Functional Foods and Intellectual Property Rights: The Importance of an Integrated Approach

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Functional foods are a relatively recent technology, but this form of innovation is almost daily increasing in marketplace importance. One author has stated that the growing importance of functional foods is due to the fact that, "it is estimated that the purchasing decisions of at least eighty percent of primary shoppers in America are influenced by the desire to manage and/or prevent a specific disease or condition, or to follow a doctors' advice."[1] These statistics show that the public is attracted to the promise of significant health benefits that functional foods may offer. These consumers want to optimize their health and may therefore be open to the utilization of therapies that are alternatives to conventional medicines.[2] The market size of functional foods in the US – estimated to be $265 billion – demonstrates the high level of public interest.[3] As with other emerging technologies, the role of intellectual property rights [*IPRs*] in the functional food sphere is a critical topic. Presently the commercial market all but insists that key technologies seek IPR protection.[4] Functional foods are no exception.

It should be noted that there are two forms of functional foods; those which are developed as a result of scientific research, and those which are familiar foods that naturally offer particular health benefits. The IPRs that may be sought to protect each form of functional foods may differ. This is true because new and existing functional foods have different characteristics, as do the various forms of IPRs which may apply to a functional food project – namely patents, copyright, trademark, etc. The relationship between types of functional foods and forms of IPRs are interwoven, as the combination of IPRs which may apply to a functional food will be dictated by the nature of the functional food itself. For example, processed foods, such as breads with added Omega-3, may attract different IPRs than fruit produce that has been crossbred to comprise increased anti-oxidants.[5]

Of course, the act of seeking IPRs is only one step towards the goal of achieving adequate intellectual property [*IP*] protection for a functional food. Another crucial step is IP management. This step involves taking a big-picture view of a functional food innovation and its intended application and uses. Only when looking through a wide-angle lens can the interrelation of forms of IPRs and the implication of IPR applications be seen and analysed. This paper will therefore be divided into two sections. First, we will address the different IPRs that may be granted to aspects of a functional food innovation. Second, we will identify how IP property management may be applied to a research project and the benefits of doing so. The culmination of this discussion will be a better understanding of how IPRs granted in a functional food research project are interrelated and how this relationship should shape the application of the IPRs generally.

1. IPRs for Functional Foods

The form of IPR that is most commonly associated with research projects is patent rights. In fact, in some situations the discussion of IPRs begins and ends with patent rights – if a project is not patentable it is considered not to be eligible for IPR protection.[6] This is a narrow view of IPRs and a misperception of the breadth of rights that may attach to aspects of a research project. The truth is that there are sev-

eral forms of IPRs in existence and depending upon the nature of a research project, a variety of rights may be utilized to provide protection to elements of a functional foods project.

Functional foods come in many different forms – yogurts with pro-biotics; fruits with enhanced nutritional value; or eggs, breads and fruit juices with Omega-3 added – just to name a few examples. For the purpose of this paper we will focus on a recent functional food project, the Authentique d'Orléans strawberry. Through crossbreeding, researchers at Agriculture and Agri-foods Canada and the Nutraceuticals and Functional Foods Institute of Laval University have developed a strawberry that has double the antioxidants of traditional strawberries.[7] This characteristic may offer several health benefits to consumers, as antioxidants have been linked to the prevention of cancer and conditions associated with aging.[8] The Authentique d'Orléans will be referenced in this paper to exemplify how IPRs can protect elements of a functional food innovation. However, it should be noted that functional foods, due to their varied nature, may be protected by a variety of combinations of IPRs and that functional foods should be considered individually to ensure the correct combination is achieved for each variety.

A functional food such as the Authentique d'Orléans seeking patent rights may immediately face two patentability hurdles.

a. Patents

In Canada, patent rights may be extended to inventions that meet the patentability criteria set by the *Patent Act* – novelty,[9] utility[10] and non-obviousness.[11] Any invention that fails to meet these three criteria is not patentable. Inventions that attain patent rights are granted twenty years of protection counted from the date the patent was filed. Besides the three criteria, another consideration that may play a role in establishing patentability is the subject matter of the invention.[12]

A functional food such as the Authentique d'Orléans seeking patent rights may immediately face two patentability hurdles. First, an innovation created through a process of crossbreeding may not represent a patentable subject matter according to common law precedent. The Supreme Court of Canada [*S.C.C.*] in the *Pioneer Hi-Bred Ltd. v. Canada (Commissioner for Patents)*[13] [*Pioneer*] decision left open the possibility that crossbreeding may fail to involve the sufficient level of human intervention necessary to represent a patentable innovation.[14] The *Pioneer* ruling builds upon the consideration as to whether an innovation is truly novel, or whether it is merely a discovery. This topic has been recently re-examined by Canadian courts in *Calgon Carbon Corporation v. The Corporation of the City of North Bay*,[15] wherein the Court reiterated the rule set out in *Reynolds v. Herbert Smith & Co. Ltd.*,[16] as stated by Justice Buckley:

> Discovery adds to the amount of human knowledge, but it does so only by lifting the veil and disclosing something which before had been unseen or dimly seen. Invention also adds to human knowledge, but not merely by disclosing something. Invention necessarily involves also the suggestion of an act to be done, and it must be an act which results in a new product, or a new result, or a new process, or a new combination for producing an old product or an old result.

As such, it is vital that any patent application filed on a crossbred fruit prove that the creation of the strawberry involved a high level of human intervention and is more than a mere discovery.

The second patentability hurdle that may confront a functional food similar to the Authentique d'Orléans is that any patent rights granted in the invention will be unable to claim the plant as a whole entity. Recent S.C.C. decisions in Canada, *Harvard College v. Canada (Commissioner of Patents)*[17] and *Monsanto Canada Inc. v. Schmeiser*,[18] have established and upheld the determination that higher life forms are not patentable subject matter in Canada. In *Monsanto*, the S.C.C. agreed that modified genes and plant cells containing such genes are patentable, but the present law in Canada is that plants cannot be claimed in a patent.[19]

The reason for raising these two issues is not to suggest that functional foods developed through the crossbreeding of plants are not patentable, but to point out that the patentablity of such innovations is not necessarily a foregone conclusion. The same is true for other types of functional foods as well. A level of human intervention will need to be proven to be part of either the creation of the food product, or the process of creating the functional food.[20] Moreover, patents for plant-based functional foods will not be able to claim the plant itself, although other elements of the innovation may be patentable, such as cells or genes.

b. Plant Breeders' Rights

Due to the fact that plants are not patentable, an alternative protection is available to plants in Canada under the *Plant Breeders' Rights Act*.[21] This Act was drafted post-*Pioneer* and is intended to provide an IPR to plant varieties. Specifically, the Act states that a plant breeder may be granted rights in new sexually or asexually reproduced plant varieties. To be new a plant variety must be "distinguishable from other varieties, stable in its essential characteristics and sufficiently homogenous."[22] Once granted, a plant breeders' IPR continues for eighteen years and includes the following exclusive rights over a plant variety in Canada: the right to sell and produce propagating material; the right to use the propagating material to develop a new plant variety; and the right to permit others to do these acts.[23]

A direct comparison of patent rights and plant breeders' rights shows similarities and differences between the two forms of right. One sharp point of contrast is that patent rights require that the innovation have utility, whereas plant breeders' rights do not. However, both rights are similar in the mode of petition that must be employed to achieve the right – a formal application must be submitted and accepted prior to the grant of the right. In the application, plant breeders must disclose the plant variety and the rights holder must thereafter maintain the propagating material.[24] In fact, the right is directed to the propagating material – the cuttings, seeds or other parts of the plant – not to the plant as a whole. This type of right would likely be granted to a functional food product such as the Authentique d'Orléans as it represents a new plant variety and other plant-based functional foods may also be eligible for a plant breeders' IPR.

c. Trade Secrets

Trade secret is frequently referred to as an alternative to patent rights. This form of IPR can be applied to any information that is kept secret. The key to obtaining trade secret protection is the creation of a standard of confidentiality.[25] It is not enough to just say that information is secret, there must be evidence that confidentiality measures sufficient to protect and maintain the secret information are in place. If secrecy standards are found to exist, then under trade secret protection, the secret holder is granted the right to take action against any person who breaches his or her confidentiality obligation by disclosing secret information to the public.[26] The risk is that in the circumstance of a breach of confidentiality the value of the secret may be lost forever. The only recourse open to retrieve any portion of that value is the trade secret holder's right to ask for damages as compensation for the lost value.

The value of a trade secret can be lost by means other than disclosure as well. For example, reverse-engineering may be applied to discover the intricate workings of an innovation and that information may be used to create a duplicate product. As the IP right in trade secret relies wholly upon the secret information not being known by third parties, the fact that the information may become public knowledge in a variety of manners means trade secret may be characterized as a fragile right. That being said, trade secret has been used effectively for some products. The most famous is the Coca-Cola formulation.[27] If confidentiality is carefully guarded, the true benefit of trade secrets is that this form of right may be utilized to protect the value of information indefinitely. There is no set term of right so the protection could potentially last for the life of the need for the innovation or information.

Looking to the example of the strawberry functional food, trade secret could be utilized to protect any of the following: research results; information as to how the crossbreeding process may be optimally achieved, rather than generally achieved; and even crossbreeding methods. Moreover, means of protecting confidentiality may include: provisions within employee contracts which require confidentiality;[28] the requirement that confidentiality agreements be signed by any third party to whom information regarding the innovation product or method of making the innovation is disclosed;[29] or even keeping information regarding the innovation under lock and key. Trade secrets may be used to protect information as a short-term measure – e.g. between the date of the discovery of the innovation and the date when a plant breeders' rights or a patent application is filed. Thus, trade secrets may have many applications for functional foods research projects as well as later commercialization efforts.

d. Copyright

Copyright is extended automatically to the expression of an idea that is captured in a work. Expression can take many forms – manuscripts, musical performances, software code, and photography – just to name a few.[30] Copyright is granted immediately upon the completion of the work and therefore does not require any formal filing, although it is possible to file copyright with the Canadian Copyright office.[31] Whether copyright is filed or not, the right is unique when compared to other IPRs because it is not limited by national boundaries. Due to an extensive copyright treaty signed by the majority of the world's nations, copyright is respected almost globally.[32]

Although it may not be immediately apparent how this type of right can apply to a functional food, in fact the research project that develops the innovation may involve the creation of several forms of copyrightable works. For example, in the case of projects developed through public institution research, it is likely that at least one of the innovators working on the project will produce a journal article for publication describing the functional food product and/or the process of its creation. Journal articles and other written materials can be protected by copyright. This is true for other works as well, such as poster presentations and even software used in the innovation development process.

Copyright is often overlooked in the context of research projects, because it rarely gleans large profits for the innovation owners. This is especially true if the author of journal publications receives no monetary compensation for the work. However, copyright can play an important role in research projects and the timing of copyright can be especially important. This topic will be discussed in greater length in the "IP Planning" section of this paper.

e. Trade Marks

This is the final category of IP protection to be discussed in this paper but the list of IPRs included in this paper is by no means exhaustive. In a broad sense, trade mark protection is integral to the branding of an innovation and will be critical to product labeling and reputation for quality. In general terms a trade mark right may be granted for images or names that are registered as linked to specific wares or goods. As such, a trade name or image mark may be registered specifically for a functional food, such as the Authentique d'Orléans strawberry. The company that commercializes and sells the strawberry may also have a brand mark which represents all of its products, and therefore, would also extend to the new variety of strawberry.

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Registering a trade mark for a functional food will likely take place downstream of the research. However, as with copyright, it can be important to contemplate this future step during the upstream portion of the project. Branding can be a very lucrative initiative and trade marks are an integral part of this protective scheme. Moreover, there is evidence that functional food owners may choose to enter the market online for a variety of reasons,[33] in which case trade marks and copyright will both play a large role in protecting the value of the innovation.

Of particular interest to functional foods are two recent forms of protection emerging in the trade mark realm – certification marks and geographical indications. Certification marks are presently widely utilized in the organic and kosher food sectors[34] and show promise for functional foods as well.[35] The addition of a certification mark to a product's label indicates that the product has achieved a particular standard of quality. This can induce certain consumers to purchase the product and therefore, be an important factor for sales.[36] Moreover, certification marks may help to abate the general public mistrust of some scientific functional food endeavours, such as genetic modification.[37]

Geographical indications, on the other hand, can link a food to a particular region and through this link may establish a level of authenticity.[38] For example, bologna as a geographical indication for a meat product assures a consumer that the item was produced in the Bologna region of Italy. Basmati as a geographical indication for rice attests to the fact that the rice was grown in India (or maybe some parts of

Pakistan).[39] If a region is known for producing a superior quality food product then a geographical indication may be an important tool for discerning consumers.[40]

Many regions are arguing for an international protection scheme for foods from particular regions by way of geographical indications. The World Trade Organization's *Agreement on Trade-Related Aspects of Intellectual Property Rights* supports these initiatives and includes two methods to effect IPR through the name of a product, although it does not require all members to accept these forms of IPRs nationally.[41] The application of international geographical indication rights could have wide-sweeping effects for established products such as Kraft Parmesan Cheese, which could conceivably be prohibited from continuing to use the word "Parmesan" on their labels, unless the cheese products truly did hail from the Parma region of Italy.[42]

Due to the business ramifications of geographical indicators, this form of IPR has not been adopted everywhere in the world as of yet, but it is of concern in many areas, including Europe and India.[43] Looking to the example of the Authentique d'Orléans functional food innovation we can see the potential effect of geographical indicators in Canada as the name given to the strawberry may be linked to the Île d'Orléans region and may therefore be caught by this type of right. For this reason, the issue of geographical indicators is raised in this article as an warning of what might become a consideration for Canada as a member of the World Trade Organization and thereby, for Canadian functional food IPR owners.[44]

2. IP Management & Planning

Having identified many of the IPRs that may be extended to facets of a functional food research project, we can now discuss the interrelation of the rights. The official term for a review of the integrated relationship of IPRs within a firm or project is IP management. In a firm context this tool is utilized to assess the company's IP assets and to determine how to apply these IPRs in a manner that derives the highest profit for the firm. In a research project context there may be more flexibility allowed in IP management strategies, particularly in reference to the goal of the application of IPRs – aims other than maximum profit may be permissible.

Our review of IP management for functional food projects will include two distinct considerations: IP planning and IP management. IP planning is a subset of IP management that focuses on the issues raised by the interrelation of IPRs. Our discussion of IP planning will consider how to address, on an ongoing basis, issues that are raised due to the connections between IPRs during the research project. This is important to ensure that one IPR does not affect the grant or attainment of another form of IPR. As a related step, we will also address IP management generally, focusing upon the goals a researcher may have for the utilization of a downstream innovation and how these may be achieved through the shrewd application of IPRs.

f. IP Planning

There are numerous examples of how IPRs may affect one another within a project. To illustrate the integration of IPRs, we will look at three important points of interaction: ownership of the innovation; timing of disclosure of an innovation; and documentation of an invention. Each example will highlight how IP planning may avert downstream IPR difficulties and inconsistencies.

Ownership

Due to the fact that universities and public institution laboratories attract highly specialized researchers with skills that are in demand globally, the turnover of employees at these institutions can be frequent.[45] Flux in staffing can cause several researchers to work on various portions of an innovation. This environment can cause difficulties to arise in a determination of the ownership of any IPRs obtained for the innovation.

For most forms of IPRs, the right is initially granted to the creator or inventor of an innovation. In the instance when multiple persons are involved in the creation process there will be several joint owners.[46] However, in order for applications or assignments of IPRs to be valid all of the joint owners must participate.[47] Thus, joint owners who no longer work in the laboratory at the time when the product is completed must be located. For this reason, it is important to keep track of all of the people who work on an innovation as depending on the nature of their contribution, they may ultimately be joint owners of an IPR.

Steps can be taken to make a determination of ownership less confusing. Issues of ownership can be written into employee contracts, whereby all employees are required to assign their rights to the employer.[48] Some university IP policies set out rules for ownership of any IP created by researchers working at that institution.[49] These types of documents can be helpful, however, generally such measures

must be applied early on in the product development process. Another measure that may avoid difficulties and delay for IPRs of co-creators or inventors at a later date can be tracking of researchers once they leave the laboratory. The truly crucial step in each of these suggestions is to consider IP ownership at the beginning of a research project.

Disclosure

Another important issue for IPRs is the timing of any disclosure of research details or results. There is a danger that if disclosure is made too early then the potential to seek IPRs may be negatively affected in the future. For example, if a journal article describing the invention is published more than twelve months prior to the date when a patent application is filed in Canada for the same invention, the public disclosure created by the article may cause the application to be rejected.[50] In this situation, the creator of the journal article would have copyright in the written work, but the innovators of the product would be precluded from obtaining patent rights to protect their invention due to the disclosure.

The truly crucial step in each of these suggestions is to consider IP ownership at the beginning of a research project.

Thus, the interrelation of copyright and patent rights should be contemplated early in a research process. A considered approach can ensure that researchers are warned against publishing information about the invention before the innovation is sufficiently advanced so as to become the subject of a patent application. However, not only the integration of patents and copyright needs to be considered at the beginning of a research project. During the interim pre-patent filing period yet another IPR may be brought into play – trade secrets. A laboratory may want to seek trade secret protection for its sensitive data and processes through the implementation of confidentiality measures, such as non-disclosure agreements and employee confidentiality clauses. Consideration of how all IPRs may work together to best protect elements of an innovation is critical and should occur early in a project.

Documentation

In some instances, very small steps may cause IPRs in an innovation to continue or fail. For example, good laboratory documentation practices may seem secondary to the research itself and can fall by the wayside when researchers are busy, however, measures such as daily lab book entries and the regular trading of these books so they can be reviewed, signed and dated by colleagues, can have a huge impact upon the longevity of IPRs, particularly patent rights. The statutory rule is that a patent is presumed to be valid upon its grant.[51] That being said, the reality is that the validity of patent rights can be challenged at any time. Key evidence that can be brought to support the validity of a patent is a lab book.[52] The information in a lab book that has been maintained daily as well as read, signed and dated by colleagues, can prove the novelty of the invention as well as inventorship. This can save a patent from invalidity and ensure that the patent rights extend for the entire allotted twenty-year term instead of being cut short early.

Ownership, disclosure and documentation may seem like small issues when viewed individually. However, if a research project integrates measures to protect these aspects of an innovation early on, the result may be an increased reliability for any IPRs obtained. All that is needed is the foresight to recognize the interrelation of IPRs.

g. IP Management

Essentially IP management is a means of ensuring that a goal for the utilization of the innovation is met. As such, IP management has a role in both the early and late stages of a research project. The necessary steps of IP management include: a review of the IPRs that are granted or may be obtained in the future for an innovation; an evaluation of the importance of each IPR in meeting institutional goals; and a plan for applying IPRs so as to reach those goals. It is generally assumed that firms will aim to utilize their IPRs in a manner that achieves optimum profit, however, IPRs can be exercised in other manners as well, and public institutions

may have more leeway to choose goals that are not profit-based.[53]

For example, a public institution may determine that their goal is to ensure that an innovation is not encumbered by a monopoly approach, but is made freely available to the public or other researchers. In such a situation, once an inventory of IPRs has been undertaken the institution may make several choices regarding its IPRs. For example, IPRs that are not presently granted may be sought, such as copyright for journal publications or trade marks. Furthermore, the goal to create a free flow of information regarding the innovation may be met through non-exclusive licenses.[54] Moreover, alternative IP systems, sometimes referred to as open source IP systems, may be utilized to ensure that information and the innovation itself is made freely available to other researchers or the public.[55] A final follow-up step should be to monitor whether the chosen application of IPRs actually achieves the set goals.

There are a host of goals that may be chosen by research projects to guide the application of the IPRs obtained for an innovation. A considered approach, namely IP management strategies, can help ensure that these goals are achieved. In every case, IP management involves the recognition of the variety of IPRs that may be granted for an innovation and the integration of those IPRs. A strategy of haphazardly obtaining IPRs and neglecting to consider their interrelation may result in unanticipated problems for an innovation. IPRs obtained in such a manner may not be as reliable or sustainable as those granted within the framework of a considered IP management strategy.

Conclusion

To conclude, a functional food innovation has the potential to attain a variety of IPRs. Although every IPR is unique and distinct, it is not entirely detached or isolated from other IPRs; they are integrated. In fact, the interrelation of IPRs should be worked into a research project in a considered manner – through IP planning. Moreover, a specific goal for the utilization of IPRs should be settled and this aim should be the focus of the application of IPRs – through IP management. A considered approach to IPRs will avert the issues that arise when rights are obtained and wielded in a haphazard fashion. This is a key consideration for an emerging innovation like functional foods. An organized approach to IPRs may have multiple benefits that will accrue to many parties including the rights holder, consumers and other researchers.

Karen L. Durell, Doctoral Candidate, McGill Faculty of Law. *The author would like to thank the Advanced Food and Materials Network and the Centre for Intellectual Property Policy, McGill University, for their support.*

1. Sarah E. Taylor & Harold J. Feld, "Promoting Functional Foods and Nutraceuticals on the Internet" (1999) 54 Food & Drug L.J. 423 at 423.
2. *Ibid*.
3. Ray A. Goldberg, "The Food Wars: A Potential Peace" (2000) 28:4 J.L. Med. & Ethics 39 at 43.
4. Thomas G. Field, Jr., "Book Review: Edison in the Boardroom: How Leading Companies Realize Value from their Intellectual Assets" (2002) 43 IDEA 147 at 147, online: Pierce Law <http://www.piercelaw.edu/tfield/edison.pdf>.
5. The difference in the IPRs granted to the bread and the fruit is directly related to the make-up of the innovation. For example, the bread may involve a high level of human intervention to create and therefore may be a patentable product, whereas the crossbred fruit may be considered to fall short of the patentability criteria. These differences will be discussed in more detail later in this paper.
6. This bias may have arisen in the public institutional sphere in particular due to the present focus upon the commercial value of elements of an invention which is normally realized through patent protection. See Derek Bok, *Universities in the Marketplace: The Commercialization of Higher Education* (Princeton, N.J.: Princeton University Press, 2003) at 29,63.
7. Carole Schinck, "Food for Thought: Functional Foods" *VIA Destinations* 2:4 (August/September 2005) 27 at 28.
8. Jean Hamann, "First Nutraceutical Strawberry Hits the Market" *The Wide Angle 05*, online: Parc Technologique du Québec métropolitain <http://www.parctechno.qc.ca/stock/fra/doc231-352.pdf>.
9. *Patent Act*, R.S.C. 1985, c. P-4, ss. 2, 28.2.
10. *Ibid.*
11. *Ibid*., s. 28.3.
12. Certain subject matter of inventions has been deemed unpatentable by the *Patent Act* at subsection 27(8) or by common law. An example of a common law

patentability exception is detailed in the *Harvard College v. Canada (Commissioner of Patents)* case, [2002] 4 S.C.R. 45, 2002 SCC 76, wherein the Supreme Court of Canada held that higher life forms are not patentable subject-matter.

13. [1989] 1 S.C.R. 1623, 60 D.L.R. (4th) 223.
14. The Patent Appeal Board who first made a ruling in the *Pioneer* case determined that crossbreeding as a technique involves a lesser degree of human intervention than genetic manipulation and held that the crossbred plant at issue in the case is not an invention. When the S.C.C. heard the case it did not make a final ruling on this component of the case, and instead unanimously dismissed the appeal on the basis of inadequate disclosure, holding that "*the statutory requirement of an adequate description of an invention cannot be met solely by the deposit of a sample of the plant variety*." In the course of its decision the S.C.C. did note that two types of genetic engineering exist: i) crossbreeding, which it defined as natural growth techniques manipulated through human intervention; and ii) recombinant DNA technology, which it found to involve human directed alteration of the genetic code of plants. The crossbreeding at issue in *Pioneer* was held by the S.C.C. at para. 18 to be a technique that does not alter the plant "*reproductive process, which occurs in accordance with the laws of nature*." Thus, in *Pioneer* the crossbreeding procedure was too close to the natural reproductive process to be patentable. The *Pioneer* ratio, however, did not close the door for other crossbreeding methods to be deemed patentable. *Ibid.*; Eileen Morin, "Of Mice and Men: The Ethics of Patenting Animals" (1997) 5 Health L.J.147 at 164 [*Morin*].
15. [2005] F.C.J. No. 2024, leave to appeal to S.C.C. refused, [2006] S.C.C.A. No. 39.
16. (1902), 20 R.P.C. 123 at 126 (Ch.D.).
17. *Supra* note 12.
18. [2004] 1 S.C.R. 902, 239 D.L.R. (4th) 271, 2004 SCC 34.
19. *Ibid*. at para. 42 (The majority decision, delivered by Chief Justice McLachlin, stated that it is possible to extend patent protection to an entire plant, provided that the patentable part of the invention is "significant and important" unpatentable whole, namely the plant. However, despite the fact that the majority SCC judgement thereby permits the extension of patent protection to unpatentable subject matter, it remains the law in Canada that plants cannot be claimed in granted patents).
20. Both the product and the process should be reviewed for patentability as each facet of the invention may represent a patentable element. An example is natural health products which are made from compounds which are found in nature and therefore are deemed to be discoveries, not inventions. Thus, the product will not be patentable, however, a patent right may be granted for an inventive process for creating natural health products.
21. R.S.C. 1990, c. 20.
22. *Ibid.,* s. 4; Morin, *supra* note 14 at 192.,
23. *Supra* note 20 at ss. 5.1, 6.
24. *Ibid.*, ss. 9, 30. Details regarding disclosure are provided in the *Plant Breeders' Rights Regulations*, SOR/91-594, s. 19(1)(g).
25. *Lac Minerals Ltd. v. International Corona Resources Ltd.*, [1989] 2 S.C.R. 574 at 638, 61 D.L.R. 4th 14. As a right of enforcement, the owner of a trade secret is permitted to take action against any party who breaches confidentiality. Three elements must be proven in order to establish a breach of confidentiality: 1) the information had the necessary quality of confidence about it; 2) the information had been disclosed in circumstances imparting an obligation of confidence; and 3) unauthorized use of the information constituted a detriment to the party who first communicated it.
26. *Ibid.*
27. NOLO, "Trade Secrets Basic FAQS", online: NOLO <http://www.nolo.com/article.cfm/ObjectID/90781CA8-0ECE-4E38-BF9E29F7A6DA5830/310/119/FAQ/>.
28. John T. Ramsay, *Ramsay on Technology Transfers and Licensing*, 2nd ed. (Markham, Ont.: Butterworths, 2002) at 10.15.2.
29. *Ibid*. at 6.7-6.8.
30. Sunny Handa, *Copyright Law in Canada* (Markham, Ont.: Butterworths, 2002) at 142.
31. *Copyright Act*, R.S.C. 1985, c. C-42, s. 54.
32. *Berne Convention for the Protection of Literary and Artistic Works*, 9 September 1886, 828 U.N.T.S. 221,Can. T.S. 1948 No. 22, revised most recently by *Paris Act relating to the Berne Convention*, 24 July 1971, 1161 U.N.T.S. 3.
33. *Supra* note 1 at 424, 427-32.
34. Benjamin N. Gutman, "Ethical Eating: Applying the Kosher Food Regulatory Regime to Organic Food" (1998-1999) 108 Yale L.J. 2351.
35. Marsha A. Echols, " Expressing the Value of Agrodiversity and Its Know-How in International Sales" (2004) 48 How. L.J. 431 at 439-441.

36. *Ibid*. at 440 Echols points out that "healthy" foods that are so defined by the fact the product has met a regulated standard will add "value to products in the buyers markets.".
37. *Supra* note 3 at 39.
38. *Supra* note 35 at 449.
39. "Pakistan, India may Register Basmati Rice Trade Mark" *Pakistan Link* (18 August 2005) online: Pakistan Link <http://www.pakistanlink.com/Headlines/Aug05/18/10.htm>.
40. Molly Torsen, "Apples and Oranges (and Wine): Why the International Conversation Regarding Geographic Indications is at a Standstill" (2005) 87 JPTOS 31.
41. *Supra* note 35 at 449. Specifically, TRIPs articles 22 through 24 govern geographical indications; *ibid*. at 38
42. Frances G. Zacher, "Pass the Parmesan: Geographic Indications in the United States and the European Union - Can there be Compromise?" (2005) 19:1 Emory Int'l L. Rev. 427 at 435. Zacher points out "legal developments in the E.U. already prohibit Kraft from using 'parmesan' in E.U. countries" and as a result Kraft now uses the term "pamesello", which in the opinion of Zacher and James Cox is an "awkward-sounding" substitute. See James Cox, "What's in a Name?" *USA Today* (9 September 2003) at 1B.
43. Europe has already established Indications of Geographical Origin in its legislation. See *supra* note 39 at 44. India is considering the value of protection for products sold internationally, such as Darjeeling tea. See Tunisia L. Staten, "Geographical Indications Protection Under the TRIPS Agreement: Uniformity Not Extension" (2005) 87:3 Journal of the Patent and Trademark Office Society 221 at 224 [*Staten*].
44. Staten, *ibid*. at 226.
45. There are many reasons why researchers move from position to position. One reason that has drawn significant press is the idea of better-paid positions in more technologically advanced laboratories creates a brain drain in areas offering lower salaries and less advanced scientific infrastructure. See William J. Carrington & Enrica Detragiache, "How Extensive is the Brain Drain?" *Finance and Development* 36:2 (June 1999). Some research institutions also promote researcher movement through links with industry and other research institutes. See John Fraher, "17m Biosciences Institute Opens at UCC" *Irish Biotech News* 64 (Summer 2003) 2.
46. The S.C.C. in *Apotex Inc. v, Wellcome Foundation Limited*, [2002] 4 S.C.R. 153 at para. 99, stated that "an individual who contributes to the inventive concept may be a co-inventor".
47. For example, section 31 of the *Patent Act* sets out that all joint inventors must be involved in the filing of a patent application. *Supra* note 9, s. 31.
48. In some instances this type of contractual provision will grant either lump sum payment to the employee in exchange for any patent rights, or else will offer royalty rights, however, this is not always the case.
49. All university researchers should look closely at the IP policy of their institution as there is no conformity among policies.
50. Section 28.2 of the *Patent Act* states that disclosure of an invention more than twelve months prior to the filing of a patent application will preclude the patentee from obtaining a patent. Supra note 9, s. 28.2. This is known as a twelve-month "grace period" which is the law in Canada and some other countries, including the US. However, it should be noted that regions such as Europe do not allow for any grace period and any prior disclosure may prevent a patent from being granted for an invention.
51. Subsection 43(2) of the *Patent Act* states that there is the presumption of validity extending to granted patents. *Supra* note 9, s. 43(2).
52. "Defensive Tactics - Record-Keeping and Diligence Practice" online: Patent.info <http://www.uspatentinfo.com/Faq12_DefensiveDriving.html>.
53. Corporations are obligated to achieve profit for shareholders. Public institutions are not limited to a profit-driven goal.
54. *Supra* note 27 at 7.3.
55. See Stephen M. Maurer, Arti Rai & Andrej Sali , "Finding Cures for Tropical Diseases: Is Open Source and Answer?" (2004) 6 Minn. J.L. Sci. & Tech. 169; Robin Feldman, "The Open Source Biotechnology Movement: Is it Patent Misuse?" (2004) 6 Minn. J.L. Sci. & Tech. 117 at 123; David W. Opderbeck, "The Penguin's Genome, or Coase and Open Source Biotechnology" (2004) 18:1 Harv. J. L. & Tech. 167.