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**Datasheet for the decision  
of 9 March 2017**

**Case Number:** T 1096/15 - 3.3.10

**Application Number:** 04014072.5

**Publication Number:** 1609491

**IPC:** A61L27/14, C08G65/30

**Language of the proceedings:** EN

**Title of invention:**

Barrier membrane

**Patent Proprietor:**

Straumann Holding AG

**Opponent:**

Kuros Biosurgery AG

**Headword:**

**Relevant legal provisions:**

EPC Art. 100(a), 56

**Keyword:**

Inventive step - obvious alternative

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 1096/15 - 3.3.10

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.10**  
**of 9 March 2017**

**Appellant:** Kuros Biosurgery AG  
(Opponent) Technoparkstrasse 1  
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**Respondent:** Straumann Holding AG  
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**Decision under appeal:** **Interlocutory decision of the Opposition**  
**Division of the European Patent Office posted on**  
**20 March 2015 concerning maintenance of the**  
**European Patent No. 1609491 in amended form.**

**Composition of the Board:**

**Chairman** P. Gryczka  
**Members:** R. Pérez Carlón  
F. Blumer

## Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the opposition division maintaining European patent No. 1 609 491 in the form of the then pending main request.

II. Notice of opposition had been filed, *inter alia* on the ground of lack of inventive step (Article 100(a) EPC).

III. The documents forming part of the opposition proceedings included the following:

D5: US 6,624,245

D7: WO 00/44808

IV. Claim 1 of the main request reads as follows:

*"Cell-occlusive membrane, obtainable by reaction of at least two precursors in the presence of water, wherein*

*a first precursor A comprising a core carrying  $n$  chains each having a conjugated unsaturated group or a conjugated unsaturated bond attached to any of the last 20 atoms of the chain and*

*a second precursor B comprising a core carrying  $m$  chains each having a thiol group attached to any of the last 20 atoms of the chain, wherein*

*$m$  is greater than or equal to 2,*

*$n$  is greater than or equal to 2,*

*$m+n$  is greater than or equal to 5,*

*the reaction forming a three dimensional network with crosslinking-points, wherein*

*each core of the precursors forms a crosslinking-point if m and n are greater than 2, and*

*if m is equal 2 the corresponding crosslinking-point corresponds to the core of the adjacent first precursor A, and*

*if n is equal 2 the crosslinking-point corresponds to the core of the adjacent second precursor B, and*

*the adjacent crosslinking-points are connected by a chain having less than 330 atoms,*

***characterized in that***

*the first precursor A has 4 to 8 chains and*

*the second precursor B has 2 to 8 chains."*

V. The division concluded that the membrane of claim 1 was inventive. Either D5 or D7 was the closest prior art. Starting from D5, the problem underlying the claimed invention was to provide an alternative cell-occlusive membrane, and the solution, which was characterised by the type of precursor A used and by the distance between cross-linking points, was not obvious having regard to the prior art.

VI. The arguments of the appellant relevant for the present decision were the following:

If the cell-occlusive membrane of claim 1 was considered novel, either document D5 or D7 was the

closest prior art. If D5 was closer, the problem underlying the claimed invention was merely to provide an alternative cell-occlusive membrane, and the solution, characterised by the nature of the precursors and the distance between cross-linking points required by claim 1, was already taught in D5. For this reason, the membranes of claim 1 were not inventive.

- VII. The final request of the appellant was that the decision be set aside and the patent be revoked.
- VIII. The respondent (patent proprietor) made no submissions during these appeal proceedings.

### **Reasons for the Decision**

- 1. The appeal is admissible.

#### Procedural matters

- 2. The respondent did not request oral proceedings. This decision, although adverse to the respondent, can thus be issued having regard to the written submissions.
- 3. The sole subject of these appeal proceedings is the patent as maintained by the opposition division, namely in the form of the main request then pending.

Although at the end of the oral proceedings in opposition five auxiliary requests were still pending, none of them was filed during these appeal proceedings.

Inventive step

4. Claim 1 relates to a cell-occlusive membrane obtainable from precursors A and B. The resulting membrane has a three-dimensional network whose adjacent cross-linking points are connected by a chain of less than 330 atoms.

Precursor A comprises a core and 4 to 8 chains, two or more of them having a conjugated unsaturated group or a conjugated unsaturated bond.

Precursor B has a core and 2 to 8 chains, two or more of them having a thiol group.

5. Closest prior art

- 5.1 The appellant argued that either document D5 or document D7 was the closest prior art, and the contested decision examined inventive step under both lines of argument.

The opposition division considered that D5 disclosed membranes which were cell-occlusive, being prepared as in the claimed invention by in-situ application to tissue (page 15, lines 1-4 of the contested decision).

It concluded that the membranes of D7 were not necessarily cell-occlusive (page 19, lines 20-26 of the contested decision).

As far as the disclosure of these documents is concerned, the board sees no reason to differ from the conclusions of the opposition division. Since D5, like claim 1 of the patent in suit, relates to cell-occlusive membranes, it is closer than D7 to the

claimed invention.

5.2 The opposition division considered that document D5 disclosed cell-occlusive membranes (examples, column 22, lines 5-20) obtainable by the reaction of 4-arm precursors of molecular weight 10,000, one of them having thiol groups and the second having succinimidyl groups. It is not contested that the obtained membranes have ca. 340 atoms between adjacent cross-linking points.

The opposition division concluded that the membranes disclosed in the examples and in column 22, lines 5-20, of document D5 differed from the subject-matter of claim 1 in that

- their adjacent crosslinking-points are connected by a chain having 340 atoms, which is a larger number than required by claim 1, and in that
- they are obtainable by reaction of a precursor A which contains a succinimide group, which is not a conjugated unsaturated group or bond as required by claim 1.

The appellant argued that none of these features could distinguish the cell-occlusive membranes of claim 1 from that of document D5.

The question of whether these features are disclosed in combination with each other and with cell-occlusive membranes in document D5 can, however, be left aside, since the board holds that even if they were regarded as distinguishing from the membrane of D5, the proposed solution is obvious for the reasons explained below.



6. Technical problem underlying the invention

The opposition division and the appellant defined the technical problem underlying the claimed invention as to provide a further cell-occlusive membrane. The board sees no reason to differ.

7. Solution

The solution to this technical problem is the cell-occlusive membrane claimed, characterised in that it is obtainable from a precursor A having a conjugated unsaturated group or a conjugated unsaturated bond, and in that its adjacent cross-linking points are connected by a chain having less than 330 atoms.

8. Success

Having regard to the data provided in the examples of the patent in suit, the problem formulated in point 6 above is credibly solved by the cell-occlusive membrane of claim 1.

9. It thus remains to be decided whether or not the proposed solution to the objective problem defined above is obvious in view of the state of the art.

Document D5 discloses rapid-gelling biocompatible polymer compositions suitable for a variety of medical uses, including tissue sealants.

Preferred tissue sealants are obtained from the reaction of pentaerythritol poly(ethylene glycol)ether tetrasuccinimidyl glutarate (SG-PEG) having a molecular weight of 10,000 and pentaerythritol poly(ethylene glycol)ether tetrasulphydryl of the same molecular

weight. In the resulting membrane, adjacent cross-linking points are connected by a chain of 340 atoms on average.

In column 22, lines 5-15, and in the context of tissue sealants, D5 discloses that precursors preferably have a molecular weight of about 5,000 to 20,000. Thus, D5 discloses precursors of a molecular weight of less than 10,000, which would form membranes whose adjacent cross linking points are connected by shorter chains, as obvious alternatives.

In table 1, document D5 further discloses suitable sulfhydryl-reactive components and teaches acryloyl precursors (entry 5), which is a preferred embodiment of a conjugated unsaturated group, as in claim 1, as an alternative to succinimydyl precursors (entry 1).

The skilled person, trying to obtain alternative cell-occlusive membranes such as tissue sealants, thus finds in the disclosure of document D5 a hint towards the claimed solution, namely towards precursors with lower molecular weight which form membranes whose adjacent cross-linking points are connected by a smaller number of atoms, and towards precursors having conjugated unsaturated groups such as acryloyl groups.

For these reasons, the board concludes that the subject-matter of claim 1 does not go beyond an arbitrary selection of equally possible alternatives taught by D5 and is hence not inventive as required by Article 56 EPC.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



C. Rodríguez Rodríguez

P. Gryczka

Decision electronically authenticated