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D E C I S I O N
of 2 February 2006

Case Number: T 0297/05 - 3.3.08

Application Number: 96923291.7

Publication Number: 0871887

IPC: G01N 33/535

Language of the proceedings: EN

Title of invention:

Electrochemiluminescent enzyme immunoassay

Applicant:

BioVeris Corporation

Opponent:

-

Headword:

Electrochemiluminescence/BIOVERIS

Relevant legal provisions:

EPC Art. 83, 84

Keyword:

"Support in the description (yes)"

"Sufficiency of the disclosure (yes)"

Decisions cited:

T 0019/90

Catchword:

-



Case Number: T 0297/05 - 3.3.08

D E C I S I O N
of the Technical Board of Appeal 3.3.08
of 2 February 2006

Appellant: BioVeris Corporation
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Representative: Colmer, Stephen Gary
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 29 October 2004
refusing European application No. 96923291.7
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: L. Galligani
Members: T. J. H. Mennessier
B. Günzel

Summary of Facts and Submissions

- I. The applicant (appellant) lodged an appeal against the decision of the Examining Division of 29 October 2004 refusing the European patent application No. 96 923 291.7 with publication number 0 871 887. The application, entitled "Electrochemiluminescent Enzyme Immunoassay", originated from an International patent application published as WO 96/41175, to be referred to in the present decision as "the application as filed".
- II. Basis for the refusal was the only request then on file, namely claims 1 to 13 filed on 9 September 2004.
- III. The application was refused by reason of non-compliance with the requirements of Articles 83 and 84 EPC. It was considered that a support in the description existed only for those embodiments of the claimed invention (all claims concerned) for which the enzyme was chosen among β -lactamases, proteases and oxidoreductases, the objection being such that it amounted to an objection of lack of disclosure.
- IV. The appellant filed a statement of grounds of appeal which was accompanied by a claim request identical to the request on which the decision was based.
- V. The Examining Division did not rectify its decision and referred the appeal to the Board of Appeal (Article 109 EPC).
- VI. A communication under Article 11(1) of the Rules of Procedure of the Boards of Appeal (RPBA) presenting some preliminary and non-binding views of the Board was

sent to the appellant. In that communication, the Board expressed particular concerns as to whether the electrochemiluminescent compound coreacted with both the enzyme substrate and the product of the enzymatic reaction and as to whether tripropylamine should be omitted from the reaction mixture. The appellant was also informed that the Board was not inclined to consider novelty and inventive step at the scheduled oral proceedings as those issues had not been discussed in the decision under appeal.

VII. In reply to the Board's communication, on 30 December 2005, the appellant submitted an auxiliary request, together with observations.

VIII. Oral proceedings took place on 2 February 2006 at which the appellant filed a new main (and sole) request in replacement of the main and auxiliary requests then on file.

The new request consisted of 10 claims.

Claim 1 read as follows:

"1. A method for the detection and/or the quantitative measurement of analyte comprising:-

(I) contacting (i) an enzyme-conjugated antibody specific for said analyte with (ii) said analyte in the presence of an electrochemiluminescent detectant and an enzyme substrate, wherein said enzyme converts said substrate into a product and wherein (a) a mixture of said substrate and said electrochemiluminescent detectant, or a conjugate of said substrate and said

electrochemiluminescent detectant, upon application of electrical energy emits electrochemiluminescence; and (b) a mixture of said product and said electrochemiluminescent detectant, or a conjugate of said product and said electrochemiluminescent detectant, upon application of electrical energy emits electrochemiluminescence; and the electrochemiluminescence emitted by (a) differs from that emitted by (b);

(II) applying electrical energy to said electrochemiluminescent detectant; and

(III) detecting or measuring electrochemiluminescence as an indication of whether or in what amount the analyte is present in the sample."

Claims 2 to 7 were dependent on claim 1 and were directed to particular embodiments thereof.

Claim 8 read as follows:

"8. A kit for measuring an analyte in a sample comprising premeasured amounts of enzyme-conjugated antibody specific for said analyte and premeasured amounts of an electrochemiluminescent detectant and an enzyme substrate and a reference standard wherein the premeasured amounts are sufficient to perform a single sample measurement and wherein said enzyme converts said substrate into a product and wherein (a) a mixture of said substrate and said electrochemiluminescent detectant, or a conjugate of said substrate and said electrochemiluminescent detectant, upon application of electrical energy emits electrochemiluminescence; and

(b) a mixture of said product and said electrochemiluminescent detectant, or a conjugate of said product and said electrochemiluminescent detectant, upon application of electrical energy emits electrochemiluminescence; and the electrochemiluminescence emitted by (a) differs from that emitted by (b)."

Claims 9 and 10 were dependent on claim 8 and were directed to particular embodiments thereof.

IX. The following document is referred to in the present decision:

(D3) Andrew W. Knight and Gillian M. Greenway, Analyst,
Vol. 119, May 1994, Pages 879 to 890

X. The submissions made by the appellant, insofar as they are relevant to the present decision, may be summarised as follows:

An invention which such as the present one opened a whole new field was entitled to more generality in the claims than one which was concerned with advances in a known technology. A fair statement of claim had not to be so narrow as to deprive the applicant of a just reward for the disclosure of its invention, as it would happen if the present appellant were arbitrarily limited to a few classes of enzymes, let alone in conjunction with their substrates and products.

The invention as claimed was to an assay method in which an enzyme was used to create or destroy an electrochemiluminescent coreactant. A person skilled in

the art, guided by the specification, could use the claimed method without undue experimentation to perform the full scope of assays within the ambit of the claims. The specification provided both general guidance and specific examples for all necessary steps and there was no need to identify other enzyme/substrate pairs that could be used in the claimed method. Document D3 taught molecules which were suitable coreactants to excite electrochemiluminescent detectant. These coreactants included primary, secondary and tertiary amines, amines, and oxalates.

Figures 8 to 12 in the application showed that both the product of the enzymatic reaction and the enzyme substrate could generate electrochemiluminescence. Central to the invention was that the light emitted with the product differed in intensity from the light emitted with the substrate.

Tripropylamine might optionally (ie depending on the coreactant involved) be used to reinforce the reducing conditions in the reaction mixture.

- XI. The appellant requests that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed during the oral proceedings.

Reasons for the Decision

Admissibility of the amendments in the main request

1. The method for the detection/and or the quantitative measurement of analyte of present claim 1 differs from

the method of claim 1 in the application as originally filed in that (i) the anti-analyte is specified as being an **antibody**, (ii) the electrochemiluminescent compound is defined as a **detectant**, (iii) the electrochemiluminescent detectant **emits differently** depending on whether it is in presence of the enzyme substrate or in presence of the product of the enzymatic reaction with the underlining feature that both **the enzyme substrate and the product of the enzymatic reaction coreact** with the electrochemiluminescent detectant and (iv) electrochemiluminescence is emitted **upon application of electrical energy**.

2. As regards the newly introduced technical features (i) to (iv), a support is found in the application as originally filed for the following reasons:
 - 2.1 Page 4 (see lines 25 and 26) states that the term "anti-analyte" is used in the application as an equivalent for the term "antibody".
 - 2.2 The term "detectant" is used to designate the electrochemiluminescent compound in the original method claims 5 to 7 and in various places in the description (see in particular page 10).
 - 2.3 A skilled reader would have realised from the application as filed - see in particular pages 6 and 12 (both as a whole) and page 13 (see lines 1 to 5), Example 2 on pages 15 to 18, together with Figure 10, as well as Example 5 on pages 22 and 23, together with Figure 14 - that, as explained in detail for the embodiments of the invention using a lactamase,

critical to the invention, whatever the enzyme may be, is the capability of the electrochemiluminescent detectant to emit differently depending on whether it is in presence of the enzyme substrate or in presence of the product of the enzymatic reaction.

- 2.4 In electrochemiluminescence the energy for the formation of the excited state of the electrochemiluminescent detectant is provided by application of a voltage to an electrode (see page 11, lines 13 to 26).
3. Thus, claim 1 has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed. The same conclusion applies *de facto* to dependent claims 2, 3, 4, 5 and 6 which correspond in their wording to original claims 3, 4, 2, 6 and 7, respectively, and to dependent claim 7 which reflects the situation illustrated in the application with respect to the use of a lactamase (see page 4, lines 14 to 18). Account being taken of original kit claims 8 to 15 and page 13 (see lines 13 to 18), the same conclusion also applies *mutatis mutandis* to present claim 8 to 10.
4. Therefore, the main request meets the requirements of Article 123(2) EPC.
5. In the Board's judgment, the amendments carried out on the original claims have not introduced any unclarity. Furthermore, as explained at the oral proceedings by the appellant, **tripropylamine** might optionally, ie depending on the coreactant involved (which itself has to be a strong reducing agent), be used as a reductant

to reinforce the reducing conditions in the reaction mixture. Therefore, its omission from the method is not regarded as an essential technical feature. This removes the concern expressed in this respect in the Board's communication under Article 11(1) RPBA. Thus the main request also meets the clarity requirement of Article 84 EPC.

Support in the description for the main request and sufficiency of the disclosure

6. The invention as presently claimed relies on the observation that an analyte may be detected or quantitatively measured by contacting it with an **enzyme**-conjugated antibody specific therefor in the presence of an electrochemiluminescent detectant and an enzyme substrate, wherein said **enzyme** converts said substrate into a product, the respective reactivities of the substrate and the product with the electrochemiluminescent detectant being as indicated in claim 1.
7. In its decision, the Examining Division has considered that support in the description existed only for those embodiments of the claimed invention (all claims concerned) wherein the enzyme was **chosen among β -lactamases, proteases and oxidoreductases**.
8. The requirement that the claims be supported by the description means that the subject-matter of each claim must have a basis in the description (formal aspect) and that the scope of the claims may not extend beyond the scope justified by the description and the drawings (substantial aspect), which means, in other terms, that

the scope of the patent monopoly as defined by the claims should correspond to the applicant's contribution to the art.

9. On page 6 of the application as filed (see lines 10 and 11) it is stated that "the invention employs enzymes such as -lactamases, proteases or oxido-reductases.". In view of the fact that the term "such as" means nothing else than "for example", this statement is a clear indication that in its original disclosure the invention was intended to cover the use of any enzyme. This provides a sufficient basis for claims 1 to 2 and 4 to 10, which are not limited as to the nature of the enzyme, to be formally supported by the description. The claims and the description are consistent with each other.
10. As to the substantive aspect of the support requirement, any objection must be substantiated and may not be based on mere suppositions. In the present case, in the absence of any evidence that alternative embodiments based on the use of an enzyme other than a lactamase, a protease or an oxidoreductase cannot be put in practice, it cannot be concluded that the support requirement of Article 84 EPC as to its substantive aspect is not met.
11. In this respect, it is noted that the reasoning made in the decision under appeal as to this substantive aspect is contradictory. If prior art document D3 were to be ignored for the reason that it was not cited in the application and thus is not part of the disclosure, then the use of enzymes other than lactamases, in particular the use of proteases and oxidoreductases, should also have been considered to represent

- unsuitable alternatives for the reason that the use of those two latter classes of enzymes has not been illustrated at all in the present application. The decision under appeal fails to explain why the support was found for those two other classes and not for any other enzymes.
12. In the Board's judgment, the main request is supported by the description, as required in Article 84 EPC.
 13. In the decision under appeal, the objection of insufficiency of disclosure was raised by the Examining Division as a direct consequence of its objection of lack of support. As the claims are considered to be supported by the description, the Examining Division's objection of insufficiency of disclosure has no longer any basis.
 14. In the Board's judgment, in the absence of any serious doubts substantiated by facts that there is an area of the claims in which the invention cannot be carried out by the skilled person without undue burden, there is no deficiency pursuant to Article 83 EPC (cf decision T 19/90, OJ EPO 1990, 476). Thus, the disclosure of the invention as presently claimed meets the requirement of that article.
 15. The request now on file meets all the formal requirements of the EPC and may therefore form a basis for further prosecution, namely consideration of novelty and inventive step which have not yet been treated by the Examining Division.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division for further prosecution on the basis of the main request filed during the oral proceedings.

The Registrar:

The Chairman:

A. Wolinski

L. Galligani