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**Datasheet for the decision
of 4 December 2012**

Case Number: T 1456/09 - 3.3.08

Application Number: 98949710.2

Publication Number: 1019517

IPC: C12N 15/82

Language of the proceedings: EN

Title of invention:

Production of proteins in plant seeds

Patentee:

The Regents of The University of California

Opponent:

BASF Plant Science GmbH

Headword:

Proteins in plant seeds/UNIVERSITY OF CALIFORNIA

Relevant legal provisions:

EPC Art. 56
RPBA Art. 12(4)

Keyword:

"Main request - not admitted"
"1st auxiliary request - inventive step (yes)"

Decisions cited:

G 0009/91, T 0386/04

Catchword:

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Case Number: T 1456/09 - 3.3.08

D E C I S I O N
of the Technical Board of Appeal 3.3.08
of 4 December 2012

Appellant: The Regents of The University of California
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted on 14 May 2009
revoking European patent No. 1019517 pursuant
to Article 101(3)(b) EPC.

Composition of the Board:

Chairman: M. Wieser
Members: M. R. Vega Laso
R. Moufang

Summary of Facts and Submissions

- I. The appeal of the patent proprietor (appellant) lies from the decision of the opposition division dated 14 May 2009 revoking the European patent No. 1 019 517 (application No. 98949710.2) with the title "Production of proteins in plant seeds" under Article 101(3) (b) EPC.

- II. The opposition to the grant of the patent had been based on the grounds that the claimed subject-matter lacked novelty and an inventive step (Article 100(a) EPC) and extended beyond the content of the application as filed (Article 100(c) EPC), and that the invention as claimed was not disclosed in the patent in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 100(b) EPC).

- III. In the decision under appeal, the opposition division found that the subject-matter of the claims according to the main request filed during the oral proceedings did not involve an inventive step within the meaning of Article 56 EPC, and that the amendments introduced into the claims according to the auxiliary request filed also during the oral proceedings offended against Article 123(2) EPC.

- IV. In the statement setting out the grounds of appeal, the appellant put forward that the decision under appeal entailed a serious procedural violation and requested reimbursement of the appeal fee and remittal to the opposition division. Together with the statement of grounds of appeal, seven sets of claims were submitted as main request and first to sixth auxiliary requests,

the fifth and sixth auxiliary requests being identical to, respectively, the main request and the auxiliary request underlying the decision under appeal. As a subsidiary request, the appellant requested oral proceedings.

- V. The opponent (respondent) replied to the statement of grounds of appeal.
- VI. In response thereto, the appellant submitted additional arguments and documentary evidence. The respondent filed further observations on the appellant's submissions.
- VII. The parties were summoned to oral proceedings. In a communication under Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA) attached to the summons, the board expressed its provisional opinion on some of the issues to be discussed, in particular on the question whether or not the requests and evidence filed by the appellant in appeal proceedings could be admitted, and whether or not a procedural violation had been committed by the opposition division. The board provided also some observations on the issue of inventive step as well as on formal issues concerning the auxiliary requests.
- VIII. Oral proceedings were held on 4 December 2012. At the outset of the oral proceedings, the appellant withdrew its request for reimbursement of the appeal fee and remittal to the opposition division. Furthermore, it withdrew the sets of claims according to the 1st to 4th auxiliary requests, and made the 5th and 6th auxiliary requests filed with the statement of grounds of appeal

its new 1st and 2nd auxiliary requests, respectively. After the discussion of the claims according to the 1st auxiliary request, the appellant filed amended pages of the description adapted thereto.

IX. Claim 1 of the set of claims according to the 1st auxiliary request reads as follows:

"1. A transgenic monocot plant comprising:

(a) a seed maturation-specific promoter selected from the group consisting of rice glutelins, rice oryzins, rice prolamines, barley hordeins, wheat gliadins, wheat glutelins, maize zeins, maize glutelins, oat glutelins, sorghum kafirins, millet pennisetins, and rye secalins promoters,

(b) operably linked to said promoter, a signal DNA sequence encoding a monocot seed-specific sequence capable of targeting a linked polypeptide to a protein storage body in monocot seeds wherein the signal DNA sequence is selected from the signal sequences comprised in the group consisting of rice glutelin, barley D-hordein, and barley B1-hordein genes, and

(c) a DNA sequence encoding a non-seed-storage heterologous protein, wherein the DNA sequence is operably linked to said signal DNA sequence."

Dependent claims 2 to 6 are directed to different embodiments of the transgenic monocot plant according to claim 1. Independent claim 7 relates to a transgenic seed produced from the transgenic monocot plant of claim 1 comprising the DNA sequences specified in

claim 1, paragraphs (a) to (c). Dependent claims 8 to 12 are directed to different embodiments of the transgenic seed according to claim 7.

X. The following documents are referred to in the present decision:

(2): WO 97/17453, published on 15 May 1997;

(3): WO 97/17455, published on 15 May 1997;

(5): WO 91/13993, published on 19 September 1991;

(9): WO 97/25419, published on 17 July 1997; and

(15): WO 95/13389, published on 18 May 1995.

XI. The submissions made by the appellant were essentially as follows:

Non-admission of the set of claims according to the main request into the proceedings

Where a patent proprietor appealed the revocation of its patent, the Boards of Appeal recognized a general ability for the patent proprietor to revert to the granted patent in appeal proceedings even if the main request in opposition proceedings had been more limited (see, e.g., decision T 386/04 of 9 January 2007). The exception to this principle was where a patent proprietor had committed a procedural abuse, which did not apply to the present case. On the contrary, the appellant had essentially maintained and defended the granted claims at the oral proceedings before the

opposition division, and re-presented those claims at the beginning of the appeal procedure, so the respondent had not been misled or distracted.

Since the independent claims of the present main request were identical to the granted claims, the appellant's position on the prior art relevant to the novelty of the subject-matter of the main request (document (5)) was clear from the arguments in favour of an inventive step of the granted claims put forward in the statement of grounds of appeal.

Therefore, the main request should be admitted into the proceedings.

1st auxiliary request

Article 56 EPC - Inventive step

Document (5), which was considered by the opposition division as the closest state of the art, did not contain any true working examples with relevance for monocot plants. The sole example describing the construction of a monocot seed-specific expression cassette (Example 6) was not enabling.

In the decision under appeal, the opposition division held that the three signal peptides listed in claims 1 and 7 were obvious alternatives to the maize zein signal peptide from hypothetical Example 6 of document (5). However, the only supporting evidence which was cited in the decision was taken from the patent itself, rather than from the prior art. Contrary to the opposition division's view, the patent did not state that the rice glutelin or barley hordein signal

peptides were well known in the art. Even if these signal peptides were indeed "well-known" *per se*, this knowledge did not mean that their suitability for targeting expression to protein storage bodies in monocot seeds was also "well-known".

A person skilled in the art faced with the paper disclosure of a construct in Example 6 of document (5), which was based on hypothetical portions of a maize zein gene, would not reasonably have expected that he/she could obtain a transgenic monocot plant or its seeds with the features of, respectively, claim 1 and 7, in particular the signal peptides. Nor would he/she have expected the resulting advantages. Therefore, the claimed subject-matter involved an inventive step.

XII. The submissions made by the respondent were essentially as follows:

Non-admission of the set of claims according to the main request into the proceedings

The claims according to the main request should not be admitted into the appeal proceedings. An identical set of claims had been filed in opposition proceedings; the claims had been withdrawn during the oral proceedings before the opposition division and replaced by another set of claims. The appellant had deliberately abandoned the subject-matter covered by the present main request. Thus, the request could not be made the basis of the appeal because, to this extent, the appellant was not adversely affected by the decision of the opposition division. An attempt to request maintenance of the patent on the basis of the present main request was to

be seen as an obvious misuse of the appeal as a means of redress.

1st auxiliary request

Article 56 EPC - Inventive step

Document (5), which related to methods of seed-specific expression of heterologous proteins in transgenic plants, represented the closest state of the art. The only difference between the disclosure of document (5) and the claimed subject-matter was the use of another signal peptide than the one derived from the 15 kDa β -zein gene, i.e. signal peptides derived from maize rice glutelin, barley D-hordein and barley B1-hordein. Thus, the problem to be solved could be formulated as the provision of an alternative signal peptide.

The patent did not provide general teaching for the promoter or signal sequences specified in claims 1 and 7, other than for the B1-hordein promoter and signal sequence. Thus, the patent did not solve the problem over the whole scope of the claims.

Signal peptides and their use for expression of heterologous proteins in plants were already known in the art, e.g. from documents (2) and (3) (α -amylase signal peptide) and document (9) (glutenin signal peptide). In the patent in suit dozens of such signal peptides were mentioned as being state of the art (see page 9, lines 46ff), including all of the signal sequences specified in the claims. It was stated in document (5) (see page 15, line 13) that a "*monocot or β -zein signal peptide*" may be required for seed-specific expression. The skilled person looking for an

alternative signal peptide would have a motivation to take a monocot signal sequence. The subject-matter of the 1st auxiliary request was thus obvious in view of the disclosure of document (5) and the apparent knowledge in the technical field.

The increased expression allegedly observed using the constructs specified in claims 1 and 7 was not surprising. Document (15) showed that in transgenic maize containing an expression cassette comprising the maize zein promoter, the lectin signal sequence and the heterologous protein SacB, the fructan accumulation in the seeds was increased due to a higher SacB expression. Thus, an inventive step based on a surprising effect could not be acknowledged.

- XIII. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent maintained on the basis of the set of amended claims according to the main request filed with the statement of grounds of appeal or, in the alternative, in the following version:
- claims 1 to 12 of the new 1st auxiliary request, filed as 5th auxiliary request with the statement of grounds of appeal;
 - amended pages 2 to 24 of the description (version II) filed at the oral proceedings;
 - figures 1 to 7 of the published patent specification.
- XIV. The respondent (opponent) requested that the appeal be dismissed.

Reasons for the Decision

Non-admission of the set of claims according to the main request into the proceedings

1. The set of claims according to the present main request, which was filed together with the statement of grounds of appeal, is identical to the claims of the main request filed by the patent proprietor on 2 February 2009 in opposition proceedings. This set of claims was discussed during the oral proceedings before the opposition division which, after deliberation, announced that it considered the subject-matter of the claims to lack novelty over at least document (5) (see paragraph 14 of the Minutes dated 14 May 2009). Following the announcement, the patent proprietor withdrew the set of claims in question, and replaced it by a new main request (see paragraph 22 of the Minutes).
2. Pursuant to decision G 9/91 of the Enlarged Board of Appeal (OJ EPO 1993, 408, paragraph 18 of the Reasons), the purpose of the appeal procedure *inter partes* is mainly to give the losing party the possibility of challenging the decision of the opposition division on its merits. In the appeal procedure, the patent proprietor who has lost before the opposition division has the right to have the rejected requests reconsidered by the board of appeal. This, however, does not necessarily apply to other requests, in particular requests that were not subject of the decision under appeal.
3. Pursuant to Article 12(1) of the Rules of Procedure of the Boards of Appeal (RPBA), appeal proceedings shall

be based on (a) the notice of appeal and statement of grounds of appeal, (b) any written reply of the other party or parties, and (c) any communication sent by the Board and any answer thereto filed pursuant to directions of the board. Even though everything presented by the parties under Article 12(1) RPBA - to the extent it relates to the case under appeal and meets the requirements specified in Article 12(2) RPBA - shall, in principle, be taken into account, the board has the discretionary power to disregard facts, evidence or requests which could have been presented or were not admitted in opposition proceedings (see Article 12(4) RPBA).

4. Although Article 12(4) RPBA does not expressly mention requests which were submitted in opposition proceedings, but were later withdrawn and were, therefore, not subject of the decision under appeal, the board is of the opinion that the admission of such requests into the appeal proceedings is a matter of discretion of the board of appeal, rather than - as the appellant contended - a matter of right. A request withdrawn in opposition proceedings is considered to be equivalent to a request that the patent proprietor did not present, even though it could have done so.

5. As regards appellant's argument that the patent proprietor is always entitled to revert to the granted patent, the board observes that the circumstances underlying the cited decision T 386/04 (*supra*) are different from those in the present case. Other than in the cited decision, in the present case the set of claims withdrawn in opposition proceedings that the appellant now seeks to reinstate in appeal proceedings

is not the claims as granted, but an amended set of claims. While it is true that the independent claims 1 and 7 of the amended request are identical to the corresponding claims as granted, the request is *de facto* a different request. Thus, the rationale of decision T 386/04 (*supra*) does not necessarily apply to the present case.

6. Therefore, exercising the discretion given to it according to Article 12(4) RPBA, the board decides that the main request filed with the statement of grounds of appeal is not admitted into the proceedings.

1st auxiliary request

Admission into the appeal proceedings

7. The set of claims according to the 1st auxiliary request, which was submitted as 5th auxiliary request together with the statement of grounds of appeal, is identical to the claims of the main request underlying the decision under appeal. These claims were subject of the decision under appeal and are thus basis of the appeal proceedings (see Article 12(1) RPBA).

Articles 123(2) (3), 84, 83 and 54 EPC

8. The respondent did not raise any objections under these articles and the board does not see any reason to do it of its own motion.

Article 56 EPC - Inventive step

9. In the decision under appeal, the opposition division considered document (5) as the closest state of the art. Both parties and the board agree with the opposition division's view.

10. Document (5) relates to seed-specific expression cassettes for use in regulation and expression of proteins in plants, particularly in plant seeds. The document describes a seed-specific expression cassette which has a promoter derived from any of the phaseolin, the α -subunit of β -conglycinin, or the β -zein 15 kDa genes; a translation initiation signal from any of the phaseolin, the α -subunit of β -conglycinin, β -zein 15 kDa genes, or an animal gene; a gene derived from either a brazil nut sulfur-rich seed storage protein or an animal gene; a translation termination region derived from the animal gene, the phaseolin, or the β -zein 15 kDa gene; and at least one polyadenylation region from the phaseolin gene, the animal gene, or the β -zein 15 kDa gene; wherein the regulatory sequences are operably linked to one another in such a manner that the gene is expressed in seed or seed storage protein bodies (see page 5, lines 11 to 21). It is indicated that the cassette may be inserted into hosts of either monocot or dicot plant species (see page 6, lines 27 and 28) to produce plants and seeds containing the expression cassette. The relevant disclosure of a seed-specific expression cassette for monocot plants is found in Examples 6 and 9.

11. In the decision under appeal, the opposition division held that the subject-matter of claim 1 of the main

request - which is the 1st auxiliary request in appeal proceedings - differed from the disclosure in document (5) in that, instead of the β -zein signal peptide, one of the signal peptides specified in claim 1, namely the signal peptides of the rice glutelin, barley D-hordein, or barley B1-hordein genes, was used. Apart from the fact that the signal peptide of the rice globulin gene, which is not specified in the amended claim 1, was erroneously mentioned by the opposition division, the board shares the opposition division's view. It should be noted that, although claim 1 specifies several seed-maturation specific promoters, it also specifies a promoter from maize zeins and thus encompasses the promoter from 15 kDa β -zein gene described in document (5) as part of the expression cassette.

12. The problem to be solved in view of document (5) was formulated by the opposition division as the provision of an alternative transgenic monocot plant engineered such that it expresses a desired non-seed storage polypeptide in a protein storage body. Also in this respect the board shares the opposition division's view.
13. The board is convinced that this problem is solved by the transgenic monocot plant defined in claim 1. While it is true that - as the respondent argued - the examples in the patent relate solely to plants transformed with constructs including the B1-hordein promoter and signal sequence, there is no evidence on file showing that, by using constructs including any of the other promoters or signal sequences specified in claim 1, expression of a non-seed-storage heterologous protein in seeds cannot be achieved. Thus, the

- respondent's objection that the problem is not solved over the whole scope of the claims fails.
14. The question that remains to be decided is whether or not the solution proposed in claim 1 was obvious to a person skilled in the art. Relying on the description of the patent, the opposition division held that the signal sequences specified in claim 1 were known equivalents or obvious alternatives to the β -zein signal peptide, and that, therefore, the subject-matter of claim 1 lacked an inventive step.
 15. For the following reasons, the board disagrees with this finding. First, the board observes that the opposition division's reasoning relies on statements made in the patent, while a finding on Article 56 EPC must be supported by disclosure in the prior art. And secondly, while in appeal proceedings the respondent pointed to documents (2), (3) and (9) as evidence that other signal peptides were known at the relevant date, the board observes that neither of the signal sequences described in these documents - i.e. barley α -amylase signal peptide described in documents (2) and (3), and the signal sequence from the wheat glutenin encoded by the Glu-D1-2b gene described in document (9) - is specified in claim 1 (or claim 7). Thus, the board is unable to see how a combination of the content of any of these documents with the disclosure content of document (5) could render obvious the claimed subject-matter.
 16. Even if the board were to accept the opposition division's argument that the signal sequences specified in claim 1 were well-known signal sequences from monocot

proteins, the board is unable to see either in document (5) or in the documents cited by the respondent a hint that would motivate the skilled person to replace the β -zein signal peptide in the cassette described in document (5) by the signal peptides of the rice glutelin, barley D-hordein, or barley B1-hordein genes. Moreover, even if a person skilled in the art would have thought of these signal peptides as possible alternatives to the maize β -zein signal peptide described in document (5), this did not mean that it would have been obvious to him/her to use any of these signal peptides in combination with any of seed maturation-specific promoters specified in the claim, with the aim of expressing a non-seed-storage heterologous protein in a monocot plant.

17. In view of the above, the arguments put forward by the respondent concerning a lack of surprising effect in view of document (15) (see section XII above) need not to be considered.
18. Summarising the above, the board concludes that, having regard to document (5) alone or in combination with documents (2), (3) and (9) cited by the respondent, the subject-matter of claim 1 involves an inventive step.

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 with the order to maintain the patent as amended in the following version:
 - claims 1 to 12 of the new 1st auxiliary request, filed as 5th auxiliary request with the statement of grounds of appeal;
 - amended pages 2 to 24 of the description (version II) filed at the oral proceedings;
 - figures 1 to 7 of the published patent specification.

The Registrar:

The Chairman:

A. Wolinski

M. Wieser