IN THE MATTER OF AN ARBITRATION UNDER CHAPTER ELEVEN OF THE NORTH AMERICAN FREE TRADE AGREEMENT

AND THE UNCITRAL ARBITRATION RULES (1976)

BETWEEN:

ELI LILLY AND COMPANY

Claimant/Investor

AND:

GOVERNMENT OF CANADA

Respondent/Party

(Case No. UNCT/14/2)

WITNESS STATEMENT OF MARCEL BRISEBOIS

JANUARY 26, 2015

Trade Law Bureau
Departments of Justice and of Foreign Affairs, Trade and Development
Lester B. Pearson Building
125 Sussex Drive
Ottawa, Ontario
K1A 0G2
CANADA

A. Introduction

1. My name is Marcel Brisebois. I am a Canadian citizen and reside in Gatineau, Quebec. Since 2007, I have worked in various positions relating to patent examination within the Canadian federal government, primarily at the Canadian Intellectual Property Office (CIPO). In December 2013 I was seconded to Industry Canada's Strategic Policy Sector. There, as a Senior Analyst, I have been engaged in analysing technical issues relating to the application of Canada's *Patent Act*, notably issues raised in the context of the Eli Lilly and Company (Claimant) NAFTA Chapter Eleven challenge.

2. I hold Bachelor of Science and Master of Science degrees from the University of Sherbrooke, Canada. For my Master's degree, I studied the effect of a combination of two cell signalling compounds (IFN-gamma and IL-2) on the repair activity of lung cells.[1]

3. In 2007, I obtained a Ph.D. in Immunology from the University of Sherbrooke's Faculty of Medicine. The main object of my doctoral thesis was to characterize the inflammatory and cellular mechanisms involved in an animal model of multiple sclerosis.[2]

4. In 2007, I joined CIPO as a Patent Examiner in the Biotechnology division of the Patent of Office. In October 2008 I was promoted to Senior Patent Examiner. I continued in that function until December 2013, when I was seconded to Industry Canada.

5. As a Senior Patent Examiner, I provided professional, scientific, technical and legal assistance and advice in the examination and disposition of patents applications from Canadian and foreign applicants, both those filed directly into the Canadian system and those filed via the Patent Cooperation Treaty (PCT). I notably analysed the biotechnological and pharmaceutical concepts disclosed in patent applications, to determine whether they constituted advances over the current state-of-the-art; developed comprehensive search

[1] The title of my Master's thesis was: "Modulation of IL-2R on rat type II epithelial cells (TTIP) by IFNg, implication in the apoptotic process."

[2] My Ph.D. thesis title was: "Characterization of a CD8+T cell mediated B7.2 Tg muring model of spontaneous autoimmune demyelination."

strategies to identify relevant technical publications, providing the basis to evaluate novel and inventive features of alleged inventions; set out the Office's position on each application in light of my technical determinations and based upon the *Patent Act* and *Rules*; analyzed responses from patent agents; and overall, determined whether patent applications for various biotechnical and pharmaceutical inventions should be approved or denied.

6. As a Senior Patent Examiner, I also trained junior examiners in patent examination procedures, coached and mentored, provided technical guidance, and exercised quality-control over technical and legal work, throughout these examiners' two-year training period. I further supervised and managed staff on several occasions as an acting Section Head in the Biotechnology Division.

7. Through my work as a Senior Patent Examiner, I acquired extensive experience and skills in examining patent applications and in conducting searches in different patent and legal research databases. I also extensively studied Canadian jurisprudence concerning the interpretation and application of the *Patent Act* and *Rules*.

8. From January 2010 to November 2011, while continuing in my position as a Senior Examiner, I was cross-appointed to the Patent Appeal Board (PAB). My principal responsibility as a member of PAB was to review examiners' rejections of patent applications, in light of the rejected applicant's submissions and the file record. Based upon my review, together with other Board members, I made recommendations to the Commissioner of Patents on the ultimate disposition of these applications.

9. Given my competencies, in late 2013 I was seconded to Industry Canada to act as a Senior Policy Analyst in the Strategic Policy Sector. That Sector among other things has responsibility for developing and reviewing Canadian federal government policy with regard to the *Patent Act* and related regulations.

10. In my role as Senior Policy Analyst, I was notably asked by Canada's counsel in this matter 1) to review Claimant's allegations regarding an alleged "spike" in invalidation rates for

pharmaceutical patents by Canadian courts based upon the "utility" criteria, and 2) to collect and consider evidence regarding Claimant's historic patent filing behaviour, notably concerning its patent filing behaviour relating to the compounds olanzapine, atomoxetine, and raloxifene.

B. Overview

11. My analysis revealed that Claimant's statistics on alleged utility-based invalidation are misleading in several respects.

12. In the first place, Claimant cites the *absolute* rather than *relative* number of cases putting at issue the validity of pharmaceutical patents, for the period 2005-2014. This fails to acknowledge that the overall level of pharmaceutical patent litigation increased dramatically in the latter period, compared with previous years. The overall *percentage* of successful patent validity challenges remained virtually unchanged between 1980-2004 and 2005-2014. Moreover, utility was not the most frequent grounds of challenge in the latter period, nor were outcomes of challenges based upon utility disproportionately successful. Indeed, of all utility challenges between 2005 and 2014, only one-third (23 of 68) were successful.

13. Secondly, while Claimant counts an alleged 23 cases of successful pharmaceutical patent invalidations based upon "utility", roughly half of these cases (11 of 23) involved patent claims successfully challenged not only on the basis of "utility", but on a number of other grounds as well, notably obviousness or anticipation. Only 12 of the 23 cases Claimant cites involved successful challenges based upon utility alone.

14. Finally, of these 12 remaining cases, only 3 were patents in fact declared <u>invalid</u> by the courts on the basis of lack of utility alone. All other cases were decisions under the *Patent Medicine (Notice of Compliance) Regulations* (*PM(NOC))*, which are interim decisions concerning the issuance of regulatory approval for competing drug products. These decisions do not declare patent claims "invalid", and opposite findings of invalidity can be reached in subsequent infringement and invalidation proceedings under the *Patent Act*.

15. To sum up, only 3 pharmaceutical patents had claims invalidated solely based upon utility in Canada, in the 35-year period from 1980 to 2014. Notably, 2 of these 3 cases were the patents at issue in this Chapter Eleven proceeding.

16. I also in parallel determined that the overwhelming majority of pharmaceutical patents successfully challenged on all grounds during the 2005-2014 period were "secondary" patents, *i.e.* patents that sought to add an additional monopoly on top of an already-granted monopoly for the base compound, typically by claiming an alleged new use, new formulation, or other "secondary" improvement.

17. My review of Claimant's patent applications regarding various alleged uses of atomoxetine, olanzapine and raloxifene revealed that it had in each case filed a large number of patent applications for new uses for each compound, in the period from 1990 to 2004. Uses of atomoxetine claimed in applications included the treatment of incontinence, ADHD, psoriasis and stuttering, just to list a few. Uses of olanzapine alleged in applications ranged from fungal dermatitis, to bipolar disorder, to insomnia and anorexia.

18. Roughly half of Claimant's filed patent application specifications, while claiming to have discovered a new use of the compound at issue, contained limited or no reference to relevant experimental data supporting the asserted new use. Instead, the patent specifications (as in the case of Claimant's patent for the use of atomoxetine for the treatment of ADHD) used language suggesting that the claimed result had been demonstrated, while failing to provide relevant data.

19. The pattern of reference to experimental results in its specifications was difficult to reconcile with Claimant's stated "expectation" that it did not need to make reference to experimental results in its patent specifications, at all: its practice in this regard is inconsistent, and seems instead to have been driven by the availability (or not) of at least some experimental results prior to filing.

20. To the extent Claimant's applications did reference pre-filing experimentation, as in the case of olanzapine, in several cases these references were summary or difficult to reconcile with the company's parallel representations in alternative sources, regarding the actual state of its research.

21. Moreover, Claimant ultimately abandoned virtually all of these applications - including those in which it had asserted having conducted clinical trials with promising results - either before the patent was granted or (where a patent was issued), post-grant, for failure to pay maintenance fees.

22. Overall, my findings suggest that Claimant's patents for olanzapine and atomoxetine, at issue in this proceeding, formed part of a pattern of overall patent filing behaviour. Claimant filed multiple patent applications claiming new "inventions" on the basis of little or no disclosed research. Irrespective of Claimant's intentions, the overall result was to create a thicket of patent applications, including patents likely filed based on speculation. Such patent thickets have the effect of limiting rather than promoting innovation in the relevant area of pharmaceutical research.

C. Claimant's Patent Invalidation Statistics

1. Methodology

23. In its Memorial, Claimant asserts that between 2005 and 2014, rates of pharmaceutical patent invalidation based upon a lack of "utility" increased substantially, from none at all during the 1980-2004 period, to at least 23 during the period from 2005 to 2014. It ascribes this upswing to a marked shift in the interpretation of the "utility" criteria in patent law by Canadian courts.[3]

24. I will not comment on Claimant's allegations regarding the alleged shift in Canadian patent law. These are addressed elsewhere by Canada, notably in the Expert Report of Ron Dimock.

[3] *See* Claimant's Memorial, paras 1, 221-222, 291.

25. Instead, I have focussed exclusively on verifying the number and nature of Canadian court patent validity challenges and outcomes between these two periods, notably for pharmaceutical patents.

26. To verify the validity of Lilly's statistical allegations, I assembled a database of all Canadian pharmaceutical patent litigation in which patent validity was challenged, comparing overall outcomes and specific outcomes for each challenged patentability criterion between the two time frames identified by Claimant, *i.e.* 1980 – 2004 and 2005-2014 (*see* Annex A).[4]

27. For the period from January 1, 1980 to September 25, 2014, all pharmaceutical patent cases were identified before the Federal Court, the Federal Court of Appeal and the Supreme Court of Canada, either concerning 1) actions in impeachment (invalidation) of patents pursuant to the *Patent Act*, or 2) applications under the *Patented Medicines (Notice of Compliance)* (*PM(NOC)*) *Regulations* in which patent invalidity was raised as an issue and where that issue has been resolved by the court. Importantly, the latter cases do not result in true invalidations. Rather, they are decisions where allegations of invalidity may be found justified, removing a regulatory hurdle for a party seeking to introduce a new drug product to market. *PM(NOC)* decisions are without prejudice to further infringement and impeachment actions under the *Patent Act*, in which the patent's validity may ultimately be upheld. Nonetheless, as the Claimant included such decisions in its overall statistics I also included them, at least for purposes of my initial examination. In all cases, I counted results based upon the highest-level court decision for the particular determination at issue (*i.e.* either patent invalidity proper, or decisions under the *PM(NOC)*).

28. Through my search, I confirmed that Canadian courts had overall considered and decided 150 validity challenges in pharmaceutical patent cases between January 1, 1980, and September 25, 2014. I then reviewed each decision to categorize the basis of each challenge

[4] *See* Claimant's Memorial, paras. 46, 221 and 222 for Claimant's statistical allegations. The evidentiary basis for Claimant's allegations is principally set out in Figures 1-3 of Claimant's Memorial, and in Claimant's exhibit C-305, listing pharmaceutical and non-pharmaceutical cases.

(*e.g.* utility, anticipation, obviousness, or some combination of these and other factors), as well as the results.

29. Claimant alleges that over the last 9 years, the Federal Courts of Canada have "invalidated" 23 pharmaceutical patents based upon "lack of utility".[5] It compares this with the prior 25 year period, in which no pharmaceutical patents were found to lack utility.[6] I determined that these numbers are misleading, for several reasons.

2. There was no increase in the relative rates of invalidation between the two periods

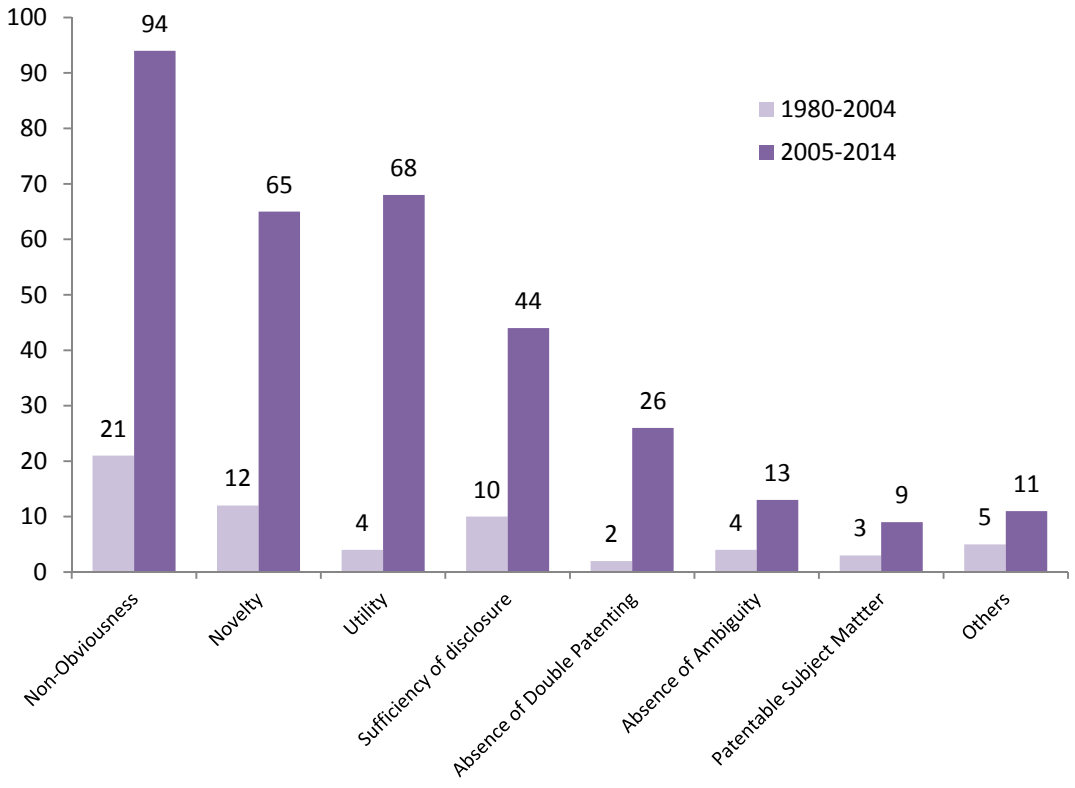
30. In the first place, Claimant fails to acknowledge that in the 2005-2014 period, as compared with the 1980-2004 period, the number of patent validity challenges in the pharmaceutical sector has overall increased on all major patentability grounds[7] (*see* Figure 1). While there were only 23 patent validity challenges in total between 1980-2004, this rose to 127 validity challenges to pharmaceutical patents between 2005-2014 (*see* Figure 2). If each ground for challenge is separately counted, courts overall issued 61 determinations in the 1980-2004 period, compared with 330 determinations in 2005-2014 (*see* Figure 1). The increase in pharmaceutical patent challenges based upon "lack of utility" must be seen in this broader context.

[5] *See* Claimant's Memorial, paras 1 and 221.

[6] *See* Claimant's Memorial, paras 1 and 46.

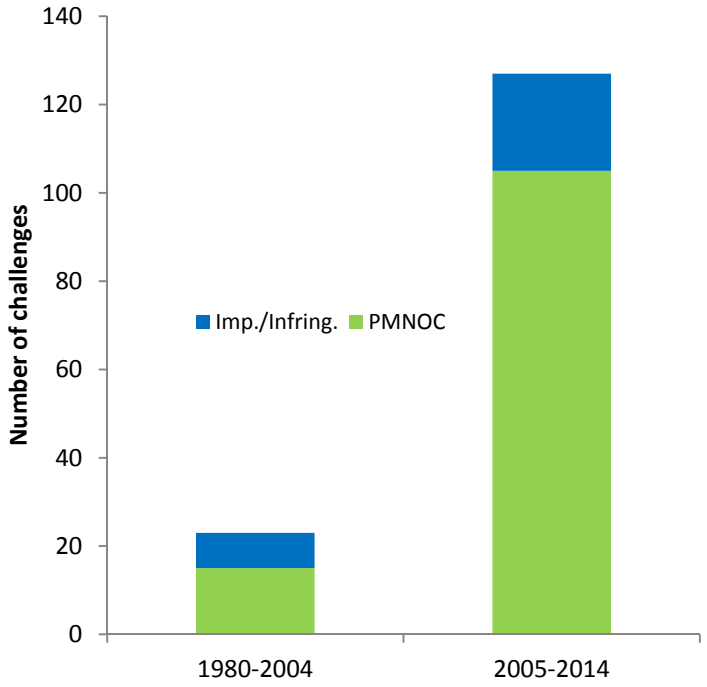
[7] These grounds include: obviousness, anticipation, lack of utility, insufficiency of disclosure/overbreadth (*i.e.*, does not include lack of proper disclosure that relates to the utility requirement)**,** double patenting, ambiguity, absence of patentable subject matter, and other.

Figure 1 – The increased number of validity challenge resolutions between the periods of 1980-2004 and 2005-2014 is observed for all patentability requirements.



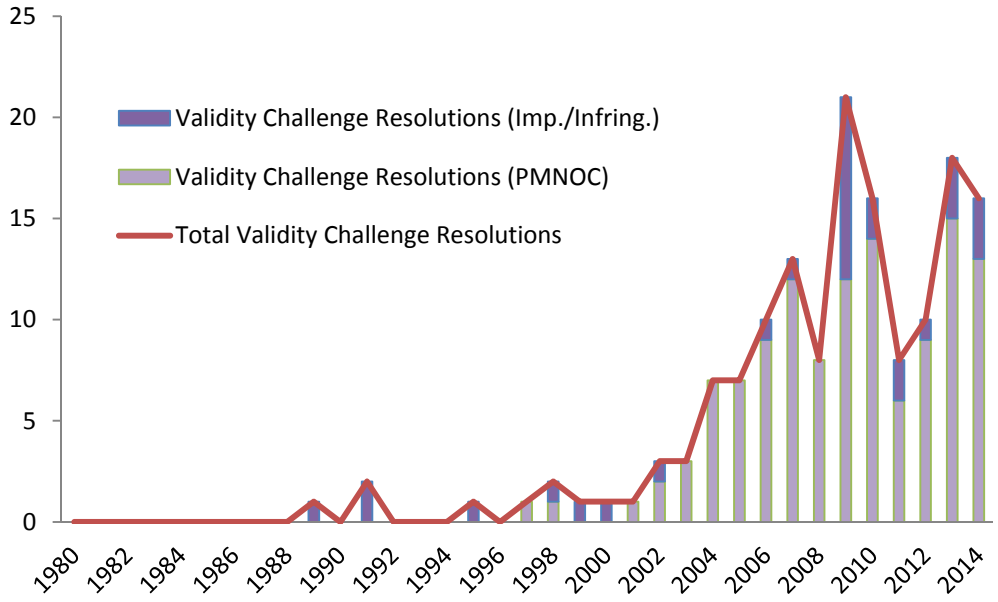
31. As Professor Ron Dimock explains in his Expert Report, prior to NAFTA there was a compulsory licensing scheme for generic manufacturers in Canada. The scheme was abolished as part of taking on NAFTA and TRIPS obligations. At the same time, Canada enacted the *Patented Medicines (Notice of Compliance)* Regulations (*PM(NOC))* in 1993. The *PM(NOC)* process allows patent holders to delay the entry of competing generic products into the market by launching a *PM(NOC)* proceeding. If the innovative company is successful, the generic manufacturer is prevented from entering the market entirely. During the process any questions of patent invalidity by the generic producer are also addressed.

Figure 2 – Absolute number of patent validity challenge resolutions per period also significantly increased in the 2005-2014 period. The bulk (83%) of the litigation of pharmaceutical patents between 1980 and 2014 occurred through the PM(NOC) proceedings



32. The overall result of the introduction of the *PM(NOC)* process has been a substantial increase to pharmaceutical litigation in Canada (*see* Figure 3). Indeed, *PM(NOC)* cases amounted to 65% of all pharmaceutical patent litigation dealing with validity issues in the 1980-2004 period. This was already a significant number of the total number of cases, recalling that this type of procedure was introduced only in 1993. The number of *PM(NOC)* cases in relation to the total of pharmaceutical patent validity challenges rose to 83% in 2005-2014 (*see* Figure 2).

Figure 3 - A significant increase of the total number of validity challenge resolutions per year is observed from 2004 onward and PM(NOC) cases amounted for the vast majority of all pharmaceutical patent litigation



33. This makes comparisons between the <u>total number</u> of successful patent challenges in the pharmaceutical patent sector, compared with other sectors (something Claimant does in its Memorial)[8], misleading, in that *PM(NOC)* proceedings are unique to the pharmaceutical sector. There is no "clear record of disproportionate effects"[9] based upon the application of the utility criteria, as Claimant suggests: instead, much of the overall litigation regarding pharmaceuticals in Canada takes place under a regime that is uniquely designed for that particular sector, and that has generated a very high level of litigation.

34. Taking into account the total number of pharmaceutical cases between the two periods of reference, I determined that overall rates of success in patent validity challenges remained consistent between 1980-2004 and 2005-2014. In the latter case, 48% of overall patent

[8] See Claimant's Memorial, paras 221, 291.

[9] See Claimant's Memorial, para 223.

validity challenges were successful; in the former, 50% (*see* Table 1). This was even taking account of *PM(NOC)* cases where allegations of invalidity were deemed "justified" but which, as I have discussed, were not true "invalidations", and remained subject to subsequent review.

Table 1 – Overall rates of successful validity challenges remained constant between the periods.

Period of reference	Successful challenge rate
1980-2004	**48%** (11 inv. / 23 inv. Challenges)
2005-2014	**50%** (64 inv. / 127 inv. Challenges)

3. Utility was not the most frequent ground of challenge of pharmaceutical patents

35. Another point that emerged from my review is that utility was not the most frequent ground for challenges during the 2005-2014 period. During this period, I counted 94 cases where the patent was challenged on the basis of obviousness, 68 cases on the basis of utility, 65 on the basis of novelty, and 44 challenges based on sufficiency of disclosure. In other words, challenges on the basis of obviousness outnumbered those made on the basis of utility by 38%, while the number of novelty challenges was nearly equal to those of utility (*see* Table 2).

Table 2 – The total validity challenge outcomes shows that a pharmaceutical patent is not more likely to be found invalid on the ground of utility than on the ground of obviousness when challenged before the Canadian courts.

Period of reference	Non-obviousness criterion met	Utility criterion met	Novelty criterion met	Sufficiency criterion met
1980-2004	62% (n=21)	100% (n=4)	67% (n=12)	70% (n=10)
2005-2014	68% (n=94)	66% (n=68)	74% (n=65)	75% (n=44)

4. Two-thirds of pharmaceutical patents challenged on the basis of utility were found useful

36. When considering the outcomes of the 2005-2014 cases, I determined that courts had found that the patent fulfilled the challenged criterion in 64 of 94 challenges on the basis of obviousness (68%), in 45 out of 68 challenges on the basis of utility (66%)[10], in 48 out of 65 cases on the basis of novelty (74%), and in 33 of 44 sufficient of disclosure challenges (75%) (*see* Table 2). This means that in cases where utility was raised, two-thirds of the time the challenged patent was found useful. Moreover, this rate compares with that arising for the other two main grounds of validity. If, as Claimant suggests, Canada's utility standard cannot reasonably be met, one would expect to find at least a higher proportion of successful challenges on this basis, overall. Instead, the opposite is true.

5. Of pharmaceutical patents successfully challenged on grounds of utility, half had other problems as well

37. I then analysed the decisions in the 23 successful challenges involving allegations of lack of utility. I determined that of these, only 12 were successful on the basis of lack of utility alone. Roughly half of the 23 cases cited by Claimant (11 out of 23) instead involved patents that had multiple defects not limited to utility, notably obviousness, anticipation and insufficiency of disclosure (*see* Figure 4).

[10] The difference between my recited percentage of validity challenges wherein the patent have been held to lack utility (34%) and Claimant's percentage (40%) is due to the fact that Claimant's percentage is based on a number of final judgements and my recited percentage is based on the number of patents on which final judgements were given. As a result, the Claimant counted each final judgement as one outcome even for cases wherein multiple patents have been challenged (e.g., 2009 FC 1102).

Figure 4 – The total challenged validity requirements outcomes indicate that during the 2005 – 2014 period, the courts held that two-thirds of pharmaceutical patents challenged on the basis of utility were useful and that half of the patents held to lack of utility had other defect(s).

38. This in turn meant that overall, between 2005-2014, only 12 out of 68 patent challenges involving allegations of lack of utility were successful on the basis of utility alone (*see* Figure 4).

6. Only a handful of pharmaceutical patent challenges were true invalidations

39. Claimant's statistics are further misleading in that only 3 out of the 68 pharmaceutical patent challenges in the 2005-2014 period actually resulted in the invalidation of the patent at issue. The balance of these decisions (9 out of the 12 decided on utility alone) were decisions under

the *PM(NOC) Regulations*, where the patent-holder remained free to pursue an action in infringement following issuance of a Notice of Compliance to a competitor. Therefore, only 3 pharmaceutical patents, not 23, were actually invalidated in Canada over the entire 2005-2014 period, based on the sole ground of utility (*see* Figure 5)**.**

Figure 5 – The total challenged validity requirements under impeachment/infringement actions reveal that only 3 pharmaceutical patents were deemed invalid by the Canadian courts for the sole reason of lack of utility in the last 35 years.

40. Overall, this means that the claims of only 3 pharmaceutical patents have been invalidated by the Canadian courts over the last 35 years, for the sole reason of lack of utility. Claimant was the patent-holder of 2 out of the 3 patents, two of which are at issue in the present

proceeding. During the same 35-year period, 2 non-pharmaceutical patents had claims also deemed invalid on the sole basis of utility.[11]

7. Patents most challenged were "secondary" patents

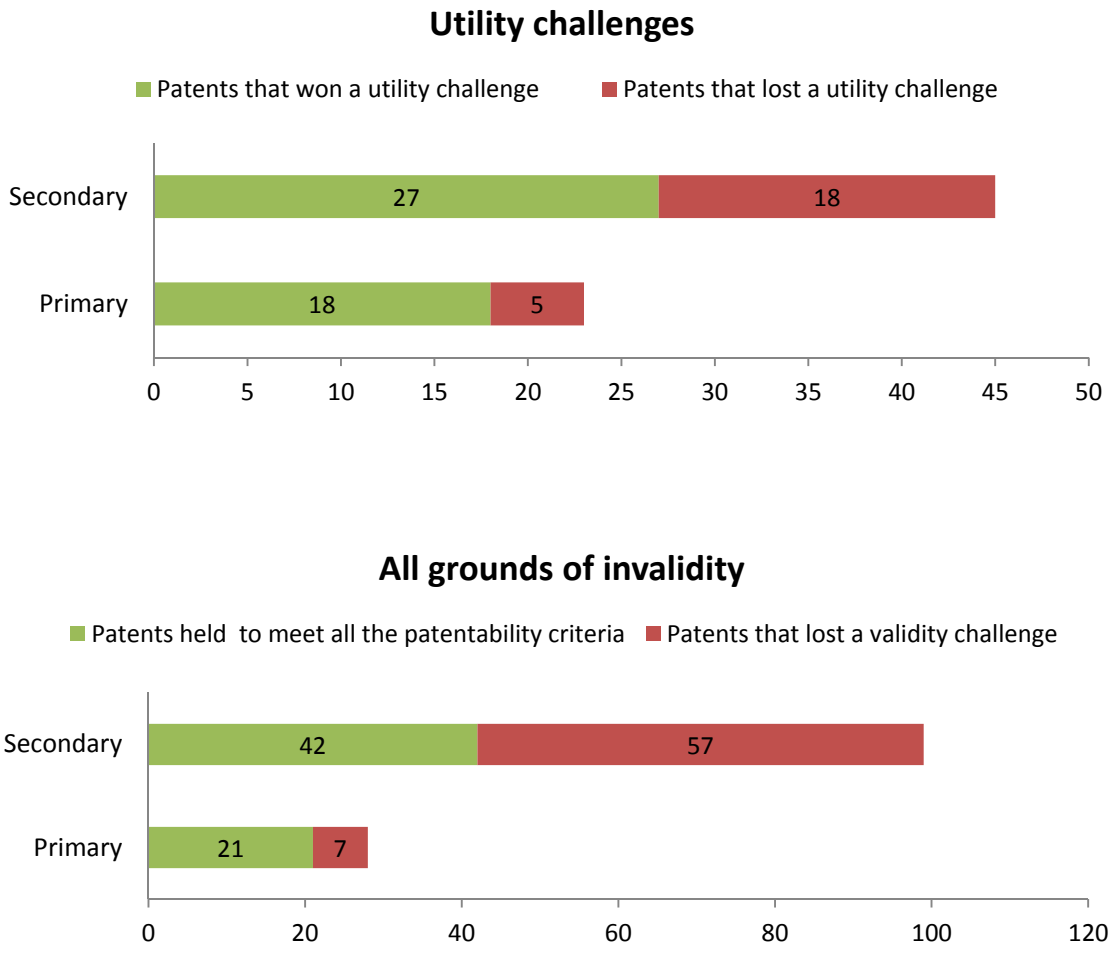
41. Another result I have confirmed is that the vast majority of patents successfully challenged before Canadian courts on the sole ground of utility were "secondary" patents, as opposed to "primary" patents. A "primary" patent is a term that I use to describe a patent directed to a new, previously-unknown base compound or composition, and its potential use. I use "secondary" patent to describe a patent directed to modified forms of that base compound, or to a new medical use of a known drug, to new combinations of known drugs, to particular formulations, dosage regiments and processes, or other secondary modifications to an already well-known drug. I also considered selection patents as secondary patents, since they involve a member of an already patented class of compounds. As their name implies, secondary patents extend the period of the patent monopoly beyond the primary patent. Claimant's atomoxetine and olanzapine patents were both secondary patents. In the case of olanzapine, Claimant argued that this "selection" offered enhanced effectiveness and a lower side-effects profile in the treatment of schizophrenia than other members of the genus, which had already been patented for this same medical use. In the case of atomoxetine, Claimant alleged that it had discovered a new use for this old and well-known compound.

42. When all grounds of invalidity are considered, my findings reveal that between 2005-2014, secondary patents were challenged more often than primary patents (99 challenges vs. 28 challenges) and lost a higher percentage of those challenges (58% vs. 25%). Overall, 89% of the patents that lost a validity challenge in the 2005-2014 period were secondary patents (*see* Figure 6).

[11] *See Feherguard Products Ltd. v. Rocky's of B.C. Leisure Ltd.* (1995), 60 C.P.R. (3d) 512 (FCA), aff'g (1994), 53 C.P.R. (3d) 417 (FCTD) (**R-210**), and *Bell Helicopter Textron Canada Limitée v. Eurocopter*, 2013 FCA 219, aff'g 2012 FC 113 (**R-204**).

43. I observed the same findings for the pharmaceutical patents that lost a utility challenge. Between 2005-2014, secondary patents were challenged more often for lack of utility than primary patents (45 challenges vs. 23 challenges) and secondary patents lost a higher percentage of those challenges compared to primary patents (40% vs. 22%) (*see* Figure 6 and Annex B). Therefore, the vast majority of patents that lost a utility challenge were for secondary patents (18 out of 23) (*see* Figure 6 and Annex B).

Figure 6 – Although the courts held that several secondary patents met all patentability criteria, secondary patents were challenged more often and were more likely to lose a validity challenge than primary patents.



44. These findings were consistent across other grounds of successful challenge: for example, I found that 90% of the patents successfully challenged in 2005-2014 on the basis of obviousness were also secondary patents (27 out of 30) (*see* Annex C).

45. Overall, these observations indicate that secondary patents are much more susceptible to challenges and findings of invalidity on different grounds than primary patents.

46. The focus in Canadian pharmaceutical patent litigation on secondary patents reflects similar trends in the U.S. and Europe. Studies show that the prevalence of patent challenges has risen dramatically in the past 25 years in the U.S. and in Europe, and secondary patents form the overwhelming percentage of these challenges.[12],[13]

D. Analysis of Claimant's Patent Filing Behaviour

47. The second main aspect of my analysis was to look into Claimant's patent filing behaviour around the compounds olanzapine, atomoxetine and raloxifene. Claimant was issued secondary patents for all three of these compounds. The invalidation of Claimant's patents for olanzapine and atomoxetine is the subject of the present NAFTA Chapter Eleven matter. I also included raloxifene as that was the compound at issue in the third of Claimant's patents that was successfully challenged on the basis of lack of utility under *PM(NOC)* proceedings. The point of my investigation was to determine to what extent these invalidated patents fell into an overall pattern of patent filing behaviour on the part of Claimant.

48. I discovered that Claimant in the 1990-2000's had filed multiple patent applications for new uses of each of the three compounds. About half of these patent applications contained no relevant experimental data in their disclosure, or supporting reference to experiments confirming the alleged new use. Many of those referencing prior experimentation did so in a

[12] European Commission (2009) Pharmaceutical Sector Inquiry: Final Report (**R-243**).

[13] Hemphill, C. Scott and Sampat, Bhaven N., When Do Generics Challenge Drug Patents?, 1 September 2011. Columbia Law and Economics Working Paper No. 379; Journal of Empirical Legal Studies, 2011; 5th Annual Conference on Empirical Legal Studies Paper; Columbia Law and Economics Working Paper No. 379. Online: SSRN: http://ssrn.com/abstract=1640512 (**R-245**).

very summary fashion. In the case of olanzapine, these references were in several cases contradicted by alternative statements by Claimant regarding the state of its research. Further, Claimant ultimately abandoned the overwhelming majority of these applications, either during patent prosecution, or indeed after the patent was issued.

1. Claimant filed a large number of patent applications for alleged new uses of olanzapine, atomoxetine and raloxifene

49. Prior to the 1990s, each of the compounds olanzapine, atomoxetine and raloxifene had already been the subject of at least one prior patent, held by Claimant itself.[14] During the 1990-2004 period, the Claimant filed multiple secondary patent applications related to these same three compounds. I searched, retrieved and analyzed the disclosure of all of these olanzapine-, atomoxetine- and raloxifene-related patent applications, as filed by Claimant. The vast majority of these applications covered a new alleged use. I therefore focussed my analysis on this specific type of secondary patent application. [15]

50. As I determined in my review, Claimant (or one of its subsidiaries) filed a total of 96 separate patent applications in Canada, each purporting to disclose the invention of a different "new" use for olanzapine, atomoxetine or raloxifene, between 1990 and 2004 (*see* Annexes D and E).[16] For olanzapine, Claimant sought 16 separate patents, each for a different use of the compound, during the period from 1995 to 1998. For atomoxetine, Claimant sought 12 separate patents for different uses of the compound, in the period from

[14] They are: 1) Olanzapine – Patent Specification CA 1,075,687 granted in 1980 (genus patent) (**R-246**); 2) Atomoxetine - Patent Specification 1,051,034 granted in 1979 (genus patent) (**R-247**); and Patent Specification 1,181,430 granted in 1985 (selection patent covering specifically atomoxetine) (**R-269**); and 3) Raloxifene – Patent Specification 1,090,795 granted in 1980 (genus patent, anti-fertility agent). (**R-270**).

[15] In addition to the 96 new use applications I assess here, Claimant filed 32 other secondary patent applications. For olanzapine, there were 7 applications for a new form or formulation, 6 applications for use of olanzapine in combination with another drug. For atomoxetine, there was 1 application for use in combination with another drug. For raloxifene, there were 8 applications for a new form, formulation or minor modification, 7 applications for use of raloxifene in combination with another drug, and 3 applications for dosage optimization.

[16] See attached**,** list of alleged "new uses" for each of atomoxetine, olanzapine and raloxifene (**Annex D**). See also, complete list of patent applications for these three compounds (**Annex E**). There were 16 patent applications made for olanzapine, 12 for atomoxetine and 68 for raloxifene. Although patent 2,041,113 listed in Annex E is part of the examined group, this patent is a selection patent and was not counted in statistics relating to patent applications and patents for a "new" use.

1992 to 2004. For raloxifene, Claimant filed 68 separate patent applications for new uses of the compound, in the period from 1993 to 2001.

51. Based upon its filings, Claimant was in effect claiming to have discovered 96 distinct treatments employing these three compounds alone.

52. For atomoxetine, between 1992-2004, the Claimant filed twelve separate patent applications, each claiming to have discovered one of the following distinct uses for the compound (*see* Annex D):

- psoriasis
- stuttering
- incontinence
- hot flashes
- anxiety disorder
- learning disabilities
- tic disorders
- cognitive failure
- oppositional defiant disorder
- conduct disorder
- pervasive development disorder
- ADHD

53. For olanzapine, Claimant filed 16 separate patent applications between 1995-1998, each claiming to have discovered one of the following alleged new uses for the compound (*see* Annex D):

- excessive aggression
- fungal dermatitis

- bipolar disorder
- sexual dysfunction
- insomnia
- an anesthetic agent
- nicotine withdrawal
- tic disorder
- anorexia
- depression
- autism and mental retardation
- pain
- migraines
- dyskinesia
- addictive substance withdrawal
- Alzheimer's disease

For raloxifene, Claimant filed 68 separate patent applications between 1993 to 2001 for a wide range of alleged uses, including autoimmune diseases, high cholesterol, breast disorders, acne, and obsessive-compulsive disorders (*see* Annex D).

2. Claimant's patent applications made inconsistent reference to prior experimentation

54. A significant proportion of the patent applications that I examined, claiming these various new uses of the compounds at issue, included no reference to any relevant supporting experimental data in their disclosure: this was the case in 31% of the olanzapine patent applications, 43% of the atomoxetine applications, and 56% of the raloxifene applications.[17]

[17] See **Annex E**. I counted as cases where relevant experimental data had been given, those patent applications including a generic reference to the results of a clinical trial, a detailed reference to the results of a clinical study, anecdotal data, *in vitro* results, *ex vivo* and *in vivo* results were all considered as relevant experimental data. Prophetic examples (*i.e.*, examples that describes how a given test or assay could be conducted and/or how expected results should be interpreted rather than working examples that describes work actually conducted or results actually

55. Roughly half of Claimant's patent applications filed in the 1990s-2000s contained at least some reference to relevant experimental data supporting the alleged new use. The nature of the data disclosed was wide-ranging, from preliminary *in vitro* results to "encouraging" clinical trial results (*see* Annex E).[18]

56. Claimant's references in its patent applications to experimental data, to the extent included at all, was often summary and unrevealing, and at times contradicted by other public disclosure by Claimant, as I will describe further below.

3. Patent applications filed for various therapeutic uses of Olanzapine

57. Claimant filed 16 patent applications in total alleging new therapeutic uses for olanzapine, in the period from 1995 to 1998. Of these, 5 patents contained no reference to relevant supporting experimental data at all, and instead simply employed language asserting the new use or suggesting that the new use had been demonstrated. Out of 11 "new use" patent applications for olanzapine containing reference to relevant supporting data, in 9 cases this disclosure amounted to a brief reference to clinical trials, in which the claimed therapeutic uses of olanzapine had allegedly been demonstrated[19] (see Annexes E and F). The conduct of double-blind multicenter clinical trials would typically imply the collection of a significant amount of data specifically relevant to each one of the claimed therapeutic uses, prior to the filing of the corresponding patent applications.

58. I compared these representations regarding the state of its research with a separate list generated by Claimant itself[20], in which it listed all past and ongoing clinical trials relating to

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achieved) were not considered as relevant experimental data. I did not attempt to determine whether the experimental data was sufficient to support a demonstration or a sound prediction for the claimed use.

[18] See **Annex E**. Claimant made reference to relevant experimental data in 11 out of 16 of its patent applications for new uses of olanzapine, in 7 out of 12 patent applications for alleged new uses for atomoxetine, and 30 out of 68 patent applications for alleged new uses of raloxifene.

[19] See table of patents filed for new uses of olanzapine and reciting a reference to a clinical trial (**Annex F**).

[20] http://www.lillytrials.com/results/Zyprexa.pdf

olanzapine: 8 of the 9 new uses cited above were not on the list of clinical trial performed before the filing of the corresponding patent applications. Notably, I found no reference on the list to clinical trials that evaluated the efficacy of olanzapine for the treatment of any of dyskinesia, tic disorder, autism, mental retardation, excessive aggression, insomnia, migraine pain or addictive substance withdrawal, dating from before the filing of corresponding patent applications.[21]

59. Moreover, this separate disclosure revealed that Claimant had directed or was aware of a clinical study for the use of olanzapine to treat psychosis associated with dementia, conducted between May 1994 and January 1995 (Study F1D-MC-HGAO).[22] Secondary objectives of the clinical trial included evaluation of the efficacy of olanzapine in the Alzheimer's population. The results showed no efficacy of olanzapine in the Alzheimer's population.[23] Despite this, four months later Claimant filed patent application CA2219902A1, for the use of olanzapine to treat Alzheimer's disease.[24] In this application, Claimant asserted that it had discovered that olanzapine was an effective treatment for that disease and refers to what appears to be the same study to support the claimed therapeutic use.[25]

60. To the extent that in its patent applications it referenced promising clinical results for this compound, this should have provided a strong incentive for the Claimant to push ahead with the corresponding patent applications that it had filed for these uses. I found, to the contrary,

[21] Eli Lilly, "Trials of Zypreza" (LY170053), online: www.lillytrials.com/results/Zyprexa.pdf (**R-217**).

[22] Clinical Study for the use of Olanzapine to Treat Psychosis Associated With Dementia, Study F1D-MC-HGAO **(R-271)**

[23] The conclusions section of Study F1D-MC-HGAO states: "This study demonstrated that olanzapine, at doses of 1 to 8 mg/day, administered under the conditions as specified in the protocol, did not demonstrate efficacy superior to placebo in alleviating the psychotic symptoms and behavioral disturbances in elderly patients with primary degenerative dementia of the Alzheimer's type." **(R-271)**

[24] Patent Specification CA 2,219,902 (**R-273**).

[25] Patent Specification CA 2,219,902, p. 13 (**R-273**).

that Claimant abandoned 8 of 9 patent applications referring to promising clinical results, during patent prosecution.

61. In the end, Claimant pursued only 1 of these patent applications.. That patent was ultimately granted. However, Claimant abandoned this patent for failure to file maintenance fees. [26]

4. Patent applications filed for alleged new therapeutic uses of Atomoxetine

62. Claimant filed 12 patent applications for atomoxetine between 1992 and 2004, each claiming a new and unexpected therapeutic use for the compound. Of these, 5 out of 12 contained no reference to relevant supporting experimental data, and instead simply employed language asserting the new use or suggesting that the new use had been "demonstrated" (as in the case of Claimant's patent for the use of atomoxetine to treat ADHD). Among the 7 of 12 separate patent applications covering a "new" use for atomoxetine that did reference relevant experimental data, 3 simply referred to a single case study in which the intended therapeutic "new" uses of atomoxetine had been allegedly demonstrated (see Annexes E and G). All 3 were abandoned during prosecution.

63. In the end, Claimant abandoned 92% (11 of 12) of its patent applications for various uses of atomoxetine, either during prosecution or after the patent was granted, maintaining only the patent covering the use of atomoxetine for the treatment of ADHD, at issue in this proceeding.[27]

64. That patent was of course ultimately invalidated by the courts, on the basis that the patent specification failed to disclose any factual basis for a sound prediction that atomoxetine could be used to treat ADHD.

[26] Patent specification CA 2,248,753C (**R-274**). The olanzapine patent at issue in this case is a selection patent and therefore was not included in my analysis of new use patents.

[27] In fact, only 3 patents were granted for new uses for atomoxetine: patent 2061665C (lower urinary tract disorders, *i.e.*, incontinence), patent 2209735C (ADHD) and patent 2304657C (conduct disorder). Patents 2061665C and 2304657C lapsed for failure to pay the maintenance fees.

5. Patent applications filed for new alleged therapeutic uses of Raloxifene

65. In the case of raloxifene, Claimant filed 68 separate secondary patent applications for the compound between 1993-2001. Over half contained no reference to relevant experimental data (*see* Annex E). Claimant went on to abandon 99% of these applications either during prosecution or following on the patent grant for failure to pay the maintenance fees, maintaining only the patent covering the use of raloxifene for the treatment of osteoporosis.[28] That patent was successfully challenged on the basis that the patent specification failed to provide sufficient disclosure for a sound prediction that raloxifene could be used to treat osteoporosis.

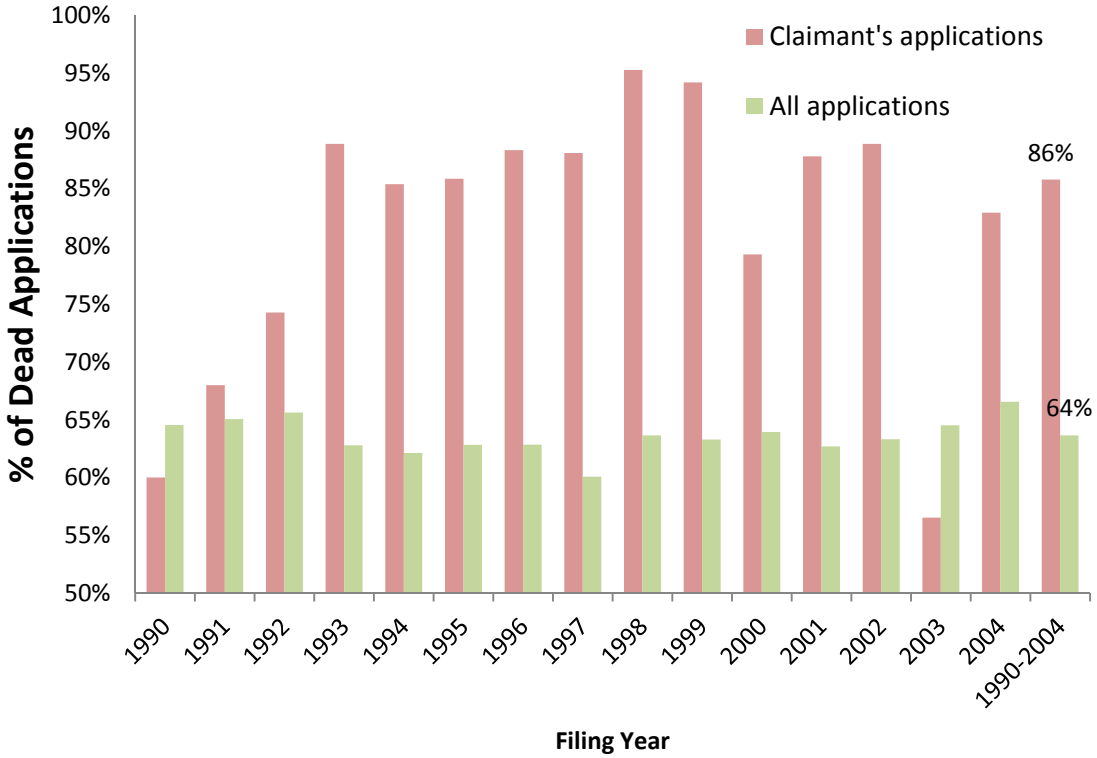
6. Claimant's percentages of dead applications are much higher than for other applicants

66. According to CIPO's internal database (Line of Business), Claimant's percentages of dead applications in the pharmaceutical area of therapeutic uses[29] were substantially higher on average than the ones observed for all patent applications in the same field between 1990-2004 (see Figure 7). Moreover, only 14% of all Claimant's patent applications were maintained until the grant of a patent or under active prosecution during 1990-2004, less than half as often than all patent applications in the same field (36%). Therefore, the percentage of dead applications covering therapeutic uses of the three compounds olanzapine, atomoxetine and raloxifene (94%) was extremely high when compared to the one observed for all patent applications in the pharmaceutical area of therapeutic uses (94% vs. 64%) and even high in comparison to the significant overall percentage of Claimant's dead applications in the pharmaceutical area of therapeutic uses during the same period (94% vs. 86%).

[28] In fact, only 2 patents were granted for new uses for raloxifene: patent 2101356C (osteoporosis) and patent 2112017C (high cholesterol). Patent 2112017C lapsed for failure to pay the maintenance fees.

[29] The presented results only include patent applications having the partial International Patent Classification (IPC) A61K 31 that encompasses "Medicinal preparations containing organic active ingredients", a category of invention reflecting patent applications covering a therapeutic use for a compound of the same broad category of the three compounds at issue. 95% of the patent applications listed in **Annex E** contain the partial IPC A61K 31 on their respective cover page.

Figure 7 - Percentage of dead patent applications among patent applications covering a therapeutic use for compounds of the same broad category of olanzapine, atomoxetine and raloxifene.



E. Conclusions

67. The Claimant maintained a marginal number of patent applications and patents covering "new" therapeutic uses for olanzapine, atomoxetine and raloxifene during the 1990-2004 period (2 out of a possible 96). It abandoned all of its olanzapine "new use" applications, either during prosecution or after obtaining the patent.[30] The only atomoxetine and raloxifene patents that were maintained by the Claimant in Canada were those that ultimately lost a utility challenge before the courts.

68. Overall, this data strongly suggests that a substantial proportion of patent applications relating to "new" uses for olanzapine, atomoxetine and raloxifene were filed based upon little

[30] Again, the olanzapine patent at issue in this case is a selection patent and therefore was not included in my analysis of new use patents

or no relevant supporting data, at a time when relevant research was either very preliminary, or simply non-existent. Moreover, it also strongly suggests that Claimant's patent applications for olanzapine and atomoxetine that are at issue in this proceeding, were part of an overall pattern of patent filing behaviour on the part of Claimant that distinguished it from other pharmaceutical applicants. The percentage of dead applications filed by the Claimant compared to all other applicants in the same field was considerably higher, and Claimant maintained its applications until a patent was granted or under active prosecution less than half as often as other applications in the same field. My findings are in line with a scattershot patent filing approach on the part of Claimant, partly on the basis of very preliminary experimental data. Irrespective of Claimant's intentions, its patent filing behaviour created a "thicket" of patent applications. This kind of "patent thicket" would have dissuaded other companies from investigating the same areas of research.

Signed at: Ottawa, Ontario on: 26/01/2015

[signed]
Marcel Brisebois

Annex A

Chronological List of Pharmaceutical Patent Validity Challenge Resolutions from January 1, 1980 to September 25, 2014

GREEN = A utility challenge has been won by the patent owner

BLUE = Several validity challenges have been lost by the patent owner, including a utility challenge

PURPLE = A utility challenge has been the sole validity challenge lost by the patent owner

#	Challenged Patent	Case name	Date	Citation
1	1,003,331	Apotex Inc. v. Hoffmann-La Roche Ltd.	1989-04-18	[1989] F.C.J. No. 321
2	741,825	Wellcome Foundation Ltd. v. Apotex Inc.	1991-11-14	[1991] F.C.J. No. 1136
3	907,014	Wellcome Foundation Ltd. v. Apotex Inc.	1991-11-14	[1991] F.C.J. No. 1136
4	1,275,349	Merck & Co. v. Apotex Inc.	1995-04-19	[1995] F.C.J. No. 588
5	1,181,076	Pfizer Canada Inc. v. Apotex Inc.	1997-08-18	[1997] F.C.J. No. 1087
6	1,322,334	Bayer Inc. v. Canada (Minister of National Health and Welfare)	1998-07-20	[1998] F.C.J. No. 1035
7	960,688	Wellcome Foundation Limited v. Novopharm Ltd.	1998-07-31	[1998] F.C.J. No. 1107
8	1,204,671	Apotex Inc. v. Syntex Pharmaceuticals International Ltd.	1999-04-23	[1999] F.C.J. No. 548
9	1,339,047	Kirin-Amgen Inc. v. Hoffmann-La Roche Ltd.	2000-12-20	[2000] F.C.J. No. 2137
10	1,332,150	Novartis Pharmaceuticals Canada Inc. v. Apotex Inc.	2001-10-18	2001 FCT 1129
11	2,178,637	Smithkline Beecham Pharma Inc v Apotex Inc	2002-05-28	2002 FCA 216
12	2,029,065	Pfizer Canada Inc v Apotex Inc	2002-11-05	2002 FCT 1138
13	1,238,277	Apotex Inc v Wellcome Foundation Ltd	2002-12-05	2002 SCC 77
14	2,214,575	GlaxoSmithKline Inc v Apotex Inc	2003-05-30	2003 FCT 687
15	1,218,067	Bayer AG v Apotex Inc	2003-10-17	2003 FC 1199
16	1,287,060	GlaxoSmithKline Inc v Genpharm Inc	2003-10-24	2003 FC 1248
17	2,212,548	GlaxoSmithKline Inc v Canada (Minister of Health)	2004-01-26	2004 FC 116
18	2,261,732	Abbott Laboratories v Canada (Minister of Health)	2004-10-01	2004 FC 1349
19	1,264,751	Apotex Inc v AB Hassle	2004-11-01	2004 FCA 369

20	1,304,080	Janssen-Ortho Inc v Novopharm Ltd	2004-11-19	2004 FC 1631
21	1,338,376	Genpharm Inc v Procter & Gamble Pharmaceuticals Canada Inc	2004-11-22	2004 FCA 393
22	1,292,693	Genpharm Inc v AB Hassle	2004-12-02	2004 FCA 413
23	1,338,377	Genpharm Inc v AB Hassle	2004-12-02	2004 FCA 413
24	2,294,595	Merck & Co Inc v Apotex Inc	2005-05-26	2005 FC 755
25	2,261,732	Abbott Laboratories v Canada (Minister of Health)	2005-08-10	2005 FC 1095
26	1,319,682	Aventis Pharma Inc v Mayne Pharma (Canada) Inc	2005-08-31	2005 FC 1183
27	2,148,071	Pfizer Canada Inc v Novopharm Ltd	2005-10-03	2005 FC 1299
28	2,148,071	Pfizer Canada Inc v Apotex Inc	2005-10-17	2005 FC 1421
29	1,340,316	Bristol-Myers Squibb Canada Co v Novopharm Ltd	2005-10-28	2005 FC 1458
30	1,246,457	Aventis Pharma Inc v Apotex	2005-11-04	2005 FC 1504
31	1,341,206	Aventis Pharma Inc v Apotex	2006-02-13	2006 FCA 64
32	1,282,006	Bayer AG v Novopharm Ltd	2006-03-24	2006 FC 379
33	1,318,590	Axcan Pharma Inc v Pharmascience Inc	2006-04-26	2006 FC 527
34	2,277,274	Abbott Laboratories v Canada (Minister of Health)	2006-05-18	2006 FCA 187
35	2,258,606	Abbott Laboratories v Canada (Minister of Health)	2006-05-18	2006 FCA 187
36	1,321,393	Pfizer Canada Inc v Canada (Minister of Health)	2006-06-09	2006 FCA 214
37	1,341,206	Pharmascience Inc v Sanofi-Aventis Canada Inc	2006-06-21	2006 FCA 229
38	1,275,350	Apotex Inc v Merck & Co	2006-10-10	2006 FCA 323
39	2,021,546	Pfizer Canada Inc v Canada (Minister of Health)	2006-12-07	2006 FC 1471
40	2,258,606	Abbott Laboratories v. Canada (Minister of Health)	2007-01-11	2006 FC 1558
41	2,393,614	Ratiopharm Inc v Canada (Minister of Health)	2007-02-23	2007 FCA 83
42	2,261,732	Abbott Laboratories v Canada (Minister of Health)	2007-04-19	2007 FCA 153
43	2,177,576	G.D. Searle & Co v Novopharm Ltd	2007-04-30	2007 FCA 173
44	2,044,748	Pfizer Canada Inc v Apotex Inc	2007-05-16	2007 FCA 195
45	1,341,206	Sanofi-Aventis Inc v Laboratoire Riva Inc	2007-05-28	2007 FC 532
46	1,341,330	Pfizer Canada Inc v Canada (Minister of Health)	2007-05-31	2007 FCA 209
47	2,041,113	Eli Lilly Canada Inc v Novopharm Ltd	2007-06-05	2007 FC 596
48	1,304,080	Novopharm Ltd v Janssen-Ortho Inc	2007-06-07	2007 FCA 217
49	2,025,668	AstraZeneca AB v Apotex	2007-06-28	2007 FC 688
50	2,133,762	AstraZeneca AB v Apotex	2007-06-28	2007 FC 688
51	2,419,729	Abbott Laboratories v Canada (Minister of Health)	2007-07-17	2007 FC 753
52	2,471,102	Abbott Laboratories v Canada (Minister of Health)	2007-07-17	2007 FC 753

53	2,220,455	Pfizer Canada Inc v Canada (Minister of Health)	2007-10-05	2007 FC 898
54	1,341,330	Pfizer Canada Inc v Canada (Minister of Health)	2008-01-02	2008 FC 11
55	2,021,546	Pfizer Canada Inc v Canada (Minister of Health)	2008-01-04	2008 FC 13
56	2,041,133	Apotex Inc v Eli Lilly Canada Inc	2008-02-04	2008 FCA 44
57	2,021,546	Pfizer Canada Inc v Canada (Minister of Health)	2008-03-20	2008 FCA 108
58	1,321,393	Pfizer Canada Inc v Canada (Minister of Health)	2008-04-17	2008 FC 500
59	2,201,967	Shire Biochem Inc v Canada (Minister of Health)	2008-04-25	2008 FC 538
60	1,340,083	GlaxoSmithKline Inc v Pharmascience	2008-05-09	2008 FC 593
61	1,336,777	Apotex Inc v Sanofi-Synthelabo Canada	2008-11-06	2008 SCC 61
62	2,163,446	Apotex v Pfizer Canada	2009-01-16	2009 FCA 8
63	1,298,288	Bristol-Myers Squibb v Apotex	2009-02-10	2009 FC 137
64	2,250,191	Eli Lilly Canada Inc v Novopharm Ltd	2009-03-19	2009 FC 235
65	2,386,527	Abbott Laboratories v Minister of Health	2009-03-20	2009 FCA 94
66	2,158,399	Eli Lilly Canada Inc v Novopharm	2009-03-23	2009 FC 301
67	2,101,356	Eli Lilly Canada v Apotex	2009-03-25	2009 FCA 97
68	1,341,196	Apotex v Adir and Servier Canada	2009-06-30	2009 FCA 222
69	2,098,738	Purdue Pharma v Pharmascience	2009-07-16	2009 FC 726
70	1,133,007	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
71	1,146,536	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
72	1,133,468	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
73	1,150,725	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
74	1,095,026	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
75	1,132,547	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
76	1,136,132	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
77	1,144,924	Eli Lilly and Co v Apotex	2009-10-01	2009 FC 991
78	2,102,778	Sanofi-Aventis Canada v Hospira Health Corp	2009-10-22	2009 FC 1077
79	2,014,453	Lundbeck Canada v Ratiopharm	2009-11-23	2009 FC 1102
80	2,426,492	Lundbeck Canada v Ratiopharm	2009-11-23	2009 FC 1102
81	2,325,014	Schering-Plough Canada Inc. v. Pharmascience Inc.	2009-12-22	2009 FC 1128
82	2,267,136	Schering-Plough Canada Inc. v. Pharmascience Inc.	2009-12-22	2009 FC 1128
83	2,290,624	Biovail Corporation v The Minister of Health	2010-01-20	2010 FC 46
84	2,177,772	Sanofi Aventis Canada v Ratiopharm	2010-03-05	2010 FC 230
85	2,173,457	Merck & Co v Pharmascience	2010-05-11	2010 FC 510
86	2,324,324	Pfizer v Ratiopharm	2010-06-08	2010 FC 612
87	2,285,266	Sandoz Canada Inc v Abbott Laboratories	2010-06-22	2010 FCA 168
88	2,358,395	Sandoz Canada Inc v Abbott Laboratories	2010-06-22	2010 FCA 168
89	2,139,653	Astrazeneca Canada Inc v Apotex Inc	2010-06-30	2010 FC 714
90	1,321,393	Pfizer v Ratiopharm	2010-07-29	2010 FCA 204

91	2,111,851	Novo Nordisk Canada Inc v Cobalt Pharmaceuticals	2010-08-03	2010 FC 746
92	2,172,149	Merck-Frosst - Schering Pharma GP v Canada (Minister of Health)	2010-09-17	2010 FC 933
93	2,065,965	Merck & Co v Canada (Minister of Health)	2010-10-22	2010 FC 1042
94	1,329,211	Merck & Co v Canada (Minister of Health)	2010-10-22	2010 FC 1043
95	2,209,735	Eli Lilly Canada Inc v Apotex	2010-10-29	2010 FC 1065
96	2,310,950	Janssen Inc v Mylan Pharmaceuticals	2010-11-10	2010 FC 1123
97	1,339,452	Lundbeck Canada v Minister of Health	2010-11-25	2010 FCA 320
98	1,161,380	Merck & Co v Apotex	2010-12-22	2010 FC 1265
99	1,328,452	GlaxoSmithKline Inc v Pharmascience	2011-03-01	2011 FC 239
100	1,339,132	Pfizer Canada Inc v Canada (Minister of Health)	2011-03-17	2011 FCA 102
101	2,209,735	Novopharm/Teva v Eli Lilly	2011-07-05	2011 FCA 220
102	1,333,285	Hoffman-La Roche v Apotex	2011-07-13	2011 FC 875
103	1,339,132	Apotex v Pfizer	2011-08-16	2011 FCA 236
104	1,341,206	Sanofi-Aventis v Apotex895	2011-11-02	2011 FCA 300
105	2,440,764	Allergan v Minister of Health	2011-11-17	2011 FC 1316
106	2,225,626	Allergan v Minister of Health	2011-11-17	2011 FC 1316
107	1,338,808	Mylan Pharmaceuticals v Pfizer	2012-03-29	2012 FCA 103
108	1,337,420	Mylan Pharmaceuticals v Astrazeneca	2012-04-11	2012 FCA 109
109	2,195,094	Alcon Canada v Apotex	2012-04-11	2012 FC 410
110	2,163,446	Teva v Pfizer	2012-04-18	2012 SCC 60
111	2,487,054	Fournier Pharma Inc v Minister of Health and Sandoz	2012-07-05	2012 FC 740
112	2,372,576	Fournier Pharma Inc v Minister of Health and Sandoz	2012-07-05	2012 FC 741
113	2,041,113	Eli Lilly Canada v Novopharm	2012-09-10	2012 FCA 232
114	2,101,572	Bristol-Myers Squibb v Mylan Pharmaceuticals	2012-09-27	2012 FC 1142
115	2,279,198	Bristol-Myers Squibb v Mylan Pharmaceuticals	2012-09-27	2012 FC 1142
116	2,440,764	Apotex v Allergan	2012-11-23	2012 FCA 308
117	2,255,652	Pfizer Canada v Pharmascience	2013-02-04	2013 FC 120
118	2,093,203	Teva v Novartis; Apotex v Norvartis	2013-02-19	2013 FC 141
119	2,170,647	Astrazeneca Canada Inc v Ranbaxy Pharmaceuticals	2013-03-05	2013 FC 232
120	2,251,944	Astrazeneca Canada Inc v Teva Canada	2013-03-07	2013 FC 245
121	2,251,944	Astrazeneca Canada Inc v Teva Canada	2013-03-07	2013 FC 246
122	1,339,452	Apotex Inc v H Lundbeck A/S	2013-03-12	2013 FC 192
123	1,338,895	Novartis Pharmaceuticals Canada v Teva Canada	2013-03-19	2013 FC 283
124	2,154,721	Hoffman-La Roche v Apotex	2013-07-12	2013 FC 718
125	1,336,777	Sanofi-Aventis v Apotex	2013-07-24	2013 FCA 186
126	1,338,937	Teva Canada Ltd v Novartis	2013-10-15	2013 FCA 244
127	2,179,728	Bayer v Cobalt Pharmaceuticals	2013-10-22	2013 FC 1061
128	2,382,426	Bayer v Cobalt Pharmaceuticals	2013-10-22	2013 FC 1061
129	2,261,619	Gilead Sciences v Minister of Health and	2013-12-20	2013 FC 1270

		Teva		
130	2,298,059	Gilead Sciences v Minister of Health and Teva	2013-12-20	2013 FC 1270
131	2,261,619	Gilead Sciences v Minister of Health and Teva	2013-12-20	2013 FC 1271
132	2,298,059	Gilead Sciences v Minister of Health and Teva	2013-12-20	2013 FC 1271
133	2,261,619	Gilead Sciences v Minister of Health and Teva	2013-12-20	2013 FC 1272
134	2,298,059	Gilead Sciences v Minister of Health and Teva	2013-12-20	2013 FC 1272
135	2,365,281	Abbvie Corporation v Janssen Inc	2014-01-17	2014 FC 55
136	2,163,446	Pfizer Ireland Pharmaceuticals v. Apotex Inc.	2014-01-22	2014 FCA 13
137	2,410,201	Novartis Pharmaceuticals v Cobalt Pharmaceuticals	2014-01-27	2014 FCA 17
138	2,177,576	Pfizer Canada and GD Searle & Co v Mylan Pharmaceuticals	2014-01-28	2014 FC 38
139	2,447,924	Alcon Canada Inc v Cobalt Pharmaceuticals Company	2014-02-14	2014 FC 149
140	2,177,576	Pfizer Canada Inc v Apotex Inc	2014-04-15	2014 FC 314
141	2,179,728	Bayer Inc v Apotex Inc	2014-05-01	2014 FC 403
142	2,382,426	Bayer Inc v Apotex Inc	2014-05-07	2014 FC 436
143	1,340,114	Alcon Canada Inc v Cobalt Pharmaceuticals Company	2014-05-14	2014 FC 462
144	2,342,211	Alcon Canada Inc v Cobalt Pharmaceuticals Company	2014-05-14	2014 FC 462
145	2,290,531	Pharmascience Inc v Canada (Minister of Health)	2014-05-22	2014 FCA 133
146	2,585,691	Allergan Inc v Minister of Health	2014-06-13	2014 FC 566
147	2,585,691	Allergan Inc v Minister of Health	2014-06-13	2014 FC 567
148	2,139,653	AstraZeneca v Apotex	2014-07-02	2014 FC 638
149	2,129,287	Alcon Canada Inc v Apotex Inc	2014-08-08	2014 FC 699
150	2,606,370	Alcon Canada Inc v Apotex Inc	2014-08-25	2014 FC 791

Annex B

Pharmaceutical patents that lost a utility challenge before the Canadian courts between January 1, 2005 and September 25, 2014

	#	Patent	Brand Name Drug	Lack of utility only	Decision	Type of invention	Type of patent
Imp./Infring.	1	1341206*	Altace (Sanofi-Aventis)		2011 FCA 300	New compound	Primary
	2	2139653*	Nexium (Astrazeneca)	X*	2014 FC 638	An old drug having a particular purity	Secondary
	3	1321393	Norvasc (Pfizer)		2010 FCA 204	Selection	Secondary
	4	2209735	Strattera (Eli Lilly)	X	2011 FCA 220	New use of an old drug	Secondary
	5	2041113	Zyprexa (Eli Lilly)	X	2012 FCA 232	Selection	Secondary
PM(NOC)	6	2201967	Alertec (Shire)		2008 FC 538	New formulation of an old drug	Secondary
	7	2177772	Avapro (Sanofi-Aventis)		2010 FC 230	New formulation of an old drug	Secondary
	8	2426492	Ebixa (Lundbeck)		2009 FC 1102	An old therapeutic use for two old drugs	Secondary
	9	2101356	Evista (Eli Lilly)	X	2009 FCA 97	New use of an old drug	Secondary
	10	2250191	Evista (Eli Lilly)	X	2009 FC 235	New formulation of an old drug	Secondary
	11	2294595	Fosamax (Merck)		2005 FC 755	New dose of an old drug	Secondary
	12	2261732	Clarithromycin Form II (Abbott)		2007 FCA 153	New form of an old drug	Secondary
	13	2255652	Lyrica (Pfizer)		2013 FC 120	New use of an old compound	Secondary
	14	2447924	Pataday (Alcon)	X	2014 FC 149	New formulation of an old drug	Secondary
	15	2324324	Revatio (Pfizer)		2010 FC 612	New use of an old drug	Secondary
	16	1340083	Valtrex (GSK)	X	2008 FC 593	Selection	Secondary
	17	2044748	Viagra (Pfizer)	X	2007 FCA 195	New compound	Primary
	18	1339132	Xalatan (Pfizer)	X	2011 FCA 236	New composition and therapeutic use thereof	Primary
	19	1338895	Zometa, Aclasta (Novartis)		2013 FC 283	New compound	Primary
	20	2261732	Clarithromycin Form II (Abbott)	X	2005 FC 1095	New form of an old drug	Secondary
	21	2290531	Nexium (Astrazeneca)	X	2014 FCA 133	New formulation of an old drug	Secondary
	22	1341206*	Altace (Sanofi-Aventis)	X*	2006 FCA 64	New compound	Primary
	23	2139653*	Nexium (Astrazeneca)		2010 FC 714	An old drug having a particular purity	Secondary

*Patent that has been held invalid both pursuant to PM(NOC) and impeachment/infringement proceedings.

Annex C

Pharmaceutical patents that lost a non-obviousness challenge before the Canadian courts between January 1, 2005 and September 25, 2014

	#	Patent	Brand Name Drug	Obviousness only	Decision	Type of invention	Type of patent
Imp./Infring.	1	1321393	Norvasc (Pfizer)		2010 FCA 204	Selection	Secondary
	2	1341206	Altace (Sanofi-Aventis)		2011 FCA 300	New compound	Primary
PM(NOC)	3	2251944	Seroquel XR (Astrazeneca)	X	2013 FC 245 2013 FC 246	New formulation of an old drug	Secondary
	4	2154721	Valcyte (Hoffman-Laroche)		2013 FC 718	New modification of an old drug	Secondary
	5	2298059	Truvada, Atripla, Viread (Gilead)	X	2013 FC 1270 2013 FC 1271 2013 FC 1272	New formulation (salt) of an old drug	Secondary
	6	2195094	Patanol (Alcon)	X	2012 FC 410	New use of an old drug	Secondary
	7	2290624	Glumetza (Biovail)	X	2010 FC 46	New formulation of an old drug	Secondary
	8	2177772	Avapro (Sanofi)		2010 FC 230	New formulation of an old drug	Secondary
	9	2324324	Revatio (Pfizer)		2010 FC 612	New use of an old drug	Secondary
	10	2139653	Nexium (Astrazeneca)		2010 FC 714	An old drug having a particular purity	Secondary
	11	2111851	GlucoNorm (Novo Nordisk)	X	2010 FC 746	Selection	Secondary
	12	2065965	Cosopt (Merck)		2010 FC 1042	Innovative combination drug	Primary
	13	2386527	Biaxin (Abbott)		2009 FCA 94	New form of an old drug	Secondary
	14	1298288	Maxipime (BMS)		2009 FC 137	New form of an old drug	Secondary
	15	2158399	Evista (Eli Lilly)		2009 FC 301	New form of an old drug	Secondary
	16	2102778	Taxotere (Sanofi)	X	2009 FC 1077	New formulation of an old drug	Secondary
	17	2014453	Ebixa (Lundbeck)		2009 FC 1102	New use of an old drug	Secondary
	18	2201967	Alertec (Cephalon)		2008 FC 538	New formulation of an old drug	Secondary
	19	2133762	Losec (Astrazeneca)		2007 FC 688	Innovative combination drug	Primary
	20	2471102	Biaxin (Abbott)		2007 FC 753	New form of an old drug	Secondary
	21	1246457	Altace (Sanofi)	X	2005 FC 1504	New use of an old drug	Secondary
	22	2129287	Travatan Z (Alcon)		2014 FC 699	Use of a known compound for a known use	Secondary

	23	2148071	Zithromax (Pfizer)		2005 FC 1421	New formulation of an old drug	Secondary
	24	2294595	Fosamax (Merck)		2005 FC 755	New dose of an old drug	Secondary
	25	2342211	Vigamox (Alcon and Bayer)	X	2014 FC462	New dose of an old drug	Secondary
	26	2606370	Travatan Z (Alcon)	X	2014 FC 791	New formulation of an old drug	Secondary
	27	2267136	Aerius (Schering)		2009 FC 1128	New formulation of an old drug	Secondary

Raloxifene

- Osteoporosis
- High cholesterol
- Uterine Fibrosis
- Endometriosis
- Peri-menopauseal symptoms
- Restenosis
- Resistant neoplasms
- Hyperglycemia
- Menstrual symptoms
- Imperfect tissue repair
- Weight loss agent
- anti- Fertility agent (women)
- Tachykinin related disorders
- Obsessive-compulsive AND Consumptive disorders (e.g. alcoholism and smoking
- CNS problems in menopausal women
- To increase thrombomodulin expression
- Acne
- To increase macrophages function
- To inhibit thrombin (undesired coagulation)
- Turner's syndrome
- Alzheimer's disease
- Pulmonary hypertensive diseases
- To increase libido in menopausal women
- Hirsutism AND alopecia in women
- Vasomotors symptoms surrounding post-menopausal syndrome
- Ovarian dysgenesis, Delayed puberty, AND sexual infantilism
- Breast disorders
- Premenstrual symptoms
- Male infertility
- Sexual precocity
- LDL oxydation and atherosclerosis
- Autoimmune diseases
- Dysfunctional uterine bleeding
- Atrophy of the skin and vagina
- To inhibit myeloperoxydase activity
- Smoking-related bone loss
- Oestrogen receptor- positive brain or CNS cancers
- Conditions associated with amyloidogenic peptides
- Bone healing and fracture repair
- Viral replication
- Conditions associated with neuropeptide Y
- Resistant tumors
- Conditions associated with bradykinin
- To inhibit growth hormone effect
- To inhibit environmental oestrogen
- To decrease serum calcium levels
- To inhibit the effects of IL-6
- To inhibit cell-cell adhesion
- Ovarian cancer
- To inhibit smooth muscle cells migration
- To modulate calcium channels
- To modulate NFkb
- Melanoma
- To induce BEF-1
- As calcium channel antagonist
- To inhibit the plasminogen activator inhibitor-1
- Chronic treatment of urinary incontinence in post-menopausal women.
- Colon tumors
- Desmoid tumors
- To induce nitric oxyde synthesis
- To reduce the uterotrophic effect of droloxifene
- Preventing headaches in post-menopausal women
- To inhibit the side-effects of GnRH or GnRH agonists
- To lower platelet count
- To regulate TRKA expression
- To lower homocysteine (cardiovascular disease risk factor)
- To increase levels of acetylcholine
- To enhance bone mineral density gain

Olanzapine

- Excessive aggression
- Fungal dermatitis
- Bipolar disorder
- Sexual dysfunction
- Insomnia
- As an anesthetic agent
- Nicotine withdrawal
- Tic disorder
- Anorexia
- Depression
- Autism and Mental retardation
- Pain
- Migraine pain
- Dyskinesia
- Addictive substance withdrawal
- Cognitive dysfunction (Alzheimer's disease)

Atomoxetine

- Lower urinary tract disorders (incontinence)
- ADHD
- Oppositional defiant disorder
- Conduct disorder
- Psoriasis
- Anxiety disorder
- Tic disorder
- Cognitive failure
- Learning disabilities
- Stuttering
- Pervasive development disorder
- Hot flashes

Annex E

Annex E: Patent or patent applications covering a “new” therapeutic use for olanzapine, atomoxetine and raloxifene

Drug	#	Patent or Patent Application	“New” Use	Type of Disclosure	Note
Olanzapine	1	2041113C*	Selection of “O” for treatment of schizophrenia	Experimental data suggesting less adverse effects than the rest of the genus	The presented data was limited to few selected members of the genus
	2	2248753C	Excessive aggression	A short reference to a clinical study wherein the intended therapeutic use of olanzapine have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	3	2240836A1	Fungal dermatitis	No data pertinent to the recited treatment	Evidence of less dermatitis in the olanzapine group than the haloperidol group. Not relevant to the treatment of dermatitis.
	4	2248905A1	Bipolar disorder	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	Indirect evidence of the existence of the clinical study before the filing date.
	5	2304472A1	Sexual dysfunction	Prophetic examples	No relevant data
	6	2248758A1	Insomnia	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement

	7	2250155A1	As an anesthetic agent	No data pertinent to the therapeutic use	Adverse effects include somnolence
	8	2218019A1	Nicotine withdrawal	Prophetic examples	No relevant data
	9	2232559A1	Tic disorder	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	10	2222073A1	Anorexia	A detailed reference to a study wherein subjects exhibited a statistically significant dose dependent weight gain and an increase in appetite	A detailed reference to a study wherein subjects exhibited a statistically significant dose dependent weight gain and an increase in appetite
	11	2241153A1	Depression	No data pertinent to the recited treatment	Evidence of less depression in the olanzapine group than the haloperidol group. Not relevant to the treatment of depression.
	12	2248741A1	Autism AND Mental retardation	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	13	2248873A1	Pain	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data

	14	2250186A1	Migraine pain	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	15	2218062A1	Dyskinesia	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	16	2248738A1	Addictive substance withdrawal	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	No evidence of the existence of the clinical study before the filing date. Generic statement
	17	2219902A1	Cognitive dysfunction (Alzheimer's disease)	A short reference to a clinical study wherein the intended therapeutic use have been allegedly demonstrated	Indirect evidence of the existence of the clinical study before the filing date. **The results were NEGATIVE**
Atomoxetine	1	2061665C	Lower urinary tract disorders (incontinence)	Relevant *in vivo*/animal data and clinical observations	Relevant *in vivo*/animal data
	2	2209735C	ADHD	No data pertinent to the therapeutic use	No relevant data
	3	2304115A1	Oppositional defiant disorder	No data pertinent to the therapeutic use	No relevant data
	4	2304657C	Conduct disorder	No data pertinent to the therapeutic use	No relevant data

	5	2400571A1	Psoriasis	Anecdotal evidence of the therapeutic use	Anecdotal evidence of the therapeutic use
	6	2426069A1	Anxiety disorder	Anecdotal evidence of the therapeutic use	Anecdotal evidence of the therapeutic use
	7	2466649A1	Tic disorder	Anecdotal evidence of the therapeutic use	Anecdotal evidence of the therapeutic use
	8	2467802A1	Cognitive failure	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	9	2530014A1	Learning disabilities	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	10	2532349A1	Stuttering	No data pertinent to the therapeutic use	No relevant data
	11	2536161A1	Pervasive development disorder	No data pertinent to the therapeutic use	No relevant data
	12	2548304A1	Hot flashes	Relevant *in vivo*/animal data with another norepinephrine reuptake inhibitor	Relevant *in vivo*/animal data with another norepinephrine reuptake inhibitor
Raloxifene	1	2101356C	Osteoporosis	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	2	2112017C	High cholesterol	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	3	2118090A1	Uterine Fibrosis	Prophetic examples	No relevant data
	4	2118092A1	Endometriosis	Prophetic examples	No relevant data
	5	2118093A1	Perimenopauseal symptoms	Prophetic examples	No relevant data
	6	2118095A1	Restenosis	Prophetic examples	No relevant data
	7	2118096A1	Resistant neoplasms	Prophetic examples	No relevant data
	8	2126400A1	Hyperglycemia	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	9	2138100A1	Menstrual symptoms	Prophetic examples	No relevant data

	10	2138454A1	Imperfect tissue repair	Prophetic examples	No relevant data
	11	2138455A1	Weight loss agent	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	12	2138456A1	anti- Fertility agent (women)	Prophetic examples	No relevant data
	13	2138457A1	Tachykinin related disorders	Prophetic examples	No relevant data
	14	2138458A1	Obsessive-compulsive AND Consumptive disorders (e.g. alcoholism and smoking	Prophetic examples	No relevant data
	15	2138459A1	CNS problems in menauposal women	Prophetic examples	No relevant data
	16	2138490A1	To increase thrombomodulin expression	Relevant *in vitro* data	Relevant *in vitro* data
	17	2138491A1	Acne	Prophetic examples	No relevant data
	18	2138492A1	To increase macrophages function	Prophetic examples	No relevant data
	19	2138493A1	To inhibit thrombin (undesired coagulation)	Prophetic examples	No relevant data
	20	2138494A1	Turner's syndrome	Prophetic examples	No relevant data
	21	2138495A1	Alzheimer's disease	Prophetic examples	No relevant data
	22	2138496A1	Pulmonary hypertensive diseases	Prophetic examples	No relevant data
	23	2138497A1	To increase libido in menauposal women	Prophetic examples	No relevant data
	24	2138498A1	Hirsutism AND alopecia in women	Prophetic examples	No relevant data

	25	2138499A1	Vasomotors symptoms surrounding post-menauposal syndrome	Prophetic examples	No relevant data
	26	2138500A1	Ovarian dysgenesis, Delayed puberty, AND sexual infantilism	Prophetic examples	No relevant data
	27	2138501A1	Breast disorders	Prophetic examples	No relevant data
	28	2138505A1	Premenstrual symptoms	Prophetic examples	No relevant data
	29	2138506A1	Male infertility	Prophetic examples	No relevant data
	30	2138507A1	Sexual precocity	Prophetic examples	No relevant data
	31	2138508A1	LDL oxydation and atherosclerosis	Relevant *in vitro* data	Relevant *in vitro* data
	32	2138509A1	Autoimmune diseases	Prophetic examples	No relevant data
	33	2138510A1	Dysfunctional uterine bleeding	Prophetic examples	No relevant data
	34	2138511A1	Atrophy of the skin and vagina	Prophetic examples	No relevant data
	35	2138513A1	To inhibit myeloperoxydase activity	Relevant *in vitro* data	Relevant *in vitro* data
	36	2168067A1	Smoking-related bone loss	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	37	2170480A1	Oestrogen receptor-positive brain or CNS cancers	Prophetic examples	No relevant data
	38	2176127A1	Conditions associated with amyloidogenic peptides	Relevant *in vitro* data	Relevant *in vitro* data
	39	2198012A1	Bone healing and fracture repair	Prophetic examples	No relevant data
	40	2198122A1	Viral replication	Prophetic examples	No relevant data
	41	2200990A1	Conditions associated with neuropeptide Y	Relevant *in vitro* data	Relevant *in vitro* data

	42	2202661A1	Resistant tumors	Relevant *in vitro* data	Relevant *in vitro* data
	43	2203914A1	Conditions associated with bradykinin	Relevant *in vitro* data	Relevant *in vitro* data
	44	2209891A1	To inhibit growth hormone effect	Prophetic examples	No relevant data
	45	2210940A1	To inhibit environmental oestrogen	Prophetic examples	No relevant data
	46	2211530A1	To decrease serum calcium levels	Prophetic examples	No relevant data
	47	2212232A1	To inhbit the effects of IL-6	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	48	2212339A1	To inhibit cell-cell adhesion	Relevant *in vitro* data	Relevant *in vitro* data
	49	2214080A1	Ovarian cancer	Prophetic examples	No relevant data
	50	2222292A1	To inhibit smooth muscle cells migration	Relevant *in vitro* data	Relevant *in vitro* data
	51	2222739A1	To modulate calcium channels	Relevant *in vivo*/animal data	Relevant *in vivo*/animal data
	52	2223092A1	To modulate NFkb	Relevant *in vitro* data	Relevant *in vitro* data
	53	2223157A1	Melanoma	Prophetic examples	No relevant data
	54	2223175A1	To induce BEF-1	Relevant *in vitro* data	Relevant *in vitro* data
	55	2223711A1	As calcium channel antagonist	Relevant *in vivo* data	Relevant *in vivo* data
	56	2234404A1	To inhibit the plasminogen activator inhibitor-1	Relevant *in vitro* data	Relevant *in vitro* data
	57	2244063A1	Chronic treatment of urinary incontinence in post-menopausal women.	Prophetic examples	No relevant data
	58	2244112A1	Colon tumors	Relevant *in vitro* data	Relevant *in vitro* data
	59	2244247A1	Desmoid tumors	Relevant *in vitro* data	Relevant *in vitro* data

	60	2255792A1	To induce nitric oxyde synthesis	Relevant *in vitro* data	Relevant *in vitro* data
	61	2257535A1	To reduce the uterotrophic effect of droloxifene	Relevant *in vivo* data	Relevant *in vivo* data
	62	2300821A1	Preventing headaches in post-menauposal women	A detailed reference to clinical data	A detailed reference to clinical data
	63	2300995A1	To inhibit the side-effects of GnRH or GnRH agonists	Relevant *in vivo* data	Relevant *in vivo* data
	64	2301806A1	To lower platelet count	Prophetic examples	No relevant data
	65	2304114A1	To regulate TRKA expression	Relevant *in vivo* data	Relevant *in vivo* data
	66	2333384A1	To lower homocysteine (cardiovascular disease risk factor)	A detailed reference to clinical data	A detailed reference to clinical data
	67	2335295A1	To increase levels of acetylcholine	Relevant *in vivo* data	Relevant *in vivo* data
	68	2412373A1	To enhance bone mineral density gain	A detailed reference to clinical data	A detailed reference to clinical data

Annex F

Patent or patent applications covering a "new" therapeutic use for olanzapine that refer to clinical trial results supporting the claimed use.

Patent Application or Patent (FD)	Relevant experimental data
CA2219902A1 (05/1995)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of [olanzapine] in 237 elderly patients with cognitive dysfunction, wherein the age of the patients was greater than or equal to sixty-five (55) years of age. Patients were randomized to [olanzapine] or placebo. Changes in behavioral manifestations were measured using the BEHAVE-AD, BPRS, and CGI rating scales, which are known and available to the skilled artisan. The results of the study suggest that [olanzapine] can be useful for the treatment of behavioral manifestations of cognitive dysfunction."
CA2218062A1 (04/1996)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of [olanzapine] in patients wherein one aspect of the study was the effect of [olanzapine] on patients with and without dyskinesia at study entry. Patients were randomized to [olanzapine] or placebo. The results of the study suggest that [olanzapine] benzodiazepine can be useful for the treatment of dyskinesias."
CA2232559A1 (08/1996)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of [olanzapine] in patients wherein one observation of the study was the effect of [olanzapine] on patients with and without tic disorders at study entry. Patients were randomized to [olanzapine] or placebo. The results of the study suggest that [olanzapine] can be useful for the treatment of tic disorders.
CA2248741A1 (12/1996)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of olanzapine. Patients were randomized to olanzapine or placebo. The results of the study suggest that olanzapine can be useful for the treatment of Autism. Further, results of the study suggest that olanzapine can be useful for the treatment of Mental Retardation."
CA2248753C (12/1996)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of olanzapine. Patients were randomized to olanzapine or placebo. The results of the study suggest that olanzapine can be useful for the treatment of excessive aggression."
CA2248905A1 (12/1996)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of olanzapine. Patients were randomized to olanzapine or placebo. The results of the study suggest that olanzapine can be useful for the treatment of Bipolar Disorder."
CA2248758A1 (03/1997)	"A double-blind multicenter clinical trial was designed to assess the safety and efficacy of olanzapine. Patients were randomized to olanzapine or placebo. The results of the study suggest that olanzapine can be useful for the treatment of insomnia."

CA2248738A1 (03/1997)	“A double-blind multicenter clinical trial was designed to assess the safety and efficacy of olanzapine. Patients were randomized to olanzapine or placebo. The results of the study suggest that olanzapine can be useful for the treatment of addictive substance withdrawal.”
CA2250186A1 (03/1997)	“A double-blind multicenter clinical trial is designed to assess the safety and efficacy of olanzapine. Patients are randomized to olanzapine or placebo. Patients are monitored for perception of pain using standard methods. Such clinical trial results suggest that olanzapine can be a relatively safe compound for the treatment of migraine pain.”

Annex G

Patent applications covering a “new” therapeutic use for atomoxetine that refer to a single case study supporting the claimed use.

Patent Application or Patent (FD)	Relevant experimental data
CA2400571A1 (02/2001)	“The subject was treated with 60 mg of tomoxetine hydrochloride, twice daily for 12 consecutive days. At the time of final assessment the subject demonstrated significant improvement, with only a few scales and faintly erythematous skin at the sites of the previous lesions.”
CA2426069A1 (11/2001)	“A female subject presented with chronic fingernail biting. The subject was treated with 60 mg of tomoxetine hydrochloride, twice daily for 13 consecutive days. At the time of final assessment the subject demonstrated significant improvement, with healthy appearing fingernails except for one finger. The patient’s chronic fingernail biting behavior resumed upon termination of treatment with tomoxetine hydrochloride.”
CA2466649A1 (11/2002)	“After starting on atomoxetine the patient had a dramatic drop in his tics. After about 2 to 3 weeks of atomoxetine treatment, the patient's mother reported a single head tic and a few eye blinking tics in the previous week, and no vocal tics.”

Marcel Brisebois
Industry Canada
235 Queen Street
Ottawa, Ontario, Canada, K1A 0H5
Phone (work): 613-697-5240
E-mail: Marcel.Brisebois@ic.gc.ca

EMPLOYMENT HISTORY

2013-current **Senior Policy Analyst, Strategic Policy Sector, Industry Canada / Government of Canada**

Principal Duties

- Initiate or support research projects and analysis on specific issues that contribute to the research and development and reforms of patent policies, laws and regulations with a view of providing future policy advice
- Provide support on issues raised in the context of Eli Lilly and Company NAFTA Chapter Eleven challenge

2008-2013 **Senior Patent Examiner - Biotechnology Division at the Canadian Intellectual Property Office (CIPO), Patent Branch**

Principal Duties

- Examine and prosecute patent applications related to biotechnology in light of the *Patent Act*, *Patent Rules* and Canadian jurisprudence.
- Perform prior art searches
- Train new examiners
- Act in the absence of the Section Head

2007-2008 **Patent Examiner - Biotechnology Division at the Canadian Intellectual Property Office (CIPO), Patent Branch**

Principal Duties

- Examine and prosecute patent applications related to biotechnology in light of the *Patent Act*, *Patent Rules* and Canadian jurisprudence.
- Perform prior art searches

EDUCATION

2000-2007	Philosophiæ Doctor (Ph.D.) in Immunology University of Sherbrooke, Sherbrooke, Canada Faculty of Medicine, Service of Immunology Thesis title: *Characterization of a CD8+ T cell mediated B7.2 Tg murine model of spontaneous autoimmune demyelination.*
1998-2000	Master Es Science (MSc) University of Sherbrooke, Sherbrooke, Canada Faculty of Medicine, Service of Immunology Thesis title: *Modulation of IL-2R on rat type II epithelial cells (TIIP) by IFNg, implication in the apoptotic process.*
1995-1998	Bachelor of Science (B.Sc.) University of Sherbrooke, Sherbrooke, Canada Faculty of Medicine, Biochemistry Department.

PUBLICATIONS

Brisebois M, Zehntner SP, Estrada J, Owens T, Fournier S, *A pathogenic role for CD8+ T cells in a spontaneous model of demyelinating disease, J Immunol*. 2006 Aug 15;177(4):2403-11.

Zehntner SP, **Brisebois M**, Tran E, Owens T, Fournier S, *Constitutive expression of a costimulatory ligand on antigen-presenting cells in the nervous system drives demyelinating disease*, FASEB J. 2003 Oct;17(13):1910-2.

Lesur O, **Brisebois M**, Thibodeau A, Chagnon F, Lane D, Füllöp T, *Role of IFN-gamma and IL-2 in rat lung epithelial cell migration and apoptosis after oxidant injury*, Am J Physiol Lung Cell Mol Physiol. 2004 Jan;286(1):L4-L14.

TRAINING

2010-2011	Developmental position as a Patent Appeal Board member.
2010	Training Program for Tribunal Members.