UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BUTAMAX™ ADVANCED BIOFUELS LLC
Petitioner

v.

GEVO, INC.
Patent Owner

CASE IPR: IPR2013-00539
Patent 8,273,565

BUTAMAX™ ADVANCED BIOFUELS LLC'S DEMONSTRATIVES FOR ORAL ARGUMENT (*INTER PARTES* REVIEW OF U.S. PATENT NO. 8,273,565)

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Sterne Kessler Goldstein Fox

BUTAMAX ADVANCED BIOFUELS, LLC,
Petitioner,
v.
GEVO, INC.,
Patent Owner.

IPR2013-00539 (Patent No. 8,273,565)

October 28, 2014

Gevo does not contest ...

- Jurisdiction
- Claim construction
- Dr. Thiele's testimony is not rebutted by an expert

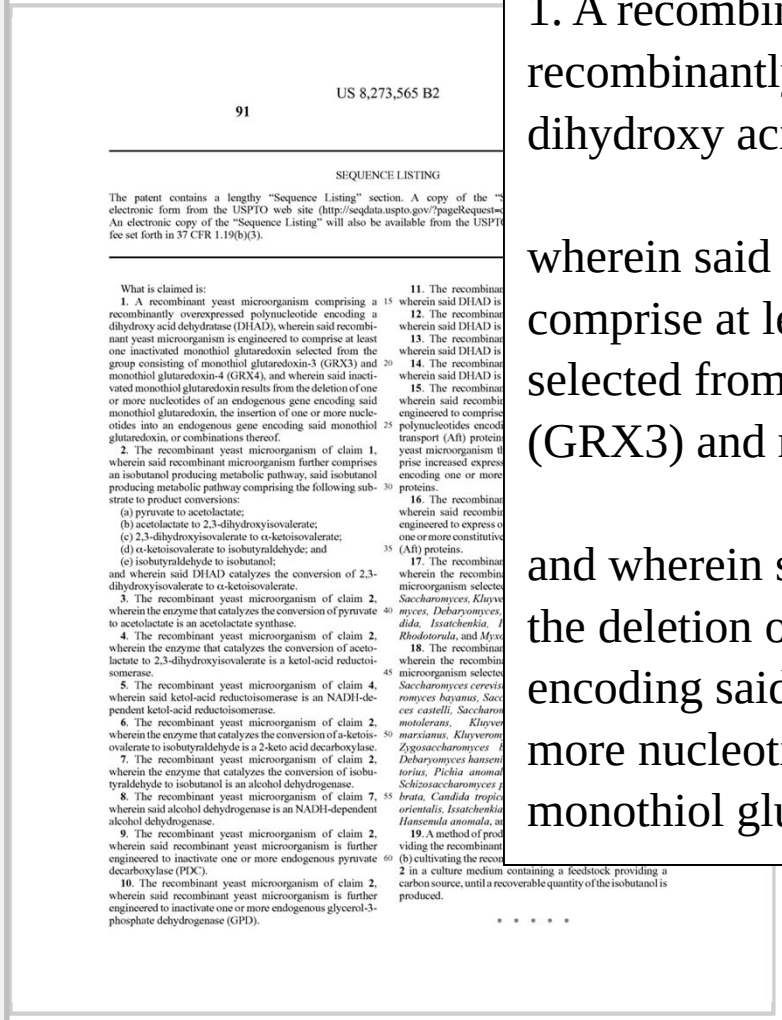
Ground 1: Gevo does not contest …

Ground	35 U.S.C.	Claims	Index of References
1	§ 102(e)	1-4, 6-8 and 11-19	Flint (BMX1003)

- Flint (and its '333 provisional application) discloses every element of claims 1-4, 6-8, and 11-19

aper 4, pg. 26; BMX1002, pgs. 26-27; Paper 9, pgs. 16-18; Paper 19, pg. 15.

U.S. Patent 8,273,565 B2, Claim 1



US 8,273,565 B2

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SEQUENCE LISTING

The patent contains a lengthy "Sequence Listing" section. A copy of the "S
electronic form from the USPTO web site (http://seqdata.uspto.gov/?pageRequest=
An electronic copy of the "Sequence Listing" will also be available from the USPT
fee set forth in 37 CFR 1.19(b)(3).

What is claimed is:

1. A recombinant yeast microorganism comprising a recombinantly overexpressed polynucleotide encoding a dihydroxy acid dehydratase (DHAD), wherein said recombinant yeast microorganism is engineered to comprise at least one inactivated monothiol glutaredoxin selected from the group consisting of monothiol glutaredoxin-3 (GRX3) and monothiol glutaredoxin-4 (GRX4), and wherein said inactivated monothiol glutaredoxin results from the deletion of one or more nucleotides of an endogenous gene encoding said monothiol glutaredoxin, the insertion of one or more nucleotides into an endogenous gene encoding said monothiol glutaredoxin, or combinations thereof.

2. The recombinant yeast microorganism of claim 1, wherein said recombinant microorganism further comprises an isobutanol producing metabolic pathway, said isobutanol producing metabolic pathway comprising the following substrate to product conversions:

(a) pyruvate to acetolactate;
(b) acetolactate to 2,3-dihydroxyisovalerate;
(c) 2,3-dihydroxyisovalerate to α-ketoisovalerate;
(d) α-ketoisovalerate to isobutyraldehyde; and
(e) isobutyraldehyde to isobutanol;

and wherein said DHAD catalyzes the conversion of 2,3-dihydroxyisovalerate to α-ketoisovalerate.

3. The recombinant yeast microorganism of claim 2, wherein the enzyme that catalyzes the conversion of pyruvate to acetolactate is an acetolactate synthase.

4. The recombinant yeast microorganism of claim 2, wherein the enzyme that catalyzes the conversion of acetolactate to 2,3-dihydroxyisovalerate is a ketol-acid reductoisomerase.

5. The recombinant yeast microorganism of claim 4, wherein said ketol-acid reductoisomerase is an NADH-dependent ketol-acid reductoisomerase.

6. The recombinant yeast microorganism of claim 2, wherein the enzyme that catalyzes the conversion of α-ketoisovalerate to isobutyraldehyde is a 2-keto acid decarboxylase.

7. The recombinant yeast microorganism of claim 2, wherein the enzyme that catalyzes the conversion of isobutyraldehyde to isobutanol is an alcohol dehydrogenase.

8. The recombinant yeast microorganism of claim 7, wherein said alcohol dehydrogenase is an NADH-dependent alcohol dehydrogenase.

9. The recombinant yeast microorganism of claim 2, wherein said recombinant yeast microorganism is further engineered to inactivate one or more endogenous pyruvate decarboxylase (PDC).

10. The recombinant yeast microorganism of claim 2, wherein said recombinant yeast microorganism is further engineered to inactivate one or more endogenous glycerol-3-phosphate dehydrogenase (GPD).

11. The recombinant
wherein said DHAD is
12. The recombinant
wherein said DHAD is
13. The recombinant
wherein said DHAD is
14. The recombinant
wherein said DHAD is
15. The recombinant
wherein said recombi
engineered to comprise
polynucleotides encod
transport (Aft) protein
yeast microorganism th
prise increased expres
encoding one or more
proteins.
16. The recombinant
wherein said recombi
engineered to express
one or more constitutive
(Aft) proteins.
17. The recombinant
wherein the recombi
microorganism selecte
Saccharomyces, Kluyve
myces, Debaryomyces,
dida, Issatchenkia,
Rhodotorula, and *Myx*
18. The recombinant
wherein the recombi
microorganism selecte
Saccharomyces cerevis
romyces bayanus, Sacc
ces castelli, Saccharo
motolerans, Kluyve
marxianus, Kluyveron
Zygosaccharomyces
Debaryomyces hansen
torius, Pichia anomal
Schizosaccharomyces
brata, Candida tropic
orientalis, Issatchenkia
Hansenula anomala, a
19. A method of prod
viding the recombinant
(b) cultivating the reco
2 in a culture medium containing a feedstock providing a carbon source, until a recoverable quantity of the isobutanol is produced.

* * * * *

What is claimed is:

1. A recombinant yeast microorganism comprising a recombinantly overexpressed polynucleotide encoding a dihydroxy acid dehydratase (DHAD),

wherein said recombinant yeast microorganism is engineered to comprise at least one inactivated monothiol glutaredoxin selected from the group consisting of monothiol glutaredoxin-3 (GRX3) and monothiol glutaredoxin-4 (GRX4),

and wherein said inactivated monothiol glutaredoxin results from the deletion of one or more nucleotides of an endogenous gene encoding said monothiol glutaredoxin, the insertion of one or more nucleotides into an endogenous gene encoding said monothiol glutaredoxin, or combinations thereof.

MX1001, col. 91, ll. 15-26.

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