Patent search for researchers

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This morning’s agenda

• Lecture:
  1. Patent publications and different searches in a nutshell
  2. Espacenet and PATENTSCOPE: Two central databases
  3. Building a search strategy: Tips and tools

• Workshop (appr. 20 minutes) with independent searches
1. Patent publications and different searches in a nutshell
The idea of patenting an invention

• Shared benefit for inventor and the public: temporal (usually 20 years) monopoly to profit professionally from the invention for the inventor; permanent open access to the detailed description of the invention for the society.
The three patentability prerequisites

- **Novelty**: the invention has to be new and unpublished anywhere in public domain
- **Inventiveness**: the invention’s solution must not be obvious for an expert in the same field.
- **Commercial applicability potential**.
Patenting process produces open patent publications (1)

- Patent is an IP right which guarantees shared benefit for the applicant and the society:
  1. Temporal monopoly (20 yrs) for the applicant/the patent owner to exploit the invention professionally and commercially
  2. Open detailed documentation of the invention to the public.

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Patenting process produces patent publications (2)

- **Patent applications** become public 18 months after initial filing. If the invention examination leads to granted patent, the **granted patent** is also published.
- Patents are examined, granted and managed by national and regional patent officials. A patent is only valid in the state/region where it is granted. Thus, you have to apply for a patent separately for your invention in each state you wish to have it protected.
- This leads to multiple patent application and granted patent publications for the same invention. These are called **patent families**.
Alternatives for filing a patent application

- National patent office, e.g. Finnish Patent and Registration Office: national patent
- European Patent Office: EP patent; valid in the European Patent Office member countries; 38 to date
- Patent Cooperation Treaty official: files and manages PCT patent application

Each patent publication gets an ID number indicating the filing office: e.g. "EP" for EPO and "WP" for PCT.
Why and when search for patents?

1. **State-of-the-art search**
   - Overall view of existing patents in a particular applied research field
2. **Novelty search for prior art**
   - Is your invention new and sufficiently different from existing solutions?
3. **Support for research projects**
   - State-of-the-art charting to use in funding applications
   - Find the most recent patents in a certain field
   - Avoid duplication of R&D efforts and spending
   - Find solutions to technical problems
4. **Support for business plans**
   - State-of-the-art charting to use in funding applications
5. **Freedom to act search**
   - Avoiding infringement of existing active patents
6. **Charting inventors and companies conducting applied research in your field of interest**
   - Fellow researchers’s patenting activities
   - Identifying possible future partners

18 October, 2017
The contents of a patent publication

The applicant provides

• **Description:** Background and aim of the invention; examples on how the invention functions

• **Claims**, i.e., what the patent protects – the legal core of the patent publication.

• **Drawings**, tables, sequences etc. image content

The patent office provides

• **Bibliographic data:** Inventor, applicant, dates

• **Patent classification** according to the field of technology

• **Search report** with novelty and patentability assessment and references.
What the description discloses

- **Prior art: the level of technique now**
  “Various arrangements have been used in the past to avoid lens fogging.”

- **Deficits in existing solutions**
  “Lenses worn close to the face limit the amount of airflow across the interior surface of the lenses”

- **Solution to a problem**
  “Fogging of the lenses”

- **Detailed solution with examples**
  “A vent passage is provided in the brow, etc.”

- **Unique advantage of the solution**
  “Eyeglasses configured to reduce fogging”

What claims typically look like

WO 2012/072096

PCT/EP2010/007362

CLAIMS

1. A method for expressing RNA in a cell comprising the step of reducing the activity of RNA-dependent protein kinase (PKR) in the cell.

2. The method of claim 1, wherein the RNA has been introduced into the cell.

3. The method of claim 2, wherein the RNA has been introduced into the cell by electroporation.

4. The method of any one of claims 1 to 3, wherein the RNA is in vitro transcribed RNA.
An example of an attempt to include as much as possible within protection in the claims

18 October, 2017
2. Espacenet and PATENTSCOPE: Two central databases
Patent authorities and their open databases

Finnish Patent and Registration Office PRH: **PatInfo** register database contains basic data, procedural status, validity and payment information on Finnish patent applications.

The United States Patent and Trademark Office USPTO: **PatFT**

European Patent Office EPO: **Espacenet**

World Intellectual Property Organization WIPO: **PATENTSCOPE**

18 October, 2017
Both Espacenet and PATENTSCOPE index full-text patent publication records for easy access – and both use secure https protocol.
What you can search in Espacenet

- Records from over 80 national/regional patent offices since the 1900th century on
- Inventors, applicants/assignees
- Dates and patent classes, record ID numbers
- Titles and abstracts from all records
- Full-text from records with English full-text
What you can search in PATENSCOPE

- Records from over 50 national/regional offices from 1970s on
- Inventors (individuals)
- Applicant/assignee (usually a company or an organisation)
- Dates (original filing date i.e. priority date; publication date)
- Applicant’s country
- Filing and publication ID numbers of the patent
- Patent publication title, abstract and full text
- Patent class
- Chemical compounds (you need to create a free account)
Example search 1: Espacenet
Example search 2: PATENTSCOPE
3. Building a search strategy: Tips and tools
Tips and tools 1: Tackling the "Patentese"

• Patent language isn’t easy to read, since patents are not a form of scientific literature but legal documents destined to defend the patented invention in court. Therefore, the “Patentese” is often vague and uses many synonyms and close terms to cover the area of the invention. E.g., mice can be referred to as "mammals, including rodents".

• Titles are often round and wide-spanning: "Influenza vaccine" "Method".

• Abstracts do not usually describe the invention in exact terms.

• Exact descriptions are in the description and claim sections.
Tips and tools 2: Keywords

- Search first by keywords of your interest. What is the invention you seek? What is it made of: silver nanoparticles; removable hinges; a chemical compound? What does the invention do? What problem does it solve? Pick terms for search.

- Since patents are legal language they often code terms in synonyms and near related terms. Think of synonyms and close terms as well. You can use online thesauruses such as The Free Thesaurus and MeSH.
Tips and tools 2: Patent classes

- **International Patent Classification (IPC) and Collaborative Patent Classification (CPC)** are overlapping, standardised hierarchies by field of technique to help identify and locate relevant patent publications. Using a couple of relevant classification numbers to narrow your search makes your search efficient.

- **PATENTSCOPE** supports IPC, Espacenet both IPC and CPC.
Class perusal is made easy in **Espacenet**: simply click the class number in the record front page to open its explanation.
Example 1: Combined keyword and class search

Keyword search for “influenza virus” provided results from different classes:

- A · · · · · · HUMAN NECESSITIES
  - A61 · · · · Medical or veterinary science
  - A61K · · · · Preparations for medical purposes
  - A61K 39/00 · · · · Medicinal preparations containing antigens or antibodies
  - A61K 39/145 · · · · Orthomyxoviridae, e.g. influenza virus

- C · · · · · · CHEMISTRY
  - C07 · · · · · · Organic chemistry
  - C07K · · · · · · Peptides
  - C07K 14/11 · · · · Influenza virus

What classes correspond with the field and technique of your interest? Pick the relevant classes and continue with combining keywords with relevant classes for more exact result lists.
Example 2: Combining keyword and class search

I need to find patents that claim to protect a bicycle. With “bicycle*” keyword search, I find records from several classes:

- B62K 13/00 cycles
- A61G 5/00 patients transport
- C07D 413/04 heterocyclic compounds
- A63B 55/08 sports apparatus
Tips and tools 3: Check citations

Patent records contain references to scientific publications and other patent publications:

- The **description part** cites patents and research publications that form the prior art, i.e. existing level of innovation in the invention’s field.

- The **search report** provided by the patent office cites publications used in the patentability evaluation of the invention.
Conclusion

Be patient with patent search – collect relevant records by
1. searching for inventors, applicants, countries and publication dates.
2. Begin full-text search by first collecting some relevant records with keyword search.
3. Pick relevant patent classes from the first relevant records on the result list.
4. Continue with combined searches with keywords and a few relevant classes.
5. Check the citations in relevant records to track more.
6. Take your time in examining the description and claim sections of seemingly relevant records. Check them against your keywords with Find command.
Support at the UTU

• The Research Funding unit helps researchers in applying for external funding: http://www.utu.fi/en/unit/university-services/research-services/Pages/home.aspx

• The Innovations unit advises in all questions concerning innovation ideas, inventions and protection interests: http://www.utu.fi/en/unit/university-services/innovation-services/Pages/home.aspx
Good to remember as a University researcher:

• If you suspect you have an innovation idea or a research-related invention, please always contact the UTU Innovation Managers before publishing your idea! All methods of publishing, e.g. in ResearchGate, a conference paper, an interview, or a tweet, prevent patenting irrevocably.

• More about the University Innovation Act: https://intranet.utu.fi/index/inventions-and-the-act/Pages/default.aspx
Further reading and tutorials

**International patent systems and registers:**

**Patent search tutorials:**
Thank you!

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