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D E C I S I O N
of 28 February 2000

Case Number: W 0015/99

Application Number: PCT/US98/18730

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Title of invention:
Fungal pathogenicity genes

Applicant:
E.I. du Pont de Nemours and Company

Opponent:
-

Headword:
Fungal genes/DU PONT DE NEMOURS

Relevant legal provisions:
PCT Art. 17(3), (a)
PCT R. 13.1, 13.2, 40.1, 40.2(c)

Keyword:
"Lack of unity a posteriori - yes"

Decisions cited:
W 0006/90, G 0001/89

Catchword:
-



Case Number: W 0015/99 - 3.3.4
International Application No. PCT/US 98/18730

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 28 February 2000

Applicant: E.I. DUPONT DE NEMOURS AND COMPANY
107 Market Street
Wilmington, Delaware 19 898 (US)

Representative: FELTHAM S.N.
DUPONT LEGAL
1007 Market Street
Wilmington, Delaware 19 898 (US)

Subject of the Decision: Protest according to Rule 40.2(c) of the Patent Cooperation Treaty made by the applicant against the invitation (payment of additional fee) of the European Patent Office (International Searching Authority) dated 18 February 1999.

Composition of the Board:

Chairman: U. Kinkeldey
Members: F. Davison-Brunel
C. Holtz

Summary of facts and submissions

I. International patent application PCT/US 98/18730 was filed on 8 September 1998 with 42 claims.

Claims 1, 12, 23 and 32 read as follows:

"1. An isolated nucleic acid fragment encoding a fungal carnitine acetyl transferase enzyme, selected from the group consisting of:

- (a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:3;
- (b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:3;
- (c) an isolated nucleic acid fragment encoding a polypeptide having at least 41% identity with the amino acid sequence as set forth in SEQ ID NO:3; and
- (d) an isolated nucleic acid fragment that is complementary to (a), (b) or (c)."

"12. An isolated nucleic acid fragment encoding a fungal imidazole glycerol phosphate dehydratase enzyme, selected from the group consisting of:

- (a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:6;
- (b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID

NO:6;

- (c) an isolated nucleic acid fragment encoding a polypeptide having at least 63% identity with the amino acid sequence as set forth in SEQ ID NO:6; and
- (d) an isolated nucleic acid fragment that is complementary to (a), (b) or (c)."

"23. An isolated nucleic acid fragment encoding a fungal membrane associated pathogenicity protein, selected from the group consisting of:

- (a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:9;
- (b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:9;
- (c) an isolated nucleic acid fragment that is complementary to (a) or (b)."

"32. An isolated nucleic acid fragment encoding a fungal homeodomain transcription factor, selected from the group consisting of:

- (a) an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:12;
- (b) an isolated nucleic acid fragment that is substantially similar to an isolated nucleic acid fragment encoding all or a substantial portion of the amino acid sequence as set forth in SEQ ID NO:12;
- (c) an isolated nucleic acid fragment that is complementary to (a) or (b)."

Claims 2 to 11, 13 to 22, 24 to 31 and 33 to 42 were dependent on claims 1, 12, 23 and 32 respectively and related to further features/uses of the isolated nucleic acids of the respective independent claims and to the corresponding polypeptides.

- II. On 18 February 1999, the EPO acting as an International Search authority (ISA) sent to the applicant an invitation to pay three additional search fees pursuant to Article 17(3)(a) PCT and Rule 40.1 PCT.
- III. The invitation stated that the application related to four groups of inventions which were not linked by a single inventive concept.

The ISA observed that several genes playing a role in rice blast disease were known in the prior art, for example, from document (8): MGG, Vol. 232, pages 174 to 182. Compounds and methods for their identification as inhibitors of metabolic pathways were also known from document (10): J.Antibiot., Vol. 49, pages 223 to 229 and document (9): J.Antibiot., Vol. 50, pages 529 to 531.

In view of this state of the art, the problem underlying the present application was to provide further genes encoding proteins implicated in the pathogenesis of rice blast and the use of the encoded gene products in evaluating inhibitory compounds.

The solutions proposed could be summarized as:

- Claims 1 to 11: Carnitine acetyltransferase encoding nucleic acids, gene products thereof and

their use for identifying inhibitory compounds.

- Claims 12 to 22: Imidazole glycerol phosphate dehydratase encoding nucleic acids, gene products thereof and their use for identifying inhibitory compounds.
- Claims 23 to 31,41: Membrane-associated pathogenicity factor encoding nucleic acids, gene products thereof and their use for identifying inhibitory compounds.
- Claims 32 to 40, 42: Homeodomain transcription factor encoding nucleic acids, gene products thereof and their use for identifying inhibitory compounds.

Taking into account the prior art and also the facts that essential differences existed in the primary structure and function of the solutions and that no other technical feature could be regarded as a special technical feature within the meaning of Rule 13,2 PCT, there was lack of a general inventive concept.

III. On 9 March 1999, the applicants paid the additional fee under protest pursuant to Rule 40.2(c) PCT. The arguments submitted in support of the protest were as follows:

- (i) The four genes and gene products were **a group of inventions;**
- (ii) The inventions are **linked by the general inventive concept** that they are all fungal

infectivity targets and may be used to screen for compounds that will inhibit fungal infection;

(iii) the inventions shared a **technical relationship** in that they may all be detected by the same infectivity assay and

(iv) The technical feature common to the invention is that they are all parts of the same fungal infectivity biochemical pathway.

IV. On 18 June 1999, the Review Panel of the ISA confirmed the finding of lack of unity and invited the applicant to pay a protest fee.

V. On 1 July 1999, the applicant paid the protest fee.

Reasons for the decision

1. The protest is admissible.
2. According to Rule 13.1 PCT, the international patent application shall relate to one invention only or to a group of inventions so linked as to form a single inventive concept. If the ISA considers that the claims lack this unity, it is empowered, under Article 17(3)(a) PCT, to invite the applicant to pay additional fees.
3. Lack of unity may be directly evident **a priori**, ie. before the examination of the merits of the claims in comparison with the state of the art revealed by the search (cf. for example, decision W 6/90, OJ EPO 1991,

438). Alternatively, having regard to decision G 1/89 of the Enlarged Board of Appeal (OJ EPO 1991, 155), the ISA is also empowered to raise an objection **a posteriori**, ie. after having taken the prior art revealed by the search into closer consideration. This practice is laid down in the PCT Search Guidelines, Chapter VII, 9 (PCT Gazette 30/1992, 14025) which are the basis for a uniform practice of all international Searching Authorities. The Enlarged Board of Appeal indicated that such consideration represents only a provisional opinion on novelty and inventive step which is in no way binding upon the authority subsequently responsible for the substantive examination of the application (point 8.1 of the Reasons for the decision). In point 8.2 of the Reasons, the Enlarged Board mentioned that such invitation to pay additional fees should always be made "with a view to giving the Applicant fair treatment" and should only be made in clear cases.

4. On page 2 of the present application, it is stated: "The instant invention relates to isolated genes encoding proteins implicated in the pathogenicity of rice blast". In example 4, it is indeed shown that non-pathogenic mutant strains transformed by a plasmid containing anyone of the four claimed genes recovers pathogenicity. It can, thus, be concluded that all four claimed genes encode proteins which play a role in the same pathway: the pathogenic pathway. Accordingly, there is no lack of unity **a priori**.

5. There remains to be assessed whether there is lack of unity **a posteriori** ie. taking into account the state of the art. Prior art document (5): The Plant Cell, Vol. 5, pages 1575 to 1590 discloses the identification

and characterisation of the gene MPG1 from the rice blast **Magnaporthe grisea** (the same organism as in the international application). It is stated on page 1576: "Null mutations at the MPG1 locus produce a reduced pathogenicity phenotype. The reduced pathogenicity phenotype is associated with reduced frequency of appressorium development", appressorium being one the steps in the pathogen cycle (patent application, page 1).

6. In light of this document, the problem underlying the present application could be seen as the provision of further genes encoding proteins implicated in pathogenicity.
7. Independent claims 1, 12, 23 and 32 provide different alternative solutions to said problem. The claimed genes have different primary structure and functions. They, thus, do not share a common technical feature, on this level and the board cannot recognize a "special" technical feature within the meaning of Rule 13.2 PCT, which would set them apart from the MPG1 gene described already in document (5). It has thus to be concluded that they do not form a single general inventive concept.
8. As for the Applicant's argument (ii) that the inventions are all fungal infectivity targets and may be used to screen for compounds that will inhibit fungal infection, it could serve to justify unity **a priori** (see point 4, above). Yet, this is irrelevant to lack of unity **a posteriori**, since the MPG1 gene/protein can also be considered as a fungal infectivity target and since there is no evidence on file that it could not equally be used to screen for compounds that will

inhibit fungal infection. The same reasoning applies with regard to arguments (iii) and (iv).

9. For the foregoing reasons, there is no special technical feature in the sense of Rule 13.2 PCT to link the groups 1 to 4 of inventions mentioned in paragraph above. Thus, the international application does not comply with the requirements of Rule 13.1 PCT and the invitation to pay the additional fees was justified.

Order

For these reasons, it is decided that:

The protest according to Rule 40.2(c) PCT is dismissed.

The Registrar:

The Chairwoman:

A. Townend

U. Kinkeldey