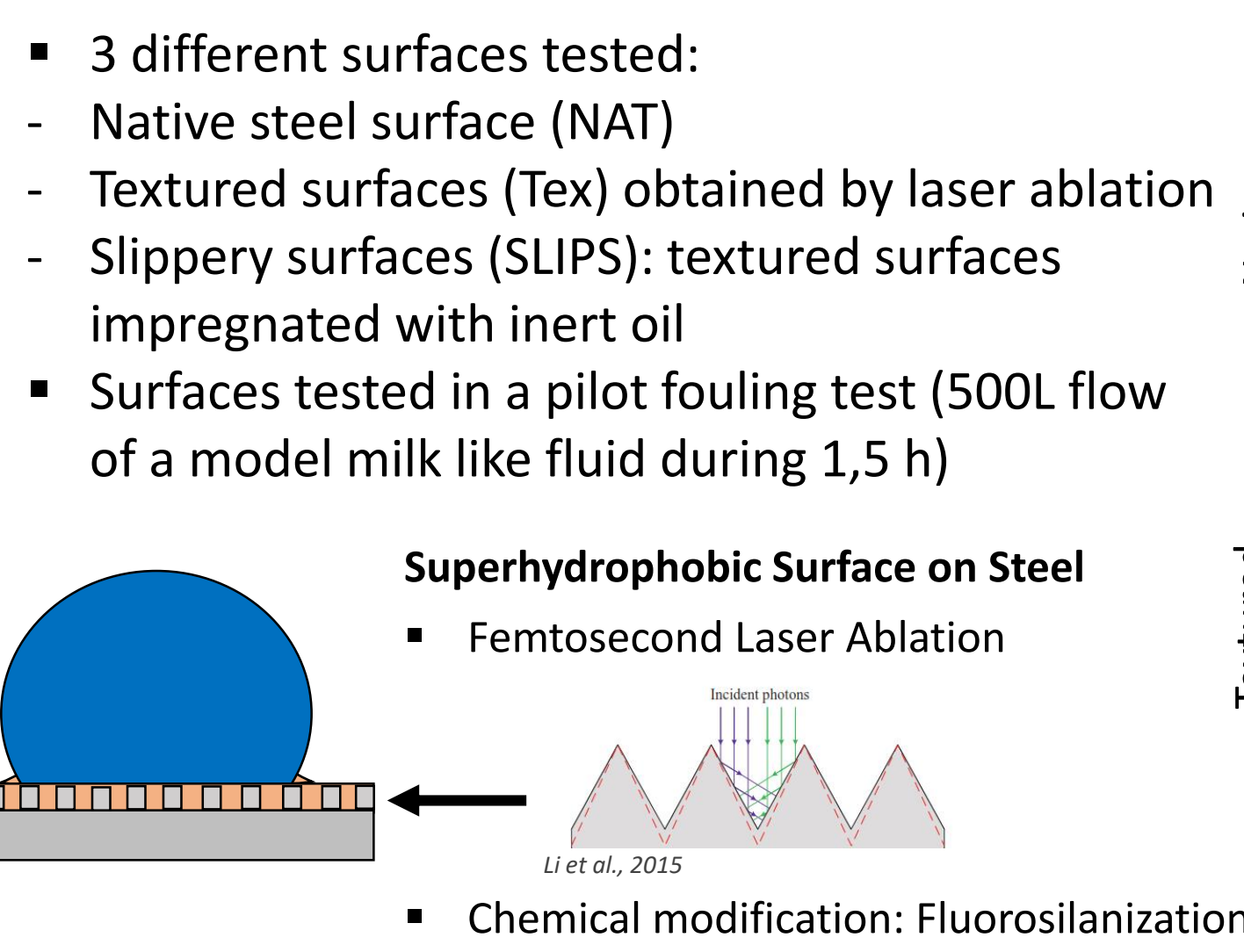
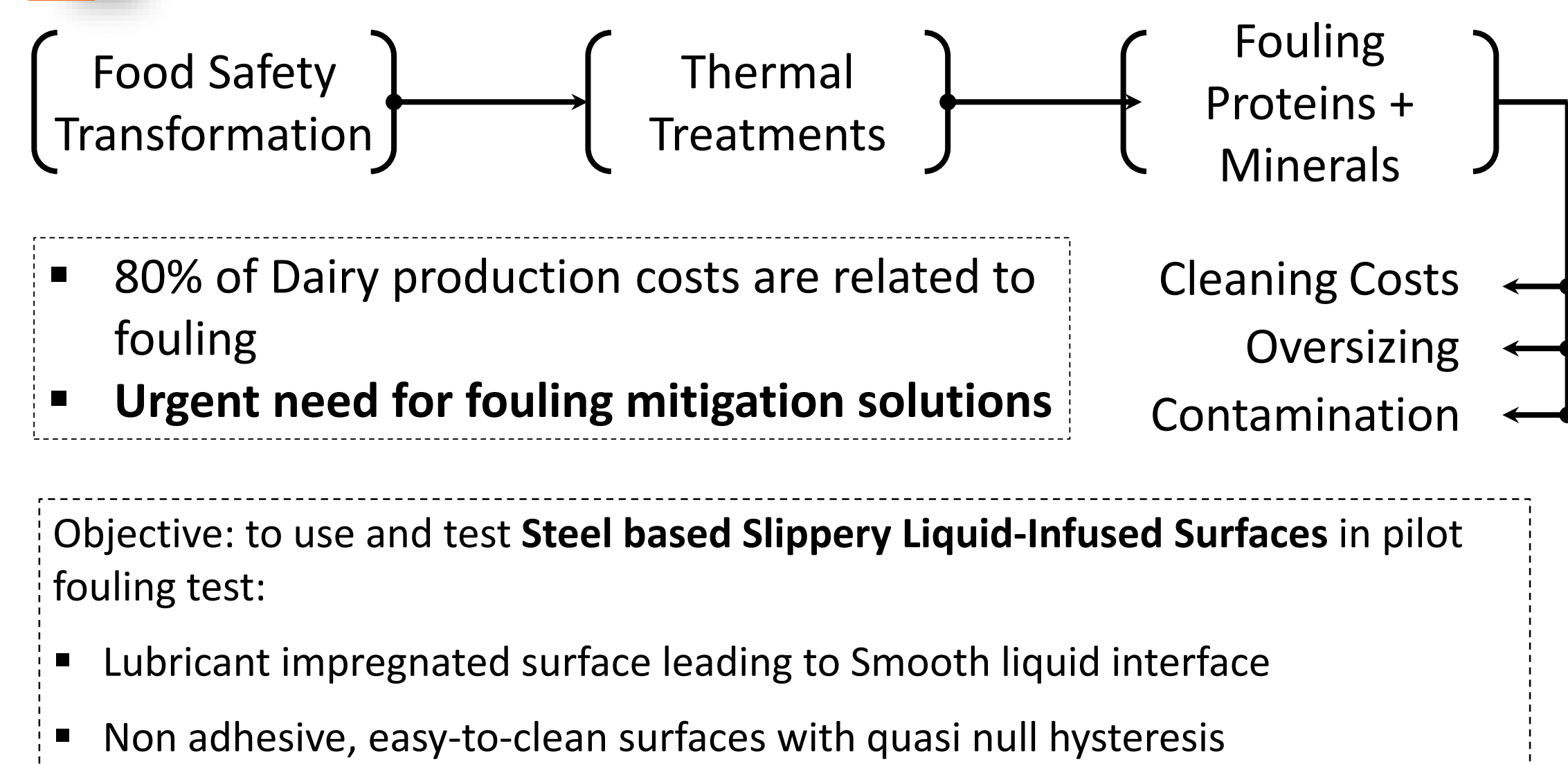


Permanent Staff on 1<sup>st</sup> January 2019 (4,4 ETP) : Michèle CARETTE (Ass. PR.), Thomas DARGENT (Ass. PR), Jérôme FOLLET (Ass. PR), Cagatay TARHAN (Ass. PR), Vincent THOMY (Ass. PR), Anthony TREIZEBRE (Ass. PR), Céline VIVIEN (Ass. PR), Alexis VLANDAS (CR).

**Non-Permanent Staff:** 2 Engineers, 10 Ongoing PhD, 10 PhD defended (2013-2018).

### Controlling (non) wetting properties for anti-bifouling surfaces

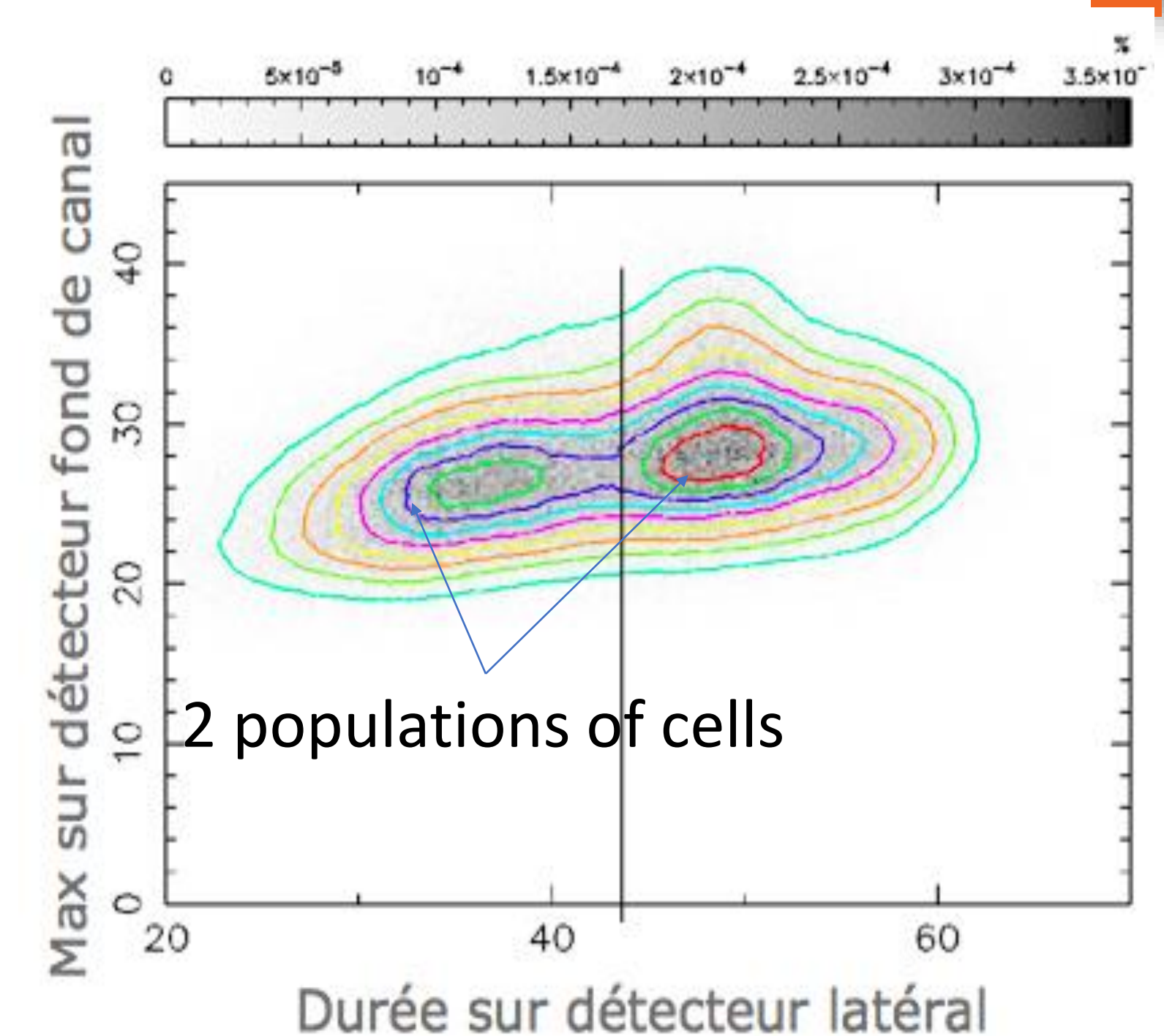
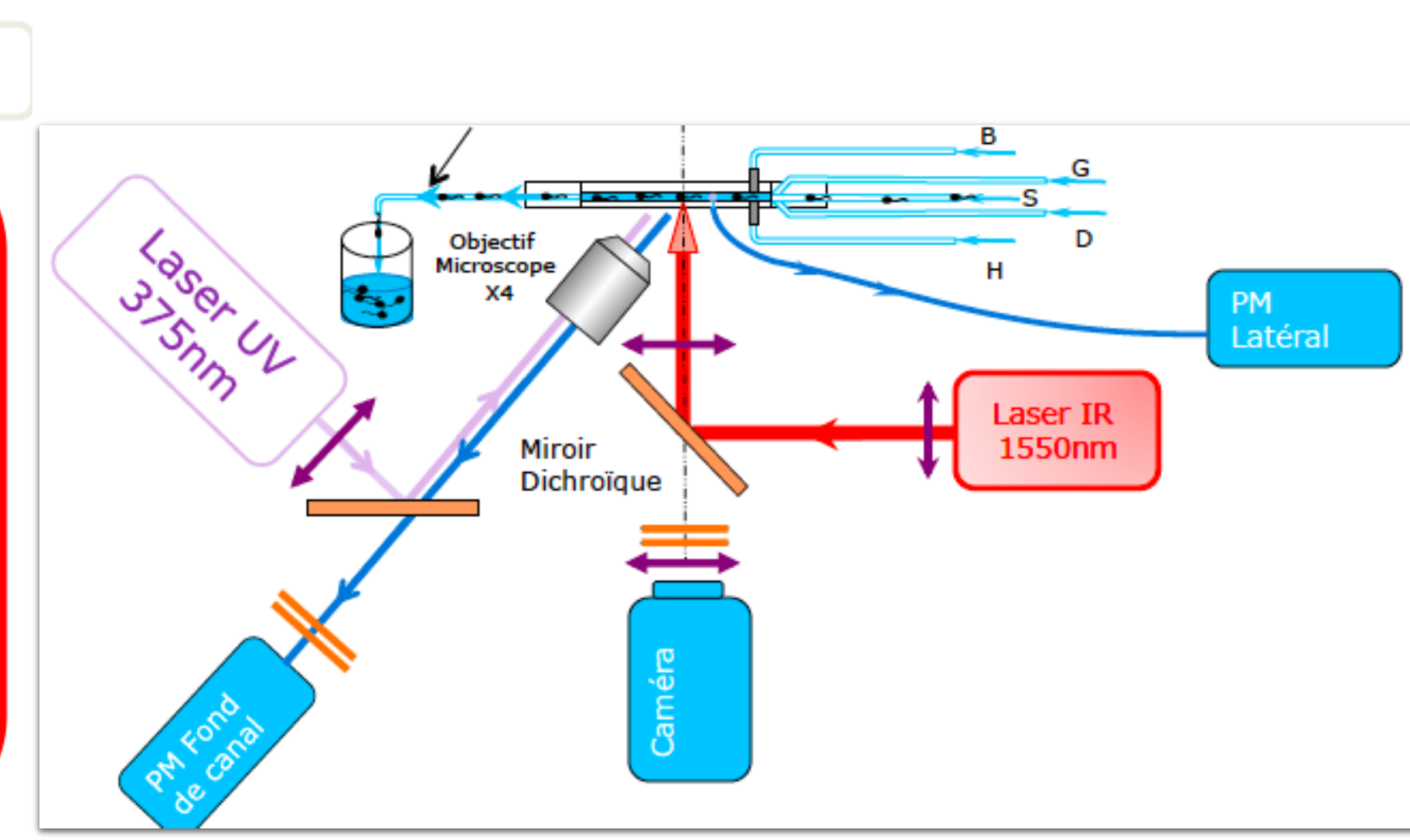
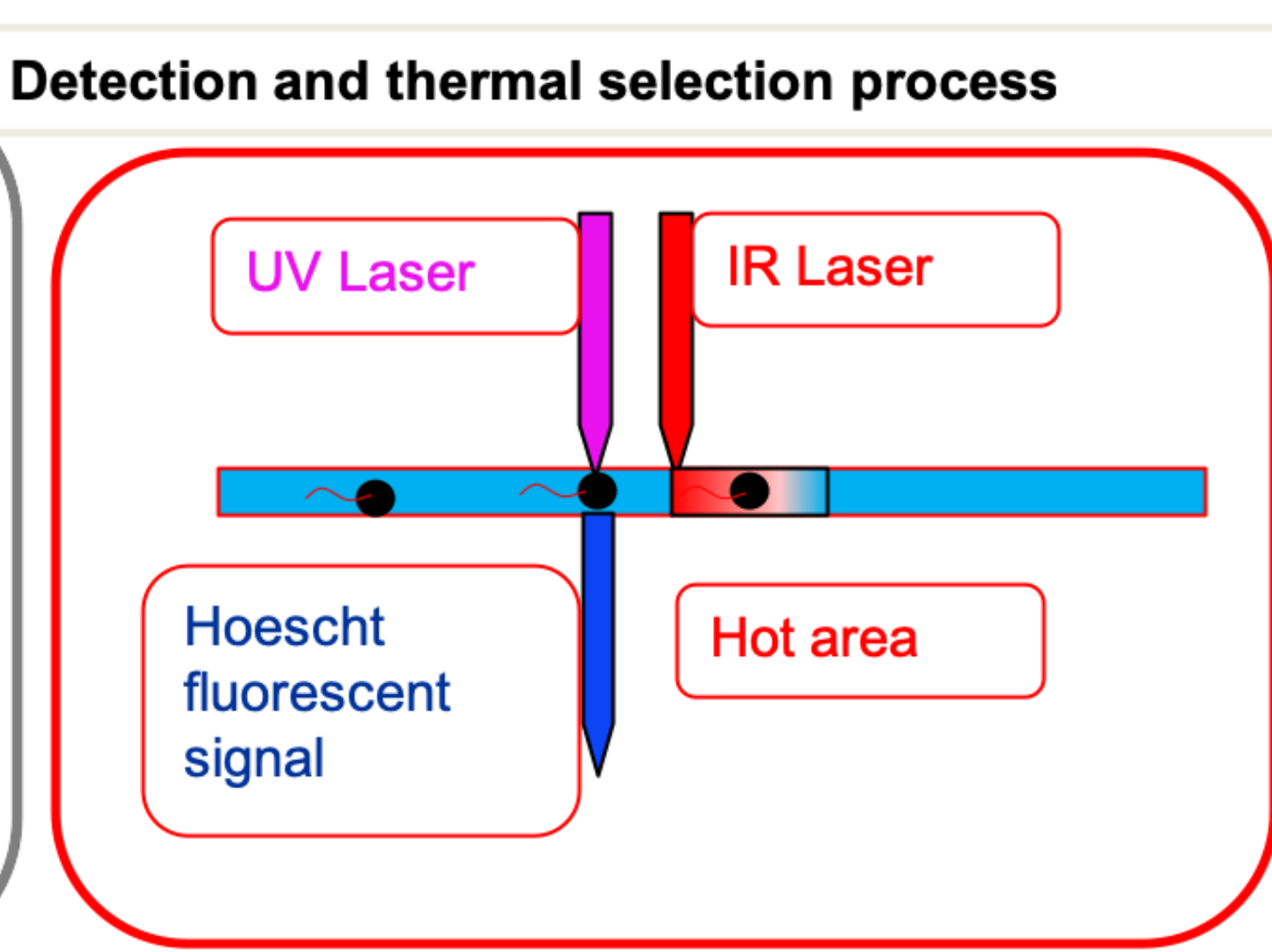
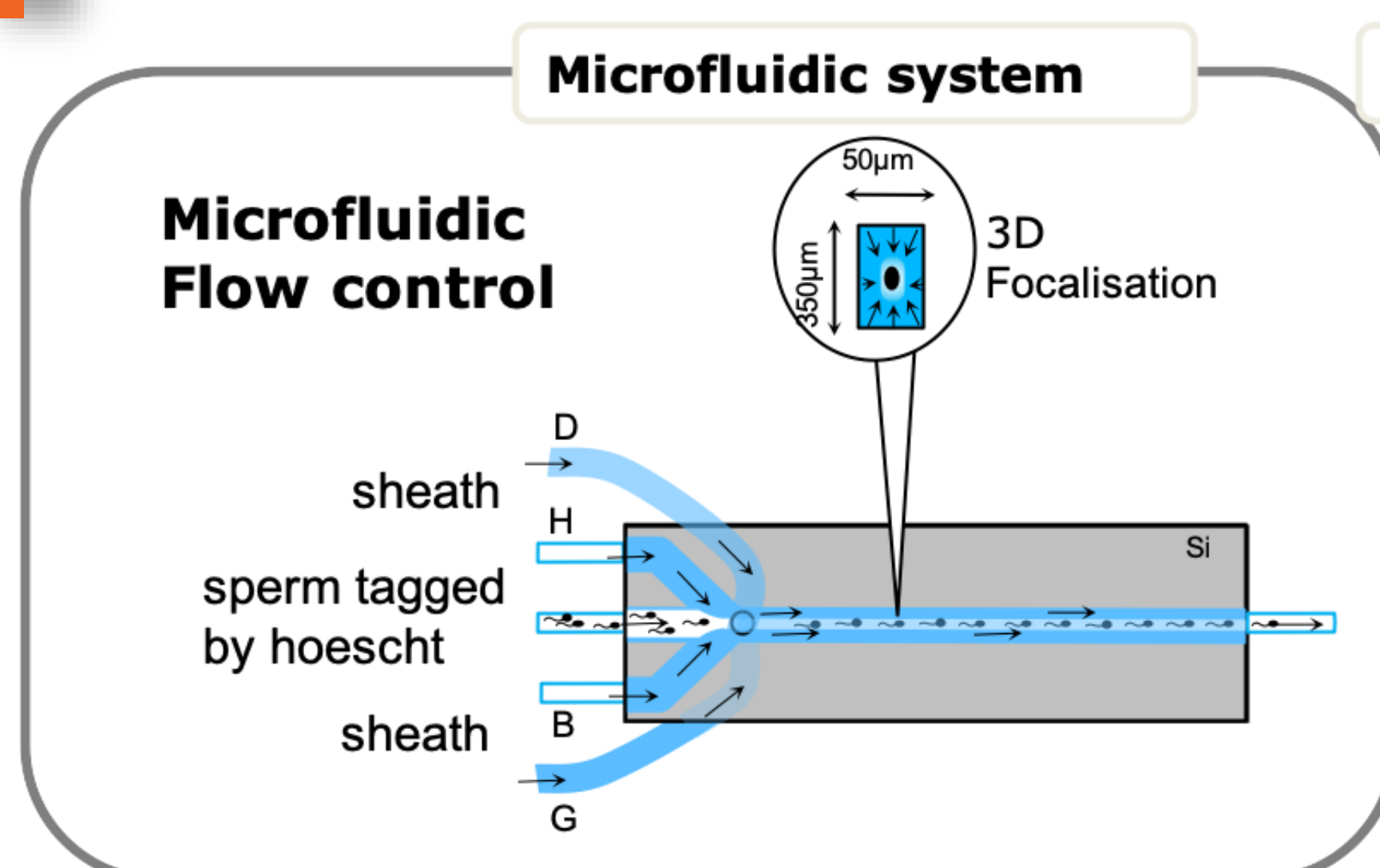


- Compare to native steel surface, SLIPS surface showed great fouling release properties:
- 73% (SLIPS) and down to -100% after a simple water rinse.
- A reuse of the same surface area shows a deterioration in performance due to loss of oil in the dairy environment (SLIPS-r)
- A fouling release of -100% is found after oil reimpregnation (SLIPS 2or)

ZOUAGHI S. et al. ACS Appl. Mater. Interfaces 9, 31 (2017) 26565-26573 / **ANR Economics 2018-2021**

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### High throughput opto-microfluidic cytometer devices

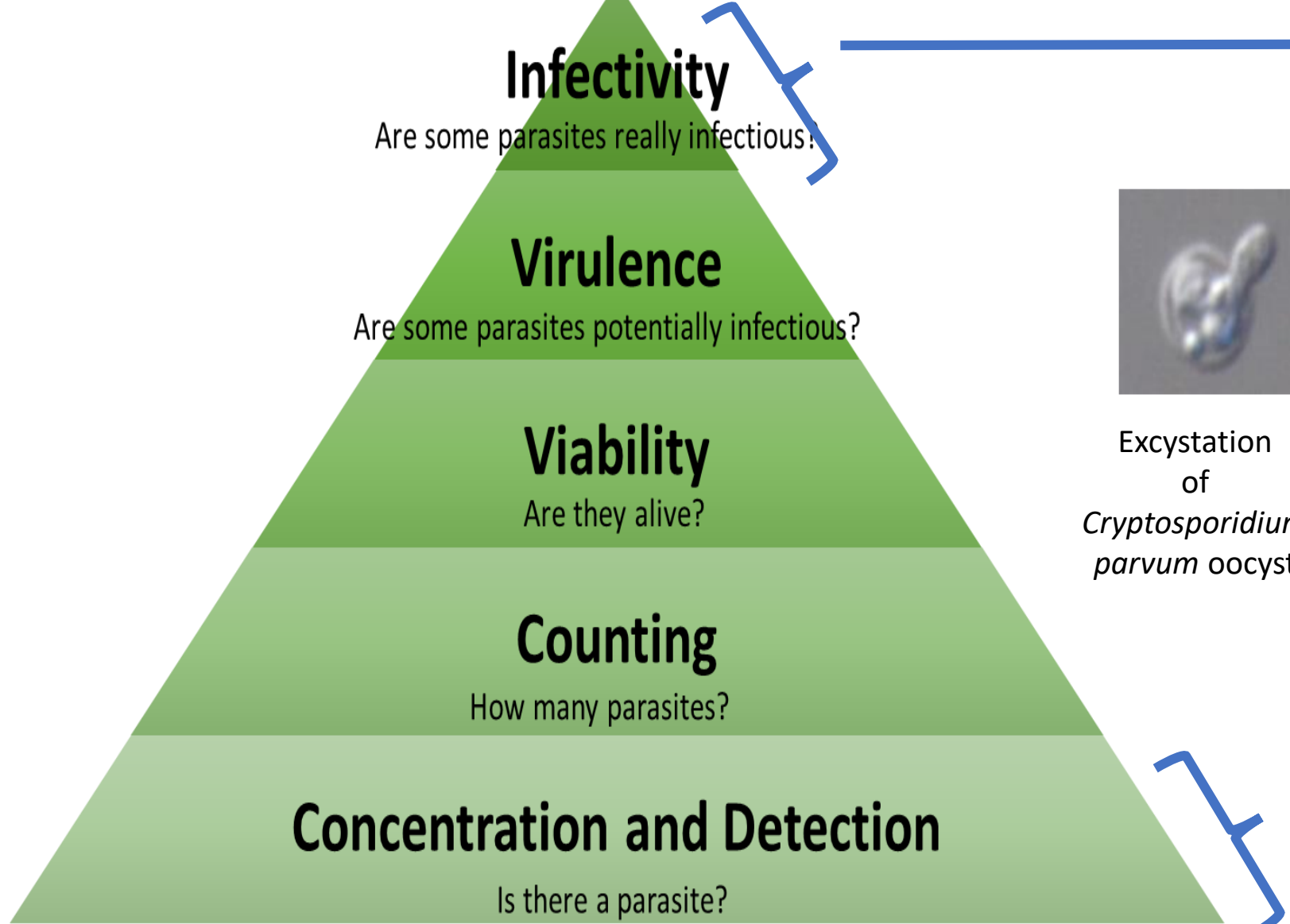


- Development of a microfluidic systems for the life sciences based on the development of a glass/silicon/glass technology.
- It leads to the realization of a novel opto-microfluidic cytometric systems integrating 3D hydrodynamic focusing and optical fiber.
- This device is able to analyze and process in real time more than 6500 events per second.

Contact: [anthony.treizebre@univ-lille.fr](mailto:anthony.treizebre@univ-lille.fr) Industrial contract with biotech partner (1 000 keuros for 4 years): 2 patents Coll. With PhLAM laboratory (ULille-CNRS)

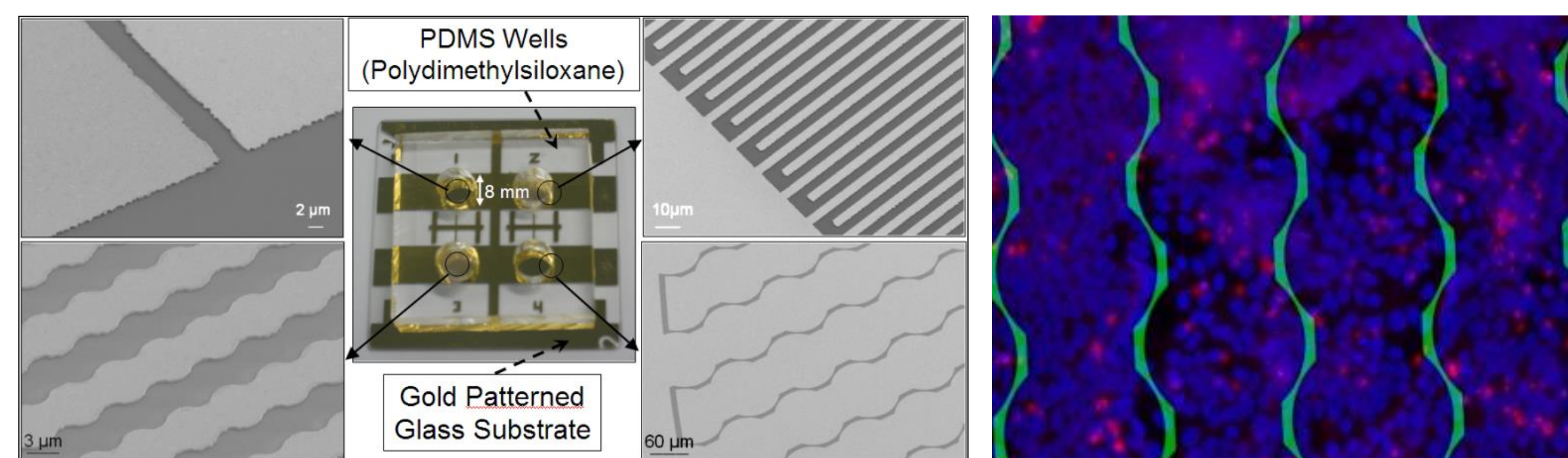
### Development of Electric Micro-System based devices In the study of *Cryptosporidium* parasite

#### Impedance spectroscopy

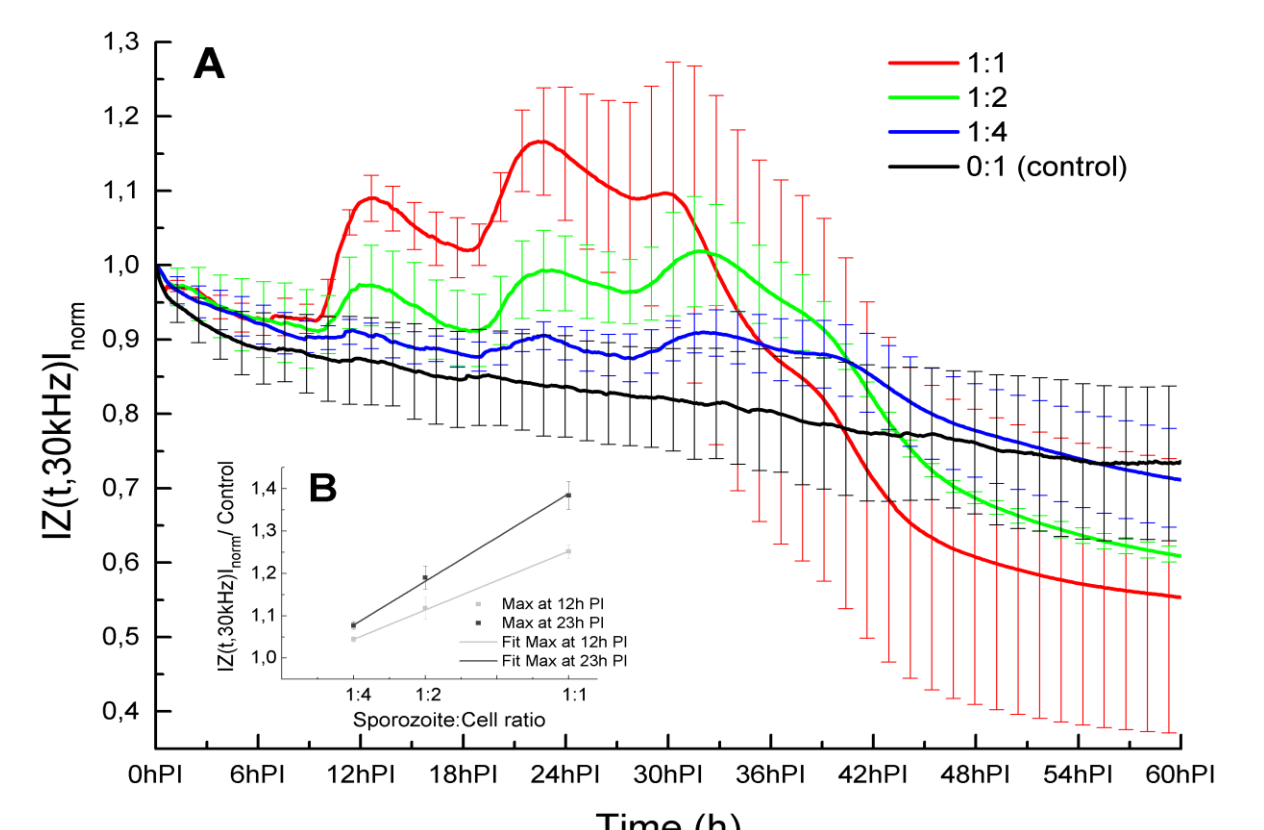


In Africa and Asia, second cause of severe diarrhea leading to death in children under 2 years of age. No medicine nor vaccine for humans or animals health is available

#### EWOD



The MEMS device was design in the clean room and electrically characterized. Human *adenocarcinoma* cells (HCT-8) were therefore seeded and grown on this network of interdigitated planar microelectrodes. Cells were then infested with *C. parvum* oocysts.



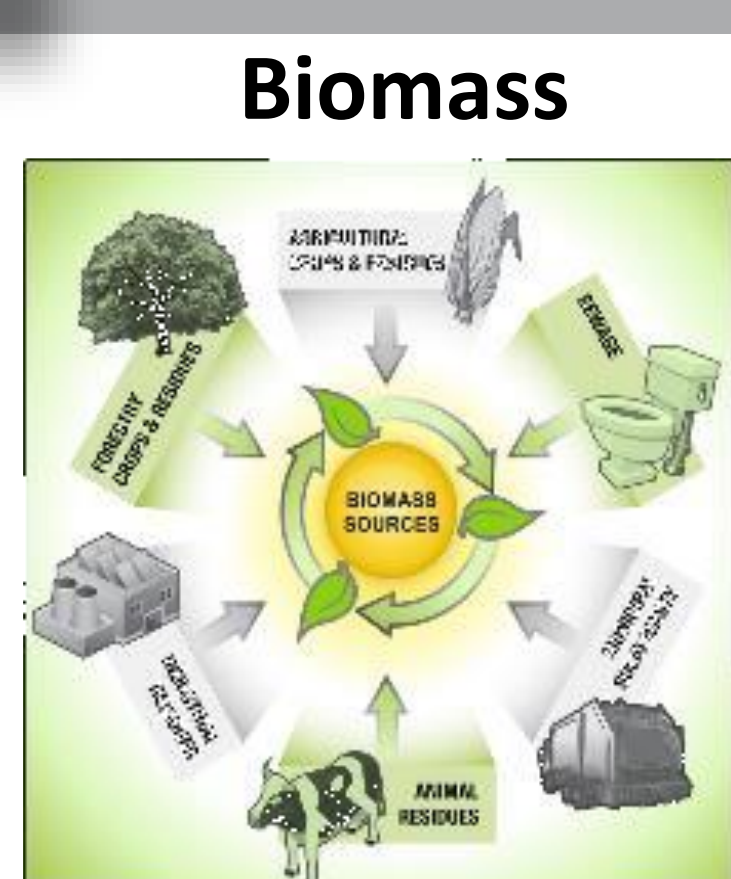
The continuous measurement of the impedimetric cell layer response has led to characterize the parasitic infestation.

Risk Analysis due to *Cryptosporidium*

Contact: [jerome.follet@yncrea.fr](mailto:jerome.follet@yncrea.fr)

Dibao-Dina A. et al, 2015 Biosensor Bioelectronics and Lejard-Malki R. et al., 2018, 18, 3310 – 3322 Lab-on-Chip

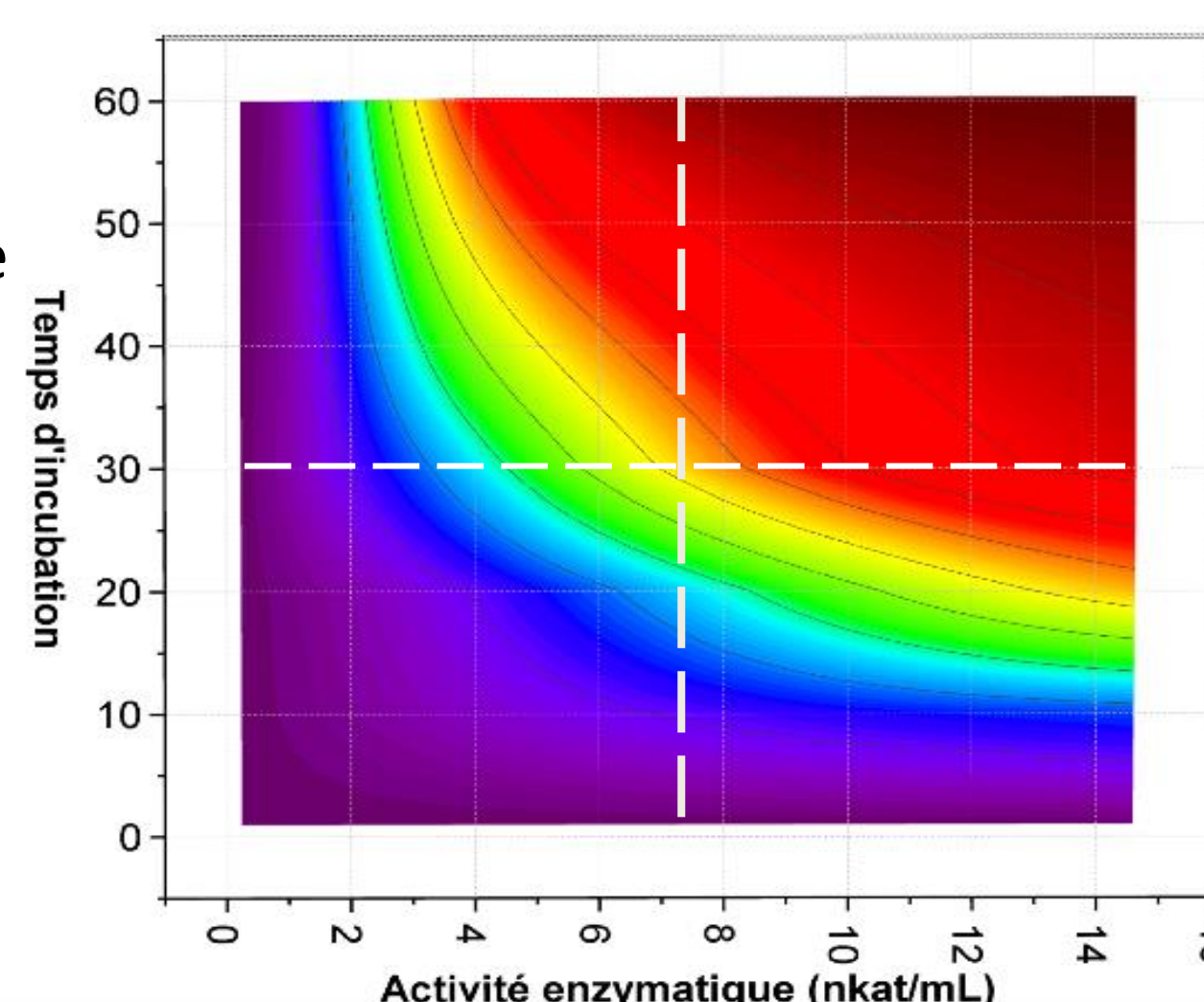
### Inkjet printing of biopolymers



#### Enzyme-Catalysed Reactions



Kinetics of biopolymer degradation by the enzyme at different activity (vertical cut) as well as calibration tables at different exposure times (horizontal cut)



**ZYMOPTIQ**  
Understanding Enzymes

- Start up created January 2019
- Focused on animal/human nutrition and biomass transformation markets
- Winner of I-Lab 2018 competition
- Awarded starting grant by LMI

Contacts : [celine.vivien@univ-lille.fr](mailto:celine.vivien@univ-lille.fr) and [alexis.vlandas@univ-lille.fr](mailto:alexis.vlandas@univ-lille.fr)

