



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : C12P 7/00, 39/00	A1	(11) International Publication Number: WO 00/56911 (43) International Publication Date: 28 September 2000 (28.09.00)
(21) International Application Number: PCT/US00/06808 (22) International Filing Date: 16 March 2000 (16.03.00) (30) Priority Data: 09/274,732 23 March 1999 (23.03.99) US (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application US 09/274,732 (CIP) Filed on 23 March 1999 (23.03.99) (71) Applicant (for all designated States except US): BOARD OF TRUSTEES OPERATING MICHIGAN STATE UNIVERSITY [US/US]; East Lansing, MI 48824 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): FROST, John, W. [US/US]; 1621 Dobie Circle, Okemos, MI 48864 (US). HANSEN, Chad, A. [US/US]; Apt. 2B, 605 Glenmoor Road, East Lansing, MI 48823 (US). (74) Agents: GIBBS, Barbara, S. et al.; Harness, Dickey & Pierce, P.L.C., P.O. Box 828, Bloomfield Hills, MI 48303 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.
(54) Title: SYNTHESIS OF 1,2,3,4-TETRAHYDROXYBENZENES AND 1,2,3-TRIHYDROXYBENZENES USING MYO-INOSITOL-1-PHOSPHATE SYNTHASE AND MYO-INOSITOL 2-DEHYDROGENASE <chem>OC[C@H]1O[C@@H](O)[C@H](O)[C@@H](O)[C@H]1O</chem> $\xrightarrow{a}$ <chem>OC[C@H]1O[C@@H](O)[C@H](O)[C@@H](O)[C@H]1OPO3H2</chem> $\xrightarrow{b}$ <chem>OC[C@H]1O[C@@H](O)[C@H](O)[C@@H](O)[C@H]1OPO3H2</chem> glucose glucose 6-phosphate myo-inositol 1-phosphate $\xrightarrow{c}$ <chem>OC[C@H]1O[C@@H](O)[C@H](O)[C@@H](O)[C@H]1O</chem> $\xrightarrow{d}$ <chem>OC[C@H]1O[C@@H](O)[C@H](O)[C@@H](O)[C@H]1=O</chem> $\xrightarrow{e}$ 1 myo-inositol myo-2-inosose *Key: (a) phosphoenolpyruvate:carbohydrate phosphotransferase; (b) myo-inositol 1-phosphate synthase; (c) phosphatase activity; (d) dehydrogenase activity; (e) 0.5 M H₂SO₄, H₂O, reflux.		
(57) Abstract A bioengineered synthesis scheme for the production of 1,2,3,4-tetrahydroxybenzene from a carbon source is provided. Methods of producing 1,2,3,4-tetrahydroxybenzene acid from a carbon source based on the synthesis scheme are also provided. Methods are also provided for converting 1,2,3,4-tetrahydroxybenzene to 1,2,3-trihydroxybenzene by catalytic hydrogenation.		