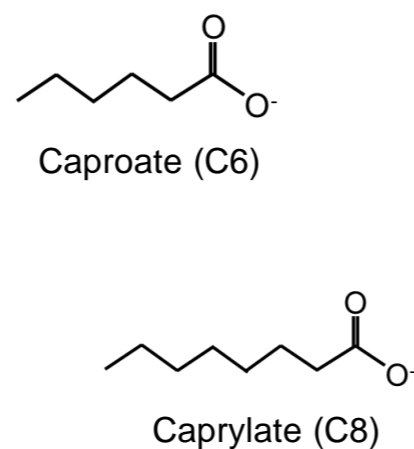
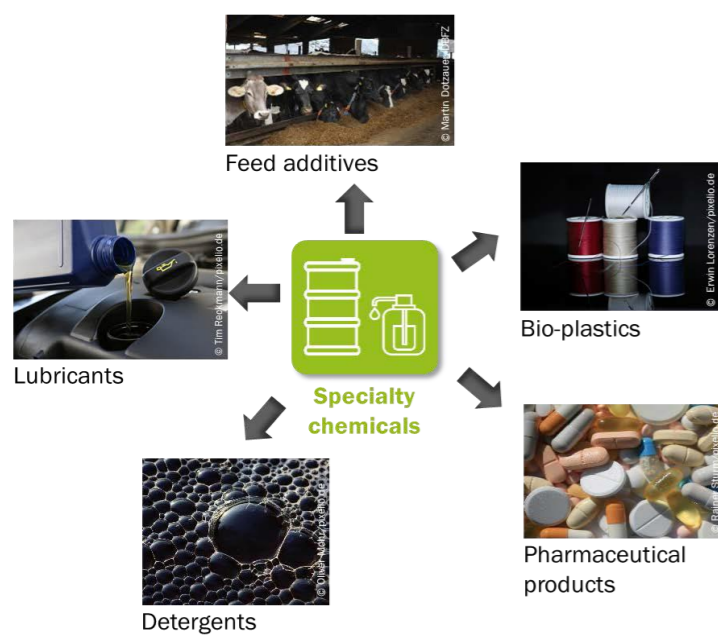


The Cell4Chem project: Engineering microbial communities for the conversion of lignocellulose into medium-chain carboxylates (MCC)

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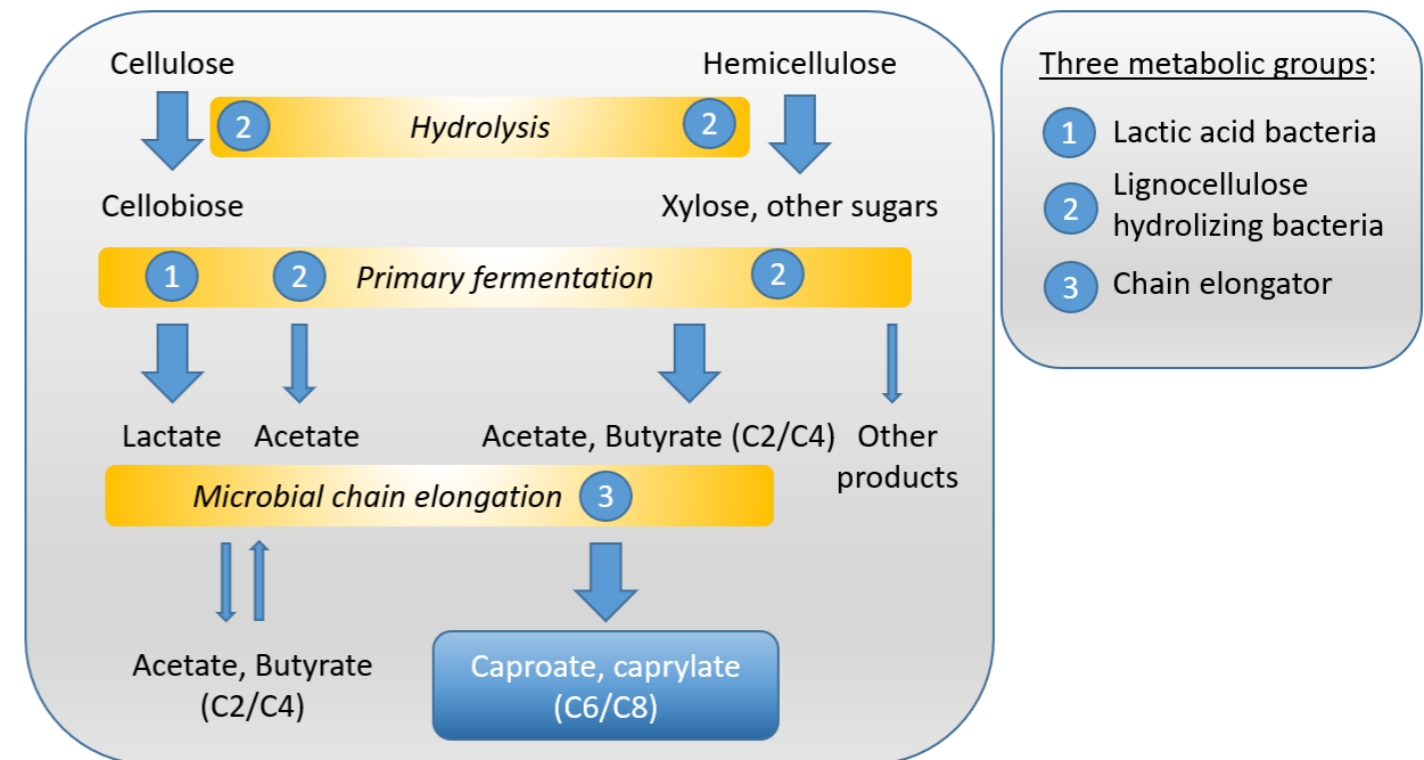
Background and aims

- **Project aims:**
 - Developing tools and strategies for **unlocking the full potential of microbial communities**
 - Expanding the **carboxylate platform** on lignocellulose
- Application of lignocellulose as substrate for **anaerobic fermentation** comes with **two bottlenecks**: lack of electron donors for microbial chain elongation and poor cellulose hydrolysis



Strategy

- Engineering synthetic consortia consisting of **recombinant strains, wildtype strains** and **enrichment cultures**
- Complement each other in their metabolic properties to overcome the bottlenecks



Research questions:

- Who is there, in which proportions, dynamics?
- Can GMOs establish?
- Who are the key players?
- Which pathways are active?

Working plan

Xylan and cellulose enrichment cultures

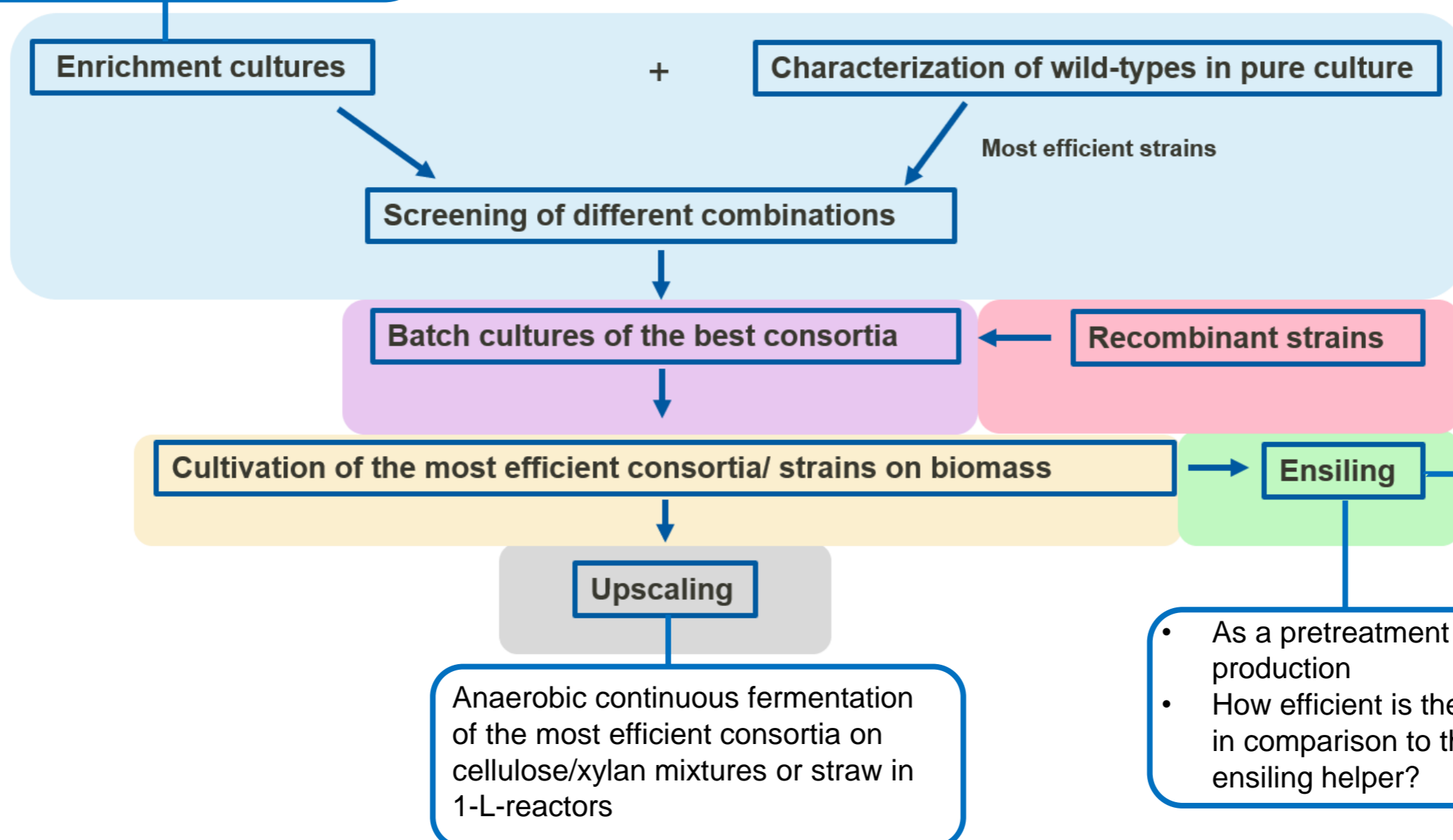
Inoculum:

marshland, cow manure, compost, digestate

Analyses:

pH, liquid and gas products (GC & HPLC), protein concentration

Genetically modified strains, which will be able to increase the cellulose degradation and lactate production



- As a pretreatment of biomass for MCC production
- How efficient is the recombinant strain in comparison to the wildtype as ensiling helper?