

Title (en)

COMPOSITIONS AND METHODS FOR PRODUCING CHEMICALS AND DERIVATIVES THEREOF

Title (de)

ZUSAMMENSETZUNGEN UND VERFAHREN ZUR HERSTELLUNG VON CHEMIKALIEN UND DERIVATEN DAVON

Title (fr)

COMPOSITIONS ET PROCÉDÉS DE PRODUCTION DE PRODUITS CHIMIQUES ET DE DÉRIVÉS DE CEUX-CI

Publication

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Application

**EP 15764217 A 20150320**

Priority

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Abstract (en)

[origin: WO2015143381A2] The present invention provides methods for producing a product of one or more enzymatic pathways. The pathways used in the methods of the invention involve one or more conversion steps such as, for example, an enzymatic conversion of guluronic acid into D-glucarate (Step 7); an enzymatic conversion of 5-ketogluconate (5-KGA) into L-Iduronic acid (Step 15); an enzymatic conversion of L-Iduronic acid into Idaric acid (Step 7b); and an enzymatic conversion of 5-ketogluconate into 4,6-dihydroxy 2,5-diketo hexanoate (2,5-DDH) (Step 16). In some embodiments the methods of the invention produce 2,5-furandicarboxylic acid (FDCA) as a product. The methods include both enzymatic and chemical conversions as steps. Various pathways are also provided for converting glucose into 5-dehydro-4-deoxy-glucarate (DDG), and for converting glucose into 2,5-furandicarboxylic acid (FDCA). The methods also involve the use of engineered enzymes that perform reactions with high specificity and efficiency. Additional products that can be produced include metabolic products such as, but not limited to, guluronic acid, L-iduronic acid, idaric acid, glucaric acid. Any of the products can be produced using glucose as a substrate or using any intermediate in any of the methods or pathways of the invention.

IPC 8 full level

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Citation (search report)

- [A] US 2011236935 A1 20110929 - MIKKELSEN JOERN DALGAARD [DK], et al
- [A] WO 2009145838 A2 20091203 - MASSACHUSETTS INST TECHNOLOGY [US], et al
- [XP] WO 2014047510 A1 20140327 - SYNTHETIC GENOMICS INC [US]
- [L] EP 2857496 A1 20150408 - ENSUIKO SUGAR REFINING [JP], et al
- See references of WO 2015143381A2

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