How and Where to Search for IP Information on the World Wide Web: The "Tricks of the Trade" and an Annotated Listing of Web Resources

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ABSTRACT

Emphasizing patents and patent searching, this chapter will put readers on the initial path to understanding and protecting intellectual property (IP). By exploring patent information on the Web site of the European Patent Office and other Web sites listed in this chapter, the reader can begin to learn by doing and quickly gain experience that should improve his or her searching skills. Other resources dealing with IP in general are described. This collection is by no means exhaustive, given the vast amount of information on IP that is present on the Web, but the sites listed here should be valuable in accessing unbiased, useful information about the IP landscape, especially for key areas of technological interest. The value of IP searches for a typical technology transfer office is also discussed.

1. INTRODUCTION

One of the major advantages of the information age is the ability for almost anyone to access information and resources that would otherwise be available only to specialists. The Internet—and its offspring, the World Wide Web—have become so pervasive that there is now little information that cannot be obtained from your desk for free or at a relatively low cost. Information about patents and other intellectual property (IP) is now almost instantly available; however, it takes a certain level of knowledge and experience to get there.

But the ubiquitous and egalitarian nature of the Internet raises some problems—the biggest problem is that it is overloaded with essentially unchecked and often highly partisan information. For this reason, a novice searcher needs some background on how to obtain relevant information and how to properly assess the reliability of a source. Simply typing *patent* or *intellectual property* into a search engine is likely to get hits, from many highly biased sources, on the desirability (or otherwise) of a patent system and the wealth-creating or wealth-destroying nature of IP regimes. Providing you with some good, general, and, we hope, unbiased places to start is one of this chapter's main goals.

A great deal of valuable information on IP rights can be found in the databases of patents and patent filings, which are now becoming more accessible; however, the databases do not provide comparable levels of interpretation and can be somewhat idiosyncratic. With databases, as with many other things, one gets what one pays for, and fee-based subscription services are always going to have more value. That does not mean that the free services are without value: a great deal can be achieved using these free sources alone.

One proviso has to be included before continuing: any searches you can perform yourself are not likely to be as complete or as well-prepared as

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those prepared by a professional patent agent or patent attorney. For any kind of IP related opinion, about which there may be legal or financial repercussions, retaining the services of an attorney is a necessity. However, for preliminary searches, for finding background information, for keeping up with the most current technological developments, and even for personal interest, knowing where to look to find patent information is very useful.

2. PATENT SEARCHES

Many people assume that IP is all about patents and that searching patent databases is a good way to identify when a product has some protected IP components. Although this is not necessarily true, patent searching is of great importance to technology transfer offices (TTOs) and IP management offices in public sector research, academic institutions, and research councils. Indeed, patents are a central tool in technology transfer and commercialization strategies in both the public and private sectors. The reasons are described below.

2.1 *Freedom to operate*

Freedom to operate (FTO) is becoming increasingly important for both the research and commercialization phases of the development of important products and technological processes. While most countries have generous *research exemptions* incorporated into their national legislation for the use of patented technologies in research, the scope and nature of the research exemption will vary from one jurisdiction to another. In the United States, the exemption is narrow and restrictive; in other jurisdictions, such as European countries, academic establishments tend to benefit from this exemption over industry, sometimes regardless of whether there are any commercial objectives. Nevertheless, this exemption may be subject to periodic review by events in judicial law, such as litigation proceedings. It is often difficult to determine clearly when early research will result in commercial activities, and so it is necessary to exercise judgment about the best time to start evaluating FTO.

When a research activity does produce commercialization initiatives, the scope of the research exemption likely will be significantly narrowed. Due diligence and thorough searching of background patents, therefore, will establish the scope of FTO. Patenting inventions generated in public sector institutions can also establish FTO. In this instance, extensive searching of patent databases is necessary for a researcher to establish whether he or she has a patentable invention.[1]

2.2 *Transfer of technology for the public good*

Some public sector institutions take patenting strategies very seriously in order to protect technologies that can be developed and transferred for the public good. Such strategies are likely to gain increasing acceptance in many other institutions. Not surprisingly, the generation of revenue from these patents is often a secondary consideration.

Developing core technology is frequently thwarted when it is simply released into the public domain. This is because the development of the technology most often requires a commercial partner who needs incentives to invest in the costly and risky development phase. Incentives include exclusivity facilitated through patent protection. For an example of such strategic considerations adopted in the public sector, see the IP draft guidelines document by the Indian Council for Agricultural Research (ICAR).[2]

That ICAR document considers patenting strategies for securing FTO, enabling food security, and *"cater[ing] to the agricultural and technological need of Indian farmers/citizens by maximising [referent] capacity for innovation and ensuring rapid transfer of technologies."* (Note that the ICAR document is not yet final and is accessible for feedback purposes at this stage.) In order to achieve the goals of food security, institutions need to balance the need for patenting with the need to release the innovation into the public domain. The strategy the institution adopts depends on which strategy will fulfill the institution's basic mission. The optimum strategy can be determined only on a case-by-case basis, depending on, among other factors, the nature of the individual technologies to be transferred. Of course, good patent-searching tools

and expertise are essential for achieving the stated aims.

2.3 *Mining technical information*

Patent descriptions contain a lot of scientific information, which makes them useful alternatives to published papers. With strong encouragement from journal editors to shorten primary papers, the materials-and-methods sections of papers are often little more than reference lists, which necessitate a paper chase if a researcher wants to discover the actual process. Patent application descriptions, however, often contain excellent methodological detail in the *enabling disclosure* section, which is the quid pro quo of the monopoly patent right. In other words, the invention is disclosed in a manner that enables the reproduction of results. Often patents may be the sole source of technical information about new technology that involves either products or processes. One example is a recently published application assigned to Moraga Biotechnology Corporation, which discloses an invention related to totipotent nonembryonic stem cells (Application number: WO 06028723A1). Not only are the methods for isolating cells presented in a level of detail that covers media compositions, cell culture techniques, and surgical procedures, but no peer-reviewed journal had published anything similar at the time of patenting.

2.4 *Avoiding wasted research efforts*

Simply searching journals will not uncover all the available technological areas of research and product development, particularly those areas that have been more recently developed. Patent searching can quickly uncover newer areas of research and can help avoid the duplication of efforts in a given area of technology. However, researchers must remember that there is a time lag of up to 18 months, sometimes more, in many jurisdictions between the filing and publication of an application.

3. PATENT SEARCHING STRATEGY

Searching for patents on a particular topic or product is not always straightforward. Patents are national rights, so it is necessary to give thought to where—in geographic terms—the product or invention needs protection. Important inventions are commonly patented in more than one country and—since these inventions involve the biggest potential markets—searching the patent offices of the United States, Europe, and Japan frequently covers nearly all of the potential patents and patent filings. A more recent system of international preliminary patent applications—the Patent Cooperation Treaty (PCT) system—is also a useful resource since inventors filing through the system have the possibility of protection in any signatory state of the PCT. Inventors have up to 30 months after filing the preliminary application to decide in which countries to file full applications.

There are no universal rules for good patent searches, and the following guidance is based on the personal experiences of one of the authors of this chapter. Starting from a position of limited or no knowledge of the technology in question, the first step is to carry out a standard bibliographic search on scientific publication databases. The online database Pubmed,[3] specialized technical journals, and other scientific search sites (including sites such as Google's™ scholar[4]) are good places to start. It is also worth trawling for information using general Internet search engines such as Google. Communicating with scientists involved in the technology is another essential requirement for the technology transfer officer/searcher. Developing effective communication between these groups may require some time and effort.

Once armed with essential information, patent databases are queried with technical search words or inventor, applicant, or company names. There are no standardized forms for company names, so one must try various options to use that search field, particularly because companies may be listed as different entities in different countries. Also, many databases do not update these fields. So it is valuable to search using older names, such as Ciba-Geigy, Novartis, and Syngenta, as many name changes occur when companies merge or are taken over. Once relevant patents are found, it is possible to obtain their "equivalents" or "family members"

through databases such as the European Patent Office (EPO). Patent families are explained later in this chapter.

It is very important to have a structured search strategy. Although the strategy can vary according to invention type, a structured strategy involves breaking into its essential elements an invention or a field of technology and emphasizing those elements that are expected to be novel and inventive. This approach creates a series of useful search words. Often it is impossible to determine useful terms before the search, and further elements can be identified as the search progresses. Using the citations within individual patents will further aid the search along the complex patent trail. Lastly, IPC (International Patent Classification) codes are useful for simplifying the retrieval of documents (more on this topic to follow).

Although many national patent offices make possible online searches of granted patents and applications issued in their jurisdictions (for example, the U.S. Patent and Trademark Office[5]), some Web sites (such as that of the Singapore IP office[6]) support searches of multiple sites at one time. Some have even collected multiple patent publication information into a single database (like the European Patent Office site[7]).

Many sites contain links to other sites with useful IP information, and one of the most comprehensive lists is maintained by the British Library,[8] but, as with all such lists, it is most likely incomplete.

Below is an annotated list of selected sites and some information about their usefulness.

4. AVAILABLE RESOURCES

Depending on available resources, individual TTOs may wish to have a dedicated searcher or to outsource the searching function, although this may be an expensive option in the long term. Requisite in-house resources include at least one well-trained staff member committed to performing patent searches. Ideally, this person should have a scientific background with the aptitude to absorb and understand technological concepts from a variety of disciplines. This is a talent-driven competence, so insistence on strict minimum qualifications can sometimes be unwise.

Investment in computer hardware is essential. Also, a fast Internet connection is ideal because many of the electronic documents that researchers will download are large. A good relationship with a local patent attorney also is advisable, especially in situations where the accuracy of the information under analysis is crucial and additional input is necessary. Investing in at least one commercial database (such as Delphion and/or Derwent) is highly recommended if financial resources permit and if the frequency and volume of searches requires that searches be completed quickly.

4.1 *Free patent sites and patent/patent searching resources*

4.1.1 *The Web portal of the European Patent Office*

The Web portal of the European Patent Office (EPO) contains bibliographic (front page) information from patent publications worldwide.[9] As of late 2006, the site contained information from more than 60 million documents from 72 countries. No full-text versions of the documents are available in the html page views, but many of the documents can be viewed and downloaded as pdf files.

Below is a detailed description of the EPO site using the esp@cenet engine and an illustration of how to search patent databases.

Esp@cenet can be accessed and searched using the following steps:

1. Go to www.espacenet.com in the browser window. This will bring you to the home page of esp@cenet. Figure 1 shows what you will see on your computer screen.
2. Scroll down the page to find a list of different servers located at the EPO, European Commission, and the national offices of members of the European Patent Convention and other European ("invited") states.
3. Click on the link that takes you to the EPO server (ep.espacenet.com).
4. Choose the search option you want from the menu on the left side of the screen.

A. Quick search

A quick search may be useful for simple searches using keywords, including the name of an inventor or a company. Figure 2 shows what you will see on you computer screen after selecting "Quick Search."

The default search part of the "Worldwide" database is shown above. Other choices are "EP" and "WIPO," which are in the drop-down menu. To perform a search, select either "Words in the title or abstract" or "Persons or organisations." Next, type in the words or names as appropriate in the search box. This box allows Boolean search operators such as "AND" and "OR."

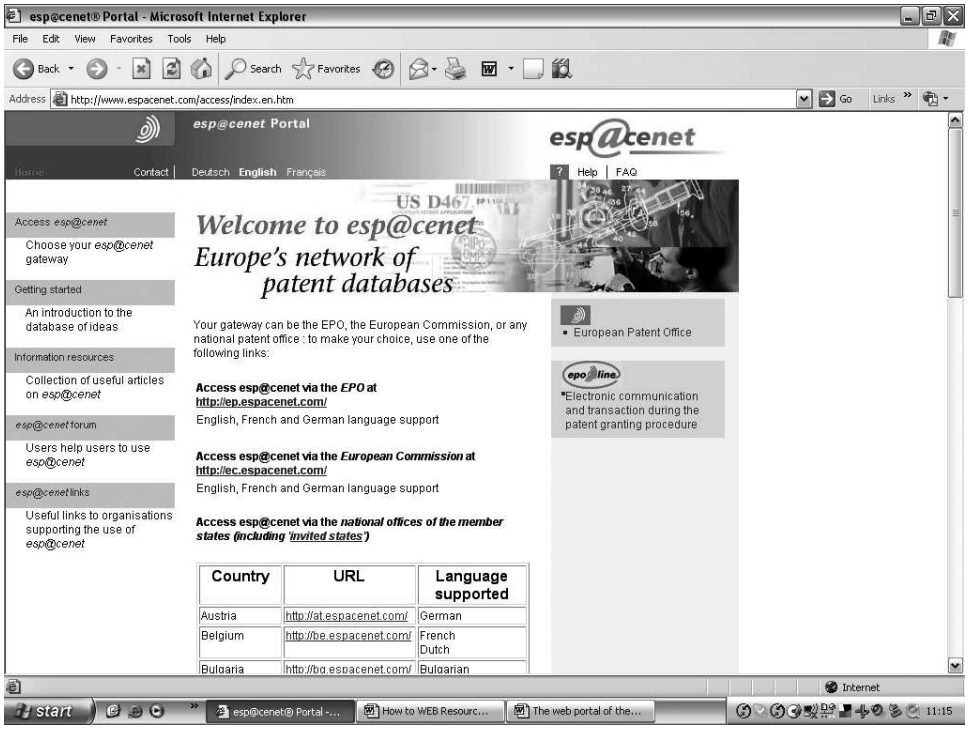
B. Number search

A number search allows rapid access to publications and applications. Click on the "Number Search" option on the left side of the screen. Type in the application, access, publication, or priority numbers. If typing in the document "type" code (A1, A3, and so on—sometimes known as the "kind" code), which is appended to the end of the publication number, ensure that the code is separated from the publication number by a single space.

As an example, searching with "EP1226178A1" may not produce a result. The "A1" publication type code should either be deleted or entered as "EP1226178 A1." The "EP" code or any national (alphabet) code at the beginning is optional. If difficulties arise, try leaving out the national code in the beginning as well, bearing in mind the possibility of duplicated numbers across different patent offices.

Checking the "Including family" box while performing the search will return all members of the same patent family relating to multiple filings of the same invention and sharing the same *earliest priority date* (the filing date of the earliest application in the family). This helps

Figure 1: esp@cenet Portal screen: Access page



determine the geographic scope of protection worldwide, although it should be noted that patents filed in developing countries without easily accessible electronic information are often not listed.

Figure 3 shows the results window of the search with the patent publication number "EP1226178" together with the checked "Including family" box.

The results show multiple applications or publications in Great Britain, Japan, and Canada with their publication dates. These applications are related to each other by a common invention and a shared earliest priority date. In this case, all applications have an identical title, although this is not always the case for patents within a single family.

It is possible to examine the individual patent documents retrieved in more detail, including those documents retrieved through other search windows such as "Quick search," by clicking on the titles. Clicking on the title "Recombinant Fusion Molecules," application number EP1226178 A1, takes you to the page shown in Figure 4.

The page shows a variety of information, including the inventors and the abstract. In this case, the actual abstract displayed is that of an equivalent PCT application belonging to the same patent family. Clicking on the appropriate tabs shows the "Description" of the invention, "Claims," the "Legal status" of the patent, and the "Original document" in pdf format.

Click on the "Original document" tab shown in the esp@cenet document view window. You will see the screen shown in Figure 5.

This screen displays the full document in pdf format. Navigate it using the scroll bar. In order to save the document to a disk or other specified location, click on the "Save Full Document" link shown in red.

Note that if you attempt to save or print the displayed pdf document using the Adobe®

Figure 2: "Quick Search" Screen

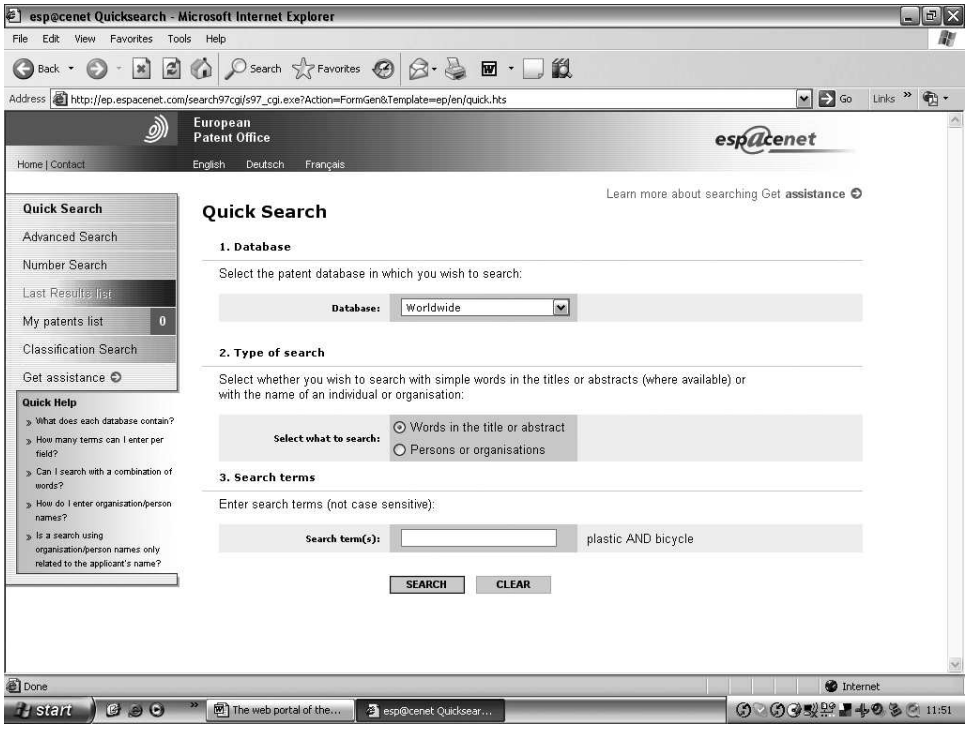


Figure 3: Family List View: Results of a Search Using the Patent Publication Number

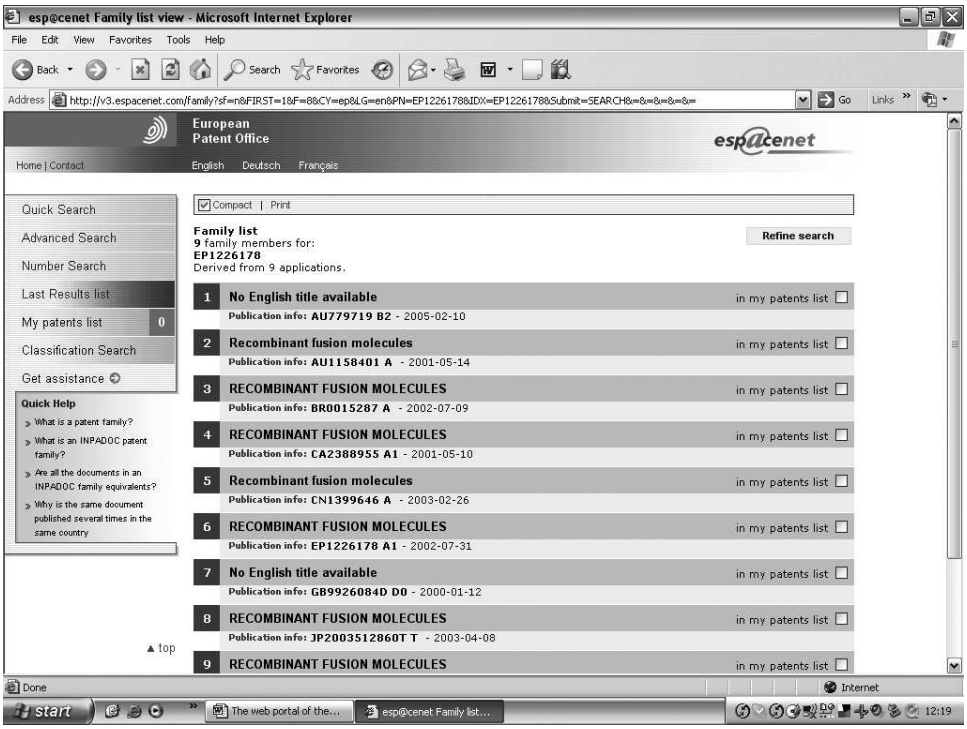
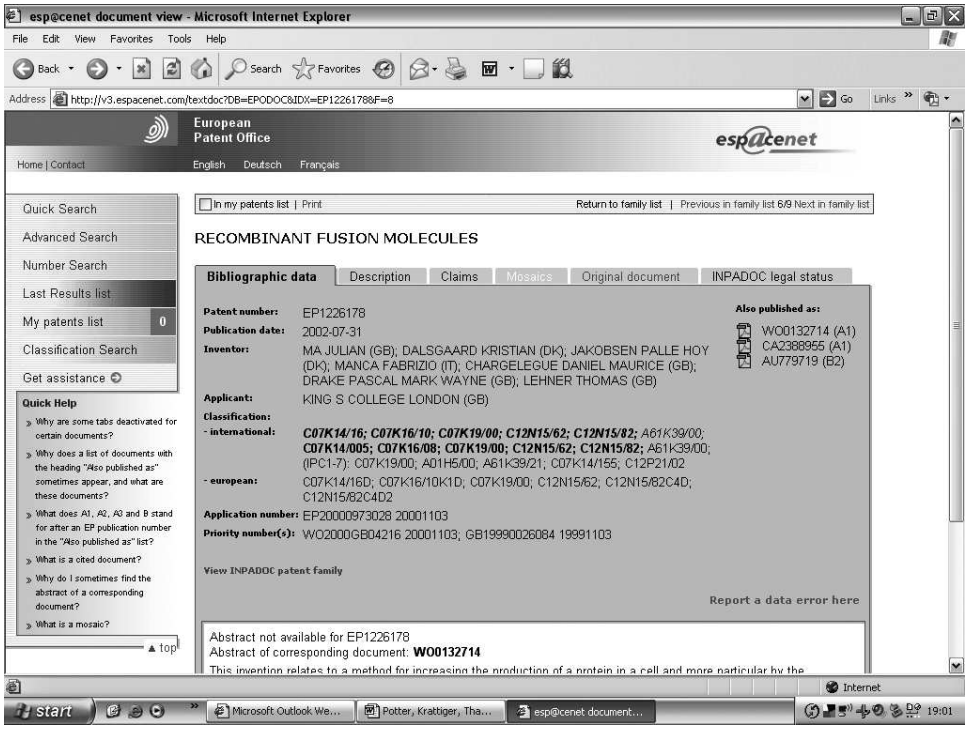


Figure 4: Document View: Results of Selecting "Recombinant Fusion Molecules" for a Specific Publication Number



Acrobat® menu icons displayed (the "save" and "print" icons of a disk or printer, respectively), you can only do so one page at a time.

If a document is not available as a full download, the site will display a message saying "No full document available" instead of the "Save Full Document" link. In many cases, recent documents are not available for complete download, even if the entire document is available to view in pdf format on the screen.

Clicking on the "Mosaics" tab enables the searcher to view six of the drawings in a single window. In the example shown above these drawings are not available.

Clicking on the "View INPADOC patent family" (Figure 4) shows the related patent documents of the family or those patents that are linked by a common priority number or date.

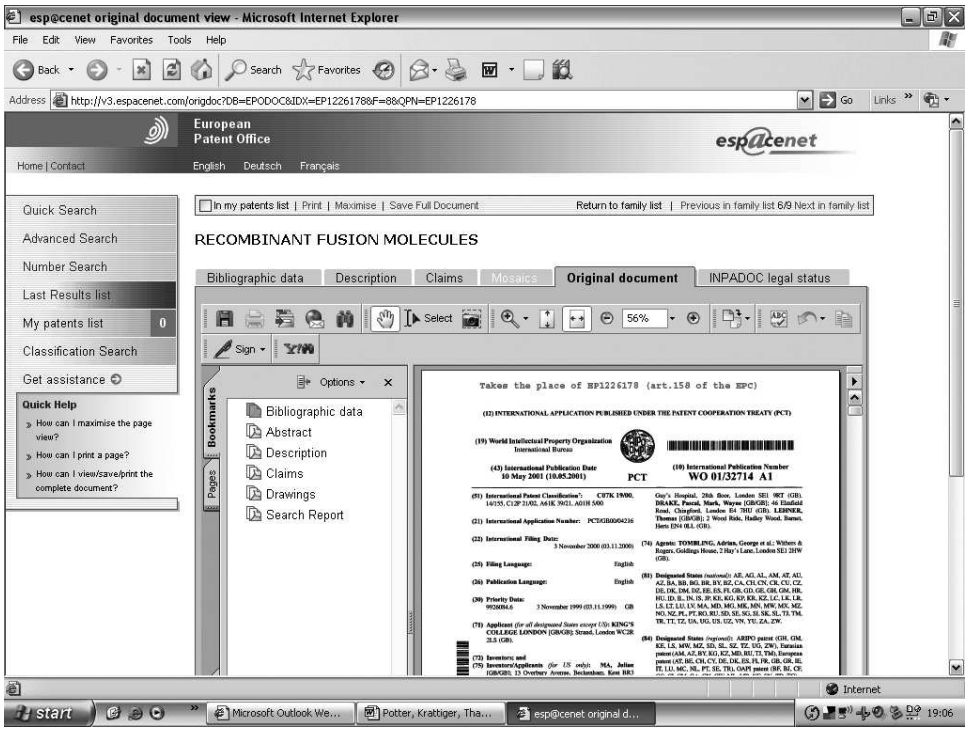
Clicking on the "INPADOC legal status" gives useful information on the legal status of the patent.

If certain EP patents are not available as full downloads from the server, check their availability through the EPO publication server.[10] Simply key in or copy and paste the publication or application number from patent searches into the appropriate box.

C. Advanced searches

Advanced search techniques, which narrow searches by combining various search terms, are possible using the "Advanced Search" option. The search box can contain a maximum of four search terms using Boolean language. Figure 6 shows a keyword search for "Antibodies AND Plants" against "title or abstract." The search is narrowed further to patents applied for by the "Scripps Research Institute," where the inventor is "Mich Hein." Additionally, the patent search is limited to those patents published in "1997" and "2001." This criterion is specified by entering those years

Figure 5: Original Document View: Results of Selecting the "Original document" Tab



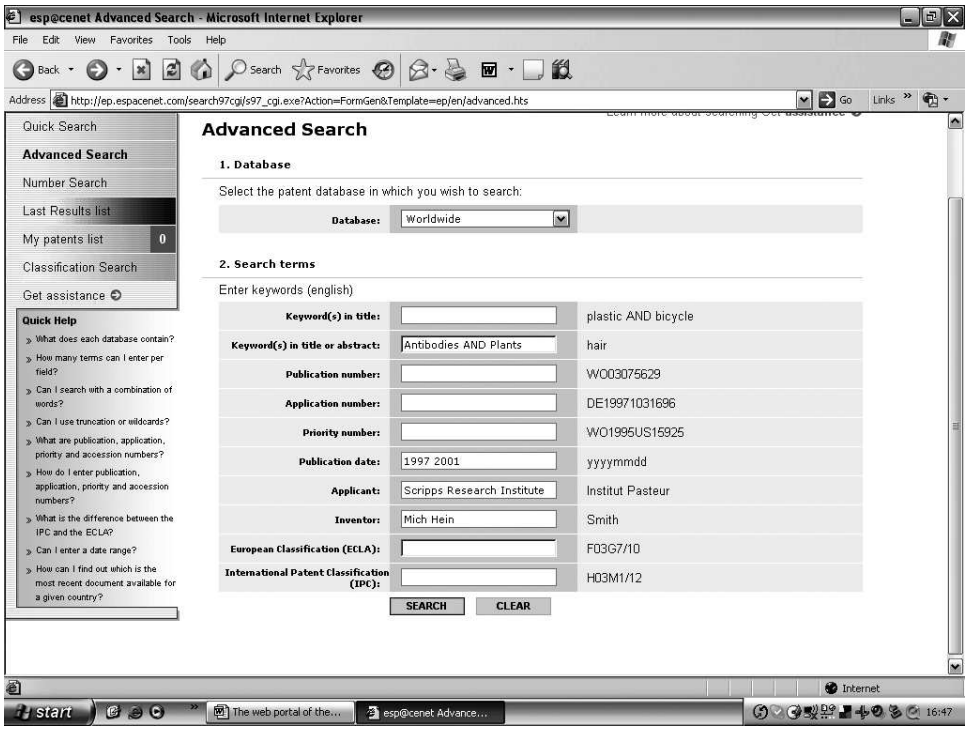
into the "Publication date" box, for which the Boolean operator is "OR" by default—alternatively, one can add the "OR" operator explicitly as "1997 OR 2001."

The results of this search are shown in Figure 7.

Here is an explanation of each of the search fields on the advanced search form (not shown in Figure 7):

- **Keywords in title and/or ritle or abstract.** A text search for the entered keywords. Up to four keywords can be entered into each box using Boolean operators such as "AND" and "OR."
- **Publication number.** The number assigned to a patent or published application. In some cases, a granted patent will retain the publication number assigned to the published application, but not all country systems do this. Granted and published patents are often distinguished by a "Kind Code" (attached to the end of the publication number), such as "A" for an application and "B" for a granted patent, followed by a numeral (for example A1 or B1) referencing to the EPO system.
- **Application number.** The number assigned to an application when filing. Rather confusingly, this number is separate from the publication number. The numbers—also shown on the front page of publications—include the country of filing and the year, but can sometimes have a different format. To further illustrate this, the application number for the example publication EP1226178 A1 shown above is EP2000000973028.
- **Priority number.** The application number of the priority application. Patents are often filed based on previously filed applications or applications filed in other countries. By including the application number of the

Figure 6: Advanced Search View: Entering Your Search Parameters



first (or priority) filing, the applicant can take advantage of the earliest filing date. A patent family is a set of publications linked by a common priority number. This is a useful way of determining patent coverage in several different countries, especially since direct patent searches are only available in the United States and Europe. To further illustrate this, the priority number for the example publication EP1226178 A1 shown above is GB1999000026084.

- **Publication date.** The actual publication date. Note that, although a range of years cannot be searched currently, up to four different years can be searched using the "OR" Boolean operator (as in the example above). It is also possible to search for precise dates using the yyyymmdd format.
- **Applicant.** Usually a company, university or other institutional entity, but can instead be one or more individuals. Words can be combined with Boolean operators to form the title of an applicant.
- **Inventor.** Name of the person or persons who discovered the invention. In the United States, the inventor must be noted on a patent or patent application. Although this is not strictly required in many other jurisdictions, inventors are usually included in practice. Often listing the authors of early papers in a field is effective in searching for related patents.
- **European Classification.** A designation used to classify technical content of patent documents based on the EPO's European Classification, which is an extension of the International Patent Classification (IPC).
- **International Patent Classification.** The technical content of patent documents clas-

Figure 7: Results View: Results of Search Using Keywords and Other Parameters of Publication



sified according to the IPC. This is assigned by the publishing office and is thus independent of the applicants, which makes it a good searching tool for patents in a specific area.[11]

D. Classification search

Finally, we consider the classification search. Using codes based on the EPO classification system, this type of search is useful when searching for all patents in a particular technical area. It is a powerful search tool, indispensable to professional searchers. Full consideration of the use of the classification system is beyond the scope of this chapter. However, the following steps are intended to give the reader some guidance on how to begin using the codes on esp@cenet.

Click on the "Classification Search" button.

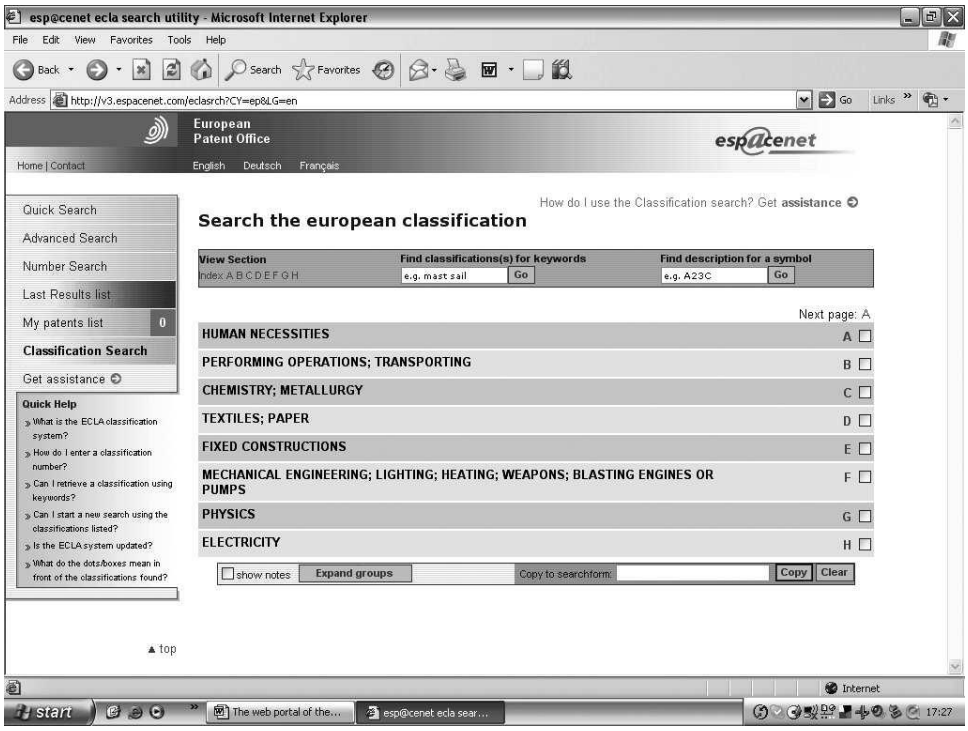
A window, similar to the one in the Figure 8, should appear. Key in the words "genetic engineering" in the box labeled "Find classification(s) for keywords" and click "Go."

This takes you to the following page (Figure 9).

A number of specific codes appear, along with descriptions. Assuming we are interested in further exploring "C12N15," click on the code or the title next to it, and you will be led to another list of codes with hierarchical subclassifications and descriptions. Scroll down to examine the list of subclassifications (or finer categories), and explore each of these codes until you have identified the codes pertinent to your areas of interest. As you explore, you can copy any code or codes to your main search form by ticking the box against the code and then choosing "Copy." The codes are then copied into the search form to narrow your searches to the relevant invention areas. Note, however, that this requires a lot of experience, and searching with multiple codes simultaneously may restrict the results.

You can also use codes with the "Advanced Search" form.

Figure 8: Classification View



Note that all search screens (Quick, Advanced, Number, Classification) contain "Quick Help" links that guide the reader through many common queries. Clicking on the "Get assistance" link on search pages will take you to the esp@cenet Assistant, an interactive training module that is useful for beginners. There are several other help pages that the reader should find while navigating the site.

We have only commented on basic search techniques in relation to esp@cenet, but one can search the sites of a number of national patent offices, using generally similar techniques. At least two sites provide lists of links to national offices and to their patent collections.[12]

Selected patent search sites and scientific and instructional resources are briefly described below.

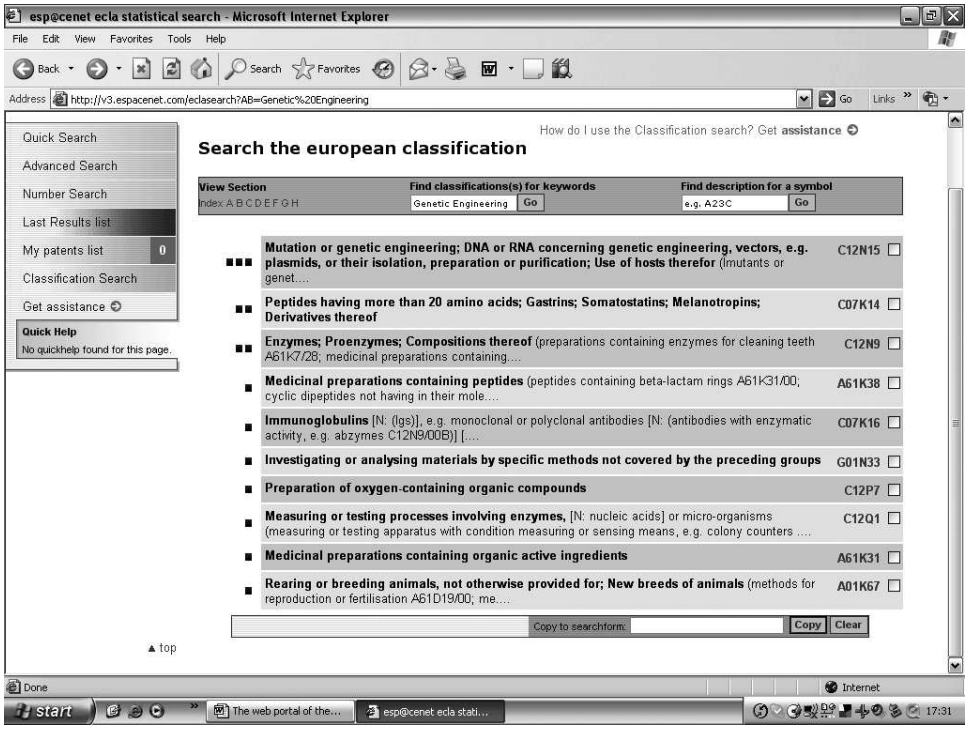
4.1.2 *U.S. Patent and Trademark Office*

The Web site of the U.S. Patent Office (PTO) contains the full text of granted patents from 1976 to the present, as well as full-page images since 1790.[13] Published applications date from 15 March 2001. Searches include both quick and advanced features. Page images are only available a single page at a time, and one must download a Tiff-viewer to see them. At the same site, you can also search trademarks registered in the United States. The U.S. Patent Office site contains links to helpful information including an excellent book on searching, titled *Patent Searching Made Easy*, which is available in paperback.[14]

4.1.3 *UK Patent Office*

The patent site of the United Kingdom Patent Office[15] is somewhat similar to the U.S. Patent Office site but offers less utility because an increasing number of patents are now filed as EP (U.K.) patents (derived from filings for multiple jurisdictions at the EPO). The U.K. site, therefore, ends up as more of a register of inventions registered in the United Kingdom after the granting of the

Figure 9: Keyword Search Results



EP filing. One of its more useful features is the ability to access patent status information, such as changes in assignees (common with the current rounds of company takeovers) and the payment of maintenance fees.

4.1.4 *WIPO PCT applications*

Maintained by the World Intellectual Property Organization (WIPO), the WIPO PCT site allows you to search PCT (Patent Cooperation Treaty) applications for international filings.[16] Both simple and "structured" (advanced) search options are available for more than a million international patent applications.

Published on a weekly basis, *The PCT Gazette* gives up-to-date information on applications and publishes special notices relating to the treaty itself and its regulations. Weekly issues are also available.[17]

4.1.5 *CAMBIA Patent Lens*

CAMBIA Patent Lens is an independent resource for patent information from the EPO, PCT, and U.S. filings.[18] The files are selected on the basis of the international classification codes as related to agriculture/plant technologies. CAMBIA's database has approximately 5.5 million documents. A site search on the home page will also reveal links to various useful, comprehensive articles in key areas of interest to agricultural biotechnology, specifically in relation to patent landscapes. These papers are updated every few years to cover newer patent applications and grants. Areas covered include promoters for the expression of heterologous genes in plants, Agrobacterium gene transfer methods, and selected antibiotic and herbicide-resistance genes. The Agrobacterium document alone amounts to 350 pages of preanalyzed patent and scientific information.

For those who specialize in agricultural or plant-related research, this is a valuable resource. First, it is helpful to have plant technology-related patents from multiple databases prefiltered into a single resource. This saves a researcher from having to search multiple unfiltered databases (EPO, PTO, and PCT), each of which have different interfaces and idiosyncrasies. Users of multiple databases need experience with all such interfaces, whereas with Patent Lens, one needs familiarity with just one interface. The Patent Lens search interface has both simple and advanced search options, including the ability to filter results according to granted patents or published applications.

Second, the full text is downloadable. Until recently, even the EPO did not have this capability.

Third, Patent Lens gives extensive coverage to understanding the IP world, including how to read and interpret a patent and its claims, with a particular focus on agricultural biotechnology. For example, inside the technology landscapes, there is expert commentary on patent protection for a given technology, structured in a manner that makes the patent maze more navigable and transparent. Each landscape explains the science behind the technology, the legal and expiry status, the claim scope of key patents, the key assignees of patents, and the geographical coverage of key patent families. Help pages for searching techniques are extensive. Considering that the CAMBIA initiative is an open-access project for the public good, such an achievement is remarkable.

Despite these advantages, a professional searcher would use commercial search tools mentioned elsewhere in addition to Patent Lens. This is primarily because the collections of professional tools are more likely to be up-to-date and will also have extended geographic coverage. However, for researchers, small businesses, and TTOs, using Patent Lens would have certain advantages, not least of which is the ability to quickly search the prior art (in plant-related patents), thereby avoiding wasteful reduplication of research efforts and investments. Besides, it is unlikely that TTOs in some developing nations would have access to commercial databases.

In summary, the CAMBIA database cannot be used in isolation. EPO, PTO, other patent offices, and commercial databases are more likely to be current. In instances where there are combinations of technologies, for example cloning and expression of a particular mammalian gene in a plant, one would want to look beyond CAMBIA. It is, however, an excellent and comprehensive starting point.

4.1.6 *Intellectual Property Office of Singapore*

The Web site of Singapore's Intellectual Property Office is a good site for starting searches.[19] It has links to other sites in "search results."

4.1.7 *Other resources*

There are numerous other resources related to patent and scientific information. Some of the more useful ones, though not related to national offices or databases, are:

- **Intellectual Property and Biotechnology Handbook.**[20] Although several years old and, in places, somewhat out-of-date, this handbook remains a useful teaching tool. Individual modules of the handbook are downloadable in pdf format, and Module Four is devoted to searching patent databases.
- **Manual for Biotechnology and IP.**[21] This excellent manual, though somewhat outdated, on IP in biotechnology was prepared by Patent and Trademark Attorneys Spruson and Ferguson. The manual includes searching strategies.
- **Managing IP Web site.**[22] This is an excellent and comprehensive guide to IP in the field of biotechnology. The site has lots of useful and current information. Although not all resources are instantly accessible without registration, many are. This site contains current information on various changes in IP laws, interpretation of these laws, and litigation outcomes related to IP disputes in a selection of jurisdictions. The articles are written by well-respected IP professionals worldwide. The "International Briefings" link, which takes you to country-specific articles, is particularly useful.
- **patent blog sites.** Recent trends have led to a rapid proliferation of so-called patent blogs. These are sites that allow anyone interested in patents to share information related to patents, including information from other blog sites. While many of these have limited or no moderation and so contain information that may be highly opinionated or of no value, it is possible to find a lot of useful information, such as announcements of patent seminars, new developments in the patent world, and patent searching tips.

Blog sites are useful if you have queries that other users can help with. Some blog sites may deal with highly specialized areas such as searching or licensing. This arena keeps changing, with new blogs being introduced and older ones disappearing, but the net trend is an overall increase in these sites. A few of the blog sites are listed here—not as recommendations, but as starting points—and the reader is encouraged to search for more resources, like these, on the Internet:

- **Patent Information Users Group (PIUG)**[23]
- **Phoista®**[24]
- **PatentlyO®**[25]
- **Promote The Progress®**[26]
- **Scirus**[27]
- **Health InterNetwork Access to Research Initiative (HINARI)**[28]

4.2 *Commercial databases and search engines/services*

Commercial patent search engines offer tremendous advantages over free databases, but they are only available for a fee. Depending on the specific requirements, the costs are easily offset by the added functionalities and options that are available only with these databases. Some of the most prominent and flexible commercial services are:

- **Delphion.**[29] Delphion is a patent search database owned and maintained by Thomson Scientific. There are two versions of Delphion:
  1. A basic, free version that requires registration. This version enables the user to perform "quick searching" among granted U.S. patents, as well as "number searching" for worldwide patent collections. Through this version, pdf files of patents are available for download on a pay-per-use basis.
  2. A fee-based subscription version with various levels of access to downloads and other features depending on the particular subscription options purchased. In our opinion, Delphion is

one of the best—if not the best—search engine (subscription version). It is the most widely used search tool of patent attorneys and professional searchers worldwide. Its comprehensiveness and accessibility far outstrip individual free services/databases.[30]

- **Derwent World Patent Index (DWPI).**31 DWPI (like Delphion) is a proprietary database owned by Thomson Scientific. It is different from other databases in that it consists of summary information about patent applications that are rewritten, annotated, and formatted by Thomson's staff in a manner that makes the site more user-friendly for beginner patent searchers. It also includes some powerful value-added features for both novice and advanced searchers. DWPI is useful if one wants to quickly determine the technical content of patents. It requires a paid subscription and is sometimes bundled as a companion product with Delphion since they are designed for integration. A version of DWPI is available for use within the buildings of the British Library in London (free remote access is not possible).[32]
- **Micropatent.**[33] Micropatent is another popular source for patent and trademark information. The coverage is comprehensive and full-document delivery is available.
- **Questel Orbit.**[34] The service hosts commercial patent search tools. It offers fee-based search services.
- **Nerac.**[35] Using this fee-based service, analysts and searchers can extract market information, prior art, and patents based on specific requests.

4.3 *Patent statistical and business analytical tools*

Several software tools and services exist that businesses use to extract information from large patent datasets, examine relationships between patents and patent sets, or create visual representations of search results and summarize the information in reports. It is possible to use these tools to, for example, find out key assignees and inventors in a particular field, view industry and technological trends, and compare patent filings over time. But many of these tools come at a price. These may be of interest to universities or spinouts with advanced commercial activities, but probably not to the average TTO. A handful of tools: MAPIT,[36] BIZINT,[37] PatGraph,[38] MapOut Pro,[39] and PatentLab II.[40]

4.4 *Other useful web resources for nonpatent IP searches and information*

While patents are arguably the most important form of IP for research and product development in health and agricultural technologies, patent information may often be worth little if it is not examined in the context of other IP rights. For example, genetic information may not only be the subject of patent protection. It can also enjoy other forms of protection. A few key links related to a selection of IP rights are mentioned below to give the reader a starting point for exploring these IP rights in these fields.

4.4.1 *Trademark Searches*

A comprehensive collection of links to trademark offices in many jurisdictions, databases, search engines, and official gazettes is available on a British Library Web page.[41]

4.4.2 *Copyright Issues*

Issues of copyright are complex, involving various national laws and partial harmonization through regional and international treaties. Some good places to start examining the issues are the various conventions and treaties in the WIPO Web site.[42]

4.4.3 *International treaties*

The WIPO portal is a great way to begin exploring international treaties on intellectual property rights (including the Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPS]) available through the WIPO portal.[43]

The WTO-TRIPS agreement is increasingly affecting cross-border trade and national and international IPR regulation and enforcement. Useful resources include the WTO Web page on TRIPS.[44]

In addition, the *Resource Book on TRIPS and Development* is available through the UNCTAD-ICTSD Capacity Building Project on IP rights. This authoritative, practical guidebook to all aspects of TRIPS is downloadable in sections.[45] Although the guide is written mainly for policy-makers and negotiators, its comprehensive coverage of subject matter is useful for all those interested in TRIPS.

5. CONCLUSIONS

Patent searching is an art that requires a solid foundation in and understanding of the sciences related to specific searches. In addition to compiling patents related to certain inventions (for FTO purposes, prior art, or scientific endeavors), it is important to pay attention to other aspects, such as regular updating. One free service for this is particularly noteworthy. FreshPatents allows users to track the publication of new patents related to certain well-defined fields of scientific endeavor.[46] After registering and defining the fields of interest, weekly e-mails are sent that include a list of the patent applications by the U.S. Patent Office. Other services are also available, such as RSS feeds. ■

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1 See, also in this *Handbook*, chapter 14.4 by GM Fenton, C Chi-Ham and S Boettiger; chapter 14.2 by SP Kowalski titled Freedom to Operate: The Preparations; and chapter 14.1 by A Krattiger.

2 www.icar.org.in/miscel/iprguidelines-draft.pdf.

3 www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed.

4 scholar.google.com.

5 www.uspto.gov.

6 www.surfip.gov.sg.

7 www.espacenet.com.

8 www.bl.uk/collections/patents/othlinks.html.

9 www.european-patent-office.org.

10 publications.european-patent-office.org/PublicationServer/main.jsp.

11 Details of this complex classification system can be found at www.wipo.int/classifications/fulltext/new_ipc/ipc7/eindex.htm.

12 inventors.ca/ipsearch.htm; www.bl.uk/collections/patents/polinks.html.

13 www.uspto.gov.

14 Hitchcock D. 2005. *Patent Searching Made Easy*. Lulu Press: Morrisville, North Carolina.

15 www.patent.gov.uk.

16 www.wipo.int/pct/en/.

17 www.wipo.int/pct/en/gazette/.

18 www.patentlens.net/daisy/patentlens/patentlens.html.

19 www.ipos.gov.sg.

20 www.dfat.gov.au/publications/biotech/overview.html.

21 www.sprusons.com.au/files/Biotechnology_IP_Manual.pdf.

22 www.managingip.com.

23 piug.derwent.co.uk/archive/index.html.

24 On this blog site, at the time the chapter was written, there was a video seminar by a U.S. patent attorney about what universities should know about the patent review process and how an inventor can submit a successful application. www.okpatents.com/phosita.

25 www.patentlyobviousblog.com.

26 www.promotetheprogress.com.

27 www.scirus.com/srsapp.

28 The HINARI initiative was set up by the World Health Organization (WHO) along with several major publishers of academic journals, including *Nature* and *Science*. About 3,300 complete journals are available for free to health research institutions in countries with a "GNP per capita" of less than US$1000. A second group of countries with a GNP per capita of US$2000–$3000 get low-cost access. However, it should be noted that some countries, like India, are excluded from both categories, despite fulfilling the eligibility criterion for free access, because the publishers have, in their agreement with the WHO, reserved the right to exclude markets where the publishers have significant sales. By clicking on "Eligibility" on the left-hand side of the home page, you can ascertain whether your country/institution is eligible for free or low-cost access. Registration is required for using the site. www.who.int/hinari/en/.

29 www.delphion.com.

30 For further information on the features of Delphion, including detailed instructions for use, visit www.delphion.com/help/index#derwent.

31 scientific.thomson.com/products/dwpi/.

32 For further information on the features of Derwent, including detailed instructions for use, visit www.delphion.com/help/index#derwent.

33 www.micropatent.com.

34 www.questel.orbit.com.

35 www.nerac.com.

36 www.mnis.com.

37 www.bizcharts.com/patents/index.html.

38 www.micropat.com/o/new_patgraph9809.html.

39 www.mapout.se/MapOut.html.

40 www.wisdomain.com/download.htm.

41 www.bl.uk/collections/patents/tmlinks.html.

42 www.wipo.int/copyright/en/treaties.htm.

43 www.wipo.int/portal/index.html.en.

44 www.wto.org/english/tratop_e/trips_e/trips_e.htm.

45 Download the guidebook at www.iprsonline.org/unctadictsd/ResourceBookIndex.htm.

46 www.freshpatents.com/.