

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

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PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2024/024054

International filing date (day/month/year)
11.04.2024

Priority date (day/month/year)
11.04.2023

International Patent Classification (IPC) or both national classification and IPC
INV. A61K47/54 A61K38/28 A61P3/10

Applicant
PROTOMER TECHNOLOGIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of
this opinion

see form
PCT/ISA/210

Authorized Officer

Villard, Anne-Laure

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed.
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. ☒ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. ☒ forming part of the international application as filed.
 - b. ☐ furnished subsequent to the international filing date for the purposes of international search (Rule 13ter.1(a)),
 - ☐ accompanied by a statement to the effect that the sequence listing does not go beyond the disclosure in the international application as filed.
4. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established to the extent that a meaningful opinion could be formed without a WIPO Standard ST.26 compliant sequence listing.
5. Additional comments:

Box No. II Priority

1. ☒ The validity of the priority claim has not been considered because the International Searching Authority does not have in its possession a copy of the earlier application whose priority has been claimed or, where required, a translation of that earlier application. This opinion has nevertheless been established on the assumption that the relevant date (Rules 43bis.1 and 64.1) is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

see separate sheet

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

- ☐ the entire international application
- ☒ claims Nos. 33, 35, 44-47, 66-100, 123, 129, 133, 134, 160-163(completely); 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172(partially)

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):
- ☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):
- ☒ no international search report has been established for the whole application or for said claims Nos. 33, 35, 44-47, 66-100, 123, 129, 133, 134, 160-163(completely); 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172(partially)
- ☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
 - ☐ furnish a sequence listing complying with WIPO Standard ST.26, and such listing was not available to the International Searching Authority in the form, language and manner acceptable to it.
 - ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a).
- ☒ See Supplemental Box for further details

Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:
- ☐ paid additional fees
 - ☐ paid additional fees under protest and, where applicable, the protest fee
 - ☐ paid additional fees under protest but the applicable protest fee was not paid
 - ☒ not paid additional fees
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 22-25, 39, 40(completely); 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172(partially)

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>25(completely); 11, 12, 16-18, 27, 28, 34, 41-43, 107, 135, 136, 142, 167-171(partially)</u>
	No: Claims	<u>22-24, 39, 40(completely); 1-10, 13-15, 19-21, 26, 29-32, 36-38, 48-65, 101-106, 108-122, 124-128, 130-132, 137-141, 143-159, 164-166, 172(partially)</u>
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>22-25, 39, 40(completely); 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172(partially)</u>
Industrial applicability (IA)	Yes: Claims	<u>22-25, 39, 40(completely); 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172(partially)</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and / or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Reference is made to the following documents:

- D1 WO 2023/225534 A1 (PROTOMER TECH INC [US]) 23 November 2023
- D2 WO 2022/109078 A1 (PROTOMER TECH INC [US]) 27 May 2022
- D3 WO 2021/202802 A1 (PROTOMER TECH INC [US]) 7 October 2021

Re Item II

Priority

The PCT application WO2023/225534 (referred to herein as D1) has been filed by the present applicant on 17.05.2023 and claims priority to US63/364,893 filed on 18.05.2022. The filing date of this priority application is anterior to the priorities of 11.04.2024 and 17.05.2023 claimed in respect of the present application.

The priority application US63/364,893 (see claims of this priority application and examples of D1 cited in the international search report) already discloses insulin peptides being drug substances/polypeptides X1 as referred to in present claim 1, conjugated to a diboronate Z1c falling within the scope of formulae FF12A, FF12B, FF12C, FF12D as referred to in present claim 1 or formula FF12 as referred to in claim 101 and comprising aromatic boron-containing groups falling within the scope of claimed formula (F2) (see in particular claim 45), through a linker Z1b via an amine of X1 as referred to in present claim 1.

The group Z1c-Z1b is in particular DSL-68/DSL-68A comprising the claimed compound FFL-3 of claim 39. This group Z1c-Z1b is used in a particular conjugate (see example 87).

The group Z1b disclosed in US63/364,893 can also be an amino acid or a peptide appended at the N-terminus of the B-chain of an insulin (see example 14).

The disclosed conjugates are formulated as pharmaceutical compositions for the treatment of disorders characterised by elevated glucose levels.

Thus, the applications to which priority is claimed cannot represent the "first application" in the sense of Article 8(2)(a) PCT and Article 4C(2) Paris Convention disclosing for the first time the subject-matter of present claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 138, 140, 145-157, 159, 164-166, 172 relating to a diboronate Z1c falling within the scope of formulae FF12A, FF12B, FF12C, FF12D as referred to in present claim 1 or formula FF12 as referred to in present claim 101.

Consequently, the priority claim is invalid for the subject-matter of present claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 138, 140, 145-157, 159, 164-166, 172 being part of the priority of D1, and the effective date for said parts of claims is the date of filing (11.04.2024) of the present application.

The PCT application WO2023/225534 (D1) which has been published on 23.11.2023, is therefore comprised within the state of the art pursuant to Rule 64.1 PCT for the subject-matter of claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 138, 140, 145-157, 159, 164-166, 172 being part of the priority of D1 and relating to a diboronate Z1c falling within the scope of formulae FF12A, FF12B, FF12C, FF12D as referred to in present claim 1 or formula FF12 as referred to in present claim 101.

Re Item III

Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The subject-matter of claims 33, 35, 44-47, 66-100, 123, 129, 133, 134, 160-163 (completely) and 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172 (partially) has not been searched.

The subject-matter for which no international search report has been established is not to be examined with respect to novelty, inventive step and industrial applicability (Rule 66.1(e) PCT).

Re Item IV

Lack of unity of invention

This Authority considers that the application does not meet the requirements of unity of invention and that there are **seven inventions** covered by the claims.

The reasons for which these seven inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT taken in combination with Rule 13.2 PCT, are as follows:

1. The general common matter, which could be identified a priori as linking the seven claimed inventions together, lies in the provision of compounds adapted for the treatment of disorders characterised by elevated glucose levels.

This general common matter is not novel over WO 2022/109078 A1 (referred to herein as D2) and WO 2021/202802 A1 (referred to herein as D3). Said documents D2 (see page 1, lines 14-20 and claims) and D3 (see page 56, lines 5-15) indeed disclose insulin conjugates for the treatment of disorders associated with elevated glucose levels, in particular hyperglycaemia and diabetes.

In addition, the conjugates of D2 comprise in particular:

- a diboronate according to claimed formula FF12A/FF12B/FF12C/FF12D/FF12, comprising aromatic boron-containing groups, and being indirectly (see example 810) or directly (see examples 818-821) linked to an insulin peptide;
- a diboronate according to claimed formula FF116, comprising aromatic boron-containing groups, and being indirectly linked through an amino acid or a peptide extension (see examples 562-574) or directly linked via one amino group of a lysine residue (see examples 562-574) to an insulin peptide;
- a diboronate (see examples 371, 510, 520, 531) with one aromatic boron-containing group of formula F1 and one aromatic boron-containing group of formula F11 according to present claim 66;
- a diboronate (see example 809) according to claimed formula FF225 linked to an insulin peptide through a linker.

Moreover, in relation to the treatment of disorders associated with elevated glucose levels, D3 (see page 82: modified insulin 4) discloses a conjugate comprising a diboronate according to formula FF227 as referred to in present claims 1 and 101, which can be regarded as being directly linked to an insulin peptide via one amino group of a lysine residue or indirectly linked to an insulin peptide through a peptide extension, wherein said diboronate is comprising one aromatic-containing group according to formula (F4) of claim 66 and one aromatic-containing group according to formulae (F2) or (F11) of claim 66.

2. In view of the above, the identified general common matter does not comprise any same or corresponding special technical features in the sense of Rule 13.2 PCT and cannot consequently represent a single general inventive concept in the sense of Rule 13.1 PCT.

Moreover, a further common matter, which could be identified a priori as linking some of the claimed inventions together and which comprises:

a conjugate with a diboronate comprising two aromatic boron-containing compounds

being linked to an insulin peptide,
is already known from D2 or D3.

This further common matter does neither comprise any same or corresponding special technical features in the sense of Rule 13.2 PCT and cannot consequently represent a single general inventive concept in the sense of Rule 13.1 PCT.

3. Starting from the general or further common matter identified above, the following seven inventions are identified:

Invention 1 covering claims 22-25, 39, 40 (completely) and 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172 (partially) directed to:

Compound comprising at least one diboronate Z1c which is selected from formulae FF12A, FF12B, FF12C or FF12D of claim 1 and is linked to X1 through at least one linker moiety Z1b;

Compound comprising at least one diboronate falling within the scope of FF12 of claim 101 and being linked to X1 indirectly;

Pharmaceutical compositions and medical uses of said compounds;

Intermediate of claim 156 comprising a diboronate falling within the scope of formula FF12.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of a diboronate of general formula FF12 which is to be conjugated via a linker to X1. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

Invention 2 covering claims 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172 (all partially) directed to:

Compound comprising at least one diboronate Z1c which is selected from formulae FF116A, FF116B, FF116C or FF116D of claim 1 and is linked to X1 through at least one linker moiety Z1b;

Compound comprising at least one diboronate falling within the scope of FF116 of claim 101 and being linked to X1 indirectly;

Pharmaceutical compositions and medical uses of said compounds;

Intermediate of claim 156 comprising a diboronate falling within the scope of formula FF116.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of a diboronate of general formula FF1116 which is to be conjugated via a linker to X1. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

Invention 3 covering claims 33 (completely) and 1-21, 26-32, 34, 36-38, 48-65, 101-122, 124-132, 135-159, 164-172 (partially) directed to:

Compound comprising at least one diboronate Z1c which is selected from formulae FF225 or FF227 of claim 1 wherein at least one B1/B2 is of formula B7 with Y10 not being H, and which is linked to X1 through at least one linker moiety Z1b;

Compound comprising at least one diboronate falling within the scope of formulae FF225 or FF227 wherein B1 and B2 are not a boronic acid or an F2 or F6 aromatic boron-containing moiety as referred to in claim 101, and being linked to X1 indirectly;

Pharmaceutical compositions and medical uses of said compounds;

Intermediate of claim 156 comprising a diboronate falling within the scope of formulae FF225 or FF227 wherein B1 and B2 are not a boronic acid or an F2 or F6 aromatic boron-containing moiety as referred to in claim 156.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of a diboronate of general formula FF225 or FF227 which is to be conjugated via a linker to X1. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

Invention 4 covering claims 35, 44-47, 160-163 (completely) and 57-65 (partially) directed to:

Insulin polypeptides, pharmaceutical compositions and medical uses thereof.

Starting from the general common matter disclosed in D2 or D3, this group of inventions comprises an insulin derivative as additional feature. This feature is related to the solution to the problem of providing an alternative insulin derivative as pharmaceutically-active ingredient for the treatment of disorders characterised by elevated glucose levels.

Invention 5 covering claims 66-100 (completely) directed to:

Compound comprising at least one diboronate comprising two covalently attached aromatic boron-containing groups, wherein one aromatic boron-containing group is selected from formulae F3-F11 of claim 66 and the other aromatic boron-containing group is selected from formulae F1-F11 of claim 66.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of a diboronate comprising two different aromatic boron-containing groups. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

Invention 6 covering claims 101-107, 113-122, 124-126, 128-159, 164, 165, 167, 172 (all partially) directed to:

Compound comprising at least one diboronate falling within the scope of formulae FF1 to FF231 of claim 101 and being linked to X1 directly;

Pharmaceutical compositions and medical uses of said compounds;

Intermediate of claim 156 comprising a diboronate falling within the scope of formulae FF1-FF11, FF13-FF115, FF17-FF224, FF226, FF228-FF231.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of a diboronate which is to be conjugated directly to X1. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

Invention 7 covering claims 123 (completely) and 101-122, 124-155, 159, 164-172 (partially) directed to:

Compound comprising at least one diboronate falling within the scope of formulae FF1-FF11, FF13-FF115, FF117-FF224, FF226, FF228-FF231 of claim 101 and being linked to X1 indirectly;

Pharmaceutical compositions and medical uses of said compounds.

Starting from the further common matter disclosed in D2 or D3, this group of inventions comprises the additional features of an alternative diboronate which is to be conjugated indirectly to X1. These features are related to the solution to the problem of providing an alternative diboronate-containing compound for the treatment of disorders characterised by elevated glucose levels.

4. Consequently, the additional features of inventions 1 to 7 as identified above which make a contribution over the identified common matters are different.

As the problems they solve are known from D2 and D3 or are different since they are merely the provision of alternatives, these features are not corresponding either.

Each of the inventions listed is a distinct invention, characterised by its own special technical feature, defining the contribution which each of the claimed inventions, considered as a whole, makes over the prior art, i.e. the specific features of the individual (groups) of compounds.

5. There is thus no relationship among the seven inventions identified above which would involve the same or corresponding special technical features, such that the requirements of unity of invention are not met (Rule 13.1 PCT taken in combination with Rule 13.2 PCT).

6. The documents cited do not represent a comprehensive search for any of the defined inventions (other than the first one) and are to be considered only as part of the prior art pertaining to the general idea underlying the present application.

As searching and examining the subject of inventions 2 to 7 would have caused a major additional searching and examination effort, **only the first invention** (covering **claims 22-25, 39, 40 (completely) and 1-21, 26-32, 34, 36-38, 41-43, 48-65, 101-122, 124-128, 130-132, 135-159, 164-172 (partially)**) **has been searched and is examined.**

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

V.1 Novelty (Article 33(2) PCT) of invention 1

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 137-141, 143-159, 164-166, 172 relating to invention 1** is not new in the sense of Article 33(2) PCT.

V.1.1 As explained in item II above, the PCT application referred to as D1 is part of the state of the art pursuant to Rule 64.1 PCT for the subject-matter of claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 137, 138, 140, 145-157, 159, 164-166, 172 being part of the priority of D1.

In view of the disclosures mentioned in item II above and the additional examples mentioned in the international search report being also disclosed in the priority of D1, the subject-matter of claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 138, 140, 145-157, 159, 164-166, 172 relating to invention 1 is not novel.

V.1.2 D2 (see passages cited in the international search report) discloses conjugates wherein a diboronate is linked to an insulin peptide via a linker.

The diboronate is falling within the scope of formulae FF12A (see examples 590, 810) or FF12D (see example 589) of present claim 1, or of formula FF12 of present claim 101.

The aromatic boron-containing groups are in particular of claimed formula (F2) of present claim 9 with all R₁ substituents being H, or they can also include a CF₃ substituent as in present claims 13 or 14 (see examples 839 and 844).

The linker is:

- falling within the scope of formulae (FL3) (see example 810) or (FL5) (see examples 805, 823, 831),
- an amino acid (see for instance examples 595, 611, 829, 844) or a peptide extension (see for instance examples 589-595, 605-612, 804) being in particular KNSTK (see examples 608-610), KGSHK (see example 607) or GKGSHK (see examples 589-591, 605, 606, 612, 810), or
- a PEG group (see examples 866, 867).

The insulin peptide comprises in particular an A-chain comprising SEQ ID NO:1 and a B-chain selected from SEQ ID NO:2 (see for instance example 591 including also peptide extensions at the N- and C-termini), SEQ ID NO:36 (see for instance examples 589 and 605 including also a peptide extension at the N-terminus) or SEQ ID NO:24047 (see for instance example 595).

The pharmaceutical compositions containing the above-mentioned conjugates can be formulated as in present claims 140 and 141 (see page 72, lines 25-28; page 77, lines 9-12) or the conjugate can be linked to another entity including a diol, antibody or albumin (see page 77, lines 14-21).

The DS-intermediates indicated in the international search correspond to those mentioned in present claim 158.

The subject-matter of claims 1-5, 7-9, 13-15, 20, 21, 26, 29-32, 36-38, 48-52, 57-65, 101-105, 108, 110-122, 124-127, 130-132, 137-141, 143-159, 164-166, 172 relating to invention 1 is therefore not new over the above-mentioned disclosures of D2.

V.2 Inventive step (Article 33(3) PCT) of invention 1

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 1-32, 34, 36-43, 48-65, 101-122, 124-128, 130-132, 135, 136, 139-159, 164-172 relating to invention 1** does not involve an inventive step in the sense of Article 33(3) PCT.

V.2.1 Being not new, the subject-matter of claims 1-10, 13-15, 19-24, 26, 29-32, 36-40, 48-65, 101-106, 108-122, 124-128, 130-132, 137-141, 143-159, 164-166, 172 relating to invention 1 cannot involve an inventive step (Article 33(3) PCT).

V.2.2 The subject-matter of claims 1-32, 34, 36-43, 48-65, 101-122, 124-128, 130-132, 135, 136, 139-159, 164-172, as far as novel, is considered obvious (Article 33(3) PCT) in view of the teachings of D2.

The (further) technical features of said claims represent mere common alternatives to the teachings of this document (see passages cited in the international search report), for which no inventive step (Article 33(3) PCT) can be acknowledged. The reason is that no particular technical effect deriving from the (further) technical features of said claims, which could go beyond common general knowledge or the teachings of D2 and/or which could be generalised over the whole scope of said claims, has been demonstrated in the present application.

V.3 Remark concerning claims 58, 62, 63, 152, 154, 155

For the assessment of the present claims on the question whether they are patentable, no unified criteria exist in the PCT Contracting States. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as patentable the subject-matter of claims to methods of therapeutic treatment and to the uses of a compound in a medical treatment, but may allow, however, claims to a known compound for a first use in a medical treatment and/or for use in a new medical treatment.

Patentability, in particular novelty and inventive step, of claims 58, 62, 63, 152, 154, 155 has been assessed on the basis of a purpose-limited product claim taking into account the alleged effects of the compound/composition.

Re Item VI

Certain documents cited

Reference is made to the following document:

D1 WO 2023/225534 A1 (PROTOMER TECH INC [US]) 23 November 2023

The priority claim is invalid for the parts of the claims already disclosed in the priority of D1. As explained in item II above, for the subject-matter of said claims, D1 is part of the state of the art pursuant to Rule 64.1 PCT.

The priority claim is respect of the rest of the claims 1-32, 34, 36-43, 48-65, 101-122, 124-128, 130-132, 135, 136, 139-159, 164-172 relating to invention 1 has been assumed to be valid. Should this not be the case, the document D1 would become relevant for the question of inventive step of said claims or parts of claims relating to invention 1.

Re Item VIII

Certain observations on the international application

VIII.1 Present claims 1-32, 34, 36-43, 48-65, 101-122, 124-128, 130-132, 135, 136, 139-159, 164-172 relating to invention 1 include undefined drug substances and polypeptides that should be useful for the treatment of disorders characterised by elevated glucose levels. Support and disclosure in the sense of Articles 6 and 5 PCT is only provided in the present application for claimed drug substances X1 corresponding to insulin derivatives comprising a A-chain and a B-chain (see examples and sequences disclosed on pages 1065-1077).

VIII.2 The compounds of claims 48 and 49 are defined with results to be achieved which cannot establish a clear technical difference with the prior art (Article 6 PCT).

VIII.3 Claim 137 refers to B6 which is not defined. This claim is therefore unclear (Article 6 PCT).

VIII.4 Claims 151 to 155 refer to pharmaceutical compositions or medical uses. The compounds referred to in said claims do not however all comprise a pharmacologically-active substance. These claims lack therefore an essential feature corresponding to X1 being an active substance and, consequently, they do not meet the requirements of Article 6 PCT.