Title: PROCESS FOR THE BIOLOGICAL PRODUCTION OF 1,3-PROPANEDIOL WITH HIGH YIELD

Abstract: The present invention provides a microorganism useful for biologically producing 1,3-propanediol from a fermentable carbon source at higher yield than was previously known. The complexity of the cofactor requirements necessitates the use of a whole cell catalyst for an industrial process that utilizes this reaction sequence to produce 1,3-propanediol. The invention provides a microorganism with disruptions in specified genes and alterations in the expression levels of specified genes that is useful in a higher yielding process to produce 1,3-propanediol.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC: C12N 1/20(2006.01), C12N 1/21; C12P 7/00(2006.01), C12P 7/18

USPC: 435/4, 435/6, 435/7, 37, 435/252.3
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S.: 435/4, 435/6, 435/7, 37, 435/252.3

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
PubMed, NCB

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST: USPT, PGPB, EPAB, JPAB, DWPI, STN, CAS, MEDLINE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of Box C. See patent family annex.

Date of the actual completion of the international search 26 February 2006 (26.02.2006)

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Form PCT/ISA/210 (second sheet) (July 1998)
INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1.  

   - Claim Nos.: 
   - because they relate to subject matter not required to be searched by this Authority, namely:

2.  

   - Claim Nos.: 
   - because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically: These claims are not searchable because they are improperly multiply dependent claims.

3.  

   - Claim Nos.: 4-7 
   - because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1.  

   - As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2.  

   - As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3.  

   - As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.: 

4.  

   - No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: 

Remark on Protest

- The additional search fees were accompanied by the applicant’s protest.
- No protest accompanied the payment of additional search fees.

Form PCT/ISA/210 (continuation of first sheet(1)) (July 1998)