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(12) **United States Patent**
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(54) **CELLS OR PLANTS PRODUCING
POLYLACTATE OR ITS COPOLYMERS AND
USES THEREOF**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1851 days.

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This patent is subject to a terminal disclaimer.

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(21) Appl. No.: **11/439,517**

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(22) Filed: **May 24, 2006**

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(65) **Prior Publication Data**

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(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**

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C12N 15/74 (2006.01)
C12P 7/62 (2006.01)
C12N 9/10 (2006.01)
C12N 9/00 (2006.01)
C12N 15/82 (2006.01)

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(52) **U.S. Cl.**

CPC . **C12P 7/625** (2013.01); **C12N 9/10** (2013.01);
C12N 9/93 (2013.01); **C12N 15/70** (2013.01);
C12N 15/74 (2013.01); **C12N 15/8242**
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20/52 (2015.11)

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(58) **Field of Classification Search**

None
See application file for complete search history.

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(57) **ABSTRACT**

The present invention relates to cells or plants that can produce polylactate or its copolymers and to a method for preparing polylactate or its copolymers using the same. More specifically, cells or plants with the ability to produce polylactate or hydroxyalkanoate-lactate copolymers comprise both a gene encoding an enzyme that converts lactate into lactyl-CoA and a gene encoding polyhydroxyalkanoate (PHA) synthase which uses lactyl-CoA as a substrate. Also described is a method for preparing polylactate or hydroxyalkanoate-lactate copolymers which comprises culturing the cells in a medium containing lactate or lactate and various hydroxyalkanoates or culturing the plants. Effective preparation of hydroxyalkanoate-lactate copolymer which comprises various hydroxyalkanoates as well as polylactate, using the cells or the plants, is disclosed.

6 Claims, 7 Drawing Sheets