

Study Note: *The study of this module will take you around 25 hours. The module is divided into two parts; Part One deals with searches in certain specialized fields (eg pharmaceuticals) and Part Two deals with certain specialized types of search (eg using citation analysis). You may find it convenient to break your study after each patent search activity. Please note that you MUST have access to the Internet.*

Important Note:

In the exercises and activities that follow, the number of hits (ie the number of results or documents found) may be given. However, these numbers should be regarded as indicative only, since online databases are updated frequently and the numbers of hits will therefore continually change.

Also, since functionality and screen layout change regularly, what you see on your search screen may differ from what is shown in the Module.

MODULE 6: SPECIALIZED SEARCHES

Learning outcomes. On successful completion of this module, students will be able:

- to carry out searches in certain specialized fields:
 - pharmaceuticals
 - biotechnology
 - chemical structures
 - traditional knowledge (TK), traditional cultural expressions (TCEs) and genetic resources (GRs);
 - computer software, mathematical methods and methods for doing business
- to carry out certain specialized types of search:
 - freedom to operate searches
 - finding patents relating to a particular technology or organization; and presenting the results graphically
 - using citation analysis (i.e. documents that cite a certain patent or were cited against that patent)

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Part One - Searching in specialized fields

6.1 Pharmaceutical and biotechnological products

Pharmaceutical products can be derived from chemicals and from biological material (eg biotechnology drugs).

Chemical pharmaceutical products, for example new chemical compounds, will typically have a number of different patents protecting the base compound and its different chemical forms, with subsequent patents covering compositions and formulations of the product.

Biotechnology products involve the use of living organisms and processes in medicine, technology and engineering. Biological pharmaceutical products in particular, for example vaccines, will generally have many patents protecting the protein sequence, followed by patents covering compositions and formulations of the vaccine. In agriculture, biotechnology is used to modify the physiology of plants to introduce specific desirable features, such as resistance to disease and to herbicides, or to achieve higher yields. Since a number of different patents can cover a product, we sometimes refer to them as the product patent, formulation patent, composition patent etc.

Now, it's important to know what to look for when searching for pharmaceutical and biotechnological patent documents. Most pharmaceutical and biological products are known by a trade name used for marketing the drug. However since any patents for a particular product would have been applied for long before that product reached the market, we can safely assume that the trade name will not be mentioned in any patent documents. So it is essential to do some homework before searching.

For example, if the brand name of a drug is *Lipitor*, you should not expect to find that name in a patent document. Instead try finding out what is the active ingredient in *Lipitor* before doing the search. What did you find? What seems to be the active ingredient in Lipitor?

A good place to start is the US FDA's online orange book, where you can search either by the proprietary name or by the active ingredient:

<http://www.accessdata.fda.gov/scripts/cder/ob/>

As there is the Orange book, there is also a "Purple Book". The "Purple Book" lists biological products, including **biosimilar and interchangeable biological products** that are licensed by FDA under the Public Health Service Act (the PHS Act).

The Purple Book, in addition to the date a biological product was licensed, also includes whether a biological product licensed under section 351(k) of the PHS Act

has been determined by FDA to be biosimilar to or interchangeable with a reference biological product (an already-licensed FDA biological product).

<https://www.fda.gov/drugs/developmentapprovalprocess/howdrugsaredevelopedandapproved/approvalapplications/therapeuticbiologicapplications/biosimilars/ucm411418.htm>

Stem cell patents can be looked up at www.StemCellPatents.com. A collection of DNA-based US patents and patent applications can be found at the DNA Patent Database at <http://dnapatents.georgetown.edu/search/index.htm>. And a good place to search gene sequences is Patentlens' sequence search facility at <http://www.lens.org/lens/bio/sequence>.

6.2 Recent developments in biotechnology

Biotechnology patenting is becoming increasingly complex. One concern with biotechnology patents is what is called the 'ever-greening' of patents, where patent protection is sought for trivial modifications or improvements of existing inventions.

In order to combat this practice, section 3(d) of the Indian Patent Act, 1970 was amended in 2005 to read:

“(d) the mere discovery of a new form of a known substance which does not result in the enhancement of the known efficacy of that substance or the mere discovery of any new property or new use for a known substance or of the mere use of a known process, machine or apparatus unless such known process results in a new product or employs at least one new reactant.

Explanation.- For the purposes of this clause, salts, esters, ethers, polymorphs, metabolites, pure form, particle size, isomers, mixtures of isomers, complexes, combinations and other derivatives of known substance shall be considered to be the same substance, unless they differ significantly in properties with regard to efficacy”

A case in India involving Novartis's Gleevec anti-cancer drug, which has been patented in over forty countries, illustrates this. Novartis filed a patent application in India for formulating the beta-crystalline form of imatinib mesylate, but lost what is regarded as a landmark case. See: <http://in.reuters.com/article/2013/04/01/india-drugs-patent-novartis-glevec-idINDEE93000920130401>

Practice exercise

Look up the patents for *Glivec* in the USA. Given the decision in the Indian court, assuming that the decision was to be final, and you had a cancer drug similar to *Glivec*, do you have freedom to operate in India, in respect of your new drug? Discuss the Indian decision by reference to various commentaries that have been made on it.

6.2.1 Search activity – Finding patents relating to a genetically modified bacterium

Pseudomonas bacterium is an oil metabolizing bacterium which when introduced into an oil spill, degrades the oil and hence enables the spill to be cleaned up. In this search activity, you are required to search for a US patent covering genetically modified *Pseudomonas* bacterium issued to Ananda Mohan Chakrabarty.

The patent abstract reads:

Unique microorganisms have been developed by the application of genetic engineering techniques. These microorganisms contain at least two stable (compatible) energy-generating plasmids, these plasmids specifying separate degradative pathways. The techniques for preparing such multi-plasmid strains from bacteria of the genus Pseudomonas are described. Living cultures of two strains of Pseudomonas (P. aeruginosa [NRRL B-5472] and P. putida [NRRL B-5473]) have been deposited with the United States Department of Agriculture, Agricultural Research Service, Northern Marketing and Nutrient Research Division, Peoria, Ill. The P. aeruginosa NRRL B-5472 was derived from Pseudomonas aeruginosa strain 1c by the genetic transfer thereto, and containment therein, of camphor, octane, salicylate and naphthalene degradative pathways in the form of plasmids. The P. putida NRRL B-5473 was derived from Pseudomonas putida strain PpG1 by genetic transfer thereto, and containment therein, of camphor, salicylate and naphthalene degradative pathways and drug resistance factor RP-1, all in the form of plasmids

You have to find the original patent number; the date of issue; the assignee; and if there are any patent family members.

Step	Description of step	Your answer
1	What clues do you have?	
2	Use your clues to do the search	
3	What are the results?	
4	Are there any patent	

	family members?	
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6.3 Recent developments in pharmaceuticals

Pharmaceuticals are a significant industry, and of growing importance. Pharmaceutical patents often cover products that take a very long time to develop, from the early discovery stages of a new chemical product through regulatory approvals. As a result, by the time the final product is launched in the market, a large portion of its patent protection is lost already.

Since initial investment in pharmaceutical research & development is extremely high, strong patent protection is of paramount importance to ensure that investment in new drugs can be recovered. Pharmaceutical drug development companies take the utmost care to protect their products in the countries in which they plan to launch their products. However, patent law requirements vary from country to country and a patent which was granted in one country might not be granted in another.

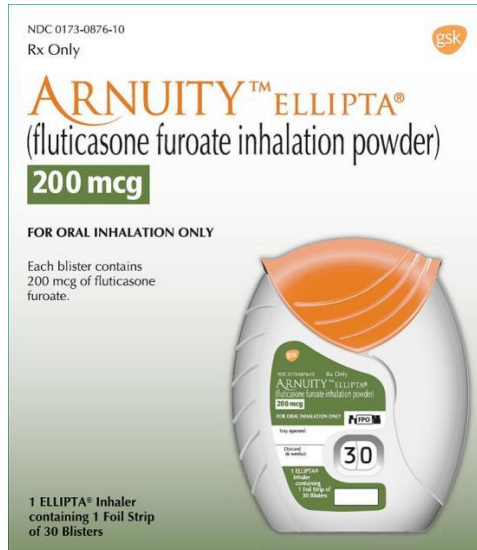
An example of this is where an Indian generics drug maker Cipla won a patent case against Swiss drug maker Roche in the New Delhi High Court in 2012. Roche had filed a patent infringement lawsuit against Cipla in 2008 for its generic version of the lung cancer drug Erlotinib (Tarceva). Roche's main claim was to the compound itself, Erlotinib hydrochloride. The court ruled that since the generic drug maker Cipla sold another form of the same compound (Polymorph B), it did not infringe.

Practice exercise

Look for the patents covering *Erlotinib*. What do these patents cover? Which company owns the *Erlotinib* patent? What other information can you find out about *Tarceva*?

6.3.1 Search activity - Searching for pharmaceutical patents: You might have heard of some drug by the name Arnuity Ellipta[®]. Let us look at the patent coverage for this drug.

Arnuity Ellipta[®] is a well-known prescription inhaled corticosteroid medicine taken as 1 inhalation, once daily, for the control and prevention of asthma in adults and children aged 12 years and older. ARNUITY helps to prevent and control symptoms of asthma. ARNUITY is not for use to treat sudden symptoms of an asthma attack, wheezing, cough, shortness of breath, and chest pain or tightness. ARNUITY won't replace a rescue inhaler. It is currently marketed by GlaxoSmithKline.



Let's try to find out the patent which covers the Arnuity Ellipta®.

Where do we start?

Step	Description of step:	Your answer:
1	Think of what clues you have.	
2	Think of what resources you have available to you and how you can use them to find the answer.	
3	What information have you found out?	
4	How can you look for patent information related to the	

	product?	
5	Using the patent numbers you have found go to a patent search site and see what the patents relate to.	
6	Look for patent related information on some patents.	
7	What do you find?	

Look for the patents relating to *Erlotinib*. What do they cover? Which company owns the *Erlotinib* patent? What other information can you find out about *Tarceva*?

6.3.2 Search activity - Searching for pharmaceutical patents: *Viagra*®

In this search activity, you are required to find patents relating to *Viagra*®, a registered drug for the treatment of erectile dysfunction in males. Find the active ingredient; the owner; the inventors; any family members, and any citing patents.

Also see if you can find an earlier use for the drug.

Step	Description of step	Your answer
1	What clues do you have?	
2	What resources do you have?	
3	What is the active ingredient of <i>Viagra</i> , and who is the	

	owner?	
4	Click on the application number <i>NO20895</i> , and then on <i>Patents and Exclusivity Information</i>	
5	Go to Espacenet and find out more about the patent	
6	Find any family members by clicking on the title and then on <i>INPADOC patent family</i>	
7	Find any patents that cited US6469012	
8	Find the Pfizer patent with the earliest priority date which relates to Viagra. What was the Viagra used for?	
9	Select number (7) as this has the earliest priority date	

6.4 Chemical structure searching

Chemical structure searching has long been available on some commercial databases; it is now available free on Patentscope.

On the Patentscope home page, click on *New Chemical Structure Search functionality* or go direct to

https://patentscope.wipo.int/search/help/en/chemsearch_help.pdf.

You will need to log in. If you do not have a Patentscope account to login-in, you can create one free of charge on the *Login* menu.

WIPO PATENTSCOPE
Search International and National Patent Collections

WORLD INTELLECTUAL PROPERTY ORGANIZATION

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Home > IP Services > PATENTSCOPE

Simple Search | Login | Account Sign Up

Using PATENTSCOPE you can search 58 million patent documents including 3 million published international patent applications (PCT). Detailed coverage information can be found here (->)

Front Page [input] Office: All Search

PCT Publication 39/2016 (2016/09/29) is now available. The next publication date is scheduled as follows: Gazette number 40/2016 (2016/10/06). More

Select *Chemical compounds*:

WIPO PATENTSCOPE
Search International and National Patent Collections

WORLD INTELLECTUAL PROPERTY ORGANIZATION

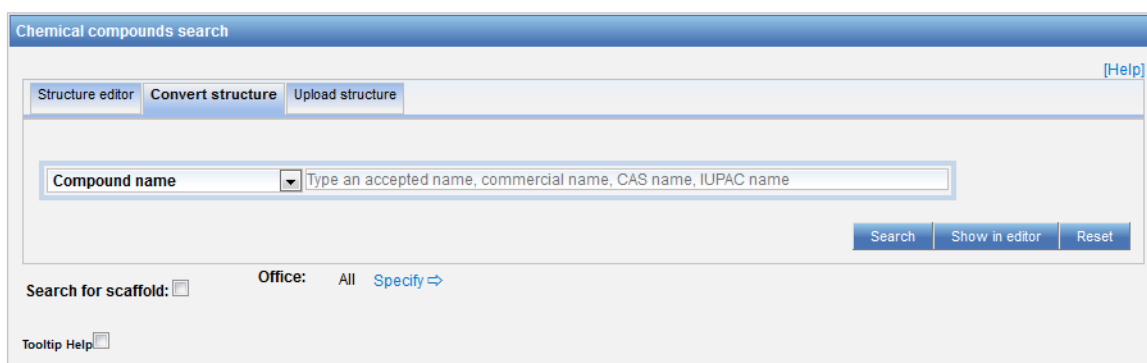
Search | Browse | Translate | Options | News | User: info@infochem.de | Help

Simple | Advanced Search | Field Combination | Cross Lingual Expansion | **Chemical compounds**

Front Page [input] Office: All Search

PCT Publication 36/2016 (2016/09/09) is now available. The next publication date is scheduled as follows: Gazette number 37/2016 (2016/09/15). More

Then there are three search options:



These are as follows:

1. *Structure editor* allows users to draw or edit a structure. Chemical structures, reactions and fragments can be drawn in a very intuitive way using the symbols familiar from chemical sketches on paper;
2. *Convert structure* allows users to select the input type of the search such as the name of the chemical compound: commercial name, CAS name, trivial name are handled in an equal manner, the international NonProprietary Name, InCHI, InChIkey or SMILES;
3. *Upload structure*: allows users to upload a chemical description file in a supported format for example MOL, SMILES as well as a bitmap representation of the chemical compound such as png, gif, tiff, jpeg format

6.5 TRADITIONAL KNOWLEDGE, TRADITIONAL CULTURAL EXPRESSIONS AND GENETIC RESOURCES

6.5.1 Introduction

As described in Module 1, section 1.7.2, indigenous people, local communities and their governments – mainly in developing countries - are seeking IP protection for traditional forms of creativity and innovation, which are not adequately protected under the conventional IP system.

These traditional forms of creativity and innovation comprise:

- **Traditional Knowledge (TK)** which is a living body of knowledge passed from generation to generation within a community – for instance knowledge of traditional medicines, hunting and fishing techniques, animal migration patterns etc etc.

- **Traditional Cultural Expressions (TCEs)** which are the forms in which traditional culture is expressed – for example dances, songs, handicraft, designs, stories etc etc.
- **Genetic Resources (GRs)** which are parts of biological materials that contain genetic material of value and are capable of reproducing or being reproduced.

6.5.2 Is the protection of TK, TCEs and GRs relevant to developing and least developed countries?

Protection is important for communities in all countries, particularly in developing and least developed countries.

TK and TCEs play an important role in the economic and social life of developing and least developed countries. Placing value on such knowledge helps strengthen cultural identity and the enhanced use of such knowledge to achieve social and development goals, such as sustainable agriculture, affordable and appropriate public health, and conservation of biodiversity. And in the case of GRs, benefit sharing arrangements can bring economic rewards to the community.

6.5.3 Can misappropriation of TK, TCEs and GRs take place?

Yes, misappropriation can and does take place. For instance, a traditional remedy could be developed by a pharmaceutical company and patented; an indigenous folk song could be adapted and protected by copyright; an invention derived from a genetic extract from a plant could be protected by patents or plant breeders' rights – all with no benefit going to the local community.

Indigenous knowledge of medicines has provided leads for the development of biologically active compounds by the modern scientific world. Because of its ease of accessibility, TK has been susceptible to misappropriation.

6.5.4 What protection can IP provide?

IP can provide *positive* protection or *defensive* protection. Under *positive* protection, communities obtain rights which empower them to promote, control exploitation of, and benefit from their intellectual property.

Defensive protection aims to prevent outsiders from unjustly obtaining intellectual property rights.

Various national approaches have been put in place to protect TK and TCEs against misuse or misappropriation. National laws are currently the prime mechanism for achieving protection and practical benefits for Indigenous knowledge holders. For instance, Brazil, Costa Rica, India, Peru, Panama, the Philippines, Portugal,

Thailand and the United States of America have all adopted *sui generis* laws that protect at least some aspect of TK and TCEs.

A database of the Official Insignia of Native American Tribes prevents others from registering these insignia as trademarks in the United States of America. New Zealand's trade mark law has been amended to exclude trademarks that cause offence, and this applies especially to Indigenous Maori symbols. India's Patent Act has been amended to clarify the status of TK within patent law. The Chinese State Intellectual Property Office has a team of patent examiners specializing in traditional Chinese medicine.

It is a daunting challenge to protect TK against opportunistic individuals and corporations, trying to patent and sell already known TK. Patent examiners may not have access to TK information in their classified non-patent literature, therefore often they cannot locate relevant traditional knowledge based prior art to reject the alleged invention. This unauthorised use of medical or biological TK is known as "bio-piracy".

6.5.5 TKDL – the Traditional Knowledge Digital Library (TKDL)

The Indian government has compiled a database of traditional knowledge (TKDL) that can be searched by patent examiners when assessing whether or not to grant a patent – see <http://www.tkdل.res.in/tkdل/langdefault/common/Home.asp?GL=Eng>.

TKDL is a database of Indigenous knowledge of the traditional Indian systems of medicine and yoga available in the public domain, set up by the Government of India in five languages: English, German, Spanish, French and Japanese to prevent misappropriation of its indigenous knowledge. To make search possible, a modern classification system ie Traditional Knowledge Resource Classification (TKRC), based on the structure of International Patent Classification (IPC) was developed for Indian Systems of Medicine viz., Ayurveda, Siddha, Unani and Yoga, thus facilitating easy retrieval of information. Patent examiners at Intellectual Property Offices around the world have access to the TKDL database for patent search and examination purposes. Full database access is only available after conclusion of an access agreement. The Patent Offices that to date (2017) have been granted access for patent search and examination are; the European Patent Office, Indian Patent Office, German Patent Office, United States Patent and Trademark Office, United Kingdom Intellectual Property Office, Canadian Intellectual Property Office, and IP Australia. (See http://www.wipo.int/meetings/en/2011/wipo_tkdل_del_11/about_tkdل.html)

6.5.6 The protection of GRs

There are regulations in place under various international agreements to control access to GRs and to regulate benefit sharing arrangements. These are not however

IP issues and are not the responsibility of WIPO. On the other hand, inventions derived from TK and GRs may be protected by patents or plant breeder's rights. Patent Office Examiners carry out searches to establish whether an invention is new and inventive. To ensure that the relevant information is available to them, WIPO is looking at providing assistance through databases, guidelines, search tools and classification systems. Another more controversial step under consideration is to require patent applicants to disclose the source of any GRs they have used and any benefit sharing arrangements they have entered in to; and to penalise them for non-compliance eg by not granting a patent or revoking a granted patent.

The role of WIPO in protecting TK, TCEs and GRs is described in Module 1, section 1.7.2

6.5.7 Bio-piracy Case study 1:Hoodia

The San tribe of the Kalahari Desert, one of the oldest communities in Southern Africa have been the holders of indigenous knowledge on the use of a succulent, *Hoodia gordonii*, found in the Kalahari Desert to block feelings of hunger. Based on this, the properties of Hoodia were researched and an active compound (P57) isolated, which found its use in anti- obesity and appetite- suppressant drugs. This compound was patented and the license for the patent was sold to a Pharmaceutical giant without any benefit-sharing agreement with the San people until a landmark court case ordered that they were to receive commission on all sales. Hoodia is now used as a weight loss supplement and sold by many companies around the world.

6.5.8 Bio-piracy in India¹

Case study 2 - the turmeric patent

The use of turmeric as a spice for flavouring Indian cooking and as an effective ingredient in cosmetics, dyes and medicines to heal wounds and rashes has been traditionally known for centuries in India. In 1995, two expatriate Indians at the University of Mississippi Medical Centre were granted a US patent on the use of turmeric in wound healing. The patent applicants acknowledged the known use of turmeric in traditional medicine for the treatment of various sprains and inflammatory conditions. The patent application was examined, the invention was considered to be new on the basis of the information then available to the USPTO and the patent was granted.

¹ Mangala Anil Hirwade, Protecting Traditional Knowledge Digitally: A Case Study of TKDL. See http://eprints.rclis.org/14020/1/TKDL_paper.pdf

The Council of Scientific & Industrial Research (CSIR) filed a re-examination case with the USPTO challenging the patent on the grounds of lack of novelty based on existing prior art. This was supported by documentary evidence of traditional knowledge, including ancient Sanskrit texts and a paper published in 1953 in the Journal of the Indian Medical Association. The patent was revoked by the USPTO.

Case study 3 - the Neem patent

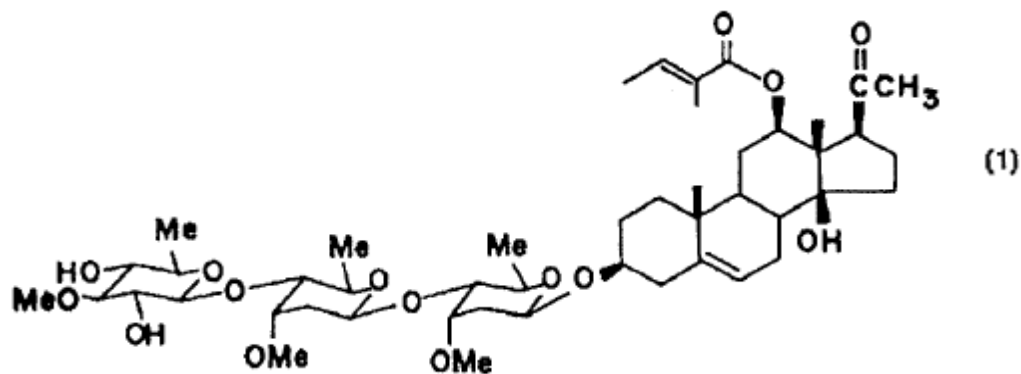
The use of extracts from Neem (*Azadirachta indica*) against hundreds of pests and fungal diseases that attack food crops; and the use of oil extracted from its seeds for treating cold and flu, malaria and skin diseases have been known for many years. In 1994, the European Patent Office (EPO) granted a patent (EP 436257) to the US Corporation W.R. Grace Company and the US Department of Agriculture for 'A method for controlling fungi on plants by the aid of hydrophobic extracted Neem oil'. In 1995, a group of international NGOs and representatives of Indian farmers opposed the patent. They submitted evidence that the fungicidal effect of extracts of Neem seeds had been known and used for centuries in Indian agriculture to protect crops. In the light of this, the EPO determined that the patent did not involve an inventive step, and revoked the patent.

6.5.9 Search activity – Find the patents relating to Hoodia.

In this search activity, you are required to do a search for patents relating to Hoodia Gordonii, a plant that is an indigenous food for the Sn people in Africa, as described above. The Council for Scientific and Industrial Research (CSIR) in South Africa studied this plant from about 1996, and has filed a number of patent applications, pursuant to isolating the bioactive compound - responsible for appetite suppression such research.

The abstract of a PCT application filed by the CSIR reads:

“A pharmaceutical composition contains an extract obtainable from a plant of the genus trichocaulon or hoodia containing an appetite suppressant agent having the formula (1). A process for obtaining the extract and a process for synthesizing compound (1) and its analogues and derivatives is also provided. The invention also extends to the use of such extracts and compound (1) and its analogues for the manufacture of medicaments having appetite suppressant activity. The invention further provides novel intermediates for the synthesis of compound (1).”



Find the earliest patent application, the patent family members, and details of the WO member and (from Google) information on who has had rights to commercialise the invention.

Step	Description of step	Your answer
1	What clues do you have?	
2	What do resources you have available to you and how you can use them ?	
3	Go to The Lens at www.lens.org	
4	Find the patent family	
5	Find from Google who has had the rights to commercialise the invention developed by the CSIR	

6.5.10 Search activity – Find the patent relating to Turmeric (*Curcuma longa*)

Curcuma longa is a perennial plant, belonging to the Ginger family, originating in South Asia. Turmeric (*Curcuma longa*) rhizomes have been traditionally used in India

and China to heal rashes and wounds. Turmeric has also been used for the treatment of inflammation, hepatic disorders, cough, cold and anorexia.

In 1995, a United States Patent was granted for the use of turmeric. The patent claimed *'A method of promoting healing of a wound in a patient, which consists essentially of administering a wound-healing agent consisting of an effective amount of turmeric powder to said patient.'*

You have to find out the number of the US patent, the date of grant and the assignee. Can you find out any information about its legal status? Do you think this is a case of misappropriation of Traditional knowledge?

Step	Description of step	Your answer
1	What clues do you have?	
2	How you can use your clues to find the answer.	
3	Can you find the answer:	
4	Find the legal status of the patent	

6.5.11 Search Activity –Searching for Ghee in the Traditional Knowledge Digital Library (TKDL)

Ghee is a class of clarified butter that originated in South Asia and is commonly used in South Asian (Indian, Bangladeshi, Nepali, Sri Lankan, and Pakistani) cuisine and ritual. There is a vast amount of traditional knowledge concerning “ghee”.

Go to the TKDL site at:

http://www.tkdlib.org/tkdlib/langdefault/common/Global_Search.asp?GL=Eng

and find out

- How many records there are where “ghee” is an ingredient
- Some of the diseases for which “ghee” in combination with other ingredients is considered effective.
- Some of the IPC symbols applied
- How far back the knowledge contained in the oldest record extends.

6.6 Computer software, mathematical methods and methods for doing business

6.6.1 Introduction

In many countries certain subjects are not considered to be patentable and as such are specifically excluded under the law. These exclusions typically apply – amongst other things - to computer software, mathematical methods and methods of doing business; although it may be possible to patent certain aspects of these subjects (eg the use of a computer program to control a machine or a technical process) .

This is not a straightforward issue however, as the law and its interpretation can vary considerably from one jurisdiction to another, so if you are considering filing an application in any of these subject areas, it is essential to find out how the law works in the countries or regions in which you are intending to file by contacting the relevant Patent Offices or researching their websites.

This section of Module 6 indicates the complexities that can arise in some of these important areas of technology. ***However, it is important to understand that the examples described here reflect practice in the United States. This will not in general be critical if your interest is in searching rather than filing, and the examples below provide interesting reading and the search activities valuable practice.***

6.6.2 Practice in the US

The ever increasing importance of software within information technology and also in other industries has led to an exponential growth in software related inventions. Although software per se is not patentable, the application of software may be considered patentable if the subject matter of the application is in accordance with the applicable law and legal precedents. A few patents have been instrumental in shaping the current state of software patenting in the US.

For example, in the 1972 case of *Gottschalk v. Benson*, the US Supreme Court declared that a method, based on a mathematical algorithm, which operated on a "shift register" of a computer to convert binary-coded decimal numbers into true binary numbers was unpatentable. Following this, in *Parker v. Flook*, the Supreme Court decided that a method for updating an "alarm limit" that was used to signal abnormal conditions in a catalytic conversion process was also unpatentable subject matter because the only new element in the invention was a mathematical formula used to calculate the alarm limit.

After these two decisions, it was felt that computer software would be considered as mathematical algorithms, making it unpatentable subject matter. However, in 1981, in *Diamond v. Diehr* – despite having the timing process controlled in software by computer as the only new feature, the Supreme Court decided that an improved process for curing rubber was patentable. The Supreme Court stated that in this

case, the invention was not merely a mathematical algorithm, but was a process for moulding rubber, and hence was considered patentable.

Perhaps one of the most important patents relating to software implemented inventions and/or so called business method patents is the **Signature Financial patent** that related to “**a data processing system for implementing an investment structure which was developed for use in Signature’s business as an administrator and accounting agent for mutual funds.**” The patent became the subject of invalidation proceedings or litigation between Signature Financial and State Street Bank, following failed licence negotiations. State Street Bank used a similar system to the patented system and had engaged Signature for a licence in order to avoid infringement.

Claim 1 of the patent reads:

A data processing system for managing a financial services configuration of a portfolio established as a partnership, each partner being one of a plurality of funds, comprising:

- (a) computer processor means for processing data;**
- (b) storage means for storing data on a storage medium;**
- (c) first means for initializing the storage medium;**
- (d) second means for processing data regarding assets in the portfolio and each of the funds from a previous day and data regarding increases or decreases in each of the funds, assets and for allocating the percentage share that each fund holds in the portfolio;**
- (e) third means for processing data regarding daily incremental income, expenses, and net realized gain or loss for the portfolio and for allocating such data among each fund;**
- (f) fourth means for processing data regarding daily net unrealized gain or loss for the portfolio and for allocating such data among each fund; and**
- (g) fifth means for processing data regarding aggregate year-end income, expenses, and capital gain or loss for the portfolio and each of the funds.**

In the US, software is not in general patentable, and any patent relating to software must conform to patentable statutory subject matter. Methods for doing business and/or software related patents where there is a technical effect can be patented as they fall within statutorily patentable subject matter.

This new class of inventions disclosing and claiming new methods of doing business in areas like e-commerce, insurance, banking, tax compliance, etc. has become a discussion point for over a decade now. *Bilski v. Kappos* is one such recent case concerning business methods. In 2010, the US Supreme Court decided and affirmed the rejection of an application for a patent (Bernie Bilski was the first named inventor) on a method of hedging losses in one segment of the energy industry by making investments in other segments of that industry, on the basis that the abstract investment strategy set forth in the application was simply not patentable subject

matter. The method claim included steps of initiating a series of transactions at a first fixed rate, identifying market participants having a counter-risk position, and initiating another series of transactions at a second fixed price. Despite the rejection, the majority opinion also stated that the term "process" should be interpreted broadly. This suggests that the process will continue to include business methods and therefore, that business methods should not be excluded from patent protection as a whole.

One of the oldest patents in this area is the '1-click' patent which covers a technique that allows customers to make online purchases with a single click, because the payment information needed for the purchase has previously been entered. According to this invention, a purchaser does not manually input billing and shipping information for a purchase but merely uses the 1-click method to use a predefined address and credit card number to complete a purchasing transaction. The 1-click method is covered by US patent, US5960411 owned by Amazon.

6.6.3 Search activity – Finding the *Signature Financial* patent

Do a search for the Signature Financial patent and find the patent number.

A PCT application was also filed for this invention. Find this and provide the publication number and a quick review of the search report.

6.6.4 Search activity – Investigating US5960411 (a business method patent); and its novelty

Search Activity Part One:

- (a) Find the inventors of US5960411 and its priority date .
- (b) How many patent applications cited US5960411?
- (c) Find the patent family for this patent.

Search Activity Part Two: Determining the patentability (novelty; inventiveness) of US596041

US5960411 was re-examined by the USPTO in 2006 in the light of a number of new prior-art documents, including US5729594 entitled "*On-line secured financial transaction system through electronic media*".

Amended claims for US5960411 were submitted by the patent owner with a view to steering clear of US5729594.

- Find the inventor, the priority date and the publication date of US5729594.

- Find out whether or not US5729594 destroys the novelty or inventiveness of the amended claims of US5960411.

Step	Description of step	Your answer
1	Search for <i>US572959</i> in Espacenet to find the inventor, priority date and publication date	
2	Search for <i>US5960411</i> in Espacenet to find the priority date and the claims	
3	Find the amended claims of <i>US5960411</i>	

6.6.5 Search Activity - Smartphone War (Apple vs Samsung)

Smartphone has become a quintessential device in our life and the companies in the industry are pushing the borders of research, product development, marketing, etc to provide customers with new products at attractive prices. In order to maintain competitiveness in the market, companies are well-aware of their proprietary rights (esp. patent rights) and are not shy of enforcing them. Apple and Samsung have been involved in a number of patent disputes in different various countries. A US patent, granted in 2008 with Bas Ording as the sole inventor, was involved in one of these disputes.

The invention in this patent relates to a movement detecting, touch screen display.

(a) Find the patent number and the title of the invention.

(b) Find out who owns the patent and what its main method claim says?

(c) List the countries where the owner can sue for patent infringement, assuming that the patent is valid and in force in all the countries where the patent applications were filed

Part Two - Specialized types of search

This section further develops some of the search types introduced in Module 2, sections 2.1 to 2.8.

6.7 Freedom to operate searches

Freedom to operate (FTO) searches (also known as **clearance searches** or **infringement searches**) are aimed at finding out if commercialising a product in a particular country or region will infringe any patents in force in that region. In general patents cannot stay in force for more than 20 years, so the search will be aimed only at patents granted in that region within the past 20 years. If any are found, it will be necessary to check their legal status – the patent may have lapsed or been invalidated by a court.

However, as well as granted patents, it is also necessary to search for any relevant patent *applications* which could be granted in that region in the future and which the product might infringe. Again, it is necessary to check legal status; the application may have lapsed, been withdrawn or refused.

If you do find any relevant patents, there are a number of options:

- investigate to see whether licensing of the patented technology could be an option.
- see if designing around the claims of the blocking patent could be an option, ie modifying your product so that it doesn't infringe the claims of the blocking patent.
- check if the patented technology is covered by multiple patents. If it is, exercise extra caution to ensure that all the features of your product or process are free to be used.
- consider carrying out a validity search to check if the claims of the blocking patent are new and not obvious, with a view to challenging the validity of the patent. It's always possible that something may have been missed by the Patent Office search when the blocking patent was granted
- explore other potential markets where there is no patent protection

Important distinctions between patentability searches and FTO searches are:

- a patentability search is not limited by time or place. Anything published anywhere however long ago could be relevant. By contrast, in FTO searches, the search is limited to the last 20 years, as only a valid patent can be infringed, and patents are generally granted for a maximum of 20 years.

- FTO searches cover only patents in force in those specific jurisdictions where the product is to be commercialised, whereas with patentability searches, where a document has been published is not important.
- whereas *any* publication - a patent document or anything else - can be used to demonstrate that an invention is not new or is obvious, only patents are relevant to FTO searches
- any potential blocking patent has to be valid and in-force – so for instance, where no renewal or maintenance fees have been paid, the patent will have expired and cannot be infringed.

6.7.1 Search activity - You know there’s a patent in country A covering your product, but are you free to market it in country B?

Your company wants to manufacture a low cost miniature camera with a reduced number of parts. There is a Japanese patent application JP11212162A for a similar camera. Are they free to operate in the United States?

Where do you start? Firstly, it is necessary to check the format of the Japanese document at <http://www.epo.org/searching/asian/japan/numbering.html>. From this we find that the number has to include an extra H, and now reads JPH11212162.

Step	Description of step	Your answer
1	Find out whether JPH11212162 has any family members for a miniature camera.	
2	Did you see any US documents?	
3	What is their status?	

Based on what you have done so far, what do you think about the freedom to operate situation in the United States? Can you think you of say five points that you could put into a report to your company?

6.7.2 Search activity - Can I get my product manufactured in China then import it into Australia

A letter to a patent attorney from a client reads:

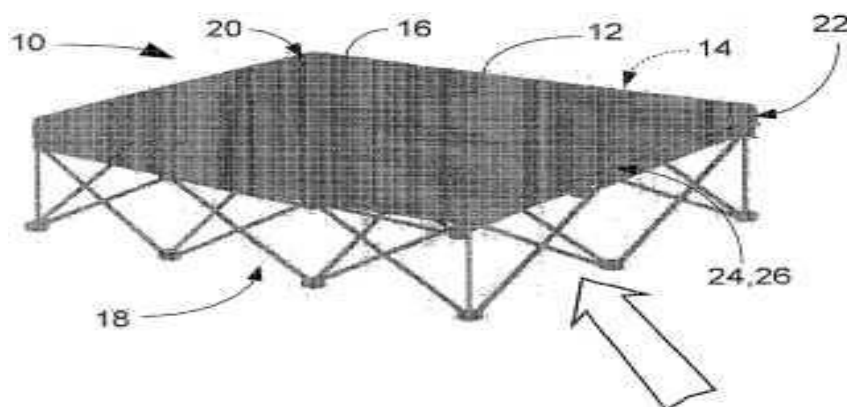
I am an avid camper and also an entrepreneur. However, the days of camping on hard ground have lost their appeal, especially after I went camping two weeks ago and the weather turned from fine to cold and wet.

Since then, I have been to various camping shops in the city and have been trying to find a camp bed that can be elevated from the ground but also have an airbed. That would be camping in luxury! None of my local stores had anything that combined both my ideas.

I conducted a Google search to see if I could find such a product and found a picture which seems to show it, but I am not sure whether this is patented in Australia. I did a preliminary search in Patentscope and found that a company called Northpole has made an application for such a bed. In my business strategy I think it is possible for a company that I know in China to make the beds for me quite cheaply, which I can then import into Australia. Can you tell me if I will need the patentee's permission to make and sell the beds in Australia, or to make the beds in China and sell them in Australia?

I'm including pictures of the bed I found from my online searches. The first is the picture of the bed from the patent document; and the second is a picture from a search on Google which I have included to show you that such beds are available. I am not sure the second picture includes an air mattress. But the invention I am looking for has an airbed, is off the ground and requires no extra devices for expansion of the structure.

Look forward to your suggestions on how I can proceed.



A drawing of a camping bed from a patent document



Images of the type of camping bed structure I am interested in

Step	Description of step	Your answer
1	Search strategy for Patentscope and Espacenet:	
2	Include classifications to focus the search in Patentscope	
3	Inventor(s) names and where they are from.	
4	What are the family members?	
5	What is the situation in Australia?	
6	What is the situation in China?	

6.8 Finding patents relating to a particular technology or organization; and presenting the results graphically

6.8.1 Search activity - Searching for patents relating to a particular technology

A fuel cell converts the chemical energy from a fuel into electricity through a chemical reaction with oxygen or another oxidizing agent. With energy and environmental issues at the centre of many discussions, fuel cell technology is seen as a possible alternative to oil dependency in areas such as power generation and pollution free transport. Welsh physicist Sir William Grove invented the first fuel cell in 1839 and since then the technology has changed drastically.

Based on international patent applications published between 2010 and 2016, can you identify

- (a) the main companies involved with research in fuel cell technology
- (b) the key inventors
- (c) if the research in this area has changed over the years

Step	Description of step	Your answer
1	What clues do you have?	
2	What resources do you have?	•
3	In the IPC search page, search for fuel cells to find relevant IPC symbols	

4	Search for the given publication date range the IPC symbol; and for PCT documents	
5	Analyse the results in terms of main inventors, companies, and trends	
6	Show these results graphically	
7	Choose another display option	

6.8.2 Search activity - Searching for patents relating to a particular organization

You have been recently contacted by a technology journalist who is covering a story on the growth of patentable research in the labs of the Council of Scientific and Industrial Research (CSIR) in India. CSIR² is India's largest R&D organization with a mission "to provide scientific and industrial R&D that maximises the economic, environmental and societal benefits for the people of India". The organization is mainly funded by the Ministry of Science and Technology.

The journalist is particularly interested in knowing:

² The organization has put efforts into fighting biopiracy – for example, CSIR successfully challenged the US patent on the use of turmeric as a wound healing agent – see 6.4.8 above

(a) the total number of PCT publications in the name of CSIR; and trends between 2011 and 2016,

(b) the two main research areas. The journalist can then explore the relationship between these main research areas and the organization's mission

(c) whether CSIR conducted research in collaboration with partners; and if so who the main partners were.

Step	Description of step	Your answer
1	What clues do you have?	
2	What resources?	
3	Search for the given publication date range and the applicant's name; and for PCT documents	
4	Show these results graphically	
5	Choose another display option	
6	What are the two main research areas?	
7	Did CSIR collaborate with partners?	

6.8.2 Search activity - Searching for patents relating to a particular organization

Access <http://www.lens.org/lens/> and search for the 'Council of Scientific and Industrial Research':

Structured Search Tips

Using the structured search tools on the right you can create specific search queries, filtering by dates, jurisdictions and document type. You can also alter default search perimeters such as stemming, family grouping, query language and the whether to only include documents with full text.

Structured search also allows you to limit your search terms to specific sections of documents. These sections include Inventors, Owners (US), Title, Abstract, Claims, Applicants, Non Patent Citations, Publication Number, and Filing Number. By searching for terms only within a given field, you can greatly reduce the number of extraneous results. For example, searching for an inventor's name only within the Inventor field will eliminate documents that happen to mention the inventor in passing.

To begin a search on a topic, it is therefore often best to begin by searching within the Title, Abstractor Claims to capture the broadest range of topical documents. Searching within Applicants may be useful for determining which

Structured Search

Query

Query Predicate: AND OR

Council of Scientific and Industrial Research in Full text

First Name Last Name in Inventors

Dates:

Documents That Were: Published Filed

between and

Jurisdictions

- Armenia
- Australia
- Brazil
- Chile
- Czechoslovakia
- Fast Germanv
- ARIPO
- Bosnia And Herzegovina
- Switzerland
- Costa Rica
- Czech Republic
- Argentina
- Belgium
- Belarus
- China
- Cuba
- Germany
- Austria
- Bulgaria
- Canada
- Columbia
- Cyprus
- Denmark

Select 'Graphical Analysis':

Results for Council of Scientific and Industrial Research

Graphical Analysis

Document

Microbial Method For The Biotransformation Of Colchicinoid Compounds US 8795986 B2

Published: Aug 5, 2014 Family: 6 Cited: 0 Info: Full Text Sequence

Owner: Sequent Scientific Ltd, Elysian Life Sciences Private Limited

An Improved Reforming Process For The Catalytic Conversion Of Petroleum Fractions To A Mixture Of Hydrocarbons Rich In Aromatics EP 0382960 B1

Published: Jan 13, 1993 Family: 4 Cited: 0 Info: Full Text

Applicant: Council Of Scientific And Industrial Research

White Rot-lignin-modifying Fungus Flavodon Flavus And A Process For Removing Dye From Dye Containing Water Or Soil Using The Fungus US 6395534 B1

Published: May 28, 2002 Family: 5 Cited: 8 Info: Full Text

Owner: Council Of Scientific And Industrial Research

Collection Management

Collection Management: allows you to create, add to, manage and edit collections of search results.

Selecting Filter Values

Include - Exclude - Agnostic -

Don't show me again

Refine Search

Dates

Jurisdictions

Inventors

Owners (US)

Applicants

Cited Authors

Cited Articles (PubMed)

Experiment with the Graphical Analysis tools:

Collection Management

Collection Management: allows you to create, add to, manage and edit collections of search results.

Selecting Filter Values ✖

Include - ✓ Exclude - ✖ Agnostic - □

[Don't show me again](#)

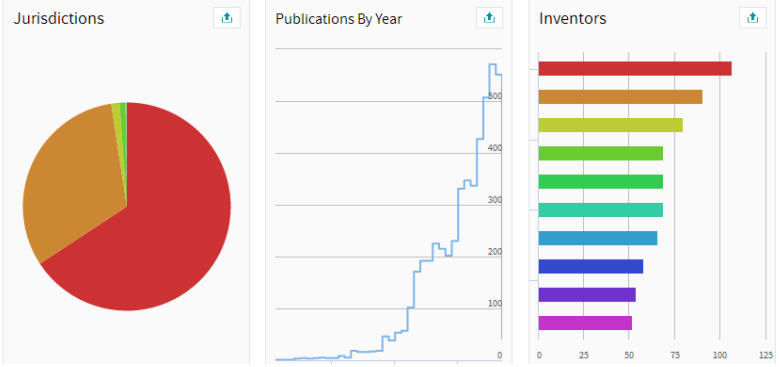
Refine Search ⓘ

- Dates
- Jurisdictions
- Inventors
- Owners (US)
- Applicants
- Cited Authors
- Cited Articles (PubMed)

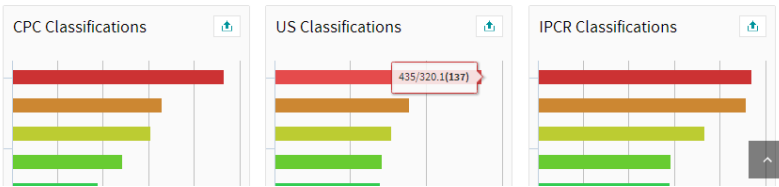
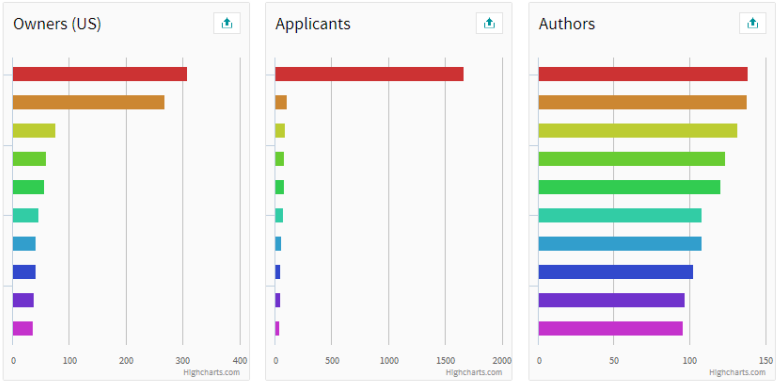
Results for Council of Scientific and Industrial Research

Graphical Analysis

You can modify your search by clicking on chart values.



- Cited Articles (CR)
- Document Families
- Classifications
- Document Types
- Biologicals
- Collections
- Query Tools





Further reading

Detailed landscape studies on different technological areas including vaccines for selected diseases, solar cooling, etc. Can be accessed at:

http://www.wipo.int/patentscope/en/programs/patent_landscapes/.

Included are downloadable '*Guidelines for Preparing Patent Landscape Reports*' with step-by-step instructions on how to prepare a Patent Landscape Report (PLR),

as well as background information such as objectives, patent analytics, concepts, frameworks, etc.

6.9 Searching by using citation analysis (ie documents that cite a certain patent or were cited against that patent)

When a patent has been applied for, it is the responsibility of a patent examiner to carry out a search in order to identify any publications – patent documents or otherwise – that might show that the invention, as set out in the claims of the application, lack novelty (ie are not new) or are obvious (ie don't involve an inventive step).

This might result in the application being refused by the Patent Office, or – more commonly – the applicant will amend the claims to restrict the monopoly claimed with a view to getting the patent granted.

The examiner may also note documents which - although not relevant to the novelty or obviousness of the claims - are otherwise of interest, eg they might describe the general state of the technology to which the invention is directed.

All of these selected documents are called ***citations***; and the number of times a patent document is ***cited*** is likely to be a measure of its technological significance.

If you are looking at a patent document then:

- it might have had documents cited against it. These are called ***backward citations***
- it might itself have been cited in searches. These are called ***forward citations***

6.9.1 Search activity – *Tamiflu* revisited

Using one of the patents US5866601 from the *Tamiflu* example, go to Espacenet, enter the patent number in the Smart Search interface to locate the patent document and click on the title.

« About Espacenet Other EPO online services ▼

Search Result list **★ My patents list (3)** Query history Settings Help

Refine search → Results → US5866601 (A)

US5866601 (A)
Bibliographic data
Description
Claims
Mosaics
Original document
Cited documents
Citing documents
INPADOC legal status
INPADOC patent family

Quick help —

- [What is meant by high quality text as facsimile?](#)
- [What does A1, A2, A3 and B stand for after a European publication number?](#)
- [What happens if I click on "In my patents list"?](#)
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- [How can I bookmark this page?](#)
- [Why does a list of documents with the heading "Also published as" sometimes appear, and what are these documents?](#)
- [What is Global dossier?](#)
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Bibliographic data: US5866601 (A) — 1999-02-02

★ In my patents list ↗ EP Register 🗨 Report data error 🖨 Print

Carbocyclic compounds

Page bookmark [US5866601 \(A\) - Carbocyclic compounds](#)

Inventor(s): LEW WILLARD [US]; KIM CHOUNG U [US]; LIU HONGTAO [US]; WILLIAMS MATTHEW A [US] ±

Applicant(s): GILEAD SCIENCES INC [US] ±

Classification: - international: [C07D309/28](#); (IPC1-7): A61K31/35; A61K31/445; A61K31/66

- cooperative: [C07D309/28](#)

Application number: **US** 19950476946 19950606

Priority number(s): US 19950476946 19950606 ; US 19950395245 19950227

Also published as: [CN1011143859 \(A\)](#) [CN101172957 \(A\)](#) [CN101172957 \(B\)](#) [CN1733707 \(A\)](#) [CN100338031 \(C\)](#)

Abstract of US5866601 (A)

Translate this text into

 powered by EPO and Google

Novel carbocyclic compounds are described. The compounds generally comprise an acidic group, a basic group, a substituted amino or N-acyl and a group having an optionally hydroxylated alkane moiety. Pharmaceutical compositions comprising the inhibitors of the invention are also described. Methods of inhibiting neuraminidase in samples suspected of containing neuraminidase are also described. Antigenic materials, polymers, antibodies, conjugates of the compounds of the invention with labels, and assay methods for detecting neuraminidase activity are also described.

On the left hand side of the above screen, you can click on ‘*Cited documents*’ to find the documents that were cited against US5866601; and on ‘*Citing documents*’ to find the patent documents that US5866601 was itself cited against. This number of documents in this second is a measure of the importance and significance of US5866601. It can also indicate its value, and potentially assist in unlocking value in a patent portfolio.

This would be the case where a patent A that is cited against a lot of other patent applications X, Y and Z, covers a basic underlying technology (this is sometimes called a ‘master patent’). The applications X, Y and Z will typically be protecting an improvement or development over patent A. A closer analysis of the documents may suggest the possibility of a licensing opportunity for the owner of patent A.

Cited documents:

Patentamt
European Patent Office
Office européen des brevets

Espacenet
Patent search

Deutsch English Français
Contact
Change country ▾

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Search Result list My patents list (0) Query history Settings Help

Refine search → Results → US5866601 (A) → Citations page 1

US5866601 (A)
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Description
Claims
Mosaics
Original document
Cited documents
Citing documents
INPADOC legal status
INPADOC patent family

Quick help ▾

→ What are cited documents?
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→ What happens if I click on "Download covers"?
→ What happens if I click on the star icon?

Cited documents: US5866601 (A) — 1999-02-02

Select all (0/25) Compact Export (CSV | XLS) Download covers CCD Print

34 documents cited in relation to US5866601 (A) 1 ▾

Sort by Priority date Sort order Descending Sort

Patents cited in the search report

1. **Biologically reversible phosphate and phosphonate protective groups**

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
★ FARQUHAR DAVID [US]	UNIV TEXAS [US]	C07F9/091 C07F9/12 C07F9/65121 (+3)	C07F9/09 C07F9/12 C07F9/6512 (+3)	US4968788 (A) 1990-11-06	1988-04-04

2. **Nucleic acid intercalating agents**

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
★ BISCHOFBERGER NORBERT W [US] MATTEUCCI MARK D [US]	GENENTECH INC [US]	C07H19/06 C07H21/00 C12Q1/6832	C07H19/06 C07H21/00 C12Q1/68 (+3)	US5175273 (A) 1992-12-29	1988-07-01

3. **Diastereomeric mono- and di-substituted diamino cyclohexane compounds and the method of preparation thereof**

Citing documents:

Patentamt
European Patent Office
Office européen des brevets

Espacenet
Patent search

Deutsch English Français
Contact
Change country ▾

← About Espacenet Other EPO online services ▾

Search Result list My patents list (0) Query history Settings Help

Refine search → Results → US5866601 (A) → Citations page 1

US5866601 (A)
Bibliographic data
Description
Claims
Mosaics
Original document
Cited documents
Citing documents
INPADOC legal status
INPADOC patent family

Quick help ▾

→ Can I export this list?
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→ What are citing documents?
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→ What happens if I click on the star icon?

Citing documents: US5866601 (A) — 1999-02-02

Select all (0/25) Compact Export (CSV | XLS) Download covers Print

Approximately 32 document citing US5866601 (A) 1 ▾

Sort by Priority date Sort order Descending Sort

1. **PHARMACEUTICAL COMPOSITIONS FOR TREATING INFECTIOUS DISEASES**

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
★ WASHBURN MICHAEL [US]	GLAXOSMITHKLINE IP NO 2 LTD [GB]	A61K2300/00 (+12)		WO2015173701 (A2) 2015-11-19 WO2015173701 (A3) 2016-02-18	2014-05-12

2. **Prodrugs of Neuraminidase Inhibitors**

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
★ HILFINGER JOHN [US] AMIDON GORDON [US]	HILFINGER JOHN [US] AMIDON GORDON [US]	A61K31/155 A61K31/167 A61K31/361 (+5)	C07C279/16 C07D231/14 C07D307/89 (+2)	US2014155350 (A1) 2014-06-05 US9181281 (B2) 2015-11-10	2008-04-15

3. **MEK INHIBITORS IN THE TREATMENT OF VIRUS DISEASES**

Inventor:	Applicant:	CPC:	IPC:	Publication info:	Priority date:
★ PLESCHKA STEPHAN	UNIV MUENSTER WILHELMS	A61K2300/00	A61K31/215	WO2014056894 (A1)	2012-10-08

Looking at the above screens, we can see that 34 documents were cited against US5866601 and it was itself cited 32 times. The documents cited against US5866601 have an earlier date than US586660 (*backward citations*), whereas the documents that cite US5866601 have a later date (*forward citations*).

An analysis of the forward citations shows a number of interesting documents: five where Gilead Sciences, the applicant of US5866601, is again the applicant, as well as documents from other players such as Abbott Labs and Adamas Pharmaceuticals, which could be potential licensing partners for Gilead.

In assessing freedom to operate, Gilead should have a closer look at the backward citations to ensure that none of these are infringed.

6.10 Further reading:

References: Jaffe A B and Trajtenberg M; Patents, Citations and Innovations; The MIT Press, 2002.

[End of Module 6]