

Supplementary Information

Achieving high productivity of 2-pyrone-4,6-dicarboxylic acid from aqueous aromatic streams with *Novosphingobium aromaticivorans*

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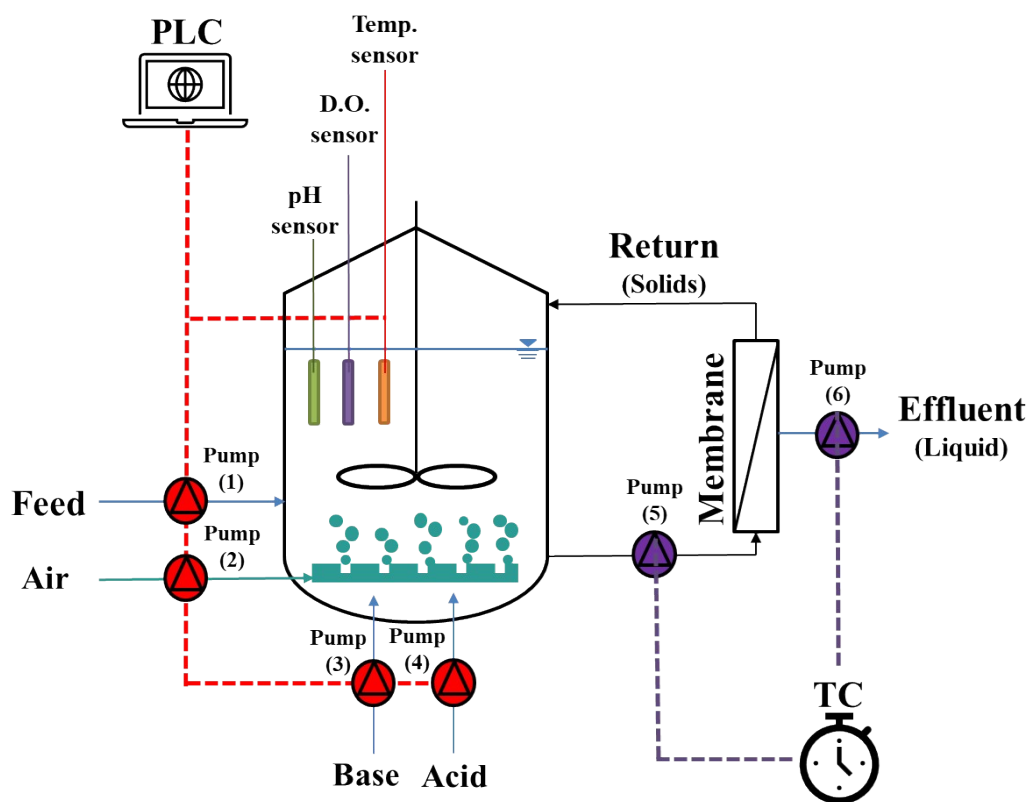


Figure S1. Schematic of membrane bioreactor (MBR) system. The operation of the bioreactor and the membrane module were controlled with a programmable logic controller (PLC) and a time controller (TC), respectively. Temperature (Temp.), dissolved oxygen (D.O.), and pH were continually monitored by the PLC and maintained using the different pumps. Feed was supplied to the bioreactor with pump 1 based on the PLC setting. Pump 2 was used for supplying air to the culture, and pumps 3 and 4 provided base and acid for pH control. The main role of the TC was to maintain the desired hydraulic retention time (HRT). The TC controlled pumps 5 and 6 using On/Off mode. Pump 5 was used for moving the culture through the membrane, and pump 6 was turned on to produce the filtered effluent.

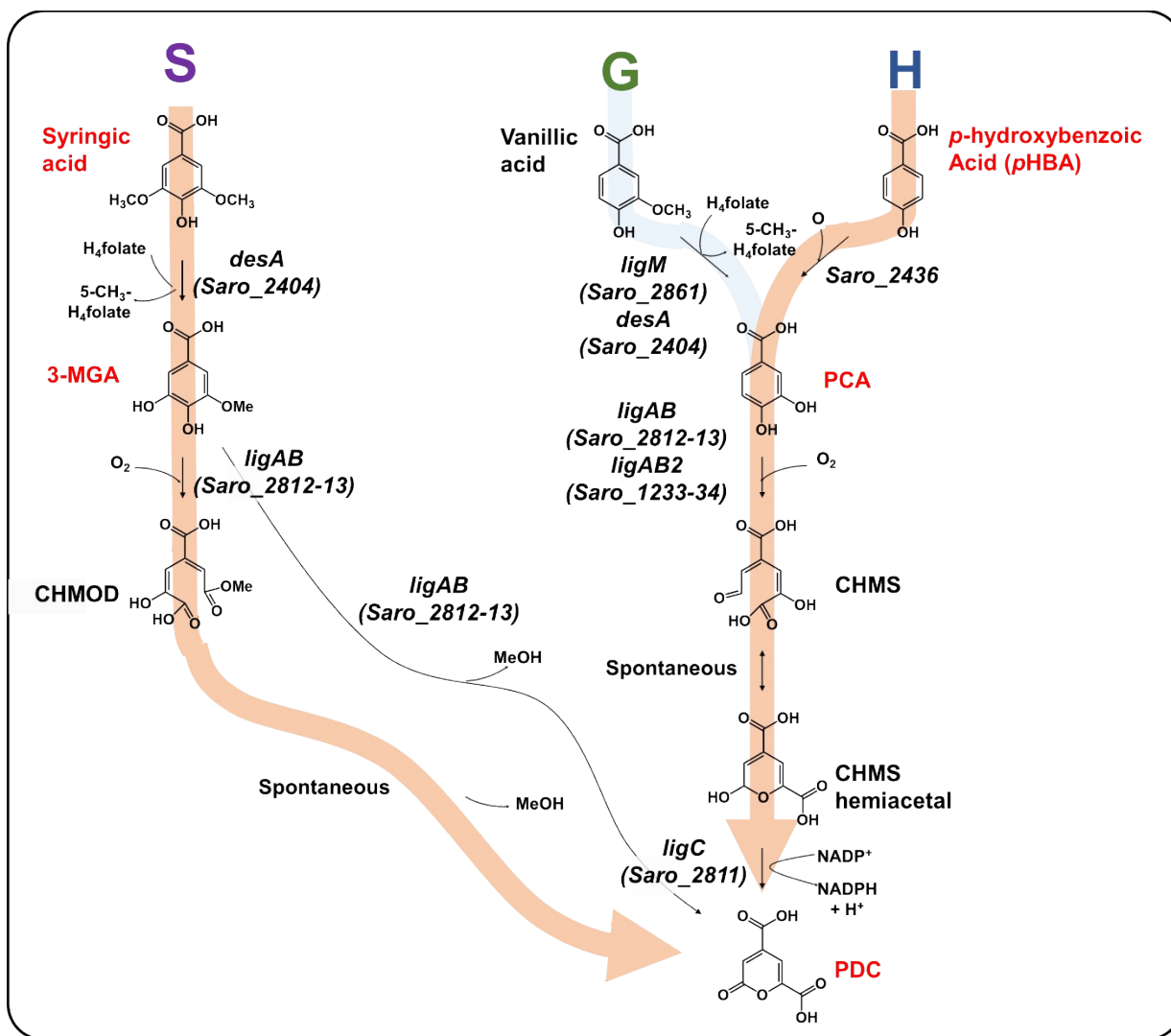


Figure S2. Schematic of aromatic metabolic pathways that lead to PDC production in *Novosphingobium aromaticivorans*. The pathway and chemicals studied in the manuscript were highlighted with orange and red font, respectively. Abbreviations: 3-MGA, 3-methylgallate; CHMOD, 4-carboxy-2-hydroxy-6-methoxy-6-oxohexa-2,4-dienoate; CHMS, 4-carboxy-2-hydroxy-*cis,cis*-muconate 6-semialdehyde; pHBA, *p*-hydroxybenzoic acid; PCA, protocatechuic acid; PDC, 2-pyrone-4,6-dicarboxylic acid.