

Biobased molecules production from renewable resources using an integrated strategy of fermentation/bioconversion and on-line extraction processes

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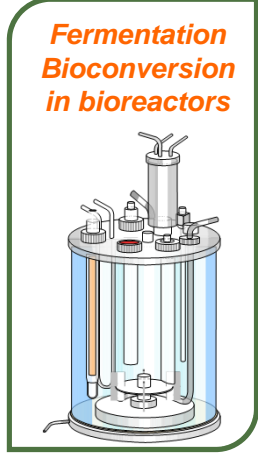
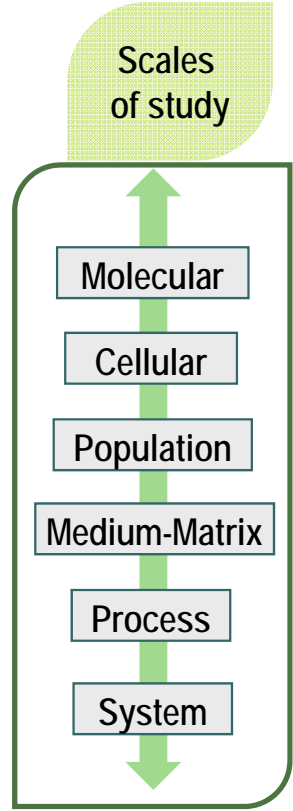
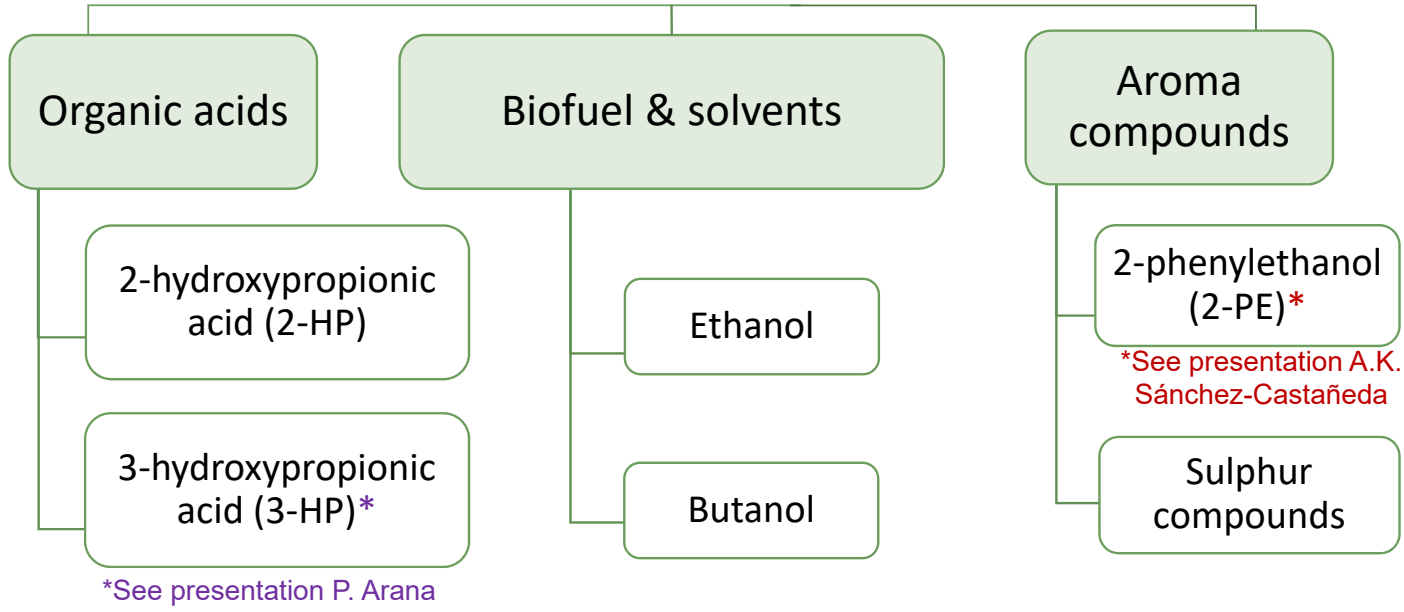
Sayfood (Paris-Saclay Food and Bioproduct Engineering, INRAé-AgroParisTech)

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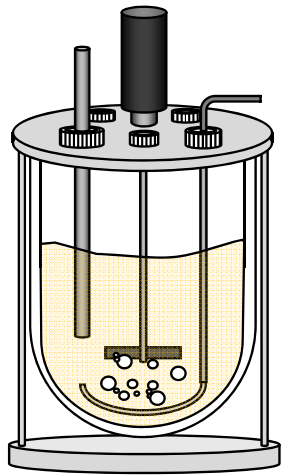
Context: paradigm shift towards bioeconomy



studying BIOTECHNOLOGICAL PRODUCTION & INTEGRATED EXTRACTION [BIO'EXTRA]



[BIO'EXTRA]: Towards bioprocess intensification

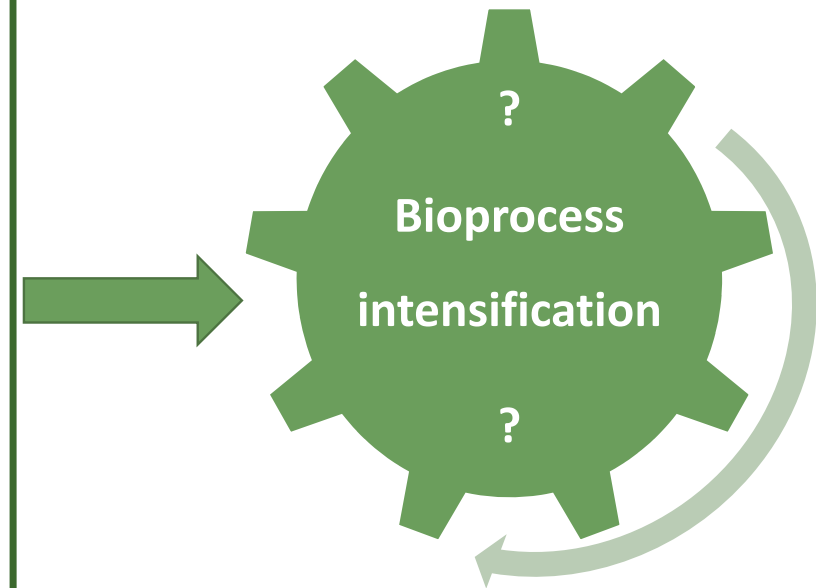


End-product
accumulation



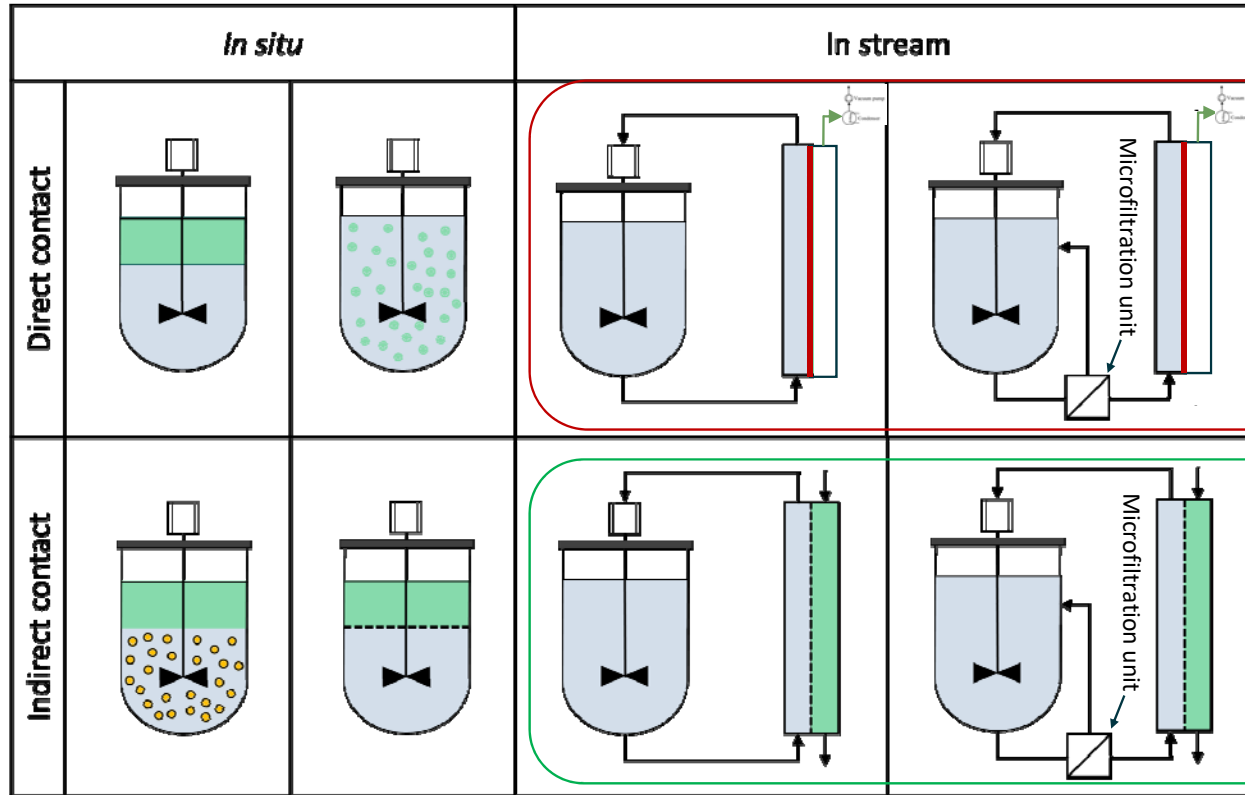
Cells' inhibition

- Low productivities & yields
- Low titres → **Challenge for downstream processing**



In Situ / In Stream Product Recovery (ISPR)

■ Bioconversion medium ■ Organic phase ● Immobilised cells



💡 Continuous product removal

💡 Facilitated DSP

💡 Promising for bioprocess intensification

Pervaporation
(dense membranes)

Expertise in
SayFood unit

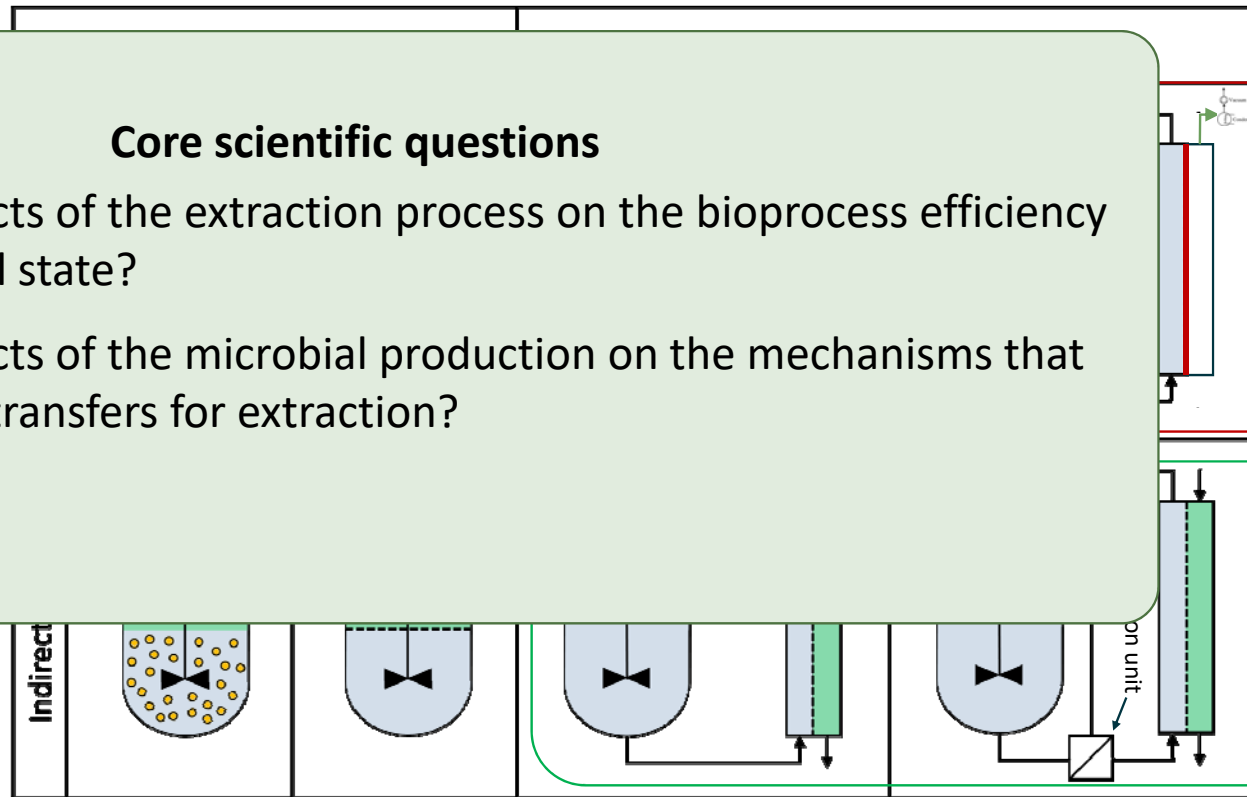
Membrane contactor
(porous membranes)

In Situ / In Stream Product Recovery (ISPR)

■ Bioconversion medium
 ■ Organic phase
 ● Immobilised cells

Core scientific questions

- What are the impacts of the extraction process on the bioprocess efficiency and cells' physiological state?
- What are the impacts of the microbial production on the mechanisms that govern reactions and transfers for extraction?

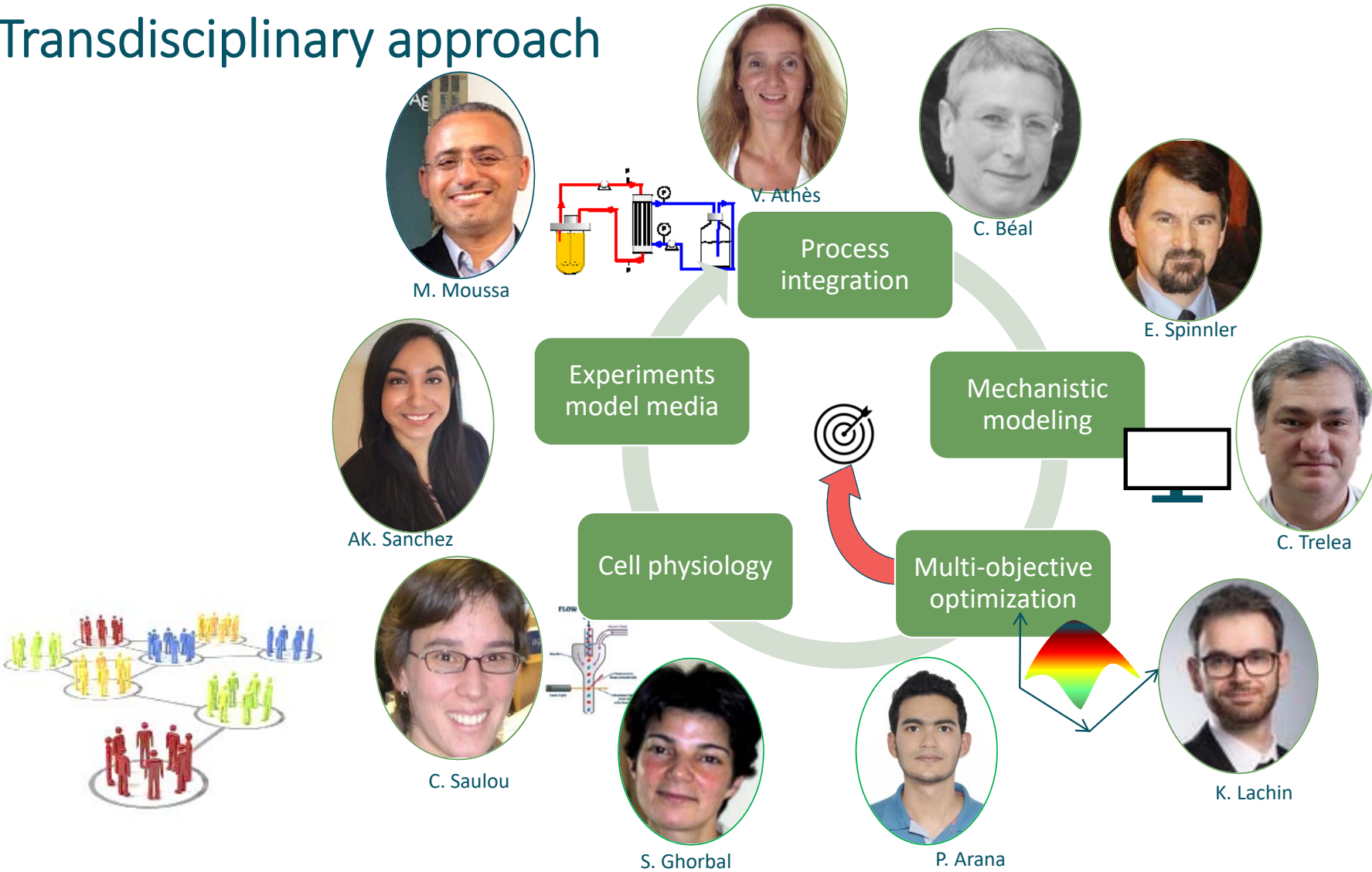


Pervaporation
 (dense membranes)

Expertise in
 SayFood unit

Membrane contactor
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Transdisciplinary approach





Jointly build-up cooperation actions on
BIOtechnological production and **EXTRA**ction
of bio-based molecules



- address interdisciplinary questions on the cutting edge in white biotechnology
- deepen the knowledge about the mechanisms underlying bioproduction, DSP and their coupling
- explore the potential of new substrates (agro-industrial byproducts, food wastes, lignocellulose)
- develop links with the socio-economic system towards environmental impact reduction
- contribute to the knowledge-based bioeconomy, and co-create IP