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# Datasheet for the decision of 20 November 2025

**Case Number:** T 2051/23 - 3.3.04

**Application Number:** 14768321.3

**Publication Number:** 2976352

**IPC:** C07K1/14, C07K1/30

**Language of the proceedings:** EN

**Title of invention:**
Purification of triple helical proteins

**Patent Proprietor:**
Evonik Operations GmbH

**Opponent:**
BASF BEAUTY CARE SOLUTIONS FRANCE SAS

**Headword:**
Purification of triple-helical proteins/EVONIK

**Relevant legal provisions:**
EPC Art. 54, 56, 83, 84, 87(1), 123(2), 123(3)
RPBA 2020 Art. 12(4), 12(6)

**Keyword:**

Auxiliary request 10a - circumstances of appeal case justify admittance (yes)
Clarity (yes)
Amendments - extension beyond the content of the application as filed (no) - extension of the protection conferred (no)
Priority - (yes)
Sufficiency of disclosure - (yes)
Novelty - (yes)
Inventive step - (yes)
Amendment to case - exercise of discretion
Late-filed facts - error in use of discretion by the opposition division (no) - circumstances of the appeal case justify admittance (no)

**Decisions cited:**

G 0007/93, T 0014/83

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**Case Number: T 2051/23 - 3.3.04**

# D E C I S I O N
# of Technical Board of Appeal 3.3.04
# of 20 November 2025

| | |
|---|---|
| **Appellant I:** (Patent Proprietor) | Evonik Operations GmbH<br>Rellinghauser Straße 1-11<br>45128 Essen (DE) |
| **Representative:** | Hoffmann Eitle<br>Hoffmann Eitle S.L.U.<br>Paseo de la Castellana 140, 3a planta<br>Edificio LIMA<br>28046 Madrid (ES) |
| **Appellant II:** (Opponent) | BASF BEAUTY CARE SOLUTIONS FRANCE SAS<br>32 Rue Saint Jean de Dieu<br>69007 Lyon (FR) |
| **Representative:** | Cabinet Beau de Loménie<br>103, rue de Grenelle<br>75340 Paris Cedex 07 (FR) |
| **Decision under appeal:** | **Interlocutory decision of the Opposition Division of the European Patent Office posted on 5 December 2023 concerning maintenance of the European Patent No. 2976352 in amended form.** |

**Composition of the Board:**

| | |
|---|---|
| **Chairwoman** | M. Pregetter |
| **Members:** | D. Luis Alves |
| | M. Blasi |

## Summary of Facts and Submissions

I. European patent No. 2 976 352, entitled "*Purification of triple helical proteins*", was granted for European patent application No. 14 768 321.3, which had been filed as an international application published as WO 2014/146175 (referred to in the following as 'the application as filed'). It claims priority from patent application No. AU 2013900990, which had been filed on 21 March 2013.

II. An opposition was filed against the patent, invoking the grounds for opposition in Article 100(a) EPC, for lack of novelty (Article 54 EPC) and lack of inventive step (Article 56 EPC), as well as the grounds for opposition in Article 100(b) and (c) EPC.

III. The opposition division decided that, account being taken of the amendments in the form of auxiliary request 10, the patent and the invention to which it related met the requirements of the EPC.

IV. The patent proprietor (appellant I) and the opponent (appellant II) both filed appeals against this decision.

V. With its statement setting out the grounds of appeal, appellant I filed sets of claims of a main request, and of auxiliary requests 1 to 14 and 5a. It also filed documents D34 to D37.

VI. With its statement setting out the grounds of appeal, appellant II argued that the request as held allowable by the opposition division did not comply with the

requirements of Article 123(2),(3) EPC or those of Articles 84, 83, 54 and 56 EPC; in this context, it submitted that the claimed priority was not valid. The decision under appeal was also contested as regards the decision to admit documents D29 and D30 and the decision not to admit documents D31 and D32.

VII. Appellant I submitted a reply to appellant II's statement of grounds of appeal, together with sets of claims of auxiliary requests 5b, 5c, 6a and 10a.

VIII. Appellant II submitted a reply to appellant I's statement of grounds of appeal.

IX. Appellants I and II submitted further arguments in letters dated 20 February 2025 and 18 October 2024, respectively.

X. The board appointed oral proceedings and in a communication pursuant to Article 15(1) RPBA it informed the parties of its preliminary view on some of the issues in the appeal case.

XI. Appellants I and II subsequently submitted further arguments in letters dated 28 August 2025 (which was not received until 29 October 2025), and 13 November 2025, respectively.

XII. Oral proceedings took place in the presence of both appellants. At the oral proceedings, appellant I withdrew all claim requests ranking higher than auxiliary request 10a. At the end of the oral proceedings, the chair announced the board's decision.

XIII. The set of claims of auxiliary request 10a consists of independent claim 1 and dependent claims 2 to 16. The claims read as follows.

"1. A method for the purification of a recombinantly expressed triple-helical protein, wherein the protein is selected from the proteins consisting of an amino acid sequence according to any one of SEQ ID NO.3, SEQ ID NO.8, SEQ ID NO.17, SEQ ID NO.24, SEQ ID NO.26, SEQ ID NO.28, SEQ ID NO.30, SEQ ID NO.38, SEQ ID NO.40 and SEQ ID NO.43, wherein the protein is contained within a non-mammalian host cell culture extract or homogenate, the method comprising:

(i) precipitating the host cell materials from the triple-helical protein at a pH less than 7 and at a temperature that is less than the melting temperature Tm of the triple-helical protein; followed by

(ii) digesting host cell materials present in the precipitated host cell culture extract or homogenate by addition of an acid protease, wherein the triple-helical protein is resistant to the acid protease digestion; and

(iii) collecting the purified triple-helical protein;

wherein the triple-helical protein remains in solution throughout at least steps (I) and (II).

2. The method according to claim 1, wherein the triple-helical protein remains in solution throughout steps (i) to (iii).

3. The method according to claim 1 or 2, wherein the pH is less than 6.

4. The method according to any one of claims 1 to 3, wherein the host cell is a bacterial, yeast or plant host cell.

5. The method according to any one of claims 1 to 4, wherein the protease is pepsin, papain, papain-like enzymes, such as bromelain, ficin or actinidin, or Aspergillus saitoi protease.

6. The method according to any one of claims 1 to 5, wherein the precipitation step is conducted at a temperature at least 10°C or more below the Tm of the triple-helical protein.

7. The method according to any one of claims 1 to 6, further comprising an additional, intermediary separation step between the precipitating step and the digesting step of physically separating the triple-helical protein from precipitated host cell materials.

8. The method according to claim 7, wherein the additional intermediary separation step is selected from one or more of centrifugation, filtration, cross flow filtration, or sedimentation.

9. The method according to any one of claims 1 to 8, wherein the expressed triple-helical protein is produced intracellularly within the host cell.

10. The method according to claim 5, wherein:
(i) the pH is between 2 and 4 and the host cell is a bacterial host cell;
(ii) the pH is between 4 and 6 and the host cell is a yeast host cell; or

(iii) the pH is between 2 and 4.5 and the host cell is a plant host cell.

11. The method according to any preceding claim, wherein precipitation of the triple-helical protein is achieved by addition of ammonium sulphate, by adjustment of pH or adjustment of temperature, and/or by use of a polymer.

12. The method according to claim 11, wherein the polymer is polyethylene glycol.

13. The method according to any preceding claim wherein the collected triple-helical protein is stabilised by addition of a stabilising agent.

14. The method according to claim 13, wherein the stabilising agent is glutaraldehyde.

15. The method according to any preceding claim, wherein the triple-helical protein is collagen.

16. The method according to any preceding claim, wherein the triple-helical protein sequence is derived from a bacterial yeast, plant, insect, or silkworm."

XIV. The following documents are referred to in this decision.

D3: Y.P. Yong *et al.*, Appl. Microbiol. Biotechnol. 98, 2014, pages 1 807-1 815

D7: M. Nokelainen *et al.*, Yeast 18, 2001, pages 797-806

D8: WO 2013/071356

D10 C. Merle *et al.*, FEBS Letters 515, 2002, pages 114-118

D16: US 6,548,077

D29: M. Cutini *et al.*, J. Phys. Chem. B 123, 2019, pages 7 354-7 364

D30: S.S. Raman *et al.*, J. Phys. Chem. B 112, 2008, pages 1 533-1 539

D31: EP 2 502 991

D32: JPH0823979

D37 H.P. Germann and E. Heidemann, Biopolymers 27, 1988, pages 157-163

XV. The arguments of appellant I, where relevant to this decision, can be summarised as follows.

*Auxiliary request 10a (sole claim request)*

*Admittance into the appeal proceedings*

The request should be admitted into the appeal proceedings. It differed from the request considered allowable by the opposition division only in that the term "*having*" had been replaced by the term "*consisting of*".

This claim request addressed an objection under Article 123(2) EPC that had been mentioned in one single sentence during the opposition proceedings. In view of the large number of objections raised by appellant II against several claims under Article 123(2) EPC in its extensive notice of opposition and subsequent written submissions, it would not have been practicable to submit auxiliary requests addressing each and every one of the objections. Moreover, there had been no reason to file this request earlier as the opposition division's preliminary opinion had been entirely favourable on this issue and had indicated that auxiliary request 10 complied with

all other EPC requirements as well. This particular objection was also considered unfounded in the decision under appeal. Auxiliary request 10a was filed in response to appellant II's objection on appeal against the request that had been considered allowable. It contained a minor change of low complexity and rendered the objection moot without creating further issues that would need to be discussed.

*Clarity (Article 84 EPC)*

The amino acid sequences were defined in the patent and it was therefore unambiguous what the SEQ ID NOs listed in claim 1 referred to.

*Amendments (Article 123(2) EPC) - Claims 1, 2 and 10*

The application as filed disclosed methods applicable to all the specified triple-helical proteins. Thus, the introduction of the amino acid SEQ ID NOs into claim 1 did not extend the subject-matter beyond the content of the application as filed. Likewise, the features "*remains in solution*", "*a temperature that is less than the melting temperature Tm of the triple-helical protein*" and "*resistant to the acid protease digestion*" were directly and unambiguously derivable from the application as filed.

Claim 10 did not single out specific combinations and therefore did not relate to subject-matter extending beyond the content of the application as filed.

*Disclosure of the invention (Article 83 EPC) - Claims 1, 7, 11 and 16*

In essence, the arguments of the opposition division were adopted.

*Priority - Claims 1, 2, 10 and 16*

With regard to claim 1, passages in the priority application which disclosed the features in question included page 5, lines 7 to 9, page 6, lines 16 to 17, page 7, lines 3 to 7, page 5, lines 31 to 32, and page 6, lines 2 to 5; with regard to claim 10, they included page 8, lines 19 to 21, and claims 11 to 13; and with regard to claim 16, they included page 10, lines 19 to 21.

*Novelty (Article 54 EPC)*

Since the priority was validly claimed, document D3 was not to be taken into account in the assessment of novelty.

The subject-matter of claim 1 was novel over the disclosure in document D8, which did not disclose the digestion step, i.e. step (ii). None of the references to digestion related to a step carried out after precipitation during protein purification.

*Inventive step (Article 56 EPC)*

Documents D3 and D8 were not part of the state of the art according to Article 54(2) EPC and therefore were not to be taken into account in the assessment of inventive step.

Document D10 was considered to represent the closest prior art.

The precipitation step in claim 1 was different from the extraction under acid conditions disclosed in document D10. A further difference was that claim 1 required the triple-helical protein to remain in solution during the precipitation step.

The skilled person had no reason to consult document D7 in order to improve the purification method, as that document focused on the role of proline-4-hydroxylase in collagen expression rather than on protein purification. Moreover, this document did not disclose that pepsin could be used to increase purity and did not mention pepsin digestion in the context of protein purification. Therefore, it did not provide the skilled person with any incentive to add a digestion step to a precipitation step in order to solve the problem of improving and simplifying the method of the closest prior art.

Document D16 did not deal with recombinant collagen but with methods of preparing collagen from animal tissues. Therefore, the skilled person would not have considered it. The requirements for purification methods were different in the two cases. Moreover, in this document there was no suggestion that a digestion step should be added after a precipitation step, while maintaining the triple-helical protein in solution.

*Admittance of documents D31 and D32 into the appeal proceedings*

The opposition division's decision not to admit these documents was correct and the board should not admit them either for the same reasons.

XVI. The arguments of appellant II, where relevant to this decision, can be summarised as follows.

*Auxiliary request 10a (sole claim request)*

*Admittance into the appeal proceedings*

Appellant I indicated that this request addressed objections under Article 123(2) EPC, in relation to the term "having" in claim 1 of auxiliary request 10, which has since been withdrawn. However, such objections had been raised in the opposition proceedings in response to the filing of that request, and these had been maintained, as is apparent from the decision under appeal (see point 115). Thus, this request should have been filed earlier and should not be admitted into the appeal proceedings (Article 12(4) and (6) RPBA). Furthermore, it did not overcome the aforementioned objections; nor was it convergent with the remainder of the auxiliary requests filed. Admitting this claim request would also be detrimental to procedural economy.

*Clarity (Article 84 EPC)*

Claim 1 was directed at triple-helical proteins but the SEQ ID NOs corresponded to proteins that included histidine tags and further domains. It was therefore

not clear whether or not the further domains were part of the claimed protein.

*Amendments (Article 123(2) EPC) - Claims 1, 2 and 10*

The application as filed did not disclose the following features of claim 1: (a) the specific SEQ ID NOs in the context of method steps as defined in claim 1; (b) "*remains in solution*"; (c) "*a temperature that is less than the melting temperature Tm of the triple-helical protein*"; and (d) "*resistant to the acid protease digestion*".

The objection relating to feature (b) above also applied to claim 2.

The combination of pH ranges in claim 10 with the specific proteases listed in claim 5 and the SEQ ID NOs in claim 1 was not disclosed in the application as filed.

*Disclosure of the invention (Article 83 EPC) - Claims 1, 7, 11 and 16*

*Claim 1*

The patent did not disclose the method for the amino acid sequences in claim 1. In particular, it did not disclose the pH allowing for the precipitation of the host cell materials from the specified proteins. The Tm for the proteins in claim 1 was not disclosed either. Moreover, there were no documents on file showing that it was common general knowledge to determine the Tm.

Further, there was no information on how to choose enzymes which avoided the degradation of the triple-helical protein.

In addition, none of the examples in the patent implemented the method claimed and they all used one and the same host cell. The exception was Example 24, which described a precipitation step applied to *E. coli* as the host cell, expressing protein of amino acid sequence SEQ ID NO.3.

Furthermore, it was not clear that the methods of purification resulted in the full amino acid sequences according to the SEQ ID NOs in the claim, since some domains might be removed during the digestion step. Document D3 seemed to confirm that V domains were removed by pepsin digestion. Consequently, the purified protein did not correspond to the amino acids in the SEQ ID NOs.

The invention defined in claim 1 lacked a clear and sufficient disclosure also as regards the feature "*host cell culture extract or homogenate*" and step (ii), which required digesting host cell proteins present in the precipitate.

*Claim 7*

This claim defined a method step which could not be carried out because it required, after step (i), a separation of the triple-helical protein from the precipitated host cell materials, but the collected fraction resulting from step (i) was the precipitate containing the host cell materials.

*Claim 11*

This claim required precipitating the triple-helical protein while it remained in solution. The skilled person would not know how to carry out such a step.

*Claim 16*

Claim 15 defined the triple-helical protein as being collagen. This, however, was not compatible with the protein sources specified in claim 16.

Priority - claims 1, 2, 10 and 16

The application from which priority was claimed did not disclose the following features of claim 1: (i) "*remains in solution*"; (ii) "*a temperature that is less than the melting temperature Tm of the triple-helical protein*"; and (iii) "*resistant to the acid protease digestion*".

The objection relating to feature (i) also applied to claim 2.

The combination of pH ranges in claim 10 with the specific proteases listed in claim 5 and the SEQ ID NOs in claim 1 was not disclosed in the priority application.

The same applied to the term "*bacterial yeast*" in claim 16.

*Novelty (Article 54 EPC)*

Document D3 was to be taken into account for the assessment of novelty since the priority had not been validly claimed.

Document D8 disclosed a method of purifying triple-helical proteins, including a protein with an amino acid sequence of SEQ ID NO.16, which corresponded to SEQ ID NO.30 of the patent. Thus, document D8 disclosed the subject-matter of claims 1, 3 to 7, 11 to 14 and 16.

*Inventive step (Article 56 EPC)*

Documents D3 and D10 could each be taken to represent the closest prior art.

In the method disclosed in document D10, total protein was extracted and dissolved in an acidic solution, then centrifuged to remove insoluble material. Thus, a step of acid precipitation was disclosed. The patent acknowledged this (see paragraph [0015]). Moreover, the pH and temperature conditions corresponded to those in the patent. It was incorrect to conclude that no precipitation took place because the incubation period was shorter than in the patent. In fact, neither claim 1 nor the description specified the duration of step (i).

Furthermore, document D10 disclosed that the recombinant collagen was resistant to pepsin at temperatures of up to 36.8°C, and that the purified collagen could be treated with pepsin, even if it did not disclose that this step resulted in the digestion of host cell proteins.

Therefore, claim 1 differed from that disclosure only in that it additionally included a digestion step. The objective technical problem was therefore to improve the purification and to purify selectively the triple-helical proteins from non-triple-helical proteins. Documents D7 and D16 each showed that digestion by pepsin was standard.

*Admittance of documents D31 and D32 into the appeal proceedings*

These documents should be admitted into the appeal proceedings. They were not late filed since they were submitted before the final date set under Rule 116 EPC and they were known to appellant I from proceedings concerning a patent family member of the patent in suit. Furthermore, they were relevant because they were used for raising inventive-step objections in combination with document D10. Moreover, it was incorrect that document D31 did not address protein purification (see paragraph [0031]).

XVII. The requests of the parties were as follows.

Appellant I requested that the patent be maintained in amended form based on the set of claims of auxiliary request 10a, or, alternatively, that the case be remitted to the opposition division for consideration of auxiliary requests 11 to 14. Appellant I further requested that some of the arguments in relation to Article 83 EPC and the objection of a lack of inventive step based on a combination of documents D10 and D16 not be admitted into the appeal proceedings.

Appellant II requested that the decision under appeal be set aside and that the patent be revoked in its entirety. Appellant II further requested that auxiliary request 10a, document D37 and several lines of argument submitted by appellant I with its reply to the statement of grounds of appeal not be admitted into the appeal proceedings.

## Reasons for the Decision

*Auxiliary request 10a (sole claim request)*

1. *Admittance into the appeal proceedings*

1.1 The set of claims of auxiliary request 10a only differs from that of auxiliary request 10, which was held allowable by the opposition division, in that the term "*having*" in the expression "*wherein the protein is selected from the proteins having amino acid sequences according to any one of ...*" in claim 1 has been amended to "*consisting of*".

1.2 The set of claims of auxiliary request 10a was first filed in reply to the appeal of appellant II, and, thus, it is not a request on which the decision under appeal was based within the meaning of Article 12(2) RPBA. Therefore, this part of appellant I's appeal case is an amendment under Article 12(4) RPBA and as a consequence the admittance thereof is at the board's discretion.

1.3 Pursuant to Article 12(4) RPBA, the board shall exercise its discretion in view of, *inter alia*, the complexity of the amendment, the suitability of the

amendment to address the issues which led to the decision under appeal, and the need for procedural economy. However, under Article 12(6), second sentence, RPBA, the board shall not admit requests which should have been submitted in the proceedings leading to the decision under appeal, unless the circumstances of the appeal case justify their admittance.

1.4 The board has decided to admit this claim request in view of the following considerations. While an objection based on the term "*having*" had already been raised against the request then pending as auxiliary request 9 during the opposition proceedings, in appellant II's letter dated 14 February 2023, a plurality of objections had been raised against the granted claims by appellant II under all of the grounds for opposition in an extensive notice of opposition of more than 50 pages. Several claims were objected to for reasons of added subject-matter, the priority was considered invalid and a lack of novelty and inventive step was argued on the basis of a plurality of documents. Further objections, one of which was the aforementioned objection that had been contained in a single sentence, were raised against the nine auxiliary requests by appellant II in its further submission dated 14 February 2023, which comprised more than 100 pages and enclosed a further 13 documents. These further objections were directed at multiple claims within auxiliary request 9, with each claim being challenged under several articles of the EPC. The objections under each article were further subdivided to address a multitude of individual claim features. In the case of claim 1, objections were raised under several grounds for opposition, and under Article 123(2) EPC alone these related to several

distinct features of the claim. Furthermore, the opposition division's preliminary opinion set out in the communication accompanying the summons to oral proceedings had been positive as regards the request then pending as auxiliary request 9 and, at the end of the oral proceedings, the request then pending as auxiliary request 10 was found allowable by the opposition division. In these circumstances, the board considers that while the set of claims of auxiliary request 10a could have been filed during the opposition proceedings, it could not be reasonably expected that this specific set of claims should have been filed before the opposition division. Furthermore, the set of claims of auxiliary request 10a, which was filed in reply to the appeal of appellant II, only contained one further amendment as compared to the set of claims considered allowable by the opposition division. This amendment was not complex, it overcame the objection of added subject-matter as maintained by appellant II in its statement of grounds of appeal, and did not create any additional complexity for the case.

1.5 In view of the above considerations, the board has decided to admit auxiliary request 10a into the appeal proceedings under Article 12(4),(6) RPBA.

2. *Objections raised by appellant II in appeal proceedings*

At the oral proceedings before the board, only inventive step was discussed as concerns auxiliary request 10a. Otherwise, appellant II stated that it relied on its written case and on the objections that had been raised with respect to auxiliary request 10 (which had been withdrawn by appellant I at the oral

proceedings), which also applied to auxiliary request 10a.

3. *Admittance of lines of argument*

There was a dispute between the parties as to the admittance of a number of lines of argument in relation to several of the auxiliary requests on file. However, when asked at the oral proceedings, the parties did not pursue any of the lines of argument that are relevant to auxiliary request 10a other than those in the context of inventive step, which are addressed in the corresponding section below. In the written proceedings, appellant II requested that, in the context of Article 123(2) EPC, certain lines of argument submitted by appellant I not be admitted. These are likewise addressed in the corresponding section below.

4. *Introduction*

Claim 1 is directed at a method of purifying recombinantly expressed triple-helical proteins. The proteins are expressed in non-mammalian host cells and they are further defined by their amino acid sequences. The starting point for the purification is a cell culture extract or homogenate. The method comprises three steps: (i) acid precipitation of host cell materials; (ii) digestion with an acid protease; and (iii) collection of the purified protein, wherein the protein remains in solution at least throughout steps (i) and (ii).

5. C*larity (Article 84 EPC)*

5.1 The objection was that it is not clear whether claim 1 is directed to triple-helical proteins, as the SEQ ID NOs correspond to proteins that include motives such as histidine tags in addition to the triple-helical motives.

5.2 The board is of the view that the proteins are defined without ambiguity by their amino acid sequences according to the SEQ ID NOs listed in the claim, which are mandatory features in claim 1. There is no lack of clarity in this respect and the objection under Article 84 EPC was therefore not convincing.

6. *Amendments (Article 123(2) EPC) - Claims 1, 2 and 10*

6.1 Appellant II had requested in writing that certain lines of argument of appellant I not be considered by the board. Yet the board could not identify any lines of argument beyond those contained in the decision under appeal. Appellant II did not make any further submissions on this issue when invited to do so at the oral proceedings.

6.2 *Claim 1*

*(a) Specific SEQ ID NOs*

6.2.1 According to appellant II, the proteins consisting of the amino acid sequences recited in claim 1 are disclosed in the application as filed only in the context of specific purification steps in the examples and not as proteins that may be purified with the generic purification steps in claim 1.

6.2.2 The board does not agree with this reading of the application as filed. The application as filed lists amino acid sequences of proteins that may be purified using the methods described (see page 13, line 7, to page 14, line 28). It sets out the sequence listing without any reference to specific examples.

6.2.3 In this context, the parties discussed, in particular, the wording on page 24, first paragraph, which reads as follows.

"*Examples 1-11 below describe different triple-helical constructs that may be purified according to the methods described therein*".

Depending on the part of the sentence they emphasised, the parties came to different conclusions as to whether each example described the only way to purify the specific protein concerned in that particular example. In the board's view, this sentence states that the constructs are merely examples and implies that other constructs can also be purified using the generic methods disclosed in the application.

6.2.4 Thus, neither of the two cited passages indicates to the skilled person that particular amino acid sequences require the adaptation of the generally defined method such that the specific steps carried out in each example are read as mandatory.

*(b) "remains in solution" versus "remains soluble"*

6.2.5 According to appellant II, the expression "*remains in solution*" has a different meaning from the expression "*remains soluble*" in the application as filed.

6.2.6 In this regard, the board first of all notes that the two expressions are used interchangeably in the application as filed (see page 4, lines 14 to 16: "*The method provides for the purification of soluble triple-helical protein(s) which remains soluble throughout the purification method*"; page 5, lines 30 to 32: "*Depending upon the protease used in the digestion step, the pH may need to be adjusted up or down with the proviso that the triple-helical protein remains in solution*"; and page 6, lines 21 to 24: "*The inventors found that by adjusting the pH of the solution to acidic conditions at a temperature at which the triple-helical protein remains thermally stable, the recombinant triple-helical protein does not denature and remains in solution...*" (underlining added by the board)). Thus, the board concludes that the replacement of one of the expressions by the other does not extend the subject-matter beyond the content of the application as filed.

6.2.7 Secondly, the board is not convinced by appellant II's argument that the term "soluble" in claim 1 as filed designated a property of the protein, whereas the term "in solution" in the amended claim 1 defined a state, namely that of being "solubilised". The terms "soluble" and "in solution" were considered by appellant II in isolation when in fact they appear in the expressions "remains soluble" and "remains in solution", respectively. In these expressions, the term "remains" introduces a temporal aspect that is incompatible with appellant II's assertion that the first of these expressions conveys a property rather than a solubilised state of the protein. Moreover, it is a requirement in the amended claim 1 that the method is carried out such that the protein remains in solution.

In the present context, this is no different to requiring that the protein be soluble under the conditions in which the method steps are carried out. The board finds that this interpretation is consistent with the presence of both expressions in the application as filed. The interpretation put forward, that "soluble" in claim 1 as filed meant a property of the protein, goes against the explanation given in the application as filed, that the choice of temperature and pH ensures that the protein "remains in solution" during the precipitation step, i.e. step (i) (see page 6, lines 21 to 24). From this explanation it is apparent that the expression "remains soluble" in the application as filed refers to a state of the protein rather than a property. Appellant II argued that this passage does not refer to the digestion step, i.e. step (ii). However, this does not contradict the above interpretation by the board.

*(c) The definition of pH and temperature*

6.2.8 According to appellant II, the expression "*a temperature at which the triple-helical protein remains thermally stable*" in claim 1 as filed cannot be replaced with the expression "*a temperature that is less than the melting temperature Tm of the triple-helical protein*" as present in claim 1 of this request because the protein stability depends on both pH and temperature.

6.2.9 Claim 1 as filed defined the precipitation in step (i) as taking place "*under acidic conditions*" and at "*a temperature at which the triple-helical protein remains thermally stable*". This wording is repeated in the description as filed on page 4, from line 25 to the last line on the page. The following page further

defines that "*the acid conditions refer to a pH of the culture extract or homogenate being at a pH less than 7, preferably a pH less than about 6*" (see page 5, lines 8 and 9). The wording "*remains thermally stable*" appears again in the next sentence. It is stated there that this can be achieved by adding known additives or "*if the precipitation step is conducted at a temperature that is less than the melting temperature of the triple-helical protein*" (see page 5, lines 10 to 19). Therefore, the wording in claim 1 to describe the temperature at which the protein remained thermally stable was already present in the application as filed (apart from "Tm"). The same wording results from a combination of claims 1, 5 and 6 as filed.

6.2.10 Appellant II argued that in the amended claim 1 the pH and temperature were determined independently of each other, whereas in the wording of claim 1 as filed a precipitation step was defined in which the pH and the temperature were chosen such that the protein remained thermally stable.

6.2.11 This argument is not convincing because the fact remains that the meaning in the amended claim was an embodiment disclosed in the application as filed.

*(d) "resistant to the acid protease digestion"*

6.2.12 Claim 1 defines in the digestion step, step (ii), that "*the triple-helical protein is resistant to the acid protease digestion*" (underlining added by the board denotes differences over claim 1 as filed).

6.2.13 At issue was whether or not the application as filed disclosed that the protein was resistant to acid

protease digestion. It was not at issue that an acid protease was disclosed for the digestion step.

6.2.14 In the board's view, the technical teaching in the application as filed is that the triple-helical protein is resistant to protease digestion, as follows. The digestion step serves to digest the host cell proteins (see claim 1, step (ii)). The triple-helical protein is subsequently collected (see claim 1, step (iii)). This implies that the triple-helical protein is not to be digested during the digestion step. It is in this technical context that the feature "resistant to protease" in claim 1 as filed needs to be interpreted, and in the board's view it has the same meaning as the feature "resistant to protease digestion" in the amended claim 1. This principle for purifying the protein is in no way changed if the protease used in the digestion step is an acid protease.

6.3 *Claim 2*

6.3.1 Claim 2 requires that the triple-helical protein remains in solution also during step (iii) of the purification method. The feature "*remains in solution*" was objected to.

6.3.2 In the board's view, the reasons set out under points 6.2.6 and 6.2.7 above apply here too. It was additionally argued that no passage of the application as filed disclosed for step (iii) the feature "*in solution*". However, the board came to the conclusion that the meaning of "*remains in solution*" and "*remains soluble*" is the same in the context of the application as filed. Therefore, it is not required that "in solution" was mentioned in the context of step (iii) in

the application as filed. Thus, this argument was not convincing.

6.4 *Claim 10*

6.4.1 Claim 10 defines a pH range for the acid precipitation step, step (i), corresponding to different host cells. According to appellant II, the application as filed does not disclose the combination of these pH ranges with the specific proteases listed in claim 5 or with the specific protein amino acid sequences in claim 1.

6.4.2 Claims 1, 5 and 10 each define a feature by a list of alternatives. For that reason, claim 10 does not single out a particular combination from the alternatives.

6.5 *Conclusion for Article 123(2) EPC*

6.5.1 None of the objections under Article 123(2) EPC was convincing.

7. *Extension of the scope of protection conferred by the patent (Article 123(3) EPC)*

The objections against former auxiliary request 10 were based on the term "having", which is absent from claim 1 of auxiliary request 10a. Therefore, those objections do not apply to this request.

8. *Disclosure of the invention (Article 83 EPC) - Claims 1, 7, 11 and 16*

8.1 *Claim 1*

*(a) Examples purifying the proteins specified in the claim*

8.1.1 Appellant II presented several lines of argument based on the examples in the patent. No experimental results were brought forward to contest that the method can be put into practice.

8.1.2 In one line of argument it was asserted that none of the examples puts into practice the method as claimed.

8.1.3 The patent discloses in Examples 1 to 11 various nucleic acid constructs for the expression of triple-helical proteins. Examples 12 to 17 describe expression in various host cell systems, including other than *E. coli* (see, for example, Examples 15 to 17). Examples 18 to 21 describe the extraction of the triple-helical proteins from the host cells. Examples 24 to 26 describe steps of acid precipitation of host cell materials and Example 27 describes alternative digestion steps.

8.1.4 In light of these examples, which relate to method steps as claimed, and in the absence of any evidence to the contrary, the board considers that the patent discloses ways of putting into practice the claimed method.

*(b) The conditions for the acid precipitation step and for the digestion step*

8.1.5 While acknowledging that Example 24 shows one way to carry out the acid precipitation step, step (i), appellant II argued that the skilled person would not know which Tm and pH to use in this step. The board notes that it was not, however, argued that the experiments in Example 24 of the patent could not be reproduced. Therefore, this argument is not considered convincing.

8.1.6 The parties were in disagreement as to whether the determination of the Tm of a protein was part of the skilled person's knowledge. As acknowledged by appellant II, the patent discloses the Tm for various triple-helical proteins (see Table 1). Further examples are given in paragraph [0117]. From this, it seems that the skilled person would have no difficulty in determining the Tm of a protein. No evidence to the contrary was made available to the board.

8.1.7 The argument that the skilled person would not know which pH to use is not convincing as the patent shows in Examples 24 to 26 the conditions for the precipitation step relating to three different host cells. No evidence was brought forward to show that these conditions for precipitating the host cell materials did not allow the triple-helical protein to remain in solution.

8.1.8 The conditions for the digestion step, step (ii), are exemplified in Example 27 of the patent and include pepsin at a pH of 2.5, papain at a pH of 6.5, fungal acid protease type XIII at a pH of 3.0, and trypsin or chymotrypsin at a pH of 8.0, all for 16 hours at 4°C.

Thus, the skilled person had at their disposal proteases active at a range of different pH values, from which they could choose depending on the pH stability of the protein to be purified. No evidence was presented showing that one of the proteins defined by the amino acid sequences in claim 1 could not be purified with any of these proteases and pH conditions. Therefore, the argument that the patent does not identify which proteases to use, and under which conditions, to avoid the degradation of the triple-helical protein, is not convincing either.

8.1.9 The board concludes that for the proteins specified in claim 1 there are no substantiated doubts that the method could be carried out.

*(c) Some protein domains removed during the purification*

8.1.10 In a further line of argument, it was asserted that the skilled person would not know how to carry out the method of purifying the proteins specified in claim 1 because it was not clear whether the protein resulting from the purification method did indeed contain the amino acids according to the SEQ ID NOs in the claim. There were serious doubts that some domains included by the sequences defined in the SEQ IDs were removed during the purification step.

8.1.11 However, the board notes that appellant II has not submitted any verifiable facts that can substantiate serious doubts that the purified proteins resulting from the claimed method did not correspond to the definition in claim 1. The only evidence brought forward was a statement in document D3, which reads as follows: "*Various enzymes were examined for hydrolysis of the remaining contaminating host proteins and to*

*cleave and digest the V domain away from the CL domain.*" Thus, the passage states that for the protein and conditions being analysed, the digestion step aimed at removing the remaining host proteins and also at removing the V domain from the protein. It does not state that any protease digestion step inevitably results in cleavage of the V domain. Therefore, the board considers that this cited document does not establish serious doubts that the skilled person would not be able to carry out the purification method.

*(d) Cell culture extract or homogenate*

8.1.12 This objection related to definitions given in the description for the terms "cell culture extract" and "cell culture homogenate", which, however, are not included in the claim (see page 16, lines 1 to 4, and page 17, lines 14 to 23; reference was made to the application as filed, the corresponding passages in the patent are found in paragraphs [0079] and [0089] to [0090], respectively). According to the definition of "homogenate", an extraction of the triple-helical proteins by cell disruption was necessary. Thus, the skilled person would not know how to put into practice the method without extracting the triple-helical proteins from the homogenate. However, the claim did not include such an extraction step.

8.1.13 Sufficiency of disclosure is to be assessed on the basis of the application as a whole – including the description, the claims and the drawings (see T 14/83, OJ 1984, 105, and other decisions cited in Case Law of the Boards of Appeal of the EPO, 11th edition, 2025, II.C.3). Accordingly, that certain information is present only in the description and not in the claim is not a convincing line of argument when, as in the

present case, the patent as a whole provided the skilled person with the complete information.

*(e) "the precipitated host cell culture extract or homogenate"*

8.1.14 Appellant II was of the view that step (ii) required a digestion of the precipitate. However, the examples showed digestion being carried out on the supernatant, and therefore there was a contradiction between the claim and the examples. This contradiction led to the claimed invention being insufficiently disclosed.

8.1.15 The key issue was how to interpret claim 1. The acid protease digestion step reads as follows.

"(ii) *digesting host cell materials present in the precipitated host cell extract or homogenate by addition of an acid protease, wherein the triple-helical protein is resistant to the acid protease digestion*".

On first reading, the expression "*in the precipitated host cell extract*" may raise the question of what the fraction is that is digested during protease digestion - whether the precipitate of step (i) or the supernatant. However, the board considers this issue to be clarified by noting that step (i) involves precipitating host cell materials from the host cell culture or homogenate. This step precedes step (ii), as indicated by the wording "*followed by*" in step (i). Given that the claim requires the triple-helical protein to remain in solution throughout steps (i) and (ii), the result of step (i) is necessarily that the precipitate contains host cell materials, and the remainder of the culture extract or homogenate, i.e. the supernatant, contains the triple-helical protein.

The expression in question necessarily refers to the latter, because it is only then that the digestion of host cells materials under conditions of resistance of the triple-helical protein to digestion is relevant, as required by step (ii).

8.2 *Claim 7*

8.2.1 It was asserted that the skilled person would not know how to carry out the additional separation step defined in this claim. The separation of triple-helical protein from precipitated host cell materials was to be carried out between steps (i) and (ii). However, this contradicted the requirements in step (ii) for the digestion of the host cell precipitate, which implied that the precipitate was collected.

8.2.2 Thus, the objection relied on an interpretation of step (ii), and in particular of the expression "*in the precipitated host cell extract*", which was rejected by the board (see point 8.1.15 above). Thus, the argument is not convincing.

8.3 *Claim 11*

8.3.1 Claim 11 defines a step of precipitating the triple-helical protein. The board does not find the argument that the skilled person would not know how to carry out precipitation of the protein while maintaining it in solution convincing. This argument is based on an interpretation of the claim according to which, in a single step, both the precipitation of the protein and its maintenance in solution would be required. It was argued that the claim does not include the wording "further" and therefore that it does not indicate that it defines an additional step rather than a further

specification of step (iii). Here too, the key issue was claim interpretation. The board agrees with the opposition division that claim 7 defines a method step that takes place subsequently to step (iii) of claim 1. This interpretation is consistent with the description. The board agrees with appellant II that the passage cited by the opposition division on page 22 (referring to the application as filed) describes an embodiment where arguably the collection step (iii) involves precipitating the triple-helical protein. However, the board considers that the patent also describes embodiments involving separate collection and subsequent precipitation steps to further concentrate or purify the triple-helical protein (see the other passage cited by the opposition division, i.e. lines 26 to 35 on page 8, also referring to the application as filed, which corresponds to paragraph [0047] of the patent). This passage refers to precipitating the triple-helical protein by a neutral polymer, but does not specify that this is the method used to collect the protein following host cell protein digestion. The board considers that the patent teaches that purification steps (i) and (ii), followed by the collection of the protein in step (iii), characterise the claimed method. However, these steps do not constitute the complete purification of the triple-helical protein and may be complemented with polishing steps, as described.

8.4 *Claim 16*

8.4.1 Claim 16 defines the origin of the protein as follows: "*wherein the triple-helical protein sequence is derived from a bacterial yeast, plant insect or silk worm*". In one line of argument it was maintained that "*bacterial yeast*" lacks sufficient disclosure. However, the board

agrees with the opposition division that this is a clerical error, and the passage should read "bacteria, yeast". This view is supported by passages of the patent in which the correct wording can be found (see, for example, paragraph [0055]).

8.4.2 Claim 16, by back-reference to claim 15, defined that the triple-helical protein was collagen and was derived from the sources in claim 16. There was a lack of disclosure as bacteria, yeast and plants did not naturally produce collagen.

8.4.3 The board considers that in the context of claim 1 the source of the triple-helical protein is not relevant because the protein is fully defined by its amino acid sequences in the SEQ ID NOs in claim 1. Therefore, the indication of source is not a limiting feature and cannot prevent the skilled person from carrying out the claimed method.

8.5 *Conclusion for Article 83 EPC*

8.5.1 None of the objections under Article 83 EPC were convincing.

9. *Priority (Article 87 EPC) - Claims 1, 2, 10 and 16*

9.1 According to appellant II, the invention defined in claims 1, 2 and 10 was not entitled to the claimed priority. Some of the features which were not considered disclosed in the application as filed, in the context of Article 123(2) EPC, were also not considered disclosed in the priority application. In a further line of argument, "bacterial yeast" in claim 16 was also considered to define subject-matter not

entitled to the claimed priority since this wording was not found in the priority application.

9.2 However, the board does not find these arguments convincing for the reasons set out above in the context of Article 123(2) EPC (see points 6.2.5 to 6.4.2) and Article 83 EPC (see point 8.4.1). In the priority application, the passages corresponding to those cited above in points 6.2.6 and 6.2.7 are found on page 6, lines 16 to 17, and on page 7, lines 3 to 7; the passages corresponding to those cited in point 6.2.9 are found on page 5, lines 18 to 28 and 32 to 33, and on page 6, lines 2 to 5; those corresponding to claim 10 are found in claims 11 to 13 and on page 8, lines 19 to 21, of the priority application; and those corresponding to claim 16 can be found on page 10, lines 7 to 9, of the priority application.

10. *Novelty (Article 54 EPC)*

10.1 Appellant II relied on documents D3 and D8.

10.1.1 Document D3 is a scientific publication which was published between the priority date and the date of filing of the patent in suit. As set out above, the board concluded that the priority is validly claimed. Consequently, document D3 does not form part of the state of the art according to Article 54(2) EPC. It also cannot form part of the state of the art according to Article 54(3) EPC because that provision applies only to European patent applications.

10.1.2 Document D8 is a patent document which was also published between the priority date and the date of filing of the patent in suit. However, it was filed

before the priority date and validly entered the regional phase before the EPO. Thus, it forms part of the state of the art according to Article 54(3) EPC. Hence, it may be taken into account for the assessment of novelty but not for the assessment of inventive step in relation to the patent in suit.

10.2 *Document D8*

10.2.1 Appellant II submitted that the protein defined by the amino acids in SEQ ID NO.16 was identical to the protein defined in claim 1 by the amino acids in SEQ ID NO.30. This was not contested by appellant I.

10.2.2 Document D8 concerns new silk proteins (see page 4, third and fourth paragraphs) and their production from host cells expressing the relevant protein. In one embodiment, recovering the protein from the host cells involves the removal of proteins from the homogenised cells by lowering the pH and heating to no more than 10°C below the melting temperature of the triple helix, followed by ammonium sulphate fractionation. In one example, proteins are removed by precipitation at a pH of 4.7 and then at 60°C, and the supernatant is then fractionated. Additional purification may be carried out (see page 26, lines 15 to 25). In another embodiment, cell lysates are treated with a high concentration of HCl or propionic acid to reduce the pH to 1-2 for at least one hour to solubilise the silk proteins while precipitating other proteins (see page 26, lines 26 to 29). Example 4 shows expression in *E. coli* and describes the protein purification as follows: cell lysis, clarification of the cell lysate by centrifugation with retention of the supernatant, and purification of the expressed silk proteins by adsorption on an IMAC HyperCell column followed, after

elution, by concentration by cross-flow filtration and further purification by gel permeation chromatography. After describing this sequence of steps, the example reads as follows (see page 43, first paragraph, last sentence).
"*The individual triple-helical segments were prepared by digestion of the proteins with 0.1 mg/ml pepsin in 50 mM acetic acid. Purity of all products was assessed by SDS-PAGE.*"

The board concludes from this sentence that pepsin digestion was part of an analytical technique to assess the purity of the recombinantly produced silk proteins and not a step in their purification, since the result of the pepsin digestion was not the whole silk protein but rather "segments" therefrom. Appellant II recognised as much in its statement of grounds of appeal (see page 39). This conclusion applies despite the statement in the third paragraph on the same page, which reads as follows.
"*Generally collagen is resistant to pepsin digestion and the treatment is commonly used to purify collagen molecules*."

While this statement might suggest that pepsin digestion could be used in the purification of silk proteins, it was not actually used for this purpose in Example 4. Since what is relevant for an assessment of novelty is establishing what is directly and unambiguously derivable from the prior art, and not what would be obvious to the skilled person in view of it, the board concludes that the subject-matter of claim 1 is novel over the disclosure in document D8.

10.2.3 In addition to the passages considered above, page 11, line 19, of document D8 was also cited as a disclosure

of the resistance of collagen-like silk proteins to pep sin digestion (apparently lines 17 to 18 were meant). This passage is part of the section entitled "*General Techniques and Definitions*", which includes definitions of the chemical structure of collagen, of the terms "collagen-like" and "collagen-like silk protein", and of silk proteins (see the paragraph bridging pages 11 and 12). These definitions include the passage cited, which reads as follows.
"*In an embodiment, a collagen-like silk protein of the invention is resistant to trypsin digestion*" (see page 11, lines 17 to 18).

As was the case for the passage mentioning pepsin digestion in Example 4, the question of obviousness may arise, but there is no disclosure of purifying the silk proteins by removing other proteins with trypsin digestion. It is, moreover, noted that Example 4 uses pepsin, not trypsin.

11. *Inventive step (Article 56 EPC)*

11.1 Appellant II relied on the disclosure in document D3 or document D10 as representing the closest prior art. As regards document D10, the invention defined in the claims was obvious in view of any of D7, D16, D31 or D32.

11.1.1 For the reasons set out above, document D3 does not form part of the state of the art according to Article 54(2) EPC (see point 10.1.1).

11.1.2 For the reasons set out below, the board has decided not to admit the objections based on documents D31 and D32 (see point 16.).

11.2 *Disclosure in document D10*

11.2.1 Document D10 concerns the recombinant production of collagen and aims at improving the thermal stability of collagen I. This is achieved by co-expressing in tobacco plants the collagen and an animal-derived proline hydroxylase (P4H) (see the abstract). Recovery of the collagen from the cell culture involves the following steps: acid extraction of total proteins from the homogenate (which includes the broken cells and their contents), followed by centrifugation to eliminate insoluble materials, and finally precipitation of the collagen with NaCl (see section 2.5).

11.2.2 Thus, the method involves an extraction of the total proteins instead of selective precipitation of host cell materials. There is no step of digesting host cell materials. The board concludes that the method defined in claim 1 differs from that in the closest prior art in that it requires a step of precipitation of the host cell materials and a step of digestion of host cell materials.

11.2.3 Appellant II argued that the precipitation step is also disclosed in section 2.5 of document D10, pointing out the incubation at a pH of 2.8.

11.2.4 However, in this passage there is no mention of the incubation achieving precipitation of any materials; rather, its aim is total protein extraction. This passage does not disclose a separate step of total protein extraction followed by incubation at a pH of 2.8. Rather, total protein extraction is achieved by this incubation. Moreover, as noted by the opposition

division, the incubation time differs significantly from that in the examples in the patent. Also for this reason, it cannot be inferred that precipitation takes place. The argument that claim 1 does not specify an incubation time is not convincing, as the claim explicitly requires "*precipitating the host cell materials*" in step (i). Moreover, the subsequent centrifugation step, which aims at eliminating insoluble materials, does not necessarily imply that precipitation of host cell materials occurred, as it may also be related to the plant cell walls present during the total protein extraction. In conclusion, document D10 does not describe the incubation at a pH of 2.8 as a precipitation step, and it cannot be inferred from the centrifugation step that precipitation took place. Therefore, step (i) of claim 1 is a distinguishing feature over the method disclosed in document D10.

11.3 *Objective technical problem*

11.3.1 Irrespective of the above, the board based its considerations on the objective technical problem as formulated by appellant II, namely, "to improve the purification and to purify selectively the triple-helical proteins from non-triple-helical proteins" (translation by the board).

11.4 *Obviousness*

11.4.1 It was argued that a step of protease digestion for removal of host cells proteins is a classic step in recombinant protein production and that the skilled person applying this step would have realised that a selective purification of triple-helical proteins would

take place. Documents D7 and D16 were cited in this context.

*Document D7*

11.4.2 Document D7 deals with recombinant expression of collagen. Large-scale production of recombinant human type I collagen had been hampered by the absence of the enzyme P4H in bacteria and yeast, and small amounts in insect cells. This resulted mostly in non-triple-helical, non-functional protein (see page 798, left-hand column, first paragraph). This issue is addressed by co-expressing collagen and P4H in the yeast *Pichia pastoris*. To analyse the collagen produced, the cells were broken to obtain a homogenate, and centrifuged. The resulting supernatant was analysed by a number of techniques including determination of total protein, SDS-PAGE, radioimmunoassay and pepsin digestion (see page 800, left-hand column, second paragraph). In the passage entitled "*Purification of the recombinant collagen*", the cell lysate is filtered, followed by pepsin digestion, centrifugation, and finally precipitation of the collagen with NaCl (see page 800, right-hand column, second paragraph). A further passage concerns digestion with pepsin for assaying for the presence of procollagen molecules. The basis for this is explained to be that the triple helix of collagens is resistant to pepsin (see page 801, right-hand column, lines 13 to 18).

11.4.3 The board concurs with appellant II that document D7 discloses a step of pepsin digestion in the purification of recombinantly produced collagen and that it also explains the rationale behind it as being the resistance of the triple helix to digestion. However, in the board's view, there is no incentive in

these passages to modify the closest prior art by adding a digestion step. Even if it were to be accepted, for the sake of argument, that document D10 did disclose a step of acid precipitation, followed by centrifugation to remove insoluble material and precipitation of collagen by NaCl, there is no suggestion therein to take a part of the purification method disclosed in document D7, in this case the pepsin digestion step, and add it to a different purification method. The board considers that this requires hindsight as the purification method in document D7 relies on a different sequence of steps, namely the filtration of the lysate, digestion, centrifugation, and finally NaCl precipitation of collagen.

11.4.4 Reference was also made to a passage of document D7 on page 804, left-hand column, middle of the first paragraph. However, this passage does not go beyond the passage on page 801, right-hand column, considered above (see point 11.4.2). It discloses that it is known that pepsin removes several residues from the short non-triple-helical regions called telopeptides, which play a role in fibril formation.

11.4.5 Therefore, none of these passages provided the skilled person with a motivation to solve the posed problem in the way claimed.

11.4.6 The references to pepsin digestion in document D10 do not change this assessment, as they merely concern techniques to determine the thermostability of the product in order to compare it to other collagen products (see page 117, left-hand column, first and second paragraphs).

11.4.7 It was further argued that a combination of the two documents is already made by the authors of document D10, since document D7 is cited therein (see page 114, reference 6).

11.4.8 However, this citation is in the context of co-expressing the enzyme P4H with collagen. It therefore does not constitute a reason for the skilled person to consult document D7 for its protein purification method.

*Document D16*

11.4.9 Document D16 pertains to the isolation of collagen from animal tissues. The board considers that the skilled person seeking to solve the above-formulated problem would not have consulted this document. The issues addressed in the separation of host cell materials from recombinantly produced collagen and in isolating collagen from animal tissues are different. Even if, for the sake of argument, the document were to be consulted, the board considers that there is no motivation to add a step of protease digestion to the purification method disclosed in the closest prior art, for the reasons set out above in the context of document D7.

11.5 The board concludes that the method defined in claim 1 is not obvious from the disclosure in documents D10, D7 and D16.

11.6 Appellant I requested that the objection based on a combination of documents D10 and D16 not be admitted into the appeal proceedings. However, the board dealt with this objection on the merits, see point 11.4.9

above, and, in order to do so, it admitted this objection for reasons of procedural economy.

*Admittance of documents D29 to D32 and D37 into the appeal proceedings*

12. The opposition division decided to admit documents D29 and D30 into the opposition proceedings and considered them on substance. Appellant II requested that these documents not be considered in the appeal proceedings, implying that these documents be excluded from the proceedings.

13. Documents D29 and D30 were not relevant for the claim request on file and therefore the board did not need to make a decision on appellant II's request. The same applies to document D37, which was first filed on appeal by appellant I.

14. The opposition division decided not to admit documents D31 and D32 into the opposition proceedings on the grounds that they were late filed and not *prima facie* relevant. Appellant II requested that they be admitted into the appeal proceedings, arguing that they were not submitted late in the opposition proceedings since they were filed before the final date set under Rule 116 EPC and that they were known to appellant I from proceedings concerning a patent family member of the patent in suit. Furthermore, they were relevant because they were used for raising inventive-step objections in combination with document D10.

15. As the documents were not admitted, and hence not considered, by the opposition division, the decision under appeal is not based on them within the meaning of

Article 12(2) RPBA. The submissions based on these documents are therefore an amendment of appellant II's appeal case within the meaning of Article 12(4) RPBA, unless appellant II demonstrates that they were admissibly raised and maintained in the decision under appeal. Under Article 12(6), first sentence, RPBA, however, the board shall not admit facts, objections or evidence which were not admitted in the proceedings leading to the decision under appeal, unless the decision not to admit them suffered from an error in the use of discretion or unless the circumstances of the appeal case justify their admittance.

16. As to a review of the opposition division's discretionary decision not to admit the documents, the board only reviews decisions of an opposition division taken in exercise of its discretion in a limited way, namely whether the opposition division exercised its discretion according to the correct principles and in a reasonable way (see the principles in decision G 7/93, OJ EPO 1994, 775). In the present case, the opposition division based its decision on correct principles, and, more specifically, on the timing of the filing of the documents, thereby also considering procedural development, and the *prima facie* relevance of the documents, also in view of the other documents which had already been duly filed. The board sees no reason to consider that the opposition division exercised its discretion improperly; nor were any such reasons put forward by appellant II. As regards the time of filing, the opposition division correctly considered the documents to be late filed, since no reason was given as to why they were not filed within the nine-month period for filing the notice of opposition. According to the decision under appeal, while appellant II argued that the documents were filed in response to the

opposition division's preliminary opinion, the opposition division saw no change in the proceedings and therefore no justification for the filing. As regards *prima facie* relevance, the board sees no reason to deviate from the assessment of the opposition division, according to which the documents concerned the expression of triple-helical proteins but did not address purification. Therefore, they were no more pertinent than other documents already on file. The board has not been presented with any reasons to view this differently.

Furthermore, no circumstances of the appeal case were apparent that would have justified the admittance of documents D31 and D32, and the associated inventive-step objections, as a legitimate reaction to the decision under appeal or unforeseen developments at a late stage of the opposition proceedings.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent in amended form with claims 1 to 16 of auxiliary request 10a filed with letter dated 6 August 2024, and a description and drawings to be adapted thereto, if necessary.

The Registrar: The Chairwoman:

I. Aperribay M. Pregetter

Decision electronically authenticated