Federal Court  Cour fédérale

Date: 20151110

Docket: T-2072-12

Citation: 2015 FC 1261

Toronto, Ontario, November 10, 2015

PRESENT: The Honourable Mr. Justice Hughes

BETWEEN:

AMGEN CANADA INC. AND AMGEN INC.

Applicants

and

APOTEX INC. AND
THE MINISTER OF HEALTH

Respondents

JUDGMENT AND REASONS

[1] This is an application brought under the provisions of the *Patent Medicines (Notice of Compliance) Regulations*, SOR/93-133, as amended, ("*NOC Regulations*"). The Applicants are seeking to restrain the Respondent, The Minister of Health ("Minister") from issuing a Notice of Compliance to the Respondent, Apotex Inc., in respect of its proposed filgrastim single-use, pre-filled syringes for parenteral administration in 300 µg/0.5 mL and 480 µg/0.5 mL strengths ("Apotex Product") until the expiry of Canadian Letters Patent No. 1,341,537 ('537 patent).

[2] For the Reasons that follow, Amgen has not satisfied me that Apotex's allegation that Claim 43 of the '537 patent is invalid for obviousness is not justified. Therefore, the application for prohibition will be dismissed.

[3] The following is an Index to the topics covered in these Reasons, by paragraph number:

I. PARTIES AND BACKGROUND

[4] The Applicant, Amgen Canada Inc., has listed the '537 patent on a list kept by the Minister under the provisions of the *NOC Regulations*. As such, Amgen Canada is referred to in those regulations as a *"first person"*. Amgen Canada has already secured a Notice of Compliance from the Minister in respect of a product it calls Neupogen which is a sterile solution containing a drug known as filgrastim in 300 μg/mL and 600 μg/mL strength for subcutaneous or intravenous administration.

[5] The other Applicant, Amgen Inc., is the owner of the '537 patent. Unless otherwise stated, I will refer to the Applicants collectively as Amgen.

[6] The Respondent, Apotex Inc., is a Canadian drug company generally referred to as a generic, and referred to in the *NOC Regulations* as a *"second person"*. It has applied to the Minister for a Notice of Compliance to sell the Apotex Product which is a generic version of the Amgen Neupogen product. The *NOC Regulations* require that Apotex serve Amgen a Notice of Allegation respecting the '537 patent, which it did by letter dated October 2, 2012. Apotex alleged that it would not infringe that patent and that the patent is invalid for a variety of reasons as set out in that Notice.

[7] Amgen, having received Apotex's Notice of Allegation, commenced these proceedings by filing a Notice of Application on November 16, 2012. While the *NOC Regulations* provide that, ordinarily, the Court must issue an Order within two years of that filing date, that period has

been extended by an Order of this Court dated October 7, 2013 to sixty (60) days from the end of the hearing of this application. The hearing ended on October 30, 2015.

[8] The Minister, while served with the relevant papers, took no active part in this proceeding.

II. THE EVIDENCE

[9] As is usual in proceedings of this kind, evidence took the form of affidavits and transcripts of the cross-examinations with exhibits as identified therein. A Confidentiality Order was made but, at the hearing, the parties waived any claim to confidentiality.

A. *Amgen's Fact Witnesses*

[10] Amgen filed the affidavits of six persons who testified as to the developments at Amgen leading to the patent at issue. Each of them, except Ms. Fare, was cross-examined. They are:

- Thomas Boone, sworn March 12, 2013. He was Vice President of Protein Sciences at Amgen before retiring in 2009. He currently consults for several companies including Amgen. He was involved in the development of filgrastim as a Research Associate working under the supervision of the named inventor, Dr. Larry Souza, and gives evidence on the research and development that took place. He discusses the development of filgrastim, and reviews protein synthesis, transcription and translation, and methods of gene sequencing.

- (Dr.) Arthur M. Cohen, sworn March 8, 2013. He is a retired Amgen employee, having left in 2001 holding the title of Director of the Pharmacology Group. During the development of filgrastim, he held the title of Research Scientist and worked as a

pharmacologist conducting in vivo studies. He has provided evidence on the *in vivo* studies conducted using filgrastim in hamsters. He discusses *in vivo* testing methodologies including lab tests performed on the animals.

- Joan A. Fare (Brezewski), sworn March 8, 2013. She is a retired Amgen employee, having left the company in 2001 holding the title of Associate Director with the Compliance Group. She was involved in the development of filgrastim as a Research Associate. She did not report directly to the named inventor, but assisted him in culturing a cell line and took direction from him while doing so. Her evidence relates to the culturing of cells as part of the development of filgrastim.

- (Dr.) Hsieng Lu, sworn March 7, 2013. She is a biochemist currently working at Amgen in the protein sequencing group. She began working at Amgen in 1984, part-way through the development process. She provides evidence on the protein sequencing aspect of that process.

- Stuart L. Watt, sworn March 12, 2013. He is a Vice President of Law and the Intellectual Property Officer at Amgen. He gives evidence respecting the '537 patent and the US patents for which a priority claim is made. He explains circumstances as to why two individuals (Dr. Lawrence Souza, the named inventor, and Dr. Janice Gabrilove, a scientist at the Sloan-Kenning Institute involved in the development of filgrastim) have not submitted affidavit evidence. He attests to several awards won by Amgen for filgrastim.

- (Dr.) Krisztina M. Zsebo, sworn March 12, 2013. She is a biochemist and Chief Executive Officer and Director of Celladon Corporation. She had worked as a research scientist at Amgen from 1984 to 1992. She testifies as to her involvement in the development of filgrastim including the production of culture medium, *in vitro* testing, *in vivo* testing, and helping express a mammalian version (as opposed to the E. coli version) of the protein.

B. *Amgen's Expert Witnesses*

[11] Amgen filed the affidavits of five persons as experts, each of whom was cross-examined. No challenge was raised as to their claimed expertise. They are:

- (Dr.) Connie Eaves, sworn September 24, 2014. She is a Distinguished Scientist in the Terry Fox Laboratory, part of the British Columbia Cancer Agency. She is an independent researcher and has been involved in studies involving filgrastim. She claims to be an expert in haematopoietic research (research about how blood cells are generated and differentiate). Her evidence relates to who the person of ordinary skill in the art (POSITA) is, what the state of the art was in 1985, what the patent promises, whether the patent was useful, and explains some terms including *"pluripotent"*.

- Randolph Wall, sworn September 29, 2014. He is a Distinguished Professor of Microbiology, Immunology and Molecular Genetics at the Molecular Biology Institute, University of California Los Angeles (UCLA) and the David Geffen School of Medicine at UCLA. He is also an Associate Director of the Broad Center of Regenerative Medicine and Stem Cell Research at UCLA. He claims expertise in molecular biology, genetics, immunology and cancer. He provides relevant scientific background information, information about the POSITA including their common general knowledge, the inventive concept of the '537 patent, and he speaks to anticipation and obviousness.

- (Dr.) Ross MacGillivray, sworn September 29, 2014. He is a Professor of Biochemistry & Molecular Biology in the Faculty of Medicine at the University of British Columbia (UBC), as well as a researcher at the UBC Centre for Blood Research. He claims expertise in blood clotting factors and blood proteins. He provides evidence relating to who the POSITA is; what Claim 43 of the '537 patent covers; when the research team had completed the necessary steps to make the invention; whether the US patent based on which they are claiming priority is for the same invention; and whether the invention was enabled, obvious, double patenting, or void under s. 53, as alleged by Apotex.

- (Dr.) Hans A Messner, sworn September 24, 2014. He is a Professor of Medicine at the University of Toronto and staff physician at the Princess Margaret Cancer Centre. He claims expertise in haematopoiesis and stem cell transplantation. He provides background information on haematopoiesis and scientific tests used to study haematopoiesis. He also provides an opinion on the promised utility of the '537 patent, including how the POSITA would have interpreted certain terms in the mid-1980's, whether utility was demonstrated or soundly predicted, and current clinical indications and utility of filgrastim.

- David W. Speicher, sworn September 29, 2014. He is the Caspar Wistar Professor of Computational and Systems Biology, the Director of the Proteomics/Mass Spectrometry Facility, and the Co-chair of the Molecular & Cellular Oncogenesis Program, and the Director of the Center for Systems and Computational Biology at the Wistar Institute in Philadelphia. He claims to be an expert in protein chemistry and sequencing. He provides evidence on allegations of obviousness, the POSITA, and what Example 1 in the '537 patent describes and whether it would have been obvious to the POSITA.

[12] Amgen also filed two affidavits of a law clerk, Diane Zimmerman, which served to make of record a number of documents. She was not cross-examined.

C. *Apotex's Witnesses*

[13] Apotex filed the affidavits of four persons as experts, each of whom was cross-examined. No challenge was raised as to their claimed expertise. They are:

- (Dr.) Norman Iscove, sworn August 22, 2013. He is a Senior Scientist at the McEwen Centre for Regenerative Medicine, a Scientist at the Program for Regenerative Medicine at the McLaughlin Centre for Molecular Medicine, and a Senior Scientist at the Ontario Cancer Institute, all located in Toronto. He claims expertise in genetics, molecular biology, experimental hematology and stem cells. His evidence relates to defining the

POSITA, what the POSITA would understand the '537 patent to teach, and whether this invention was useful or soundly predicted on August 25, 1986. He also comments on cell culture work and colony forming assays in response to some of Amgen's evidence. He was asked to compare the '537 Patent with the US Patents from which it claims priority, to provide general scientific background, and to comment on the motivation of the POSITA to obtain the claimed invention at the priority dates.

- (Dr.) James L. Manley, sworn August 15, 2013. He is the Julian Clarence Levi Professor of Life Sciences in the Department of Biological Sciences at Columbia University. His research is focused on mechanisms and regulation of gene expression in mammalian cells. His evidence relates to the state of the art and the interest in producing recombinant human proteins on August 23, 1985 and March 3, 1986, determining who the POSITA is, what the POSITA would understand the '537 patent to claim and what the inventive concepts are, whether ingenuity would have been required of the POSITA at various points in time and with or without materials from Sloan-Kettering, and whether disclosure existed and if that disclosure enabled one to make use of the invention.

- William Stratton Lane, sworn August 14, 2013. He is the Manager of the Harvard University Mass Spectrometry & Proteomics Resource Laboratory. He claims to be an expert in proteomics (the study of proteins, in particular their structure and function). He provides evidence on the state of the art related to, and interest in sequencing purified natural proteins on August 23, 1985 and March 3, 1986. He was asked who the POSITA would be, what the subject matter of the '537 patent would be understood to have been, and whether inventive ingenuity would have been required. He also comments on some of Amgen's evidence.

- (Dr.) Robert S. Negrin, sworn May 12, 2015. He is a haematologist and Professor of Medicine (Blood and Marrow Transplantation) at the Stanford University School of Medicine. He claims to be an expert in hematopoiesis, hematopoietic growth factors, and the treatment of blood disorders including some cancers. He was asked who the POSITA would be, what they would have understood the subject matter of the '537 patent to be on its publication date (July 31, 2007), and whether the '537 patent asserted that the

polypeptides would be useful in some way. He discusses how the POSITA would have read two other Canadian Patents (Nos.1,297,004 and 1,297,005), and whether the inventive concepts were the same as in the ‘537 patent. These answers were all provided to counsel by phone. He read the affidavit of Dr. Carl Anthony who was unable to testify in this proceeding due to illness, and adopted Dr. Anthony’s opinions as his own.

[14] In addition, Apotex filed the affidavit of Samira Ali, an investigator employed by Canpro King-Reed LP, operating as CKR Global Investigations. She testifies to unsuccessful attempts to contact or to convince certain individuals, including Dr. Gabrilove, to testify. She was not cross-examined.

[15] Each of Amgen and Apotex criticised some of the expert evidence of the other on various grounds such as undue participation by lawyers in the preparation of the affidavits or failure to direct the evidence to the “real” issues and so forth. These proceedings are intended to be summary but, in reality, are anything but summary. They are, at best, summary trials or mini-trials wherein the Court is asked to consider and rule upon complex scientific matters, decide upon opposing views of sophisticated experts, and deal with complex issues of law, often within a limited timeframe. Something has to be done about this before the system breaks down completely. Given that the Court has not seen any witness in person, it is unfair to ask the Court to make findings as to the propriety of a witness’s conduct or the candor of a witness’s evidence. I will not make any rulings as to the propriety of any witness or their evidence. My decision is based on the evidence itself as I see it in the Record.

III. WHAT DID AMGEN DO

[16] I am satisfied that the ‘537 patent fairly sets forth the steps taken by the Amgen inventor, Dr. Souza, and those working under him, to accomplish what they set out to do. The goal was to take the *“naturally occurring”* protein reported by Dr. Karl Welte at Sloan-Kettering Institute (“SKI”) and to create, by recombinant means, a protein having some or all of the amino acid sequence and some or all of the biological properties of that protein so as to have available, in sufficient quantities, a recombinant protein which showed promise for further research.

[17] As stated at pages 2 and 3 of the patent, a culture medium of a human bladder carcinoma cell line called 5637 had been deposited by another party, presumably SKI, in a Culture Collection in Maryland. As noted in pages 3 and 5, certain restrictions against commercial use appear to apply in respect of access to that culture. The record does not clearly state what those restrictions are.

[18] Welte at SKI had purified from this culture a protein he called pluripotent hematopoietic colony-stimulating factor or pluripotent CSF yielding certain samples in purity ranging from 85% to 95% (patent page 10) which were provided to Amgen. There is no evidence that Welte or anyone else at SKI had determined any of the amino acid sequence. Welte’s paper suggests that some sequencing had been initiated but does not report it. The paper reports a variety of biological characteristics of the protein including a molecular weight of 18,000 daltons.

[19] The ‘537 patent, at pages 10 and 11, Tables I and II, reports that Amgen endeavoured to determine the amino acid sequence using 3-4 μg and 5-6 μg of samples of Welte’s material. In the first instance, Table I, just over ten amino acids were sequenced. In the second instance, Table II, almost 20 amino acids were identified with a few more possibly identified. There was a third run using Welte’s material which yielded no data.

[20] Because these results did not provide a sufficiently long, unambiguous sequence, Amgen undertook to make and purify its own material starting with cells from the 5637 line. This process is set out at pages 11 to 15 of the patent. Material of 85 ± 5% purity was thereby obtained in a quantity of 150-300 μg. Samples of this material were subjected to amino acid sequencing in Run # 4 and #5. Run #4 resulted in 31 amino acids being identified (also referred to as called or sequenced) and Run #5, in 44 acids being identified with a further three potentially identified (Tables III and IV).

[21] Amgen wanted to identify the DNA which was producing the protein of interest. It knew that it was produced by a gene (consisting of a DNA sequence) found in the host cell but not which one. Amgen created artificial DNA which is referred to as cDNA by a process called reverse transcription of mRNA. That process needs not be discussed here. Several different kinds of cDNA were assembled in “libraries”. The goal was to try to locate the particular cDNA coding for the protein of interest within the many candidates found in the libraries. Amgen accomplished this by looking at the 40 or so amino acids identified in the protein sample (Table IV of the patent) and fixing upon a length of ten or so amino acids within that strand from which a *“probe”* could be created. The probe was itself a string of molecules called oligonucleotides

which would adhere to a portion of the cDNA coding for the identified amino acid sequence of the protein. While the evidence shows that there were two or three apparent places along the 40 or so identified amino acid chain from which a probe might be created, one was selected by Amgen using the amino acids at residues 23-30. To reduce the number of potential probes needed, Amgen used the *"inosine"* technique recently disclosed by Takahashi and others, as set out at pages 17 and 18 of the patent.

[22] By using the probes, several potential cDNA candidates were selected from the cDNA libraries. Those candidates were examined and the most suitable candidate was analysed and sequenced. These processes are described at pages 15 to 33 of the patent.

[23] Example 6 illustrates the assembly of various pieces of genetic material so as to produce the gene that makes the protein in question.

[24] Example 7 illustrates how the gene is then replicated (expressed) in a bacteria (*E. coli*) medium so as to provide the desired protein in quantity. Example 9 does the same in a COS (monkey kidney derivative) medium.

[25] Example 10 illustrates the steps taken to compare several of the biological properties of the resultant protein with those of the naturally occurring protein obtained by Welte. Comparison is made in respect of molecular weight, thymidine uptake, WEHI differentiation, bone marrow cell differentiation, cell binding assays, immunoassay, serine analog bioassays, and an *in vivo* bioassay.

[26] Thus, the steps taken and tests done show that the protein produced from the recombinant DNA has some or all of the amino acid sequence of the natural: the first 40 are the same and, given the strong resemblance in the bioassay tests and the method by which it was made, it is inferred that the remainder are the same or nearly the same. The recombinant product has the same or nearly the same biological characteristics as the natural.

[27] The evidence adduced by Amgen from the witnesses Boone, Cohen, Fare, and Lu, all of whom participated in this work at Amgen, clearly identifies and confirms that Amgen did the work as set out in the patent. Apotex argued that Amgen did not provide an affidavit from the inventor, Dr. Souza, or from persons working at SKI such as Dr. Gabrilove. I do not find that such evidence was essential. If Apotex wanted the evidence of these persons, there are means, such as letters rogatory, to obtain it. Apotex made no effort in that regard.

IV. PATENT AT ISSUE

[28] At issue is Canadian Letters Patent No. 1341537 (the '537 patent).

[29] The '537 patent is entitled *"Production of Pluripotent Granulocyte Colony – Stimulating Factor"*. It names Lawrence M. Souza of the United States as the inventor, and was issued and granted to Kirin-Amgen, Inc. of the United States on July 31, 2007.

[30] This patent is somewhat unusual in that it is one of the last to issue under the "old" pre-October 1, 1989 regime. All patent applications filed subsequent to that date fall under the provisions of the "new" *Patent Act*, RSC 1985 c. P-4, regime. The citation of the *Patent Act*

remains the same; one must look at the date that the application for the patent was filed in the Canadian Patent Office to determine if the patent at issue falls under the "old" or the "new" regime. The application for the '537 patent was filed in the Canadian Patent Office on August 25, 1986, thus it is governed by the terms of the "old", pre-October 1, 1989, *Patent Act*.

[31] Among the matters governed differently by the "old" *Patent Act* is the term of the patent, which is seventeen (17) years from the date of grant. The '537 patent was granted on July 31, 2007, thus its term will expire on July 31, 2024. The application remained in the Patent Office almost twenty-one (21) years, an unusually long time.

[32] Novelty (anticipation) of an "old" *Act* patent is to be determined as of two years before the Canadian filing date in dealing with publications and public use. The filing date of the '537 patent was August 31, 1985, thus novelty is to be determined as of August 31, 1983. If the allegation is that someone else knew or used the invention before the inventor named in the patent did so, then that other person must have made a public disclosure or use of that invention before the application date of the patent (see sections 27(a) and 61(1)(a) of the "old" *Patent Act*). Here, the allegation is that persons at the Sloan-Kettering Institute and others in Australia, had such prior knowledge and published their knowledge in scientific journals in papers called "Welte" and "Nicola".

[33] Obviousness of an "old" *Act* patent is to be determined as of the "date of the invention". The date of invention of the '537 patent is presumptively taken to be the Canadian filing date, August 25, 1986. That date can be established at an earlier date with reference to foreign priority

applications if the substance of the description is essentially the same as the Canadian patent. Here, two United States patent applications were named as priority applications; United States Application No. 768,959, filed August 23, 1985, and United States Application No. 835,548, filed March 3, 1986. An even earlier date of invention can be proven upon evidence before the Court. In the present case, Amgen relied upon the earlier of two priority filing dates, namely August 23, 1985, and Apotex was apparently content to deal with obviousness as of that date.

[34] The patent is to be read, through the eyes of a person skilled in the art (POSITA or PSA), as of the date it was first made public. Under the "old" *Patent Act*, a patent application is never made public so that the public first sees the patent is the day that it is issued and granted. Here, that date is July 31, 2007; see *Whirlpool Corp. v Camco Inc.*, [2000] 2 SCR 1067 at para. 55 and *Free World Trust v Électro Santé Inc.*, [2000] 2 SCR 1024 at para. 54. Amgen raised the question as to whether the patent was to be read as of the date of grant but through the eyes of a POSITA who was aware that the patent description had been written in 1985, and thus used the language of that date. This question, though intriguing, was not required to be pursued in the context of the issues raised at the hearing.

[35] Whether the patent is an "old" or "new" *Patent Act* patent, it is initially presumed to be valid.

V. ISSUES

[36] The fundamental issue before the Court is whether an Order should be given prohibiting the Minister from issuing a Notice of Compliance to Apotex in respect of the Apotex Product at

issue. In this regard, the Court must determine whether the allegations made by Apotex in its Notice of Allegations are "justified".

[37] Apotex made numerous allegations in its Notice of Allegations. Those allegations made by Apotex, and the issues raised by Amgen in its Notice of Application, have been substantially reduced. Only Claim 43 of the '537 patent is now at issue. Only validity is at issue, not infringement. As to validity, the following four issues were stated in Apotex's Memorandum:

- Novelty
- Overbreadth
- Obviousness
- Inutility

[38] At the hearing, Apotex's Counsel withdrew the "Overbreadth" issue, leaving only three issues as to invalidity to be dealt with by this Court: Novelty, Obviousness and Inutility.

[39] Therefore, the Court will consider only the three remaining validity issues as set out above.

VI. BURDEN

[40] The remaining issues all relate to Apotex's allegations that the '537 patent is invalid. Apotex is constrained by its Notice of Allegation such that it cannot raise new grounds of invalidity (e.g. *Pfizer Canada Inc. v Canada (Minister of Health)*, 2006 FC 1471 at paragraphs

70 to 72); however, it can, as it has done here, restrict its arguments as to invalidity to fewer than those raised in the Notice of Allegation.

[41] The ultimate burden rests on Amgen to satisfy the Court that the allegations as to invalidity put in play by Apotex are not justified (*NOC Regulations*, s. 6(2)). That burden is initially satisfied by the presumption of validity afforded by the "old" *Patent Act*, s. 45. However, once evidence as to invalidity is led, as is the case here, the Court must consider the matter based on the evidence. The first party, Amgen, at this point, bears the burden of proving on the evidence that the allegations are not justified (e.g. *Pfizer Canada Inc. v Apotex Inc.*, 2007 FC 26 at paragraphs 5 to 13; aff'd 2007 FCA 195). I repeat what I wrote in *Allergan Inc. v Canada (Minister of Health)*, 2012 FC 767 at paragraph 42:

> *[42] As to the allegations of invalidity, the Patent Act, RSC 1985, P-4, section 43(2) affords a presumption of validity; however, once a second person, here Apotex, puts in some evidence as to invalidity, the Court must determine the matter on the usual civil burden; namely, balance of probabilities. I repeat what I wrote in GlaxoSmithKline Inc v Pharmascience Inc, 2011 FC 239 at paras 43 and 44:*
>
> > *43 O'Reilly J of this Court has summarized the question of burden of proof where the issue is invalidity in Pfizer Canada Inc. v. Apotex Inc., 2007 FC 26, 59 CPR (4th) 183 (aff'd 2007 FCA 195, leave to appeal refused [2007] SCCA No. 371) at paragraphs 9 and 12:*
> >
> > > *9 In my view, the burden on a respondent under the Regulations is an "evidential burden" -- a burden merely to adduce evidence of invalidity. Once it has discharged this burden, the presumption of validity dissolves and the Court must then determine whether the applicant has discharged its legal burden of proof. I believe this is what is meant in those cases where the Court has stated that the respondent must put its allegations "into play". It must present sufficient evidence to give its allegations of invalidity an air of reality.*

...

> *12 To summarize, Pfizer bears the legal burden of proving on a balance of probabilities that Apotex's allegations of invalidity are unjustified. Apotex merely has an evidentiary burden to put its case "into play" by presenting sufficient evidence to give its allegations of invalidity an air of reality. If it meets that burden, then it has rebutted the presumption of validity. I must then determine whether Pfizer has established that Apotex's allegations of invalidity are unjustified. If Apotex does not meet its evidential burden, then Pfizer can simply rely on the presumption of validity to obtain its prohibition order.*

44 In Pfizer Canada Inc. v. Canada (Minister of Health), 2008 FC 11, 69 C.P.R. (4th) 191, I said in respect of the same thing at paragraph 32:

> *32 I do not view the reasoning of the two panels of the Federal Court of Appeal to be in substantial disagreement. Justice Mosley of this Court reconciled these decisions in his Reasons in Pfizer Canada Inc. v. Apotex Inc., [2007] F.C.J. No. 1271, 2007 FC 971 at paragraphs 44 to 51. What is required, when issues of validity of a patent are raised:*
>
> > *1. The second person, in its Notice of Allegation may raise one or more grounds for alleging invalidity;*
> >
> > *2. The first person may in its Notice of Application filed with the Court join issue on any one or more of those grounds;*
> >
> > *3. The second person may lead evidence in the Court proceeding to support the grounds upon which issue has been joined;*
> >
> > *4. The first person may, at its peril, rely simply upon or, more prudently, adduce its own evidence as to the grounds of invalidity put in issue.*
> >
> > *5. The Court will weigh the evidence; if the first person relies only on the presumption, the Court will the presumption of validity afforded by the Patent Act nonetheless weigh the strength of the*

> *evidence led by the second person. If that evidence is weak or irrelevant the presumption will prevail. If both parties lead evidence, the Court will weigh all the evidence and determine the matter on the usual civil balance.*
>
> *6. If the evidence weighed in step 5 is evenly balanced (a rare event), the Applicant (first person) will have failed to prove that the allegation of invalidity is not justified and will not be entitled to the Order of prohibition that it seeks.*

VII. PERSONS OF ORDINARY SKILL IN THE ART (POSITA)

[42] The characterization of the Person of Ordinary Skill in the Art ("POSITA"), sometimes shortened to Person Skilled in the Art ("PSA") is to be defined by the Court. This is the person to whom the patent is said to be addressed, through whose eyes the Court is to read the patent, and who stands as the criterion for determination of obviousness.

[43] Amgen describes the POSITA at paragraph 47 of its Memorandum as follows:

> *Both parties' experts essentially agree that the person of ordinary skill would likely comprise a team of people with expertise in biochemistry, molecular biology and hematology. However, there is considerable disagreement about the extent of the expertise and equipment that the people comprising this team would have (or have access to). Apotex attempts to raise the level of skill to one that makes the pioneering work of the Souza group seem commonplace. In particular, in the mid-1980s, essentially all molecular cloning had been accomplished in very few highly expert laboratories, with the latest equipment and expertise. While Apotex's argument boils down to, "molecular cloning of cytokines had been accomplished by others" this had been accomplished by the leaders of the field, and not persons of ordinary skill.*

[44] Apotex describes the POSITA at paragraph 14 of its Memorandum as follows:

> *There is no significant dispute regarding the attributes of the skilled addressee of the 537 patent. The subject matter of the 537 patent includes hematopoietic growth factor proteins, the purification of such proteins, DNA sequences coding for such proteins, recombinant techniques to produce such proteins and pharmaceutical compositions containing such proteins and thus the skilled addressee is competent in these areas. The 537 patent is addressed to a team of persons with advanced degrees and several years of experience in disciplines such as molecular biology, biochemistry, protein chemistry, amino acid sequencing and hematology.*

[45] Thus, both parties are agreed that the POSITA is a team of persons with expertise in biochemistry, molecular biology and hematology. The length of time that such a team has been engaged in these fields and the level of expertise is somewhat in dispute. One must remember that a POSITA is a person of ordinary skill in the art, not the newcomer, not the greatest of experts, but an ordinary person in the field at issue. The matter was well stated by Justice Phelan in *Merck-Frosst-Schering Pharma GP v. Canada (Minister of Health)*, 2010 FC 933 at paragraph 69:

> *69. It must be remembered that the POSITA is a person of skill in the art so the degree of separation between the right and left hemisphere must reflect the characteristics of the notional POSITA. The person is neither first nor last in her class but somewhere in the middle.*

[46] I accept Apotex's definition of a POSITA as being more consistent with that postulated in our jurisprudence. Amgen pitches it too high when it urges that a POSITA must be a team of persons in highly expert laboratories.

VIII. THE ‘537 PATENT IN DETAIL

[47] The ‘537 patent is a lengthy document. It begins at page 1 with a general description of the invention:

> *The present invention pertains in general to hematopoietic growth factors and to polynucleotides encoding such factors. The present application pertains in particular to mammalian pluripotent colony stimulating factors, specifically human pluripotent granulocyte colony-stimulating factor (hpG-CSF), to fragments and polypeptide analogs thereof and to polynucleotides encoding the same.*

[48] There follows a discussion of the human blood-forming hematopoietic system with a focus on a factor the patent calls human pluripotent granulocyte colony-stimulating factor (hpG-CSF). The characterization of this factor and recombinant production of this factor in commercial scale quantities is what the invention is directed to. Simply extracting that factor from cell cultures is inadequate. At pages 4 and 5, the patent says, in part:

> *Based upon their common properties, it appears that human CSF-B of Nicola, et al., supra, and the hpCSF of Welte, et al., supra, are the same factor which could properly be referred to as a human pluripotent granulocyte colony-stimulating factor (hpG-CSF). Characterization and recombinant production of hpG-CSF would be particularly desirable in view of the reported ability of murine G-CSF to completely suppress an in vitro WEHI-30 3B D^+ leukemic cell population at "quite normal concentrations", and the reported ability of crude, injected preparations of murine G-CSF to suppress established transplanted myeloid leukemias in mice. Metcalf, Science, 229, 16-22 (1985). See also, Sachs, Scientific American, 284(1), 40-47 (1986).*
>
> *To the extent that hpG-CSF may prove to be therapeutically significant and hence need to be available in commercial scale quantities, isolation from cell cultures is unlikely to provide an adequate source of material. It is noteworthy, for example, that restrictions appear to exist against commercial use of Human*

Tumor Bank cells such as the human bladder carcinoma cell line 5637 (A.T.C.C. HTB9) which have been reported as sources of natural hpCSF isolates in Welte, et al. (1985, supra).

[49] A summary of the invention is set out at pages 5 to 8 which states, in part:

Summary of the Invention

According to the present invention, DNA sequences coding for all or part of hpG-CSF are provided. Such sequences may include: the incorporation of codons "preferred" for expression by selected non-mammalian hosts; the provision of sites for cleavage by restriction endonuclease ,enzymes and the provision of additional initial, terminal or intermediate DNA sequences which facilitate construction of readily expressed vectors. The present invention also provides DNA sequences coding for microbial expression of polypeptide analogs or derivatives of hpG-CSF which differ from naturally-occurring forms in terms of the identity or location of one or more amino acid residues (i.e., deletion analogs containing less than all of the residues specified for hpG-CSF; substitution analogs, such as (ser^{17}] hpG-CSF, wherein one or more residues specified are replaced by other residues; and addition analogs wherein one or more amino acid residues is added to a terminal or medial portion of the polypeptide) and which share some or all the properties of naturally-occurring forms.

...

The present invention provides purified and isolated polypeptide products having part or all of the primary structural conformation (i.e., continuous sequence of amino acid residues) and one or more of the biological properties (e.g, immunological properties and in vitro biological activity) and physical properties (e.g., molecular weight) of naturally-occurring hpG-CSF including allelic variants thereof. These polypeptides are also characterized by being the product of chemical synthetic procedures or of procaryotic or eukaryotic host expression (e.g., by bacterial, yeast, higher plant, insect and mammalian cells in culture) of exogenous DNA sequences obtained by genomic or cDNA cloning or by gene synthesis. The products of typical yeast (e.g., Saccaromyces cerevisiae) or procaryote [e.g., Escherichia coli (E. coli)] host cells are free of association with any mammalian proteins. The products of microbial expression in vertebrate (e.g., non-human mammalian and avian) cells are free of association with any human proteins. Depending upon the host employed, polypeptides

> *of the invention may be glycosylated with mammalian or other eucaryotic carbohydrates or may be non-glycosylated. Polypeptides of the invention may also include an initial methionine amino acid residue (at position -1).*
>
> *Also comprehended by the invention are pharmaceutical compositions comprising effective amounts of polypeptide products 9f the invention together with suitable diluents, adjuvants and/or carriers useful in hpG-CSF therapy.*

[50] Some possibilities for the invention are set out at page 8:

> *Polypeptide products of the present invention may be useful, alone or in combination with other hematopoietic factors or drugs in the treatment of hematopoietic disorders, such as aplastic anemia. They may also be useful in the treatment of hematopoietic deficits arising from chemotherapy or from radiation therapy. The success of bone marrow transplantation, for example, may be enhanced by application of hpG-CSF. Wound healing burn treatment and the treatment of bacterial inflammation may also benefit from the application of hpG-CSF. In addition, hpG-CSF may also be useful in the treatment of leukemia based upon a reported ability to differentiate leukemic cells. Welte, et al., Proc. Natl. Acad. Sci. (USA), 82, 1526-1530 (1985) and Sachs, supra.*

[51] A Detailed Description follows with a number of Examples described in general at page 9:

> *The following examples are presented by way of illustration of the invention and are specifically directed to procedures carried out· prior to identification of hpG-CSF cDNA and genomic clones, to procedures resulting in such identification, and to the sequencing, development of expression systems based on cDNA, genomic and manufactured genes and verification of expression hpG-CSF and analog products in such systems.*
>
> *More particularly, Example 1 is directed to amino acid sequencing of hpG-CSF. Example 2 is directed to the preparation of a cDNA library for colony hybridization screening. Example 3 relates to construction of hybridization probes. Example 4 relates to hybridization screening, identification of positive clones, DNA sequencing of a positive cDNA clone and the generation of*

> *polypeptide primary structural conformation (amino acid sequence) information. Example 5 is directed to the identification and sequencing of a genomic clone encoding hpG-CSF. Example 6 is directed to the construction of a manufactured gene encoding hpG-CSF wherein E.coli preference codons are employed.*
>
> *Example 7.is directed to procedures for construction of an E. coli transformation vector incorporating hpG-CSF-encoding DNA, the use of the vector in procaryotic expression of hpG-CSF, and to analysis of properties of recombinant products of the invention. Example 8 is directed to procedures for generating analogs of hpG-CSF wherein cysteine residues are replaced by another suitable amino acid residue by means of mutagenesis performed on DNA encoding hpG-CSF. Example 9 is directed to procedures for the construction of a vector incorporating hpG-CSF analog-encoding DNA derived from a positive cDNA clone, the use of the vector for transfection of COS-l cells, and the cultured growth of the transfected cells. Example 10 relates to physical and biological properties or recombinant polypeptide products of the invention.*

[52] The claims, eighty-two in all, follow after the Examples. Only Claim 43 is at issue here.

IX. CLAIM 43

[53] Claim 43 is the only claim at issue. It reads as follows:

43. A polypeptide defined by the amino acid sequence:
Met Thr Pro Leu Gly Pro Ala Ser Ser Leu Pro Gln Ser Phe Leu Leu Lys Cys Leu Glu Gln
Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln Glu Lys Leu Cys Ala Thr Tyr Lys
Leu Cys His Pro Glu Glu Leu Val Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro
Leu Ser Ser Cys Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser
Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser Pro Glu Leu Gly
Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp Phe Ala Thr Thr Ile Trp Gln Gln
Met Glu Glu Leu Gly Met Ala Pro Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe
Ala Ser Ala Phe Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe
Leu Glu Val Ser Tyr Arg Val Leu Arg His Leu Ala Gln Pro.

X. CONSTRUCTION OF CLAIM 43

[54] The parties propose somewhat different constructions of the Claim 43. At paragraph 52 of its Memorandum, Amgen says:

> *52. Claim 43 claims a 175 amino acid polypeptide. The inventive concept can be construed from the balance of the patent: it is a recombinant polypeptide, made in E. coli, with "part or all of the primary structural conformation (i.e., continuous sequence of amino acid residues) and one or more of the biological properties (e.g., immunological properties and in vitro biological activity) and physical properties (e.g., molecular weight) of naturally-occurring hpG-CSF…" In other words, the inventive concept is that this recombinant polypeptide has some of the same biological and physical properties as Welte's protein preparation.*

[55] Apotex, at paragraph 20 of its Memorandum, says:

> *20. Claim 43 of the 537 patent is to a "polypeptide (i.e., a protein) defined by a sequence of 175 amino acids. The skilled addressee of the 537 patent would understand that the amino acid sequence is comprised of the amino acid, methionine, followed by the 174 amino acids of natural G-CSF. Given that its amino acid sequence is not identical to natural G-CSF, the skilled person would understand that the polypeptide of claim 43 is the product of recombinant manufacture, which is consistent with the stated purpose of the invention. The claim makes no mention of any particular method to make the polypeptide.*

[56] Stratus J.A., for the panel, in *Zero Spill (Int'l) Inc. v Heide*, 2015 FCA 115, summarized the principles to be followed by a Court in construing a claim. He wrote at paragraph 41:

> *41. Before us, the parties broadly agreed on the operative principles for claims construction. The well-accepted canons of construction are as follows:*
>
> - *Claims construction is the first step in a patent suit.*

- *The task of claims construction rests with the court.*
- *The court must read the claims through the eyes of the person skilled in the art to which the patent pertains.*
- *The skilled reader comes to the patent armed with all of the common general knowledge in the art.*
- *The skilled reader construes the claims as at the patent's publication date.*
- *The essential elements of the claims must be sorted from the non-essential elements.*
- *The claims are to be read purposively with the object of obtaining a fair result as between the patentee and the public.*
- *The words of the claims are to be considered with reference to the entire specification, but not with a view to enlarging or contracting the claims' language as written.*
- *Expert evidence is admissible to assist in placing the court in the position of the skilled reader.*

[57] I accept the basic science as set out at paragraphs 22 to 27 of the affidavit of Dr. Wall:

> ***Proteins, polypeptides and amino acids***
>
> *22. Proteins play crucial roles in almost all biological processes. They perform a variety of different functions, both inside and outside the cell. For example, the protein hemoglobin transports oxygen in red blood cells. Antibodies, another type of protein, help protect us from foreign molecules our bodies are exposed to. Proteins also provide tensile strength to our skin and bones and are the major component of muscle. Proteins also act as messengers in the body by binding to specific receptors on a cell and signaling the cell to perform a particular function.*
>
> *23. The primary building blocks of proteins are called "amino acids". The basic structure of an amino acid is shown below in Figure 1.*

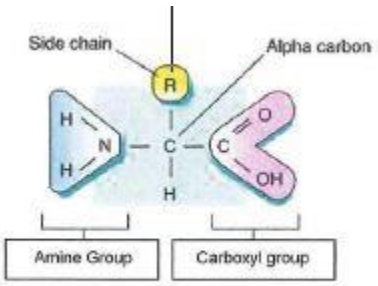


Figure 1. Basic structure of an amino acid

24. There are twenty standard amino acids, each differing from the rest by a unique "side chain" or "R group" (shown in Figure I by a yellow box labeled "R"). The side chains confer different properties on each of the twenty amino acids. With rare exception, all proteins in all species - from bacteria to humans - are made from combinations of these twenty amino acids. In his affidavit, at paragraph 36 and Figure 2, Mr. Lane describes the structure of amino acids, and I agree with his statements.

25. Amino acids are often designated by either a three-letter abbreviation or a one-letter abbreviation, as shown in Table 1 below.

Amino Acid	Three-Letter Abbreviation	One-Letter Abbreviation
Alanine	Ala	A
Arginine	Arg	R
Asparagine	Asn	N
Aspartate	Asp	D
Cysteine	Cys	C
Glutamate	Glu	E
Glutamine	Gln	Q
Glycine	Gly	G
Histidine	His	H
Isoleucine	Ile	I
Leucine	Leu	L
Lysine	Lys	K
Methionine	Met	M
Phenylalanine	Phe	F
Proline	Pro	P
Serine	Ser	S
Threonine	Thr	T
Tryptophan	Trp	W
Tyrosine	Tyr	Y
Valine	Val	V

Table 1. Abbreviations for amino acids

26. Amino acids can link together end-to-end (where the carboxyl group of one amino acid connects with the amine group of another). When multiple amino acids are linked together, the resulting chain is called a "polypeptide". In his affidavit, at paragraphs 60-61 and Figure 9, Dr. Manley describes the structure of polypeptides, and I agree with his statements. In his affidavit, at paragraphs 37-38 and Figures 3 and 4, Mr. Lane

> *describes the formation of peptide bonds and proteins, and I agree with his statements.*
>
> *27. Depending on the cell type in which the protein is produced, the protein can also be modified by the attachment of sugar molecules (glycans) to specific amino acids in the protein - a process called "glycosylation".*

[58] I discussed amino acids in two earlier decisions of this Court. In *Abbvie Corporation v Janssen Inc.*, 2014 FC 55, I wrote at paragraph 28:

> *[28] Turning to a different aspect, life forms are comprised of building blocks known as amino acids, of which there are over twenty known acids. These acids are often referred to by a three-letter short form or a capital letter; thus, glycine is often written as gly or a letter G, and so forth for the other amino acids. These acids are strung together in different orders and lengths to form substances such as proteins and peptides (essentially short proteins). As these chains become longer and more complex, they fold, sometimes because of the individual amino acid interaction within the protein and specific hydrophobicity of each amino acid. The folding of the amino acid chains results in the formation of globular structures emerging as shapes such as the "Y" shape of the resultant antibodies at issue here.*

[59] In *Merck & Co. Inc. v Apotex Inc.*, 2006 FC 524, I wrote at paragraph 16:

> *[16] Amino acids are the basic building blocks from which living matter is constructed. There are twenty amino acids commonly found in nature, these have names such as proline, lysine, glutamine, etc. which names are often shortened to pro, lys and glu, etc. By combining various numbers and groups of these acids in various configurations, larger structures known as peptides are formed. The bonds between these acids are known as peptide bonds. Still larger groups known as proteins may be formed from such acids. Yet larger structures can result in configurations such as deoxyribonucleic acid (DNA) and, ultimately, living matter.*

[60] Claim 43 does not set out any physical parameters for the polypeptide nor does it define or limit the process by which it is made.

[61] Claim 43 is directed to a polypeptide having an amino acid sequence beginning with a Met (methionine) with the remainder of the sequence having some or all of the sequence and some or all of the biological properties of the natural factor identified by Welte.

XI. ANTICIPATION (NOVELTY)

[62] The *Patent Act* (new and old), section 2 defines an *"invention"* as something that is *"new"*. The "old" *Patent Act*, section 27(1)(a), when combined with section 61(1)(a), provides that a patent cannot be granted to, or be valid if granted to, a person, if the invention was known or used by another person before he invented it, provided that such other person disclosed or used the invention in such a manner that the invention became available to the public.

[63] There appears to be no real dispute, and I so find that the named inventor in the '537 patent, Dr. Souza, made the invention as claimed in Claim 43 of that patent at least by the priority filing date of August 23, 1985.

[64] Apotex argues that Welte and others at SKI had previously made the invention and disclosed it to the public by means of the "Welte" paper entitled *"Purification and biochemical characterization of human pluripotent hematopoietic colony-stimulating factor"* published in Proceedings of Natural Science, USA, in March 1985. That data precedes the August 23, 1985 priority date by several months.

[65] The Welte paper describes that the authors have purified, to apparent homogeneity, what they describe as a pluripotent hematopoietic colony-stimulating factor (pluripotent CSF) which they characterize by several means. Apparently, an amino acid sequence identification had been initiated but no data is revealed in the paper. I repeat part of the Discussion portion of that paper:

> *In this study we describe the purification of a pluripotent CSF, which is constitutively produced by the human bladder carcinoma cell line 5637. This protein is capable of stimulating the in vitro growth of mixed colony progenitor cells (CFU-GEMM), early erythroid progenitor cells (BFU-E), and granulocyte-macrophage progenitors (CFU-GM) and in addition, induces differentiation of both the murine myelomonocytic [WEHI-38B (D+)] and the human promyelocytic (HL-60) leukemic cell lines (unpublished data). The purified pluripotent CSF had a specific activity in the GM-CSF assay of 1.5 x 10^8 u/mg of protein. To our knowledge this is the highest specific activity for a human pluripotent CSF reported to date. Pluripotent CSF has a M_r of 32,000 by gel filtration and a M_r of 18,000 by $NaDodSO_4$/PAGE under both reduced and .nonreduced conditions and a pI of 5.5. Pluripotent CSF activities could be eluted from gel slices representing the same molecular weight range as the stained protein band.*
>
> *The purified protein shown in $NaDodSO_4$/PAGE is consistent with pluripotent CSF because (i) the profile of protein elution visualized in $NaDodSO_4$/PAGE (not shown) and elution of pluripotent CSF activity (Fig. 3) from RP-HPLC columns is equivalent in the major fraction and side fractions,(ii) additional chromatography of the purified protein on diphenyl or octyl RP-HPLC columns using acetonitrile or ethanol as organic solvents for elution did not lead to a separation of protein and pluripotent CSF activity (data not shown), (iii) there is identical localization of the protein band and pluripotent CSF activity in a preparative $NaDodS0_4$/PAGE, and (iv) high specific GM-CSF activity (1.5 x 10^8 u/mg of protein) occurs. Our data suggest that we have purified pluripotent CSF to apparent homogeneity and, therefore, we have initiated amino acid sequence analysis of our purified protein (data not shown). It is possible, though we believe unlikely, that pluripotent CSF is associated with a minor component representing <5% of the preparation.*

[66] Thus, Apotex argues, Welte et al had isolated and purified the *"natural"* product, now known as G-CSF, and characterized it in several ways, albeit not the amino acid sequence, and indicated that it was worthwhile to pursue several apparent uses in the field of medical treatments. All Amgen did, argues Apotex, is identify an inherent property, namely the amino acid sequence. It argues that no patent can claim an identification of a property of a known substance.

[67] Amgen argues that the substance of Claim 43 is not that of Welte; it is a new substance obtained artificially by recombinant means. The placing of a *"Met"* at the beginning of the amino acid sequence makes the product new and different; it is obtained by recombinant means. Further, the balance of the amino acid sequence is probably, but not certainly, the amino acid sequence of the Welte *"natural"* product. The patent says that the substance has *"some or all"* of the physical properties and *"some or all"* of the biological properties of the natural product.

[68] The '537 patent makes some statements about the Welte paper. Those statements made in the patent are to be considered as admissions binding on the patentee (e.g. *Pfizer Canada Inc. v. Novopharm Ltd.* (2005), 42 CPR (4th) 502 at paragraph 78, and *Pfizer Canada Inc. v. Canada (Health)*, 2008 FC 500, where I wrote at paragraph 56:

> *[56] It is reasonable, when considering the claimed invention, which can be simply stated as amlodipine besylate salt used to treat cardiac conditions, to start with the prior art that is acknowledged in the patent itself. This, after all, is an acknowledgment by the patentee as to the pre-existing state of the art (see Eli Lilly Canada v. Novopharm Ltd., 2007 FC 596 at paragraph 142 and Pfizer Canada Inc. v. Novopharm Ltd., 2005 FC 1299 at paragraph 78).*

[69] At pages 2 and 3, the ‘537 patent discusses the Welte paper:

> *A human hematopoietic growth factor, called human pluripotent colony-stimulating factor (hpCSF) or pluripoietin, has been shown to be present in the culture medium of a human bladder carcinoma cell line denominated 5637 and deposited under restrictive conditions with the American Type Culture Collection, Rockville, Maryland as A.T.C.C. Deposit No. HTB-9. The hpCSF purified from this cell line has been reported to stimulate proliferation and differentiation of pluripotent progenitor cells leading to the production of all major blood cell types in assays using human bone marrow progenitor cells. Welte et al., Proc. Nat1. Acad. Sci. (USA), 82, 1526-1530 (1985). Purification of hpCSF employed: $(NH_4)_2S0_4$ precipitation; anion exchange chromatography (DEAE cellulose, DE52); gel filtration (AcA54 column; and C18 reverse phase high performance liquid chromatography. A protein identified as hpCSF, which is eluted in the second of two peaks of activity in CI8 reverse phase HPLC fractions, was reported to have a molecular weight (MW) of 18,000 as determined by sodium dodecyl sulphate (SDS)-polyacrylamide gel electrophoresis (PAGE) employing silver staining. HpCSF was earlier reported to have an isoelectric point of 5.5 [Welte, et al., J. Cell. Biochem., Supp 9A, 116 (1985)] and a high differentiation activity for the mouse myelomonocytic leukemic cell line WEHI-3B D^+ [Welte, et al., UCLA Symposia on Molecular and Cellular Biology, Gale, et al., eds., New Series, 28 (1985)]. Preliminary studies indicate that the· factor identified as hpCSF has predominately granulocyte colony-stimulating activity during the first seven days in a human CFU-GM assay.*

[70] Thus, the ‘537 patent acknowledges that the Welte paper discloses a protein which it calls hpCFS which was derived from the 5637 cell line. It has a molecular weight of 18,000 and an isoelectric point of 5.5. It has differentiation activity in a WEHI test, and has predominately granulocyte colony-stimulating activity. When Amgen endeavoured to *“call”* (identify) the amino acid sequence of samples of the Welte material, Amgen identified fewer than 20 amino acids, four or five of which were uncertain, as shown in Tables I and II of the patent at pages 10 and 11.

[71] Apotex argues, with respect to Claim 43, that the initial *"Met"* in the amino acid sequence is a mere artifact of the process by which the product is made, and the fact that the amino acid and sequence of the Welte product was yet to be determined, is irrelevant. Apotex points to the decision of the Federal Court of Appeal in *Abbott Laboratories v. Canada (Minister of Health)*, 2007 FCA 153 for the proposition that a person did not need to know that a prior product actually existed; it still is an anticipation. Sharlow J.A. for the panel wrote at paragraphs 21 and 22:

> *[21] The conclusion of the Judge is also supported by evidence relating to the creation of clarithromycin Form II by a heating technique that was known before 1996. Clarithromycin Form II can be obtained by heating clarithromycin Form I by that known technique until its temperature exceeds 135˚C. It is undisputed that clarithromycin Form I, when so heated, is transformed into clarithromycin Form II at some point after the heated substance reaches 135˚C, although it ceases to be clarithromycin Form II by the time the substance reaches the melting point at 225˚C.*
>
> *[22] Abbott argues that a person skilled in the art who heated clarithromycin Form I by the known technique would not and could not know that clarithromycin Form II had been created, unless they also knew that the heating process had to be stopped before the substance reached its melting point at 225˚C. In my view, the absence of that knowledge is legally irrelevant. The undisputed evidence is that clarithromycin Form II would have been present if the heating technique had been followed. There were well established analytical techniques that would have disclosed its presence if anyone had cared to look at the appropriate moment.*

[72] The closest jurisprudence to the facts of this case is the well-known and difficult decision of the House of Lords in *Kirin-Amgen Inc. v Hoechst Marion Roussel Ltd.*, [2004] UKHL 46, written by Lord Hoffmann. That case, as does this one, dealt with a patent directed to producing, in quantity, a recombinant product from a cell line, which mimicked a protein naturally produced

in the body but in minute quantities, called erythropoietin or EPO. Lord Hoffmann wrote at paragraph 5:

> *5. EPO was a particularly elusive goal in the early 1980s because it was difficult to get hold of enough of the natural product to do the necessary research. To design the probes to find the gene, whether in a genomic or cDNA library, you first had to know the amino acid sequence of at least a part of the natural polypeptide. But the kidney makes such minuscule quantities that purified natural EPO was virtually unobtainable. In 1977 a team including Dr Takaji Miyake and Dr Eugene Goldwasser developed and published a protocol for purifying milligrams of EPO from large quantities of urine laboriously collected from patients suffering from aplastic anaemia: see Miyake et al, 252 J Biol Chem. 252 No 15, pp 5558-5564 (1977). Dr Goldwasser made some of this urinary EPO ("uEPO") available to Dr Rodney Hewick of Cal Tech, who tried to sequence 26 residues at the N terminus. (The protein has 165 residues). This information was published by Sue and Sytkowski in 80 PNAS USA, pp 3651-3655 (1983) but two of the residues were incorrectly identified.*

[73] The patentee was called Amgen (actually Kirin-Amgen Inc., probably a predecessor of Amgen Inc.) who had sequenced and replicated the EPO gene. Lord Hoffmann wrote at paragraphs 6 and 8 how this was done using patient but conventional methods:

> *6. The Amgen team trying to sequence the EPO gene was headed by (indeed, consisted largely of) Dr Fu-Kuen Lin. Dr Goldwasser was engaged as a consultant. He was able to make some uEPO available to Dr Lin, who designed a set of fully degenerate probes to hybridise with the DNA coding for two regions of the protein. As the kidney makes so little EPO, there was little prospect of obtaining mRNA for a cDNA library. So Dr Lin used his probes on the vast array of genes in a genomic library. Against the odds, he obtained three positives which enabled him to locate the EPO gene in the fall of 1983. He was then able by patient but conventional methods to identify the whole of its structural region, its introns, exons and splicing sites and a fair amount of the upstream and downstream sequences as well. He thus established the correct sequence of the amino acid residues which formed the protein and its leader sequence.*
>
> ...

> *8. Once the sequence of the EPO gene had been discovered, it was possible to make it by methods of recombinant DNA technology which were well known in 1983. These are succinctly described in the specification of the patent in suit:*
>
> > *"Simply put, a gene that specifies the structure of a desired polypeptide product is either isolated from a 'donor' organism or chemically synthesised and then stably introduced into another organism which is preferably a self-replicating unicellular organism such as bacteria, yeast or mammalian cells in culture. Once this is done, the existing machinery for gene expression in the 'transformed' or 'transfected' microbial host cells operates to construct the desired product, using the exogenous DNA as a template for transcription of mRNA which is then translated into a continuous sequence of amino acid residues."*

[74] The relevant claims at issue were claims 1, 19 and 26 which Lord Hoffmann set out at paragraphs 13, 14 and 15:

> *13. I shall now set out the precise terms of the three relevant claims. Claim 1 is for:*
>
> > *"A DNA sequence for use in securing expression in a procaryotic or eucaryotic host cell of a polypeptide product having at least part of the primary structural [conformation] of that of erythropoietin to allow possession of the biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells and to increase [haemoglobin] synthesis or iron uptake, said DNA sequence selected from the group consisting of:*
> >
> > *(a) the DNA sequences set out in Tables V and VI or their complementary strands;*
> >
> > *(b) DNA sequences which hybridize under stringent conditions to the protein coding regions of the DNA sequences defined in (a) or fragments thereof; and*
> >
> > *(c) DNA sequences which, but for the degeneracy of the genetic code, would hybridize to the DNA sequences defined in (a) and (b)."*

> *14. Claim 19 is for:*
>
> > *"A recombinant polypeptide having part or all of the primary structural conformation of human or monkey erythropoietin as set forth in Table VI or Table V or any allelic variant or derivative thereof possessing the biological property of causing bone marrow cells to increase production of reticulocytes and red blood cells to increase haemoglobin synthesis or iron uptake and characterised by being the product of eucaryotic expression of an exogenous DNA sequence and which has a higher molecular weight by SDS-PAGE from erythropoietin isolated from urinary sources."*
>
> *15. Finally, claim 26 is for:*
>
> > *"A polypeptide product of the expression in a eucaryotic host cell of a DNA sequence according to any of claims 1, 2, 3, 5, 6 and 7."*

[75] The issue for the Court respecting Claim 26 was set out at paragraph 87:

> *87. Section 1(1)(a) of the Act says that a patent may be granted only for an invention which is new and section 2(1) says that an invention shall be taken to be new if it does not form part of the state of the art. The Act assumes that any invention will be either a product or a process (see the definition of infringement in section 60.) Claim 26 is to a product, namely a polypeptide which is the expression in a host cell of a DNA sequence in accordance with claim 1. Such a product is EPO and the question is whether it is new or the same as the EPO which was already part of the state of the art, namely the uEPO which Miyake and others had purified from urine.*

[76] The question turned on whether the EPO of Claim 26 was identical to the EPO naturally produced by the human body; this was called uEPO. In the case before the House of Lords, the trial judge, Neuberger J. (now Lord Neuberger, the Chief Justice of the UK Supreme Court), found as a fact that uEPO and EPO were the same. That being the case, the House of Lords found that the product *per se* claim was anticipated; however, the patentee could still claim the

product when made by a particular process. I repeat what Lord Hoffmann wrote at paragraphs 93 to 101 where he was discussing Neuberger J.'s findings, and comparing those findings with the decision of the Technical Board of the European Patent Office which held that EPO and uEPO were different (paragraph 94) in terms of glycosylation (sugar molecules located on certain places on the protein strand):

> *93. In the case of claim 26, the EPO was defined as the product of the expression, in a eucaryotic host of a DNA sequence according to claim 1. This is verbally different from the definition in claim 19, which applies to the expression of any exogenous DNA sequence, although whether this makes any practical difference is another matter. The Technical Board found on the evidence that expression in a eucaryotic host:*
>
> > *"will ensure glycosylation of the product, thus distinguishing it from the prior art."*
>
> *94. The Board went on to say:*
>
> > *"The Board is on the evidence prepared to presume that the limitation to the polypeptide being a product makeable using the DNA of Claim 1 is a technical feature which ensures that it has a glycosylation pattern different from the known uEPO."*
>
> *95. I must confess to being a little puzzled by these findings. It is unclear to me whether the technical feature which ensured novelty was the use of a eucaryotic host cell (as the first quotation above suggests) or whether it was the use of DNA according to claim 1 (as the second quotation suggests). It is true that glycosylation occurs only in eucaryotic cells, but that is no distinction from the prior art because human cells are eucaryotic. Likewise, the DNA of Claim 1 was alleged to be the human EPO gene as sequenced by Dr Lin. Nor can I quite understand why the Board arrived at a different conclusion in respect of the facts relevant to claim 19. But for present purposes none of this matters: the decision of the Board on claim 26 was based upon a finding of fact that it was necessarily different from uEPO.*
>
> *96. Neuberger J, on the other hand, found as a fact that there was no difference between uEPO and EPO made according to claim 26. He drew no distinction between EPO made in accordance with claim 19 and EPO made in accordance with*

claim 26, calling them both recombinant EPO ("rEPO"). He found (at paragraphs 545 to 557) that there was no necessary distinction between rEPO and uEPO. It seems clear that if the European Patent Office had made similar findings of fact, it would have rejected claim 26. So TKT say that Neuberger J ought to have held it had been anticipated.

97. Both the judge and the Court of Appeal rejected this argument as a matter of law, and for similar reasons. In the Court of Appeal, Aldous LJ said:

> *"The [Technical] Board [of the EPO] accepted that it is permissible to have a claim to a product defined in terms of a process of manufacture, but state that such claims should only be granted in cases when the product cannot be satisfactorily defined by reference to its composition, structure or other testable parameter. That is a rule of practice which is not the concern of the national courts."*

98. That is, I must respectfully say, an incomplete statement of the position of the Board. The first requirement is that the product must be new and that a difference in the method of manufacturing an identical product does not make it new. It is only if the product is different but the difference cannot in practice be satisfactorily defined by reference to its composition etc that a definition by process of manufacture is allowed. The latter may be a rule of practice but the proposition that an identical product made by a new process does not count as new is in my opinion a proposition of law. It cannot be new in law but not new for the purposes of the practice of the Office.

99. Aldous LJ then went on to say "it seems that the Office concluded that claim 26 fell within the type of case where the product could not be satisfactorily defined by its features." That is true, but again incomplete. The important point is that the Office found that rEPO according to claim 26 was a new product because its glycosolation pattern would necessarily be different from that of uEPO. Once this finding of fact was removed, there was no basis for allowing claim 26.

100. Aldous LJ also relied upon article 64(2) as being consistent with a product-by-process claim. But in my opinion it leads to exactly the opposite conclusion and the Technical Board in International Flavors so held. The point of article 64(2) is to extend the protection afforded by a process claim to a product directly made by that process and to make it unnecessary to claim the product defined by reference to the process.

> *101. I think it is important that the United Kingdom should apply the same law as the EPO and the other Member States when deciding what counts as new for the purposes of the EPC: compare Merrell Dow Pharmaceuticals Inc v H.N. Norton & Co Ltd [1996] RPC 76, 82. It is true that this means a change in a practice which has existed for many years. But the difference is unlikely to be of great practical importance because a patentee can rely instead on the process claim and article 64(2). It would be most unfortunate if we were to uphold the validity of a patent which would on identical facts have been revoked in opposition proceedings in the EPO. I would therefore allow this part of the appeal and declare claim 26 invalid on the ground of anticipation.*

[77] Amgen argues that Claim 43 is directed to a new product, one that places a *"Met"* at the start of the amino acid sequence and that the *"Met"* is an essential feature of the claim. Amgen's expert, Dr. Wall, at paragraphs 36 of his affidavit, states that many proteins found naturally in the body exist with a *"Met"*. The evidence in this case, as shown in Tables I and II of the '537 patent, is that there is no *"Met"* in the naturally occurring product.

> *36. Since methionine is a "start" codon for every protein, in theory, all proteins begin with a methionine. However in eukaryotic cells, many proteins, when they are first translated are "immature" proteins because they begin with what is called a "leader sequence" – a short stretch of amino acids that begins with methionine followed by other amino acids. For these proteins, the leader sequence is removed by the cell as the immature protein is processed into a "mature" protein. Thus, although the methionine is used to make all proteins, many mature proteins exist in the body without a methionine.*

[78] Dr. MacGillivray, another Amgen expert, acknowledges that Amgen (the Souza Team) had to engineer the *"Met"* into the DNA sequence in order to make them capable of being expressed by bacteria cells. He wrote at paragraph 155:

> *155. In order to attempt to express their protein using E. Coli, the Souza Team had to modify the DNA sequence in order to make the encoded protein capable of being expressed by the bacterial*

> *cells. Although a leader sequence was not required for E. coli expression, bacterial machinery requires a Met codon at the N-terminus in order to initiate translation in the cell (as Dr. Manley notes in paragraph 94 of his affidavit). This new nucleotide sequence encoding a methionine had to be engineered in the DNA coding region manually.*

[79] There is also evidence from Dr. Wall that the addition of the *"Met"* to the naturally occurring protein may affect the physical and biological properties of the protein, and that there is no guarantee that the recombinant protein will behave as the natural one did. He said at paragraph 221 of his affidavit that:

> *A person of ordinary skill would not know whether a recombinantly expressed polypeptide made in a host cell and having a methionine in the -1 position, would still have one or more of the physical and biological properties of the 5637 cell line-produced protein. The recombinant protein made by the Souza group was not exactly the same as any-naturally occurring protein. Until the protein was tested for biological activity, it could not be known if the recombinant protein had one or more of the physical and biological properties of the 5637-produced target protein.*

[80] I am satisfied, on the evidence before me, that the product of Claim 43 is not identical to the *"natural"* product of Welte because of the inclusion of the *"Met"* at the beginning of the amino acid sequence, and because the amino acid sequence of Claim 43 following the *"Met"* is quite possibly but not certainly the sequence of the natural product. Therefore, I am satisfied that Amgen has shown that Apotex's allegations in respect of anticipation (lack of novelty) are not justified.

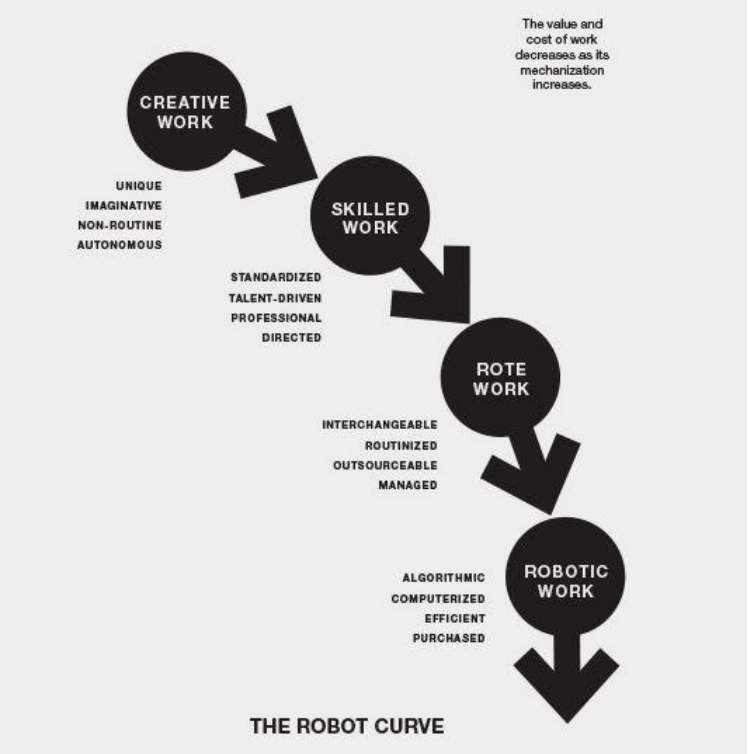
XII. OBVIOUSNESS

[81] Apotex argues that the protein claimed in Claim 43 of the ‘537 patent claimed nothing inventive over the prior art, particularly that disclosed in the Welte paper.

[82] The *Patent Act*, here section 27 of the “old” *Act*, provides that a patent is to be granted for an *“invention”*. The Courts have long struggled to define what an invention is, and have proposed tests by means of which a Court can determine if an *“invention”* has been made and claimed.

[83] It must be remembered that a patent is a two-edged sword. It is a reward, hence an incentive, for those who have made an *“invention”* and properly disclosed and claimed that invention in the patent. On the other hand, a patent creates a monopoly for several years in respect of what is claimed thus prohibiting others from making or using something that, in reality, ought to be public property. Therefore, the Patent Office and the Courts must be careful to restrict the patent monopoly to that which is truly inventive.

[84] During the hearing of this matter, I drew Counsels’ attention to an article published in the October 2015, issue of *Canadian Lawyer* magazine. The article, written by Kate Simpson entitled *“Swimming Uphill on the Robot Curve: 5 lessons”* at pages 28 and 29, reproduces a schematic prepared by Marty Neumeier, of Liquid Agency. That schematic illustrates various stages of work descending from creative, to skilled, to rote, to robotic. I reproduce it here:



[85] This schematic nicely illustrates that creative work, which is unique, imaginative, non-routine and autonomous, is different from skilled work, which is standardized, talent-driven professional and directed.

[86] In patent language, we speak of the skilled person in the art who is the notional person or reader to whom the patent is directed and through whose eyes a patent is to be read. That person is different from the inventor who does creative work; that is, makes an invention.

[87] I accept Dr. Eaves' description of the state of the art as set out in paragraph 11(b) of her affidavit:

> *11(b) Before Dr. Souza's invention, skilled persons understood that there were proteins in the body often called "colony-stimulating factors." Such factors were so-named because very few*

> *had, at that time, been purified and characterized. Thus they were known by their ability, under experimental conditions, to stimulate the survival, proliferation and/or differentiation of various types of individual hematopoietic (blood-forming) precursor cells, resulting in the formation of "colonies" of mature daughter blood cells. One such factor that had already been purified and characterized was "mouse G-CSF" (Granulocyte-Colony Stimulating Factor). This factor could stimulate the formation of colonies of granulocytes from mouse granulocyte-restricted precursor cells. However, it had also already been discovered that this factor could initiate the division of mouse cells capable of generating colonies of red blood cells as well as granulocytes. Unlike other known colony-stimulating factors, mouse G-CSF was also shown to stimulate the differentiation of a particular mouse leukemic cell line (WEHI 3B (D+)). Before Dr. Souza's invention (which I understand to be August, 1985), two scientific groups, one at the Sloan-Kettering Institute (SKI) in New York and the other at the Walter and Eliza Hall Institute (WEHI) in Melbourne, Australia, had independently obtained partially purified human protein preparations (which they had respectively named "Pluripotent CSF" and "CSF-β") and found that these preparations of human molecules had activities that appeared similar to mouse GCSF. However, the human protein(s) believed to be responsible for these activities had not yet been identified (and, thus, no amino acid sequence for such a protein was known).*

[88] Apotex, in arguing obviousness, relies heavily upon the Welte paper that has been discussed here in respect of Anticipation. That paper ends with a paragraph which Amgen characterizes as a *"cry for help"* and which Apotex describes as motivation for persons skilled in the art to create a source for large-scale production, and for isolation and cloning of the gene that creates the protein. It says:

> *Constitutive production of pluripotent CSF by the bladder carcinoma cell line 5637 suggests that it is a valuable source for large-scale production and for isolation and cloning of the gene that codes for pluripotent CSF. The availability of purified human pluripotent CSF has important and far-reaching implications in management of clinical diseases involving hematopoietic derangement or failure.*

[89] The test for obviousness to be applied by the Courts was articulated by the Supreme Court of Canada in *Apotex Inc. v Sanofi-Synthelabo Canada Inc.*, 2008 SCC 61, and further considered by the Federal Court of Appeal in *Apotex Inc. v Pfizer Canada Inc.*, 2009 FCA 8, and *Sanofi-Aventis v. Apotex Inc.*, 2013 FCA 186. I reviewed those decisions in *Novartis Pharmaceuticals Canada Inc. v Cobalt Pharmaceuticals Company*, 2013 FC 985 at paragraphs 60 to 66. I repeat that review:

> *[60] One of the most difficult issues faced by a Court in patent litigation is that of obviousness. The Court must address the alleged invention through the eyes of a person skilled in the art and ask whether it is deserving of patent protection; that is, whether it is either inventive or obvious.*
>
> *[61] The rationale has been put well by Professor Carl Moy of William Mitchell College of Law, author of Moy's Walker on Patents, Thomson/West, in addressing a Master of Law Class at Osgood Hall Law School. He said that a patent is a bargain between the public and the patentee which provides a monopoly to a person (patentee) in respect of certain scientific subject matter, provided that it is purchased from the public by disclosing something that is new, useful and inventive. If it is not new, then the monopoly has been purchased for nothing and cannot be valid. If it is something that that the public would get anyway from a person of ordinary skill practicing their craft, then nothing has been paid for the monopoly and the monopoly cannot be valid.*
>
> *[62] The concepts of inventiveness or obviousness are elusive, which has caused the Courts to endeavour to articulate tests and criteria to be examined and assessed against the evidence. The current state of such tests in Canada is that set out by the Supreme Court of Canada in Apotex Inc v Sanofi-Synthelabo Canada Inc, 2008 SCC 61, [2008] 3 SCR 265 ("Plavix"), per Rothstein J, for the Court, at paragraphs 67 and 69 to 70:*
>
> > *67 It will be useful in an obviousness inquiry to follow the four-step approach first outlined by Oliver L.J. in Windsurfing International Inc. v. Tabur Marine (Great Britain) Ltd., [1985] R.P.C. 59 (C.A.). This approach should bring better structure to the obviousness inquiry and more objectivity and clarity to the analysis. The Windsurfing approach was recently updated by Jacob L.J.*

in Pozzoli SPA v. BDMO SA, [2007] F.S.R. 37, [2007] EWCA Civ 588, at para. 23:

> *In the result I would restate the Windsurfing questions thus:*
>
> > *(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? [Emphasis added.]*

It will be at the fourth step of the Windsurfing/Pozzoli approach to obviousness that the issue of "obvious to try" will arise.

...

69 If an "obvious to try" test is warranted, the following factors should be taken into consideration at the fourth step of the obviousness inquiry. As with anticipation, this list is not exhaustive. The factors will apply in accordance with the evidence in each case.

> > *(1) Is it more or less self-evident that what is being tried ought to work? Are there a finite number of identified predictable solutions known to persons skilled in the art?*
> >
> > *(2) 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?*
>
> *(3) Is there a motive provided in the prior art to find the solution the patent addresses?*
>
> *70 Another important factor may arise from considering the actual course of conduct which culminated in the making of the invention. It is true that obviousness is largely concerned with how a skilled worker would have acted in the light of the prior art. But this is no reason to exclude evidence of the history of the invention, particularly where the knowledge of those involved in finding the invention is no lower than what would be expected of the skilled person.*

[63] The Federal Court of Appeal subsequently dealt with this test and, in particular, the question of motivation in Apotex Inc v Pfizer Canada Inc, (2009), 72 CPR (4th) 141, 2009 FCA 8. That Court distinguished as between "obvious to try" and "more or less self-evident". The Court rejected the "obvious to try" test if it was based on the "possibility" that something might work, and accepted the "more or less self-evident" test. Noel JA wrote at paragraphs 43 to 45:

> *43 The reasoning advanced by Mr. Justice Laddie and approved by the English Court of Appeal is that where the motivation to achieve a result is very high, the degree of expected success becomes a minor matter. In such circumstances, the skilled person may feel compelled to pursue experimentation even though the chances of success are not particularly high.*
>
> *44 This is no doubt the case. However, the degree of motivation cannot transform a possible solution into an obvious one. Motivation is relevant in determining whether the skilled person has good reason to pursue "predictable" solutions or solutions that provide "a fair expectation of success" (see respectively the passages in KSR International Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007) at page 1742 and Angiotech Pharmaceuticals Inc. v. Conor Medsystems Inc., [2008] UKHL 49, at paragraph 42, both of which are referred to with approval in Sanofi-Synthelabo, supra, at paragraphs 57 and 59).*
>
> *45 In contrast, the test applied by Mr. Justice Laddie appears to be met if the prior art indicates that something*

> *may work, and the motivation is such as to make this avenue "worthwhile" to pursue (Pfizer Ltd., supra, para. 107, as quoted at para. 42 above). As such, a solution may be "worthwhile" to pursue even though it is not "obvious to try" or in the words of Rothstein J. even though it is not "more or less self-evident" (Sanofi-Synthelabo, supra, para. 66). In my view, this approach which is based on the possibility that something might work, was expressly rejected by the Supreme Court in Sanofi-Synthelabo, at paragraph 66.*

[64] These principles have been applied recently by the Federal Court of Appeal in Sanofi-Aventis v Apotex Inc, 2013 FCA 186, wherein the Court of Appeal found that the Trial Judge had erred in concluding that if the necessary techniques were available to arrive at the alleged invention, the invention itself was obvious. Pelletier JA (with whom Noel JA agreed) wrote at paragraphs 73 and 74:

> *73 With these facts in mind, the Supreme Court articulated why the separation of the racemate was not obvious to try. It held that just because the methods of separating a racemate into its isomers are known, it does not follow that a person skilled in the art would necessarily apply them. The Supreme Court explained:*
>
> > *It is true that at the relevant time there was evidence that a skilled person would know that the properties of a racemate and its isomers might be different. However, a possibility of finding the invention is not enough. The invention must be self-evident from the prior art and common general knowledge in order to satisfy the "obvious to try" test. That is not the evidence in this case.*
> >
> > *Plavix, cited above, at paragraph 85*
> >
> > *However, the prior patent did not differentiate between the efficacy and the toxicity of any of the compounds it covered. This suggests that what to select or omit was not then self-evident to the person skilled in the art.*
> >
> > *Plavix, cited above, at paragraph 90*
>
> *74 What emerges from this review of the Supreme Court's decision in Plavix, cited above, is that the key*

> *factor in its "obvious to try" analysis was the lack of knowledge of the properties of the enantiomers of the compounds of the '875 Patent, including the racemate from which clopidogrel was obtained. Absent that knowledge, it was not obvious to try to resolve the racemate, or any other compound, so as to obtain the enantiomer having those advantageous properties.*

and at paragraph 81:

> *81 Given that the Trial Judge applied the test for obviousness set out in Plavix, and given that he applied it to the same material facts as the Supreme Court, he ought to have come to the same conclusion. His error lay in failing to recognize that the unknown nature of the properties of the enantiomers of PCR 4099, or of any of the other compounds of the '875 Patent, was fatal to the "obvious to try" analysis. Put another way, the distance between the common general knowledge and the inventive concept of the '777 Patent could not be bridged by routine experimentation since the results to be obtained were unknown. On the facts, this was confirmed by the fact that the inventors, who had more knowledge that the person of ordinary skill in the art, attempted to resolve a number of other compounds before finally trying PCR 4099: see Reasons, at paragraphs 752-759.*

[65] Gauthier JA wrote concurring reasons. At paragraph 137 she wrote:

> *137 The Trial Judge believed that the evidence before him with respect to the separation of the enantiomers was significantly different from the evidence before the Supreme Court of Canada in Plavix because: i) he found that a line had been drawn in the sand at the time the application was filed, and that as part of the process of developing a racemic drug a sponsor would be motivated to separate the enantiomers to get information to pre-empt expected new regulatory requirements (See Reasons at paragraphs 748-749); and ii) in his view, the separation itself did not involve substantial difficulties and was routine. However, Rothstein J. made it clear in Plavix that whether the separation or resolution of the enantiomers was routine or involved arduous work would assume small significance in this case when one considers the whole course of conduct that led to the decision to separate (See Plavix at paragraph 89).*

> *[66] I will turn to the various criteria for assessing obviousness as set out by the Supreme Court in Sanofi, supra, as further considered by the Federal Court of Appeal in Apotex and Sanofi Aventis, supra.*

[90] I will proceed, having regard to the record in this case, to consider the following matters:

a) Identify the notional person skilled in the art;

b) Identify the state of the art including the relevant common general knowledge of that person;

c) Identify and construe the inventive concept of Claim 43;

d) Identify what differences, if any, exist between the state of the art and the inventive concept of the claim; and

e) Without any knowledge of the invention as claimed, were these differences obvious to a person skilled in the art, or do they require a degree of invention; in particular:

   i. what was the nature and extent of effort required – was it routine, or not?

   ii. was there motive in the prior art to find the solution not just based on a possibility that it might work, but because it was more or less self-evident?

a) *Identify the Notional Person Skilled in the Art*

[91] I have already done this earlier in these Reasons.

b) *Identify the State of the Art*

[92] I have, as previously stated, adopted Dr Eaves' description of the common general knowledge.

[93] The Welte article is the most relevant piece of prior art. Techniques for taking the various steps undertaken by Amgen were known. There were a variety of choices to be made at each step and each step had to be carefully undertaken. A wrong choice or improperly conducted step could lead to failure. However, Amgen did not utilize any hitherto unknown step or technique.

[94] The 5637 cell line was deposited in a Culture Collection where it was available under certain conditions such as no commercial use. Thus, it appears to have been available at least for some research purposes.

[95] Welte had identified a particular material he called human pluripotent colony-stimulating factor (hpCSF) which was reported to stimulate proliferation and differentiation of pluripotent progenitor cells leading to the production of various blood cell types in certain assays. Welte had identified several biological properties of this factor, including molecular weight and isoelectric point, but not its amino acid sequence. Welte had identified the need for large-scale production, and for isolation and cloning of the gene producing this factor because of its implications in the management of clinical diseases including hematopoietic derangement or failure.

c) *Identify or Construe the Inventive Concept of Claim 43*

[96] The inventive concept, as embodied in Claim 43, is a recombinantly produced polypeptide having an amino acid sequence beginning with a Met followed by some or all of the amino acid sequence of the Welte protein possessing some or all of its biological properties.

d) *Identify what difference, if any, exists between the state of the art and the inventive concept of the claim.*

[97] The difference between the inventive concept of Claim 43 and what Welte disclosed is that Claim 43 identifies the amino sequence of a polypeptide beginning with a Met that has some or all of the sequences of Welte's factor and some or all of its biological properties.

e) *Without any knowledge of the invention as claimed, were these differences obvious to a person skilled in the art, or do they require a degree of invention; in particular:*

i. *what was the nature and extent of effort required - was it routine, or not?*

[98] Amgen stresses the difficulty and inherent risk of failure in the processes it undertook. I repeat a part of its Counsel's brief at trial on this point:

> *(a)* *The process from going to a prior art protein preparation to a functional recombinant polypeptide was inherently unpredictable. The PSA did not know that what was to be tried was going to work until experiments were performed and obtained the result.*
>
> *(b)* *There was a variety of available techniques confronting the PSA that might be employed to try to successfully complete a recombinant cloning program. These various techniques ranged in their level of activity.*
>
> *(c)* *There was no guidance for which methods or techniques could be applied with an expectation of success. A skilled person would have been required to select from the multitude of available techniques, methods, etc. to design a program that they hoped would work.*
>
> *(i)* *A skilled person would recognize that techniques that had been successful for previous researchers could not be expected to be successful for them.*
>
> *26.* *There was a genuine possibility that the program might have been cut short, due to failure, at any number of steps along*

> *the way. The failure (or success) of many important aspects of any project are dictated by nature and are simply not amenable to any level of prediction (much less constituting a reasonable prospect of success) in advance.*

[99] Apotex argues that, while the type of work undertaken by Amgen requires skill and involves some risk of failures and revising of technique, it is all nonetheless within the expected skill and knowledge of a person skilled in the art. Paragraphs 175 and 176 of the affidavit of Dr. Manley sets out this position:

> *175. "Each of those steps involved a genuine possibility of failure" (para.21): What must be understood is that the work of a molecular biologist routinely involves performing protocols and repeating protocols. Temporary "failures" are part of the normal routine work of a molecular biologist.*
>
> *176. It is true that there were a number of steps, with even more sub-steps, between (i) obtaining quantities of a pure natural protein and (ii) expressing a recombinant version of that protein. While one could minutely dissect each protocol and sub-protocol and the choices faced by the molecular biologist along the way, to do so is to ignore the reality that the protocols and sub-protocols existed and the choices made on the road to producing a recombinant protein are routine and within the knowledge of the ordinary molecular biologist.*

[100] This is the type of enquiry discussed by the United Kingdom Court of Appeal in *MedImmune Ltd. v Novartis Pharmaceuticals UK Ltd.*, [2012] EWCA Civ 1234 at paragraphs 90 to 93:

> *90. One of the matters which it may be appropriate to take into account is whether it was obvious to try a particular route to an improved product or process. There may be no certainty of success but the skilled person might nevertheless assess the prospects of success as being sufficient to warrant a trial. In some circumstances this may be sufficient to render an invention obvious. On the other hand, there are areas of technology such as pharmaceuticals and biotechnology which are heavily dependent*

on research, and where workers are faced with many possible avenues to explore but have little idea if any one of them will prove fruitful. Nevertheless they do pursue them in the hope that they will find new and useful products. They plainly would not carry out this work if the prospects of success were so low as not to make them worthwhile. But denial of patent protection in all such cases would act as a significant deterrent to research.

91. For these reasons, the judgments of the courts in England and Wales and of the Boards of Appeal of the EPO often reveal an enquiry by the tribunal into whether it was obvious to pursue a particular approach with a reasonable or fair expectation of success as opposed to a hope to succeed. Whether a route has a reasonable or fair prospect of success will depend upon all the circumstances including an ability rationally to predict a successful outcome, how long the project may take, the extent to which the field is unexplored, the complexity or otherwise of any necessary experiments, whether such experiments can be performed by routine means and whether the skilled person will have to make a series of correct decisions along the way. Lord Hoffmann summarised the position in this way in Conor at [42]:

> *"In the Court of Appeal, Jacob LJ dealt comprehensively with the question of when an invention could be considered obvious on the ground that it was obvious to try. He correctly summarised the authorities, starting with the judgment of Diplock LJ in Johns-Manville Corporation's Patent [1967] RPC 479, by saying that the notion of something being obvious to try was useful only in a case where there was a fair expectation of success. How much of an expectation would be needed depended on the particular facts of the case."*

92. Moreover, whether a route is obvious to try is only one of many considerations which it may be appropriate for the court to take into account. In Generics (UK) Ltd v H Lundbeck, [2008] EWCA Civ 311, [2008] RPC 19, at [24] and in Conor [2008] UKHL 49, [2008] RPC 28 at [42], Lord Hoffmann approved this statement of principle which I made at first instance in Lundbeck:

> *"The question of obviousness must be considered on the facts of each case. The court must consider the weight to be attached to any particular factor in the light of all the relevant circumstances. These may include such matters as the motive to find a solution to the problem the patent addresses, the number and extent of the possible avenues of*

> *research, the effort involved in pursuing them and the expectation of success."*
>
> *93. Ultimately the court has to evaluate all the relevant circumstances in order to answer a single and relatively simple question of fact: was it obvious to the skilled but unimaginative addressee to make a product or carry out a process falling within the claim. As Aldous LJ said in Norton Healthcare v Beecham Group Plc (unreported, 19 June 1997):*
>
> > *"Each case depends upon the invention and the surrounding facts. No formula can be substituted for the words of the statute. In every case the Court has to weigh up the evidence and decide whether the invention was obvious. This is the statutory task."*

[101] There was a high degree of skill required and risk involved in what Amgen undertook. The steps were routine in the sense that they were carried out by skilled persons operating with the science as it was known at the time. This amounts to what is termed *"skilled work"* on the Robot Curve previously reproduced, and not to the *"creative work"* necessary to deserve patent protection. This point is well made by Mustill L. J. (as he then was) in *Genentech Inc.'s Patent* [1989] RPC 147 (CA) at page 281, lines 11 to 17:

> *The project was the most difficult to have been tackled at the time, but the possible routes and the destination were known, even if nobody could foresee just what obstacles might be found on the way. This does not, of course, prove directly that the invention was obvious, and the facts must be examined at a later stage. But equally, it cannot, in my judgment, be assumed that inventiveness must have been involved somewhere, just because a wager on success could have been placed at long odds.*

ii. <u>*was there motive in the prior art to find the solution not just based on a possibility that it might work, but because it was more or less self-evident?*</u>

[102] The standard to be applied by Canadian Courts in this regard has been clearly set out by Justice de Montigny (as he then was) in *Eli Lilly Canada Inc. v. Mylan Pharmaceuticals ULC*, 2015 FC 178 at paragraph 150; the test is whether it was self-evident or plain that there would be a fair expectation of success:

> *[150] I am also of the view that the person skilled in the art would have considered it obvious to try the excipients in the '948 Patent to achieve a stable, rapid onset tadalafil tablet. As previously mentioned, this is not a case where there were an infinite number of potential solutions. Moreover, the test is not whether a skilled person would know for certain that a formulation would work or whether there is a guarantee that particular formulations would work, as suggested by Dr. Bodmeier in his affidavit (see paras 143 and 161, AR Vol 2, pp 223, 226). This would set the bar too high. The test, rather, is whether the skilled person had good reason to pursue predictable solutions or solutions that provide a "fair expectation of success". This is not to be equated with the "worth a try" test rejected by the Federal Court of Appeal in Pfizer Canada v Apotex, 2009 FCA 8. The Federal Court of Appeal and this Court have made it clear on a number of occasions that the fair expectation of success is the standard to use when an "obvious to try" analysis is warranted. As Justice Near stated in AstraZeneca Canada v Teva Canada Ltd, 2013 FC 245, at para 41:*
>
> > *Pfizer Canada Inc v Apotex Inc, 2009 FCA 8, [2009] FCJ No 66 [Pfizer v Apotex] intends that "fair expectation of success" is the standard to be adopted by the Court. The Federal Court of Appeal, at para 44, described that "predictable", and therefore obvious, solutions are equivalent to "solutions that provide 'a fair expectation of success'" (Pfizer v Apotex, above). This Court has also adopted this standard. In Pfizer Canada Inc v Ratiopharm Inc, 2010 FC 612, [2010] FCJ No 748, for example, the Court decided that it was self-evident or plain that the drug in that particular case had a fair expectation of success based on the prior art to achieve the solution the patent addressed (see para 171).*
> >
> > *(See also Shire Biochem v Canada (Minister of Health), 2008 FC 538, at para 82)*

[103] Welte had already identified the critical protein, isolated it, purified it, and characterized it in several respects, albeit not the amino acid sequence. Welte concluded his paper by suggesting that the 5637 cell line is a valuable source for large-scale production and for isolating and cloning of the relevant gene. I have no doubt that this was motivational for leading edge scientific labs such as Amgen to undertake the task.

[104] There are two questions to ask. The first is was it more or less self-evident that the gene could be isolated and cloned in large-scale. The second is whether Claim 43 is the appropriate monopoly for the task in accompanying that result. Claim 43 is to the end product, however produced, and not to the process by which it is produced.

[105] The work done by Welte in identifying a protein of interest in stimulating differentiation of hematopoietic precursor cells may well be considered an invention. It is similar to the work done by Abbvie discussed in *Abbvie Corporation v. Janssen Inc.*, 2014 FC 55, that I found to be an invention at paragraphs 134 to 140. I repeat paragraph 136:

> *[136] The evidence shows that many persons were directing their efforts towards identifying an antibody that would adhere to one or more of the soup of cytokines, and in doing so, might treat one or more human diseases. Dr Chizzonite's evidence is that there were many failures in this area of research and very few successes. AbbVie's researchers got lucky; they found an antibody that bound to a particular cytokine IL-12 and in so doing, treated psoriasis. They did so some time between September 1999 and March 2000 when they recorded that, by luck, one of the persons being clinically studied was given the antigen called J695 and was, in so doing, treated for psoriasis. Some patent agent, presumably, was astute enough to record this event as Example 9 in the patent application filed as of March 24, 2000. There is no evidence as to who put Example 9 into the application, or when, other than that, it was between March 25, 1999 and March 24, 2000, the date that the PCT application was filed.*

[106] In this case, Welte found the protein and said to the readers of his paper to go out and make it in quantity. Amgen did that. Perhaps Amgen did so using an inventive process, and perhaps it is entitled to a patent claiming such a process or processes. I note that there are several claims in the '537 patent directed to processes. The end product, which is simply the protein made by whatever process, was not itself inventive. Welte clearly and unambiguously pointed to that protein, leaving to others to devise new processes, or use old processes, to get that product in quantity. Amgen did that and obtained a product having an amino acid sequence beginning with a Met. The addition of the methionine, as pointed out in paragraph 78, was simply part of the process necessary in order to create the recombinant protein that Welte said should be made.

[107] I am satisfied that Amgen has not proven that Apotex's allegations respecting lack of invention are not justified.

XIII. UTILITY – PROMISE OF PATENT

[108] The *Patent Act*, section 27, in the "old" version and subsection 27(1) in the "new" version says that a patent may be granted to an inventor or the inventor's legal representative, for an *"invention"*. Section 2, of both versions of that *Act*, define an *"invention"* as being something that is *"new and useful"*.

[109] Particularly in the area of chemistry, including pharmaceuticals, discussion has arisen as to whether a claimed invention is *"useful"*. A discussion of the matter usually begins with the decision of the Supreme Court of Canada in *Consolboard Inc. v. MacMillan Bloedel*

(Saskatchewan) Ltd., [1981] 1 SCR 504. In that case, Dickson J. wrote at pages 525 and 526 that, while utility is a requirement for the grant of a patent, an inventor is not required in the patent disclosure or the claims to state in what way the invention is useful. He also says that *"not useful"* means, among other things, that the invention *"will not do what the specification promises that it will do"*. He wrote:

> *In my respectful opinion the Federal Court of Appeal erred also in holding that s. 36(1) requires distinct indication of the real utility of the invention in question. 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. [Footnotes omitted.]*
>
> *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.]*
>
> *Canadian law is to the same effect. In Rodi & Wienenberger A.G. v. Metalliflex Limited [(1959), 19 Fox Pat. C. 49] (affirmed in this Court [1961] S.C.R. 117) the Quebec Court of Appeal adopted at p. 53 the following quotation from the case of Unifloc Reagents, Ld. v. Newstead Colliery, Ld. [(1943), 60 R.P.C. 165] at p. 184:*
>
> > *If when used in accordance with the directions contained in the specification the promised results are obtained, the invention is useful in the sense in which that term is used in patent law. The question to be asked is whether, if you do what the specification tells you to do, you can make or do*

> *the thing which the specification says that you can make or do.*
>
> *Although (i) s. 36(1) requires the inventor to indicate and distinctly claim the part, improvement or combination which he claims as his invention and (ii) to be patentable an invention must be something new and useful (s. 2), and not known or used by any other person before the applicant invented it (s. 28(1)(a)), I do not read the concluding words of s. 36(1) as obligating the inventor in his disclosure or claims to describe in what respect the invention is new or in what way it is useful. He must say what it is he claims to have invented. He is not obliged to extol the effect or advantage of his discovery, if he describes his invention* ***so as to produce it.***

[110] The Federal Court of Appeal in *Pfizer Canada Inc. v. Canada (Health)*, 2008 FCA 108, per Nadon J.A., for the panel at paragraph 53, has stated that while a patentee is not obliged to promise a result in the patent, if he does make such a promise, he will be held to it:

> *[53] The decision in American Cyanamid v. Ethicon Limited, [1979] R.P.C. 215 at 261 (Ch.D.) stands for the proposition that although a patentee is not obligated to promise a result in the patent, if he does make such a promise, he will be held to it.*

[111] Further, the Federal Court of Appeal has held that the Court should approach the matter on the basis that some promises may affect some claims of the patent but not others; an unfulfilled promise does not necessarily mean that the whole patent, or every claim, is invalid. In every case, it is a matter of proper construction. I repeat what Dawson J.A., for the panel, wrote in *Astrazeneca Canada Inc. v. Apotex Inc.*, 2015 FCA 158 at paragraph 5 in reliance upon *Pfizer Canada Inc. v. Apotex Inc.*, 2014 FCA 250:

> *[5] It is also now settled law that some promises can be construed to impose utility requirements across each of a patent's claims, while other promises may touch only a subset of the claims. In every case it is a question of proper construction of the relevant claims (Pfizer Canada Inc. v. Apotex Inc.; Pfizer Canada Inc. v.*

> *Mylan Pharmaceuticals ULC, 2014 FCA 250, 465 N.R. 306 (Celecoxib), at paragraphs 86 to 89).*

[112] In the present case, Apotex relies on this paragraph as set out at page 7 of the patent:

> *Also comprehended by the invention are pharmaceutical compositions comprising effective amounts of polypeptide products of the invention together with suitable of diluents, adjuvants and/or carriers useful in the hpG-CSF therapy.*

[113] Apotex points to Claim 33 of the '537 patent as specifically claiming a pharmaceutical:

> *33. A pharmaceutical composition comprising an effective amount of the polypeptide having the sequence of amino acids 1 – 174 of the sequence set forth in Figure 2, and a pharmaceutically acceptable diluent, adjuvant and carrier.*

[114] Claim 33 is not at issue in these proceedings. Claim 43, which does not claim any particular use, is.

[115] It is to be noted that the passage relied upon by Apotex begins with the word *"Also"*. I construe the passage relied upon by Apotex as being a statement made that is additional to previous statements made in the patent. That previous statement begins at page 4 of the patent:

> *Based upon their common properties, it appears that human CSF-β of Nicola, et al., supra, and the hpCSF of Welte, et al.,* supra*, is the same factor which could properly be referred to as a human pluripotent granulocyte colony-stimulating factor (hpG-CSF). Characterization and recombinant production of hpG-CSF would be particularly desirable in view of the reported ability of murine G-CSF to completely suppress an in vitro WEHI-3B D^+ leukemic cell population at "quite normal concentrations", and the reported ability of crude, injected preparations of murine G-CSF to suppress established transplanted myeloid leukemias in mice. Metcalf, Science, 229, 16-22 (1985). See also, Sachs, Scientific American, 284(1), 40-47 (1986).*

...

> *The present invention provides purified and isolated polypeptide products having part or all of the primary structural conformation (i.e., continuous sequence of amino acid residues) and one or more of the biological properties (e.g, immunological properties and in vitro biological activity) and physical properties (e.g., molecular weight) of naturally-occurring hpG-CSF including allelic variants thereof. These polypeptides are also characterized by being the product of chemical synthetic procedures or of procaryotic or eukaryotic host expression (e.g., by bacterial, yeast, higher plant, insect and mammalian cells in culture) of exogenous DNA sequences obtained by genomic or cDNA cloning or by gene synthesis. The products of typical yeast (e.g., Saccaromyces cerevisiae) or procaryote [e.g., Escherichia coli (E. coli)] host cells are free of association with any mammalian proteins. The products of microbial expression in vertebrate (e.g., non-human mammalian and avian) cells are free of association with any human proteins. Depending upon the host employed, polypeptides of the invention may be glycosylated with mammalian or other eucaryotic carbohydrates or may be non-glycosylated. Polypeptides of the invention may also include an initial methionine amino acid residue (at position -1).*

[116] In addition to the *"Also"* paragraph relied upon by Apotex, there is another *"Also"* paragraph at page 6:

> *Also comprehended by the present invention is that class of polypeptides coded for by portions of the DNA complement to the top strand human cDNA or genomic DNA sequences of Tables VII or VIII herein, i.e., "complementary inverted proteins" as described by Tramontano, et al., Nucleic Acids Res., 12, 5049-5059 (1984).*

[117] I construe the patent as telling the reader, at pages 4 to 7, that there has been interest in a protein, as reported in the literature in references such as Nicola and Welte, which has probable ability to stimulate hematopoietic precursor cells to differentiate. The invention of the patent is to provide a purified and isolated protein having some or all of the amino acid sequence of those

reported proteins, and one or more of the biological properties of those reported proteins. In other words, to create a manufactured protein having some or all of the amino acid structure, and some or all of the biological properties of the natural protein is the *"promise"* of the patent.

[118] This is consistent with the evidence of Dr. Eaves on this point. At paragraph 103 of her affidavit, she wrote:

> *103. It is apparent that Dr. Souza's invention of claim 43 was not specifically a "pluripotent" polypeptide, but rather a man-made polypeptide that shared one or more of the biological properties seen in prior art protein preparations when tested in the same in vitro bioassays. This was in and of itself an important advance, as it established the possibility of reproducibly producing in large amounts a biologically active polypeptide with interesting activities, this enabling further studies of the mechanisms responsible, and, ultimately, tests of any potentially therapeutic efforts in animal models and humans. The creation of this polypeptide, in fact, opened the door to its subsequent use as an important therapeutic agent, which would likely never have been achieved with a non-recombinant source. Indeed, prior to Dr. Souza's invention, skilled persons could not even obtain enough protein in sufficient purity to test it in an animal model.*

[119] What is claimed in Claim 43 does this. As discussed above under the heading "What did Amgen do", the recombinant polypeptide shares at least some of the physical structure and several of the biological properties of the naturally occurring protein. Not only was this demonstrated at the time the patent was filed, it was reported in the patent itself.

[120] Whether or not the inventor, Dr. Souza, had a sound basis for predicting in the *"Also"* statement of the patent that the manufactured protein would be useful in certain therapy, is relevant only with respect to Claim 33, and not in respect of Claim 43 which is the claim at issue here. Claim 43 is directed only to the recombinant protein and not to its uses. The utility of the

recombinant protein is to make available enough of it having some or all of the amino acid sequence and biological properties of the natural protein to enable further research to be carried on. This is borne out by Dr. Eaves' answers to questions 589 to 592 of her cross-examination:

> *589 Q. A skilled person reading that statement would understand that Souza was contemplating pharmaceutical compositions that would be useful in therapy?*
>
> *A. I think he was contemplating, if there were, this patent wanted to cover it. I don't think he was contemplating that there necessarily would be.*
>
> *590. Q. He was predicting that there would be?*
>
> *A. No, I don't think he was even predicting there would be.*
>
> *591. Q. So your understanding is that the patent that includes the statement, "Also comprehended by the invention are…" pharmaceutical compositions useful in therapy, combined with a claim to pharmaceutical compositions, was based upon the inventor simply wanting to cover off the subject matter in case it proved to be true?*
>
> *A. Absolutely, because there was huge interest in this possibility.*
>
> *592. Q. And in your view, it wasn't necessary for the inventor to have demonstrated that in order to get their claim, obviously?*
>
> *A. Yes.*

[121] I am satisfied that Amgen has proven that Apotex's allegations respecting Claim 43 of the '537 patent and lack of utility or failure to meet the promise of the patent, are not justified.

XIV. CONCLUSIONS AND COSTS

[122] In summary, with respect to the issues finally remaining at the hearing, Amgen has satisfied me that Apotex's allegations respecting Novelty and Utility are not justified but has not satisfied me that Apotex's allegations concerning lack of Invention are not justified. Therefore, I will dismiss Amgen's application for prohibition.

[123] As to costs, I will not award them to any party. Apotex put a vast number of issues as to invalidity, as well as non-infringement, into play in its Notice of Allegation which required Amgen to address them in its Notice of Application. At some point, Amgen reduced the claims at issue to two and, after much of the evidence was in, to only one claim. At a pre-trial conference a few weeks before trial, I asked Apotex's Counsel if Apotex was pursuing all of the issues that it initially raised and the answer was yes. As the matter came to the eve of trial, Apotex dropped its infringement argument and reduced its invalidity arguments to four. During trial, one of these four was dropped. Given this constantly changing scene, the parties must accept that they have not made matters clear and efficient for each other or the Court. They shall each bear their own costs.

JUDGMENT

THIS COURT'S JUDGMENT is that:

1. The Application is dismissed;

2. No party is entitled to costs.

"Roger T. Hughes"
Judge

FEDERAL COURT

SOLICITORS OF RECORD

DOCKET:	T-2072-12
STYLE OF CAUSE:	AMGEN CANADA INC. AND AMGEN INC. v APOTEX INC. AND THE MINISTER OF HEALTH
PLACE OF HEARING:	TORONTO, ONTARIO
DATE OF HEARING:	OCTOBER 26, 27, 28, 29, 30, 2015
JUDGMENT AND REASONS:	HUGHES J.
DATED:	NOVEMBER 10, 2015

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