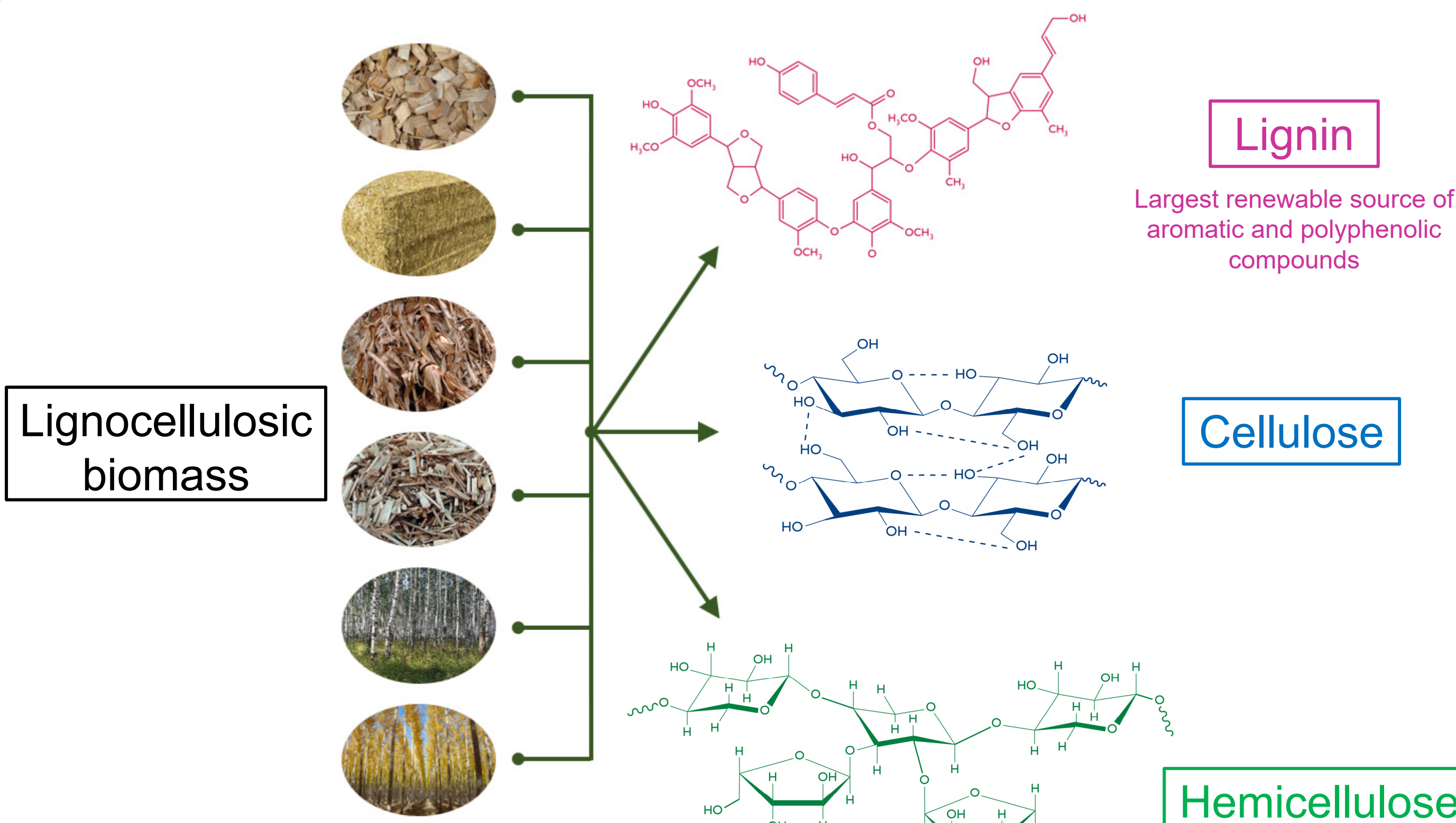


Construction of Functional Bacterial Chassis and Synthetic Consortia to Produce Bio-Based Platform Chemicals from Lignin-Derived Aromatics

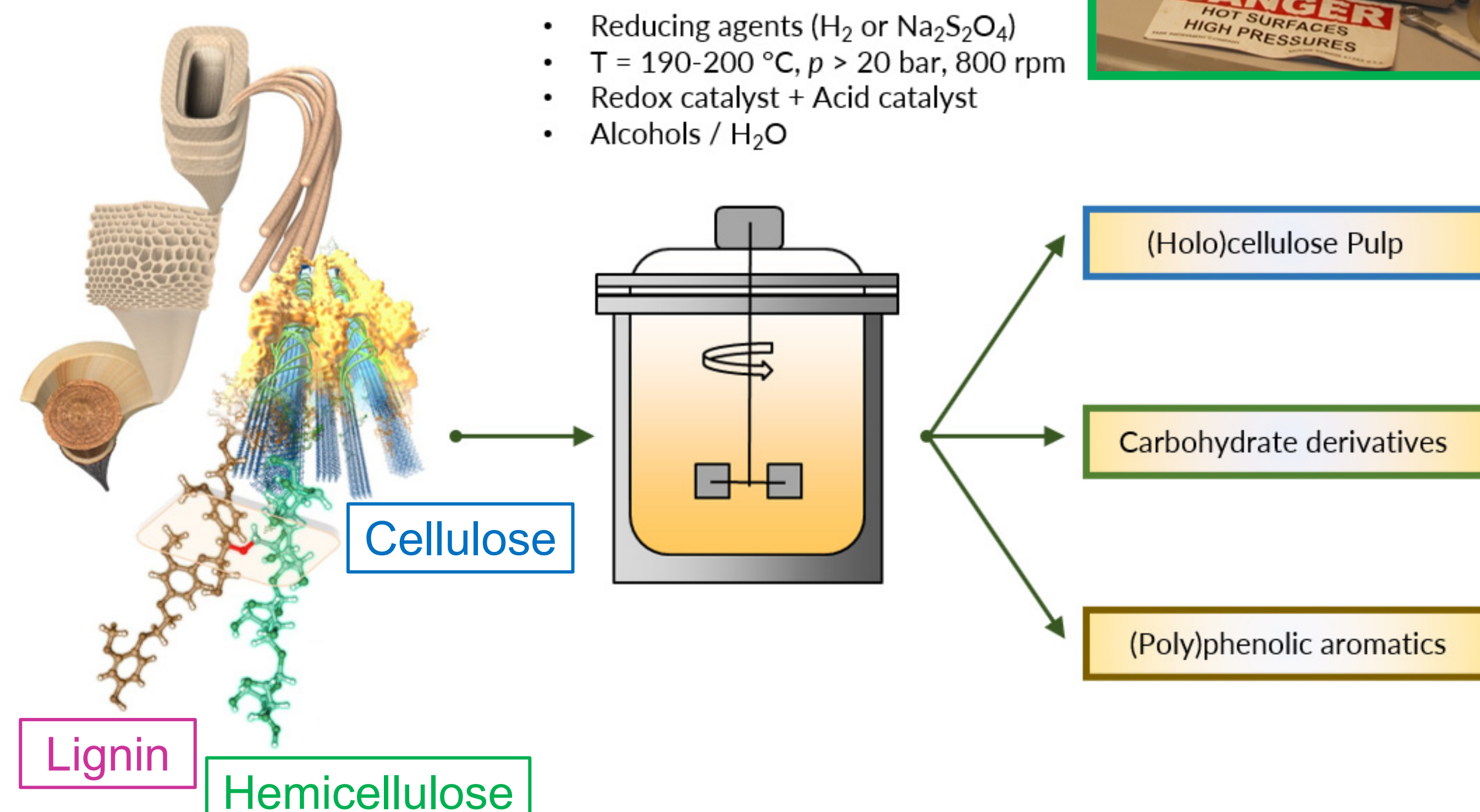
Laboratory of Bioengineering and Biorefining

Aromatic Biorefinery Platform as a substitute for Petrochemistry



Reductive Catalytic fractionation^[1]

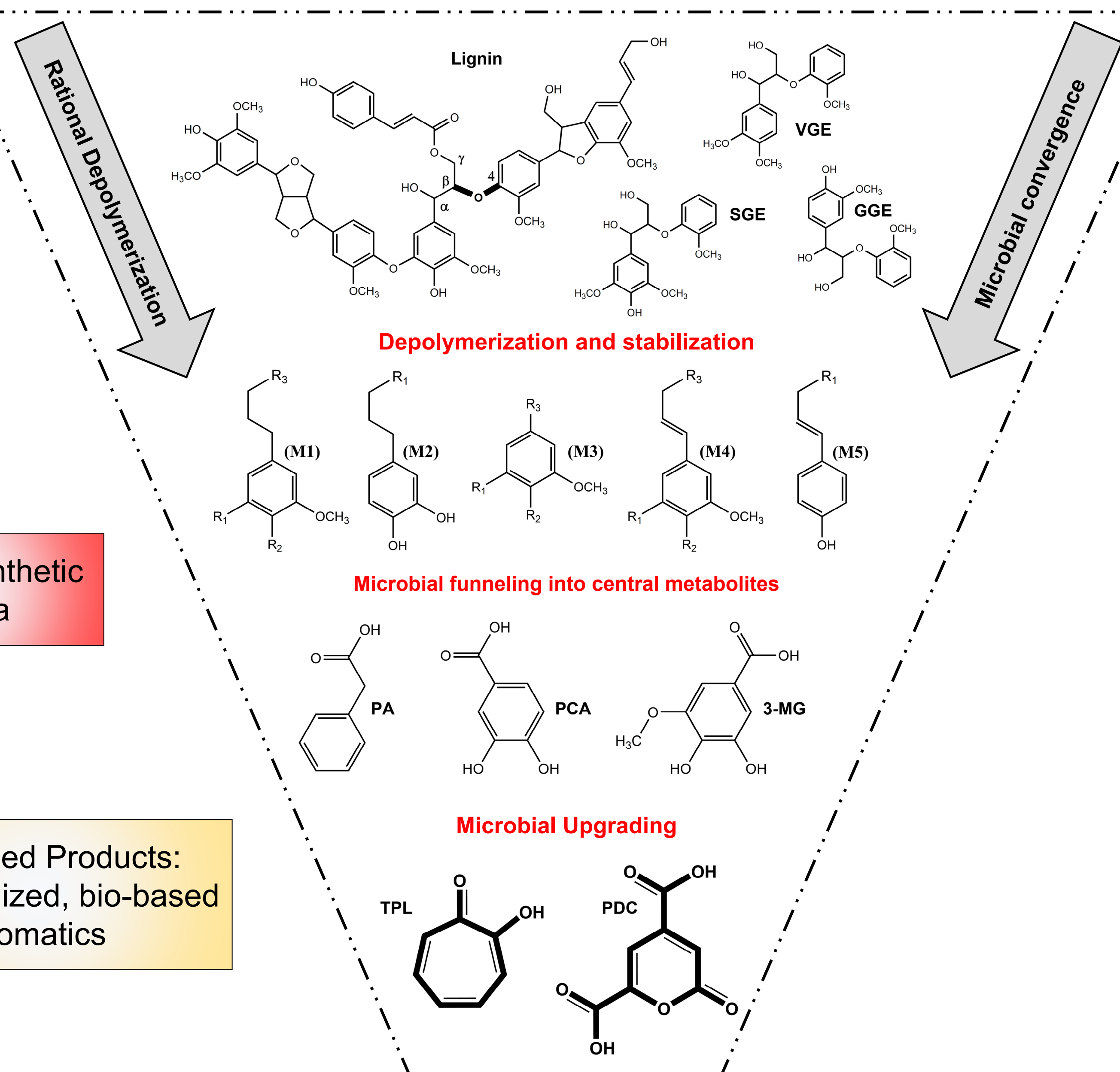
- Reducing agents (H_2 or $Na_2S_2O_4$)
- $T = 190-200\text{ }^\circ\text{C}$, $p > 20\text{ bar}$, 800 rpm
- Redox catalyst + Acid catalyst
- Alcohols / H_2O



Renewable carbon: lignin-derived aromatics

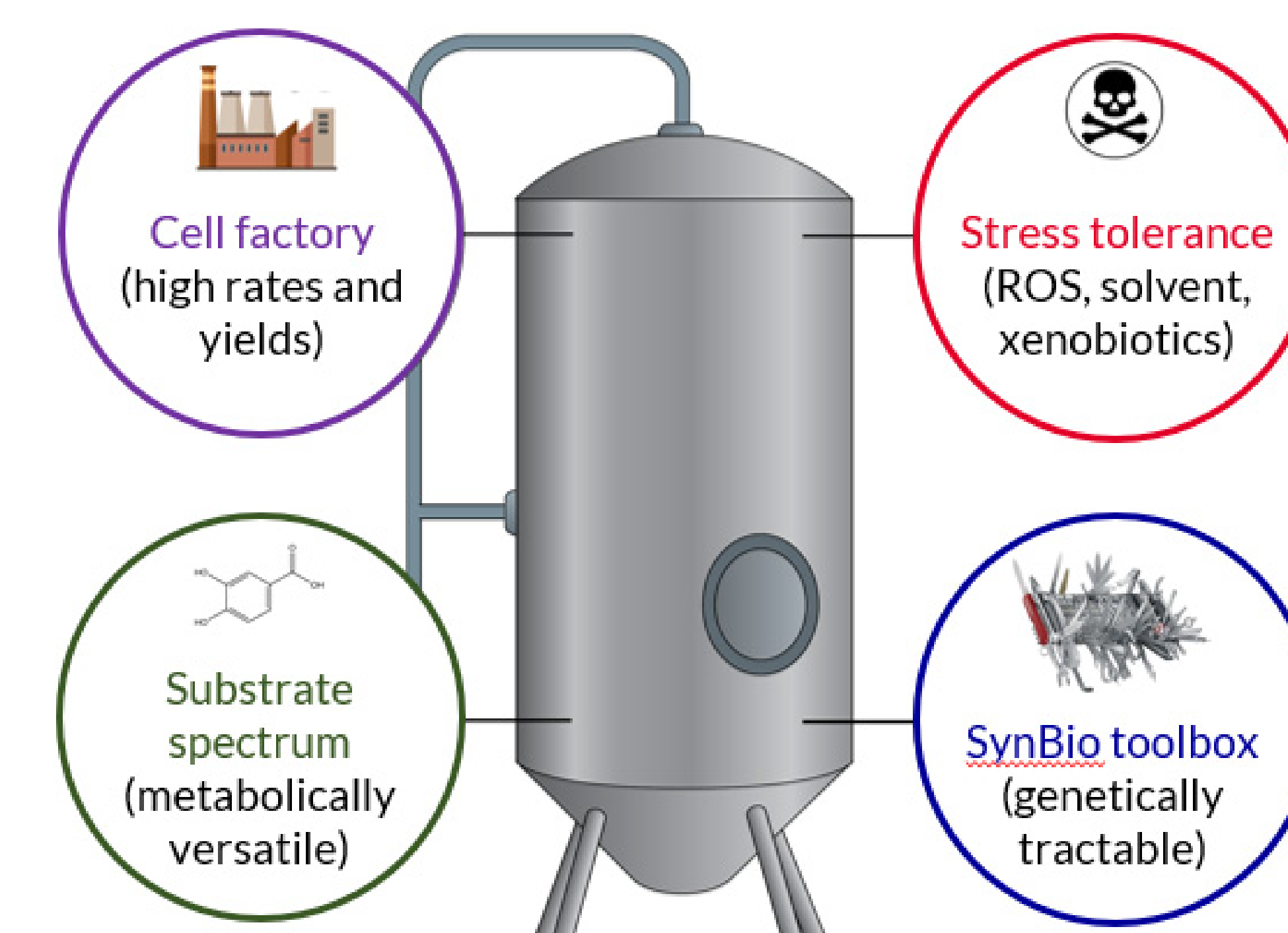
Catalysts: synthetic consortia

Bio-based Products: Functionalized, bio-based aromatics



Bioaromatic Platform driven by Microbial Conversion

Pseudomonas putida as bacterial chassis^[**]



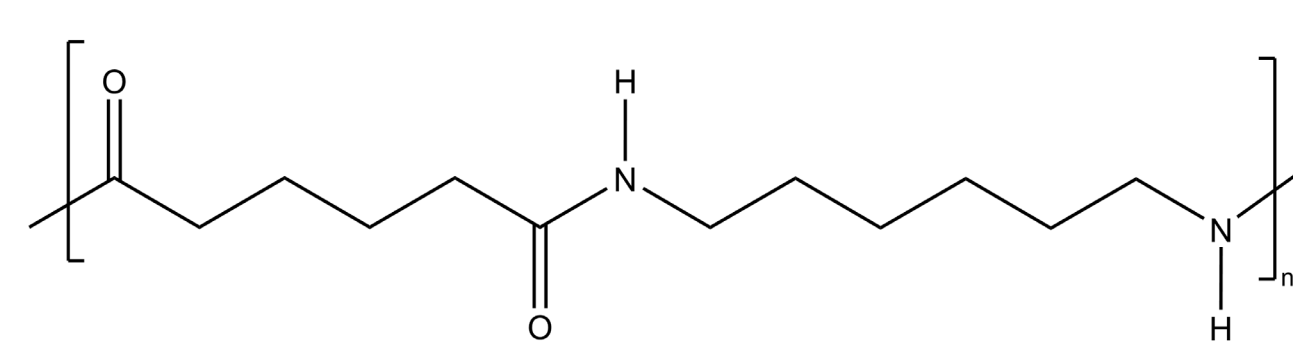
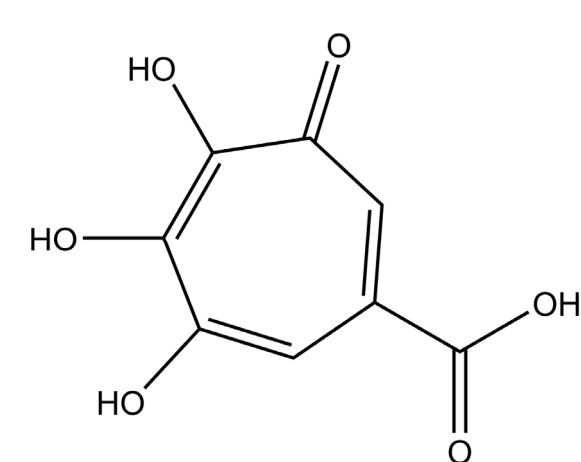
High value-added products

Polycarboxylic acids
(e.g. detergents)

Drugs
(e.g. antimicrobial, antitumoral, antimalarial)

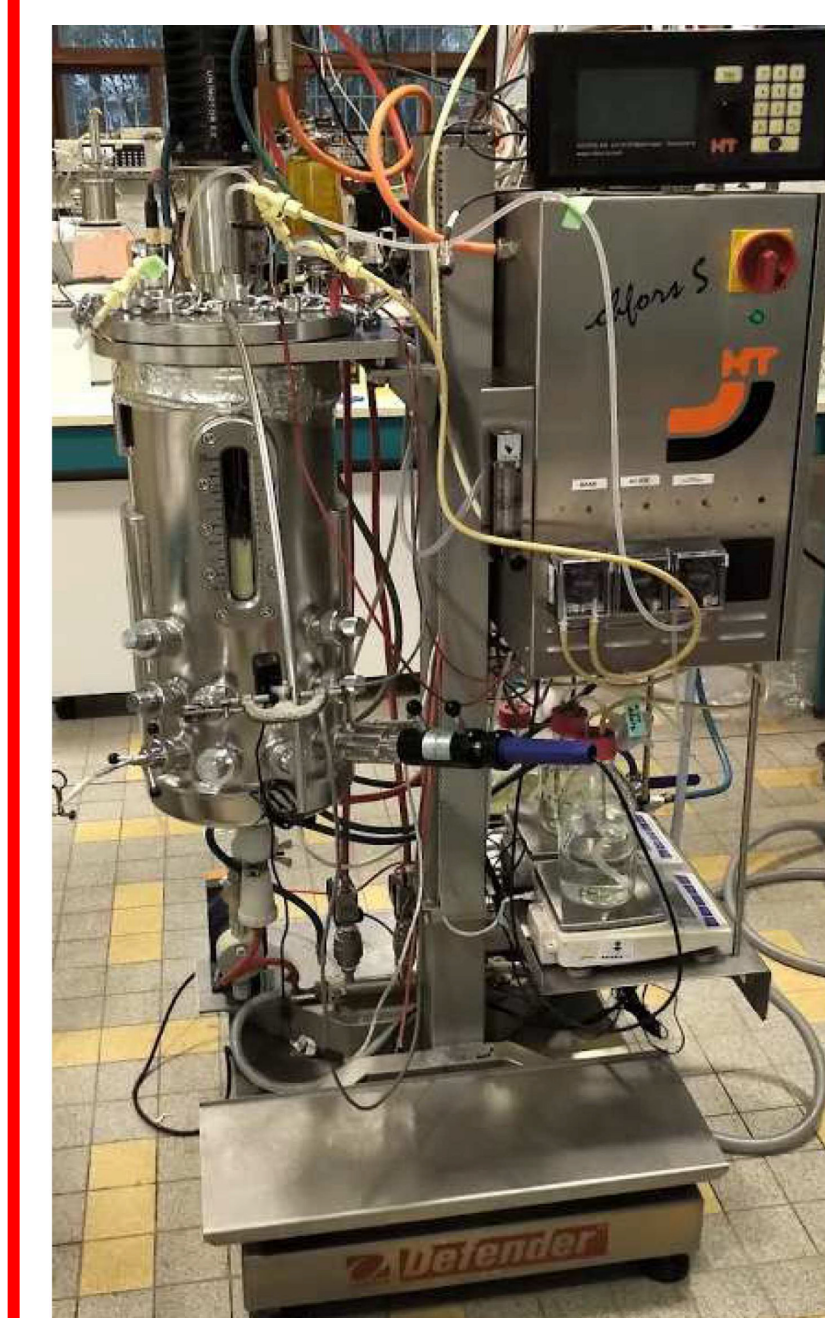
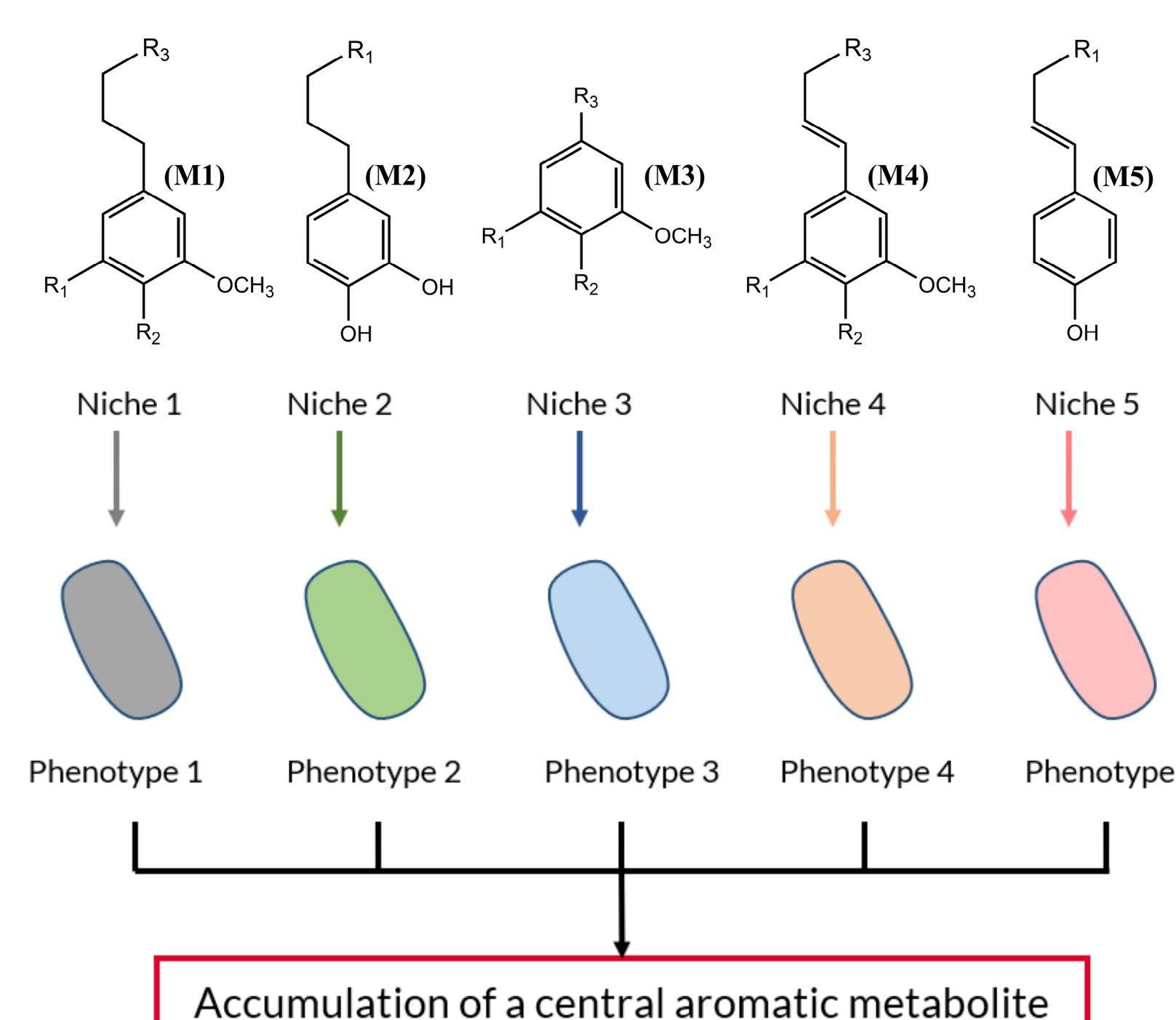
Polyesters
(e.g. clothes)

Puberulic acid



Nylon 66

Biodiversity to exploit available resources more efficiently



[1] Brienza et al., 2021; Nishimura et al., 2018

[**] Montañó et al., 2021