Federal Court  Cour fédérale

Date: 20091218

Docket: T-2221-07

Citation: 2009 FC 1294

Vancouver, British Columbia, December 18, 2009

PRESENT: The Honourable Madam Justice Heneghan

BETWEEN:

PFIZER CANADA INC. and
PHARMACIA ATKIEBOLAG

Applicants

and

THE MINISTER OF HEALTH and
PHARMASCIENCE INC.

Respondents

REASONS FOR JUDGMENT AND JUDGMENT

I. INTRODUCTION

[1] Pfizer Canada Inc. and Pharmacia Atkiebolag (the "Applicants") apply pursuant to the *Patented Medicines (Notice of Compliance) Regulations*, SOR/93-133 (the "NOC Regulations") for an order prohibiting the Minister of Health from issuing a Notice of Compliance ("NOC") to Pharmascience Inc. ("PMS", "Pharmascience" or the "Respondent"), pursuant to section C.08.004 of the *Food and Drug Regulations*, C.R.C., c. 870, until the expiry of Canadian letters patent

1,339,132 (the " '132 Patent"). The '132 Patent is entitled "Prostaglandin Derivatives for the treatment of glaucoma or Ocular Hypertension". A patent list pertaining to 50 microgram/ml ophthalmic solution of Latanoprost and referencing the '132 Patent was submitted to the Minister of Health (the "Minister"). The Minister issued Notices of Compliance to Pfizer for the 50 microgram/ml ophthalmic solution of Latanoprost on various dates, including October 6, 2003. The 50 microgram/ml ophthalmic solution of Latanoprost is marketed in Canada under the registered trade-mark Xalatan®.

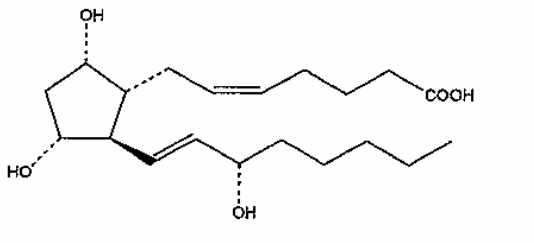
[2] This application was commenced following service of a Notice of Allegation (the "NOA") dated November 2, 2007 upon the Applicants on that day. In its NOA, the Respondent alleged that the '132 Patent is invalid on several grounds including anticipation, obviousness, lack of utility, lack of sound prediction, overbreadth and lack of sufficiency. The Respondent also alleged that it would not infringe the '132 Patent by producing its version of Latanoprost ophthalmic solution, 50 microgram/ml, hereinafter referred to as "PMS-latanoprost".

A. The Patent

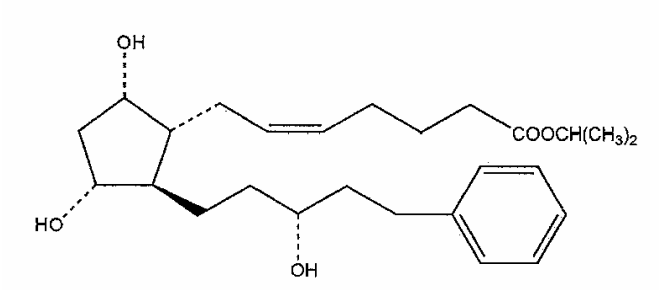
[3] The '132 Patent application was filed on September 12, 1989. It issued on July 29, 1997. The Patent addresses the use of certain prostaglandin derivatives in the treatment of glaucoma or ocular hypertension.

[4] Prostaglandins are naturally occurring substances found in human and animal tissues that contain 20 carbon atoms and have a molecular structure called "prostanoic acid". The $PGF_{2\alpha}$ is a

naturally occurring compound that can be esterified into $PGF_{2\alpha}$ isopropyl ester, also referred to as $PGF_{2\alpha}$ –IE. The chemical composition of $PGF_{2\alpha}$ is as follows:



[5] The Latanoprost compound is a prostaglandin derivative that has the chemical formulation of 13,14-dihydro-17-phenyl-18,19,20-trinor $PGF_{2\alpha}$ isopropyl ester or 13,14-dihydro-17-phenyl-18,19,20-trinor $PGF_{2\alpha}$ -IE. Its chemical structure is as follows:



[6] Latanoprost is made by modifying $PGF_{2\alpha}$ as follows:

i. removing the last 3 carbons of the omega chain ("18,19,20-trinor");

ii. attaching a phenyl ring to carbon 17 ("17-phenyl");

iii. changing the double bond to a single bond between carbon 13 and carbon 14 ("13,14-dihydro"); and

iv. esterifying the carboxylic acid to an isopropyl ester.

[7] The '132 Patent contains 38 claims; however, only Claims 12, 19, 31, 37 and 38 are at issue in this proceeding. Broadly speaking, Claim 19 is a compound *per se* claim that is dependent on Claim 18. Claims 31, 37 and 38 are use claims. Claim 12 is a narrower use claim and is dependent on Claim 1. The relevant claims read as follows:

i. A therapeutic composition for topical treatment of glaucoma or ocular hypertension, containing a prostaglandin PGA, PGB, PGD, PGE or PGF in an amount sufficient to reduce intraocular pressure without causing substantial ocular irritation and an ophthalmologically compatible vehicle, which the omega chain of the prostaglandin has the formula:

(13) (14) (15-24)

C - B - C - D - R_2

wherein

C is a carbon atom (the number is indicated within parenthesis);

B is a single bond, a double bond or a triple bond;

D is a chain with 1-10 carbon atoms, optionally interrupted by hetero atoms O, S, or N, the substituents on each carbon atom being H, alkyl groups, lower alkyl groups with 1 – 5 carbon atoms, an oxo functionality or a hydroxyl group;

R_2 is a ring structure selected from the group consisting of phenyl and phenyl having at least one substituent, said substituent being selected from C_1-C_5

alkyl groups, C_1-C_4 alkoxy groups, trifluoromethyl groups, C_1-C_3 aliphatic acylamino groups, nitro groups, halogen atoms, and phenyl group; or an aromatic heterocyclic group having 5-6 ring atoms, selected from the group consisting of thiazol, imidazole, pyrrolidine, thiopene and oxazole; or a cycloalkane or a cycloalkene with 3-7 carbon atoms in the ring, optionally substituted with lower alkyl groups with 1-5 carbon atoms.

12. An ophthalmological composition according to claim 1, wherein the prostaglandin derivative is 13,14-dihydro-17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$ -isopropylester.

18. 13,14-dihydro-17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$ -alkyl-ester, in which the alkyl group has 1-10 carbon atoms.

19. Compound of claim 18, wherein the alkyl group is isopropyl.

31. The use of 13,14-dihydro-17-phenyl-18, 19,20-trinor-$PGF_{2\alpha}$ -isopropylester in the treatment of glaucoma or ocular hypertension.

37. The use of 13,14-dihydro-17-phenyl-18,19,20-trinor- $PGF_{2\alpha}$ -alkyl-ester, in which the alkyl group has 1-10 carbon atoms for the treatment of glaucoma or ocular hypertension.

38. The use of 13,14-dihydro-17-phenyl-18,19,20-trinor- $PGF_{2\alpha}$ -isopropyl-ester in the treatment of glaucoma or ocular hypertension.

B. The Evidence

[8] Each party submitted affidavit evidence from several witnesses; some of whom provided factual evidence and others who addressed matters of opinion.

i) Applicants' Witnesses

[9] Dr. Yvonne M. Buys is an ophthalmologist practising in Toronto, Ontario. She is engaged both in clinical practice and as an Associate Professor in the Department of Ophthalmology at the University of Toronto. Dr. Buys was asked to provide a brief background on glaucoma and ocular hypertension and the treatment of these diseases prior to the introduction of Latanoprost, as well as to discuss the clinical use and advantages of this drug, including its mechanism of action.

[10] Further, Dr. Buys was asked to describe the qualifications of the person of ordinary skill in the art ("POSITA") to whom the '132 Patent is addressed, to give her understanding of the patent with particular reference to Claims 12, 19, 31, 37 and 38 as of July 29, 1997, and to give an opinion whether Latanoprost has the utility promised in the '132 Patent.

[11] Dr. Robert D. Fechtner is a clinical ophthalmologist practising in New Jersey. He is also a professor in the Department of Ophthalmology and Visual Science, New Jersey Medical School, University of Medicine and Dentistry of New Jersey. He has held this position since 2002. He was asked to provide a basic tutorial on the eye and intraocular pressure ("IOP"), glaucoma, ocular hypertension and the treatment of those conditions and to describe the common general knowledge

relative to the treatment of ocular hypertension, glaucoma and prostaglandins as of September 12, 1989.

[12] Dr. Fechtner was also asked to describe the qualifications of the POSITA to whom the ‘132 Patent is addressed and to state his understanding of the ‘132 Patent, with reference to Claims 12, 19, 31, 37 and 38 as of July 29, 1997. He was also asked to describe the utility taught by the ‘132 Patent and whether Latanoprost has utility. He was asked to describe the utility of the ‘132 Patent and whether Latanoprost exhibits that utility. As well, he was asked to consider whether the specification of the ‘132 Patent, including Claims 12, 19, 31, 37 and 38 correctly and fully describe, as of July 29, 1997, to the POSITA, the subject matter of the invention and its operation or use as contemplated by the inventor. In addition to reviewing relevant documents, including the ‘132 Patent, Dr. Fechtner was asked to review certain affidavits filed by the Respondent.

[13] Dr. Johan W. Stjernschantz of Uppsala, Sweden is one of the inventors of the ‘132 Patent. He addressed the factual background to the discovery of Latanoprost, including the history of other efforts that were made by competitors, seeking the discovery of a drug that would treat glaucoma and ocular hypertension.

[14] As well, Dr. Stjernschantz tendered opinion evidence as to the POSITA as of September 12, 1989, the concept of obviousness of the invention claimed in the ‘132 Patent having regard to the prior art, the sufficiency of the ‘132 Patent having regard to the test data in the Patent and the evidence tendered by the Respondent, and the utility of the ‘132 Patent.

[15] I note that Dr. Stjernschantz, as one of the inventors of the '132 Patent, is in a unique position to give evidence about the invention. However, in my opinion, his evidence is to be approached with caution in respect of issues of claim construction and validity since it is almost impossible for a person with an "interest", even an intellectual one, to be wholly objective about his own work. In this regard, I refer to the decision in *Emmanuel Simard & Fils (1983) Inc. v. Raydan Manufacturing Ltd.* (2005), 41 C.P.R. (4th) 385 (F.C.).

[16] Dr. Kirk M. Maxey is a medicinal chemist with expertise in the area of prostaglandins with almost thirty years experience in the study and synthesis of prostaglandins. Although he holds a medical degree, he has never practiced as a medical doctor. He is the founder and Chairman of the Board of the Cayman Biomedical Research Institute, a non-profit institute that conducts research in the areas of rare diseases and genetic defects.

[17] Dr. Maxey was asked to give a brief tutorial on prostaglandins. He was also asked to describe the qualifications of the POSITA and to give his understanding of the '132 Patent, particularly with regard to Claims 12, 19, 31, 37 and 38 as of July 29, 1997.

[18] Dr. Maxey was also asked to consider whether Latanoprost had been disclosed in the prior art, whether the POSITA would have been led to Latanoprost having regard to the state of the art as of September 12, 1989 and July 29, 1997 and whether the claims in issue are broader than the invention made or disclosed in the '132 Patent.

[19] Dr. Arthur H. Neufeld is a Professor of Ophthalmology and the Head of Laboratory for the Investigation of the Aging Retina at the Northwestern University School of Medicine. He submitted two affidavits on behalf of the Applicants, the first sworn on April 25, 2008 and the second sworn on August 27, 2008.

[20] In his first affidavit, Dr. Neufeld addressed the mandate that he had received to give his interpretation on the '132 Patent and whether the Respondent's product PMS-latanoprost, infringes Claims 12, 19, 31, 37 and 38 of the '132 Patent. In his opinion, the Respondent's product does infringe the specified claims of the '132 Patent.

[21] In his second affidavit, Dr. Neufeld said that he had been asked to explain glaucoma and ocular hypertension and to describe the common general knowledge, as of September 12, 1989, based on his expertise relative to prostaglandins. He was also asked to give his "interpretation" of the '132 Patent as of July 29, 1997 and to describe the qualifications of the POSITA.

[22] The Applicants filed one affidavit of fact, that is the affidavit of Ms. Arshia Ghani, Regulatory Affairs Associate of Pfizer Canada. She deposed to the ownership of the '132 Patent and the issuance of NOCs over a number of years, beginning in 1997.

ii) Respondent's Witnesses

[23] The Respondent filed the affidavits of Dr. Ashim Mitra, Dr. Steven Podos, Dr. Glenn Prestwich, Dr. George Spaeth and Mariane Simonian.

[24] Dr. Ashim Mitra is a pharmaceutical chemist and a Missouri Curator's Professor of Pharmacy. He is the Chairman of the Division of Pharmaceutical Sciences at the University of Missouri. Among other things, he is engaged in research focused on synthesizing chemical compounds, in particular ophthalmic drugs. He has been recognized for his work, including receipt of an award in 2007 from the Association of Research in Vision and Ophthalmology ("ARVO").

[25] Dr. Mitra was asked to describe the qualification of a POSITA as of September 12, 1989, the Canadian filing date of the '132 Patent. He was asked to give an opinion on the sufficiency of the specifications in the '132 Patent as of July 1997, the publication date. He was also asked to give an opinion on whether the '132 Patent was anticipated, whether it was obvious, whether the claims are overbroad and whether the claimed invention lacks utility.

[26] Dr. Steven Podos is a Professor and Chair Emeritus of the Department of Ophthalmology at Mount Sinai School of Medicine in New York City. He was asked to give an opinion as to whether the '132 Patent is obvious to a POSITA as of September 12, 1989, in view of the prior art and the common general knowledge. He was also asked to give an opinion as to whether the data disclosed in the '132 Patent is sufficient to disclose the invention, that is its advantages over other prostaglandins.

[27] Dr. Glenn Prestwich is a medicinal chemist and Presidential Professor of Medicinal Chemistry at the University of Utah in Salt Lake City. He is engaged in research, including synthesis of inhibitors of epoxide hydro-laser.

[28] Dr. Prestwich was asked to give an opinion upon the issues identified in the NOA, specifically with respect to the validity of the '132 Patent and the qualifications of the POSITA as of July 29, 1997.

[29] Dr. Prestwich filed a second affidavit in which he addressed the issue of infringement.

[30] Finally, the Respondent filed the affidavit of Ms. Mariane Simonian, a law clerk with Hitchman and Sprigings, solicitors for the Respondent. Attached as exhibits to her affidavit are copies of the articles referred to in Schedule A of the NOA as the prior art cited by the Respondent.

C. The Eye, Glaucoma and Ocular Hypertension

[31] The '132 Patent deals with an ophthalmic solution for treatment of glaucoma and ocular hypertension. The eye is a closed sphere that produces a clear fluid called aqueous humor. Aqueous humor is essential to the functioning of the eye. It conveys nutrients to the eye and removes waste products and contaminants from the eye. Drainage of aqueous humor assists in avoiding an increase in intraocular pressure. Elevated IOP is one of the strongest risk factors for disorders of the eye, including glaucoma and ocular hypertension.

[32] Ocular hypertension means elevated intraocular hypertension in the absence of damage to the optic nerve, according to Dr. Fechtner. Glaucoma, according to Dr. Fechtner, describes a group of disorders that are characterized by damage to the optic nerve that results in loss of vision if the condition is left untreated. Elevated intraocular pressure is one of the strongest risk factors for the development and progression of glaucoma.

[33] There is no cure for glaucoma but both this disease and ocular hypertension can be managed by the reduction of intraocular pressure. According to Dr. Fechtner, this is the only risk factor of these disorders that can be modified by treatment.

[34] Two possible ways of reducing intraocular pressure by the use of drugs are the reduction in the production of aqueous humor and second, an increase in the outflow of aqueous humor.

[35] Successful treatment of glaucoma by the use of drugs requires a high level of patient compliance. Therapies with less frequent dosages are preferred by patients and contribute to patient compliance.

[36] Tolerance of the drug regime is another factor that affects patient compliance. Tolerability of drugs refers to the existence of side effects. Side effects may be systemic, that is occurring throughout the body or local, that is adverse effects occurring in and around the eye. Systemic effects of drugs used to treat glaucoma include worsening of asthma or emphysema. Local side

effects include ocular inflammation, that is within the eye, and irritation, that is side effects occurring outside the wall of the eye.

[37] Conjunctival hyperemia, that is redness of the eye, may also be a local side effect. Conjunctival hyperemia can be experienced with or without irritation.

[38] Prior to the advent of Latanoprost, other drugs were on the market for the treatment of glaucoma and ocular hypertension. According to the evidence of Dr. Buys and Dr. Fechtner, these drugs included timolol maleate, epinephrine and acetazolamide which caused side effects, including burning, hyperemia, tingling, and stomach upset. Further, more serious systemic effects of these drugs were blood disorders, cardiac arrhythmia, asthma, emphysema and death.

II. ISSUES

[39] The following issues arise from this application:

i. How should the claims in issue be construed?

ii. Will the Respondent's drug infringe the '132 Patent?

iii. Are any of the Respondent's allegations of invalidity justified, as follows:

(a) anticipation;

(b) obviousness;

(c) insufficiency of the specification;

(d) lack of utility;

(e) lack of sound prediction;

(f) overbreadth.

III. DISCUSSION AND DISPOSITION

[40] The parties filed a considerable amount of evidence in relation to this proceeding. I will not refer to all of the evidence contained within the record but instead will base my conclusions upon that evidence which I found to be most relevant, credible and reliable. I have not ignored evidence to which I do not explicitly refer.

A. Nature of This Proceeding

[41] This application seeks to prohibit the issuance of a NOC to the Respondent for its product which contains Latanoprost. The Applicants challenge the Respondent's NOA on the grounds that the allegations of invalidity of the '132 Patent are not justified.

[42] A NOC grants marketing approval for drugs in Canada. It is issued by the Federal Government, indicating that all requirements have been met pursuant to the Food and Drug Regulations for the protection of public health and safety. The NOC Regulations authorize owners of existing patents for pharmaceutical products to file a "patent list" relative to those products for which they hold a NOC. The NOC Regulations refer to the person filing such a list as the "first person". In this case, the Applicants are the "first person".

[43] The framework of the NOC Regulations allows generic drug manufacturers to rely on prior approval of related pharmaceutical products in applying for marketing approval of their generic

form of the products. Manufacturers who produce the same drug may file an application for a NOC that refers to and relies on the fact that prior approval has been granted for the brand-name version of the drug. Such a manufacturer is known as the "second person" and that is the Respondent's status.

[44] The NOC Regulations prohibit the Minister of Health from issuing a NOC until all relevant product and use patents in the earlier approved medicine, as described in the patent list, have expired. Consequently, a second person must either wait until patent expiry before receiving a NOC or it may submit a NOA to the Minister with its new drug submission.

[45] The NOC Regulations require service of the NOA upon the first person. Section 5 sets out the grounds upon which a NOA is to be based. Briefly, the NOA must assert either that the first person is not the patentee, that the patent is expired or invalid, or that it would not be infringed if a NOC were issued.

[46] Following service of the NOA, the Minister may issue a NOC to the second person, unless the first person avails of its right, pursuant to section 6(1) of the NOC Regulations, to seek an order from the Federal Court prohibiting the Minister from issuing the NOC. Any such step must be taken by the first person within 45 days after receipt of the NOA and once such a proceeding is commenced, the issuance of a NOC to the second person is stayed for a maximum period of twenty-four months.

B. Burden of Proof

[47] Before addressing the specific aspects of this case, I will briefly address the jurisprudence applicable to the burden of proof and the question that must be answered in a NOC proceeding. It is well-established that the burden of proving that the second person's, that is, Pharmascience's, allegations are not justified is on the person seeking the Prohibition Order, Pfizer. Pfizer must establish, on a balance of probabilities, that Pharmascience's allegations are not justified. Pharmascience must put its allegations "in play" through its NOA. However, once that has been done, Pfizer bears the burden of proving that such allegations are not justified, on a balance of probabilities: see *Eli Lilly and Co. v. Nu-Pharm Inc.* (1996), 69 C.P.R. (3d) 1 (F.C.A.), *Merck Frosst Canada Inc. v. Canada (Minister of National Health and Welfare)* (1994), 55 C.P.R. (3d) 302 (F.C.A.) and *SmithKline Beecham Pharma Inc. v. Apotex Inc.*, [2001] 4 F.C. 518 (T.D.), aff'd (2002), 291 N.R. 168 (F.C.A.).

[48] Second, the Court must determine whether Pharmascience's allegations of invalidity are justified or not. In *Pharmacia Inc. v. Canada (Minister of National Health and Welfare)* (1994), 58 C.P.R. (3d) 209 (F.C.A.) ("*Pharmacia*") the Federal Court of Appeal commented upon the standard to be applied to this type of proceeding, at page 216:

> ...these proceedings are not actions for determining validity or infringement: rather they are proceedings to determine whether the Minister may issue a notice of compliance. That decision must turn on whether there are allegations by the generic company sufficiently substantiated to support a conclusion for administrative purposes (the issue of a notice of compliance) that the applicant's patent would not be infringed if the generic's product is put on the market…

[49] In *SmithKline*, Justice Gibson considered the evidentiary burden in proceedings under the NOC Regulations where invalidity of a patent is alleged. At paras. 14 to15 he wrote the following:

> Against the foregoing, I conclude that while an "evidential burden" lies on Apotex to put each of the issues raised in its notice of allegation "in play", if it is successful in doing so, the "persuasive burden" or "legal burden" then lies with SmithKline. Assuming Apotex to be successful in putting the issue of validity of the '637 patent "in play", SmithKline is entitled to rely on the presumption of validity of the patent created by subsection 43(2) of the Act.
>
> The "persuasive burden" or "legal burden" that lies with SmithKline in the circumstances described in the preceding paragraph is, however, impacted by the nature of the proceeding here before the Court. In *Merck Frosst Canada Inc. v. Canada (Minister of National Health and Welfare)*, [(1994), 55 C.P.R. (3d) 302 (F.C.A.)] Mr. Justice Hugessen, for the Court, wrote at pages 319-20:
>
> > As I understand the scheme of the regulations, it is the party moving under s. 6, in this case Merck, which, as the initiator of the proceedings, has the carriage of the litigation and bears the initial burden of proof. That burden, as it seems to me, is a difficult one since it must be to disprove some or all of the allegations in the notice of allegation which, if left unchallenged, would allow the Minister to issue a notice of compliance…
> >
> > …
> >
> > In this connection, it may be noted that, while s. 7(2)(b) [of the Regulations] seems to envisage the court making a declaration of invalidity or non-infringement, it is clear to me that such declaration could not be given in the course of the s. 6 proceedings themselves. Those proceedings, after all, are instituted by the patentee and seek a prohibition against the Minister; since they take the form of a summary application for judicial review, it is impossible to conceive of them giving rise to a counterclaim by the respondent seeking such a declaration. Patent invalidity, like patent infringement, cannot be litigated in this kind of proceeding.
>
> Thus, the burden on SmithKline is only to disprove the allegations in the notice of allegation, not to justify declarations of validity and

> infringement or conversely to negative claims for declarations of invalidity and non-infringement.

[50] The burden lies on Pfizer, as the Applicants, to refute the allegations set forth by Pharmascience in its NOA dated November 2, 2007. Therefore, like any plaintiff or applicant, Pfizer has the overall legal burden of proof. Pharmascience, as the Respondent, has an obligation to put the allegations set out in its NOA in play.

[51] The present proceeding is a summary proceeding pursuant to the NOC Regulations and the *Federal Court Rules,* SOR/98-106 (the "Rules") governing applications for judicial review. A finding of invalidity or infringement in the context of this type of proceeding is not determinative of that issue in any subsequent action: *Pharmacia* at page 216.

Issue 1: Construction of the '132 Patent

[52] According to the direction given by the Supreme Court of Canada in its decisions in *Whirlpool Corp. v. Camco Inc.* (2000), 9 C.P.R. (4th) 129 (S.C.C.) and *Free World Trust v. Électro Santé Inc.* (2000), 9 C.P.R. (4th) 168 (S.C.C.), before addressing the issues of infringement and invalidity, the Court must first construe the patent.

[53] Claims construction must be approached in an informed and purposive manner, with close regard to the purpose and intent of the authors. Information is to be gained from the patent as a whole in order to determine the context in which the claims are to be considered. The role of experts is to provide assistance, if necessary, relative to the technical meaning of the words and concepts

used in the claims; see *Whirlpool* at paras. 51 and 52. In construing the claim, the Court should be neither harsh nor benevolent but approach the claim with a mind willing to understand.

[54] The '132 Patent specification gives an overview of disorders of the eye derived from elevated intraocular pressure (IOP), discloses the results if the eye disorder is left untreated, and defines the formulae to determine IOP levels. The specification goes on to discuss the current state of the art available at the time the patent application was filed as well as the available research activity undertaken in the use of prostaglandins. Finally, the specification discloses the solution that the invention solves as well as some of the preferred derivatives and preferred methods of preparing, testing, using and applying the invention.

[55] The '132 patent is governed by the provisions of the *Patent Act*, R.S.C. 1985, c. P-4, (the "Act"). The provisions of the Act that pertain to patents applied for prior to October 1, 1989, are called "Old Act Patent"). The claims are to be construed from the date of issue, that is July 29, 1997.

[56] The Applicants made submissions on the issue of claims construction. They argued that claims construction should follow the steps outlined in the recent decision of the Supreme Court of Canada in *Sanofi-Synthelabo Canada Inc. v. Apotex Inc.* (2008), 298 D.L.R (4^{th}) 385 (S.C.C.) at paras. 76.

[57] As noted earlier, Claims 12, 19, 31, 37 and 38 are in issue in this proceeding. Broadly speaking, Claim 19 is a compound *per se* claim. Claims 12, 31, 37 and 38 are use claims, with Claim 12 limited by reference to Claim 1. I propose to deal with construction of the claims, beginning with Claim 19.

[58] Claim 19 reads as follow:

> 19. Compound of claim 18, wherein the alkyl group is isopropyl.

[59] This claim is for the chemical compound described in Claim 18. Claim 18 reads as follows:

> 18. 13,14-dihydro-17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$ -alkyl-ester, in which the alkyl group has 1-10 carbon atoms.

[60] I construe Claim 19, having regard to Claim 18 as being a chemical compound with isopropyl as the alkyl group. The isopropyl used as the alkyl group has three carbon atoms.

[61] Claims 12, 31, 37 and 38 are use claims and I construe them as such. Claim 12 refers to Claim 1 and accordingly, can be read as follows:

> i. A therapeutic composition for topical treatment of glaucoma or ocular hypertension, containing a prostaglandin PGA, PGB, PGD, PGE or PGF in an amount sufficient to reduce intraocular pressure without causing

substantial ocular irritation and an ophthalmologically compatible vehicle, which the omega chain of the prostaglandin has the formula:

(13) (14) (15-24)

C - B - C - D - R_2

wherein

C is a carbon atom (the number is indicated within parenthesis);

B is a single bond, a double bond or a triple bond;

D is a chain with 1-10 carbon atoms, optionally interrupted by hetero atoms O, S, or N, the substituents on each carbon atom being H, alkyl groups, lower alkyl groups with 1 – 5 carbon atoms, an oxo functionality or a hydroxyl group;

R_2 is a ring structure selected from the group consisting of phenyl and phenyl having at least one substituent, said substituent being selected from C_1-C_5 alkyl groups, C_1-C_4 alkoxy groups, trifluoromethyl groups, C_1-C_3 aliphatic acylamino groups, nitro groups, halogen atoms, and phenyl group; or an aromatic heterocyclic group having 5-6 ring atoms, selected from the group consisting of thiazol, imidazole, pyrrolidine, thiopene and oxazole; or a cycloalkane or a cycloalkene with 3-7 carbon atoms in the ring, optionally substituted with lower alkyl groups with 1-5 carbon atoms.

12. An ophthalmological composition according to claim 1, wherein the prostaglandin derivative is 13,14-dihydro-17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$ - isopropylester.

[62] The claim for use in Claim 12 is limited by the reference in Claim 1 to the reduction of intraocular pressure "without causing substantial ocular irritation".

[63] Claim 31 provides as follows:

> 31. The use of 13,14-dihydro-17-phenyl-18, 19,20-trinor-$PGF_{2\alpha}$ -isopropylester in the treatment of glaucoma or ocular hypertension.

[64] I construe this to be a claim for the use of the compound in Claim 19 in the treatment of glaucoma or ocular hypertension. Glaucoma and ocular hypertension are disorders of the eye, according to the evidence of the expert witnesses.

[65] Claim 37 provides as follows:

> 37. The use of 13,14-dihydro-17-phenyl-18,19,20-trinor- $PGF_{2\alpha}$ -alkyl-ester, in which the alkyl group has 1-10 carbon atoms for the treatment of glaucoma or ocular hypertension.

[66] I construe this to be a claim for the use of the compound claimed in Claim 19 for the treatment of glaucoma or ocular hypertension.

[67] Claim 38 provides as follows:

> 38. The use of 13,14-dihydro-17-phenyl-18,19,20-trinor- $PGF_{2\alpha}$ -isopropyl-ester in the treatment of glaucoma or ocular hypertension.

[68] I construe this to be another claim for the use of the compound claimed in Claim 19 in the treatment of glaucoma or ocular hypertension. It is identical to Claim 37 with a difference in the spelling of "isopropylester", a hyphen is included in Claim 38.

[69] Since this is an Old Act Patent, the operative date for claims construction is the date of issuance of the '132 Patent, that is July 29, 1997. In this regard, I refer to the decision in *Janssen-Ortho Inc. v. Novopharm Ltd.* (2006), 57 C.P.R. (4th) 6 (F.C.), aff'd (2007), 59 C.P.R. (4th) 116 (F.C.A.), leave to appeal to S.C.C. refused, [2007] 3 S.C.R. xii.

Issue 2: Infringement

[70] The Respondent alleges that its product will not infringe the '132 Patent because the '132 Patent claims an old use for an old compound. This kind of allegation is known as the "Gillette Defence" on the basis of the decision in *Gillette Safety Razor Co. v. Anglo-American Trading Co. Ltd.* (1913), 30 R.P.C. 465 (H.L.) at 480 to 481 where the House of Lords said the following:

> The defence that "the alleged infringement was not novel at the date of the plaintiff's Letters Patent" is a good defence in law, and it would sometimes obviate the great length and expense of Patent cases if the defendant could and would put forth his case in this form, and thus spare himself the trouble of demonstrating on which horn of the well-known dilemma the plaintiff had impaled himself, invalidity or non-infringement.

[71] The Gillette Defence has been raised in many cases in Canada but has rarely been successful. One exception to that trend is the decision in *Eli Lilly Canada Inc. v. Apotex Inc.*, 75 C.P.R. (4th) 165 (F.C.) at paras. 60 to 64 where the Court, per Justice Hughes, found that the product to be produced by the respondent would not be different from that produced by the process of a prior art patent and in theory, the respondent would infringe the patent in issue in the proceedings before him. However, he found that the product of that earlier patent anticipates the product of the patent in issue and consequently, the claims in issue were invalid.

[72] In my opinion, the availability of the "Gillette Defence" depends upon the determination of the many allegations of invalidity raised by the Respondent. This means that if the allegations of anticipation and obviousness fail, this Gillette Defence must also fail.

[73] Dr. Neufeld addressed the issues of infringement on behalf of the Applicants. He referred to the description of the Respondent's product as set out in the NOA as follows:

> PMS has sought approval to sell latanoprost ophthalmic solution, 50 microgram/ml ("pms-latanoprost").
>
> pms-Latanoprost is indicated for the following:
>
> "pms-Latanoprost (latanoprost) is indicated for the reduction of intraocular pressure in patients with open-angle glaucoma or ocular hypertension. pms-Latanoprost may be used for the reduction of intraocular pressure in patients with chronic angle-closure glaucoma who underwent peripheral iridotomy or laser iridoplasty."

[74] He further stated, in his affidavit, that the active pharmacological ingredient in PMS-Latanoprost is 13, 14-dihydro-17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$-isopropyl ester which is Latanoprost as set out in Claim 19 of the '132 Patent.

[75] Dr. Neufeld reviewed the five claims of the '132 Patent that are in issue and tendered the opinion that the Respondent's product will infringe each claim. Claim 12 of the '132 Patent claims an ophthalmological composition containing Latanoprost as described in Claim 19. He also reviewed the use claim in Claims 31, 37 and 38, in comparison with PMS-Latanoprost, and concluded that the use claim will be infringed by the Respondent's product.

[76] Dr. Prestwich responded to Dr. Neufeld's evidence, on behalf of the Respondent. He proffered the opinion that if Dr. Neufeld were correct in his interpretation of the claims in issue, then:

> … it is clear that the '132 patent covers an old compound (latanoprost) for an old use (reducing IOP) as was disclosed in the prior art (as I discussed in my First Affidavit). Similarly, claims 19, 31, 37 and 38 which contain no reference to ocular irritation, cover an old compound for an old use.

[77] In short, then, Dr. Prestwich rests his opinions on non-infringement upon his interpretation of the prior art that Claim 12 of the '132 Patent claims an old compound, that is Latanoprost, for an old use, that is the reduction of IOP. Likewise, he offers the opinion that Claims 19, 31, 37 and 38, which are silent on the matter of ocular irritation, claim an old compound for an old use.

[78] The determination of the allegation of non-infringement by the Respondent, then, depends upon the assessment of the allegations of invalidity that the Respondent advances.

Issue 3: Invalidity

[79] The Respondent advances several grounds of invalidity against the '132 Patent, as follows: anticipation, obviousness, lack of utility, lack of sound prediction, overbreadth and lack of sufficiency.

i) Anticipation

[80] Two distinct requirements must be met in order to prove anticipation, that is disclosure and enablement. The Supreme Court of Canada addressed these requirements in its decision in *Sanofi*. Adopting the approach taken by Lord Hoffmann in the decision of the House of Lords in *Synthon B.V. v. SmithKline Beecham plc*, [2006] 1 All E.R. 685 (H.L.), Mr. Justice Rothstein said the following at para. 25 of *Sanofi*:

> He explains that the requirement of prior disclosure means that the prior patent must disclose subject matter which, if performed, would necessarily result in infringement of that patent, and states, at para. 22:
>
> > If I may summarise the effect of these two well-known statements [from *General Tire* and *Hills v. Evans*], the matter relied upon as prior art must disclose subject matter which, if performed, would necessarily result in an infringement of the patent. . . It follows that, whether or not it would be apparent to anyone at the time, whenever subject matter described in the prior disclosure is capable of being performed and is such that, if performed, it must result in the patent being infringed, the disclosure condition is satisfied.

> When considering the role of the person skilled in the art in respect of disclosure, the skilled person is "taken to be trying to understand what the author of the description [in the prior patent] meant" (para. 32). At this stage, there is no room for trial and error or experimentation by the skilled person. He is simply reading the prior patent for the purposes of understanding it.

[81] Once the element of disclosure has been addressed, the Supreme Court in *Sanofi* instructed that the second step, that is enablement, is to be considered only if the prior element of disclosure is satisfied. In this regard, I refer to para. 26 of the *Sanofi* decision where the Supreme Court said the following:

> If the disclosure requirement is satisfied, the second requirement to prove anticipation is "enablement" which means that the person skilled in the art would have been able to perform the invention (para. 26). Lord Hoffmann held that the test for enablement for purposes of anticipation was the same as the test for sufficiency under the relevant United Kingdom legislation. (Enablement for the purposes of sufficiency of the patent specification under the Canadian *Patent Act*, s. 34(1)(b) of the pre-October 1, 1989 Act, now s. 27(3)(b), is not an issue to be decided in this case and my analysis of enablement is solely related to the test for anticipation. The question of whether enablement for purposes of sufficiency is identical in Canada is better left to another day.)

[82] In short, the disclosure requirement is met when a single document discloses subject matter that, if performed, would necessarily result in infringement. If there is more than one possible result, there is no disclosure. Further, the requirement of disclosure is not met when the prior art teaches a broad class and the invention is for a specific member of that class; see *Sanofi, Synthon* and *Pfizer Canada Inc. v. Canada (Minister of Health)* (2008), 67 C.P.R. (4th) 23 (F.C.A.) at para. 83 ("*Pfizer 2008*").

[83] Any patent application filed and any patent issuing from it must comply with subsection 27(1) of the Act which outlines the relevant date to assess the state of the art. In this proceeding, it is two years before the Canadian filing date of the application. The filing date for the '132 Patent is September 12, 1989 under the Act and therefore anticipation is based on a date on or before September 12, 1987. Subsection 27(1) of the Act provides:

27. (1) Subject to this section, any inventor or legal representative of an inventor of an invention that was (a) not known or used by any other person before he invented it, (b) not described in any patent or in any publication printed in Canada or in any other country more than two years before presentation of the petition hereunder mentioned, and (c) not in public use or on sale in Canada for more than two years prior to his application in Canada, may, on presentation to the Commissioner of a petition setting out the facts, in this Act termed the filing in the application, and on compliance with all other requirements of this Act, obtain a patent granting to him an exclusive property in the invention.	27. (1) Sous réserve des autres dispositions du présent article, l'auteur de toute invention ou le représentant légal de l'auteur d'une invention peut, sur présentation au commissaire d'une pétition exposant les faits, appelée dans la présente loi le « dépôt de la demande », et en se conformant à toutes les autres prescriptions de la présente loi, obtenir un brevet qui lui accorde l'exclusive propriété d'une invention qui n'était pas : a) connue ou utilisée par une autre personne avant que lui-même l'ait faite; b) décrite dans un brevet ou dans une publication imprimée au Canada ou dans tout autre pays plus de deux ans avant la présentation de la pétition ci-après mentionnée; c) en usage public ou en vente au Canada plus de deux ans avant le dépôt de sa demande au Canada.

[84] The Respondent cited many articles of prior art. All documents with a date on or before September 12, 1989, the filing date, have been reviewed. No document listed in the prior art disclosed the chemical composition of Latanoprost as defined in the '132 Patent for the treatment of glaucoma or ocular hypertension as further discussed below.

[85] In oral argument, the Respondent focused on two pieces of prior art, that is NOA Document No. 20, an article by E. Granstrom (the "Granstrom article") and NOA Document No. 25, Canadian Patent No. 986,926 (the " '926 Patent").

[86] The Granstrom article is entitled "Metabolism of 17-phenyl-18,19,20-trinor $PGF_{2\alpha}$ in the Cynomolgus Monkey and the Human Female". It was accepted on December 16, 1974 and published in January 1975.

[87] The same arguments were advanced with respect to the '926 Patent.

[88] Dr. Mitra opined that both the Granstrom article and the '926 Patent anticipate Latanoprost. He said that the Granstrom article, which was published in 1975, describes Latanoprost in the acid form and as a methyl ester. The acid form works in the body and according to Dr. Mitra, this means that Latanoprost is disclosed in the article.

[89] Dr. Mitra took a similar stance with respect to the '926 Patent, saying that this patent disclosed Latanoprost as an acid and an alkyl ester.

[90] Dr. Prestwich also addressed these two pieces of prior art, as well as NOA Document No. 13, British Patent Application No. 1,324,737 (the "'737 application"). He offered the opinion that according to the Granstrom article, NOA Document No. 20, a POSITA would know that a prostaglandin analog containing a phenyl ring and an ester was known. He expressed the opinion that this application disclosed "all the structural elements of the latanoprost molecule".

[91] Dr. Prestwich said that the Granstrom article, NOA Document No. 20, disclosed the acid form of Latanoprost as a metabolite of 17-phenyl-18,19,20-trinor-$PGF_{2\alpha}$.

[92] As for the '926 Patent, NOA Document No. 25, Dr. Prestwich said that this patent also discloses the chemical structure of the acid form of Latanoprost and further, that this patent discloses the method for making Latanoprost in the acid form and that the acid form can be esterified.

[93] Dr. Maxey and Dr. Neufeld, expert witnesses on behalf of the Applicants, disagree with the opinions expressed by the Respondent's expert witness. Dr. Maxey considered the opinions regarding the anticipatory effect of GB '737, NOA Document No. 13, the Granstrom article, NOA Document No. 20 and the '926 Patent, NOA Document No. 25. He said the opinions of both Dr. Mitra and Dr. Prestwich with respect to the GB '737 demonstrate a hindsight approach and further, that this patent application has nothing to do with the eye. He said that the Granstrom article does not disclose the isopropyl compound which is required by the '132 Patent in Claim 19.

[94] Likewise, Dr. Maxey said that the '926 Patent, NOA Document No. 25 does not disclose Latanoprost.

[95] Having regard to the conflicting evidence given by the expert witnesses for the Applicants and the Respondent, and having reviewed the documents in question, I am satisfied that none of the documents relied upon by the Respondent disclose the chemical composition of Latanoprost as defined in the '132 Patent for the treatment of glaucoma or ocular hypertension. There is not a single prior publication that discloses all the information that is necessary, for practical purposes, to perform the claimed invention without the exercise of any inventive skill.

[96] The legal test to establish anticipation requires the second person to show both disclosure and enablement in an anticipatory publication. The Court needs to consider the question of enablement if the prior publication meets the requirements of disclosure. That threshold has not been met in this case.

[97] The Respondent has not shown that any prior art anticipates the compound claimed in Claim 19. It is not necessary for me to discuss the matter of enablement.

ii) Obviousness

[98] In *Sanofi*, the Supreme Court of Canada set out the prevailing test for obviousness in Canada. This requires the Court to look at the following elements:

(a) identify the skilled person to whom the patent is addressed and the state of the art known to that person;

(b) identify the inventive concept in the claims, having regard to the disclosure if the claims do not expand on that concept;

(c) determine the differences between what was previously known and the inventive concept in the claims; and

(d) determine if those differences would be obvious without the benefit of hindsight.

[99] If the "obvious to try" test is appropriate, Justice Rothstein in *Sanofi* identified four additional but non-exhaustive factors to consider under the fourth step:

(a) Is it more or less self-evident that what is being tried ought to work? Are there an infinite number of identified predictable solutions known to persons skilled in the art?

(b) What is the extent, nature and amount of effort required to achieve the invention? Are routine trials carried out or is the experimentation prolonged and arduous, such that the trials would not be considered routine?

(c) Is there a motive provided in the prior art to find the solution the patent addresses?

(d) What is the course of conduct followed in arriving at the invention?

(1) The Person of Ordinary Skill in the Art and the Common General Knowledge

[100] There is really no dispute between the parties that the POSITA could be a medicinal or organic chemist or a pharmacologist, holding at least a Bachelor's degree, with some familiarity with prostaglandins and the ophthalmological field, as well as a medical doctor specializing in ophthalmology. The qualifications of the POSITA were addressed by Dr. Mitra, Dr. Podos, Dr. Prestwich and Dr. Neufeld.

[101] The relevant common general knowledge of the POSITA would include all of the prior art that was submitted by the Respondent. The experts for both parties agreed that prostaglandins have the potential to reduce IOP and that reduction of IOP was disclosed in the prior art, but that prostaglandins caused side effects such as hyperemia and irritation in the eye. These points were addressed by Dr. Fechtner, Dr. Mitra, Dr. Podos, Dr. Neufeld and Dr. Stjernschantz. The relevant common general knowledge would include awareness of the types of drugs on the market at the filing date of the '132 Patent, that is September 12, 1989.

[102] The Applicants greatly focused on the fact that Dr. Stjernschantz, as one of the inventors, was awarded the Proctor Medal at the ARVO Conference in 2000. Their emphasis upon the bestowal of this award for Dr. Stjernschantz' work with prostaglandins, including the invention of Latanoprost, undoubtedly illustrates achievement and professional respect from peers and others working in the field of ophthalmology.

[103] However, receipt of this award *per se* is not dispositive of the legal issues of obviousness and utility. These issues are subject to distinct legal tests in Canada. While the evidence about the Proctor Medal is interesting and forms part of the background, it is not a determinative answer to the allegations of invalidity that are in play here.

[104] With respect to the issue of the relevant common general knowledge of the POSITA, the Applicants' experts generally concurred that as of September 12, 1989 for Old Act Patent that the POSITA would know that there was not an available medication that contained a prostaglandin for the treatment of glaucoma or ocular hypertension. At that time, that is as of September 12, 1989, the state of the art was a drug called timolol that had to be administered to each eye between two and four times per day for the rest of a patient's life since glaucoma is a chronic condition – that requires continuing treatment. Both Dr. Neufeld and Dr. Fechtner addressed that point in their affidavits. As well, timolol causes systemic side effects such as cardio arrhythmia, asthma and emphysema. There were other drugs on the market, such as acetazolamide, that were effective in treating glaucoma or ocular hypertension with similar side effects to timolol, but none contained prostaglandins.

(2) The Inventive Concept

[105] The Applicants claim that the inventive concept of the claims in issue is the use of Latanoprost to reduce IOP in the treatment of glaucoma or ocular hypertension without causing substantial ocular irritation.

[106] The Respondent asserts that there is no "inventive concept", that the patent simply reveals an old use of an old compound.

[107] I am persuaded by the evidence of the Applicants, that is the evidence of Dr. Neufeld who said the following at paras. 46 and 70 of his affidavit:

> 46. Dr. Johan W. Stjernschantz and Dr. Bahram Resul, who were working for Pharmacia, invented a new compound, latanoprost (13,14-dihydro-17-phenyl-18,19,20 trinor- $PGF_{2\alpha}$-IE), a compound useful for the treatment of patients with glaucoma or ocular hypertension. This compound had a better side effect profile than $PGF_{2\alpha}$-IE, i.e. a compound that had been previously tested in humans (see Document **No. 127**). Latanoprost was shown to cause less ocular irritation and hyperemia.
>
> 70. The inventors conducted tests on latanoprost to determine the degree of ocular irritation in cats (see Table III of the '132 Patent), the degree of conjunctival hyperemia in rabbits (see Table IV of the '132 Patent), the IOP reducing effects in monkeys (see Table V of the '132 Patent) and in human volunteers (see Table VI of the '132 Patent). Based on the results of these tests, which I have explained above, the '132 Patent correctly and fully describes to the person of ordinary skill in the art, as of July 29, 1997 the use of latanoprost in the treatment of ocular hypertension or glaucoma without causing substantial ocular irritation.

[108] Prostaglandins, according to both Dr. Maxey and Dr. Prestwich, are naturally occurring molecules and are found in infinite combinations naturally. Synthetic types can be made with an infinite number of molecular attachments.

[109] It is either inconclusive or not clearly shown that prostaglandins, other than Latanoprost at that time, did not cause substantial ocular irritation to the extent that another type of prostaglandin was a viable option, except the fact that no other drug was on the market at that time**.** None of the

affidavits filed on behalf of both the Applicants and the Respondent conclusively show that there was another prostaglandin compound ready to be used as a drug on the market with good patient compliance since the side effects were so high as documented in the prior art. Pfizer and Pharmascience agreed that prostaglandins were a promising area to explore due to the reduction in IOP. However, as of the filing date, the IOP promise could not be separated from the side effects. More exploration was needed to conquer side effects and irritation.

[110] As of September 12, 1989, the general consensus was that prostaglandins were a promising area to explore in terms of IOP reduction but more work was required as the possibility of patient non-compliance was high, due to the side effects of hyperemia, irritation, burning and other intolerable reactions. The body of conflicting evidence, for example, NOA Doc. 64 Bito Patent EP 0,093,380 and NOA Doc. 25 Canadian Patent 986,926 does not show that the problem of side effects had been solved.

(3) Differences Between the "State of the Art" and the Inventive Concept of the Claim.

[111] As of September 12, 1989, the state of the art would have been the other medicines on the market that were used to treat glaucoma or ocular hypertension. Those medicines are timolol, epinephrine, acetazolamide and pilocarpine.

[112] Latanoprost, being a synthetic prostaglandin that was used to treat IOP without substantial ocular irritation, would be different from the state of the art since it is the first marketable

prostaglandin drug. The side effects of Latanoprost, in comparison with those of timolol, are limited to just ocular irritation. In this regard, I refer to the evidence of Dr. Buys who said that in her practice, Latanoprost is better tolerated than other prostaglandin analogues like bimatoprost and travoprost.

(4) Are these steps obvious to the skilled person or do they require a degree of invention?

(A) Is it self-evident that what is being tried ought to work?

[113] The evidence submitted by the witnesses for both parties shows that as of September 12, 1989, those working in the ocular field wanted to find any type of prostaglandin that would work well enough to be a marketable drug in any area of medicine. Many people were publishing articles describing experimental and theoretical data, thereby creating a vast bibliography, numbering in the thousands of documents about prostaglandins. According to Dr. Maxey, Dr. Stjernschantz, Dr. Mitra, Dr. Podos and Dr. Neufeld, it was easy to find a document pointing in one direction and several others that gave different conclusions.

[114] Finally, it is noteworthy that an almost infinite number of changes can be made to the natural prostaglandin, in this case the naturally occurring $PGF_{2\alpha}$. Furthermore, a POSITA making molecular changes to $PGF_{2\alpha}$-IE could not predict the result, since subtle changes in the addition or removal of molecules from its structure can result in major changes of biological activity.

[115] On these grounds, it would not have been obvious that what is being attempted, that is the chemical structure of Latanoprost, would work.

> *(B) What is the extent, nature and amount of effort required to achieve the invention? Are routine trials conducted or is the experimentation long and arduous, such that the trial would not be considered routine?*

[116] The parties tendered conflicting evidence on this point. Dr. Stjernschantz, on behalf of the Applicants, deposed that the synthesis of prostaglandin analogs was difficult and time-consuming. Experimentation was conducted to find the modification for $PGF_{2\alpha}$ that would yield the desired pharmacological benefits. Of course, Dr. Stjernschantz was more experienced than the POSITA and he had the advantage of having worked with Dr. Bito who was very prolific and one of the most knowledgeable researchers in this field.

[117] Dr. Podos, Dr. Prestwich and Dr. Mitra, witnesses on behalf of the Respondent, concluded that Latanoprost was obvious, in light of the prior art. They said that the testing that was performed was routine and inadequate and they question the reliability of the data recorded in the ‘132 Patent relative to that testing.

[118] Testing results shown on pages 22d and 25-29, that is Tables III to VI of the ‘132 Patent discloses test results on animals and healthy humans where Latanoprost demonstrates how it works in that it lowers IOP while having minimal irritative effects. The ‘132 Patent discusses why certain

animals were used as well as the grading used to compare compounds. The test results disclose dosage levels and the grading scale.

[119] Tables III to VI show comparative tests on Latanoprost and other compounds to determine the required outcomes. More specifically, the results on page 22d are from a test of Latanoprost in two healthy human volunteers and show a reduction in IOP over time wherein there is no reported occurrence of side effects such as hyperemia or ocular irritation. Table III is a compound comparative test to show the degree of ocular irritation in cats.

[120] Table IV compares the degree of conjunctival hyperemia for different compounds in rabbits, Table V compares the IOP reducing effects of different compounds in monkeys and cats. Table VI uses healthy humans to show IOP reducing effects for various compounds. The tests were criticized as failing to provide enough "experimental protocols" for the POSITA to reproduce the experiments.

[121] In spite of the conflicting opinions from the experiments for the Applicants and the Respondent, I find the evidence adduced by the Applicants to be more persuasive. I am satisfied from the evidence of Dr. Stjernschantz, in particular as set out in paras. 40 to 44 of his affidavit, that the POSITA following a similar course of conduct that may encompass routine experimentation, using the common general knowledge and prior art, and acting in a manner similar to that followed by Dr. Stjernschantz, would not obtain the same results. Indeed, a competitor looking at data he performed from comparable types of experimentation that had been performed by Dr. Stjernschantz

recorded a different conclusion about the viability of using synthetic $PGF_{2\alpha}$ compounds. In this regard, I refer to the paper written by D. F. Woodward et al entitled "Prostaglandin $F2_{\alpha}$ Effects on Intraocular Pressure Negatively Correlate with FP-Receptor Stimulation, published August 1989, NOA document 107.

(C) Is there a motive in the prior art to find the solution that the patent addresses?

[122] As stated above, many people wanted to find a marketable drug using prostaglandins for the treatment of glaucoma and ocular hypertension. Prostaglandins had been identified by prior art as having great efficiency in the reduction of IOP. However, prior to the discovery of Latanoprost, the general consensus was that the irritative effects of prostaglandins could not be adequately removed in order to provide for a useable product.

(D) What is the course of conduct that was followed in arriving at the invention?

[123] The mixing and reacting of chemicals was used, along with experimentation on animals and humans, in order to obtain data for analysis. The results of the testing are set out in Tables III, IV, V and VI. The tables address testing in cats, rabbits, monkeys or cats and humans, respectively.

[124] The difference here, between the Applicants and its competitors is in the consolidation of the data, the analysis of the data obtained and the conclusions drawn from the experimentation which was done.

(5) Conclusion on Obviousness

[125] I find that Latanoprost would not have been obvious to the ordinary skilled person**.** I conclude that the allegation of obviousness is not justified.

iii) Insufficiency of the Specification

[126] The concept of utility was discussed by the Supreme Court of Canada in its decision in *Consolboard Inc. v. MacMillan Bloedel (Saskatchewan) Ltd.*, [1981] 1 S.C.R. 504 at 521-527. At p. 525, the Supreme Court succinctly explained the concept of utility as follows:

> There is a helpful discussion in *Halsbury's Laws of England*, (3rd ed.), vol. 29, at p. 59, on the meaning of "not useful" in patent law. It means "that the invention will not work, either in the sense that it will not operate at all or, more broadly, that it will not do what the specification promises that it will do". There is no suggestion here that the invention will not give the result promised. The discussion in *Halsbury's Laws of England*, *ibid*., continues:
>
> > ... the practical usefulness of the invention does not matter, nor does its commercial utility, unless the specification promises commercial utility, nor does it matter whether the invention is of any real benefit to the public, or particularly suitable for the purposes suggested...
>
> and concludes:
>
> > ... it is sufficient utility to support a patent that the invention gives either a new article, or a better article,

> or a cheaper article, or affords the public a useful choice. [Footnotes omitted by S.C.C.]

[127] Recently, in *Pfizer 2008* at para. 62, the Federal Court of Appeal interpreted subsection 27(3) of the Act as it now stands as meaning that "[T]here is no requirement that a patentee explain in the disclosure why and how his invention is useful."

[128] Pharmacience alleges that the '132 patent is invalid because it does not provide sufficient information about the invention as required under subsection 34(1) of the Old Act Patent, which is now found under subsection 27(3) of the Act. This position was taken by Dr. Mitra and Dr. Podos, on behalf of the Respondent. The Respondent's witnesses claim that the POSITA would not be able to draw any valid scientific conclusions from the '132 Patent regarding the efficacy of Latanoprost as compared to the other compounds listed in the tables disclosed because basic scientific practices were not followed, for example no long term studies were recorded, the choice of animal and human models was inadequate, and the '132 Patent does not adequately disclose the definition of irritation and background data to support the claim that the Latanoprost is inventive.

[129] The relevant parts of subsection 34(1) of the Old Act Patent require that the specification of an invention must:

> 1. fully describe the invention, its operation and use;
>
> 2. set out clearly the various steps in the process or method of construction of the invention to enable any person skilled in the science to which it pertains to make the invention and use it.

[130] Subsection 27(3) of the Act states:

(3): The specification of an invention must	(3) Le mémoire descriptif doit:
(a) correctly and fully describe the invention and its operation or use as contemplated by the inventor;	a) décrire d'une façon exacte et complète l'invention et son application ou exploitation, telles que les a conçues son inventeur;
(b) set out clearly the various steps in a process, or the method of constructing, making, compounding or using a machine, manufacture or composition of matter, in such full, clear, concise and exact terms as to enable any person skilled in the art or science to which it pertains, or with which it is most closely connected, to make, construct, compound or use it;	b) exposer clairement les diverses phases d'un procédé, ou le mode de construction, de confection, de composition ou d'utilisation d'une machine, d'un objet manufacturé ou d'un composé de matières, dans des termes complets, clairs, concis et exacts qui permettent à toute personne versée dans l'art ou la science dont relève l'invention, ou dans l'art ou la science qui s'en rapproche le plus, de confectionner, construire, composer ou utiliser l'invention;
(c) in the case of a machine, explain the principle of the machine and the best mode in which the inventor has contemplated the application of that principle; and	c) s'il s'agit d'une machine, en expliquer clairement le principe et la meilleure manière dont son inventeur en a conçu l'application;
(d) in the case of a process, explain the necessary sequence, if any, of the various steps, so as to distinguish the invention from other inventions.	d) s'il s'agit d'un procédé, expliquer la suite nécessaire, le cas échéant, des diverses phases du procédé, de façon à distinguer l'invention en cause d'autres inventions.

[131] The Federal Court of Appeal in *Pfizer 2008* reviewed the "sufficiency" requirement under subsection 27(3) of the Act and held that the patent must answer only two questions to meet the sufficiency requirement for the purpose of subsection 27(3):

1. What is the invention? and

2. How does it work?

[132] The Court, at para. 36, refers to *Hughes and Woodley on Patents*, 2nd ed., Volume 1, at 333 where the authors state:

> Insufficiency is directed to whether the specification is sufficient to enable a person skilled in the art to understand how the subject mater of the patent is to be made [...] An allegation of insufficiency is a technical attack that should not operate to defeat a patent for a meritorious invention; such attack will succeed where a person skilled in the art could not put the invention into practice. [Emphasis in original]

[133] The relevant date for construing the '132 Patent with respect to the sufficiency of the disclosure and the POSITA is the date that the patent was placed open for public inspection which is July 29, 1997 under the Act.

[134] The Applicants' witnesses agree that the POSITA as of July 29, 1997 would know from the '132 Patent the subject matter of the invention, its operation and use as contemplated by the inventors and that the patent fully describes Latanoprost for the use in treating ocular hypertension or glaucoma without causing substantial ocular irritation. The '132 Patent explains why each

animal model was used, how each test was graded for comparison, IOP effects and irritation effects. The patent shows how to make the invention and also discloses what the invention is.

[135] Finally, one witness testifies that Dr. Mitra is wrong in that it is not relevant to disclose the biological mechanism of action to demonstrate how the invention works since, frequently, clinical drugs sold on the market are used for years before it is conclusively found the biological mechanism of action. The '132 Patent shows that Latanoprost reduces IOP without substantial ocular irritation and that is enough.

[136] In *Pfizer Canada Inc. et al. v. Canada (Minister of Health) et al.* (2008)**,** 326 F.T.R. 88 (F.C.)**,** Justice Hughes reviewed the Canadian law as to utility at paras. 93 – 94 as follows:

> 93 The **Patent Act**, supra, in defining an "*invention*" in section 2 requires that the invention be "*new and useful*". There has not been a great deal of discussion by the higher Courts in Canada as to the concept of "*utility*". That concept at times seems to be conflated with that of "*sufficiency*", that is, does the patent provide sufficient description such that a person skilled in the art can make something that is workable. Utility also seems at times to be conflated with the concept of "*claims broader than the invention*", that is, while the patent describes something that is useful, it has claimed something more than that and the something more is not useful.
>
> 94 A good summary of the Canadian law as to utility, which is representative as to the law even today, was given by Strayer, J., in his Reasons in ***Corning Glass Works v. Canada Wire & Cable Ltd.*** (1984), 81 C.P.R. (2d) 39 (F.C.T.D.) at page 71:
>
> > "The legal position asserted by the defendant is perhaps best represented by a passage which counsel cited from ***Minerals Separation North American Corp. v. Noranda Mines Ltd.*** (1950), 12 C.P.R. 99 at p. 111-2 [1947] Ex. C.R. 306 at p. 317, 6 Fox Pat. C. 130, where, in speaking of the description of the

> invention which must be set out in the disclosures, Thorson P. said:
>
> > 'The description must also give all information that is necessary for successful operation or use of the invention, without leaving such result to the chance of successful experiment, and if warnings are required in order to avert failure such warnings must be given. Moreover, the inventor must act uberrima fide and give all information known to him that will enable the invention to be carried out to its best effect as contemplated by him.'
>
> To the same effect see also ***Hatmaker v. Joseph Nathan & Co. Ltd.*** (1919), 36 R.P.C. 231 at 237 (H.L.). Counsel also cited ***Hoechst Pharmaceuticals of Canada Ltd. et al. v. Gilbert & Co. et al.*** (1965), 50 C.P.R. 26 at p. 58 [1966] S.C.R. 189, at p. 194, 32 Fox Pat. C. 56. In that case Hall J. for the court invalidated certain claims because they covered every possible member of a class of compounds whether any given member could conceivably be made or not. The patentee was held to have overclaimed in this respect."

[137] The foregoing review of the law means that a patentee must only answer what the invention is and how it works, not how well it works.

[138] In the '132 Patent, I believe the Applicant has sufficiently disclosed the invention by having the methods to make Latanoprost as found in the specification, the specification disclosing and the testing results showing how Latanoprost works and at the very least claim 19 for Latanoprost which is a compound per se claim and finally claims 31, 37 and 38 are to the use of Latanoprost.

iv) Lack of Utility

[139] The date for determining utility for an Old Act Patent is the filing date, that is September 12, 1989.

[140] The Applicants rely on the evidence of Dr. Neufeld and of Dr. Stjernschantz to support the claim that the patent has utility. The Respondent relies on the evidence of Dr. Mitra to say that it does not have utility. The key issue of Dr. Mitra's criticisms is that the patent promises an absence of adverse side effects and that it does demonstrate utility.

[141] The Applicants refer to the evidence of Dr. Neufeld, Dr. Stjernschantz, Dr. Fechtner and Dr. Maxey to show that the '132 Patent has utility. The Applicants submit that the evidence of the Respondent that is the affidavit of Dr. Mitra, is unreliable because Dr. Mitra based his opinion of a lack of utility upon an erroneous construction of the patent. According to Dr. Mitra, the Patent promises an "absence of adverse effects" and it does not meet that promise.

[142] The Applicants' witnesses, that is Dr. Neufeld and Dr. Stjernschantz, say that Latanoprost shows a reduction in ocular irritation. As the witnesses assert, Claim 12 only refers to a reduction of IOP without substantial ocular irritation. That does not refer to the elimination of all side effects.

[143] Further, the patent itself shows utility. I refer to pages 7 and 8 where the patent demonstrates what the invention is by stating the use for the treatment of glaucoma or ocular hypertension where the irritating effects are reduced and treatment is given with 1 or 2 drops per eye.

[144] Example 9 on page 16 of the ‘132 Patent shows how to prepare Latanoprost. Page 22 of the patent demonstrates what the invention is by stating that IOP is lowered with minimal side effects. Page 23 shows the chemical structure of Latanoprost, again what the invention is.

[145] Page 22d and pages 25 to 29 disclose test results on animals and healthy humans where Latanoprost demonstrates how Latanoprost how it works in that it reduces IOP with minimal irritative side effects. Finally, the claims in issue disclose Latanoprost.

[146] The ‘132 Patent demonstrates utility, discloses what the invention is and how it works, as claimed. Furthermore, the disclosure requirements are met as of the issue date. Disclosure can be assessed against documents published between September 12, 1989 and July 29, 1997. Dr. Fechtner referred to studies that were done comparing Latanoprost to timolol and discussing the effectiveness of Latanoprost. These articles were attached as exhibits to his affidavit.

[147] Dr. Neufeld also discussed that he disagrees with both Dr. Podos and Dr. Mitra in that he believes the data provided in the ‘132 Patent is enough to conclude that Latanoprost will be useful in the treatment of ocular hypertension or glaucoma.

[148] In the result, I am satisfied that the ’132 Patent offers the public a useful choice from what was offered as the state of the art at the time of filing the patent application and considering the prior art that was available to the POSITA.

v) Lack of Sound Prediction

[149] The doctrine of sound prediction was reviewed by the Supreme Court of Canada in *Apotex Inc. v. Wellcome Foundation Ltd.*, [2002] 4 S.C.R. 153. At para. 46, Justice Binnie said that where the invention is for a new use for an old product, the utility that is required for patentability must either be demonstrated or a sound prediction based on the information and expertise then available.

[150] The doctrine of sound prediction has three elements:

i. there must be a factual basis for the prediction;

ii. the inventor must have as the date of the patent application a "sound" line of reasoning from which the desired result can be inferred from the factual basis;

iii. there must be proper disclosure.

[151] The date from which sound prediction is to be considered is the filing date of the patent application, that is September 12, 1989. In this regard, see *Aventis Pharma Inc. v. Apotex Inc.* (2005), 43 C.P.R. (4th) 161 (F.C.), aff'd (2006), 46 C.P.R. (4th) 401 (F.C.A.).

[152] While I have found that the '132 Patent has utility, I will briefly address the issue of sound prediction utility.

[153] The date and the example of the '132 Patent provides a sound line of reasoning and disclosure. Page 16 of the patent discloses how to make Latanoprost. Page 23 shows a diagram of

the Latanoprost molecule. Pages 22d and 29 disclose test results in healthy humans. Pages 25 to 29 disclose test results where Latanoprost was tested on animals.

[154] As well, Dr. Mitra Dr. Podos, Dr. Stjernschantz and Dr. Neufeld addressed these tests. While Dr. Mitra and Dr. Podos criticize the test data, I am satisfied that the evidence tendered by Dr. Neufeld supports the claim for sound prediction utility.

vi) Overbreadth

[155] The Respondent argues that the '132 Patent is invalid because the claims in issue are broader than the invention claimed.

[156] The test for overbreadth is set out in *Lowell Manufacturing Co. and Maxwell Ltd. v. Beatty Bros. Ltd.* (1962), 41 C.P.R. 18 (Ex. Ct.) at p. 66 where the Court said that "[i]f the claims read fairly on what has been disclosed and illustrated in the specification and drawing, as they do, they are not wider than the invention…".

[157] Relying on the evidence of Dr. Maxey and Dr. Neufeld, the Applicants submit that the claims in issue are not broader than the invention disclosed. The Respondent, relying on the evidence of Dr. Mitra, takes the contrary view.

[158] Dr. Mitra says that Claim 12 is limited to compounds that do not cause ocular irritation, even though these compounds may well cause hyperemia. He says Claim 19 is overbroad because

there is no use of the compound for “other disease states”, as well as no disclosure dealing with the prevalence of irritation or hyperemia.

[159] However, I prefer the evidence of the Applicants. The Respondent’s arguments are based upon the fact that hyperemia was not included in the claims. It was within the discretion of the inventors of the ‘132 Patent to forego making a claim in relation to hyperemia. The claims in issue are not overbroad because the inventors decided not to claim a particular benefit.

IV. CONCLUSION

[160] In conclusion, I am satisfied that the Applicants have demonstrated on a balance of probabilities that the allegations of invalidity set out by the Respondent in its NOA dated November 2, 2007 respecting the ‘132 Patent are not justified. It follows that the Gillette Defence is not available to the Respondent.

[161] Accordingly, the Applicants are entitled to an Order of Prohibition relative to the ‘132 Patent and an Order will issue in that regard, with costs to the Applicants.

JUDGMENT

THIS COURT ORDERS AND ADJUDGES that the application for an Order of Prohibition in respect of the 1,339,132 Patent is granted with costs to the Applicants.

"E. Heneghan"
Judge

FEDERAL COURT

SOLICITORS OF RECORD

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