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**Datasheet for the decision
of 21 June 2007**

Case Number: T 0106/06 - 3.3.04

Application Number: 98920003.5

Publication Number: 1017412

IPC: A61K 38/16

Language of the proceedings: EN

Title of invention:

Genes coding proteins for early liver development and their use in diagnosing and treating liver disease

Applicant:

Mishra, Lopa

Opponent:

-

Headword:

Early liver development/MISHRA

Relevant legal provisions:

EPC Art. 82, 150(2)

PCT Art. 27(1)(5)

EPC R. 30(1)

Keyword:

"Lack of unity - (no)"

Decisions cited:

W 0002/95, W 0011/99, G 0001/91, T 0735/03

Catchword:

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Case Number: T 0106/06 - 3.3.04

D E C I S I O N
of the Technical Board of Appeal 3.3.04
of 21 June 2007

Appellant: Mishra, Lopa
Applicant: 6910 Oakridge Avenue
Bethesda, MD 20815 (US)

Representative: Cripps, Joanna Elizabeth
Mewburn Ellis LLP
York House
23 Kingsway
London WC2B 6HP (GB)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 19 August 2005
refusing European application No. 98920003.5
pursuant to Article 97(1) EPC.

Composition of the Board:

Chair: U. Kinkeldey
Members: G. Alt
G. Weiss

Summary of Facts and Submissions

- I. The appeal lies from a decision of the examining division refusing European patent application 1 017 412 (application No. 98 920 003.5) entitled "Genes coding proteins for early liver development and their use in diagnosing and treating liver disease", which originates from International application No. PCT/US98/08656, originally published under International publication No. WO 98/48827.
- II. The examining division found that the claims before them did not fulfil the requirement of unity (Article 82 EPC).

Claims 1 and 4 to 8 of the set of claims considered by the examining division read:

"1. A method of isolating and characterizing genes coding for stage-specific early-developing liver proteins comprising constructing a cDNA library for each of four embryonic stages post coitus in the developing mouse embryo, namely (1) a first stage wherein a change in cell polarity occurs; (2) a second stage wherein invasion and migration of endothelial cells into surrounding mesenchym occurs; (3) a third stage of pseudolobule formation wherein cords of hepatocytes form together with early sinusoids; and (4) a fourth stage wherein the liver is marked by hematopoietic foci and fully differentiated fetal hepatocytes; and screening and characterizing said libraries with a group of probes comprising known growth factors and transcriptional activators known to be expressed in the developing liver.

4. A cDNA isolatable by the method according to any one of the preceding claims having a nucleic acid sequence as shown in Figure 1, 2a-e, 2f-i, 2j, 3, 4, or 5.

5. A cDNA isolatable by the method according to any one of claims 1 to 3 encoding an early developing liver protein selected from elf, liyor-1 (145), pk, protein 106, and praja-1.

6. An early-developing stage-specific liver protein obtainable by the method according to any one of claims 1 to 3 which is encoded by genes 20, 36, 41, 112, 114, 118, 129, or genes coding for elf proteins 1-3, liyor-1 (145), pd, protein 106 and praja-1.

7. An early-developing stage-specific liver protein according to claim 6 which is encoded by a nucleic acid sequence selected from one of the sequences as shown in Figure 1, 2a-e, 2f-i, 2j, 3, 4, or 5.

8. An antibody obtainable by being raised against a peptide derived from an early-developing stage-specific liver protein according to claim 6 or claim 7, said peptide selected from the group aa 2-14 of mouse elf gene N-terminus having the sequence 5-ELQRTSSVSGPLS-3, aa 2140-2154 of mouse elf gene C-terminus having the sequence 5-FNSRRTASDHSWSG-3, aa 144-156 of mouse praja-1 gene middle portion having the sequence 5-LRRKYRSREQPQS-3, 145peptide-A from the C-terminus of gene 145 (Cded) having the sequence 5-SAQSLVVTLGRVEGGIRV-3 or 5-CSAQSLVVTLGRVEGGIRV-3, 145peptide-B from the middle part of gene 145 (Cded) having the sequence 5-KIEGSSKCAPLRPASRL-3 or

5-CAPLRPASRLPASQTLG-3, the g59peptide-A from the N-terminus of gene G59 (Praja-1) having the sequence 5-PPREYRASGSRRGMAY-3 or 5-PPREYRASGSRRGMAYC-3, the g59peptide-B (15-mer) from the middle part of gene 59 (Praja-1) having the sequence 5-CKVPRRRRTMADPDFW-3, and the fusion protein covering the two EF-hands motifs of itih-4."

III. The examining division reasoned their decision as follows:

It was not a special technical feature that cDNA libraries were constructed at each of the four embryonic stages because, firstly, any given clone in claim 4 or 5 was the result from the subtraction of two and not four cDNA libraries and secondly, because stage-specific clones from early-developing liver isolated from subtracted libraries had been disclosed in the prior art.

Moreover, the interdependency-argument was not convincing because the already known early-developing stage-specific liver proteins would also have to be regarded as interdependent proteins. Therefore, this feature was not a contribution to the art.

Two known methods resulted in the identification of one of the claimed genes. Therefore, the method, too, could not provide the link.

Consequently, the application contained more than one invention solving different problems. The first problem to be solved was the provision of a further method of isolating genes coding for stage-specific early

developing liver proteins, to which the method according to claims 1 to 3 provided a solution. This was one invention. The second problem was the provision of further genes encoding early liver developmental proteins. Each and every gene provided by the present application was a different solution to this problem. Consequently, claims 4 and 5 provided 14 different solutions to this problem resulting in 14 different inventions.

- IV. With the statement setting out the grounds of appeal the applicant filed auxiliary requests 1 to 8, and with a further submission in response to a communication by the board, auxiliary requests 9 to 12.
- V. The appellant's representative informed the board, by fax received on 18 June 2007, that he would not be attending the oral proceedings.
- VI. Oral proceedings were held on 21 June 2006. The appellant was not represented. At the end of the proceedings the board announced its decision.
- VII. The appellant's arguments presented in the written proceedings may be summarized as follows:

The subject-matter of the method and the product claims was linked by a special technical feature, namely by the method used to isolate the respective genes.

The unitary character of the subject-matter of claims corresponding to the ones objected by the examining division had been acknowledged during the original PCT search and examination. In finding non-unity the

examining division had applied a more restrictive approach in the assessment of unity which was not permitted according to Article 27(1) PCT.

The claimed method resulted in the isolation of interdependent liver proteins that were crucial to the development of the liver. The subject-matter of all claims was linked by this interdependence.

VIII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or one of the auxiliary requests 1 to 8 filed on 29 December 2005 with the statements setting out the grounds of appeal or one of the auxiliary requests 9 to 12 filed with letter received on 11 June 2007.

Reasons for the Decision

1. The reason given in the decision under appeal for refusing the application was that "there is no special technical feature that would link the method of claim 1 with the products of claims 4-8.". The board has thus to consider whether the subject-matter of claim 1 on the one hand and of claims 4 to 8 on the other hand fulfil the requirements of Article 82 EPC stipulating that "the European patent application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept".
2. Claim 1 is directed to a **method** of isolating and characterizing genes coding for stage-specific early-developing liver proteins; claim 4 relates to a **cdna**

isolatable by the claimed method having a nucleic acid sequence as shown in Figures 1, 2a-e, 2f-i, 2j, 3, 4, or 5; claim 5 is directed to a **cdna** isolatable by the claimed method encoding an early developing liver protein selected from elf, liyor-1 (145), pk, protein 106, and praja-1; claim 6 is directed to an early-developing stage-specific liver **protein** obtainable by the method according to any one of claims 1 to 3 which is encoded by genes 20, 36, 41, 112, 114, 118, 129, or genes coding for elf proteins 1-3, liyor-1 (145), pd, protein 106 and praja-1; claim 7 relates to an early-developing stage-specific liver **protein** according to claim 6 which is encoded by a nucleic acid sequence selected from one of the sequences as shown in Figure 1, 2a-e, 2f-i, 2j, 3, 4, or 5; claim 8 relates to an **antibody** obtainable by being raised against a peptide derived from an early-developing stage-specific liver protein according to claim 6 or claim 7.

3. Rule 30(1) EPC which is applicable to patent applications filed after 1 June 1991 (OJ EPO 1991, 4), i.e. to the present application which has the priority date of 30 April 1997, stipulates that "where a group of inventions is claimed in one and the same European patent application, the requirement of unity of invention referred to in Article 82 shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those features which define a contribution which each of the claimed inventions considered as a whole makes over the prior art."

In the board's judgement, where unity of a process and a product are at issue, the requirement according to Rule 30(1) EPC of a "technical relationship" or "special technical features" has to be interpreted such that it is fulfilled if the claimed product may be obtained by the claimed process.

4. In the present case each of the claimed products is, either directly (cDNA) or indirectly (proteins and antibodies) the result of the claimed process. Therefore, prima facie, there is a technical relationship between the method of claim 1 and the products of claims 4 to 8.
5. As to the principles governing the question of unity, the relevant provisions under the EPC and the Patent Cooperation Treaty (PCT) correspond to each other. Therefore, the jurisprudence developed by the boards of appeal as an instance for deciding on a protest made by an applicant against an additional fee charged under the provision of Article 34 PCT is relevant to such and similar situations arising in the course of proceedings under the EPC. Therefore, the judgement given above in point 5 is in line with established case law of the Boards of Appeal ruling that a manufacturing process and its resulting products are considered as unitary subject-matter (for example decision W 2/95 of 18 October 1995, points 5 and 6.2 of the "Reasons"; decision W 11/99, OJ EPO 2000, 186, points 2 to 2.7 of the "Reasons").
6. This jurisprudence has also expanded into the Guidelines for Examination in the version applicable to the present case. It is stated in chapter C-III, 7.2

that Rule 30 EPC should be construed as permitting the inclusion in one application of the combination of an independent claim for a given product and an independent claim for a process specially adapted for the manufacture of said product.

7. The cited case law and the Guidelines for Examination refer to **manufacturing** processes. Therefore, the board has given consideration to the question as to whether the fact that claim 1 does not relate to manufacturing process in the usual sense which may be characterized in that the specific end products are envisaged at the outset of the process, but to a process of isolating genes which, in view of its set up, has resemblance to a screening process which, in turn, may be characterized in that the final product it is not known at the outset, should have an influence on the assessment of unity.

However, the decisive question is whether the product has been actually produced by the process and not whether it was known or not at the start of it. Therefore, the board considers that there is no difference in the assessment of unity between a manufacturing process and a screening process and their resulting products so that the cited case law and the cited part of the Guidelines for Examination are relevant.

8. Since the criterion for assessing unity between a process and the resulting product is the suitability of the process for producing the product, the examining division's observation that the products may be obtained by other methods, too, implying that unity was

only fulfilled if the product may be exclusively obtained by that method, or that properties of the method or products were known or obvious cannot change the board's view.

9. Thus, the board concludes that the method of claim 1 is linked to each of the alternative products in claims 4 to 8. Therefore, in this respect, the requirement of Article 82 EPC are fulfilled.

10. The following is noted with regard to appellant's argument that the examining division could not apply a stricter approach in the assessment of unity than the PCT search or examination authorities.

Article 150(2) EPC, first and second sentence state that "International applications filed under the Cooperation Treaty may be the subject of proceedings before the European Patent Office. In such proceedings the provisions of that treaty shall be applied, supplemented by the provisions of this Convention".

Article 27 PCT regulating the "National Requirements" draws a distinction between formal and substantive aspects of an application. According to Article 27(1) PCT no national office is permitted to require compliance with requirements relating to form or contents of the application over and above those set out in the PCT. In other words, as far as form or content are concerned the regulations of the PCT take the place of the respective national regulations. The question of unity is however not related to the formal requirements of an application, but to its substantive requirements (decision G 1/91, OJ EPO 1992, 253,

point 4.1 of the "Reasons"). In view of Article 27(5) PCT nothing in the PCT is however intended to prescribe any substantive conditions of patentability. Therefore, in the European phase of an application the EPA is not legally bound to the ISA's or the IPEA's view on the patentability expressed in the international phase (see also decision T 735/03 of 5 October 2005).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution on the basis of the main request.

The Registrar:

The Chair:

S. Sánchez Chiquero

U. Kinkeldey