

## Patents and Patenting: Balancing Protection with the Public Domain

The nature of *public* and *private* and balancing individual rights with public welfare has been a perennial concern for many societies. For more than two thousand years in the West, scholars, philosophers, and politicians have debated questions of individual rights and of a government's responsibility to protect those rights while promoting the public good. Plato argued against private property (he said it would corrupt the personality by infecting it with greed), while Aristotle essentially argued for private property stating it would enhance an individual's sense of identity and self-esteem and, in addition, allow for the optimal economic use of *the commons*.

**Private goods** are those over which there can be competition or rivalry, their use can be excluded from nonowners. Private goods typically are traded in markets. If a market is able to agree on a price (such as for bread), the ownership or use of the good (the bread) is transferred. Further, once the good is consumed (the bread has been eaten) others are precluded from also eating it.

**Public goods** are goods the use of which neither competes with nor rivals use by others (nonrival), and no person can exclude other persons from use of the goods (nonexcludable). Sunlight, traffic lights, street signs, sewer systems, and a smallpox-free world are examples of public goods. Crucially, **who provides the public good is not a factor in determining whether a good is public or private**. Governments provide public

goods (such as street lights) and they also provide private goods (for example, housing and medical care). Similarly, the private sector may provide public goods, such as technical norms or streetlights. The example of the streetlight illustrates how private goods (patented, high-efficiency light bulbs, electricity produced by companies, street posts installed by local private contractors) become public goods because they are made available to all. The creation of a public good is not free of cost. Costs may have been borne by society at large (the street light will have been paid for, indirectly, by the taxpayer) but the enjoyment or use of it is free to any and all individuals who pass along that particular street.

Further, these examples demonstrate how *public* and *private* are in some respects two sides of the same coin; both are needed for the coin to exist and have value. But as Boettiger and Chi-Ham<sup>1</sup> show, the manner in which this plays out with information and inventions generated by science is not as straightforward as the examples above suggest. Complications are due, in part, to the fact that inventions, unlike real and tangible property, once they are disclosed are essentially nonrival and nonexcludable. Unless, of course, IP rights systems regulate ownership, access, and use.

Boettiger and Chi-Ham discuss the nexus of public and private property and provide in-depth guidance on using defensive publishing and the public domain as tools to achieve a range of IP

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management goals. The authors examine the extent to which the *public domain* can in fact be depended upon and even *leveraged* to facilitate and preserve access to technologies. The authors view **defensive publishing** and utilizing public domain research inputs as options within a broader set of IP management strategies, including the options of patenting, trade secrecy, trademark protection, and bailment contracts. All of the above can be used in various combinations to find the balance between protection and accessibility that both promotes technology development and fosters ongoing innovation. They argue that the choice of the strategic option depends on a pragmatic and realistic understanding of the nature of the *public domain*. In order to clarify and illustrate this, the *public domain* is compared to two different, but closely related, property rights concepts: *open source* and *the commons*.

**Open source** is defined as the body of knowledge over which owners claim property rights, but with access to that knowledge being provided systematically by the owners under terms of a license that regulates access. According to the authors, **the commons** is, by its nature, a less clearly defined concept that varies according to context, but includes a lack of private ownership, open access, or collective management.

It should be noted that defensive publishing strategies can be more viable than patenting in the following two cases:

- development of the technology will not depend on private sector investment
- the leverage ownership could provide, such as the ability to segment markets or bargain for access to complementary technologies, is not important

Defensive publishing can be less costly, eliminating patent costs and transaction costs in licensing, especially when the ultimate desired outcome is to provide broad access to a technology. When cost or infeasibility makes enforcing a patent unlikely, defensive publishing is the more sensible alternative for companies. It can be very effective when combined with patenting.

The second aspect of the chapter by Boettiger and Chi-Ham deals with the **use of public domain**

**technologies** as research inputs. The authors outline how this approach can reduce transaction costs and mitigate potential IP access problems in downstream R&D. However, as for any IP management strategy, attention should be paid to the overlapping, web-like nature of patent claims and the ever-shifting boundary of the public domain. Even when a technology is preliminarily believed to be in the public domain, such as from an early scientific publication or an expired patent, subsequent publications or patents can still claim certain uses of the technology, such as in particular combinations, applications, or with possible improvements.

The public domain can be a vital resource to public sector institutions and also companies. Judicious defensive publishing and the careful use of public domain technologies offer IP managers everywhere effective, flexible, and less-expensive tools for exploiting these resources. Intellectual property is not a panacea for the management of innovation. Neither is open source. All have utility and limitations. **Artful management involves the creative and balanced use and handling of both public and private goods.**

If patenting is the chosen route, it must be remembered that patenting decisions need to be made well before it is clear whether or not an invention has value. It makes business and strategic sense, therefore, to minimize the initial costs of such decisions. If the invention appears to have significant market potential, then a cost-minimizing approach toward patenting is not recommended. However, most inventions have questionable or uncertain future value, and so a cost-minimizing approach is an appropriate strategy for patent application filings.

One **cost-minimizing approach is the filing of provisional patent applications**, which is possible in many countries. Importantly, foreign inventors may also file provisional applications in the United States. Provisional patents allow inventors an extra year of protection, effectively extending the patent period from 20 to 21 years. As Cruz<sup>2</sup> explains, the **benefits of provisional applications** include cost and simplicity. Provisional applications are not substantively reviewed by a patent office examiner, but are simply checked

to ensure that they meet minimal filing requirements. A provisional application also does not require a prior art search. Since these applications are so quick and inexpensive to prepare, they offer an easy way for inventors to establish a priority date for an invention and avoid statutory bars.

But there are also **limitations associated with provisional applications**. While inexpensive to file, provisional patent applications do not reduce the costs of preparing and filing subsequent utility applications, meaning that the total cost of filing will increase, if only by a small amount. More importantly, provisional applications require a degree of disclosure, so inventors should be sure not to disclose something they wish to retain as a trade secret. Also, provisional patents may not be amended; they trigger the time line for Patent Cooperation Treaty (PCT) and Paris Convention filings, and without filing nonprovisional patent applications, provisionals do not mature into patents.

Livne<sup>3</sup> then discusses various avenues for reducing costs in patent filings and presents a highly useful **decision tree**. He cautions that the use of patent attorney is generally an essential guide in such matters. The stakes are often high and mistakes can be costly. When publication is imminent and patent protection in foreign countries is desired, a provisional or nonprovisional application should be filed in the United States before publication. Once disclosed, filing in many countries will no longer be possible.

Although licensing is discussed elsewhere,<sup>4</sup> the manner in which patent applications are written, particularly the claims, can be instrumental in facilitating certain licensing strategies, particularly field-of-use licensing. The **foundation of an effective field-of-use licensing strategy is a patent application** that foresees certain licensing opportunities and accommodates unforeseen opportunities. Olson<sup>5</sup> discusses this using examples from the agricultural, pharmaceutical, biochemical, and chemical disciplines and illustrates how this strategy applies equally to inventions with commercial and humanitarian applications. He urges technology managers to retain control over the patent application process and to encourage creative thinking when preparing patent applications.

Applying for patents is only one element in a strategy to create IP portfolios of substantial value. For both public and private sectors, patents are a central element, but an IP portfolio should also take advantage of other forms of protection: trademarks, copyrights, and trade secrets. Dodds<sup>6</sup> presents various **strategies for building an IP fortress** and discusses the limitations and strengths of various approaches. For example, an *offensive* patent strategy is designed to build barriers to exclude competitors from proprietary technologies. With a *defensive* patent strategy, a company files patents primarily to ensure that innovations can be practically used. To build an IP fortress of protection, several forms of intellectual property may be used for the same invention or improvement, with different forms of IP protection serving of offensive or defensive tactics.

Notwithstanding the different missions, objectives, and motivations of the public and private sectors, the central forces behind their respective IP protection strategies are identical (though the relative strength of the forces will vary significantly). **Private sector** organizations, primarily corporations, are profit-oriented and respond to the pressures imposed by the marketplace and by shareholders who expect returns on their investments. Therefore, the private sector will use defensive and offensive patenting strategies, often obtaining numerous patents with narrowly drafted claims. In this way, a series of patent portfolios is strategically used to build proprietary fortifications and the private sector organization can stake out its territory, protect its interests, and secure its profits. In the expanding world marketplace, this strategy has only become more telling, with the increasing reliance on foreign filing and patent families confirming the predominant global strategic perspective of multinational companies.

The **public sector**, on the other hand, has a very different mission, which is to serve the greater public good. Patenting strategy will focus on more broadly drafted claims that will encompass a technology or (as is often, and more importantly, the case) a key process, method, or technique, for example a technique of genetic transformation. These types of patents, when appropriately

strategically licensed, enable effective development, broad dissemination, and maximum societal impact of a technological advance precisely in line with the public sector mission of providing for the general public, in contrast to the much more limited constituency of the private sector.

Patent protection is limited geographically, protecting the invention only in countries where the patent issues. Private sector companies and public sector institutions can reduce costs by focusing the patent protection to those geographic areas where there are business or humanitarian opportunities. But filing in foreign jurisdictions is not easy or cheap. For this reason, two chapters, one by Viksnins and McCrackin<sup>7</sup> and the other by Schneiderman,<sup>8</sup> review **foreign filing strategies and tactics, with particular emphasis on filing patent applications using the PCT**. The two chapters are complementary and discuss the practical aspects from different points of view.

Several key factors should be reviewed when approaching the international production, marketing, distribution, and sales of a new and innovative product or process for which patent protection will be sought. These factors include a full range of various business and legal issues that, once considered, will provide the international patent protection options that can then be evaluated and appropriately selected, according to an organization's business goals and financial resources.

Depending on an organization's goals and resources, specific patent-application options will have advantages and disadvantages. One option is to file a separate patent application for each nation or region where protection is sought. Another option is to file a patent application, in accordance with the **Paris Convention**, which establishes a priority filing date. This gives, for one year, the exclusive right to file for patents in other Paris Convention countries. This approach has advantages when filing in a very limited number of countries. It also avoids the costs associated with the intermediate steps of filing in the PCT or regional patent offices prior to filing nationally. This option has the following disadvantages: each application will be independently examined (that is, no deference is given to a prior favorable

review in a different country) and government filing fees and translation costs will be due early in the patenting process.

An indispensable tool for delaying, consolidating, and minimizing international patent costs, **the PCT offers a unified and simplified procedure** for filing multiple foreign patent applications using a single initial application. The PCT has standardized the filing and preliminary evaluation of international patent applications. Consisting of over 130 member countries, the PCT is administered by the World Intellectual Property Organization (WIPO), which reviews PCT applications and then distributes them to designated member countries. The process of filing the PCT application in individual patent offices can be delayed for up to 30 months. During this time, the applicant will receive the results of the WIPO International Preliminary Examination of the PCT application. For many countries, especially those still developing capacity in patent prosecution, national patent offices give considerable deference to the PCT International Preliminary Examination Report.<sup>9</sup>

Using best practices in IP management involves identifying IP assets, organizing resources, building capacity, formulating options, and then pursuing strategies that will maximize the value of an organization's IP assets. Managing patent portfolios is always challenging, even more so now with the rapid globalization of technology markets. Globalization makes **best practices in patent portfolio management** more critical for effectively distributing innovations in the health and agricultural sciences, whether for commercial purposes or for facilitating humanitarian access. As public and private sector institutions increasingly work in a global context, choosing where and under what circumstances to file for patents is becoming more important, and, according to Yin and Cunningham,<sup>10</sup> the following factors should be considered:

- objectives of the organization with respect to its issued patents
- assertion of patents *offensively*, either as part of a licensing strategy or in litigation, if companies are unwilling to license

- assertion of patents *defensively*, as leverage in licensing negotiations or to ward off litigation by others
- identifying where potential targets are located or doing the bulk of their business, if a portfolio is to be used offensively,
- identifying where an organization may most likely encounter licensing approaches or litigation offensively by others, if a portfolio is to be primarily defensive

A global patent program should be proactive as well as preemptive in its outlook, especially regarding the potentiality of patent litigation, where knowledge of options can save time and money. Yin and Cunningham compare and contrast the **advantages and disadvantages of pursuing patent litigation** in either a federal district court or in the U.S. International Trade Commission (ITC). Although the ITC's jurisdiction is essentially limited to cases dealing with the illegal importation of alleged infringing products, there are times when it might be a good idea to pursue patent litigation in the ITC. In addition, one can also pursue litigation in both the federal district court (patent infringement action) and the ITC (unfair trade practices action) at the same time.

**Obtaining patent protection and regulatory approval** for biotechnology and pharmaceutical products is an extremely time-consuming and expensive process. For nonprofit organizations working with limited resources, it is especially crucial to manage the process efficiently and make the most of patent protections while they last. Fernandez, Huie, and Hsu<sup>11</sup> suggest that public sector entities can use private sector techniques to **maximize revenue and, in turn, provide drugs to the public at the lowest possible price**. The authors suggest that organizations carefully plan the timing of patent and Food and Drug Administration (FDA) applications to maximize the effective life of a patent and avoid unnecessary disclosures.

Nonprofits especially should note that the U.S. Patent and Trademark Office (PTO) gives special priority to certain biotechnology patent applications from small entities and nonprofits. The FDA likewise expedites approval if there are

indications that the product will provide significant therapeutic benefit over existing therapies. At the other end of the patent lifecycle, after having gone through the steps of obtaining FDA approval, it is in the best interests of innovating companies to **extend the patent term** for as long as possible. This chapter is included in the *Handbook* to show the important **interface between patents and the regulatory drug approval process** and to show how this interplay affects market entry. It is not intended as an endorsement of extending effective patent life to delay the market entry of generic drugs.

As part of certain patent application filings,<sup>12</sup> biological resources may have to be deposited in support of a patent application. According to Harney and McBride,<sup>13</sup> in the United States a **deposit of biological materials** is not a requirement per se, but under U.S. patent law it can satisfy three main requirements:

- the enablement requirement, that is, that it would allow a person skilled in the art could make and use the invention
- the written description requirement, that is, it would describe the invention in sufficient detail to allow such a person skilled in the art to reasonably conclude that the applicant was in *possession* of the claimed invention at the time of filing
- the best mode requirement, that is, that it would disclose the best mode of carrying out an invention in sufficient detail to allow a person of ordinary skill in the art to practice it

Plant varieties constitute a biological resource. While in the United States while plant varieties can be protected as utility patents, the United States and many other countries also have **protection mechanisms specifically adapted to the biological and self-replicating nature of plant varieties**. Pardee<sup>14</sup> provides detailed and step-by-step instructions for how to obtain a U.S. Plant Variety Protection (PVP) certificate. Although the chapter focuses on PVP application procedures in the United States, the chapter is generally useful for illustrating the principles, preparations, and procedures for applying for and obtaining a PVP

certificate. This is because the U.S. provisions of the PVP Act of 1970 closely follow the model developed by the Convention of the International Union for the Protection of New Varieties of Plants (UPOV). Moreover, UPOV procedures have been adopted by many countries around the world, even by many who are not members of UPOV.

In sum, the factors that drive decisions about what type of protection to seek and where to seek it are complex and will heavily depend on the context in which the decisions are made. Public and private institutions will consider the same factors but weigh them using different criteria. For example, the prospect of litigation in a foreign jurisdiction for a public sector entity will be marginally important per se but highly relevant to its potential to license. The result is that both public and private sectors will consider whether to adopt *offensive* or *defensive* protection and litigation strategies.

Because the rights accorded to the patentee are divisible (the right to exclude one from selling or the right to exclude another from manufacturing) one can divide the countries of the world into those where the invention can be manufactured versus countries where the invention will be sold. And even after identifying those countries where the invention might be marketed, it is often unnecessary to file in all of the identified countries. In order to best determine what strategy to pursue, an organization must know what it has and decide where it's going. The first step, therefore, in developing an IP strategy is to document what technologies already exist in the organization, what technologies are in development, and what partnerships are feasible. It will then be possible to intelligently choose the best ways to protect intellectual property and enhance its value, be it for economic or humanitarian objectives, or both. ■

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All chapters refer to: *Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices*. 2007. A Krattiger, RT Mahoney, L Nelsen, JA Thomson, AB Bennett, K Satyanarayana, GD Graff, C Fernandez, and SP Kowalski (eds.). MIHR: Oxford, U.K., and PIPRA: Davis, U.S.A. Available online at [www.ipHandbook.org](http://www.ipHandbook.org). The online version contains for each chapter a detailed Editor's Summary, Implications, and Best Practices.

- 1 Chapter 10.1 by S Boettiger and C Chi-Ham titled Defensive Publishing and the Public Domain, p. 879.
- 2 Chapter 10.2 by RL Cruz titled Provisional Patent Applications: Advantages and Limitations, p. 897.
- 3 Chapter 10.5 by O Livne titled Cost-Conscious Strategies for Patent Application Filings, p. 921.
- 4 See Section 11 in the *Handbook* and Part 11 in this *Executive Guide*.
- 5 Chapter 10.3 by AM Olson titled Designing Patent Applications for Possible Field-of-Use Licensing, p. 903.
- 6 Chapter 10.4 by J Dodds titled Patenting Strategies: Building an IP Fortress, p. 911.
- 7 Chapter 10.6 by AS Viksnins and AM McCrackin titled A Guide to International Patent Protection, p. 927.
- 8 Chapter 10.7 by AM Schneiderman titled Filing International Patent Applications under the Patent Cooperation Treaty (PCT): Strategies for Delaying Costs and Maximizing the Value of Your Intellectual Property Worldwide, p. 941.
- 9 A potential alternative to PCT filing or filing directly in each country of interest is to file in a regional patent office. Regional patent offices have come into existence through international treaties and include the European Patent Office (EPO), the African Regional Industrial Property Organization (ARIPO), the African Intellectual Property Organization (OAPI), and the Eurasian Patent Convention (EA). The advantages of filing in a regional patent office are that some translation costs may be eliminated, and substantive examination of the regional patent in each of the designated countries may not be required. Indeed, if protection is desired in a number of member countries, this approach is especially cost-effective. But if protection in only a few member countries is desired, it may be less expensive to file applications in each country individually and avoid the costs associated with the intermediate steps of first filing in the regional patent office. Also, not every target country may be a member of a regional convention.
- 10 Chapter 10.8 by R Yin and S Cunningham titled Filing and Defending Patents in Different Jurisdictions, p. 953.
- 11 Chapter 10.9 by DS Fernandez, J Huie and J Hsu titled The Interface of Patents with the Regulatory Drug Approval Process and How Resulting Interplay Can Affect Market Entry, p. 965.
- 12 Such would include filings for bacteria, fungi, eukaryotic cells and lines, hybridomas, plasmids, plant tissues, seeds, viruses, vectors, and cell organelles.
- 13 Chapter 10.10 by DJ Harney and TB McBride titled Deposit of Biological Materials in Support of a U.S. Patent Application, p. 973.
- 14 Chapter 10.11 by WD Pardee titled Protecting New Plant Varieties through PVP: Practical Suggestions from a Plant Breeder for Plant Breeders, p. 981.



## FOR GOVERNMENT POLICYMAKERS

- ✓ The use of IP rights is not a panacea for the management of innovation, nor is the public domain. Both public and private goods have utility and limitations. The **art of innovation management is in using both public and private goods** and to manage the interface between them.
- ✓ Because public domain technologies play an important role in publicly funded research, **defensive publishing** can be used by public sector research institutions to help expand and reinforce the accessibility of technologies in the public domain. Academic institutions in particular should be encouraged to publish, in addition to considering IP protection.
- ✓ Because of the case-specific applicability of defensive publishing, **blanket policies that require defensive publishing by national research institutions** deny them the opportunity to develop their research results strategically in combination with IP rights protection.
- ✓ In order to realize the commercial and humanitarian potential of international markets for products and processes arising from public sector research investments, public sector research-based institutions ought to develop **strategies that judiciously balance the public domain and IP rights**. Commercial and humanitarian objectives and strategies are not in conflict, but rather are complementary aspects of best practices in IP management.
- ✓ A country's **membership in the Patent Cooperation Treaty (PCT)** can greatly help national institutions—public and private—to strengthen international technology transfer, licensing and research, and product development partnerships and can aid access to global markets.
- ✓ Membership in the **PCT can provide significant advantages** and can lead to much more cost-effective examination of patent applications.
- ✓ **Harmonizing national patent systems** across regions, as well as globally, can be a useful strategy for improving the effectiveness of the IP system and improving a national institution's ability to reach foreign markets.
- ✓ Providing for legislation, or for amendments to current statutes, that **facilitates patent filing by foreign entities** can be an important component of technology transfer and development.



## FOR SENIOR MANAGEMENT

(UNIVERSITY PRESIDENT, R&D MANAGER, ETC.)

- ✓ The use of IP rights is not a panacea for the management of innovation, nor is the public domain. Both public and private goods have utility and limitations. The **art of innovation management is in using both public and private goods** and to manage the interface between them.
- ✓ Because public domain technologies play an important role in publicly funded research, **defensive publishing** can be used by public sector research institutions to help expand and reinforce the accessibility of technologies in the public domain. Academic institutions in particular should be encouraged to publish, in addition to considering IP protection.
- ✓ Because of the case-specific applicability of defensive publishing, **blanket policies that require defensive publishing** deny the opportunity to use research results strategically in combination with IP rights protection.
- ✓ Few institutions anywhere in the world have transparent incentives for researchers or technology transfer officers to prepare defensive publications. Encouraging **publication with maximum inventive disclosure** through a balanced set of incentives for researchers and technology transfer officers is a useful strategy.
- ✓ Scientists should be encouraged to **use public domain technologies** as research inputs whenever feasible to reduce possible future constraints in the downstream commercialization of innovations. In many circumstances, however, **relying on patented technologies** may be the more effective way to go, particularly when the goal is to develop products.
- ✓ Building strong **institutional capacity in IP management** will enable technology managers and scientists alike to understand the complex array of options that should be considered before publishing research results or filing patent applications. Development of protocols and strategies will clarify options and retain and maximize value.
- ✓ One such capacity centers on the decision of whether patents for an invention should be filed in a manner that does **not delay publication of research results**. Provisional patent applications, where possible, offer one such avenue.
- ✓ An important component of **developing an IP strategy** is to document the technologies that already exist in the organization, plus those technologies in development (for example, through an **IP audit**). Other essential components of such a strategy are the promotion of international patent protection and the concrete steps an institution is taking to drive innovation and technology transfer.
- ✓ Management should encourage good laboratory practices and diligent **record keeping** of data to ensure that research can later be used in possible regulatory filings. Doing so could lower costs and reduce the time to market.



## FOR SCIENTISTS

- ✓ Published information, or research tools provided by a colleague, may be covered by IP rights. In the life sciences, the web of patents extends far and wide. This should neither deter nor distract you from good science. An **awareness of basic IP management best practices** will minimize possible future problems.
- ✓ You can intentionally make your inventions and the associated technologies accessible to everyone by **publishing results instead of patenting them**. Publishing results, however, does not guarantee full public access. Patents can still encroach upon the technical content of the work. Speak to your technology transfer manager about publications, and ask him or her to help with performing the necessary steps for turning your publication into a readily identifiable disclosure of patentable technology.
- ✓ **If public disclosure is your goal** as a way of preventing others from patenting a particular invention, it may be valuable to consider posting online or in searchable databases, with a valid date stamp, a longer working-paper version, supporting materials, or appendices. For this purpose, consider using dedicated services, such as a university technical disclosure bulletin or a centralized registry of unpublished papers, with official date stamps posted on faculty Web sites for online searches.
- ✓ **If patenting and public disclosure are your goals**, first consult with your institution's technology transfer manager prior to disclosure. Your institution should have an effective mechanism in place to determine whether or not a patent should be filed without significantly delaying publication. But be aware that premature publication can lead to a loss of IP rights.
- ✓ Your institution's technology **transfer managers will need your input** in order to make strategic decisions about where to pursue foreign patent applications. You likely know where competitors are located and where products arising from your research are needed.
- ✓ One of the services of **PIPRA** is to advise researchers in the plant sciences about which research is in the public domain and which is available for licensing on reasonable terms. If you are engaged in the development of biotechnology crops, you may find PIPRA's Web site and services useful.
- ✓ Good laboratory practices and comprehensive **laboratory notebooks** can ensure that your research is suitable for subsequent regulatory filings. This can reduce costs and time to market.



## FOR TECHNOLOGY TRANSFER OFFICERS

- ✓ The use of IP rights is not a panacea for the management of innovation, nor is the public domain. Both public and private goods have utility and limitations. The **art of innovation management is in using both public and private goods** and to manage the interface between them.
- ✓ Because public domain technologies play an important role in publicly funded research, **defensive publishing** can be used by public sector research institutions to help expand and reinforce the accessibility of technologies in the public domain.
- ✓ It helps to have other tools besides patents to **get technology out of the lab and into the marketplace**. Consider first whether a technology requires investment by the private sector (and, thus, exclusivity) to be put into practice.
- ✓ Defensive publishing may run contrary to your instincts if you tend to think in terms of controlling a technology by ownership (and thus excluding others from using it). Think instead in terms of **maintaining control of the technology**—or elements of it—by casting it into the public domain and, thereby, preventing others from owning it.
- ✓ Researchers will need advice on how to craft **defensive publications**.
- ✓ It is important to understand the **advantages of provisional patent applications**. They can be very useful in controlling costs and, also, in providing additional time for weighing options as to whether it is worthwhile to pursue a full patent application.
- ✓ **Delaying patent applications** involves risk. Subsequent prior art that blocks an application might appear. Or, the same invention might be patented by a competitor.
- ✓ For any invention, evaluate whether **foreign patent rights** are truly required. This will require a combination of business, marketing, and legal analyses.
- ✓ When assembling a patent application, **attorney costs can be reduced** by providing a cohesive document containing all data and information relating to the invention, such as alternative methods, compositions and/or devices. Use attorneys, at least, to review draft patent applications and to write the **all-important claims**.
- ✓ The foundation of an effective **field-of-use licensing strategy** is a patent application that foresees certain licensing opportunities and accommodates unforeseen opportunities. It will thus be important for your office to establish and implement strategies for patent application preparation that seek to anticipate any and all licensing opportunities that can arise from an invention.
- ✓ It is essential to **retain control of patent applications**. Don't permit a licensee to gain control; their interests and your interests are likely very different.
- ✓ **Tiered or layered IP protection strategies** utilize several forms of protection for a single product or process. For example, a hybrid maize variety may be simultaneously protected by patents, trade secret, trademark, and plant variety protection.