Citation: Ipsen Pharma S.A.S. (Re), 2022 CACP 11
Commissioner's Decision #1618
Décision du Commissaire nº 1618
Date: 2022-04-01

TOPIC:	F00	Novelty
	O00	Obviousness
	J80	Professional or Artistic Skill
	K11	Treatment
	D00	Division

SUJET:	F00	Nouveauté
	O00	Évidence
	J80	Aptitudes professionnelles (artistiques)
	K11	Traitement
	D00	Division

Application No. : 2,664,734

Demande nº 2 664 734

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2,664,734, having been rejected under subsection 30(3) of the *Patent Rules* (SOR/96-423) as they read immediately before October 30, 2019, has consequently been reviewed in accordance with paragraph 199(3)(c) of the *Patent Rules* (SOR/2019-251). The recommendation of the Patent Appeal Board and the decision of the Commissioner are to refuse the application if the necessary amendments are not made.

Agent for the Applicant:

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INTRODUCTION

[1] This recommendation concerns the review of rejected Canadian patent application number 2,664,734, which is entitled “Method of drug delivery for bone anabolic protein” and is owned by Ipsen Pharma S.A.S. (the Applicant).

[2] A review of the rejected application has been conducted by the Patent Appeal Board (the Board) pursuant to paragraph 199(3)(c) of the *Patent Rules* (SOR/2019-251) (the *Patent Rules*). As explained in more detail below, our recommendation is that the Commissioner of Patents refuse the application if the necessary amendments are not made.

BACKGROUND

The application

[3] The application has a filing date of October 3, 2007, and was laid open to public inspection on May 29, 2008.

[4] The application generally relates to storage-stable compositions comprising the PTHrP analogue [$Glu^{22,25}$, $Leu^{23,28,31}$, Aib^{29},$Lys^{26,30}$]hPTHrP(1-34)NH_2 (herein “SEQ 2”) and to the use of SEQ 2 at a specific dosage for treating osteoporosis or stimulating bone growth.

[5] The claims under review are claims 1-52, dated October 18, 2017 (claims on file).

Prosecution history

[6] On June 17, 2019, a Final Action (FA) rejecting the claims on file was issued pursuant to subsection 30(4) of the *Patent Rules* (SOR/96-423) (the former *Patent Rules*) as they read immediately before October 30, 2019. The FA indicates the subject-matter of claims 45-50 on file is anticipated contrary to paragraph 28.2(1)(b) of the *Patent Act* and is further obvious contrary to section 28.3 of the *Patent Act*. The FA further indicates that claims 45-52 encompass the skill and judgment of a medical professional, which is subject-matter that lies outside the definition of “invention” and does not comply with section 2 of the *Patent Act*. Finally, claims 1-44 were identified as being compliant with the *Patent Act* and *Patent Rules* in the FA.

[7] On December 17, 2019, a response to the FA (RFA) was filed by the Applicant along with a proposed set of amended claims 1-51. The RFA disputes that the subject-matter of claims 45-50 on file or the proposed claims is anticipated or obvious. The RFA further provides arguments that the amendments to claims 45-51 proposed would address the concern in the FA relating to patentable subject-matter.

[8] The Examiner agreed that the proposed amendments would address the patentable subject-matter defect but was not persuaded that the subject-matter of the claims on file or the proposed amended claims is novel and unobvious and so the application was forwarded to the Board along with a Summary of Reasons (SOR) on February 26, 2020. The SOR reiterates that claims 1-44 on file are compliant with the *Patent Act* and *Patent Rules*.

[9] The SOR was forwarded to the Applicant on March 2, 2020. In a letter dated June 19, 2020, the Applicant expressed continued interest in having the application reviewed by the Board.

[10] This Panel was formed to review the rejected application and make a recommendation to the Commissioner as to its disposition.

[11] During the review an additional question arose in relation to whether the set of claims on file contains claims for separate inventions that are not unified by a single general inventive concept, contrary to subsection 36(1) of the *Patent Act*, and so the Applicant was notified of this issue pursuant to subsection 86(9) of the *Patent Rules*.

[12] In a preliminary review letter (PR letter) dated March 18, 2022, we set out our preliminary views that claims 45-50 on file are novel and that claims 45-52 on file are directed to patentable subject-matter. The PR letter further sets out our preliminary views that the subject-matter of claims 45-50 is obvious contrary to section 28.3 of the *Patent Act* and that claims 1-44 and 45-52 are not linked by a single general inventive concept and therefore do not comply with subsection 36(1) of the *Patent Act*. Since there is no meaningful difference between the claims proposed in response to the FA and the claims on file with respect to these two issues, we further expressed our preliminary view that the proposed claim

amendments would not overcome these defects. Based on these preliminary conclusions, and since claims 1-44 on file were considered in the FA and SOR to be compliant with the *Patent Act* and *Patent Rules*, we explained that our preliminary inclination was to recommend that the application be refused unless the claims were limited to claims 1-44, since they are directed to one invention only. Finally, we provided the Applicant with an opportunity to make oral and/or written submissions in response to the PR letter.

[13] In a response to the PR letter dated March 23, 2022 (RPR), the Applicant did not provide any arguments, opting instead to submit a new set of proposed claims 1-44 (the proposed claims) that correspond to the claims that were considered allowable in the PR letter and would cancel claims 45-52 presently on file. Further, the Applicant indicated that an oral hearing was not required.

[14] The Panel has completed its review and have set out our conclusions below.

ISSUES

[15] The issues addressed by the review are:

- whether the subject-matter of claims 45-50 on file is anticipated contrary to paragraph 28.2(1)(b) of the *Patent Act*;
- whether the subject-matter of claims 45-50 on file is obvious contrary to section 28.3 of the *Patent Act*;
- whether claims 45-52 on file encompass the skill and judgment of a medical professional, which is subject-matter that lies outside the definition of “invention” and does not comply with section 2 of the *Patent Act*; and
- whether the claim set on file contains claims for separate inventions that are not unified by a single general inventive concept, contrary to subsection 36(1) of the *Patent Act*.

LEGAL PRINCIPLES AND OFFICE PRACTICE

Purposive construction

[16] In accordance with *Free World Trust v Électro Santé Inc*, 2000 SCC 66 [*Free*

World Trust] and *Whirlpool Corp v Camco Inc*, 2000 SCC 67, purposive construction is performed from the point of view of the person skilled in the art in light of the relevant common general knowledge (CGK), considering the whole of the disclosure including the specification and drawings. In addition to interpreting the meaning of the terms of a claim, purposive construction distinguishes the essential elements of the claim from the non-essential elements. Whether or not an element is essential depends on the intent expressed in or inferred from the claim, and on whether it would have been obvious to the skilled person that a variant has a material effect upon the way the invention works.

[17] "Patentable Subject-Matter under the *Patent Act*" (CIPO, November 2020) [*PN2020–04*] also discusses the application of these principles, pointing out that all elements set out in a claim are presumed essential unless it is established otherwise or where such presumption is contrary to the claim language.

Anticipation

[18] Subsection 28.2(1) of the *Patent Act* requires claimed subject-matter to be new:

> The subject-matter defined by a claim in an application for a patent in Canada (the "pending application") must not have been disclosed
>
> (a) before the one-year period immediately preceding the filing date or, if the claim date is before that period, before the claim date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant, in such a manner that the subject-matter became available to the public in Canada or elsewhere;
>
> (b) before the claim date by a person not mentioned in paragraph (a) in such a manner that the subject-matter became available to the public in Canada or elsewhere;
> …

[19] There are two separate requirements to show that prior art anticipates a claimed invention: there must be a prior disclosure of the claimed subject-matter and the prior disclosure must enable the claimed subject-matter to be practised by a skilled person (*Apotex Inc v Sanofi–Synthelabo Canada Inc*, 2008 SCC 61 [*Sanofi*] at paras 24–29, 49).

[20] “Prior disclosure” means that the prior art must disclose subject-matter which, if performed, would necessarily result in infringement of the patent. The skilled person looking at the disclosure is “taken to be trying to understand what the author of the description [in the prior patent] meant” (*Sanofi* at para 32). At this stage, there is no room for trial and error or experimentation by the skilled person. The prior art is simply read “for the purposes of understanding it” (*Sanofi* at para 25, citing *Synthon BV v SmithKline Beecham plc*, [2006] 1 All ER 685, [2005] UKHL 59).

[21] “Enablement” means that the person skilled in the art would have been able to perform the invention without undue burden. The person skilled in the art is assumed to be willing to make trial and error experiments to get it to work (*Sanofi* at paras 26–27).

Obviousness

[22] Section 28.3 of the *Patent Act* requires claimed subject-matter to not be obvious:

> The subject-matter defined by a claim in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to
>
> (a) information disclosed before the one-year period immediately preceding the filing date or, if the claim date is before that period, before the claim date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and
>
> (b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.

[23] In *Sanofi* at para 67, the Supreme Court of Canada stated that it is useful in an obviousness inquiry to follow the following four-step approach:

> (1)(a) Identify the notional “person skilled in the art”;
> (b) Identify the relevant common general knowledge of that person;
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Patentable subject-matter: skill and judgment

[24] The definition of invention is set out in section 2 of the *Patent Act*:

> "invention" means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter

[25] *PN2020-04* clarified the Patent Office's approach with respect to the determination of patentable subject-matter under section 2 of the *Patent Act*. In general:

> To be both patentable subject-matter and not be prohibited under subsection 27(8) of the *Patent Act*, the subject-matter defined by a claim must be limited to or narrower than an actual invention that either has physical existence or manifests a discernible physical effect or change and that relates to the manual or productive arts, meaning those arts involving or concerned with applied and industrial sciences as distinguished in particular from the fine arts or works of art that are inventive only in an artistic or aesthetic sense.

[26] It is well established that methods of medical treatment and surgery are not patentable subject-matter falling within the manual and productive arts and are excluded from the definition of invention as defined in section 2 of the *Patent Act* (see *Tennessee Eastman Co v Commissioner of Patents* (1970), 62 CPR 117 (Ex Ct), aff'd [1974] SCR 111; *PN2020-04*). However, medical "use" claims have been considered to be directed to patentable subject-matter (see *Apotex Inc v Wellcome Foundation Ltd*, 2002 SCC 77).

[27] A number of lower court decisions have considered the validity of medical use claims (*Axcan Pharma Inc v Pharmascience Inc*, 2006 FC 527; *Merck & Co, Inc v Pharmascience Inc*, 2010 FC 510; *Janssen Inc v Mylan Pharmaceuticals ULC*, 2010 FC 1123; *AbbVie Biotechnology Ltd v Canada (Attorney General)*, 2014 FC 1251 [*AbbVie*]). Upon reviewing prior decisions, the Federal Court in *AbbVie*

concluded that the jurisprudence is consistent; Federal Court jurisprudence has developed the principle that:

> [A] claim directed to the exercise of professional skill or judgment is not patentable. However, a claim which does not restrict, or interfere with, or otherwise engage professional skill or judgment – including a claim for a fixed dosage and or a fixed dosage schedule or interval – is not impermissible subject matter where there is no evidence to contradict that claimed dosage. (para 114).

[28] With particular reference to the determination of patentable subject-matter in respect of medical use claims containing a dosage or dosing regimen, *PN2020-04* states that:

> [I]n cases where at least one of the essential elements of the actual invention limits the claimed use to a dosage…and/or a dosage regimen, regardless of whether these are fixed and/or cover a range, this fact alone is not determinative of whether the claim is patentable subject-matter. It is also necessary to consider whether the exercise of professional skill and judgment of a medical professional is part of the actual invention. For example, professional skill and judgment may be involved if a medical professional is expected to monitor or make adjustments to the treatment, or make a selection of a dosage from a claimed range (i.e., in cases where not all dosages in the range will work for all subjects within the treatment group).

Unity of Invention: Patent for one invention only

[29] Subsection 36(1) of the *Patent Act* states that:

> A patent shall be granted for one invention only but in an action or other proceeding a patent shall not be deemed to be invalid by reason only that it has been granted for more than one invention.

[30] This provision clearly states that a patent shall be granted for one invention only: *Teva Canada Ltd. V Pfizer Canada Inc*, 2012 SCC 60 at para 58 [*Teva*].

[31] The definition of “one invention” is provided in section 88 of the *Patent Rules*:

> For the purposes of section 36 of the Act, ***one invention*** includes a group of inventions linked in such a manner that they form a single general inventive concept.

[32] It is important to remember that a single, overarching inventive concept flows through a patent and must effectively unify or connect every claim: *Apotex Inc. v Shire LLC*, 2021 FCA 52 at paras 77, 86-88 [*Shire*]; *AstraZeneca Canada Inc v Apotex Inc*, 2017 SCC 36 at para 49 (quoting the following from David Vaver, Intellectual Property Law 2nd ed (Toronto: Irwin Law, 2011), at 275):

> For simplicity's sake, the rule is "one invention, one application, one patent". But inventions are like a many-faceted prism: multiple claims (sometimes running into the hundreds) covering all facets are allowed in the same patent if a "single general inventive concept" links them.

[33] When assessing whether a claim set contains claims for separate inventions that are not all linked by a single general inventive concept, the Court must look to the whole of the disclosure and claims to ascertain the nature of the invention and methods of its performance: *Teva* at para 64. The claimed invention should provide a solution to a practical problem, and claims that define that solution or refinements to that solution may all relate to a single inventive concept: The *Manual of Patent Office Practice* [*MOPOP*] §21.05 (revised November 2013); see also *Shire* paras 60, 76-77 and 110.

[34] As specified in the *MOPOP* §21.06 (revised November 2013), a lack of unity defect may become apparent through either an *a priori* or an *a posteriori* evaluation of the claims:

> The two aspects of the unity of invention requirement can be considered separately as: 1) the need for a common set of elements among the claims, and 2) the requirement that the common set of elements be new and unobvious (*i.e.*, inventive) over the prior art.
>
> The former can be assessed without regard to the state of the art, and is referred to as an *a priori* evaluation of unity of invention, whereas the latter requires the state of the art to be considered and is referred to as an *a posteriori* evaluation. A lack of unity of invention is a defect in an application regardless of whether it is identified *a priori* or *a posteriori*.

[35] Considering the state of the art as part of the assessment is consistent with section 2 of the *Patent Act*, which requires that an invention must be novel: *Teva*, para 65.

ANALYSIS

Purposive construction

[36] Claims 1-52 are contained in the claim set on file. Claims 1-13 are directed to storage-stable SEQ 2 compositions, claims 14-44 define the use of storage-stable compositions to treat or prepare a medicament to treat osteoporosis or stimulate bone growth, and claims 45-52 are directed to the use of a specific dosage amount of 75 µg to 80 µg of SEQ 2 to treat or prepare a medicament to treat osteoporosis or stimulate bone growth. There are nine independent claims: claims 1, 14-17 and 45-48. Independent claims 1, 14, 45 and 48 are illustrative:

> Claim 1. A storage-stable composition suitable for administration to a subject comprising:
> a) a PTHrP analogue having the sequence…(SEQ ID NO. 2); and
> b) an effective amount of a pH buffer to maintain the pH in a range of 4.5 to 5.6.
>
> Claim 14. A use of a storage-stable composition comprising:
> a) a PTHrP analogue having the sequence…(SEQ ID NO. 2); and
> b) an effective amount of a pH buffer to maintain the pH in a range of 4.5 to 5.6,
> for treating osteoporosis in a subject in need thereof.
>
> Claim 45. A use of a dosage of 75 µg to 80 µg of a PTHrP analogue having the sequence…(SEQ ID NO. 2) for the preparation of a medicament for treating osteoporosis in a subject in need thereof.
>
> Claim 48. A use of a dosage of 75 µg to 80 µg of a PTHrP analogue having the sequence…(SEQ ID NO. 2) for stimulating bone growth in a subject in need thereof.

[37] Dependent claims 2-13, 18-44 and 49-52 further define: the pH (claims 2-4, 51-52); the buffer (claims 5-7, 20, 23); further additives (claims 8-13, 19, 22), the condition (claim 24, 50) and the amount of SEQ 2 for single daily subcutaneous (sc) injection (claims 18, 21, 25-44, 49).

Person skilled in the art and the relevant common general knowledge of that person

[38] On pages 8-9 of the PR, we expressed the following preliminary view:

> On page 3, the FA characterized the skilled person as a researcher in the fields of osteoporosis and bone growth. The CGK of that person was characterized as including the knowledge that:
>
> > effective therapeutic dosage amounts of therapeutic agents can be in a broad range of values and that the process to find the optimal dosage involves trying dosages within a range and testing to see which is most effective.
>
> The RFA did not dispute, contest or comment on these characterizations. We agree that these characterizations are reasonable and would add the following knowledge:
>
> > • parathyroid hormone (PTH) and a peptide fragment of its N-terminus hPTH(1-34) which reproduces its biological action, have dual activity in bone by acting as a catabolic agent (i.e., promoting bone breakdown and resorption) and as an anabolic agent (i.e., promoting bone formation) (as evidenced by Dempster page 690; Fox page 338; D3 “Background” section page 1);
> >
> > • Bone resorption is favored over growth when PTH or hPTH(1-34) is administered continuously, whereas growth is favoured at intermittent once daily dosing: both modes of administration stimulate bone formation similarly but have different effects on bone resorption and bone mass (as evidenced by Dempster pages 696-697; Neer page 1434);
> >
> > • Bone resorption is also favoured over growth at very high doses of hPTH(1-34) (750 µg sc daily), whereas 450 µg/day improves the calcium balance and leads to net bone growth (Dempster page 700), and 20 µg/day has fewer episodes of hypercalcemia (i.e., a condition where blood calcium is abnormally high and can weaken bones) compared to 40 µg/day (as evidenced by Fox page 339; Neer pages 1434, 1439);
> >
> > • PTH and N-terminal fragments like hPTH(1-34) are equipotent to PTH at the PTH-1 receptor, are highly efficacious at increasing bone mineral density when administered daily and are generally well-tolerated (as evidenced by Fox page 342); and

> • Conventional treatments for osteoporosis were aimed at inhibiting bone resorption until November 2002 when recombinant hPTH(1-34) (Forteo™, 20 µg sc daily) became the first agent approved in the USA that stimulated new bone formation (as evidenced by Fox page 338[1]).
>
> The above references Dempster, Fox and Neer were added to the prosecution record by the Applicant with the letter of August 10, 2010, and D3 is cited in the FA as prior art:
>
> Dempster, D. W. et al., "Anabolic actions of parathyroid hormone on bone" (December 1993) 14:6 Endocr Rev pages 690-709.
>
> Fox, J., "Developments in parathyroid hormone and related peptides as bone-formation agents" (1 June 2002) 2:3 Curr Opin Pharmacol pages 338-344.
>
> Neer, R. et al., "Effect of parathyroid hormone (1-34) on fractures and bone mineral density in postmenopausal women with osteoporosis" (10 May 2001) 344:19 N Engl J Med page 1434-1441.
>
> D3: WO 97/02834 Dong, Z. X. 30 January 1997 (30-01-1997)
>
> Subject to any comments or clarifications the Applicant wishes to make, the Panel intends to adopt the above characterizations for the purposes of our analysis.

[39] The RPR did not dispute, contest or comment on these characterizations of the skilled person and the relevant CGK and so we adopt them for the purposes of our review.

Essential elements

[40] On page 10, we expressed the following preliminary view in the PR letter:

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[1] Fox reports the approval as pending, the date of approval was confirmed on the FDA website

> The assessment of essential elements in the FA was carried out in accordance with guidance that was superseded by *PN2020-04*. We have therefore undertaken a new assessment of the essential elements.
>
> As stated above, all of the elements set out in a claim are presumed essential unless it is established otherwise or where such a presumption is contrary to the claim language: *PN2020-04*. Further, a claim element is essential when it would have been obvious to the skilled person that its omission or substitution would have a material effect on the way the invention works: *Free World Trust* at para 55; *PN2020-04*.
>
> With respect to claim language, our preliminary view is that the skilled person reading claims 1-52 in the context of the specification as a whole and the CGK would understand that there is no use of language in the claims indicating that any of the elements are optional, preferred or were otherwise intended as being non-essential. Our preliminary view is therefore that all of the elements of claims 1-52 are essential.

[41] The RPR did not dispute or contest our assessment of the essential elements and so we will take all of the elements of claims 1-52 as essential for the purposes of our review.

Anticipation

[42] On page 2, the FA contends that claims 45-50 encompass subject-matter that was disclosed in document D3 before the claim date.

[43] D3 (citation above) discloses a number of PTHrP analogues including SEQ 2 that are capable of stimulating bone growth and are useful in the treatment of osteoporosis and bone fractures (pages 1, 7, 11). The 75 to 80 µg dosage amounts are not disclosed, rather the document discloses using a “therapeutically effective amount”.

[44] On pages 10-11 of the PR letter, we expressed our view that claims 45-50 are not anticipated by D3:

> The Applicant disputes that claims 45-50 are anticipated by D3. The arguments in the RFA focus primarily on the proposed claims. The following statements made by the Applicant in the letter of April 5, 2016 were made in relation to

broader claims than those currently under review but are considered to apply equally (page 1):

> Applicant submits that D3 is completely silent with respect to the dosage claimed, and therefore absent the disclosure of a dosage of 75 µg to 160 µg of PTHrP analogue, D3 cannot possibly anticipate the rejected claims as this subject-matter is not included. In view of this absence of a full disclosure, Applicant submits that D3 does not meet the two-part test established by the Supreme Court of Canada in *Apotex Inc. v. Sanofi-Synthelabo Canada* for rendering a claim anticipated.

The specific dosage amount of 75 to 80 µg is an essential element that is not explicitly, implicitly or inherently disclosed in D3. We agree with the Applicant that the disclosure requirement in the *Sanofi* test is not met: performing the subject-matter of D3 would not necessarily result in the infringement of a patent explicitly claiming the use of 75 to 80 µg of SEQ 2. At the disclosure stage, there is no room for trial and error experimentation by the skilled person: *Sanofi* at para 25.

Since the disclosure requirement is not met, there is no need to consider enablement.

Our preliminary view is therefore that the subject-matter of claims 45-50 complies with subsection 28.2(1) of the *Patent Act*.

[45] The RPR did not dispute or contest the above analysis set out in the PR letter. For the reasons set out above, our conclusion is that claims 45-50 comply with subsection 28.2(1) of the *Patent Act*.

Obviousness

[46] On pages 2-4, the FA contends that claims 45-50 on file are directed to subject-matter that would have been obvious at the claim date to the skilled person. The analysis and arguments from the Applicant were addressed on pages 11-15 of our PR letter using the *Sanofi* four-step framework, as set out below:.

(1) Identify the skilled person and their relevant CGK

These have already been identified above.

(2) Identify the inventive concept of the claims in question or if that cannot readily be done, construe it

The FA focused on the essential elements of claims 45-50 without formally identifying their inventive concepts. The RFA did not directly dispute this approach. However, on page 2 the Applicant argued that certain advantages that were disclosed in the description, but not claimed, ought to be considered:

> Applicant disagrees with the Examiner in view of Example 6 of the original specification. Example 6 provides pharmacokinetic and pharmacodynamic data that demonstrates the "surprising or unexpected advantages" of using the 80 µg dose. For example, lines 23-26 of page 45 demonstrates that P1NP concentrations surprisingly stayed above the base line with the 80 µg dose while the corresponding serum levels of P1NP following placebo doses generally stayed near predose levels. It is worth noting that lower P1NP serum levels are a predictive marker of bone loss.

To the extent that this is saying that it is appropriate in some cases to construe beneficial properties or advantages that are inherent to the essential elements as part of the inventive concept of a claim, we agree. The subject-matter of the claim describes its scope of protection, not why the subject-matter is patentable: *Shire* at para 23, citing *Free World Trust* at para 14. Where the "inventiveness" of the essential elements is "not readily discernable from the claims themselves" it is necessary to turn to the specification for amplification of the inventive concept of the claim, bearing in mind that it is not permissible to construe the claims more narrowly or widely than that text will allow: *Shire* at paras 72-73, citing *Sanofi* at para 77.

However, this does not mean that any property disclosed in the specification is appropriately construed as part of the inventive concept. The application must sufficiently describe the property as the "solution taught by the patent" in order to be construed as part of the inventive concept of the claim: *Shire* at para 84, citing *Bristol-Myers Squibb Canada Co v Teva Canada Limited*, 2017 FCA 76 at para 75.

As the SOR explains, Example 6 and the associated disclosure from page 45 are not found in the description and were not part of the originally filed

application. The description consists of 18 pages with only 5 examples, and none of those examples involves the use of an 80 µg dose. During the course of our review, we identified this information as coming from a related application WO2009/137093 A1 which was filed by the Applicant outside of Canada more than two years after the claim date of the present application.

Since higher PINP serum levels associated with the 80 µg dose was not disclosed in the description this data would not have been considered by the skilled person reading the specification as a whole or construed as part of the inventive concepts of claims 45-50.

By contrast, the description does teach that SEQ 2 can be used without increasing hypercalcemia or stimulating bone resorption which allows for higher dosing and, as discussed further below under unity, we consider this as one of two solutions described in the application. As stated in *Shire*, the solution taught by the patent is the lens that should be kept in mind when determining what, if anything, makes the claim as construed inventive: *Shire* para 76.

Our preliminary view is therefore that the skilled person would construe the inventive concepts of claims 45-50 as including the essential elements of each claim and that using SEQ 2 treats osteoporosis or stimulates bone growth without increasing hypercalcemia or stimulating bone resorption at the claimed dosages.

Subject to any comments or clarifications the Applicant wishes to make, our analysis will use the above inventive concepts.

(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed.

The FA cites the same document D3, cited above for anticipation, for obviousness. However, during the course of our review of the prosecution record, which as mentioned includes a number prior art documents submitted by the Applicant with the letter of August 10, 2010, the Panel identified Fox (cited above in support of certain points of CGK) and the following article by Dong et al. as relevant prior art:

Dong et al., “Highly potent analogs of human parathyroid hormone and human parathyroid hormone-related protein” (2001) in: Lebl M., Houghten, R.A. (eds) Peptides: The Wave of the Future. American Peptide Symposia, vol. 7, pages 668-669.

Fox is a review of the developments in PTH and related fragments and analogues as bone-formation agents as of 2002. SEQ 2 is identified as an early candidate of interest but no specific data concerning SEQ 2 is disclosed (page 339-340, as BIM-44058). Fox also discusses human trials that studied native PTH, Forteo™ and another hPTHrP(1-34) analogue semparatide at daily doses ranging from 20-100µg (pages 338-340). The treatment of subjects with bone fractures is also disclosed (page 339).

Dong et al. is another publication from the same group as D3 that published about four years later that discloses eight specific PTH/PTHrP(1-34) analogues including SEQ 2 which is singled out from the rest as a potent bone anabolic agent with a wider safety margin than native hPTH(1-34) (i.e., the native equivalent to recombinant Forteo™). The introduction explains that native PTH(1-84) and hPTH(1-34) have a relatively narrow therapeutic index, above which they can cause bone resorption and hypercalcemia. Dong et al. explains that SEQ 2 had been identified as having a much lower tendency to mobilize blood calcium than hPTH(1-34) and so further testing was carried out in ovariectomized osteopenic rats and monkeys. SEQ 2 was reportedly shown to be about 2-fold more efficacious than hPTH(1-34) in restoring femoral bone mineral density in the rats, and at doses of 1 and 10 µg/kg/day in monkeys there was significantly enhanced bone formation without impact on the cortical porosity.

Since SEQ 2 features more prominently in Dong et al. than in D3, and squarely addresses a compound with a wider safety margin with respect to bone resorption and hypercalcemia, we consider Dong at al. as the closest prior art. The dosage of 75-80 µg, or 80 µg specifically in claim 49, is the main difference from the inventive concepts of claims 45-50.

(4) Do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

On page 3, the FA explains that even though the particular dosage range of 75-80 µg was not known in the prior art, the skilled worker would have been led to

it directly and without difficulty since SEQ 2 was already known to be a therapeutic agent and finding the optimal dosage of a therapeutic agent is a matter of CGK. Even though the following was said in reference to D3, we consider this statement from the FA applies equally to Dong et al.:

> …once a known compound is known to be useful for treating a disease, it is CGK to the skilled person to optimize the dosage amount of that compound to achieve the greatest clinical benefit. Moreover, the present application provides no evidence of any surprising or unexpected effect of the dosage claimed in claims 45-50. In other words, there is no evidence in the application that the Applicant has exercised any inventive ingenuity in arriving at the dosage range of claims 45-50.

The RFA disputed that the claims were obvious, but the arguments presented focus on the above post-filing data that was mistakenly said to have been part of the original description. Based on the information before us, this post-filing data constitutes evidence of a subsequently recognized advantage, which the courts have indicated is a secondary factor of limited usefulness in considering inventive ingenuity as of the date of the invention that should be given little weight: *Novopharm Ltd v Janssen-Ortho Inc*, 2007 FCA 217 at para 26, aff'ing 2006 FC 1234.

Apart from that data, the RFA argues that the skilled person "could not have predicted the use of 80 µg dose to treat and/or prepare medicament for treating osteoporosis and/or stimulating bone growth without undue experimentation" (page 2).

We are unable to agree. Dong et al. discloses SEQ 2 as a promising PTH(1-34) analogue that is about 2-fold more efficacious than hPTH(1-34) in restoring femoral bone mineral density in ovariectomized, osteopenic rats, and so the activity in stimulating bone growth would have been expected.

Further, since SEQ 2 is also disclosed as having a wider safety margin than hPTH(1-34), the skilled person reading Dong et al. would have been motivated to identify the limits of the margin and the optimal dosages that maximize efficacy and minimize hypercalcemia and bone resorption. The knowledge needed to do this was CGK and would have followed from the Forteo™ pilot studies and clinical protocols. As the first PTH(1-34) fragment to receive

> marketing approval, it stands to reason that these studies (disclosed in Neer and in Fox on pages 338-339) would have been CGK.
>
> In addition, the skilled person would have been guided by the SEQ 2 primate studies disclosed in Dong et al. that tested 1 µg/kg and 10 µg/kg in selecting the doses to test. In our view, since no human trial data involving SEQ 2 was available, the skilled person would also have been guided by the actual dosages used in human trials involving PTH and other PTH(1-34) analogues from the same field. Three such trials are discussed in Fox which involve daily sc dosages of PTH, Forteo™ and semparatide which ranged from about 20-100 µg. Our preliminary view is that the skilled person would have been motivated to combine the teachings from Fox and Dong et al. since they are in the same field and they each consider hPTH(1-34) and analogues of interest (including SEQ 2) for stimulating bone growth.
>
> For these reasons, our preliminary view is that the skilled worker would have been led directly and without difficulty to the particular dosage range of claims 45-50. Our preliminary view is therefore that the subject-matter of claims 45-50 would have been obvious to the skilled person in view of Dong et al. and Fox in view of the CGK, contrary to section 28.3 of the *Patent Act*.

[47] The RPR did not dispute or contest any part of the analysis set out in the PR letter. For the same reasons set out above, our conclusion is that claims 45-50 do not comply with section 28.3 of the *Patent Act*.

Patentable subject-matter: skill and judgment

[48] On page 4, the FA contends that claims 45-52 encompass subject-matter that lies outside the definition of “invention” and do not comply with section 2 of the *Patent Act*.

[49] On page 15 of our PR letter, we explained that the FA performed its analysis of patentable subject-matter according to practice guidelines that were superseded by *PN2020-04* and so we undertook a new assessment in light of the revised guidelines.

[50] On pages 15-16, we expressed the preliminary view that claims 45-52 are directed to patentable subject-matter falling within the definition of “invention” set out in section 2 of the *Patent Act*:

> According to *PN2020-04*, where at least one of the essential elements of the claimed invention limits a medical use claim to a particular dosage, regardless of whether the dosage is fixed or covers a range, this fact alone is not determinative. It is necessary to consider whether the exercise of professional skill and judgment of the practitioner is part of the claim. As above, *PN2020-04* further indicates that skill and judgment may be involved if a medical professional is expected to make a selection of a dosage from a claimed range and not all dosages in the range will work for all subjects within the treatment group.
>
> The essential elements common to claims 45-52 are the use of a dosage of SEQ 2 that is expressed as a range of 75-80 µg, or as 80 µg specifically, for treating osteoporosis or stimulating bone growth.
>
> There is nothing in the description that indicates that the claimed doses would not all work for treating osteoporosis or stimulating bone growth for all subjects falling with the patient group, or that the dosage is selected based on any patient-specific features. Further, even if hypercalcemia and stimulating bone resorption are considered, our view is that the skilled person reading the specification through the lens of the CGK would understand that any differences among the narrow range of 75 to 80 µg would be negligible. As such, there is no indication that selecting a dose from the claimed range would require the skill and judgment of a medical professional.
>
> Our preliminary view is therefore that claims 45-52 are directed to patentable subject-matter falling within the definition of “invention” in section 2 of the *Patent Act*.

[51] The RPR did not dispute or contest the above analysis set out in the PR letter. For the reasons set out above, our conclusion is that claims 45-52 are directed to patentable subject-matter falling within the definition of “invention” in section 2 of the *Patent Act*.

Unity of invention: Patent for one invention only

[52] On pages 16-18 of the PR letter, we expressed our view that the claims on file are not all linked by a single general inventive concept as is required by subsection 36(1) of the *Patent Act*:

As a preliminary matter, we note that this issue was originally raised in the first examiner report dated December 30, 2013 in reference to document D1[2], which discloses SEQ 2. In response the claims were amended to a set that corresponds to claims 1-44 on file. However, similar claims to those that had been removed and that correspond to claims 45-52 on file were reintroduced in an amendment dated December 18, 2015.

As stated above, assessing whether a claim set contains claims for separate inventions requires consideration of the whole of the description and claims to ascertain the nature of the invention: *Teva* 64.

The claims as construed above are directed to three general categories: storage-stable compositions comprising SEQ 2 and pH buffer and with a particular pH (claims 1-13), use of those storage-stable compositions for stimulating bone growth or for treating osteoporosis (claims 14-44), and the use of SEQ 2 at a particular dosage for stimulating bone growth or for treating osteoporosis (claims 45-52).

The description explains in the background section that PTHrP and certain analogues were known to be useful to improve bone mass and quality in the treatment of osteoporosis and related disorders, but that their use was associated with two problems. First, there was a need to develop storage-stable formulations for commercial use. Second, side-effects such as hypercalcemia and increased stimulation of bone resorption limit the suitable dosage ranges and so there was a need for compounds with a reduced potential for these side-effects that can be administered at a higher doses (page 1).

The summary of invention section discloses that the invention provides a number of embodiments that include storage-stable compositions comprising SEQ 2 and a buffer used to maintain a particular pH, and methods where a particular dosage of SEQ 2 is used (pages 1-3). Page 3 also states that the compositions can be administered in higher doses than “currently available osteoporosis drugs” and have the desired reduction or elimination of the unwanted side effects, such as hypercalcemia or stimulation of bone resorption.

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[2] D1: US 2005/0282749 A1, Henriksen et al., December 22, 2005

The suitable doses are said to range from 40-160 µg on page 8. All of the doses in the range are listed out in 5 µg increments (i.e., as 40-45, 45-50, 50-55 etc. all the way to 155-160 µg). There is nothing in the description that indicates that 75 to 80 µg, or 80 µg specifically, stands out in any way or is preferred to any of the other dosages falling within the range. Rather, our preliminary view is that the skilled person reading the specification would consider 75-80 µg and 80 µg as illustrative of the broader range.

Apart from the above references to dosing, and the following statement from page 9, the remainder of the description addresses storage-stability:

> The compositions of the present invention typically do not show any or show reduced side-effects such as hypercalcemia and typically do not increase the stimulation of bone resorption at the dosage listed above. This reduction in side effects allows for administration of higher doses than commercially available osteoporosis drugs.

SEQ 2 is the only specific PTHrP analogue disclosed in the specification, although the description on page 3 does also refer to five prior art documents which are said to disclose PTHrP analogues other than SEQ 2. Notably, SEQ 2 is also disclosed in two of those documents: US 5,723,577 and US 6,544,949. The latter discloses and claims SEQ 2 for treating osteoporosis and stimulating bone growth.

As stated above, unity of invention requires that the common element(s) is new and unobvious (i.e., inventive) over the prior art. However, the only element that is common to all of the claims on file is SEQ 2 and it was already known from the two documents cited in the description, D1 and the prior art addressed in the anticipation and obviousness sections above.

Our preliminary view is that the skilled person reading the claims and description to ascertain the nature of the invention would understand that using a buffer to maintain the specific pH solves the storage stability problem. They would further understand that the dosing limitations associated with PTH(1-34) analogues is a separate problem from storage stability that required a different solution.

> Claims 1-44 contain a common set of elements and are linked by a single general inventive concept. Namely, using a buffer in a SEQ 2 composition to maintain a pH falling within the particular range claimed provides storage stability.
>
> Claims 45-52 contain a different set of common elements: the use of 75 µg to 80 µg of SEQ 2 for stimulating bone growth or for treating osteoporosis. None of these claims explicitly mention a composition, storage stability or a buffer. These claims are directed to a second invention and are linked by a separate general inventive concept: using SEQ 2 at these doses treats osteoporosis or stimulates bone growth without increasing hypercalcemia or stimulating bone resorption.
>
> In this view, the claims on file are not limited to only one invention because claims 1-44 and 45-52 are not linked by a single general inventive concept. Consequently, our preliminary view is that the application does not comply subsection 36(1) of the *Patent Act*.

[53] The RPR did not dispute, contest or comment on these views. Instead, the RPR proposed claim amendments that we agree would address all of the outstanding concerns addressed in the PR letter, as we explain in the following section.

[54] For the reasons explained above, our conclusion is that the claims on file do not comply with subsection 36(1) of the *Patent Act* because they are not limited to one invention only since claims 1-44 and 45-52 are not linked by a single general inventive concept.

Proposed claims 1-44

[55] As we have already mentioned, the RPR submitted a set of proposed claims 1-44 that correspond to claims 1-44 on file which were considered allowable in the PR letter. We agree that this amendment, which would cancel claims 45-52 on file, would address the outstanding obviousness defect and limit the claims to one invention only.

[56] Consequently, our conclusion is that proposed claims 1-44 would comply with subsection 36(1) and section 28.3 of the *Patent Act* and that the proposed amendment is “necessary” for compliance with the *Patent Act* and *Patent Rules*

pursuant to subsection 86(11) of the *Patent Rules*.

RECOMMENDATION OF THE BOARD

[57] In view of the above, the Panel recommends that the Applicant be notified, in accordance with subsection 86(11) of the *Patent Rules*, that the following specific amendment is “necessary” for compliance with the *Patent Act* and *Patent Rules*, and that you intend to refuse the application unless this amendment, and only this amendment, is made:

- the deletion of claims 45-52 on file that was proposed with the Applicant’s letter dated March 23, 2022.

Cara Weir	Marcel Brisebois	Ryan Jaecques
Member	Member	Member

DECISION OF THE COMMISSIONER

[58] I concur with the conclusions and recommendation of the Board. In accordance with subsection 86(11) of the *Patent Rules*, I hereby notify the Applicant that the following amendment, and only this amendment, must be made in accordance with paragraph 200(b) of the *Patent Rules* within (3) months of the date of this decision, failing which I intend to refuse the application:

- the deletion of claims 45-52 on file that was proposed with the Applicant's letter dated March 23, 2022.

Virginie Ethier

Assistant Commissioner of Patents

Dated at Gatineau, Quebec,

This 1st day of April, 2022