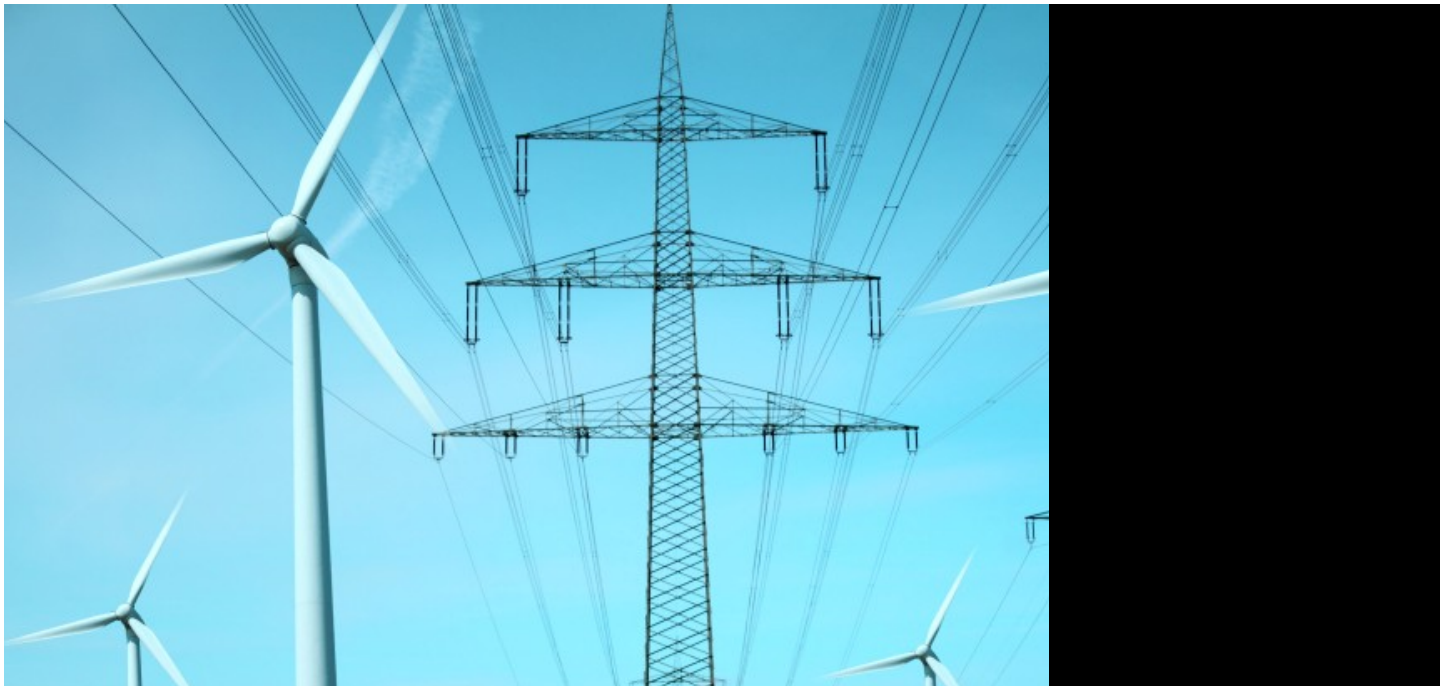

5 May 2012

Core competences in private sector R&D in Denmark

An analysis commissioned by the Danish Agency for Science, Technology and Innovation

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1 Introduction and summary of findings

1.1 Purpose and approach

This report presents the results of a systematic identification and characterisation of core competences in Danish private sector research and development (R&D).

Core competences are defined as research areas in which R&D by Danish firms has an above-average impact on the international research front.

Private sector R&D is analysed using data on patents and publications by Danish firms during the period 2000 to 2011 (both years included). The impact of firms' patents and publications is measured using data on citations. Moreover, to constitue a core competence, Danish firms must have had above-average impact within a research area when assessed over the entire period of study, i.e. the past decade. This approach was chosen to ensure that the analysis only identifies *established* core competences, i.e. research areas that have a sufficiently robust foundation to warrant dedicated focus in the national innovation strategy and subsequent initiatives to lift Danish research and innovation in selected research areas.[1]

It should be noted that there are large differences across both firms and industry sectors in the use of patents and scientific publications. Thus, some firms and some sectors will be overrepresented in an analysis of this type, while others will be underrepresented. On the whole, however, publications and patents are valuable sources for systematic identification of core competences in R&D.

1.2 Why is it important to map core competences in private sector R&D?

Private sector research is a key engine of knowledge production, innovation and, ultimately, economic growth. For instance, in 2010, Danish industry invested 36.9 billion Danish kroner, or 2.1 percent of the gross national product, in research and development.

Moreover, private sector research is an important complement to public sector research: it can both utilise results and methods developed by public research institutions and stimulate public science to pursue new research directions.

[1] The technique applied in this study can also be used to identify emerging core competences, i.e. research areas in which Danish firms have had an above-average impact over a shorter period of time, e.g. three years. The ten-year period was selected in this study to ensure a certain level of continuity and robustness in the core competences identified.

1.3 Key findings

102 core competences in Danish private sector R&D have been identified.

In total, Danish industry has had an above-average impact compared to other countries[2] in 102 (24 percent) of the 430 research areas[3] examined using publication and patent data from the past decade.

56 of the 102 core competences have been identified based on publication data; the remaining 46 were identified using patent data.

The distribution of core competences across research fields is summarised in the table below.

Table 1.1. Core competences, by research field

Research field	No. of patent based core competences	No. of publication based core competences
Chemistry	6	1
Materials chemistry	6	4
Biotechnology	3	7
Pharmaceuticals	2	3
General medicine	0	19
Food science & technology	2	6
Enviromental technology	2	5
Instruments	2	4
Civil & mechanical engineering	13	5
Information technology	10	2
Total	**46**	**56**

Source: DAMVAD 2012.

Large firms dominate core competences.

The analysis indicates that large international firms contribute to a disproportionate number of core competences. This indicates that large firms are key drivers in leading-edge research areas in Danish industry. It should however be noted that the methodology used to identify core competences (i.e. using publication and patent data) may be biased towards large firms, as these companies have greater resources at their disposal to invest in publishing and patenting.

Core competences are not linked to specific industry sectors; they are instead based on contributions from firms from several sectors.

The analysis of different industry sectors' contributions to core competences in private sector R&D reveals that firms from several sectors often contribute to the same core competences. Thus, the analysis indicates that core competences in private sector R&D are not tightly linked to specific industries, but that they rather (at least in many cases) bring companies from different sectors together in a research area of joint interest.

Publications and patents are valuable and highly complementary sources of insight into private sector R&D.

Finally, the analysis shows that publications and patents offer a window on firms' R&D activities that can be used in a systematic analysis of core competences in Danish industry R&D. Moreover, the two types of data appear to be highly complementary: 678 firms have contributed to core competences in private sector R&D; of these, just 128 firms (19 percent) have contributed to both publication and patent based core competences. The remaining firms have only contributed to publication *or* patent based core competences, indicating that publication and patent data capture different aspects of knowledge production in industry.

[2] For core competences based on patents the impact measure is compared to worldwide patents. For the core competences based on publications, impact is measured relative to the OECD countries.

[3] These 430 research areas include 278 patent based and 208 publication based research areas that are derived from standard classifications of patent and publication data. There is some degree of overlap between the patent and publication based classification of research areas, as many research areas lend themselves to both patenting and publishing.

1.4 Limitations and uses of the findings

Some limitations of the method – and therefore the results – should be noted. First, the method is biased toward companies, research areas and industries that publish and/or patent their R&D results. For example, companies in certain industries (e.g. biotechnology) are both prolific publishers and patenters. Moreover, large research-intensive firms are likely to have greater resources to fund publishing and patenting activity. Such industries and firms are therefore more likely to appear in the results of this analysis.

Meanwhile, a large part of research and innovation in industry is neither patented nor published. Many firms, particularly small and medium-sized enterprises, develop new products, services and processes without taking out patents or publishing their results. This is especially the case in low-tech industries, for instance consultancy and advisory services. This analysis can only capture private sector R&D core competences that can be identified through a systematic analysis of publication and patent data.

Second, because the method applied defines core competences based on the *relative* rather than absolute impact of a research area in private sector R&D, a core competence identified in this mapping can be based on anywhere from 10 to hundreds of publications or patents. This method was selected to reduce the bias toward research areas characterised by a large degree of patenting and/or publishing and to allow for the identification of strong "niches" in Danish firms' R&D. However, in the further, more detailed analysis of the core competences presented in this report, it is important to consider the volume of patents and/or publications on which they are based.

Finally, the method allows for significantly better coverage of research in the natural and technical sciences than in the social sciences and humanities. Research in the latter sciences is generally not patented; moreover, the natural and technical sciences generate far more publications than the social sciences and humanities. This is especially true of firms' publications. For example, a pharmaceutical firm is more likely to publish the results of a drug discovery project than a consulting firm is likely to publish the results of a change management process in a client company. Thus, the method used to identify core competences in private sector R&D is likely to underestimate firms' research in the social sciences and humanities.[4]

Generally speaking, the mapping of core competences in Danish private sector R&D presented in this report is intended as a **point of departure** for (1) the identification of existing strengths in Danish research and industry, and (2) an assessment of how these strengths should be maintained and developed in the coming years.

The analysis presented in this report is based on the premise that positions of strength in research and industry should not be addressed with a "one size fits all"-model. Rather, insight into the particular potential, challenges and needs of each position of strength should be used to develop a customised plan of action for boosting innovation within that position of strength.

[4] It should be noted that the analysis reported here actually revealed a number of core competences in social sciences and humanities research. However, the majority of these were excluded because they were based on less than 10 publications or patents by Danish firms over the past decade.

This report is intended to support the identification of Danish strengths in research and industry – and the development of a national innovation strategy to expand these strengths – in two ways:

- By pointing to international research areas where Danish firms have exhibited an overall strong performance over the past decade and which may therefore constitute or contribute to overall positions of strength in Danish research and industry.
- By providing access to rich empirical data on these research areas that can be analysed further as part of the development and implementation of the national innovation strategy.

The data collected in connection with this mapping provides several opportunities for further analysis of data, including for instance:

- Analyses of how Danish firms' involvement and performance in selected research areas have developed over time
- Analysis of the degree of collaboration between Danish firms
- Analysis of the Danish public sector institutions that the firms collaborate with and the extent to which they collaborate.
- Analysis of Danish firms' collaboration with international research institutions and companies.

Such analyses could provide important insight into the particular strengths and weaknesses of selected core competences in private sector R&D.

Finally, the results of the mapping of core competences in Danish private sector R&D should be considered in light of other recent or ongoing analyses, notably the aforementioned mappings of core competences in Danish public sector research and of key existing strengths in Danish industry.

2 Data and methods

This chapter briefly describes the method used in the identification of core competences in Danish private sector R&D, which was developed in dialogue with the Danish Agency for Science, Technology and Innovation.

2.1 Guiding principles

The following guiding principles were applied in the development of the methodology.

1. Core competences should be identified using a systematic, "bottom up"-approach.

National R&D competences are often identified through a "top down"-approach whereby experts in a range of fields are asked to identify key national research areas. This approach is dependent on the knowledge and objectivity of the selected experts.

To ensure a comprehensive and objective identification of core competences in Danish private sector R&D, we apply a "bottom up"-approach that systematically assesses the relative international impact of a broad range of research areas.

To allow for a systematic identification of core competences in Danish private sector R&D, we use data on all patents and scientific publications by Danish firms during the period 2000-2011, both years included.

2. Core competences are defined as research areas in which firms have an above-average impact on the international research front.

In other words, the mapping should identify research areas in which Danish firms make a significant difference in the international production of knowledge.

The analysis should capture both large research areas and smaller niche research areas in Danish industry. The defining aspect of a core competence is therefore not the absolute size of a given research area, but its *relative scientific impact* compared to international research.

Thus, the impact of Danish firms' research is compared to the impact of international public and private sector research in the same research areas.[5]

3. Core competences should be in established research areas, i.e. areas in which Danish industry has exhibited an above-average impact over a significant period of time.

The mapping will provide inputs to the development and implementation of a national innovation strategy aimed at exploiting and expanding existing national strengths in research and industry. A number of research areas will be selected and form the basis for dedicated efforts to boost innovation. To be effective, such efforts must build on established core competences, that is, on existing R&D activities, actors and achievements.

Core competences are therefore identified as research areas in which Danish firms have had an above-average impact on the international front when examined *over the last decade*. In other words, for a private sector research area to constitute a core competence, its average impact must have been higher than the average impact of international (public and private sector) research in the same research area when calculated over the entire period of study, i.e. from 2000 to 2011.

[5] By comparing like with like, this approach takes into consideration differences in scientific impact across research fields.

2.2 Data

Core competences are identified through a systematic analysis of publications and patents by Danish firms during the period 2000 to 2011 (both years included).

By patents, we actually refer to *patent applications* (and not necessarily granted patents), although we use the terms "patent" and "patent application" interchangeably in this report. Patent applications are often used as indicators for firms' R&D activities, because they are used to protect novel inventions and discoveries by firms. Patents may be based on firms' in-house research or on research undertaken in collaboration with other firms and/or public institutions.

By publications, we refer to *publications in leading international peer-reviewed scientific journals*. Scientific publications are more commonly used as indicators for R&D activities by academic researchers. Increasingly, they are also used as proxies for firms' research activities, including in-house and collaborative research.

Firms publish articles for a number of reasons, including for instance to signal their R&D activities, to prevent patenting ("defensive publishing"), to provide incentives for the researchers that they have employed, and because publishing is often (though not always) an outcome of R&D collaboration with public scientists.

Collection of patent data

- A list of approximately 3,095 Danish firms that could potentially have applied for patents was generated using desk research.
- A search for patent applications assigned to Danish firms was conducted based on individual patent searches for each of the 3,095 firms.
- Subsequently, data on citations to all the patent applications identified was gathered.
- A total of 13,696 patent applications assigned to 803 Danish firms were identified.

Source of data:

The list of 3,095 Danish firms that could potentially have applied for a patent was established based on the following inputs:

- *List of firms participating in Danish and EU research and innovation programs (from DAMVAD's proprietary Collaboration Database)*
- *List of firms that have co-authored publications with key Danish universities over the past decade (from DAMVAD's proprietary Research Database)*
- *Lists of firms that have engaged in research collaboration with selected authorized technological services institutes (GTS), provided by DASTI*
- *Lists of firms involved in Danish innovation networks, provided by DASTI..*

Patents were gathered from Thomson Reuters' Derwent World Patents Index. Citation data was gathered from the EPO-OECD patent citation database (June 2010 version).

Collection of publication data

- Publications that were authored or co-authored by employees from Danish firms were identified through a search for publications with author affiliations with a Danish company form and address. Supplementary searches were undertaken for each of the firms thus identified (including for different variations of the company name).
- A total of 15,157 publications were identified for 650 firms.

Source of data: *Publications were gathered from Thomson Reuters' Web of Science database.*

2.3 Approach

Core competences in Danish private sector R&D are defined as areas in which publications or patents by Danish firms have an above-average impact compared to publications or patents, respectively, in the same research area from other countries.

Impact refers to the scientific impact of a publication or patent, as indicated by the number of times that it is cited by other publications or patents, respectively.[6]

Publications and patents are categorised under specific **research areas.** In total, 278 patent based research areas and 208 publication based research areas were examined in the study.

[6] The analysis of impact is corrected for self-citations.

Moreover, it is important to note that citation mechanisms differ for publications and patents. In publications, citations are made by the authors of publications and refer to the previous work that their research builds on; citations may also be used to position a publication against the existing scientific literature. Such citations can be influenced by a number of factors, including for instance researchers' social networks and thereby their frames of reference. In patents, however, citations to prior patents are typically assigned by an external examiner in a patent office; these citations are intended to indicate relevant prior art and primarily influenced by the examiners and their expert knowledge of the research area and topic of the patent.

In spite of these differences, for both publications and patents, citations can be used an indicator for the extent to which publications and patents are referenced and built upon in subsequent work and therefore provide a proxy for their impact on the international research front.

Finally, the assessment of the impact of company patents only includes patents filed with the European Patent Office (EPO) and the World Intellectual Property Organization (WIPO). The study thus excludes e.g. U.S. patents. This approach is gennerally accepted as the standard procedure for this type of patent analysis in the academic litterature because of inconsistencies in patent examiners' procedures for assigning patent citations within the different patenting systems.

Research areas were identified:

- For publications, based on Thomson Reuters' Web of Science subject areas, which are assigned to scientific journals (and thus, by extension) to scientific publications.
- For patents, based on International Patent Classification (IPC) codes, which are used for the classification of patents according to the areas of technology to which they pertain.

Identification of core competences: A research area was identified as a core competence

- If the research area is based on at least 10 publications or 1 patent by Danish firms during the period of study (i.e. from 2000 to 2011, both years included).[7]
- If the impact of publications or patents in the research area by Danish firms was, on average over the past decade, higher than the average impact of international research. For publications, this refers to research conducted within the OECD countries; for patents, international research refers to patents applied for worldwide.[8]

For more information, please see:

- Appendix 1 for the full list of 102 core competences in Danish private sector research
- Appendix 2 for the full list of research areas examined in the study
- Appendix 3 for a list of all companies that contribute to core competences
- Appendix 4 for a list of companies by industry sector.

[7] The minimum number of publications and patents that could constitute a core competence was set low (i.e. at 10) for two reasons: (1) to allow for the identification of niche research areas, which may be small in volume but still make a significant contribution to international research, and (2) in consideration of the fact that some research areas generate fewer publications or patents than others and might therefore be disadvantaged in this analysis. E.g. the social sciences generate far fewer publications per researcher than e.g. the natural sciences.

[8] Please note that Danish firms' publications were compared to publications from other OECD countries to ensure the relevance of the data used in the comparison. The impact of Danish patents was assessed against patents from all countries.

3 Overview of findings

3.1 All patents by Danish industry

The data collection revealed a total of 13,696 patent applications assigned to a total of 803 Danish firms during the period 2000 to 2011 (both years included).

Table 3.1. Main results from patent search

	Results
No. of firms included in the search	3,095
No. (percentage) of these firms that had filed patent applications	803 (26%)
Total no. of patent applications	13,969
Ave. no. of patent applications by firm	22
Min. no. of patent applications by firm	1
Max. no. of patent applications by firm	2,144

Source: DAMVAD 2012.

Figure 3.1 shows the development in the number of patents applications by year of application. Please note that only a part of the patent applications filed in 2010 and 2011 were available at the time of data collection in spring 2012.

This is due to the time lag that is enforced by the patent filing procedure. A patent application is normally kept secret (and therefore does not appear in patent searches) for the first 18 months after filing, to allow for the patent examiners' initial review of the novelty of the patent and for possible infringement in the patent.

Table 3.2 lists the distribution of firms with patent applications, categorised by the number of patents that they filed for.

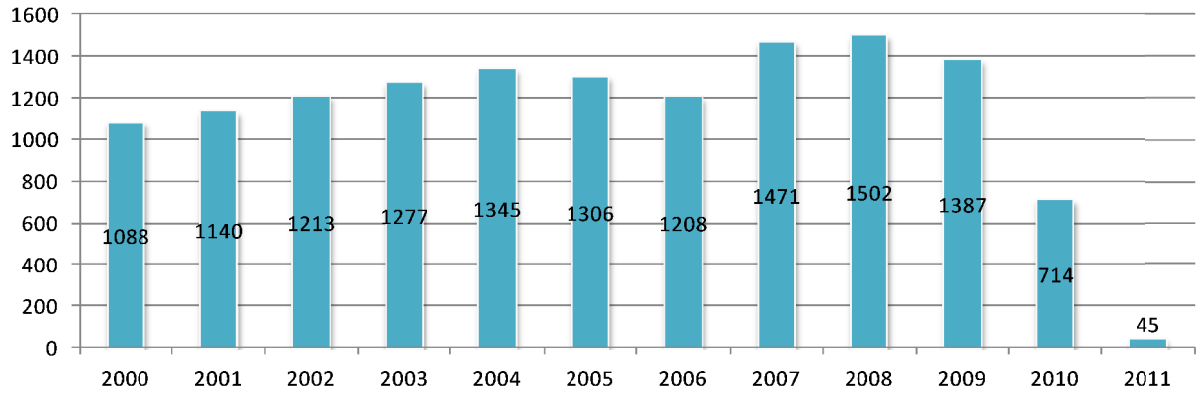
It shows that 7% of firms have filed 72% of the patent applications assigned to Danish firms during the period of study.

Table 3.2. Firms, by number of patents

	No. of firms	Share of firms	No. of patents	Share of patents
1-5 patents	537	67%	1,080	8%
5-10 patents	103	13%	650	5%
10-50 patents	112	14%	2,229	16%
50-500 patents	45	6%	5,702	42%
> 500 patents	6	1%	4,035	30%
Total	**803**	**100%**	**13,696**	**100%**

Source: DAMVAD 2012.

Figure 3.1. Number of patent applications by Danish firms, by year (2000-2011)



Source: DAMVAD 2012.

3.2 All publications by Danish industry

The data collection revealed a total of 15,157 scientific publications authored or co-authored by a total of 650 Danish firms during the period 2000 to 2011 (both years included).

Table 3.3. Main results from publication search

	Results
No. of firms with publications	650
Total no. of publications	15,567
Ave. no. of publications by firm	31
Min. no. of publications by firm	1
Max. no. of publications by firm	3,188

Source: DAMVAD 2012.

Figure 3.2 shows the development in the number of publications by year of publication.

Table 3.4 lists the distribution of firms with publications, categorised by the number of publications that they have authored or co-authored.

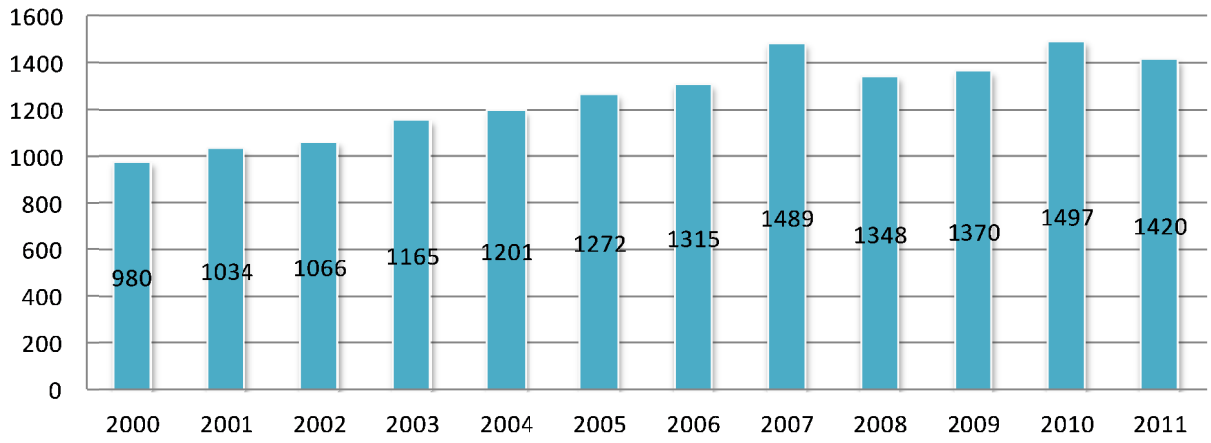
It shows that 7% of firms have authored or co-authored 76% of the publications by Danish firms during the period of study.

Table 3.4. Firms, by number of publications

	No. of firms	Share of firms	No. of pubs.	Share of pubs.
1-5 publications	406	62%	772	5%
5-10 publications	69	11%	421	3%
10-50 publications	131	20%	2,398	16%
50-500 publications	38	6%	5,135	34%
> 500 publications	6	1%	6,431	42%
Total	**650**	**100%**	**15,157**	**100%**

Source: DAMVAD 2012.

Figure 3.2. Number of publications by Danish firms, by year (2000-2011)



Source: DAMVAD 2012.

3.3 Contributing firms

As indicated by table 3.5, 486 (75 percent) of the Danish firms that have published scientific articles during the past decade have also contributed to one or more of the core competences identified using publication data. The table also shows that 416 (52 percent) of the firms that have filed for patents during the same period have contributed to one or more of the core competences identified using patent data.

Table 3.5. Firms that have published and/or patented

	Results
No. of firms with publications	650
No. of firms with publications that have contributed to core competences	**486**
No. of firms with patents	803
No. of firms with patents that have contributed to core competences	**416**

Source: DAMVAD 2012.

The analysis also indicates that patents and publications are complementary sources of insight into core competences in private sector R&D. In total, 678 unique firms that could be linked to a company registration (i.e. CVR) number have contributed to the core competences (cf. table 3.6)[9]. Just 128 of these firms (19 percent) have contributed to both publication and patent based core competences.

Table 3.6. Firms that could be linked to a company registration number and which have contributed to core competences, by source of contribution

Category	No. of firms
Firms that have contributed to both publication- and patent based core competences	128 (19%)
Firms that have contributed to publication based core competences only	254 (37%)
Firms that have contributed to patent based core competences only	296 (43%)
Total number of firms	**678 (100%)**

Source: DAMVAD 2012.

Meanwhile, 254 (37 percent) have contributed to publication based core competences alone, while 296 (43 percent) have contributed to patent based core competences alone.

Finally, the analysis indicates that large firms make a disproportionately large contribution to core competences in private sector R&D in Denmark. Table 3.7 lists some examples.

On the one hand, this may reflect the important contribution of such large, research-intensive firms to research and innovation. On the other hand, as described in section 1.5, the method used in the identification of core competences is also likely to be biased toward larger firms with more resources to invest in patenting and scientific publishing.

[9] The difference in the number of firms listed in tables 3.5 and 3.6 is caused by the fact that not all firms contributing to patents or publications could be linked to a company registration (CVR) number. As a result, a number of firms (e.g. firms involved in mergers or acquisitions or that have been closed down at some point in time during the period from 2000 to 2012) are not included in the analysis behind table 3.6.

Table 3.7. Top ten firms by number of core competences that the firms contribute to

	No. of core competences
Novo Nordisk	64
Danfoss	31
Danisco	27
Lundbeck	27
Grundfos Biobooster	22
Novozymes	21
Chr. Hansen	19
Neurosearch	18
Carlsberg	17
Coloplast	16
NKT Research	16
Haldor Topsøe	15
Nycomed	15
VIKING Life-Saving Equipment	15
ALK-Abelló	14

Source: DAMVAD 2012.

For a full list of the companies that contribute to core competences, please see Appendix 3.

3.4 Core competences

In total, Danish industry has had an above-average impact compared to other countries in 102 (24 percent) of the 430 research areas examined using publication and patent data from the past decade.

56 of the 102 core competences have been identified based on publication data; the remaining 46 were identified using patent data.

Table 3.8. Distribution of core competences across research areas based on publications and patents

	Results
No. of publication based research areas examined	208
No. of publication based core competences identified	**56 (27%)**
No. of patent based research areas examined	278
No. of patent based core competences identified	**46 (17%)**
Total no. of research areas examined	430
Total no. of core competences identified	**102 (24%)**

Source: DAMVAD 2012.

Table 3.10 on the next two pages presents an overview of the 102 core competences, aggregated under ten overall research fields. The distribution of core competences across research fields is summarised in table 3.9 below.

Table 3.9. Number of core competences by research field

Research field	No. of patent based core competences	No. of publication based core competences
Chemistry	6	1
Materials chemistry	6	4
Biotechnology	3	7
Pharmaceuticals	2	3
General medicine	0	19
Food science & technology	2	6
Enviromental technology)	2	5
Instruments	2	4
Civil & mechanical engineering	13	5
Information technology	10	2

Source: DAMVAD 2012.

Table 3.10. All 102 core competences in Danish private sector R&D, organized by research field

Research field	Patent based core competences	Publication based core competences
Chemistry	Organic fine chemistry Chemical engineering Macromolecular chemistry, polymers Macromolecular chemistry, polymers / Organic fine chemistry Macromolecular chemistry, polymers / Other special machines Macromolecular chemistry, polymers / Surface technology, coating	Chemistry / Engineering
Materials chemistry	Materials, metallurgy Materials, metallurgy / Surface technology, coating Surface technology, coating Basic materials chemistry Basic materials chemistry / Macromolecular chemistry, polymers Basic materials chemistry / Organic fine chemistry	Physics / Science & Technology - Other Topics / Materials Science Chemistry / Science & Technology - Other Topics / Materials Science Materials Science / Metallurgy & Metallurgical Engineering Electrochemistry / Materials Science
Biotechnology	Biotechnology Biotechnology / Basic materials chemistry Biotechnology / Food chemistry	Biochemistry Molecular Biology / Life Sciences & Biomedicine - Other Topics / Cell Biology Mycology Cell Biology / Oncology Biochemistry Molecular Biology / Biophysics Virology Biotechnology applied microbiology / Microbiology Biophysics
Pharmaceuticals	Pharmaceuticals Organic fine chemistry / Pharmaceuticals	Pharmacology & Pharmacy / Psychiatry Neurosciences & Neurology / Pharmacology & Pharmacy Neurosciences & Neurology / Physiology
General medicine	-	Integrative & Complementary Medicine Respiratory System Endocrinology & Metabolism / Physiology Allergy Cardiovascular System & Cardiology / Neurosciences & Neurology Immunology / Infectious Diseases Genetics & Heredity / Research & Experimental Medicine Geriatrics & Gerontology / Neurosciences & Neurology Reproductive Biology Otorhinolaryngology Nursing Behavioral Sciences Surgery / Transplantation General & Internal Medicine / Research & Experimental Medicine Transplantation Anesthesiology Rehabilitation Orthopedics / Rheumatology Medical Laboratory Technology

Table 3.10. All 102 core competences in Danish private sector R&D, organized by research field *(continued)*

Research field	Core Competences (patents)	Core Competences (publications)
Food science & technology	Food chemistry Food chemistry / Pharmaceuticals	Health Care Sciences & Services / Public, Environmental & Occupational Health Veterinary Sciences / Zoology Nutrition & Dietetics / Food Science & Technology Biotechnology applied microbiology / Food Science & Technology Food Science & Technology / Microbiology Endocrinology & Metabolism / Nutrition & Dietetics
Enviromental technology)	Chemical engineering / Environmental technology Environmental technology	Fisheries Engineering / Environmental Sciences & Ecology / Water Resources Zoology Entomology Agriculture
Instruments	Medical technology Optics	Physics / Science & Technology - Other Topics / Optics Microscopy Engineering / Optics Optics / Physics
Civil & mechanical engineering	Civil engineering Engines, pumps, turbines Engines, pumps, turbines / Mechanical elements Handling Machine tools Mechanical elements Other special machines Other special machines / Surface technology, coating Thermal processes and apparatus Transport Electrical machinery, apparatus, energy / Mechanical elements Electrical machinery, apparatus, energy Electrical machinery, apparatus, energy / Semiconductors	Engineering / Instruments & Instrumentation Engineering / Geology Mineralogy Physical Geography Energy & Fuels / Engineering
Information technology	Audio-visual technology Audio-visual technology / Computer technology Audio-visual technology / Electrical machinery, apparatus, energy Audio-visual technology / Semiconductors Computer technology Computer technology / Control Computer technology / IT methods for management Digital communication Digital communication / Telecommunications Computer technology / Medical technology	Medical Informatics Mathematical & computational Biology

4 Core competences by industry sector

This chapter lists the 102 core competences by industry sector.

Core competences are assigned to sectors based on the sector-afiliation of the firms that contribute to them. Thus, core competences can be listed under multiple sectors.

For a list of all the industry sectors included in this chapter, please see table 4.1 on the next page. Also, for a list of the companies that contribute to core competences, organised by industry sector, please see Appendix 4.

For each sector, this chapter presents:

- ***A graph of the top 10 core competences that firms in the sector contribute to.*** The top 10 competences were identified as the competences where Danish industry contributes most to overall Danish research (i.e. based on the share of Danish patents/publications in the research area that have been produced by a Danish company).

- ***A table listing all core competences that firms in the sector contribute to.*** The table contains the following information:

Variable	Description
ID No.	Core competence identification number. The prefixes “Pat” and “Pub” indicate whether a core competence is derived from patent or publication data, respectively
Core competence	The research area in which Danish industry has a core competence. A research area is identified as a core competence if it has a relative impact over the value of 1 and is based on at least 10 publications or patents
Share	Share of Danish patents/ publications in the research area that were produced by firms
Impact	Relative international impact of the patents/publications produced by Danish firms
Volume	Number of patents/publications in the research area that were produced by firms

Table 4.1. List of all industry sectors included in the chapter

Sectors included in the chapter	Description of the sector in Danish*
Agriculture, forestry and fishery	Landbrug, skovbrug og fiskeri
Natural ressource extraction	Råstofindvinding
Food, drink and tobacco	Føde-, drikke- og tobaksvareindustri
Textiles and leather	Tekstil- og læderindustri
Wood, paper and printing	Træ- og papirindustri, trykkerier
Chemicals	Kemisk industri
Pharmaceuticals	Medicinalindustri
Plastics, gas and concrete	Plast-, glas- og betonindustri
Metals	Metalindustri
Electronics	Elektronikindustri
Manufacturing of electrical equipment	Fremstilling af elektrisk udstyr
Mechanical engineering	Maskinindustri
Transport and transportation equipment	Transport- og transportmiddelindustri
Other manufacturing	Møbel og anden industri mv.
Energy	Energiforsyning
Water and waste	Vandforsyning og renovation
Construction	Bygge og anlæg
Publishing, TV and radio	Forlag, tv og radio
IT and information services	It- og informationstjenester
Consultancy and advisory services	Rådgivning mv.
Research and development	Forskning og udvikling
Other business services	Reklame og øvrig erhvervsservice
Healthcare	Sundhedsvæsen
Other services	Andre serviceydelser mv.

Source: DAMVAD 2012.

* These descriptions are based on *Dansk Branchekode 2007 (DB07) 36 Std.*.

A reader's guide

Example based on the agriculture, forestry and fishing sector

Firms in the agriculture, forestry and fishing sector contribute to 10 core competences in Danish private sector R&D.

These core competences are listed in the table presented in this chapter. Core competences are ranked by the share of publications or patents in this field that the private sector contributes to. In other words, the core competences, where Danish firms in general (not in this particular sector) make the greatest contribution are listed at the top. This is important information, because it indicates whether industry plays a *significant* role in the research areas in which it holds core competences.

For example, firms in this sector have contributed to the patent based core competence "Pat 40: Biotechnology".

- "Share" is 0.70, indicating that all Danish firms active in the research area have generated 70% of all Danish patents within the research area. The remaining 30% of all Danish patents applied for during the period of investigation had no assignees from Danish firms; these remaining patents have therefore been applied for by other organizations, notably Danish public research organizations.
- "Impact" is 1,04, indicating that patents by Danish firms receive, on average4% more citations than the average international patent in this research area.
- "Volume" indicates that the core competence is based on a total of 764 patents applied for by Danish firms.

For information on which other sectors have contributed to this core competence, and to what extent they have done so, please look up "Pat 1" in Chapter 5 of this report. For information on which firms have contributed to this core competence, please look up "Pat 1" in Appendix 3.

The top ten core competences that the sector contributes to (in this case, *all* the core competences that it contributes to) are identified in the figure presented in this chapter.

- The x-axis indicates the total contribution to this research area in Denmark by Danish firms that are active in the agriculture, forestry and fishing sector (i.e. how large a proportion of all patents in the field that have been generated by Danish firms in the agriculture, forestry and fishing sector).
- The y-axis indicates the relative international impact of Danish firms' patents in the field.

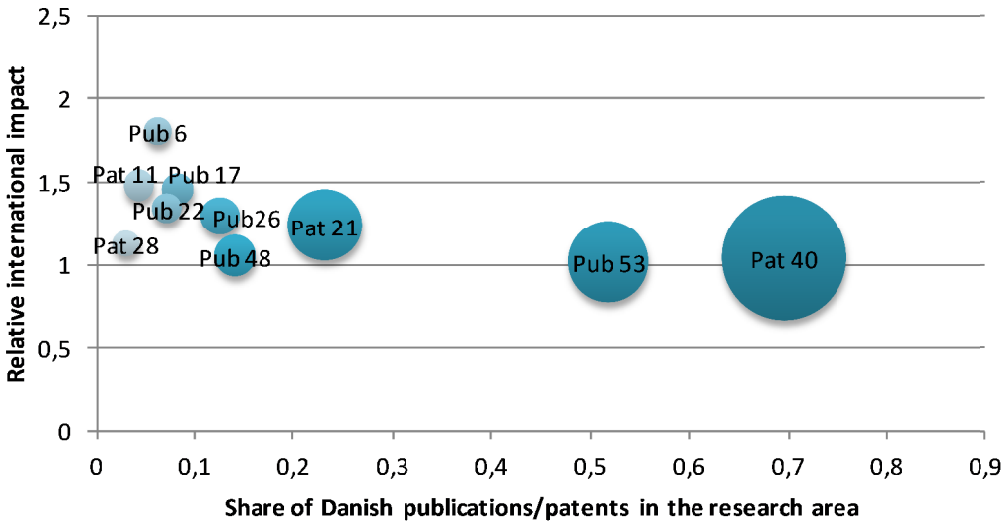
4.1 Agriculture, forestry and fishing

Table 4.2. All core competences that firms in the agriculture, foretry and fishing sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.70	1.04	764
Pub 53	Agriculture	0.52	1.02	315
Pat 21	Biotechnology / Food chemistry	0.23	1.24	254
Pub 48	Zoology	0.14	1.05	85
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.13	1.29	76
Pub 17	Mycology	0.08	1.46	50
Pub 22	Fisheries	0.07	1.34	44
Pub 6	Veterinary Sciences; Zoology;	0.06	1.81	38
Pat 11	Other special machines	0.04	1.48	47
Pat 28	Basic materials chemistry	0.03	1.13	33

Source: DAMVAD 2012

Figure 4.1. Top ten core competences that firms in the agriculture, foretry and fishing sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

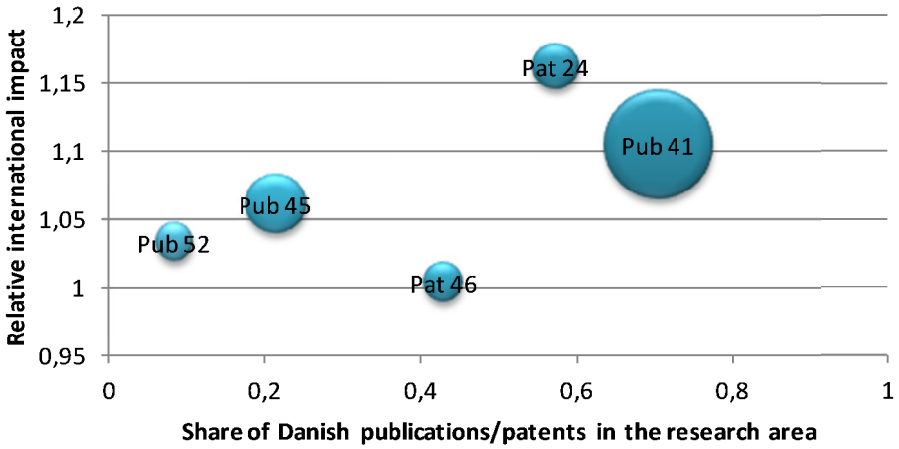
4.2 Natural resource extraction

Table 4.3. All core competences that firms in the natural resource extraction sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 41	Energy & Fuels; Engineering;	0.70	1.10	205
Pat 24	Civil engineering	0.57	1.16	36
Pat 46	Mechanical elements	0.43	1.00	27
Pub 45	Engineering; Geology;	0.21	1.06	62
Pub 52	Mineralogy	0.08	1.03	24

Source: DAMVAD 2012

Figure 4.2. Top ten core competences that firms in the natural resource extraction sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.3 Food, drink and tobacco

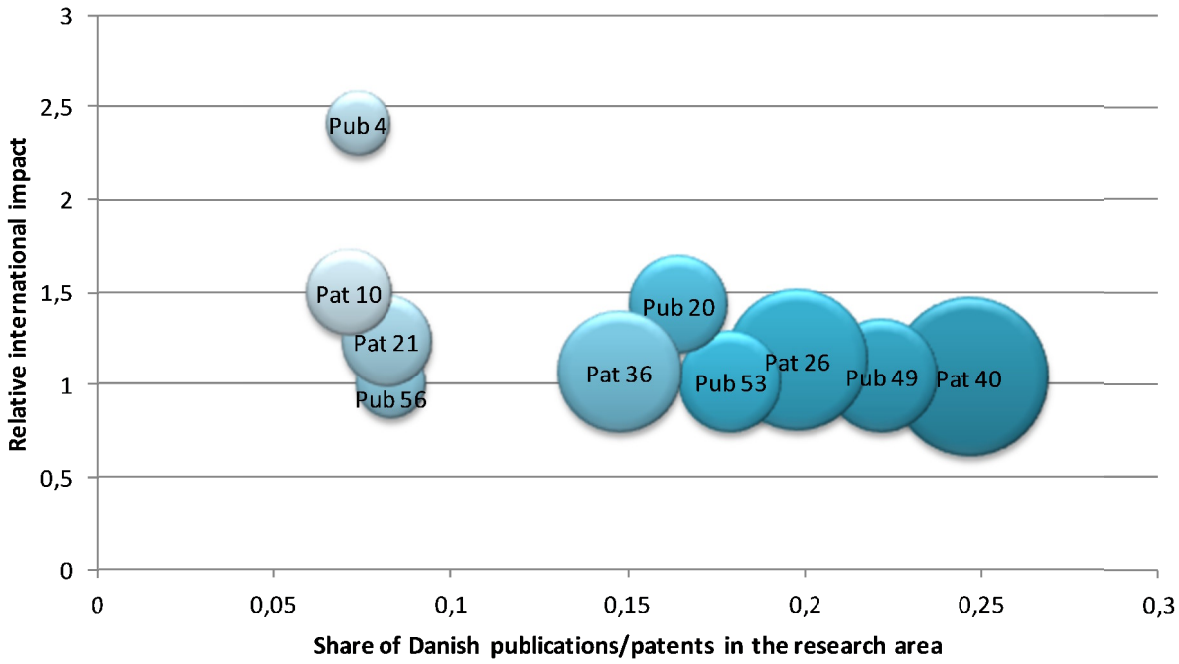
Table 4.4. All core competences that firms in the food, drink and tobacco sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volumne
Pat 40	Biotechnology	0.25	1.04	764
Pub 49	Biophysics	0.22	1.05	390
Pat 26	Organic fine chemistry / Pharmaceuticals	0.20	1.13	614
Pub 53	Agriculture	0.18	1.02	315
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.16	1.43	289
Pat 36	Pharmaceuticals	0.15	1.07	458
Pub 56	Biotechnology applied microbiology; Microbiology;	0.08	1.00	146
Pat 21	Biotechnology / Food chemistry	0.08	1.24	254
Pub 4	Chemistry; Engineering;	0.07	2.41	130
Pat 10	Biotechnology / Basic materials chemistry	0.07	1.50	221
Pat 22	Medical technology	0.07	1.21	209
Pat 9	Food chemistry	0.06	1.53	179
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.04	1.29	76
Pub 10	Orthopedics; Rheumatology;	0.04	1.69	73
Pub 17	Mycology	0.03	1.46	50
Pat 29	Engines. pumps. turbines	0.03	1.12	78
Pub 22	Fisheries	0.03	1.34	44
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.02	1.18	42
Pub 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0.02	4.91	40
Pub 16	Physics; Science & Technology - Other Topics; Materials Science	0.02	1.48	39
Pub 35	Biotechnology applied microbiology; Food Science & Technology;	0.02	1.16	32
Pub 14	Physics; Science & Technology - Other Topics; Optics	0.02	1.49	30
Pat 11	Other special machines	0.02	1.48	47
Pub 24	Nutrition & Dietetics; Food Science & Technology;	0.01	1.30	26
Pat 23	Macromolecular chemistry. polymers	0.01	1.17	44
Pub 46	Food Science & Technology; Microbiology;	0.01	1.05	23
Pat 17	Engines. pumps. turbines / Mechanical elements	0.01	1.38	38
Pat 19	Thermal processes and apparatus	0.01	1.26	37
Pat 28	Basic materials chemistry	0.01	1.13	33
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Pat 46	Mechanical elements	0.01	1.00	27
Pub 13	Integrative & Complementary Medicine	0.01	1.51	15
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24
Pat 41	Basic materials chemistry / Macromolecular chemistry. polymers	0.01	1.04	17

ID no.	Core competence	Share	Impact	Volumne
Pat 6	Macromolecular chemistry. polymers / Organic fine chemistry	0.01	1.69	16
Pat 43	Food chemistry / Pharmaceuticals	0.00	1.03	12

Source: DAMVAD 2012

Figure 4.3. Top ten core competences that firms in the food, drink and tobacco sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

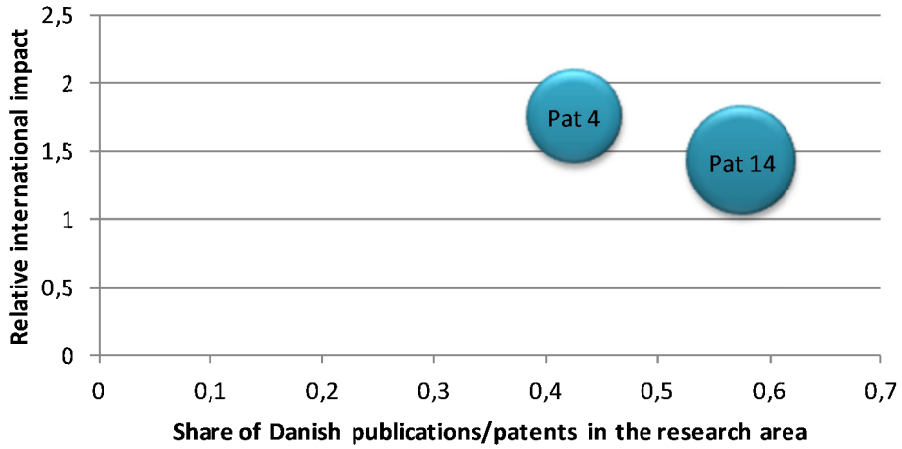
4.4 Textiles and leather

Table 4.5. All core competences that firms in the textiles and leather sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competences	Share	Impact	Volume
Pat 14	Other special machines / Surface technology, coating	0.58	1.43	23
Pat 4	Transport	0.43	1.75	17

Source: DAMVAD 2012

Figure 4.4. Top ten core competences that firms in the textiles and leather sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

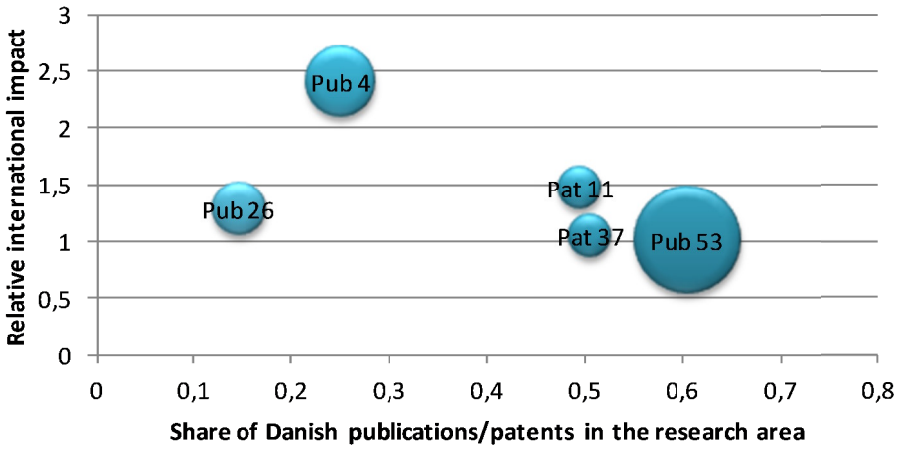
4.5 Wood, paper and printing

Table 4.6. All core competences that firms in the wood, paper and printing sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 53	Agriculture	0.60	1.02	315
Pat 37	Electrical machinery. apparatus. energy	0.51	1.06	48
Pat 11	Other special machines	0.49	1.48	47
Pub 4	Chemistry; Engineering;	0.25	2.41	130
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.15	1.29	76

Source: DAMVAD 2012

Figure 4.5. Top ten core competences that firms in the wood, paper and printing sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.6 Chemicals

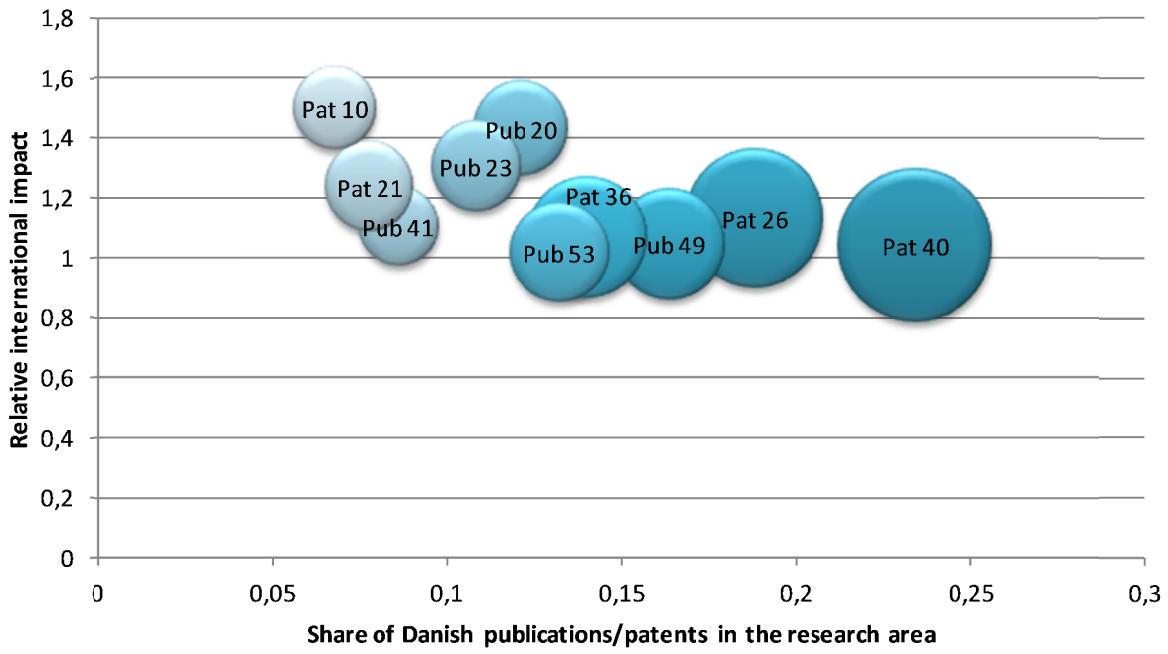
Table 4.7. All core competences that firms in the chemicals sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.23	1.04	764
Pat 26	Organic fine chemistry / Pharmaceuticals	0.19	1.13	614
Pub 49	Biophysics	0.16	1.05	390
Pat 36	Pharmaceuticals	0.14	1.07	458
Pub 53	Agriculture	0.13	1.02	315
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.12	1.43	289
Pub 23	Allergy	0.11	1.30	258
Pub 41	Energy & Fuels; Engineering;	0.09	1.10	205
Pat 21	Biotechnology / Food chemistry	0.08	1.24	254
Pat 10	Biotechnology / Basic materials chemistry	0.07	1.50	221
Pat 22	Medical technology	0.06	1.21	209
Pub 56	Biotechnology applied microbiology; Microbiology;	0.06	1.00	146
Pat 39	Organic fine chemistry	0.06	1.05	183
Pat 9	Food chemistry	0.05	1.53	179
Pub 4	Chemistry; Engineering;	0.05	2.41	130
Pub 30	Virology	0.04	1.19	106
Pub 48	Zoology	0.04	1.05	85
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.03	1.29	76
Pub 15	Respiratory System	0.03	1.49	62
Pub 17	Mycology	0.02	1.46	50
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.02	1.17	49
Pub 22	Fisheries	0.02	1.34	44
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.02	1.18	42
Pub 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0.02	4.91	40
Pat 11	Other special machines	0.01	1.48	47
Pat 23	Macromolecular chemistry. polymers	0.01	1.17	44
Pub 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pat 31	Chemical engineering	0.01	1.10	40
Pat 31	Chemical engineering	0.01	1.10	40
Pub 24	Nutrition & Dietetics; Food Science & Technology;	0.01	1.30	26
Pat 28	Basic materials chemistry	0.01	1.13	33
Pub 46	Food Science & Technology; Microbiology;	0.01	1.05	23
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24

ID no.	Core competence	Share	Impact	Volume
Pat 14	Other special machines / Surface technology. coating	0.01	1.43	23
Pat 34	Machine tools	0.01	1.07	22
Pub 50	Entomology	0.01	1.04	16
Pat 12	Handling	0.01	1.47	17
Pat 41	Basic materials chemistry / Macromolecular chemistry. polymers	0.01	1.04	17
Pat 6	Macromolecular chemistry. polymers / Organic fine chemistry	0.00	1.69	16
Pat 43	Food chemistry / Pharmaceuticals	0.00	1.03	12
Pat 44	Surface technology. coating	0.00	1.03	12
Pat 13	Macromolecular chemistry. polymers / Surface technology. coating	0.00	1.43	10

Source: DAMVAD 2012

Figure 4.6. Top ten core competences that firms in the chemicals sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.7 Pharmaceuticals

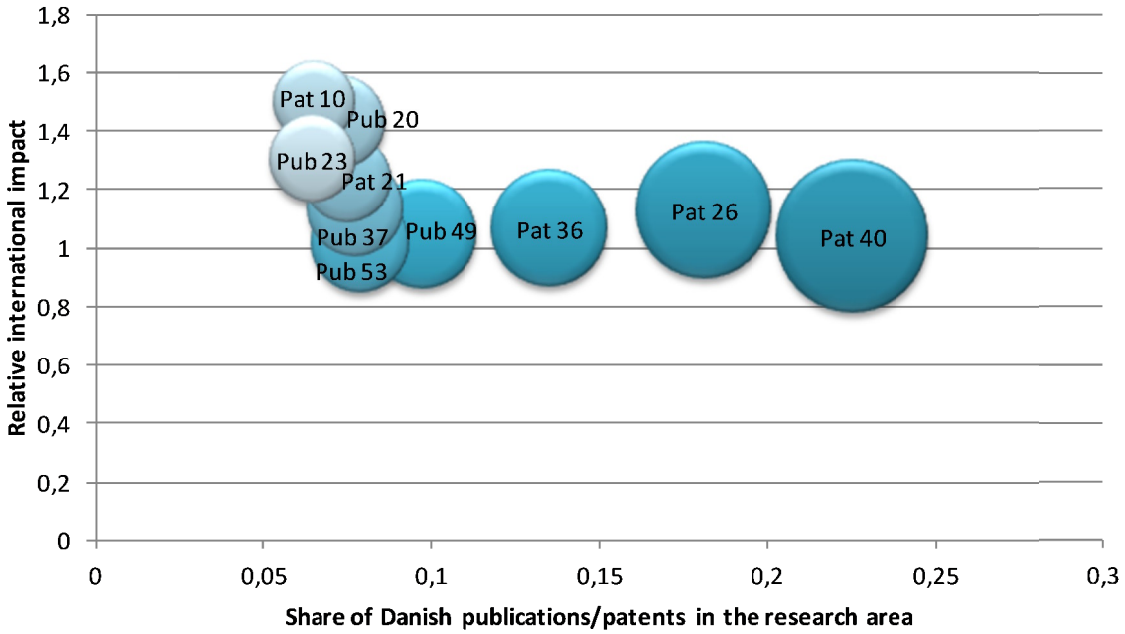
Table 4.8. All core competences that firms in the pharmaceutical sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.23	1.04	764
Pat 26	Organic fine chemistry / Pharmaceuticals	0.18	1.13	614
Pat 36	Pharmaceuticals	0.13	1.07	458
Pub 49	Biophysics	0.10	1.05	390
Pub 53	Agriculture	0.08	1.02	315
Pub 37	Neurosciences & Neurology; Pharmacology & Pharmacy;	0.08	1.14	310
Pat 21	Biotechnology / Food chemistry	0.07	1.24	254
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.07	1.43	289
Pat 10	Biotechnology / Basic materials chemistry	0.07	1.50	221
Pub 23	Allergy	0.06	1.30	258
Pat 22	Medical technology	0.06	1.21	209
Pub 25	Pharmacology & Pharmacy; Psychiatry;	0.06	1.30	242
Pat 39	Organic fine chemistry	0.05	1.05	183
Pat 9	Food chemistry	0.05	1.53	179
Pub 11	Medical Laboratory Technology	0.04	1.65	161
Pub 56	Biotechnology applied microbiology; Microbiology;	0.04	1.00	146
Pub 42	Reproductive Biology	0.04	1.10	145
Pub 4	Chemistry; Engineering;	0.03	2.41	130
Pub 55	Behavioral Sciences	0.03	1.01	116
Pub 30	Virology	0.03	1.19	106
Pub 48	Zoology	0.02	1.05	85
Pub 28	Optics; Physics;	0.02	1.23	81
Pub 39	Engineering; Instruments & Instrumentation;	0.02	1.11	79
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.02	1.29	76
Pub 10	Orthopedics; Rheumatology;	0.02	1.69	73
Pub 3	General & Internal Medicine; Research & Experimental Medicine;	0.02	3.20	67
Pub 15	Respiratory System	0.02	1.49	62
Pub 29	Neurosciences & Neurology; Physiology;	0.01	1.23	60
Pat 11	Other special machines	0.01	1.48	47
Pub 38	Geriatrics & Gerontology; Neurosciences & Neurology;	0.01	1.12	55
Pub 31	Immunology; Infectious Diseases;	0.01	1.19	53
Pat 23	Macromolecular chemistry. polymers	0.01	1.17	44
Pub 17	Mycology	0.01	1.46	50
Pub 21	Endocrinology & Metabolism; Physiology;	0.01	1.39	49

ID no.	Core competence	Share	Impact	Volume
Pub 8	Anesthesiology	0.01	1.70	48
Pat 31	Chemical engineering	0.01	1.10	40
Pat 31	Chemical engineering	0.01	1.10	40
Pat 33	Computer technology	0.01	1.08	39
Pub 51	Mathematical & computational Biology	0.01	1.04	45
Pat 17	Engines. pumps. turbines / Mechanical elements	0.01	1.38	38
Pub 43	Endocrinology & Metabolism; Nutrition & Dietetics;	0.01	1.09	44
Pub 33	Genetics & Heredity; Research & Experimental Medicine;	0.01	1.18	43
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.01	1.18	42
Pub 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0.01	4.91	40
Pub 12	Cardiovascular System & Cardiology; Neurosciences & Neurology;	0.01	1.62	40
Pat 28	Basic materials chemistry	0.01	1.13	33
Pub 6	Veterinary Sciences; Zoology;	0.01	1.81	38
Pub 7	Transplantation	0.01	1.70	36
Pat 5	Computer technology / Medical technology	0.01	1.70	29
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Pub 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pub 19	Microscopy	0.01	1.43	29
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24
Pub 24	Nutrition & Dietetics; Food Science & Technology;	0.01	1.30	26
Pat 34	Machine tools	0.01	1.07	22
Pub 47	Nursing	0.01	1.05	25
Pub 18	Cell Biology; Oncology;	0.01	1.44	23
Pub 36	Medical Informatics	0.01	1.15	23
Pub 46	Food Science & Technology; Microbiology;	0.01	1.05	23
Pat 4	Transport	0.01	1.75	17
Pat 12	Handling	0.01	1.47	17
Pat 6	Macromolecular chemistry. polymers / Organic fine chemistry	0.00	1.69	16
Pub 5	Health Care Sciences & Services; Public. Environmental & Occupational Health;	0.00	1.82	18
Pat 18	Audio-visual technology / Computer technology	0.00	1.28	14
Pub 2	Surgery; Transplantation;	0.00	3.95	16
Pat 27	Computer technology / IT methods for management	0.00	1.13	13
Pub 13	Integrative & Complementary Medicine	0.00	1.51	15
Pat 43	Food chemistry / Pharmaceuticals	0.00	1.03	12
Pat 44	Surface technology. coating	0.00	1.03	12
Pat 8	Computer technology / Control	0.00	1.55	11
Pat 13	Macromolecular chemistry. polymers / Surface technology. coating	0.00	1.43	10

Source: DAMVAD 2012

Figure 4.7. Top ten core competences that firms in the pharmaceutical sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.8 Plastics, gas and concrete

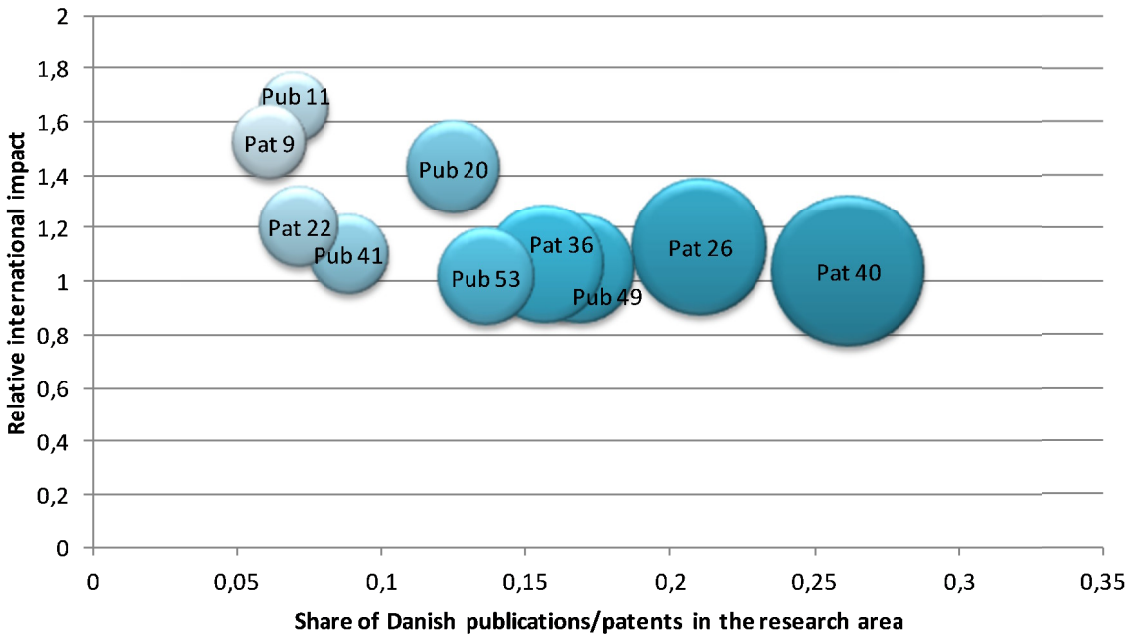
Table 4.9. All core competences that firms in the plastics, gas and concrete sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.26	1.04	764
Pat 26	Organic fine chemistry / Pharmaceuticals	0.21	1.13	614
Pub 49	Biophysics	0.17	1.05	390
Pat 36	Pharmaceuticals	0.16	1.07	458
Pub 53	Agriculture	0.14	1.02	315
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.13	1.43	289
Pub 41	Energy & Fuels; Engineering;	0.09	1.10	205
Pat 22	Medical technology	0.07	1.21	209
Pub 11	Medical Laboratory Technology	0.07	1.65	161
Pat 9	Food chemistry	0.06	1.53	179
Pub 4	Chemistry; Engineering;	0.06	2.41	130
Pub 27	Engineering; Optics;	0.05	1.24	112
Pub 28	Optics; Physics;	0.04	1.23	81
Pub 39	Engineering; Instruments & Instrumentation;	0.03	1.11	79
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.03	1.29	76
Pub 9	Rehabilitation	0.03	1.70	75
Pub 45	Engineering; Geology;	0.03	1.06	62
Pat 29	Engines. pumps. turbines	0.03	1.12	78
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.02	1.17	49
Pub 54	Physical Geography	0.02	1.02	47
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.02	1.18	42
Pub 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0.02	4.91	40
Pub 16	Physics; Science & Technology - Other Topics; Materials Science	0.02	1.48	39
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Pat 11	Other special machines	0.02	1.48	47
Pub 7	Transplantation	0.02	1.70	36
Pat 23	Macromolecular chemistry. polymers	0.02	1.17	44
Pat 32	Materials. metallurgy	0.01	1.09	42
Pat 33	Computer technology	0.01	1.08	39
Pub 14	Physics; Science & Technology - Other Topics; Optics	0.01	1.49	30
Pat 19	Thermal processes and apparatus	0.01	1.26	37
Pub 19	Microscopy	0.01	1.43	29
Pat 24	Civil engineering	0.01	1.16	36
Pat 28	Basic materials chemistry	0.01	1.13	33

ID no.	Core competence	Share	Impact	Volume
Pub 47	Nursing	0.01	1.05	25
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Pat 5	Computer technology / Medical technology	0.01	1.70	29
Pat 46	Mechanical elements	0.01	1.00	27
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24
Pat 14	Other special machines / Surface technology. coating	0.01	1.43	23
Pat 34	Machine tools	0.01	1.07	22
Pat 12	Handling	0.01	1.47	17
Pat 41	Basic materials chemistry / Macromolecular chemistry. polymers	0.01	1.04	17
Pat 6	Macromolecular chemistry. polymers / Organic fine chemistry	0.01	1.69	16
Pat 18	Audio-visual technology / Computer technology	0.00	1.28	14
Pat 27	Computer technology / IT methods for management	0.00	1.13	13
Pat 38	Audio-visual technology	0.00	1.05	13
Pat 44	Surface technology. coating	0.00	1.03	12
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.00	3.32	10
Pat 13	Macromolecular chemistry. polymers / Surface technology. coating	0.00	1.43	10

Source: DAMVAD 2012

Figure 4.8. Top ten core competences that firms in the plastics, gas and concrete sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

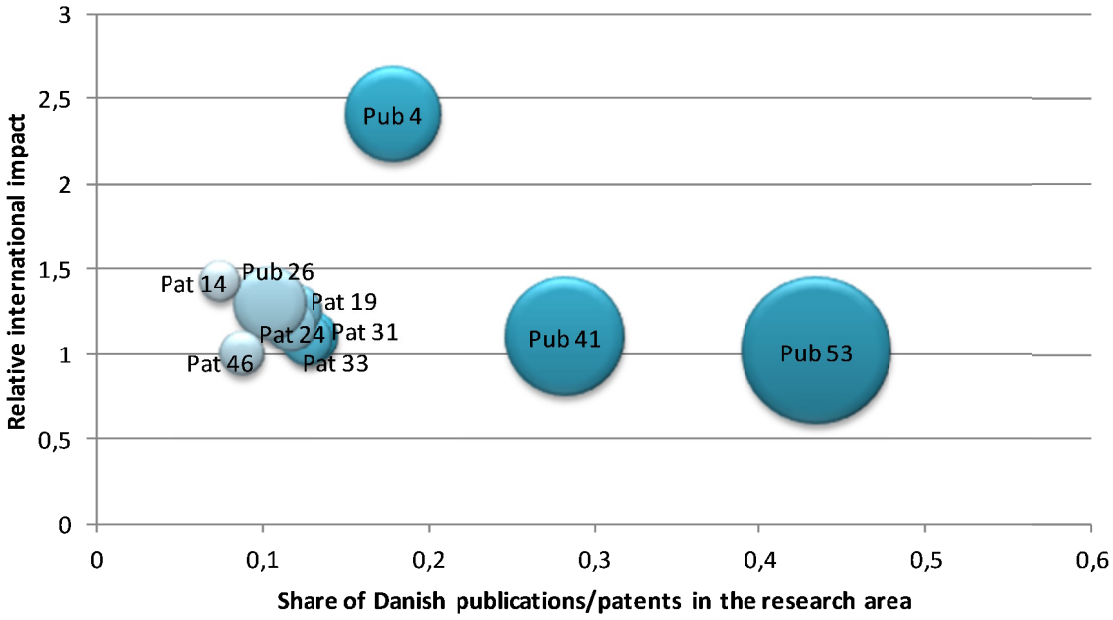
4.9 Metals

Table 4.10. All core competences that firms in the metals sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 53	Agriculture	0.43	1.02	315
Pub 41	Energy & Fuels; Engineering;	0.28	1.10	205
Pub 4	Chemistry; Engineering;	0.18	2.41	130
Pat 31	Chemical engineering	0.13	1.10	40
Pat 33	Computer technology	0.13	1.08	39
Pat 19	Thermal processes and apparatus	0.12	1.26	37
Pat 24	Civil engineering	0.12	1.16	36
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.10	1.29	76
Pat 46	Mechanical elements	0.09	1.00	27
Pat 14	Other special machines / Surface technology. coating	0.07	1.43	23
Pat 34	Machine tools	0.07	1.07	22
Pat 12	Handling	0.06	1.47	17
Pat 16	Environmental technology	0.05	1.40	15
Pat 44	Surface technology. coating	0.04	1.03	12
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.03	3.32	10
Pat 20	Chemical engineering / Environmental technology	0.03	1.24	10
Pat 20	Chemical engineering / Environmental technology	0.03	1.24	10

Source: DAMVAD 2012

Figure 4.9. Top ten core competences that firms in the metals sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.10 Electronics

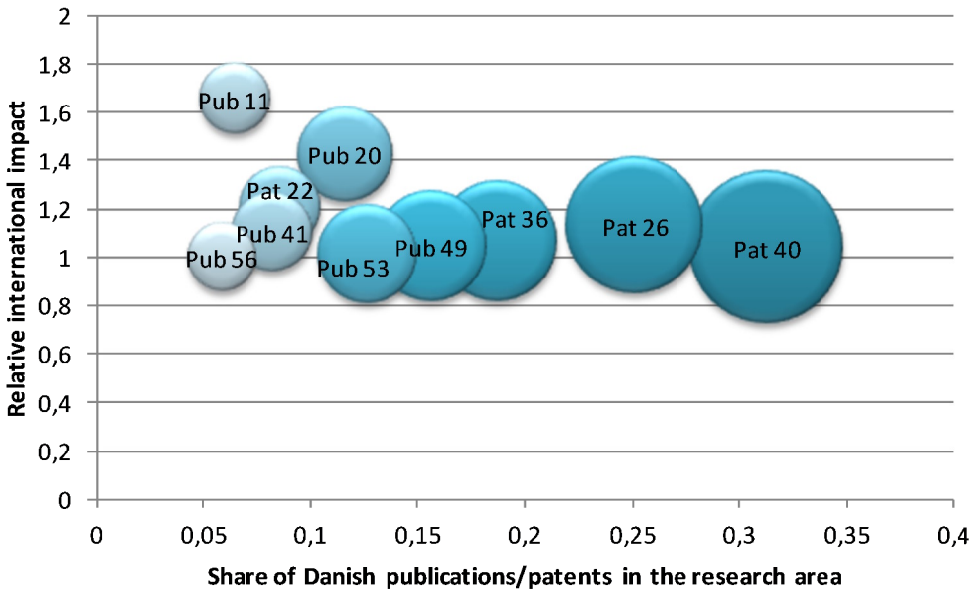
Table 4.11. All core competences that firms in the electronics sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.31	1.04	764
Pat 26	Organic fine chemistry / Pharmaceuticals	0.25	1.13	614
Pat 36	Pharmaceuticals	0.19	1.07	458
Publ 49	Biophysics	0.16	1.05	390
Publ 53	Agriculture	0.13	1.02	315
Publ 20	Biochemistry Molecular Biology; Biophysics;	0.12	1.43	289
Pat 22	Medical technology	0.09	1.21	209
Publ 41	Energy & Fuels; Engineering;	0.08	1.10	205
Publ 11	Medical Laboratory Technology	0.06	1.65	161
Publ 56	Biotechnology applied microbiology; Microbiology;	0.06	1.00	146
Publ 42	Reproductive Biology	0.06	1.10	145
Publ 27	Engineering; Optics;	0.04	1.24	112
Publ 48	Zoology	0.03	1.05	85
Publ 28	Optics; Physics;	0.03	1.23	81
Publ 39	Engineering; Instruments & Instrumentation;	0.03	1.11	79
Publ 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.03	1.29	76
Publ 9	Rehabilitation	0.03	1.70	75
Publ 44	Otorhinolaryngology	0.03	1.07	68
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Publ 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.02	1.17	49
Publ 8	Anesthesiology	0.02	1.70	48
Pat 11	Other special machines	0.02	1.48	47
Pat 23	Macromolecular chemistry. polymers	0.02	1.17	44
Publ 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.02	1.18	42
Pat 33	Computer technology	0.02	1.08	39
Pat 17	Engines. pumps. turbines / Mechanical elements	0.02	1.38	38
Pat 19	Thermal processes and apparatus	0.02	1.26	37
Pat 24	Civil engineering	0.01	1.16	36
Publ 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pat 5	Computer technology / Medical technology	0.01	1.70	29
Publ 19	Microscopy	0.01	1.43	29
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24
Publ 52	Mineralogy	0.01	1.03	24

ID no.	Core competence	Share	Impact	Volume
Publ 36	Medical Informatics	0.01	1.15	23
Publ 46	Food Science & Technology; Microbiology;	0.01	1.05	23
Pat 34	Machine tools	0.01	1.07	22
Pat 18	Audio-visual technology / Computer technology	0.01	1.28	14
Pat 38	Audio-visual technology	0.01	1.05	13
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.00	3.32	10

Source: DAMVAD 2012

Figure 4.10. Top ten core competences that firms in the electronics sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

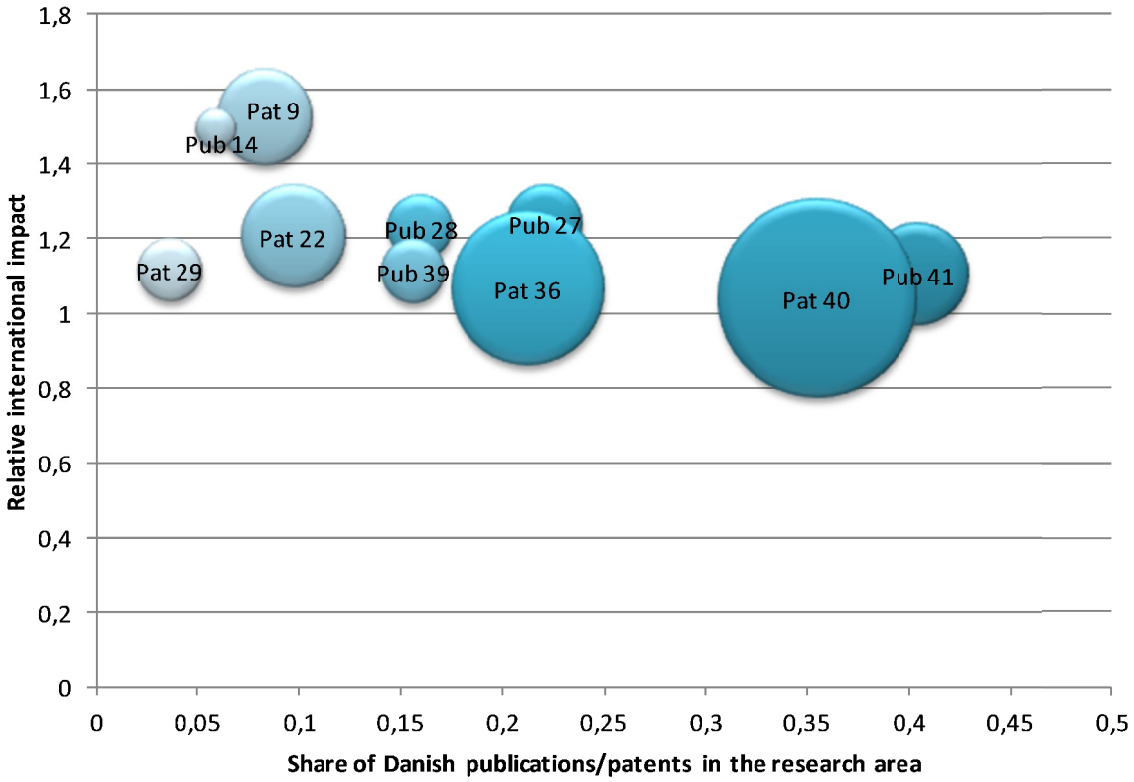
4.11 Manufacturing of electrical equipment

Table 4.12. All core competences that firms in the electrical equipment manufacturing sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 41	Energy & Fuels; Engineering;	0.40	1.10	205
Pat 40	Biotechnology	0.35	1.04	764
Pub 27	Engineering; Optics;	0.22	1.24	112
Pat 36	Pharmaceuticals	0.21	1.07	458
Pub 28	Optics; Physics;	0.16	1.23	81
Pub 39	Engineering; Instruments & Instrumentation;	0.16	1.11	79
Pat 22	Medical technology	0.10	1.21	209
Pat 9	Food chemistry	0.08	1.53	179
Pub 14	Physics; Science & Technology - Other Topics; Optics	0.06	1.49	30
Pat 29	Engines. pumps. turbines	0.04	1.12	78
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Pat 11	Other special machines	0.02	1.48	47
Pat 32	Materials. metallurgy	0.02	1.09	42
Pat 33	Computer technology	0.02	1.08	39
Pat 17	Engines. pumps. turbines / Mechanical elements	0.02	1.38	38
Pat 19	Thermal processes and apparatus	0.02	1.26	37
Pat 24	Civil engineering	0.02	1.16	36
Pat 42	Optics	0.02	1.03	34
Pat 46	Mechanical elements	0.01	1.00	27
Pat 4	Transport	0.01	1.75	17
Pat 16	Environmental technology	0.01	1.40	15
Pat 18	Audio-visual technology / Computer technology	0.01	1.28	14
Pat 27	Computer technology / IT methods for management	0.01	1.13	13
Pat 38	Audio-visual technology	0.01	1.05	13
Pat 8	Computer technology / Control	0.01	1.55	11
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.00	3.32	10

Source: DAMVAD 2012

Figure 4.11. Top ten core competences that firms in the electrical equipment manufacturing sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.12 Mechanical engineering

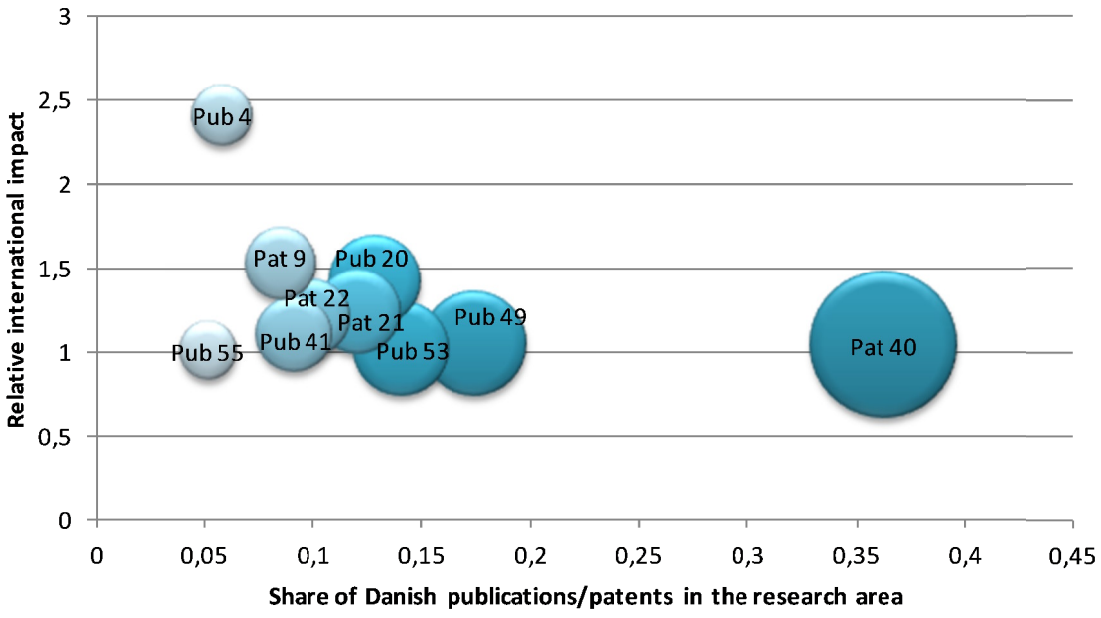
Table 4.13. All core competences that firms in the mechanical engineering sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.36	1.04	764
Publ 49	Biophysics	0.17	1.05	390
Publ 53	Agriculture	0.14	1.02	315
Publ 20	Biochemistry Molecular Biology; Biophysics;	0.13	1.43	289
Pat 21	Biotechnology / Food chemistry	0.12	1.24	254
Pat 22	Medical technology	0.10	1.21	209
Publ 41	Energy & Fuels; Engineering;	0.09	1.10	205
Pat 9	Food chemistry	0.08	1.53	179
Publ 4	Chemistry; Engineering;	0.06	2.41	130
Publ 55	Behavioral Sciences	0.05	1.01	116
Publ 27	Engineering; Optics;	0.05	1.24	112
Pat 29	Engines. pumps. turbines	0.04	1.12	78
Publ 28	Optics; Physics;	0.04	1.23	81
Publ 39	Engineering; Instruments & Instrumentation;	0.04	1.11	79
Publ 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.03	1.29	76
Publ 10	Orthopedics; Rheumatology;	0.03	1.69	73
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Pat 11	Other special machines	0.02	1.48	47
Publ 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.02	1.17	49
Publ 51	Mathematical & computational Biology	0.02	1.04	45
Pat 32	Materials. metallurgy	0.02	1.09	42
Publ 22	Fisheries	0.02	1.34	44
Publ 43	Endocrinology & Metabolism; Nutrition & Dietetics;	0.02	1.09	44
Pat 31	Chemical engineering	0.02	1.10	40
Pat 31	Chemical engineering	0.02	1.10	40
Publ 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.02	1.18	42
Pat 33	Computer technology	0.02	1.08	39
Pat 17	Engines. pumps. turbines / Mechanical elements	0.02	1.38	38
Publ 40	Electrochemistry; Materials Science;	0.02	1.11	40
Pat 19	Thermal processes and apparatus	0.02	1.26	37
Publ 16	Physics; Science & Technology - Other Topics; Materials Science	0.02	1.48	39
Pat 24	Civil engineering	0.02	1.16	36
Publ 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pat 5	Computer technology / Medical technology	0.01	1.70	29

ID no.	Core competence	Share	Impact	Volume
Publ 14	Physics; Science & Technology - Other Topics; Optics	0.01	1.49	30
Pat 46	Mechanical elements	0.01	1.00	27
Pat 14	Other special machines / Surface technology. coating	0.01	1.43	23
Pat 34	Machine tools	0.01	1.07	22
Pat 4	Transport	0.01	1.75	17
Pat 12	Handling	0.01	1.47	17
Publ 50	Entomology	0.01	1.04	16
Pat 16	Environmental technology	0.01	1.40	15
Pat 16	Environmental technology	0.01	1.40	15
Pat 18	Audio-visual technology / Computer technology	0.01	1.28	14
Pat 27	Computer technology / IT methods for management	0.01	1.13	13
Pat 44	Surface technology. coating	0.01	1.03	12
Pat 8	Computer technology / Control	0.01	1.55	11
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.00	3.32	10
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10

Source: DAMVAD 2012

Figure 4.12. Top ten core competences that firms in the mechanical engineering sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

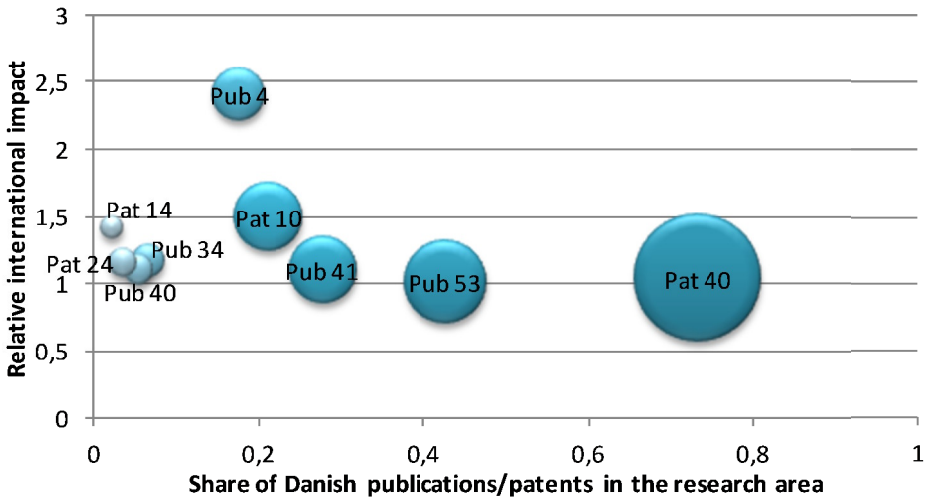
4.13 Transport and transportation equipment

Table 4.14. All core competences that firms in the transport and transportation equipment sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.73	1.04	764
Pub 53	Agriculture	0.43	1.02	315
Pub 41	Energy & Fuels; Engineering;	0.28	1.10	205
Pat 10	Biotechnology / Basic materials chemistry	0.21	1.50	221
Pub 4	Chemistry; Engineering;	0.18	2.41	130
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.07	1.17	49
Pub 40	Electrochemistry; Materials Science;	0.05	1.11	40
Pat 24	Civil engineering	0.03	1.16	36
Pat 14	Other special machines / Surface technology. coating	0.02	1.43	23

Source: DAMVAD 2012

Figure 4.13. Top ten core competences that firms in the transport and transportation equipment sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

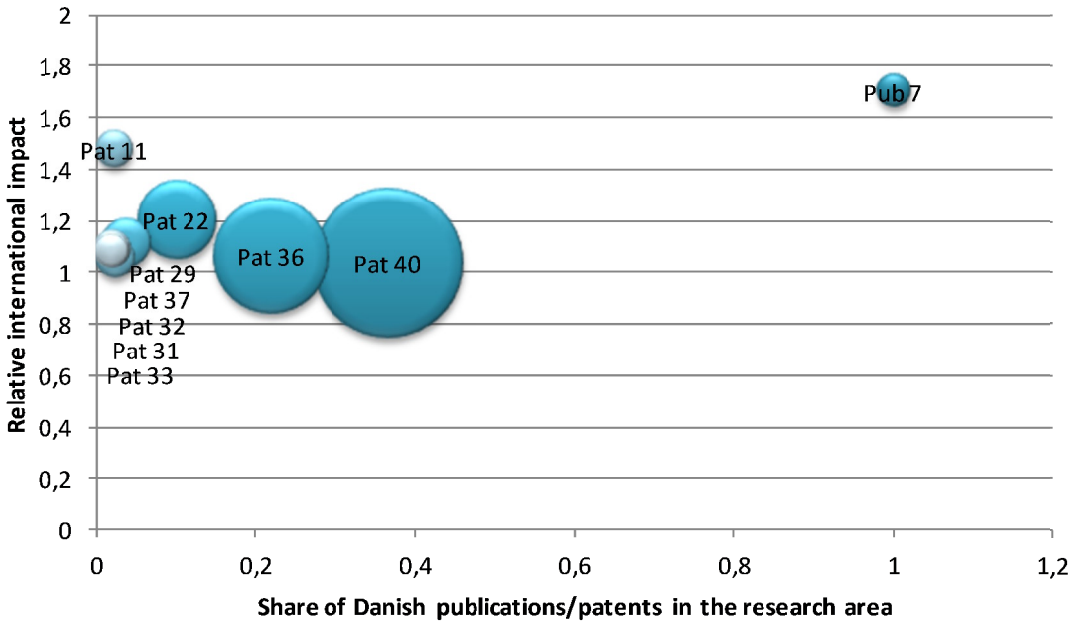
4.14 Other manufacturing

Table 4.15 All core competences that firms in the other manufacturing sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 7	Transplantation	1.00	1.70	36
Pat 40	Biotechnology	0.37	1.04	764
Pat 36	Pharmaceuticals	0.22	1.07	458
Pat 22	Medical technology	0.10	1.21	209
Pat 29	Engines. pumps. turbines	0.04	1.12	78
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Pat 11	Other special machines	0.02	1.48	47
Pat 32	Materials. metallurgy	0.02	1.09	42
Pat 31	Chemical engineering	0.02	1.10	40
Pat 33	Computer technology	0.02	1.08	39
Pat 17	Engines. pumps. turbines / Mechanical elements	0.02	1.38	38
Pat 19	Thermal processes and apparatus	0.02	1.26	37
Pat 24	Civil engineering	0.02	1.16	36
Pat 28	Basic materials chemistry	0.02	1.13	33
Pat 46	Mechanical elements	0.01	1.00	27
Pat 14	Other special machines / Surface technology. coating	0.01	1.43	23
Pat 34	Machine tools	0.01	1.07	22
Pat 4	Transport	0.01	1.75	17
Pat 12	Handling	0.01	1.47	17
Pat 44	Surface technology. coating	0.01	1.03	12
Pat 8	Computer technology / Control	0.01	1.55	11
Pat 1	Audio-visual technology / Electrical machinery. apparatus. energy	0.00	3.32	10
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10

Source: DAMVAD 2012

Figure 4.14. Top ten core competences that firms in the other manufacturing sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

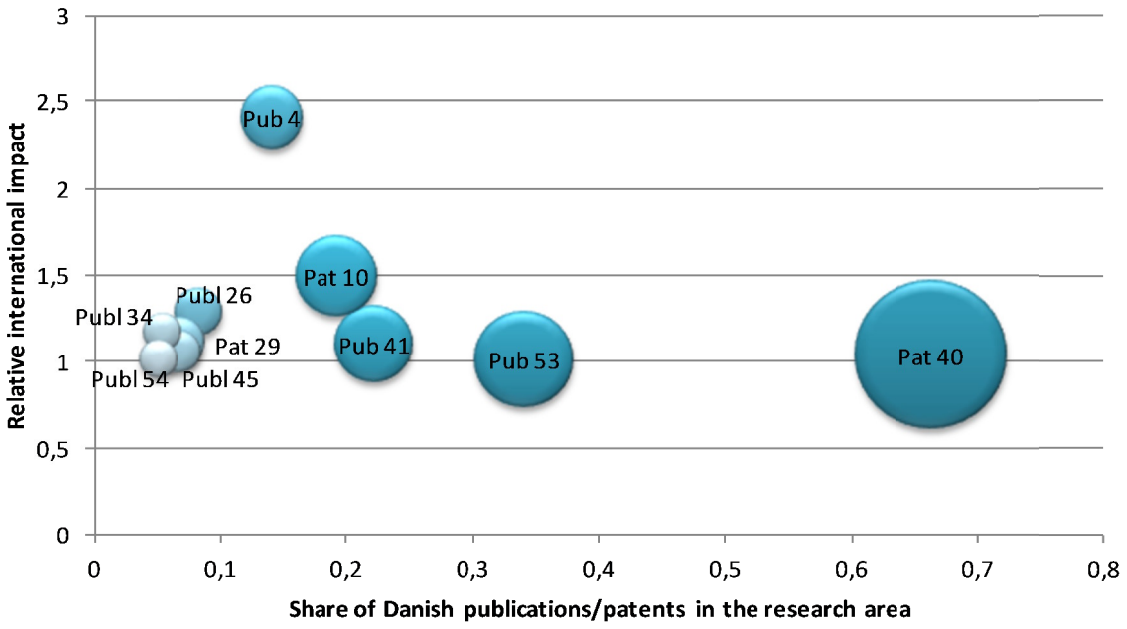
4.15 Energy

Table 4.16. All core competences that firms in the energy sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.66	1.04	764
Pub 53	Agriculture	0.34	1.02	315
Pub 41	Energy & Fuels; Engineering;	0.22	1.10	205
Pat 10	Biotechnology / Basic materials chemistry	0.19	1.50	221
Pub 4	Chemistry; Engineering;	0.14	2.41	130
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.08	1.29	76
Pat 29	Engines. pumps. turbines	0.07	1.12	78
Pub 45	Engineering; Geology;	0.07	1.06	62
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.05	1.17	49
Pub 54	Physical Geography	0.05	1.02	47
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.05	1.18	42
Pat 37	Electrical machinery. apparatus. energy	0.04	1.06	48
Pat 32	Materials. metallurgy	0.04	1.09	42

Source: DAMVAD 2012

Figure 4.15. Top ten core competences that firms in the energy sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

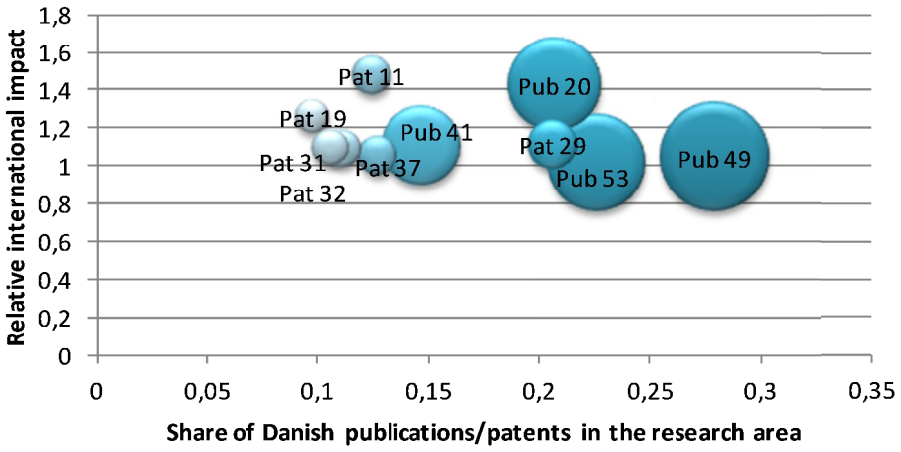
4.16 Water and waste

Table 4.17. All core competences that firms in the water and waste sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 49	Biophysics	0.28	1.05	390
Pub 53	Agriculture	0.23	1.02	315
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.21	1.43	289
Pat 29	Engines. pumps. turbines	0.21	1.12	78
Pub 41	Energy & Fuels; Engineering;	0.15	1.10	205
Pat 37	Electrical machinery. apparatus. energy	0.13	1.06	48
Pat 11	Other special machines	0.12	1.48	47
Pat 32	Materials. metallurgy	0.11	1.09	42
Pat 31	Chemical engineering	0.11	1.10	40
Pat 19	Thermal processes and apparatus	0.10	1.26	37
Pat 24	Civil engineering	0.09	1.16	36
Pat 28	Basic materials chemistry	0.09	1.13	33
Pub 39	Engineering; Instruments & Instrumentation;	0.06	1.11	79
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.05	1.29	76
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.03	1.18	42
Pat 20	Chemical engineering / Environmental technology	0.03	1.24	10
Pat 2	Electrical machinery. apparatus. energy / Semiconductors	0.02	2.11	8

Source: DAMVAD 2012

Figure 4.16. Top ten core competences that firms in the water and waste sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

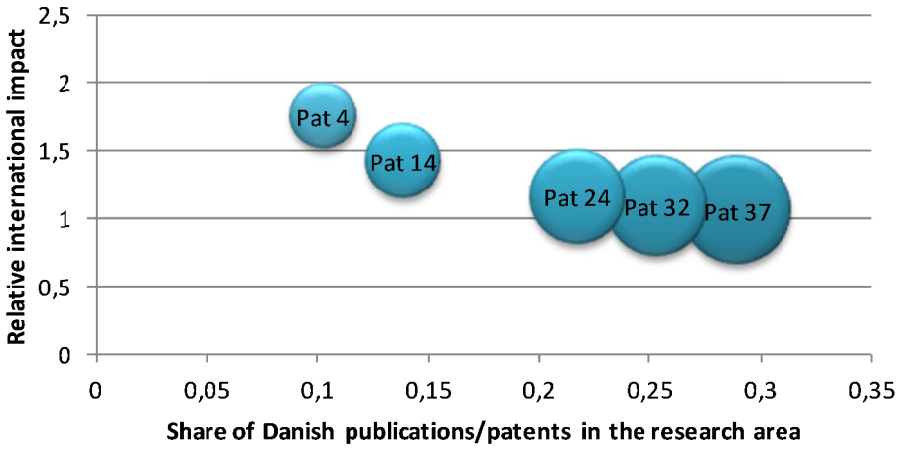
4.17 Construction

Table 4.18. All core competences that firms in the construction sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 37	Electrical machinery. apparatus. energy	0.29	1.06	48
Pat 32	Materials. metallurgy	0.25	1.09	42
Pat 24	Civil engineering	0.22	1.16	36
Pat 14	Other special machines / Surface technology. coating	0.14	1.43	23
Pat 4	Transport	0.10	1.75	17

Source: DAMVAD 2012

Figure 4.17. Top ten core competences that firms in the construction sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

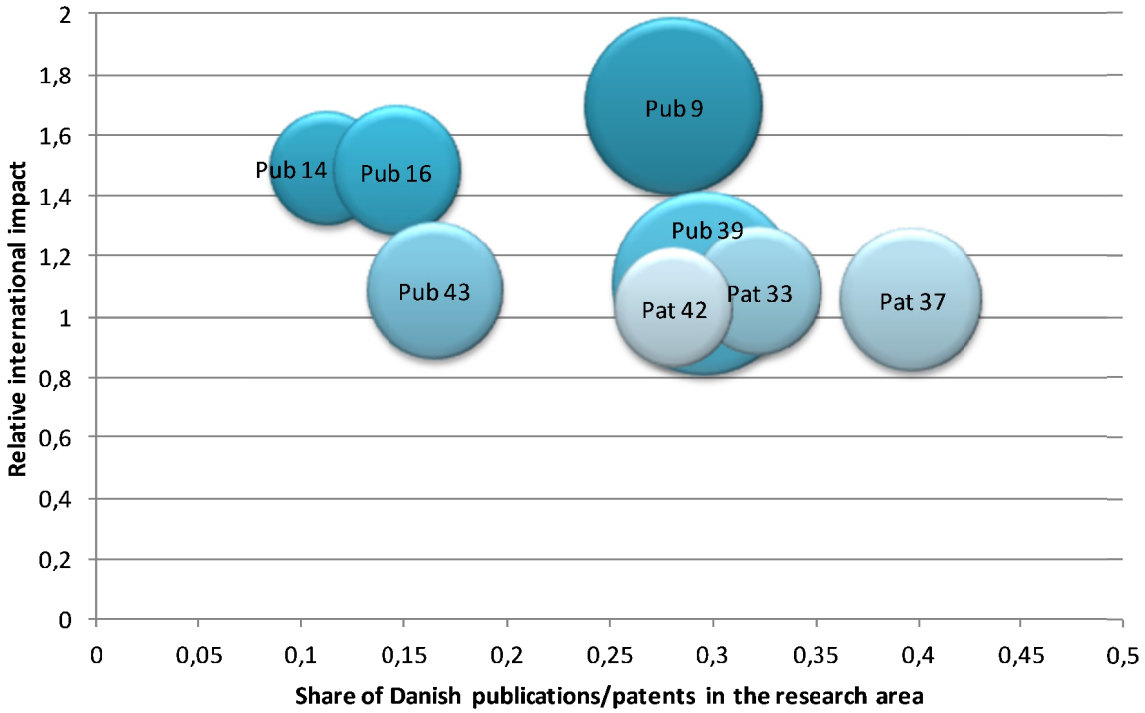
4.18 Publishing, TV and radio

Table 4.19. All core competences that firms in the publishing, TV and radio sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 37	Electrical machinery. apparatus. energy	0.40	1.06	48
Pat 33	Computer technology	0.32	1.08	39
Pub 39	Engineering; Instruments & Instrumentation;	0.30	1.11	79
Pat 42	Optics	0.28	1.03	34
Pub 9	Rehabilitation	0.28	1.70	75
Pub 43	Endocrinology & Metabolism; Nutrition & Dietetics;	0.16	1.09	44
Pun 16	Physics; Science & Technology - Other Topics; Materials Science	0.15	1.48	39
Pub 14	Physics; Science & Technology - Other Topics; Optics	0.11	1.49	30

Source: DAMVAD 2012

Figure 4.18. Top ten core competences that firms in the publishing, TV and radio sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

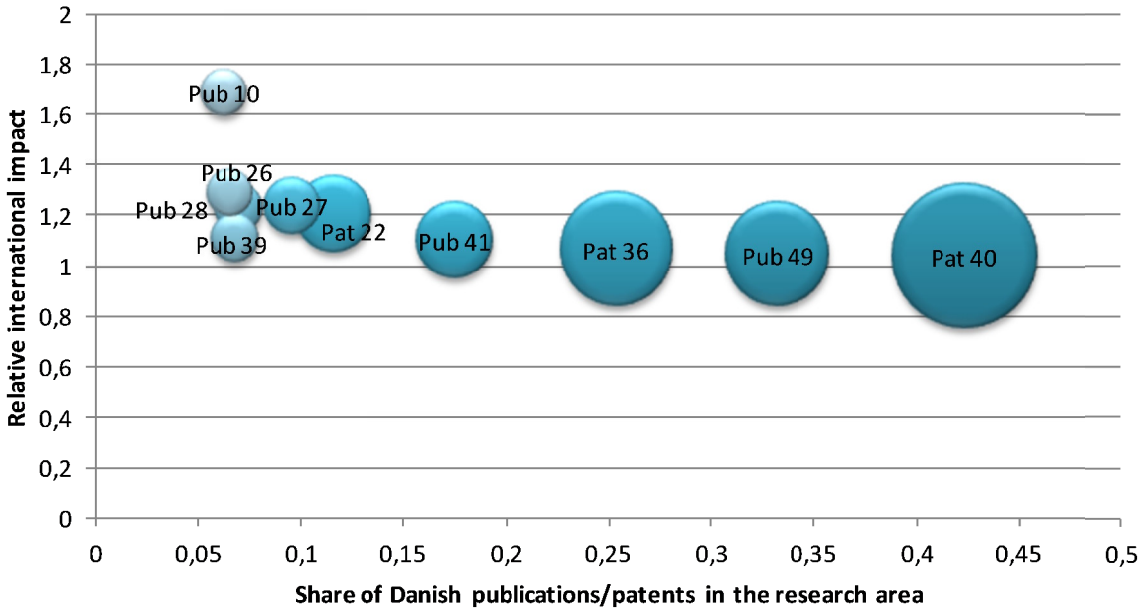
4.19 IT and information services

Table 4.20. All core competences that firms in the IT and information sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.42	1.04	764
Pub 49	Biophysics	0.33	1.05	390
Pat 36	Pharmaceuticals	0.25	1.07	458
Pub 41	Energy & Fuels; Engineering;	0.17	1.10	205
Pat 22	Medical technology	0.12	1.21	209
Pub 27	Engineering; Optics;	0.10	1.24	112
Pub 28	Optics; Physics;	0.07	1.23	81
Pub 39	Engineering; Instruments & Instrumentation;	0.07	1.11	79
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.06	1.29	76
Pub 10	Orthopedics; Rheumatology;	0.06	1.69	73
Pub 54	Physical Geography	0.04	1.02	47
Pub 51	Mathematical & computational Biology	0.04	1.04	45
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.04	1.18	42
Pat 37	Electrical machinery. apparatus. energy	0.03	1.06	48
Pat 11	Other special machines	0.03	1.48	47
Pat 31	Chemical engineering	0.02	1.10	40
Pat 33	Computer technology	0.02	1.08	39
Pat 24	Civil engineering	0.02	1.16	36
Pub 36	Medical Informatics	0.02	1.15	23
Pat 5	Computer technology / Medical technology	0.02	1.70	29
Pat 46	Mechanical elements	0.01	1.00	27
Pat 34	Machine tools	0.01	1.07	22
Pat 4	Transport	0.01	1.75	17
Pat 12	Handling	0.01	1.47	17
Pat 18	Audio-visual technology / Computer technology	0.01	1.28	14
Pat 27	Computer technology / IT methods for management	0.01	1.13	13
Pat 38	Audio-visual technology	0.01	1.05	13
Pat 8	Computer technology / Control	0.01	1.55	11

Source: DAMVAD 2012

Figure 4.19. Top ten core competences that firms in the IT and information sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.20 Consultancy and advisory services

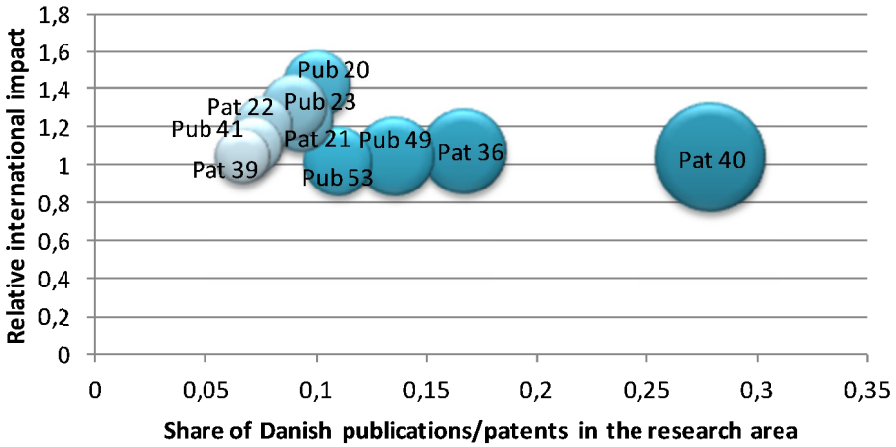
Table 4.21. All core competences that firms in the consultancy and advisory services sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.28	1.04	764
Pat 36	Pharmaceuticals	0.17	1.07	458
Pub 49	Biophysics	0.14	1.05	390
Pub 53	Agriculture	0.11	1.02	315
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.10	1.43	289
Pat 21	Biotechnology / Food chemistry	0.09	1.24	254
Pub 23	Allergy	0.09	1.30	258
Pat 22	Medical technology	0.08	1.21	209
Pub 41	Energy & Fuels; Engineering;	0.07	1.10	205
Pat 39	Organic fine chemistry	0.07	1.05	183
Pat 9	Food chemistry	0.07	1.53	179
Pub 56	Biotechnology applied microbiology; Microbiology;	0.05	1.00	146
Pub 4	Chemistry; Engineering;	0.05	2.41	130
Pub 27	Engineering; Optics;	0.04	1.24	112
Pat 29	Engines. pumps. turbines	0.03	1.12	78
Pub 28	Optics; Physics;	0.03	1.23	81
Pub 39	Engineering; Instruments & Instrumentation;	0.03	1.11	79
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.03	1.29	76
Pub 9	Rehabilitation	0.03	1.70	75
Pub 3	General & Internal Medicine; Research & Experimental Medicine;	0.02	3.20	67
Pub 15	Respiratory System	0.02	1.49	62
Pub 45	Engineering; Geology;	0.02	1.06	62
Pub 29	Neurosciences & Neurology; Physiology;	0.02	1.23	60
Pat 37	Electrical machinery. apparatus. energy	0.02	1.06	48
Pat 11	Other special machines	0.02	1.48	47
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.02	1.17	49
Pub 54	Physical Geography	0.02	1.02	47
Pub 22	Fisheries	0.02	1.34	44
Pat 32	Materials. metallurgy	0.02	1.09	42
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.01	1.18	42
Pat 31	Chemical engineering	0.01	1.10	40
Pat 31	Chemical engineering	0.01	1.10	40
Pat 33	Computer technology	0.01	1.08	39
Pub 40	Electrochemistry; Materials Science;	0.01	1.11	40

ID no.	Core competence	Share	Impact	Volume
Pat 17	Engines. pumps. turbines / Mechanical elements	0.01	1.38	38
Pub 16	Physics; Science & Technology - Other Topics; Materials Science	0.01	1.48	39
Pat 19	Thermal processes and apparatus	0.01	1.26	37
Pat 24	Civil engineering	0.01	1.16	36
Pat 28	Basic materials chemistry	0.01	1.13	33
Pub 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Pub 14	Physics; Science & Technology - Other Topics; Optics	0.01	1.49	30
Pub 19	Microscopy	0.01	1.43	29
Pub 24	Nutrition & Dietetics; Food Science & Technology;	0.01	1.30	26
Pub 52	Mineralogy	0.01	1.03	24
Pat 34	Machine tools	0.01	1.07	22
Pub 36	Medical Informatics	0.01	1.15	23
Pub 5	Health Care Sciences & Services; Public. Environmental & Occupational Health;	0.01	1.82	18
Pat 4	Transport	0.01	1.75	17
Pat 12	Handling	0.01	1.47	17
Pat 41	Basic materials chemistry / Macromolecular chemistry. polymers	0.01	1.04	17
Pub 50	Entomology	0.01	1.04	16
Pat 16	Environmental technology	0.01	1.40	15
Pat 16	Environmental technology	0.01	1.40	15
Pat 18	Audio-visual technology / Computer technology	0.01	1.28	14
Pat 27	Computer technology / IT methods for management	0.00	1.13	13
Pat 38	Audio-visual technology	0.00	1.05	13
Pat 44	Surface technology. coating	0.00	1.03	12
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10

Source: DAMVAD 2012

Figure 4.20. Top ten core competences that firms in the consultancy and advisory services sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

4.21 Research and development (R&D)

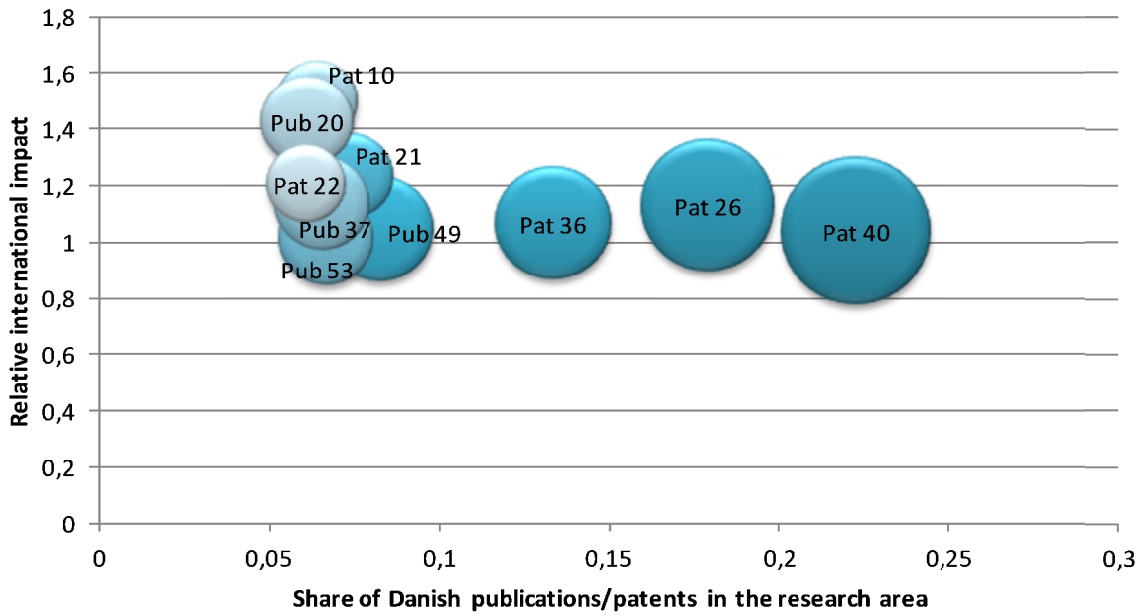
Table 4.22. All core competences that firms in the R&D sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 40	Biotechnology	0.22	1.04	764
Pat 26	Organic fine chemistry / Pharmaceuticals	0.18	1.13	614
Pat 36	Pharmaceuticals	0.13	1.07	458
Publ 49	Biophysics	0.08	1.05	390
Pat 21	Biotechnology / Food chemistry	0.07	1.24	254
Publ 53	Agriculture	0.07	1.02	315
Publ 37	Neurosciences & Neurology; Pharmacology & Pharmacy;	0.07	1.14	310
Pat 10	Biotechnology / Basic materials chemistry	0.06	1.50	221
Publ 20	Biochemistry Molecular Biology; Biophysics;	0.06	1.43	289
Pat 22	Medical technology	0.06	1.21	209
Publ 23	Allergy	0.05	1.30	258
Pat 39	Organic fine chemistry	0.05	1.05	183
Pat 9	Food chemistry	0.05	1.53	179
Publ 25	Pharmacology & Pharmacy; Psychiatry;	0.05	1.30	242
Publ 41	Energy & Fuels; Engineering;	0.04	1.10	205
Publ 11	Medical Laboratory Technology	0.03	1.65	161
Publ 56	Biotechnology applied microbiology; Microbiology;	0.03	1.00	146
Publ 42	Reproductive Biology	0.03	1.10	145
Publ 4	Chemistry; Engineering;	0.03	2.41	130
Publ 55	Behavioral Sciences	0.02	1.01	116
Publ 27	Engineering; Optics;	0.02	1.24	112
Publ 30	Virology	0.02	1.19	106
Publ 48	Zoology	0.02	1.05	85
Publ 28	Optics; Physics;	0.02	1.23	81
Publ 39	Engineering; Instruments & Instrumentation;	0.02	1.11	79
Publ 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.02	1.29	76
Publ 9	Rehabilitation	0.02	1.70	75
Publ 10	Orthopedics; Rheumatology;	0.02	1.69	73
Publ 44	Otorhinolaryngology	0.01	1.07	68
Publ 3	General & Internal Medicine; Research & Experimental Medicine;	0.01	3.20	67
Pat 11	Other special machines	0.01	1.48	47
Publ 15	Respiratory System	0.01	1.49	62
Publ 45	Engineering; Geology;	0.01	1.06	62
Pat 23	Macromolecular chemistry. polymers	0.01	1.17	44
Publ 29	Neurosciences & Neurology; Physiology;	0.01	1.23	60
Pat 32	Materials. metallurgy	0.01	1.09	42
Pat 31	Chemical engineering	0.01	1.10	40
Pat 31	Chemical engineering	0.01	1.10	40
Publ 38	Geriatrics & Gerontology; Neurosciences & Neurology;	0.01	1.12	55
Pat 33	Computer technology	0.01	1.08	39

ID no.	Core competence	Share	Impact	Volume
Publ 31	Immunology; Infectious Diseases;	0.01	1.19	53
Pat 19	Thermal processes and apparatus	0.01	1.26	37
Publ 17	Mycology	0.01	1.46	50
Publ 21	Endocrinology & Metabolism; Physiology;	0.01	1.39	49
Publ 34	Materials Science; Metallurgy & Metallurgical Engineering;	0.01	1.17	49
Publ 8	Anesthesiology	0.01	1.70	48
Pat 28	Basic materials chemistry	0.01	1.13	33
Publ 51	Mathematical & computational Biology	0.01	1.04	45
Publ 22	Fisheries	0.01	1.34	44
Publ 43	Endocrinology & Metabolism; Nutrition & Dietetics;	0.01	1.09	44
Publ 33	Genetics & Heredity; Research & Experimental Medicine;	0.01	1.18	43
Publ 32	Chemistry; Science & Technology - Other Topics; Materials Science	0.01	1.18	42
Publ 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0.01	4.91	40
Publ 12	Cardiovascular System & Cardiology; Neurosciences & Neurology;	0.01	1.62	40
Publ 40	Electrochemistry; Materials Science;	0.01	1.11	40
Pat 5	Computer technology / Medical technology	0.01	1.70	29
Pat 45	Basic materials chemistry / Organic fine chemistry	0.01	1.02	29
Publ 16	Physics; Science & Technology - Other Topics; Materials Science	0.01	1.48	39
Publ 6	Veterinary Sciences; Zoology;	0.01	1.81	38
Publ 7	Transplantation	0.01	1.70	36
Pat 7	Macromolecular chemistry. polymers / Other special machines	0.01	1.59	24
Publ 35	Biotechnology applied microbiology; Food Science & Technology;	0.01	1.16	32
Pat 14	Other special machines / Surface technology. coating	0.01	1.43	23
Publ 14	Physics; Science & Technology - Other Topics; Optics	0.01	1.49	30
Publ 19	Microscopy	0.01	1.43	29
Publ 24	Nutrition & Dietetics; Food Science & Technology;	0.01	1.30	26
Publ 52	Mineralogy	0.01	1.03	24
Pat 12	Handling	0.00	1.47	17
Pat 41	Basic materials chemistry / Macromolecular chemistry. polymers	0.00	1.04	17
Publ 18	Cell Biology; Oncology;	0.00	1.44	23
Publ 36	Medical Informatics	0.00	1.15	23
Publ 46	Food Science & Technology; Microbiology;	0.00	1.05	23
Pat 6	Macromolecular chemistry. polymers / Organic fine chemistry	0.00	1.69	16
Pat 27	Computer technology / IT methods for management	0.00	1.13	13
Pat 43	Food chemistry / Pharmaceuticals	0.00	1.03	12
Pat 44	Surface technology. coating	0.00	1.03	12
Publ 2	Surgery; Transplantation;	0.00	3.95	16
Publ 50	Entomology	0.00	1.04	16
Publ 13	Integrative & Complementary Medicine	0.00	1.51	15
Pat 13	Macromolecular chemistry. polymers / Surface technology. coating	0.00	1.43	10
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10
Pat 20	Chemical engineering / Environmental technology	0.00	1.24	10

Source: DAMVAD 2012

Figure 4.21. Top ten core competences that firms in the R&D sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

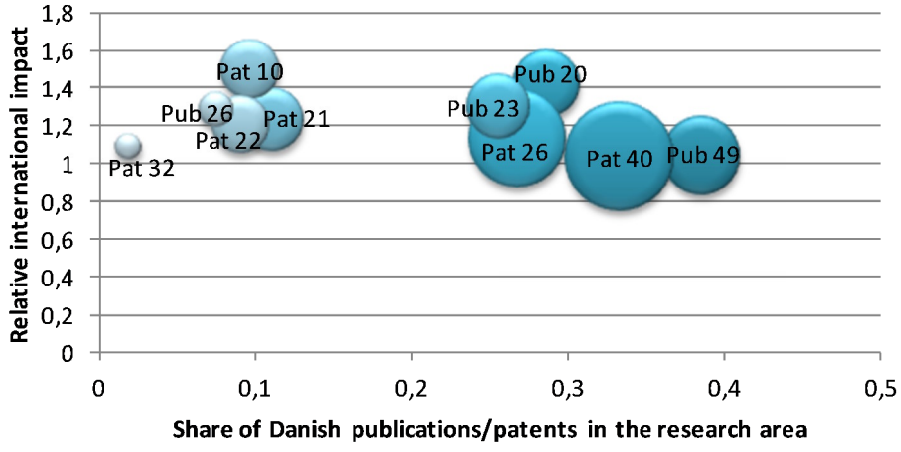
4.22 Other business services

Table 4.23. All core competences that firms in the advertising and other business services sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pub 49	Biophysics	0.38	1.05	390
Pat 40	Biotechnology	0.33	1.04	764
Pub 20	Biochemistry Molecular Biology; Biophysics;	0.29	1.43	289
Pat 26	Organic fine chemistry / Pharmaceuticals	0.27	1.13	614
Pub 23	Allergy	0.25	1.30	258
Pat 21	Biotechnology / Food chemistry	0.11	1.24	254
Pat 10	Biotechnology / Basic materials chemistry	0.10	1.50	221
Pat 22	Medical technology	0.09	1.21	209
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0.08	1.29	76
Pat 32	Materials. metallurgy	0.02	1.09	42
Pat 31	Chemical engineering	0.02	1.10	40
Pat 33	Computer technology	0.02	1.08	39
Pat 24	Civil engineering	0.02	1.16	36
Pat 42	Optics	0.01	1.03	34
Pat 4	Transport	0.01	1.75	17
Pat 27	Computer technology / IT methods for management	0.01	1.13	13
Pat 8	Computer technology / Control	0.00	1.55	11

Source: DAMVAD 2012

Figure 4.22. Top ten core competences that firms in the advertising and other business services sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

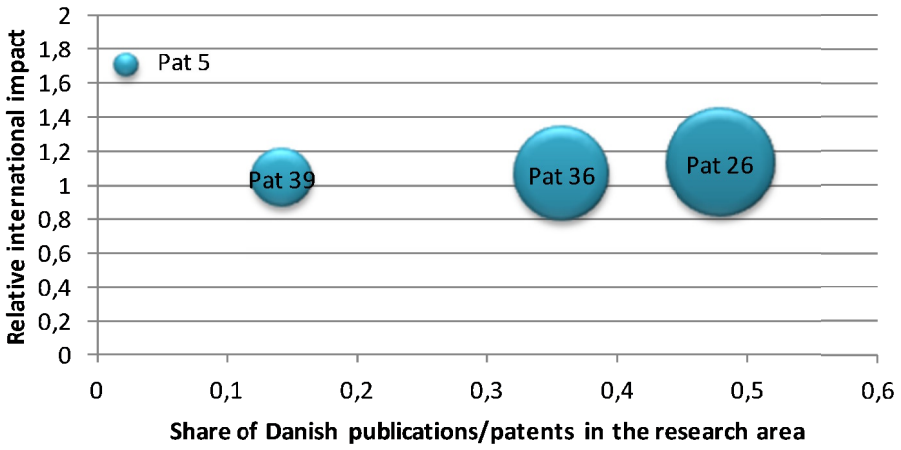
4.23 Healthcare

Table 4.24. All core competences that firms in the healthcare sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 26	Organic fine chemistry / Pharmaceuticals	0.48	1.13	614
Pat 36	Pharmaceuticals	0.36	1.07	458
Pat 39	Organic fine chemistry	0.14	1.05	183
Pat 5	Computer technology / Medical technology	0.02	1.70	29

Source: DAMVAD 2012

Figure 4.23. Top ten core competences that firms in the healthcare sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

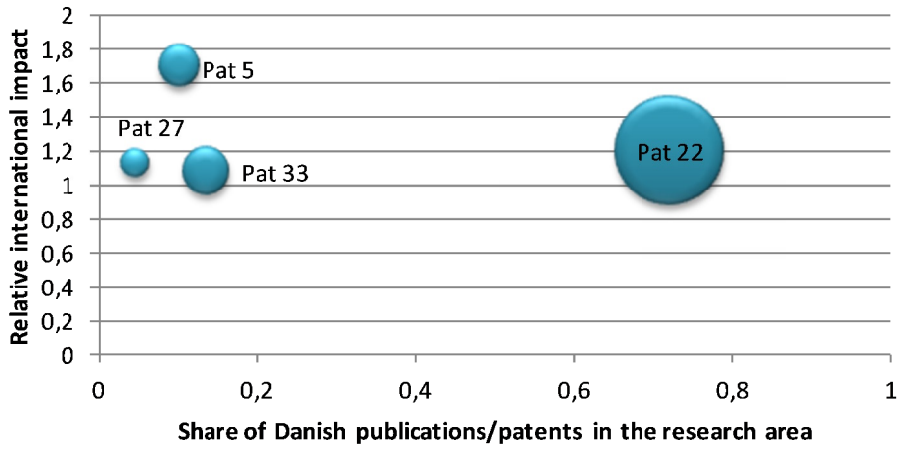
4.24 Other services

Table 4.25. All core competences that firms in the other services sector contribute to (ranked by share of Danish publications/patents in the research area)

ID no.	Core competence	Share	Impact	Volume
Pat 22	Medical technology	0.72	1.21	209
Pat 33	Computer technology	0.13	1.08	39
Pat 5	Computer technology / Medical technology	0.10	1.70	29
Pat 27	Computer technology / IT methods for management	0.04	1.13	13

Source: DAMVAD 2012

Figure 4.24. Top ten core competences that firms in the other services sector contribute to (by share of Danish publications/patents in the research area)



Source: DAMVAD 2012

5 Industry sectors' contributions to core competences

This chapter lists the 102 core competences and shows the industry sectors that contribute to each of the core competences. The tables specify the number of firms from each sector that contribute to the core competence, and the share of all firms behind the given competence that these firms account for.

As mentioned in the previous chapter, core competences can be assigned to several sectors.

A reader's guide

Example based on Pat 1: Audio-visual technology / Electrical machinery, apparatus and energy

Danish firms have a patent based core competence in audio-visual technology combined with electrical machinery, apparatus and energy. The patent applications that contribute to this field were produced by a total of 104 Danish firms (that could be identified and assigned to an industry sector based on their CVR number).

- Number of firms indicates how many companies have been assigned to the sector based on their CVR number, *not* how many firms have contributed with patents to the core competence.
- Share of firms indicates the relative contribution of each industry sector to the patents that form the core competence.
- 42% (or 44) of these firms are in the mechanical engineering sector. Thus, this sector is the single greatest contributing industry sector to the "Pat 1" core competence.
- 14% (or 15) of the firms are in the electronics sector.
- 13% (or 14) of the firms are in the plastics, gas and concrete sector.
- 12% (or 12) of the firms are in the manufacturing of electrical equipment sector.
- 11% (or 11) of the firms are in the metals sector.
- 8% (or 8) of the firms are in the other manufacturing sector.

5.1 Patent based core competences

Pat 1: Audio-visual technology / Electrical machinery, apparatus and energy

Sector	Number of firms	Share of firms
Mechanical engineering	44	42%
Electronics	15	14%
Plastics, gas and concrete	14	13%
Manufacturing of electrical equipment	12	12%
Metals	11	11%
Other manufacturing	8	8%

Pat 2: Electrical machinery, apparatus, energy / Semiconductors

Sector	Number of firms	Share of firms
Mechanical engineering	44	44%
Consultancy and advisory services	33	33%
Manufacturing of electrical equipment	12	12%
Other manufacturing	8	8%
Water and waste	3	3%

Pat 3: Audio-visual technology / Semiconductors

Sector	Number of firms	Share of firms
Manufacturing of electrical equipment	12	60%
Other manufacturing	8	40%

Pat 4: Transport

Sector	Number of firms	Share of firms
Mechanical engineering	44	30%
Consultancy and advisory services	33	22%
IT and information services	20	13%
Other business services	13	9%
Manufacturing of electrical equipment	12	8%
Pharmaceuticals	12	8%
Other manufacturing	8	5%
Construction	5	3%
Textiles and leather	2	1%

Pat 5: Computer technology / Medical technology

Sector	Number of firms	Share of firms
Research and development	80	43%
Mechanical engineering	44	23%
IT and information services	20	11%
Electronics	15	8%
Plastics, gas and concrete	14	7%
Pharmaceuticals	12	6%
Healthcare	2	1%
Andre serviceydelser mv.	1	1%

Pat 6: Macromolecular chemistry, polymers / Organic fine chemistry

Sector	Number of firms	Share of firms
Research and development	80	63%
Food, drink and tobacco	14	11%
Plastics, gas and concrete	14	11%
Pharmaceuticals	12	9%
Chemicals	7	6%

Pat 7: Macromolecular chemistry, polymers / Other special machines

Sector	Number of firms	Share of firms
Research and development	80	56%
Electronics	15	11%
Food, drink and tobacco	14	10%
Plastics, gas and concrete	14	10%
Pharmaceuticals	12	8%
Chemicals	7	5%

Pat 8: Computer technology / Control

Sector	Number of firms	Share of firms
Mechanical engineering	44	40%
IT and information services	20	18%
Other business services	13	12%
Manufacturing of electrical equipment	12	11%
Pharmaceuticals	12	11%
Other manufacturing	8	7%

Pat 9: Food chemistry

Sector	Number of firms	Share of firms
Research and development	80	37%
Mechanical engineering	44	20%
Consultancy and advisory services	33	15%
Food, drink and tobacco	14	6%
Plastics, gas and concrete	14	6%
Manufacturing of electrical equipment	12	6%
Pharmaceuticals	12	6%
Chemicals	7	3%

Pat 10: Biotechnology / Basic materials chemistry

Sector	Number of firms	Share of firms
Research and development	80	60%
Food, drink and tobacco	14	11%
Other business services	13	10%
Pharmaceuticals	12	9%
Chemicals	7	5%
Transportmiddelindustri	4	3%
Energy	3	2%

Pat 11: Other special machines

Sector	Number of firms	Share of firms
Research and development	80	22%
Mechanical engineering	44	12%
Consultancy and advisory services	33	9%
IT and information services	20	5%
Electronics	15	4%
Food, drink and tobacco	14	4%
Plastics, gas and concrete	14	4%
Manufacturing of electrical equipment	12	3%
Pharmaceuticals	12	3%
Other manufacturing	8	2%
Chemicals	7	2%
Water and waste	3	1%
Agriculture, forestry and fishery	2	1%
Wood, paper and printing	2	1%

Pat 12: Handling

Sector	Number of firms	Share of firms
Research and development	80	24%
Mechanical engineering	44	13%
Consultancy and advisory services	33	10%
IT and information services	20	6%
Plastics, gas and concrete	14	4%
Pharmaceuticals	12	4%
Metals	11	3%
Other manufacturing	8	2%
Chemicals	7	2%

Pat 13: Macromolecular chemistry, polymers / Surface technology, coating

Sector	Number of firms	Share of firms
Research and development	80	71%
Plastics, gas and concrete	14	12%
Pharmaceuticals	12	11%
Chemicals	7	6%

Pat 14: Other special machines / Surface technology, coating

Sector	Number of firms	Share of firms
Research and development	80	46%
Mechanical engineering	44	25%
Plastics, gas and concrete	14	8%
Metals	11	6%
Other manufacturing	8	5%
Chemicals	7	4%
Construction	5	3%
Transportmiddelindustri	4	2%
Textiles and leather	2	1%

Pat 15: Electrical machinery, apparatus, energy / Mechanical elements

Sector	Number of firms	Share of firms
Mechanical engineering	44	49%
Plastics, gas and concrete	14	16%
Manufacturing of electrical equipment	12	13%
Metals	11	12%
Other manufacturing	8	9%

Pat 16: Environmental technology

Sector	Number of firms	Share of firms
Mechanical engineering	44	44%
Consultancy and advisory services	33	33%
Manufacturing of electrical equipment	12	12%
Metals	11	11%

Pat 17: Engines, pumps, turbines / Mechanical elements

Sector	Number of firms	Share of firms
Mechanical engineering	44	32%
Consultancy and advisory services	33	24%
Electronics	15	11%
Food, drink and tobacco	14	10%
Manufacturing of electrical equipment	12	9%
Pharmaceuticals	12	9%
Other manufacturing	8	6%

Pat 18: Audio-visual technology / Computer technology

Sector	Number of firms	Share of firms
Mechanical engineering	44	29%
Consultancy and advisory services	33	22%
IT and information services	20	13%
Electronics	15	10%
Plastics, gas and concrete	14	9%
Manufacturing of electrical equipment	12	8%
Pharmaceuticals	12	8%

Pat 19: Thermal processes and apparatus

Sector	Number of firms	Share of firms
Research and development	80	34%
Mechanical engineering	44	19%
Consultancy and advisory services	33	14%
Electronics	15	6%
Food, drink and tobacco	14	6%
Plastics, gas and concrete	14	6%
Manufacturing of electrical equipment	12	5%
Metals	11	5%
Other manufacturing	8	3%
Water and waste	3	1%

Pat 20: Chemical engineering / Environmental technology

Sector	Number of firms	Share of firms
Research and development	80	45%
Mechanical engineering	44	25%
Consultancy and advisory services	33	18%
Metals	11	6%
Other manufacturing	8	4%
Water and waste	3	2%

Pat 21: Biotechnology / Food chemistry

Sector	Number of firms	Share of firms
Research and development	80	26%
Mechanical engineering	44	14%
Consultancy and advisory services	33	11%
Food, drink and tobacco	14	5%
Other business services	13	4%
Pharmaceuticals	12	4%
Chemicals	7	2%
Agriculture, forestry and fishery	2	1%

Pat 22: Medical technology

Sector	Number of firms	Share of firms
Research and development	80	29%
Mechanical engineering	44	16%
Consultancy and advisory services	33	12%
IT and information services	20	7%
Electronics	15	5%
Food, drink and tobacco	14	5%
Plastics, gas and concrete	14	5%
Other business services	13	5%
Manufacturing of electrical equipment	12	4%
Pharmaceuticals	12	4%
Other manufacturing	8	3%
Chemicals	7	3%
Andre serviceydelser mv.	1	0%

Pat 23: Macromolecular chemistry, polymers

Sector	Number of firms	Share of firms
Research and development	80	56%
Electronics	15	11%
Food, drink and tobacco	14	10%
Plastics, gas and concrete	14	10%
Pharmaceuticals	12	8%
Chemicals	7	5%

Pat 24: Civil engineering

Sector	Number of firms	Share of firms
Mechanical engineering	44	24%
Consultancy and advisory services	33	18%
IT and information services	20	11%
Electronics	15	8%
Plastics, gas and concrete	14	8%
Other business services	13	7%
Manufacturing of electrical equipment	12	7%
Metals	11	6%
Other manufacturing	8	4%
Construction	5	3%
Transportmiddelindustri	4	2%
Water and waste	3	2%
Natural ressource extraction	1	1%

Pat 25: Digital communication

Sector	Number of firms	Share of firms
Mechanical engineering	44	73%
IT and information services	20	33%

Pat 26: Organic fine chemistry / Pharmaceuticals

Sector	Number of firms	Share of firms
Research and development	80	51%
Electronics	15	10%
Food, drink and tobacco	14	9%
Plastics, gas and concrete	14	9%
Other business services	13	8%
Pharmaceuticals	12	8%
Chemicals	7	4%
Healthcare	2	1%

Pat 27: Computer technology / IT methods for management

Sector	Number of firms	Share of firms
Research and development	80	35%
Mechanical engineering	44	19%
Consultancy and advisory services	33	14%
IT and information services	20	9%
Plastics, gas and concrete	14	6%
Other business services	13	6%
Manufacturing of electrical equipment	12	5%
Pharmaceuticals	12	5%
Andre serviceydelser mv.	1	0%

Pat 28: Basic materials chemistry

Sector	Number of firms	Share of firms
Research and development	80	46%
Consultancy and advisory services	33	19%
Food, drink and tobacco	14	8%
Plastics, gas and concrete	14	8%
Pharmaceuticals	12	7%
Other manufacturing	8	5%
Chemicals	7	4%
Water and waste	3	2%
Agriculture, forestry and fishery	2	1%

Pat 29: Engines, pumps, turbines

Sector	Number of firms	Share of firms
Mechanical engineering	44	34%
Consultancy and advisory services	33	25%
Food, drink and tobacco	14	11%
Plastics, gas and concrete	14	11%
Manufacturing of electrical equipment	12	9%
Other manufacturing	8	6%
Energy	3	2%
Water and waste	3	2%

Pat 30: Materials, metallurgy / Surface technology, coating

Sector	Number of firms	Share of firms
Research and development	80	59%
Consultancy and advisory services	33	24%
Plastics, gas and concrete	14	10%
Other manufacturing	8	6%

Pat 31: Chemical engineering

Sector	Number of firms	Share of firms
Research and development	80	35%
Mechanical engineering	44	19%
Consultancy and advisory services	33	14%
IT and information services	20	9%
Other business services	13	6%
Pharmaceuticals	12	5%
Metals	11	5%
Other manufacturing	8	3%
Chemicals	7	3%
Water and waste	3	1%

Pat 32: Materials, metallurgy

Sector	Number of firms	Share of firms
Research and development	80	37%
Mechanical engineering	44	20%
Consultancy and advisory services	33	15%
Plastics, gas and concrete	14	7%
Other business services	13	6%
Manufacturing of electrical equipment	12	6%
Other manufacturing	8	4%
Construction	5	2%
Energy	3	1%
Water and waste	3	1%

Pat 33: Computer technology

Sector	Number of firms	Share of firms
Research and development	80	30%
Mechanical engineering	44	17%
Consultancy and advisory services	33	12%
IT and information services	20	8%
Electronics	15	6%
Plastics, gas and concrete	14	5%
Other business services	13	5%
Manufacturing of electrical equipment	12	5%
Pharmaceuticals	12	5%
Metals	11	4%
Other manufacturing	8	3%
Forlag, tv og radio	3	1%
Andre serviceydelser mv.	1	0%

Pat 34: Machine tools

Sector	Number of firms	Share of firms
Mechanical engineering	44	27%
Consultancy and advisory services	33	20%
IT and information services	20	12%
Electronics	15	9%
Plastics, gas and concrete	14	9%
Pharmaceuticals	12	7%
Metals	11	7%
Other manufacturing	8	5%
Chemicals	7	4%

Pat 35: Digital communication / Telecommunications

Sector	Number of firms	Share of firms
IT and information services	20	24%
Plastics, gas and concrete	14	17%
Other business services	13	16%
Manufacturing of electrical equipment	12	15%
Pharmaceuticals	12	15%
Metals	11	13%

Pat 36: Pharmaceuticals

Sector	Number of firms	Share of firms
Research and development	80	37%
Consultancy and advisory services	33	15%
IT and information services	20	9%
Electronics	15	7%
Food, drink and tobacco	14	6%
Plastics, gas and concrete	14	6%
Manufacturing of electrical equipment	12	6%
Pharmaceuticals	12	6%
Other manufacturing	8	4%
Chemicals	7	3%
Healthcare	2	1%

Pat 37: Electrical machinery, apparatus, energy

Sector	Number of firms	Share of firms
Mechanical engineering	44	27%
Consultancy and advisory services	33	20%
IT and information services	20	12%
Electronics	15	9%
Plastics, gas and concrete	14	9%
Manufacturing of electrical equipment	12	7%
Other manufacturing	8	5%
Construction	5	3%
Energy	3	2%
Forlag, tv og radio	3	2%
Water and waste	3	2%
Wood, paper and printing	2	1%

Pat 38: Audio-visual technology

Sector	Number of firms	Share of firms
Consultancy and advisory services	33	35%
IT and information services	20	21%
Electronics	15	16%
Plastics, gas and concrete	14	15%
Manufacturing of electrical equipment	12	13%

Pat 39: Organic fine chemistry

Sector	Number of firms	Share of firms
Research and development	80	60%
Consultancy and advisory services	33	25%
Pharmaceuticals	12	9%
Chemicals	7	5%
Healthcare	2	1%

Pat 40: Biotechnology

Sector	Number of firms	Share of firms
Research and development	80	28%
Mechanical engineering	44	16%
Consultancy and advisory services	33	12%
IT and information services	20	7%
Electronics	15	5%
Food, drink and tobacco	14	5%
Plastics, gas and concrete	14	5%
Other business services	13	5%
Manufacturing of electrical equipment	12	4%
Pharmaceuticals	12	4%
Other manufacturing	8	3%
Chemicals	7	2%
Transportmiddelindustri	4	1%
Energy	3	1%
Agriculture, forestry and fishery	2	1%

Pat 41: Basic materials chemistry / Macromolecular chemistry, polymers

Sector	Number of firms	Share of firms
Research and development	80	54%
Consultancy and advisory services	33	22%
Food, drink and tobacco	14	9%
Plastics, gas and concrete	14	9%
Chemicals	7	5%

Pat 42: Optics

Sector	Number of firms	Share of firms
Other business services	13	46%
Manufacturing of electrical equipment	12	43%
Forlag, tv og radio	3	11%

Pat 43: Food chemistry / Pharmaceuticals

Sector	Number of firms	Share of firms
Research and development	80	71%
Food, drink and tobacco	14	12%
Pharmaceuticals	12	11%
Chemicals	7	6%

Pat 44: Surface technology, coating

Sector	Number of firms	Share of firms
Research and development	80	38%
Mechanical engineering	44	21%
Consultancy and advisory services	33	16%
Plastics, gas and concrete	14	7%
Pharmaceuticals	12	6%
Metals	11	5%
Other manufacturing	8	4%
Chemicals	7	3%

Pat 45: Basic materials chemistry / Organic fine chemistry

Sector	Number of firms	Share of firms
Research and development	80	50%
Consultancy and advisory services	33	21%
Food, drink and tobacco	14	9%
Plastics, gas and concrete	14	9%
Pharmaceuticals	12	8%
Chemicals	7	4%

Pat 46: Mechanical elements

Sector	Number of firms	Share of firms
Mechanical engineering	44	35%
IT and information services	20	16%
Food, drink and tobacco	14	11%
Plastics, gas and concrete	14	11%
Manufacturing of electrical equipment	12	10%
Metals	11	9%
Other manufacturing	8	6%
Natural ressource extraction	1	1%

5.2 Publication based core competences

Pub 1: Biochemistry Molecular Biology; Life Sciences & Biomedicine – Other Topics; Cell Biology

Sector	Number of firms	Share of firms
Research and development	117	66%
Food, drink and tobacco	23	13%
Pharmaceuticals	14	8%
Chemicals	12	7%
Plastics, gas and concrete	11	6%

Pub 2: Surgery; Transplantation

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 3: General & Internal Medicine; Research & Experimental Medicine

Sector	Number of firms	Share of firms
Research and development	117	59%
Consultancy and advisory services	67	34%
Pharmaceuticals	14	7%

Pub 4: Chemistry; Engineering

Sector	Number of firms	Share of firms
Research and development	117	42%
Consultancy and advisory services	67	24%
Food, drink and tobacco	23	8%
Mechanical engineering	21	8%
Pharmaceuticals	14	5%
Chemicals	12	4%
Plastics, gas and concrete	11	4%
Metals	4	1%
Transportmiddelindustri	4	1%
Wood, paper and printing	3	1%
Energy	2	1%

Pub 5: Health Care Sciences & Services; Pubic, Environmental & Occupational Health

Sector	Number of firms	Share of firms
Consultancy and advisory services	67	83%
Pharmaceuticals	14	17%

Pub 6: Veterinary Sciences; Zoology

Sector	Number of firms	Share of firms
Research and development	117	85%
Pharmaceuticals	14	10%
Agriculture, forestry and fishery	7	5%

Pub 7: Transplantation

Sector	Number of firms	Share of firms
Research and development	117	77%
Pharmaceuticals	14	9%
Plastics, gas and concrete	11	7%
Other manufacturing	9	6%

Pub 8: Anesthesiology

Sector	Number of firms	Share of firms
Research and development	117	70%
Electronics	36	22%
Pharmaceuticals	14	8%

Pub 9: Rehabilitation

Sector	Number of firms	Share of firms
Research and development	117	48%
Consultancy and advisory services	67	28%
Electronics	36	15%
Forlag, tv og radio	12	5%
Plastics, gas and concrete	11	5%

Pub 10: Orthopedics; Rheumatology

Sector	Number of firms	Share of firms
Research and development	117	54%
IT and information services	41	19%
Food, drink and tobacco	23	11%
Mechanical engineering	21	10%
Pharmaceuticals	14	6%

Pub 11: Medical Laboratory Technology

Sector	Number of firms	Share of firms
Research and development	117	66%
Electronics	36	20%
Pharmaceuticals	14	8%
Plastics, gas and concrete	11	6%

Pub 12: Cardiovascular System & Cardiology; Neurosciences & Neurology

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 13: Integrative & Complementary Medicine

Sector	Number of firms	Share of firms
Research and development	117	76%
Food, drink and tobacco	23	15%
Pharmaceuticals	14	9%

Pub 14: Physics; Science & Technology - Other Topics; Optics

Sector	Number of firms	Share of firms
Research and development	117	45%
Consultancy and advisory services	67	26%
Food, drink and tobacco	23	9%
Mechanical engineering	21	8%
Forlag, tv og radio	12	5%
Plastics, gas and concrete	11	4%
Manufacturing of electrical equipment	10	4%

Pub 15: Respiratory System

Sector	Number of firms	Share of firms
Research and development	117	56%
Consultancy and advisory services	67	32%
Pharmaceuticals	14	7%
Chemicals	12	6%

Pub 16: Physics; Science & Technology - Other Topics; Materials Science

Sector	Number of firms	Share of firms
Research and development	117	47%
Consultancy and advisory services	67	27%
Food, drink and tobacco	23	9%
Mechanical engineering	21	8%
Forlag, tv og radio	12	5%
Plastics, gas and concrete	11	4%

Pub 17: Mycology

Sector	Number of firms	Share of firms
Research and development	117	68%
Food, drink and tobacco	23	13%
Pharmaceuticals	14	8%
Chemicals	12	7%
Agriculture, forestry and fishery	7	4%

Pub 18: Cell Biology; Oncology

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 19: Microscopy

Sector	Number of firms	Share of firms
Research and development	117	48%
Consultancy and advisory services	67	27%
Electronics	36	15%
Pharmaceuticals	14	6%
Plastics, gas and concrete	11	4%

Pub 20: Biochemistry Molecular Biology; Biophysics

Sector	Number of firms	Share of firms
Research and development	117	37%
Consultancy and advisory services	67	21%
Electronics	36	11%
Food, drink and tobacco	23	7%
Mechanical engineering	21	7%
Pharmaceuticals	14	4%
Chemicals	12	4%
Plastics, gas and concrete	11	3%
Other business services	9	3%
Water and waste	6	2%

Pub 21: Endocrinology & Metabolism; Physiology

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 22: Fisheries

Sector	Number of firms	Share of firms
Research and development	117	47%
Consultancy and advisory services	67	27%
Food, drink and tobacco	23	9%
Mechanical engineering	21	9%
Chemicals	12	5%
Agriculture, forestry and fishery	7	3%

Pub 23: Allergy

Sector	Number of firms	Share of firms
Research and development	117	53%
Consultancy and advisory services	67	31%
Pharmaceuticals	14	6%
Chemicals	12	5%
Other business services	9	4%

Pub 24: Nutrition & Dietetics; Food Science & Technology

Sector	Number of firms	Share of firms
Research and development	117	50%
Consultancy and advisory services	67	29%
Food, drink and tobacco	23	10%
Pharmaceuticals	14	6%
Chemicals	12	5%

Pub 25: Pharmacology & Pharmacy; Psychiatry

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 26: Engineering; Environmental Sciences & Ecology; Water Resources

Sector	Number of firms	Share of firms
Research and development	117	31%
Consultancy and advisory services	67	18%
IT and information services	41	11%
Electronics	36	10%
Food, drink and tobacco	23	6%
Mechanical engineering	21	6%
Pharmaceuticals	14	4%
Chemicals	12	3%
Plastics, gas and concrete	11	3%
Other business services	9	2%
Agriculture, forestry and fishery	7	2%
Water and waste	6	2%
Metals	4	1%
Wood, paper and printing	3	1%
Energy	2	1%

Pub 27: Engineering; Optics

Sector	Number of firms	Share of firms
Research and development	117	39%
Consultancy and advisory services	67	22%
IT and information services	41	14%
Electronics	36	12%
Mechanical engineering	21	7%
Plastics, gas and concrete	11	4%
Manufacturing of electrical equipment	10	3%

Pub 28: Optics; Physics

Sector	Number of firms	Share of firms
Research and development	117	37%
Consultancy and advisory services	67	21%
IT and information services	41	13%
Electronics	36	11%
Mechanical engineering	21	7%
Pharmaceuticals	14	4%
Plastics, gas and concrete	11	3%
Manufacturing of electrical equipment	10	3%

Pub 29: Neurosciences & Neurology; Physiology

Sector	Number of firms	Share of firms
Research and development	117	59%
Consultancy and advisory services	67	34%
Pharmaceuticals	14	7%

Pub 30: Virology

Sector	Number of firms	Share of firms
Research and development	117	82%
Pharmaceuticals	14	10%
Chemicals	12	8%

Pub 31: Immunology; Infectious Diseases

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 32: Chemistry; Science & Technology - Other Topics; Materials Science

Sector	Number of firms	Share of firms
Research and development	117	33%
Consultancy and advisory services	67	19%
IT and information services	41	12%
Electronics	36	10%
Food, drink and tobacco	23	7%
Mechanical engineering	21	6%
Pharmaceuticals	14	4%
Chemicals	12	3%
Plastics, gas and concrete	11	3%
Water and waste	6	2%
Energy	2	1%

Pub 33: Genetics & Heredity; Research & Experimental Medicine

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 34: Materials Science; Metallurgy & Metallurgical Engineering

Sector	Number of firms	Share of firms
Research and development	117	43%
Consultancy and advisory services	67	25%
Electronics	36	13%
Mechanical engineering	21	8%
Chemicals	12	4%
Plastics, gas and concrete	11	4%
Transportmiddelindustri	4	1%
Energy	2	1%

Pub 35: Biotechnology applied microbiology; Food Science & Technology

Sector	Number of firms	Share of firms
Research and development	117	40%
Consultancy and advisory services	67	23%
Electronics	36	12%
Food, drink and tobacco	23	8%
Mechanical engineering	21	7%
Pharmaceuticals	14	5%
Chemicals	12	4%

Pub 36: Medical Informatics

Sector	Number of firms	Share of firms
Research and development	117	43%
Consultancy and advisory services	67	24%
IT and information services	41	15%
Electronics	36	13%
Pharmaceuticals	14	5%

Pub 37: Neurosciences & Neurology; Pharmacology & Pharmacy

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 38: Geriatrics & Gerontology; Neurosciences & Neurology

Sector	Number of firms	Share of firms
Research and development	117	89%
Pharmaceuticals	14	11%

Pub 39: Engineering; Instruments & Instrumentation

Sector	Number of firms	Share of firms
Research and development	117	35%
Consultancy and advisory services	67	20%
IT and information services	41	12%
Electronics	36	11%
Mechanical engineering	21	6%
Pharmaceuticals	14	4%
Forlag, tv og radio	12	4%
Plastics, gas and concrete	11	3%
Manufacturing of electrical equipment	10	3%
Water and waste	6	2%

Pub 40: Electrochemistry; Materials Science

Sector	Number of firms	Share of firms
Research and development	117	56%
Consultancy and advisory services	67	32%
Mechanical engineering	21	10%
Transportmiddelindustri	4	2%

Pub 41: Energy & Fuels; Engineering

Sector	Number of firms	Share of firms
Research and development	117	35%

Consultancy and advisory services	67	20%
IT and information services	41	12%
Electronics	36	11%
Mechanical engineering	21	6%
Chemicals	12	4%
Plastics, gas and concrete	11	3%
Manufacturing of electrical equipment	10	3%
Water and waste	6	2%
Natural ressource extraction	5	1%
Metals	4	1%
Transportmiddelindustri	4	1%
Energy	2	1%

Pub 42: Reproductive Biology

Sector	Number of firms	Share of firms
Research and development	117	70%
Electronics	36	22%
Pharmaceuticals	14	8%

Pub 43: Endocrinology & Metabolism; Nutrition & Dietetics

Sector	Number of firms	Share of firms
Research and development	117	71%
Mechanical engineering	21	13%
Pharmaceuticals	14	9%
Publishing, TV and radio	12	7%

Pub 44: Otorhinolaryngology

Sector	Number of firms	Share of firms
Research and development	117	76%
Electronics	36	24%

Pub 45: Engineering; Geology

Sector	Number of firms	Share of firms
Research and development	117	58%
Consultancy and advisory services	67	33%
Plastics, gas and concrete	11	5%
Natural ressource extraction	5	2%
Energy	2	1%

Pub 46: Food Science & Technology; Microbiology

Sector	Number of firms	Share of firms
Research and development	117	58%
Electronics	36	18%
Food, drink and tobacco	23	11%
Pharmaceuticals	14	7%
Chemicals	12	6%

Pub 47: Nursing

Sector	Number of firms	Share of firms
Pharmaceuticals	14	56%
Plastics, gas and concrete	11	44%

Pub 48: Zoology

Sector	Number of firms	Share of firms
Research and development	117	63%
Electronics	36	19%
Pharmaceuticals	14	8%
Chemicals	12	6%
Agriculture, forestry and fishery	7	4%

Pub 49: Biophysics

Sector	Number of firms	Share of firms
Research and development	117	33%
Consultancy and advisory services	67	19%
IT and information services	41	11%
Electronics	36	10%
Food, drink and tobacco	23	6%
Mechanical engineering	21	6%
Pharmaceuticals	14	4%
Chemicals	12	3%
Plastics, gas and concrete	11	3%
Other business services	9	3%
Water and waste	6	2%

Pub 50: Entomology

Sector	Number of firms	Share of firms
Research and development	117	54%
Consultancy and advisory services	67	31%
Mechanical engineering	21	10%
Chemicals	12	6%

Pub 51: Mathematical & computational biology

Sector	Number of firms	Share of firms
Research and development	117	61%
IT and information services	41	21%
Mechanical engineering	21	11%
Pharmaceuticals	14	7%

Pub 52: Mineralogy

Sector	Number of firms	Share of firms
Research and development	117	52%
Consultancy and advisory services	67	30%
Electronics	36	16%
Natural ressource extraction	5	2%

Pub 53: Agriculture

Sector	Number of firms	Share of firms
Research and development	117	36%
Consultancy and advisory services	67	20%
Electronics	36	11%
Food, drink and tobacco	23	7%
Mechanical engineering	21	6%
Pharmaceuticals	14	4%
Chemicals	12	4%
Plastics, gas and concrete	11	3%
Agriculture, forestry and fishery	7	2%
Water and waste	6	2%
Metals	4	1%
Transportmiddelindustri	4	1%
Wood, paper and printing	3	1%
Energy	2	1%

Pub 54: Physical geography

Sector	Number of firms	Share of firms
Consultancy and advisory services	67	55%
IT and information services	41	34%
Plastics, gas and concrete	11	9%
Energy	2	2%

Pub 55: Behavioral Sciences

Sector	Number of firms	Share of firms
Research and development	117	77%
Mechanical engineering	21	14%
Pharmaceuticals	14	9%

Pub 56: Biotechnology applied microbiology; Microbiology

Sector	Number of firms	Share of firms
Research and development	117	43%
Consultancy and advisory services	67	25%
Electronics	36	13%
Food, drink and tobacco	23	9%
Pharmaceuticals	14	5%
Chemicals	12	4%

Appendix 1. Full list of core competences

This appendix lists the 102 core competences. For each competence, it specifies the the information listed in the table on the right.

Variable	Description
ID No.	Core competence identification number. The prefixes “Pat” and “Pub” indicate whether a core competence is derived from patent or publication data, respectively
Core competence	The research area in which Danish industry has a core competence. A research area is identified as a core competence if it has a relative impact over the value of 1 and is based on at least 10 publications or patents
Share	Share of Danish patents/ publications in the research area that were produced by firms
Impact	Relative international impact of the patents/publications produced by Danish firms
Volume	Number of patents/publications in the research area that were produced by firms

Patent based core competences

ID No.	Core Competences	Share	Impact	Volume
Pat 1	Audio-visual technology / Electrical machinery, apparatus, energy	0,03	3,32	10
Pat 2	Electrical machinery, apparatus, energy / Semiconductors	0,02	2,11	10
Pat 3	Audio-visual technology / Semiconductors	0,00	2,04	10
Pat 4	Transport	0,10	1,75	17
Pat 5	Computer technology / Medical technology	0,10	1,70	29
Pat 6	Macromolecular chemistry, polymers / Organic fine chemistry	0,01	1,69	16
Pat 7	Macromolecular chemistry, polymers / Other special machines	0,01	1,59	24
Pat 8	Computer technology / Control	0,01	1,55	11
Pat 9	Food chemistry	0,86	1,53	179
Pat 10	Biotechnology / Basic materials chemistry	0,21	1,50	221
Pat 11	Other special machines	0,49	1,48	47
Pat 12	Handling	0,06	1,47	17
Pat 13	Macromolecular chemistry, polymers / Surface technology, coating	0,00	1,43	10
Pat 14	Other special machines / Surface technology, coating	0,58	1,43	23
Pat 15	Electrical machinery, apparatus, energy / Mechanical elements	0,01	1,42	12
Pat 16	Environmental technology	0,05	1,40	15
Pat 17	Engines, pumps, turbines / Mechanical elements	0,02	1,38	38
Pat 18	Audio-visual technology / Computer technology	0,01	1,28	14
Pat 19	Thermal processes and apparatus	0,12	1,26	37
Pat 20	Chemical engineering / Environmental technology	0,03	1,24	10
Pat 21	Biotechnology / Food chemistry	0,23	1,24	254
Pat 22	Medical technology	0,72	1,21	209
Pat 23	Macromolecular chemistry, polymers	0,02	1,17	44

Pat 24	Civil engineering	0,57	1,16	36
Pat 25	Digital communication	0,00	1,15	10
Pat 26	Organic fine chemistry / Pharmaceuticals	0,48	1,13	614
Pat 27	Computer technology / IT methods for management	0,04	1,13	13
Pat 28	Basic materials chemistry	0,09	1,13	33
Pat 29	Engines, pumps, turbines	0,21	1,12	78
Pat 30	Materials, metallurgy / Surface technology, coating	0,00	1,11	13
Pat 31	Chemical engineering	0,13	1,10	40
Pat 32	Materials, metallurgy	0,25	1,09	42
Pat 33	Computer technology	0,32	1,08	39
Pat 34	Machine tools	0,07	1,07	22
Pat 35	Digital communication / Telecommunications	0,02	1,07	10
Pat 36	Pharmaceuticals	0,36	1,07	458
Pat 37	Electrical machinery, apparatus, energy	0,51	1,06	48
Pat 38	Audio-visual technology	0,01	1,05	13
Pat 39	Organic fine chemistry	0,14	1,05	183
Pat 40	Biotechnology	0,73	1,04	764
Pat 41	Basic materials chemistry / Macromolecular chemistry, polymers	0,01	1,04	17
Pat 42	Optics	0,28	1,03	34
Pat 43	Food chemistry / Pharmaceuticals	0,06	1,03	12
Pat 44	Surface technology, coating	0,04	1,03	12
Pat 45	Basic materials chemistry / Organic fine chemistry	0,01	1,02	29
Pat 46	Mechanical elements	0,43	1,00	27

Publication based core competences

ID No.	Core Competences	Share	Impact	Volume
Pub 1	Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0,02	4,91	40
Pub 2	Surgery; Transplantation;	0,00	3,95	16
Pub 3	General & Internal Medicine; Research & Experimental Medicine;	0,02	3,20	67
Pub 4	Chemistry; Engineering;	0,18	2,41	130
Pub 5	Health Care Sciences & Services; Public, Environmental & Occupational Health;	0,00	1,82	18
Pub 6	Veterinary Sciences; Zoology;	0,06	1,81	38
Pub 7	Transplantation	0,02	1,70	36
Pub 8	Anesthesiology	0,02	1,70	48
Pub 9	Rehabilitation	0,28	1,70	75
Pub 10	Orthopedics; Rheumatology;	0,06	1,69	73
Pub 11	Medical Laboratory Technology	0,06	1,65	161
Pub 12	Cardiovascular System & Cardiology; Neurosciences & Neurology;	0,01	1,62	40
Pub 13	Integrative & Complementary Medicine	0,01	1,51	15
Pub 14	Physics; Science & Technology - Other Topics; Optics	0,11	1,49	30
Pub 15	Respiratory System	0,03	1,49	62
Pub 16	Physics; Science & Technology - Other Topics; Materials Science	0,15	1,48	39
Pub 17	Mycology	0,08	1,46	50
Pub 18	Cell Biology; Oncology;	0,01	1,44	23
Pub 19	Microscopy	0,01	1,43	29
Pub 20	Biochemistry Molecular Biology; Biophysics;	0,16	1,43	289
Pub 21	Endocrinology & Metabolism; Physiology;	0,01	1,39	49
Pub 22	Fisheries	0,07	1,34	44
Pub 23	Allergy	0,11	1,30	258
Pub 24	Nutrition & Dietetics; Food Science & Technology;	0,01	1,30	26
Pub 25	Pharmacology & Pharmacy; Psychiatry;	0,06	1,30	242
Pub 26	Engineering; Environmental Sciences & Ecology; Water Resources	0,13	1,29	76
Pub 27	Engineering; Optics;	0,22	1,24	112
Pub 28	Optics; Physics;	0,16	1,23	81
Pub 29	Neurosciences & Neurology; Physiology;	0,01	1,23	60
Pub 30	Virology	0,04	1,19	106
Pub 31	Immunology; Infectious Diseases;	0,01	1,19	53
Pub 32	Chemistry; Science & Technology - Other Topics; Materials Science	0,05	1,18	42
Pub 33	Genetics & Heredity; Research & Experimental Medicine;	0,01	1,18	43
Pub 34	Materials Science; Metallurgy & Metallurgical Engineering;	0,05	1,17	49
Pub 35	Biotechnology applied microbiology; Food Science & Technology;	0,02	1,16	32

Pub 36	Medical Informatics	0,02	1,15	23
Pub 37	Neurosciences & Neurology; Pharmacology & Pharmacy;	0,08	1,14	310
Pub 38	Geriatrics & Gerontology; Neurosciences & Neurology;	0,01	1,12	55
Pub 39	Engineering; Instruments & Instrumentation;	0,30	1,11	79
Pub 40	Electrochemistry; Materials Science;	0,02	1,11	40
Pub 41	Energy & Fuels; Engineering;	0,40	1,10	205
Pub 42	Reproductive Biology	0,06	1,10	145
Pub 43	Endocrinology & Metabolism; Nutrition & Dietetics;	0,16	1,09	44
Pub 44	Otorhinolaryngology	0,03	1,07	68
Pub 45	Engineering; Geology;	0,07	1,06	62
Pub 46	Food Science & Technology; Microbiology;	0,01	1,05	23
Pub 47	Nursing	0,01	1,05	25
Pub 48	Zoology	0,14	1,05	85
Pub 49	Biophysics	0,33	1,05	390
Pub 50	Entomology	0,01	1,04	16
Pub 51	Mathematical & computational Biology	0,04	1,04	45
Pub 52	Mineralogy	0,01	1,03	24
Pub 53	Agriculture	0,52	1,02	315
Pub 54	Physical Geography	0,05	1,02	47
Pub 55	Behavioral Sciences	0,05	1,01	116
Pub 56	Biotechnology applied microbiology; Microbiology;	0,08	1,00	146

Appendix 2. Full list of research areas included in the analysis

This appendix lists the full set of research areas included in the analysis. For each research area, it specifies the the information listed in the table on the right.

In total, 278 patent based research areas and 208 publication based research areas were examine in the study.

Variable	Description
Research area	The research area examined
Share	Share of Danish patents/publications in the research area that were produced by firms
Impact	Relative international impact of the patents/publications produced by Danish firms
Volume	Number of patents/publications in the research area that were produced by firms
Core competence ID no.	If the research area has been identified as a core competence (i.e. if it has a relative impact over the value of 1 and is based on at least 10 publications or patents), the identification number of the competence is listed here.

Patent based research areas

Research areas	Share	Impact	Volume	Core competence ID no.
Analysis of biological materials / Chemical engineering	0,00	0,00	0	
Analysis of biological materials / Pharmaceuticals	0,86	0,81	31	
Audio-visual technology	0,01	1,05	13	Pat 38
Audio-visual technology / Basic communication processes	0,00	0,00	0	
Audio-visual technology / Biotechnology	0,00	0,00	0	
Audio-visual technology / Computer technology	0,01	1,28	14	Pat 18
Audio-visual technology / Digital communication	0,11	1,08	1	
Audio-visual technology / Electrical machinery, apparatus, energy	0,03	3,32	10	Pat 1
Audio-visual technology / Furniture, games	0,00	0,00	0	
Audio-visual technology / Handling	0,25	0,00	1	
Audio-visual technology / Mechanical elements	0,00	0,00	0	
Audio-visual technology / Medical technology	0,08	0,00	3	
Audio-visual technology / Optics	0,00	0,00	0	
Audio-visual technology / Other consumer goods	0,06	0,93	1	
Audio-visual technology / Semiconductors	0,00	2,04	10	Pat 3
Audio-visual technology / Thermal processes and apparatus	0,20	0,00	1	
Basic communication processes	0,00	0,00	0	
Basic communication processes / Electrical machinery, apparatus, energy	0,55	0,30	6	
Basic communication processes / Medical technology	0,00	0,00	0	
Basic materials chemistry	0,09	1,13	33	Pat 28
Basic materials chemistry / Chemical engineering	0,17	3,27	6	
Basic materials chemistry / Civil engineering	0,00	0,00	0	
Basic materials chemistry / Engines, pumps, turbines	0,00	0,00	0	
Basic materials chemistry / Environmental technology	0,22	1,20	4	

Research areas	Share	Impact	Volume	Core competence ID no.
Basic materials chemistry / Food chemistry	0,27	1,48	9	
Basic materials chemistry / Machine tools	0,14	0,00	1	
Basic materials chemistry / Macromolecular chemistry, polymers	0,01	1,04	17	Pat 41
Basic materials chemistry / Materials, metallurgy	0,21	1,58	5	
Basic materials chemistry / Medical technology	0,18	0,85	4	
Basic materials chemistry / Optics	0,00	0,00	0	
Basic materials chemistry / Organic fine chemistry	0,01	1,02	29	Pat 45
Basic materials chemistry / Other special machines	0,31	1,38	5	
Basic materials chemistry / Pharmaceuticals	0,60	0,43	9	
Basic materials chemistry / Surface technology, coating	0,59	0,58	13	
Basic materials chemistry / Textile and paper machines	0,15	3,04	3	
Biotechnology	0,73	1,04	764	Pat 40
Biotechnology / Basic materials chemistry	0,21	1,50	221	Pat 10
Biotechnology / Chemical engineering	0,14	0,19	5	
Biotechnology / Computer technology	0,26	1,16	6	
Biotechnology / Environmental technology	0,00	0,00	0	
Biotechnology / Food chemistry	0,23	1,24	254	Pat 21
Biotechnology / Macromolecular chemistry, polymers	0,15	1,47	7	
Biotechnology / Medical technology	0,16	0,84	3	
Biotechnology / Organic fine chemistry	0,04	0,80	21	
Biotechnology / Other special machines	0,10	0,20	5	
Biotechnology / Pharmaceuticals	0,16	0,73	57	
Biotechnology / Semiconductors	0,00	0,00	0	
Biotechnology / Surface technology, coating	0,00	0,00	0	
Biotechnology / Textile and paper machines	0,05	4,61	2	
Chemical engineering	0,13	1,10	40	Pat 31
Chemical engineering / Basic materials chemistry	0,29	2,70	7	
Chemical engineering / Civil engineering	0,00	0,00	0	
Chemical engineering / Computer technology	0,00	0,00	0	
Chemical engineering / Control	0,00	0,00	0	
Chemical engineering / Electrical machinery, apparatus, energy	0,50	0,62	6	
Chemical engineering / Engines, pumps, turbines	0,29	0,96	2	
Chemical engineering / Environmental technology	0,03	1,24	10	Pat 20
Chemical engineering / Food chemistry	0,30	2,23	3	
Chemical engineering / Furniture, games	0,00	0,00	0	
Chemical engineering / Handling	0,00	0,00	0	
Chemical engineering / Machine tools	0,00	0,00	0	
Chemical engineering / Macromolecular chemistry, polymers	0,57	0,85	4	
Chemical engineering / Materials, metallurgy	0,60	0,77	15	
Chemical engineering / Mechanical elements	0,00	0,00	0	
Chemical engineering / Medical technology	0,00	0,00	0	

Research areas	Share	Impact	Volume	Core competence ID no.
Chemical engineering / Optics	0,14	0,00	1	
Chemical engineering / Organic fine chemistry	0,00	0,00	0	
Chemical engineering / Other consumer goods	0,18	0,00	4	
Chemical engineering / Other special machines	0,00	0,00	0	
Chemical engineering / Pharmaceuticals	0,00	0,00	0	
Chemical engineering / Surface technology, coating	0,00	0,00	0	
Chemical engineering / Thermal processes and apparatus	0,19	0,49	4	
Civil engineering	0,57	1,16	36	Pat 24
Civil engineering / Electrical machinery, apparatus, energy	1,00	0,78	4	
Civil engineering / Engines, pumps, turbines	0,00	0,00	0	
Civil engineering / Materials, metallurgy	0,00	0,00	0	
Civil engineering / Measurement	0,38	2,89	3	
Civil engineering / Mechanical elements	0,11	0,19	4	
Civil engineering / Optics	0,00	0,00	0	
Civil engineering / Other special machines	0,00	0,00	0	
Civil engineering / Semiconductors	0,00	0,00	0	
Civil engineering / Surface technology, coating	0,21	0,00	3	
Civil engineering / Textile and paper machines	0,00	0,00	0	
Civil engineering / Thermal processes and apparatus	0,00	0,00	0	
Civil engineering / Transport	0,00	0,00	0	
Computer technology	0,32	1,08	39	Pat 33
Computer technology / Control	0,01	1,55	11	Pat 8
Computer technology / Digital communication	0,26	0,90	15	
Computer technology / Electrical machinery, apparatus, energy	0,30	0,73	3	
Computer technology / Engines, pumps, turbines	0,00	0,00	0	
Computer technology / Environmental technology	0,50	0,00	1	
Computer technology / Furniture, games	0,22	0,00	2	
Computer technology / Handling	0,00	0,00	0	
Computer technology / IT methods for management	0,04	1,13	13	Pat 27
Computer technology / Measurement	0,20	0,53	3	
Computer technology / Mechanical elements	0,17	0,00	1	
Computer technology / Medical technology	0,10	1,70	29	Pat 5
Computer technology / Organic fine chemistry	1,00	0,00	1	
Computer technology / Pharmaceuticals	0,67	0,00	2	
Computer technology / Semiconductors	0,60	0,78	3	
Computer technology / Telecommunications	0,58	0,49	11	
Computer technology / Textile and paper machines	0,00	0,00	0	
Control / Digital communication	0,33	1,29	3	
Control / Electrical machinery, apparatus, energy	0,20	0,93	4	
Control / Engines, pumps, turbines	0,08	8,54	1	
Control / Furniture, games	0,00	0,00	0	
Control / Handling	0,00	0,00	0	

Research areas	Share	Impact	Volume	Core competence ID no.
Control / Measurement	0,00	0,00	0	
Control / Mechanical elements	0,05	0,88	2	
Control / Thermal processes and apparatus	0,00	0,00	0	
Control / Transport	0,50	2,53	1	
Digital communication	0,00	1,15	10	Pat 25
Digital communication / Engines, pumps, turbines	0,00	0,00	0	
Digital communication / IT methods for management	0,15	0,86	2	
Digital communication / Measurement	0,14	0,23	1	
Digital communication / Telecommunications	0,02	1,07	10	Pat 35
Electrical machinery, apparatus, energy	0,51	1,06	48	Pat 37
Electrical machinery, apparatus, energy / Audio-visual technology	0,06	0,00	2	
Electrical machinery, apparatus, energy / Basic communication processes	0,60	0,31	6	
Electrical machinery, apparatus, energy / Engines, pumps, turbines	0,09	3,81	6	
Electrical machinery, apparatus, energy / Food chemistry	0,00	0,00	0	
Electrical machinery, apparatus, energy / Handling	0,14	4,78	1	
Electrical machinery, apparatus, energy / Materials, metallurgy	0,78	0,12	7	
Electrical machinery, apparatus, energy / Measurement	0,17	0,26	5	
Electrical machinery, apparatus, energy / Mechanical elements	0,01	1,42	12	Pat 15
Electrical machinery, apparatus, energy / Medical technology	0,00	0,00	0	
Electrical machinery, apparatus, energy / Optics	0,17	0,83	3	
Electrical machinery, apparatus, energy / Organic fine chemistry	0,00	0,00	0	
Electrical machinery, apparatus, energy / Other special machines	0,00	0,00	0	
Electrical machinery, apparatus, energy / Semiconductors	0,02	2,11	10	Pat 2
Electrical machinery, apparatus, energy / Surface technology, coating	0,36	1,96	4	
Electrical machinery, apparatus, energy / Telecommunications	0,13	0,00	1	
Electrical machinery, apparatus, energy / Thermal processes and apparatus	0,00	0,00	0	
Engines, pumps, turbines	0,21	1,12	78	Pat 29
Engines, pumps, turbines / Environmental technology	0,47	1,44	8	
Engines, pumps, turbines / Handling	0,00	0,00	0	
Engines, pumps, turbines / Machine tools	0,05	0,00	2	
Engines, pumps, turbines / Macromolecular chemistry, polymers	0,00	0,00	0	
Engines, pumps, turbines / Materials, metallurgy	0,29	1,44	2	
Engines, pumps, turbines / Measurement	0,04	0,37	2	

Research areas	Share	Impact	Volume	Core competence ID no.
Engines, pumps, turbines / Mechanical elements	0,02	1,38	38	Pat 17
Engines, pumps, turbines / Medical technology	0,25	1,23	2	
Engines, pumps, turbines / Organic fine chemistry	0,00	0,00	0	
Engines, pumps, turbines / Other special machines	0,00	0,00	0	
Engines, pumps, turbines / Pharmaceuticals	0,00	0,00	0	
Engines, pumps, turbines / Semiconductors	0,00	0,00	0	
Engines, pumps, turbines / Surface technology, coating	0,00	0,00	0	
Engines, pumps, turbines / Telecommunications	0,00	0,00	0	
Engines, pumps, turbines / Thermal processes and apparatus	0,12	0,43	8	
Engines, pumps, turbines / Transport	0,10	0,59	6	
Environmental technology	0,05	1,40	15	Pat 16
Environmental technology / Materials, metallurgy	0,00	0,00	0	
Environmental technology / Medical technology	1,00	1,53	4	
Environmental technology / Organic fine chemistry	0,00	0,00	0	
Environmental technology / Surface technology, coating	0,17	0,00	1	
Environmental technology / Textile and paper machines	0,00	0,00	0	
Environmental technology / Thermal processes and apparatus	0,20	0,98	2	
Food chemistry	0,86	1,53	179	Pat 9
Food chemistry / Furniture, games	0,00	0,00	0	
Food chemistry / Handling	0,25	1,00	1	
Food chemistry / Macromolecular chemistry, polymers	0,07	0,00	2	
Food chemistry / Measurement	0,00	0,00	0	
Food chemistry / Mechanical elements	1,00	2,00	1	
Food chemistry / Medical technology	0,33	1,27	3	
Food chemistry / Organic fine chemistry	0,12	1,19	6	
Food chemistry / Other special machines	0,06	1,67	3	
Food chemistry / Pharmaceuticals	0,06	1,03	12	Pat 43
Food chemistry / Textile and paper machines	0,00	0,00	0	
Food chemistry / Thermal processes and apparatus	0,00	0,00	0	
Furniture, games	0,18	0,92	43	
Furniture, games / Electrical machinery, apparatus, energy	0,00	0,00	0	
Furniture, games / Handling	0,11	4,45	1	
Furniture, games / Measurement	0,00	0,00	0	
Furniture, games / Mechanical elements	0,07	2,26	2	
Furniture, games / Medical technology	0,23	0,31	3	
Furniture, games / Other consumer goods	0,50	2,53	2	
Furniture, games / Other special machines	0,00	0,00	0	
Furniture, games / Textile and paper machines	0,25	3,23	1	
Handling	0,06	1,47	17	Pat 12
Handling / Chemical engineering	0,00	0,00	0	
Handling / Machine tools	0,20	0,00	1	

Research areas	Share	Impact	Volume	Core competence ID no.
Handling / Materials, metallurgy	0,00	0,00	0	
Handling / Mechanical elements	0,00	0,00	0	
Handling / Medical technology	0,64	1,40	9	
Handling / Other consumer goods	0,00	0,00	0	
Handling / Other special machines	0,07	4,16	1	
Handling / Semiconductors	0,00	0,00	0	
Handling / Surface technology, coating	0,75	1,34	9	
Handling / Transport	0,00	0,00	0	
IT methods for management / Engines, pumps, turbines	0,00	0,00	0	
Machine tools	0,07	1,07	22	Pat 34
Machine tools / Materials, metallurgy	0,25	3,61	2	
Machine tools / Measurement	0,00	0,00	0	
Machine tools / Mechanical elements	0,18	1,83	4	
Machine tools / Medical technology	0,20	0,87	1	
Machine tools / Other special machines	0,63	2,81	5	
Machine tools / Textile and paper machines	0,00	0,00	0	
Macromolecular chemistry, polymers	0,02	1,17	44	Pat 23
Macromolecular chemistry, polymers / Materials, metallurgy	0,22	0,00	2	
Macromolecular chemistry, polymers / Medical technology	0,40	0,86	4	
Macromolecular chemistry, polymers / Organic fine chemistry	0,01	1,69	16	Pat 6
Macromolecular chemistry, polymers / Other special machines	0,01	1,59	24	Pat 7
Macromolecular chemistry, polymers / Pharmaceuticals	0,33	1,57	1	
Macromolecular chemistry, polymers / Surface technology, coating	0,00	1,43	10	Pat 13
Macromolecular chemistry, polymers / Textile and paper machines	0,09	2,59	1	
Materials, metallurgy	0,25	1,09	42	Pat 32
Materials, metallurgy / Mechanical elements	0,17	0,00	1	
Materials, metallurgy / Organic fine chemistry	0,07	0,00	1	
Materials, metallurgy / Other special machines	0,09	0,00	2	
Materials, metallurgy / Pharmaceuticals	0,00	0,00	0	
Materials, metallurgy / Surface technology, coating	0,00	1,11	13	Pat 30
Materials, metallurgy / Textile and paper machines	0,00	0,00	0	
Measurement	0,42	0,96	257	
Measurement	0,21	1,07	128	
Measurement / Analysis of biological materials	0,52	0,68	38	
Measurement / Audio-visual technology	0,00	0,00	0	
Measurement / Chemical engineering	0,23	0,57	3	
Measurement / Environmental technology	0,33	0,00	1	
Measurement / Handling	0,14	2,37	1	

Research areas	Share	Impact	Volume	Core competence ID no.
Measurement / Mechanical elements	0,00	0,00	0	
Measurement / Medical technology	0,25	0,91	7	
Measurement / Organic fine chemistry	0,00	0,00	0	
Measurement / Semiconductors	0,29	2,85	4	
Measurement / Telecommunications	0,19	0,64	4	
Measurement / Thermal processes and apparatus	0,00	0,00	0	
Mechanical elements	0,43	1,00	27	Pat 46
Mechanical elements / Medical technology	0,40	1,32	4	
Mechanical elements / Other special machines	0,46	1,52	6	
Mechanical elements / Surface technology, coating	0,29	0,16	5	
Mechanical elements / Thermal processes and apparatus	0,03	0,00	4	
Mechanical elements / Transport	0,09	0,00	3	
Medical technology	0,72	1,21	209	Pat 22
Medical technology / IT methods for management	0,29	2,57	2	
Medical technology / Other consumer goods	0,05	1,61	1	
Medical technology / Other special machines	0,19	0,69	8	
Medical technology / Pharmaceuticals	0,39	3,09	9	
Medical technology / Surface technology, coating	0,05	0,50	2	
Micro-structural and nano-technology / Semiconductors	0,67	0,00	2	
Optics	0,28	1,03	34	Pat 42
Optics / Other special machines	0,47	3,16	7	
Optics / Semiconductors	0,41	0,54	13	
Optics / Telecommunications	0,60	0,00	3	
Organic fine chemistry	0,14	1,05	183	Pat 39
Organic fine chemistry / Other special machines	0,00	0,00	0	
Organic fine chemistry / Pharmaceuticals	0,48	1,13	614	Pat 26
Other consumer goods / Control	0,17	0,00	1	
Other consumer goods / Thermal processes and apparatus	0,07	0,00	1	
Other consumer goods / Transport	0,00	0,00	0	
Other special machines	0,49	1,48	47	Pat 11
Other special machines / Audio-visual technology	0,20	0,00	1	
Other special machines / Surface technology, coating	0,58	1,43	23	Pat 14
Other special machines / Textile and paper machines	0,08	0,44	2	
Other special machines / Thermal processes and apparatus	0,05	2,29	1	
Pharmaceuticals	0,36	1,07	458	Pat 36
Pharmaceuticals / Measurement	0,00	0,00	0	
Semiconductors / Thermal processes and apparatus	0,20	0,00	1	
Surface technology, coating	0,04	1,03	12	Pat 44
Surface technology, coating / Machine tools	0,21	1,26	3	
Surface technology, coating / Textile and paper machines	0,63	1,17	5	
Telecommunications	0,54	0,92	125	
Telecommunications / Audio-visual technology	1,00	0,36	26	

Research areas	Share	Impact	Volume	Core competence ID no.
Telecommunications / Medical technology	0,00	0,00	0	
Textile and paper machines	0,60	0,84	63	
Textile and paper machines / Chemical engineering	0,00	0,00	0	
Textile and paper machines / Other consumer goods	0,20	0,00	1	
Thermal processes and apparatus	0,12	1,26	37	Pat 19
Thermal processes and apparatus / Machine tools	0,00	0,00	0	
Transport	0,10	1,75	17	Pat 4
Transport / Electrical machinery, apparatus, energy	0,07	0,00	1	
Analysis of biological materials / Chemical engineering	0,00	0,00	0	
Analysis of biological materials / Pharmaceuticals	0,86	0,81	31	
Audio-visual technology	0,01	1,05	13	Pat 38
Audio-visual technology / Basic communication processes	0,00	0,00	0	
Audio-visual technology / Biotechnology	0,00	0,00	0	
Audio-visual technology / Computer technology	0,01	1,28	14	Pat 18
Audio-visual technology / Digital communication	0,11	1,08	1	
Audio-visual technology / Electrical machinery, apparatus, energy	0,03	3,32	10	Pat 1
Audio-visual technology / Furniture, games	0,00	0,00	0	

Publication based research areas

Research area	Share	Impact	Volume	Core competence ID no.
Acoustics	0,17	0,66	172	
Agriculture	0,07	1,02	315	Pub 53
Allergy	0,11	1,30	258	Pub 23
Anatomy & Morphology	0,16	1,34	34	
Anesthesiology	0,02	1,70	48	Pub 8
Anthropology	0,12	3,22	40	
Archaeology	0,10	0,83	24	
Architecture	0,06	0,00	2	
Area Studies	0,00	0,00	1	
Art	0,03	0,00	2	
Arts & Humanities - Other Topics	0,00	0,00	1	
Asian Studies	0,02	0,00	1	
Astronomy & Astrophysics	0,01	0,21	13	
Audiology & Speech-Language Pathology	0,52	2,56	11	
Automation & Control Systems	0,24	0,84	91	
Behavioral Sciences	0,18	1,01	116	Pub 55
Biochemistry Molecular Biology; Biophysics;	0,16	1,43	289	Pub 20
Biochemistry Molecular Biology; Biotechnology & Applied Microbiology;	0,26	0,93	173	
Biochemistry Molecular Biology; Cell Biology;	0,25	0,70	244	
Biochemistry Molecular Biology; Chemistry;	0,42	0,98	368	
Biochemistry Molecular Biology; Genetics & Heredity;	0,09	0,49	58	
Biochemistry Molecular Biology; Immunology;	0,10	0,85	41	
Biochemistry Molecular Biology; Life Sciences & Biomedicine - Other Topics; Cell Biology	0,02	4,91	40	Pub 1
Biochemistry Molecular Biology; Microbiology;	0,17	0,44	49	
Biochemistry Molecular Biology; Neurosciences & Neurology;	0,48	0,86	129	
Biochemistry Molecular Biology; Pharmacology & Pharmacy;	0,44	0,89	166	
Biochemistry Molecular Biology; Physics; Spectroscopy	0,39	0,73	22	
Biochemistry Molecular Biology; Plant Sciences;	0,14	0,46	31	
Biodiversity & Conservation	0,01	1,12	6	
Biomedical Social Sciences	0,01	0,30	4	
Biophysics	0,33	1,05	390	Pub 49
Biotechnology applied microbiology; Food Science & Technology;	0,02	1,16	32	Pub 35
Biotechnology applied microbiology; Genetics & Heredity;	0,18	0,94	76	
Biotechnology applied microbiology; Microbiology;	0,08	1,00	146	Pub 56
Biotechnology applied microbiology; Pharmacology & Pharmacy;	0,26	0,32	11	

Research area	Share	Impact	Volume	Core competence ID no.
Biotechnology applied microbiology; Research & Experimental Medicine;	0,28	0,43	43	
Biotechnology applied microbiology; Toxicology;	0,21	0,36	21	
Biotechnology applied microbiology; Virology;	0,14	1,62	12	
Business & Economics; Health Care Sciences & Services;	0,63	0,21	181	
Business & Economics; Operations Research & Management Science;	0,04	0,08	9	
Business & Economics; Psychology;	0,02	0,00	4	
Cardiovascular System & Cardiology; Hematology;	0,14	0,28	140	
Cardiovascular System & Cardiology; Neurosciences & Neurology;	0,01	1,62	40	Pub 12
Cell Biology; Endocrinology & Metabolism;	0,14	0,69	22	
Cell Biology; Immunology;	0,15	0,12	39	
Cell Biology; Oncology;	0,01	1,44	23	Pub 18
Cell Biology; Pathology;	0,06	0,33	17	
Chemistry; Engineering;	0,18	2,41	130	Pub 4
Chemistry; Environmental Sciences & Ecology;	0,17	0,94	26	
Chemistry; Food Science & Technology;	0,19	0,90	126	
Chemistry; Instruments & Instrumentation;	0,25	0,05	62	
Chemistry; Materials Science; Physics	0,10	0,35	38	
Chemistry; Pharmacology & Pharmacy;	0,45	0,45	292	
Chemistry; Polymer Science;	0,26	0,56	35	
Chemistry; Science & Technology - Other Topics; Materials Science	0,05	1,18	42	Pub 32
Chemistry; Spectroscopy;	0,28	0,71	75	
Classics	0,02	0,00	1	
Communication	0,04	0,61	8	
Computer Science; Engineering;	0,33	0,98	244	
Construction & Building Technology	0,20	0,67	93	
Criminology & Penology	0,03	0,78	1	
Cultural Studies	0,00	0,00	0	
Dance	0,00	0,00	0	
Demography	0,00	0,00	0	
Dentistry, Oral Surgery & Medicine; Public, Environmental & Occupational Health;	0,09	0,55	3	
Dermatology; Pharmacology & Pharmacy;	0,14	1,18	7	
Dermatology; Surgery;	0,38	0,84	19	
Developmental Biology	0,09	0,56	46	
Education & Educational Research; Physiology;	0,03	0,41	1	
Education & Educational Research; Psychiatry;	0,13	1,69	4	
Education & Educational Research; Rehabilitation;	0,13	2,11	4	

Research area	Share	Impact	Volume	Core competence ID no.
Electrochemistry; Materials Science;	0,02	1,11	40	Pub 40
Emergency Medicine	0,11	1,01	13	
Endocrinology & Metabolism; Neurosciences & Neurology;	0,25	0,68	57	
Endocrinology & Metabolism; Nutrition & Dietetics;	0,16	1,09	44	Pub 43
Endocrinology & Metabolism; Physiology;	0,01	1,39	49	Pub 21
Energy & Fuels; Engineering;	0,40	1,10	205	Pub 41
Energy & Fuels; Environmental Sciences & Ecology;	0,07	0,72	13	
Energy & Fuels; Geology;	0,14	0,34	24	
Engineering; Construction & Building Technology;	0,14	0,34	49	
Engineering; Environmental Sciences & Ecology;	0,13	0,86	169	
Engineering; Environmental Sciences & Ecology; Water Resources	0,13	45,66	76	Pub 26
Engineering; Geology;	0,07	1,06	62	Pub 45
Engineering; Instruments & Instrumentation;	0,30	1,11	79	Pub 39
Engineering; Materials Science;	0,31	0,51	137	
Engineering; Mechanics;	0,19	0,57	92	
Engineering; Optics;	0,22	1,24	112	Pub 27
Engineering; Physics;	0,98	0,53	401	
Engineering; Telecommunications;	0,56	0,91	160	
Entomology	0,03	1,04	16	Pub 50
Environmental Sciences & Ecology; Geology;	0,04	0,48	22	
Environmental Sciences & Ecology; Marine & Freshwater Biology;	0,01	0,48	19	
Environmental Sciences & Ecology; Meteorology & Atmospheric Sciences;	0,02	0,58	12	
Environmental Sciences & Ecology; Water Resources;	0,08	0,59	106	
Ethnic Studies	0,00	0,00	0	
Evolutionary Biology	0,04	1,24	33	
Family Studies	0,17	3,27	5	
Film Radio Television	0,00	0,00	0	
Fisheries	0,07	1,34	44	Pub 22
Food Science & Technology; Microbiology;	0,01	1,05	23	Pub 46
Forestry	0,07	0,72	29	
Gastroenterology & Hepatology; Pharmacology & Pharmacy;	0,03	1,70	10	
Gastroenterology & Hepatology; Surgery;	0,05	1,94	15	
General & Internal Medicine; Research & Experimental Medicine;	0,02	3,20	67	Pub 3
Genetics & Heredity; Research & Experimental Medicine;	0,01	1,18	43	Pub 33
Geochemistry & Geophysics	0,11	0,48	113	
Geography	0,01	0,19	3	
Geology; Physical Geography;	0,05	0,98	43	Pub 54

Research area	Share	Impact	Volume	Core competence ID no.
Geriatrics & Gerontology; Neurosciences & Neurology;	0,01	1,12	55	Pub 38
Government & Law	0,01	0,43	3	
Health Care Sciences & Services; Public, Environmental & Occupational Health;	0,11	1,82	18	Pub 5
History	0,00	0,00	0	
History & Philosophy of Science	0,02	0,84	7	
Imaging Science & Photographic Technology	0,27	0,49	37	
Immunology; Infectious Diseases;	0,01	1,19	53	Pub 31
Immunology; Microbiology;	0,07	0,15	78	
Infectious Diseases; Microbiology;	0,11	0,91	83	
Infectious Diseases; Pharmacology & Pharmacy;	0,08	0,04	26	
Information Science & Library Science	0,04	0,30	10	
Instruments & Instrumentation; Optics; Physics	0,00	0,00	1	
Integrative & Complementary Medicine	0,01	1,51	15	Pub 13
International Relations	0,00	0,00	0	
Legal Medicine	0,13	0,92	26	
Life Sciences & Biomedicine - Other Topics; Research & Experimental Medicine;	0,20	0,42	18	
Linguistics	0,03	3,21	14	
Literature	0,05	0,00	10	
Materials Science; Construction & Building Technology;	0,33	0,63	49	
Materials Science; Metallurgy & Metallurgical Engineering;	0,05	1,17	49	Pub 34
Materials Science; Polymer Science;	0,13	0,46	15	
Materials Science; Science & Technology - Other Topics;	0,12	0,86	94	
Mathematical & computational Biology	0,04	1,04	45	Pub 51
Mathematical Methods In Social Sciences	0,01	0,31	4	
Mathematics; Computer Science;	0,07	0,26	42	
Medical Ethics	0,00	0,00	0	
Medical Informatics	0,02	1,15	23	Pub 36
Medical Laboratory Technology	0,06	1,65	161	Pub 11
Meteorology & Atmospheric Sciences	0,07	0,67	78	
Microbiology; Pharmacology & Pharmacy;	0,11	0,78	41	
Microscopy	0,01	1,43	29	Pub 19
Mineralogy	0,07	1,03	24	Pub 52
Mining & Mineral Processing	0,26	0,96	26	
Music	0,06	0,68	2	
Mycology	0,08	1,46	50	Pub 17
Neurosciences & Neurology; Pharmacology & Pharmacy;	0,08	1,14	310	Pub 37
Neurosciences & Neurology; Physiology;	0,01	1,23	60	Pub 29

Research area	Share	Impact	Volume	Core competence ID no.
Neurosciences & Neurology; Psychiatry;	0,71	0,23	316	
Neurosciences & Neurology; Radiology, Nuclear Medicine & Medical Imaging;	0,28	0,55	81	
Neurosciences & Neurology; Rehabilitation;	0,25	1,76	41	
Nuclear Science & Technology; Instruments & Instrumentation;	0,06	0,34	12	
Nursing	0,09	1,05	25	Pub 47
Nutrition & Dietetics; Food Science & Technology;	0,01	1,30	26	Pub 24
Obstetrics & Gynecology; Reproductive Biology;	0,06	0,99	109	Pub 42
Oceanography	0,03	0,61	43	
Oncology; Pharmacology & Pharmacy;	0,23	0,73	17	
Operations Research & Management Science	0,08	0,60	44	
Ophthalmology; Surgery;	0,46	0,85	11	
Optics; Physics;	0,16	1,23	81	Pub 28
Orthopedics; Rheumatology;	0,06	1,69	73	Pub 10
Otorhinolaryngology	0,03	1,07	68	Pub 44
Paleontology	0,08	1,03	30	
Parasitology	0,04	0,90	25	
Pathology	0,20	0,81	152	
Pediatrics	0,10	0,64	106	
Pharmacology & Pharmacy; Psychiatry;	0,06	1,30	242	Pub 25
Pharmacology & Pharmacy; Research & Experimental Medicine;	0,46	0,63	28	
Pharmacology & Pharmacy; Toxicology;	0,23	0,84	111	
Philosophy	0,02	2,25	6	
Physical Geography	0,07	1,02	47	
Physics; Science & Technology - Other Topics; Materials Science	0,15	1,48	39	Pub 16
Physics; Science & Technology - Other Topics; Optics	0,11	1,49	30	Pub 14
Physiology; Sport Sciences;	0,06	0,50	31	
Plant Sciences; Pharmacology & Pharmacy;	0,10	0,95	18	
Psychology; Neurosciences & Neurology;	0,28	0,74	53	
Psychology; Psychiatry;	0,11	0,99	37	
Public Administration	0,01	1,02	6	
Public, Environmental & Occupational Health ; Environmental Sciences & Ecology;	0,03	0,85	14	
Public, Environmental & Occupational Health ; Health Care Sciences & Services;	0,04	1,14	18	
Radiology, Nuclear Medicine & Medical Imaging; Oncology;	0,02	2,24	8	
Rehabilitation	0,28	1,70	75	Pub 9
Religion	0,07	0,20	14	
Remote Sensing	0,05	0,53	11	

Research area	Share	Impact	Volume	Core competence ID no.
Reproductive Biology	0,12	1,10	145	
Respiratory System	0,03	1,49	62	Pub 15
Rheumatology	0,58	0,89	393	
Robotics	0,18	0,09	10	
Social Issues	0,08	0,27	11	
Social Sciences - Other Topics	0,04	1,63	20	
Social Work	0,01	3,27	1	
Sociology	0,01	1,78	5	
Spectroscopy	0,25	0,64	170	
Sport Sciences	0,08	0,69	77	
Substance Abuse	0,06	0,56	11	
Surgery; Neurosciences & Neurology;	0,24	0,77	39	
Surgery; Transplantation;	0,00	3,95	16	Pub 2
Telecommunications	0,40	0,90	187	
Theater	0,13	0,00	1	
Thermodynamics	0,22	0,79	90	
Toxicology	0,22	0,97	241	
Transplantation	0,02	1,70	36	Pub 7
Transportation	0,23	0,59	44	
Tropical Medicine	0,02	0,05	12	
Urban Studies	0,03	0,31	5	
Urology & Nephrology; Transplantation;	0,06	2,61	9	
Veterinary Sciences; Zoology;	0,06	1,81	38	Pub 6
Virology	0,04	1,19	106	Pub 30
Water Resources	0,19	0,83	190	
Women's Studies	0,09	0,80	3	
Zoology	0,05	1,05	85	Pub 48

Appendix 3. Firms (and universities) that contribute to core competences, by core competence

This appendix contains

- First, a full list of companies that contribute to core competences, ranked by the number of core competences that they contribute to
- Second, a list of the 102 core competences with information on which firms contribute to the publications and patents behind the core competence (and the number of publications or patents that each firm contributes to).
  For publication based core competences, the chapter also lists the Danish universities that have co-authored company publications.

It should be noted that this chapter only lists companies for which a company registration number ("CVR nummer", in Danish) was available.

All firms, by number of core competences

Number of competences that the firm contributes to	Pat.	Pub.	Total
Novo Nordisk	22	42	**64**
Danfoss	24	7	**31**
Danisco	19	8	**27**
H Lundbeck & Co / Pharma	5	22	**27**
Grundfos Biobooster	21	1	**22**
Novozymes	19	2	**21**
Chr Hansen	5	14	**19**
Neurosearch	6	12	**18**
Carlsberg	8	9	**17**
NKT Research	14	2	**16**
Coloplast	10	6	**16**
Haldor Topsoe	11	4	**15**
NYCOMED	10	5	**15**
VIKING LIFE - SAVING EQUIPMENT	10	5	**15**
ISOVER	14		**14**
DakoCytomation	9	5	**14**
ALK Abello	2	12	**14**
Eurofins Steins Laboratorium	1	13	**14**
CPKelco	11	2	**13**
Grundfos Management	11	2	**13**
Oticon	11	2	**13**
Schur Technology	6	7	**13**
Grundfos Microrefinery	11	1	**12**
Retinalyze	11	1	**12**
Saxo Bank	11	1	**12**
GEUS		12	**12**
Haldor Topsoe Res Labs		12	**12**
LEO Pharma	4	7	**11**
Bioneer		11	**11**
Center for Clinical & Basic Research		11	**11**
Contec	10		**10**
Rockwool International	10		**10**
Sapa Profiler	4	6	**10**
Ferrosan	3	7	**10**

Number of competences that the firm contributes to	Pat.	Pub.	Total
Vestas Wind Systems	7	2	9
Pharmos Bioscience	5	4	9
Nunc	1	8	9
APC	8		8
MAN-B&W DIESEL	7	1	8
7TM Pharma	4	4	8
Fluxome Sciences	4	4	8
APV	7		7
GE Healthcare	6	1	7
GN Otometrics	6	1	7
GN Resound	6	1	7
William Demant Holding	6	1	7
DELTA	4	3	7
Pharma Nord	4	3	7
Topsoe Fuel Cell	4	3	7
Cheminova	3	4	7
COWI	3	4	7
NsGene	3	4	7
ALECTIA		7	7
Hagedorn Res Inst		7	7
Bang & Olufsen	6		6
SFK Systems	6		6
Zapera Com	6		6
Alpharma	5	1	6
DISA	5	1	6
LM Glasfiber	5	1	6
Prepchrom	5	1	6
OsteoPro	4	2	6
Rheosci	4	2	6
DONG Energy	3	3	6
MUUSMANN Res & Consulting	3	3	6
Q Interline	3	3	6
CCBR	2	4	6
Unisense FertiliTech	2	4	6
Zymenex	2	4	6
ENKAM Pharmaceut	1	5	6
Danish Technology Institute		6	6

Number of competences that the firm contributes to	Pat.	Pub.	Total
Sectra Pronosco		6	6
Stobbe Tech		6	6
Biolab	5		5
CBD	5		5
GN Netcom	5		5
LEGO	5		5
LINAK	5		5
CSO Santaris Pharma	4	1	5
Evolva	4	1	5
Nordic Bioscience Clinical Studies	4	1	5
Pantheco	4	1	5
3Shape Inc	3	2	5
DONG Energy Power	3	2	5
IRD	3	2	5
Janssen Cilag	3	2	5
Babcock & Wilcox Volund	2	3	5
Boehringer Ingelheim	2	3	5
ENERGI E2	2	3	5
Radiometer Medical	2	3	5
Aquaporin	1	4	5
Sanovo Foods	1	4	5
Synarc	1	4	5
Danisco Cultor		5	5
FLSmidth		5	5
Grundfos		5	5
Nordic Bioscience		5	5
Bellinger	4		4
EC Power	4		4
Hempel	4		4
MedCom	4		4
Protana	4		4
Treat	4		4
Trescal	4		4
Econet	3	1	4
Inbicon	3	1	4
IRD Fuel Cells	3	1	4
Polypeptide Labs	3	1	4

Number of competences that the firm contributes to	Pat.	Pub.	Total
SIMI	3	1	4
Aasted-mikroverk	3	1	4
Crystal Fiber	2	2	4
DLF Trifolium	2	2	4
Elsam Engineering	2	2	4
FLS Miljo	2	2	4
Foss Analytical	2	2	4
LifeCycle Pharma	2	2	4
Sophus Berendsen	2	2	4
Synoptik	2	2	4
Zensys	2	2	4
Aalborg Industries	2	2	4
RhinoMetrics	1	3	4
Arla Foods		4	4
BioMar		4	4
Ferring Pharmaceuticals		4	4
Orbicon A		4	4
Scanbur (BK)		4	4
Acta	3		3
Aktieselskabet Beauvais	3		3
Almirall	3		3
Bahner.dk	3		3
BIOINFORMATICS	3		3
BIOMODICS	3		3
Chew Tech I/S or Gumlink	3		3
CNC	3		3
Dandy	3		3
Dantherm	3		3
Fiberline	3		3
Gumlink	3		3
Martin Professional	3		3
Nuevolution	3		3
Poalis	3		3
PROMECON	3		3
Smart Biosystems	3		3
Tarconord	3		3
Tellabs Denmark	3		3

Number of competences that the firm contributes to	Pat.	Pub.	Total
Terranol	3		3
Ultera A Southwire NKT Cables Joint Venture	3		3
Valcon	3		3
Wastewater Control	3		3
Watertech	3		3
AdvanDx	2	1	3
DIMAC	2	1	3
Elsamprojekt	2	1	3
NEG MICON	2	1	3
NKT Flexibles IS	2	1	3
Norpharma	2	1	3
Son MEMS	2	1	3
Sophion Bioscience	2	1	3
Synarc Imaginging Technologies	2	1	3
Unizyme Labs	2	1	3
Viuff	2	1	3
AntibodyShop	1	2	3
BioGasol	1	2	3
BioImage	1	2	3
Biomage	1	2	3
ENKOTEC	1	2	3
Eurofins Danmark	1	2	3
Lattec	1	2	3
LiPlasome Pharma	1	2	3
Micro Managed Photons	1	2	3
NatImmune	1	2	3
Nordic Vaccine	1	2	3
Statens Serum Institut	1	2	3
AstraZeneca		3	3
Calsep		3	3
Capres		3	3
Ciphergen Biosystems		3	3
Cyncron Clin Res Unit		3	3
Danish Aquaculture		3	3
Danish Hydraulic Institute		3	3
Danish Institute Fundamental Metrology		3	3
Dicon		3	3

Number of competences that the firm contributes to	Pat.	Pub.	Total
Eli Lilly Danmark		3	3
EMD Int		3	3
Exiqon		3	3
Mekoprint		3	3
OFS Fitel Denmark		3	3
Supertrae		3	3
Tacon Europe		3	3
Velux		3	3
ACURE	2		2
Alfa Laval Kolding	2		2
Amcor Flexible	2		2
ATEA	2		2
AXA Power	2		2
Bifodan	2		2
BIOPLAN	2		2
Bioscan	2		2
Biovelop	2		2
BORRINGIA	2		2
CemeCon	2		2
CFS Slagelse	2		2
COMETAS	2		2
Composhield	2		2
Cubic-Modulsystem	2		2
Cureon	2		2
Danfoss Solar Inverters	2		2
DANIONICS	2		2
Deloitte	2		2
Dianova	2		2
DKI PLAST	2		2
Dong Energy Generation	2		2
Dupont Lightstone	2		2
ECCO SKO	2		2
Emri	2		2
Excite	2		2
Gartneriet PKM	2		2
GATEHOUSE	2		2
GEA Farmaceutisk Fabrik	2		2

Number of competences that the firm contributes to	Pat.	Pub.	Total
GENECARE	2		2
Genmab	2		2
Gits	2		2
Hydro Aluminium	2		2
Hymite	2		2
Icopal	2		2
Kruuse	2		2
Lyngsoe Systems	2		2
Multimerics	2		2
MYCO TEO	2		2
Nilfisk Advance	2		2
Nor-Feed	2		2
Osteologix	2		2
Pharmacia & Upjohn Inc	2		2
Ramboll Denmark	2		2
Reapplix	2		2
RoboTool	2		2
Rovesta Miljo	2		2
SerEnergy	2		2
SFK Technol	2		2
StrateKo	2		2
SunFlake	2		2
TD Vaccines	2		2
Thermex	2		2
TOMS GRUPPEN	2		2
TopoTarget	2		2
TPR Grp	2		2
Unimerco	2		2
Versamatrix	2		2
WELLTEC	2		2
Widex	2		2
YOKE interaction design	2		2
YORK DENMARK	2		2
ZGene	2		2
Agro Business Pk	1	1	2
AgroTech	1	1	2
Bang & Olufsen Medical	1	1	2

Number of competences that the firm contributes to	Pat.	Pub.	Total
Brodrene Hartmann	1	1	2
Colotech	1	1	2
Dandrit Biotech	1	1	2
Danish Steel Works	1	1	2
Interface Biotech	1	1	2
Medicult	1	1	2
Nebo	1	1	2
Nutri Pharma	1	1	2
Osteometer Biotech	1	1	2
PharmaZell Denmark	1	1	2
Pipeline Biotech	1	1	2
Reference Lab	1	1	2
Sejet Planteforaedling	1	1	2
TORSANA	1	1	2
ACE Biosciences		2	2
Albeda Research		2	2
Alfa Laval Copenhagen		2	2
Alight Technologies		2	2
AnyBody Technology		2	2
Burmeister & Wain Scandinavian Contractor		2	2
Chashude		2	2
Chempaq (Microinstruments)		2	2
CLC Bio		2	2
CMC Biopharmaceuticals		2	2
Cobento Biotech		2	2
Cyncron		2	2
Danfoss Drives		2	2
Danfysik		2	2
Danish Fundamental Metrology		2	2
Danmeter		2	2
Dantec Dynamics		2	2
Dinex Filter Technology		2	2
Ellegaard Gottingen Minipigs		2	2
Elsam		2	2
Foss Electric		2	2
Fundal Consult		2	2
Hardi International		2	2

Number of competences that the firm contributes to	Pat.	Pub.	Total
HKL Technology		2	2
IBSEN Micro Structures		2	2
Image Metrology		2	2
InSensor		2	2
KK Elect		2	2
Koheras		2	2
LAB Res Scantox		2	2
Loke Diagnostics		2	2
Lucent Technologies		2	2
M&B		2	2
M&E Biotech		2	2
Maersk Olie & Gas		2	2
Maxygen		2	2
Microlytic		2	2
Microtron		2	2
NANOKO		2	2
NKT Photonics		2	2
Nordic Bioscience Diagnostics		2	2
Noreco ASA		2	2
OVC		2	2
Pfizer Denmark		2	2
PH Consult		2	2
Plum		2	2
Poseidon Pharmaceuticals		2	2
RBE		2	2
Ridley's		2	2
Rosti		2	2
Samson Agro		2	2
Scandinavian Airlines System		2	2
SkyTEM		2	2
Sonion Roskilde		2	2
Steno Diabetes Center		2	2
Taconic		2	2
Tempress		2	2
Traeger		2	2
Xperion		2	2
3H Inventors	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
ABEO	1		1
AC-Sun	1		1
Actulux	1		1
Albihns	1		1
AMMINEX	1		1
Anico	1		1
APM Terminals	1		1
Aproxi	1		1
ASAH Medico	1		1
Asetek	1		1
ATV	1		1
AVN Energy	1		1
Balslev	1		1
BARDOW CONSULT	1		1
Barsmark	1		1
BaySystems	1		1
Bekaert Handling	1		1
Besam	1		1
Better Place	1		1
Bevola	1		1
BilWinco	1		1
BIOCONTRACTORS	1		1
Biolocus	1		1
Biomonitor	1		1
Biosa	1		1
Biosynergy	1		1
Borean Pharma	1		1
Bridge Bioresearch Danmark	1		1
Brother, Brother & Sons	1		1
Brøndum	1		1
Cabinplant	1		1
Carmo	1		1
Catcon	1		1
Cismi	1		1
Cleanfield	1		1
CLLUONE DIAGNOSTICS	1		1
CLLUONE THERAPEUTICS	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Clou-Thürmer	1		1
CMC Biologics	1		1
Codan Gummi	1		1
Confac	1		1
Configit	1		1
CPH Design	1		1
Crisplant	1		1
Crown-Foods	1		1
CRYPTOMATHIC	1		1
Curix Biotech	1		1
Dall Energy	1		1
Daloon	1		1
Damas	1		1
Damcos	1		1
Damptech	1		1
DANAPAK FLEXIBLES	1		1
Danion	1		1
Danish Crown	1		1
Dansk Kvægavl	1		1
DANTECH	1		1
DB LAB	1		1
Decumed	1		1
Designit	1		1
Develco	1		1
DFDS	1		1
DITENS	1		1
Dragsbæk	1		1
DrugMode	1		1
Dyrup	1		1
E.ON Sverige	1		1
Easyfood	1		1
Elos Medtech-Pinol	1		1
Eltronic	1		1
eMEDLink	1		1
Envotherm	1		1
Epoke	1		1
ESN	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Eva Denmark	1		1
Exhausto	1		1
ExpreS2ion Biotechnologies	1		1
FIBERTEX	1		1
Flex Coil	1		1
Forward Pharma	1		1
Frydendahl Im- og Export	1		1
Gastrotech Pharma	1		1
GEA Liquid Processing	1		1
Genomic Expression	1		1
GeoHeat Ex	1		1
Germanischer Lloyd AG	1		1
GMF	1		1
GODevelopment	1		1
GomSpace	1		1
Green Farm Energy	1		1
Greenwave Reality	1		1
Habitat Vis	1		1
Hollensen Energy	1		1
Hove	1		1
Hypo Safe	1		1
Høiberg	1		1
IDEGO	1		1
IN Situ RCP	1		1
INAGEN	1		1
InMold Biosystems	1		1
INNOVISION	1		1
Inoxell	1		1
INROPA	1		1
Intellix	1		1
Intramed	1		1
IONAS	1		1
IWT	1		1
Kiermar Technology	1		1
KIRK ACOUSTICS	1		1
KMD	1		1
Knudsen Køling	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Kvadrat	1		1
Lading Arkitekter	1		1
LeanVent	1		1
Leukotech	1		1
Linco Food Systems	1		1
Linddana	1		1
Logstor	1		1
Lumodan	1		1
Lyngdorf Audio	1		1
MARINOVA	1		1
MediMush	1		1
Mermaid Care	1		1
Microbotic	1		1
MOBILE INTERNET TECHNOLOGY	1		1
MOBILETHINK	1		1
Mosbaek	1		1
Møller & Devicon	1		1
Nassau Door	1		1
NCC	1		1
NCC ROADS	1		1
NESA	1		1
Neurokey	1		1
NIL Technology	1		1
NLM Combineerin	1		1
Nordic Light	1		1
NORDISK REBALANCE	1		1
NORFRIG	1		1
NS System	1		1
Organic Fuel Technology	1		1
OSTJYSK INNOVATION	1		1
Oxydice	1		1
PAJ SYSTEMTEKNIK	1		1
Palsgaard	1		1
PentaBase	1		1
PERSONICS	1		1
Pharmexa	1		1
Pixiegene	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Pnn Medical	1		1
Prodan	1		1
PRO-MOVEC	1		1
Pronova Biocare	1		1
QuantumWise	1		1
ReaTech	1		1
RiboTask	1		1
RINAS	1		1
Sandrini Acupuncture	1		1
Sauer Danfoss	1		1
Scandinavian Clinical Nutrition	1		1
Scandinavian Micro Biodevices SMB	1		1
Scape Technologies	1		1
SCF Technol	1		1
Scion DTU	1		1
Skamol	1		1
SKOV	1		1
Slagteriernes Forskningsinstitut	1		1
Solarcap	1		1
Solum	1		1
Sprunk Jansen	1		1
Sunarc	1		1
Systemair	1		1
T Cell	1		1
Techwise	1		1
Thomsen Bioscience	1		1
TK ENERGI	1		1
Trifork	1		1
Uddeholm	1		1
Unest	1		1
Unisense	1		1
Varo	1		1
Vattenfall	1		1
Vipergen	1		1
Virogates	1		1
Visiopharm	1		1
VIVOX	1		1

Number of competences that the firm contributes to	Pat.	Pub.	Total
ViZoo	1		1
VKR OR VELUX IND	1		1
Xergi	1		1
AKVA Group Denmark		1	1
Alfa Laval Nakskov		1	1
Alfa Laval Protein Technology		1	1
Amgros		1	1
AntennA Syst Consulting		1	1
Aquapri Danmark		1	1
AquaSearch Vet		1	1
Arla Foods Ingredients R&D		1	1
Arla Foods Innovation		1	1
AROS Applied Biotechnology		1	1
Atomistix		1	1
Avannaa Resources Ltd		1	1
Azign Bioscience		1	1
Bioconsult		1	1
BioNanoPhoton		1	1
BK Medical		1	1
Boss Produkter		1	1
Cant		1	1
Carl Bro		1	1
CCKonsult		1	1
Celtor Biosystems		1	1
Ciconia R&D		1	1
Clinical Reearch & Development		1	1
Computat Mat Design		1	1
Consulting Engineers & Planners		1	1
Cryos International Sperm Bank		1	1
Curalog		1	1
Daehnfeldt		1	1
Daka		1	1
Dana Feed		1	1
DANESPO		1	1
Danfoss Corporate Ventures		1	1
Danisco Seed		1	1
Danish Bacon & Meat Council		1	1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Danish Distillers		1	1
Danish Fluid Bed Technology		1	1
DanTrials		1	1
DDH Consulting		1	1
Destron Fearing		1	1
Display Systems Biotech		1	1
DMRI		1	1
DSM Nutritional Products		1	1
Ea Energy Analysis		1	1
Elkraft Systems		1	1
EnerDry		1	1
ENFOR		1	1
ENVICARE		1	1
Epivetko		1	1
Erik K Jorgensen		1	1
EvidenceProfile		1	1
FASAN		1	1
FASAN WiE Plant		1	1
Faxe Kalk		1	1
FCMB		1	1
Ferroperm Piezoceram		1	1
Fertilitech		1	1
FLS Automat		1	1
Force Technology		1	1
Forecasting & Optimizat Energy Sector		1	1
Genencor Inc		1	1
Genzyme		1	1
GIGA		1	1
GlaxoSmithKline Pharma		1	1
GPL Int		1	1
GRAS Sound & Vibration		1	1
Grodania		1	1
Grontmij Carl Bro		1	1
GX Biosyst AS Symbion		1	1
Hamlet Protein		1	1
Hampen Traeforarbejdning		1	1
Hedeselskabet		1	1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Hojmarklab		1	1
Ilochip		1	1
Incent Partners		1	1
Incoteco Denmark		1	1
Intentia Danmark		1	1
International Food Science Center		1	1
Judex Datasystemer		1	1
Jyllandsposten		1	1
Kamstrup		1	1
Kemira Miljo		1	1
Kemira Water		1	1
KLIFO		1	1
Knud Jepsen		1	1
Kobenhavns Energi		1	1
Kruger		1	1
Kruger Veolia Water Systems		1	1
Lynette Treatment Plants		1	1
Lynettefaellesskabet		1	1
MAN Diesel & Turbo SE		1	1
MDS Protana		1	1
MDS Proteomics		1	1
MedArt		1	1
Medical Prognosis Institute		1	1
MEKOS Labs		1	1
Meyers Madhus		1	1
Micro Clean Ltd		1	1
Midtkraft Energy Co		1	1
Mikro Vaerkstedet		1	1
Motorola Inc		1	1
NBG		1	1
Neltec Denmark		1	1
NetTest		1	1
Neurodan		1	1
Niels Clauson Kaas		1	1
NIRAS		1	1
NKT Integration		1	1
Nor Feed		1	1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Nordic Bioscience Imaging		1	1
Nordic Sugar		1	1
Norsk Hydro		1	1
Odegaard		1	1
Odense Waste Management Co Ltd		1	1
OJ Electronics		1	1
OPDI Technologies		1	1
Optilink		1	1
Orbicon Consulting		1	1
Ornis Consult Ltd		1	1
Oxford Instruments HKL		1	1
Pharma		1	1
Pharmacia		1	1
Pharmacosmos		1	1
Powre Lynx		1	1
Pride Proteomics		1	1
Prozymex		1	1
QuantiBact		1	1
Reduce		1	1
RefLab		1	1
Res Ctr Eriksholm		1	1
Royal Greenland Seafood Ltd		1	1
Sanofi Pasteur MSD		1	1
Sanos Bioscience		1	1
Santaris Pharma		1	1
ScanSpeak		1	1
SEMuS		1	1
Siemens		1	1
Siemens Flow Instruments		1	1
Siemens Wind Power		1	1
SKIOLD		1	1
SLA		1	1
Sorbisense		1	1
SP System Danmark		1	1
Spæncom		1	1
STOBBE TECH CERAMICS		1	1
Strecon		1	1

Number of competences that the firm contributes to	Pat.	Pub.	Total
Symphogen		1	1
TC Electronic		1	1
Technoconsult		1	1
Teknologisk Innovation		1	1
Thrombologic		1	1
Triax		1	1
UpFront Chromatography		1	1
Vestforbraending		1	1
VISIBLE DIAGNOSTICS		1	1
WaterCare		1	1
Wave Star		1	1
Xenia Pharma		1	1
Zealand Pharma		1	1
Aalborg Portland		1	1
AarhusKarlshamn Denmark		1	1

Patent based core competences

Pat 1. Electrical engineering: Audio-visual technology / Electrical machinery, apparatus, energy

Firms	No. of patents
Total	**41**
Danfoss	15
Oticon	11
Grundfos	4
Widex	2
Sauer-Danfoss	2
Dupont Lightstone	2
Sonion Roskilde	1
ScanSpeak	1
LINAK	1
KIRK ACOUSTICS	1
Cubic-Modulsystem	1

Source: DAMVAD 2012

Pat 2. Electrical engineering: Electrical machinery, apparatus, energy / Semiconductors

Firms	No. of patents
Total	**24**
Danfoss	12
NKT	4
CNC	2
Grundfos	2
Hymite	2
NIL Technology	1
Oticon	1

Source: DAMVAD 2012

Pat 3. Electrical engineering: Audio-visual technology / Semiconductors

Firms	No. of patents
Total	**11**
Danfoss	8
Oticon	3

Source: DAMVAD 2012

Pat 4. Mechanical engineering: Transport

Firms	No. of patents
Total	**66**
Sauer-Danfoss	17
Danfoss	8
Better Place	5
Viking Life-Saving Equipment	5
VESTAS	4
APC	3
Nilfisk Advance	3
AXA Power	2
Brøndum	2
CPH Design	2
MAN-B&W DIESEL	2
PRO-MOVEC	2
Bevola	1
BORRINGIA	1
Catcon	1
DFDS	1
ECCO SKO	1
Germanischer Lloyd	1
GomSpace	1
Habitat Vis	1
NORFRI	1
Scandinavian Airlines System	1
SerEnergy	1

Source: DAMVAD 2012

Pat 5. Electrical engineering: Computer technology / Medical technology

Firms	No. of patents
Total	**52**
Novo Nordisk	25
Nordic Bioscience Clin Studies	10
CCBR	3
MedCom	3
Nycomed	2
PERSONICS	2
Pnn Medical	2
Contec	1
eMEDLink	1
GN RESOUND	1
Oticon	1
Retinalyze	1

Source: DAMVAD 2012

Pat 6. Chemistry: Macromolecular chemistry, polymers / Organic fine chemistry

Firms	No. of patents
Total	**27**
DANISCO	8
CP Kelco	6
Novo Nordisk	4
VersaMatrix	3
Carlsberg	2
ISOVER	2
Dako	1
Novozymes	1

Source: DAMVAD 2012

Pat 7. Chemistry: Macromolecular chemistry, polymers / Other special machines

Firms	No. of patents
Total	**39**
DANISCO	10
Coloplast	7
NKT	5
ISOVER	4
ROCKWOOL	3
Carlsberg	2
Emri	2
BaySystems	1
CP Kelco	1
Novo Nordisk	1
Novozymes	1
Treat	1
VersaMatrix	1

Source: DAMVAD 2012

Pat 8. Electrical engineering: Computer technology / Control

Firms	No. of patents
Total	**29**
Danfoss	11
Novo Nordisk	6
LEGO	2
Lyngsoe Systems	2
Sauer-Danfoss	2
YORK DENMARK	2
BIOINFORMATICS	1
Kruuse	1
RINAS	1

SOLUM	1

Source: DAMVAD 2012

Pat 9. Chemistry: Food chemistry

Firms	No. of patents
Total	**434**
DANISCO	209
Novozymes	76
CP Kelco	28
Chew Tech I/S or Gumlink	12
Biovelop	10
Danish Crown	10
Aarhus-Karlshamn	10
Carlsberg	9
Palsgaard	9
Chr Hansen	7
Aasted-mikroverk	7
APV	6
Nutri Pharma	5
UpFront Chromatog	5
Confac	3
Dandy	3
Pronova Biocare	3
Dragsbæk	2
Multimerics	2
Novo Nordisk	2
SFK Systems	2
Slagteriernes Forskningsinstitut	2
Toms Gruppen	2
Boehringer Ingelheim Danmark	1
CFS Slagelse	1
Crown-Foods	1
Danion	1
Easyfood	1
Fluxome	1
NeuroSearch	1
Nor-Feed	1
POALIS	1
SCF TECHNOLOGIES	1

Source: DAMVAD 2012

Pat 10. Chemistry: Biotechnology / Basic materials chemistry

Firms	No. of patents
Total	**347**
Novozymes	177
DANISCO	98
Novo Nordisk	44
DONG Energy Power	6
CP Kelco	2
Fluxome	2
Inbicon	2
NsGene A S, Ballerup, Denmark	2
SCF TECHNOLOGIES AS	2
Terranol	2
AdvanDx	1
Alpharma	1
CBD	1
Dako	1
Dianova	1
IRD	1
NeuroSearch	1
Pharmexa	1
Santaris Pharma	1
TopoTarget	1

Source: DAMVAD 2012

Pat 11. Mechanical engineering: Other special machines

Firms	No. of patents
Total	**141**
Slagteriernes Forskningsinstitut	27
VESTAS	24
LM Glasfiber	13
Grundfos	4
NKT	4
ROCKWOOL	4
Linco Food Systems	3
Siemens Wind Power	3
SKIOLD	3
Teknologisk Innovation	3
3H Inventors	2
APC	2
APV	2
Brdr. Hartmann	2
Carlsberg	2
Dantherm	2
Econet	2
Gartneriet PKM	2
ISOVER	2
Novozymes	2
Xperion	2
Aasted-mikroverk	2
Agrotech	1
Anico	1
Bang & Olufsen	1
BilWinco	1
BIOMODICS	1
Cabinplant	1
Chew Tech I/S or Gumlink	1
Coloplast	1
Crystal Fibre	1
Daloon	1
Damas	1
Danfoss	1
DANISCO	1
DANTECH	1
ECCO SKO	1
Fiberline	1
Flex Coil	1
Frydendahl Im og Export	1
GN RESOUND	1
Gumlink	1
InMold Biosystems	1
Lattec I/S	1
Nycomed	1
Samson Agro	1
SFK Systems	1
SLA	1
Widex	1
YOKE interaction design	1
YORK DENMARK	1

Source: DAMVAD 2012

Pat 12. Mechanical engineering: Handling

Firms	No. of patents
Total	**35**
Carlsberg	10
DANISCO	4
ISOVER	4
Crisplant	2
Microbotic	2
Velux	2
APC	1
APM Terminals	1

DANAPAK FLEXIBLES	1
Danfoss	1
Novo Nordisk	1
Novozymes	1
Nycomed	1
Prodan	1
Sauer-Danfoss	1
Schur Technology	1
Slagteriernes Forskningsinstitut	1

Source: DAMVAD 2012

Pat 13. Chemistry: Macromolecular chemistry, polymers / Surface technology, coating

Firms	No. of patents
Total	**15**
NKT	6
ISOVER	2
Novo Nordisk	2
Treat	2
Coloplast	1
Hempel	1
VersaMatrix	1

Source: DAMVAD 2012

Pat 14. Mechanical engineering: Other special machines / Surface technology, coating

Firms	No. of patents
Total	**51**
LM Glasfiber	9
VESTAS	7
NKT	6
Coloplast	5
ISOVER	5
Danfoss	3
DKI PLAST	2
Logstor	2
ROCKWOOL	2
Rosti	2
Amcor Flexible ON	1
Barsmark	1
BIOMODICS	1
Composhield	1
DANISCO	1
FIBERTEX	1
Hempel	1
RBE	1

Source: DAMVAD 2012

Pat 15. Electrical engineering: Electrical machinery, apparatus, energy / Mechanical elements

Firms	No. of patents
Total	**23**
Danfoss	10
LINAK	7
Grundfos	2
Cubic-Modulsystem	1
ISOVER	1
Sauer-Danfoss	1
VESTAS	1

Source: DAMVAD 2012

Pat 16. Chemistry: Environmental technology

Firms	No. of patents
Total	**15**
Haldor Topsøe	3
LM Glasfiber	3
Babcock & Wilcox Volund	2
Anico	2
APV	1
Cleanfield	1
EC Power	1
DISA AS	1
Dantherm	1

Source: DAMVAD 2012

Pat 17. Mechanical engineering: Engines, pumps, turbines / Mechanical elements

Firms	No. of patents
Total	**277**
Danfoss	104
MAN Diesel	68
Sauer-Danfoss	41
VESTAS	38
Grundfos	4
Wave Star	4
Aktieselskabet Beauvais	2
NEG MICON	2
SerEnergy	2
Tempress	2
AVN Energy	1
CFS Slagelse	1
EC Power	1
Gits	1
GODevelopment	1
LM Glasfiber	1
Novo Nordisk	1
Siemens Wind Power	1
Watertech	1
YORK DENMARK	1

Source: DAMVAD 2012

Pat 18. Electrical engineering: Audio-visual technology / Computer technology

Firms	No. of patents
Total	**48**
Widex	11
Oticon	10
GN RESOUND	5
3Shape	4
Bang & Olufsen	4
Sauer-Danfoss	3
Acta	2
GN Netcom	2
APC	1
Contec	1
Dupont Lightstone	1
Mobile Internet Technology	1
NKT	1
Novo Nordisk	1
Trifork	1

Source: DAMVAD 2012

Pat 19. Mechanical engineering: Thermal processes and apparatus

Firms	No. of patents
Total	**313**
Danfoss	208
Grundfos	24
Aalborg Ind	14
Haldor Topsøe	8
EC Power	6
APV	5
Exhausto	5

YORK DENMARK	5
ISOVER	4
Sunarc	4
Dantherm	3
FLS Miljo	3
PROMECON	3
Dall Energy	2
GeoHeat Ex	2
Hollensen Energy	2
Icopal	2
Teknologisk Innovation	2
COWI	1
IONAS	1
Knudsen Køling	1
ROCKWOOL	1
Systemair	1
Tempress	1
Thermex	1
TK ENERGI	1
Traeger	1
AarhusKarlshamn	1
Aasted-mikroverk	1

Source: DAMVAD 2012

Pat 20. Chemistry: Chemical engineering / Environmental technology

Firms	No. of patents
Total	**21**
Grundfos	8
DISA	2
Aalborg Ind	2
ATEA	1
Babcock & Wilcox Volund	1
Haldor Topsøe	1
Lifecycle Pharma	1
Reduce	1
COMETAS	1
STOBBE TECH CERAMICS	1
Danfoss	1
Dantherm	1

Source: DAMVAD 2012

Pat 21. Chemistry: Biotechnology / Food chemistry

Firms	No. of patents
Total	**567**
Novozymes	242
DANISCO	230
Novo Nordisk	41
CHR HANSEN	10
Fluxome	8
Carlsberg	4
CBD	4
CP Kelco	4
DLF - TRIFOLIUM	3
BIOPLAN	2
Evolva	2
Genmab	2
Inbicon	2
MediMush	2
ZGene	2
Bifodan	1
GE HEALTHCARE	1
GEA Liquid Processing	1
HEMEBIOTECH	1
IRD	1
NeuroSearch	1
Nycomed	1
Pharma Nord	1
POALIS	1

Source: DAMVAD 2012

Pat 22. Instruments: Medical technology

Firms	No. of patents
Total	**121**
Coloplast	222
Novo Nordisk	73
Danfoss	8
Nycomed	7
ASAH Medico	6
Bang & Olufsen	6
Almirall	4
Bahner.dk	4
Ferrosan	4
NsGene	4
Radiometer Medical	4
SerEnergy	4
Interface Biotech	3
Oticon	3
Albihns	2
Amcor Flexible ON	2
Aproxi	2
MedCom	2
Mermaid Care	2
Plum AS	2
Pnn Medical	2
RhinoMetrics	2
Widex	2
3Shape	1
Alpharma	1
BORRINGIA	1
Decumed	1
DITENS	1
Elos Medtech-Pinol	1
GE HEALTHCARE AS	1
Hypo Safe	1
INNOVISION	1
Intramed	1
Kruuse Aps	1
Møller & Devicon	1
Novozymes	1
RINAS APS	1
Rosti AS	1
Sectra Pronosco	1
Synarc Imaging Technol	1
Synoptik	1
Traeger	1

Source: DAMVAD 2012

Pat 23. Chemistry: Macromolecular chemistry, polymers

Firms	No. of patents
Total	**81**
DANISCO	10
Carlsberg	8
Coloplast	8
CP Kelco	8
Novo Nordisk	8
NKT	7
ISOVER	6
ROCKWOOL	6
VersaMatrix	6
Treat	4
BIOMODICS	3
Emri	3
Novozymes	2

Hempel	1
Taconic	1

Source: DAMVAD 2012

Pat 24. Other fields: Civil engineering

Firms	No. of patents
Total	**123**
ROCKWOOL	19
ISOVER	15
Velux	11
VESTAS	11
Grundfos	8
Hydro Aluminium	6
Sunarc	4
COWI	3
Damptech	3
Kvadrat	3
Bekaert Handling	2
BIOPLAN	2
Composhield	2
Epoke	2
Fiberline	2
KMD	2
Nassau Door	2
NLM Combineerin	2
Sapa Profiler	2
Traeger	2
WaterCare	2
ABEO	1
Actulux	1
APC	1
Besam	1
Contec	1
Danfoss	1
Designit	1
Icopal	1
Lading Arkitekter	1
LEGO	1
NKT	1
RBE	1
Spæncom	1
Technoconsult	1
Triax	1
Watertech	1
WELLTEC	1
Bellinger	1

Source: DAMVAD 2012

Pat 25. Electrical engineering: Digital communication

Firms	No. of patents
Total	**45**
Prodan A/S	6
Contec	5
CRYPTOMATHIC A/S	5
Zensys AS, DK-2100 Copenhagen E, Denmark	5
Deloitte	4
Novo Nordisk A/S	4
Oticon	4
Bang & Olufsen A/S	3
CNC	3
Danfoss A/S	3
IWT ApS	3
BIOINFORMATICS APS	2
GN Netcom A/S	2
Nabto	2
TIETOENATOR	2
Tpack A/S	2
Widex A/S	2
ESN	1
Giritech	1
Kamstrup A/S	1
Logica	1
MOBILETHINK A/S	1
Nilfisk Advance	1
RTX Telecom A/S	1
SOLUM A/S	1
TC Electronic	1
TEKLATECH AS	1
Tellabs A/S	1
VESTAS	1
Wiborg	1

Source: DAMVAD 2012

Pat 26. Chemistry: Organic fine chemistry / Pharmaceuticals

Firms	No. of patents
Total	**924**
NeuroSearch	252
H. Lundbeck	240
Novo Nordisk	138
Nycomed	95
Almirall	79
LEO PHARMA	34
7TM PHARMA	16
TopoTargert	13
DANISCO	6
Santaris Pharma	5
Biolab	4
Evolva	3
GE HEALTHCARE	3
GENECARE	3
Janssen Cilag	3
GEA Farmaceutisk Fabrik	2
ACURE	2
Alpharma	2
BIOINFORMATICS	2
Norpharma	2
Osteologix	2
Prozymex	2
Zealand Pharma	2
Triax	2
Coloplast	2
BARDOW CONSULT	1
LiPlasome Pharma	1
MYCO TEO	1
Novozymes	1
Nuevolution	1
Pharmacosmos	1
Pharmexa	1
Pronova Biocare	1
SEMuS	1
CP Kelco	1

Source: DAMVAD 2012

Pat 27. Electrical engineering: Computer technology / IT methods for management

Firms	No. of patents
Total	**22**
Deloitte	2
Excite	2
H. Lundbeck	2
LEGO	2
Lyngsoe Systems	2

Novo Nordisk	2
CRYPTOMATHIC	1
Fiberline	1
Foss	1
Høiberg	1
LINAK	1
MedCom	1
Nordic Bioscience Clin Studies	1
Retinalyze	1
VISIOPHARM	1
YORK DENMARK	1

Source: DAMVAD 2012

Pat 28. Chemistry: Basic materials chemistry

Firms	No. of patents
Total	**107**
Novozymes	25
DANISCO	23
Cheminova	8
CP Kelco	8
Haldor Topsøe	6
ISOVER	6
Novo Nordisk	5
Biolocus	3
Contec	3
Bioscan	2
Econet	2
Pronova Biocare	2
Biolab	1
Cismi	1
Coloplast	1
COWI	1
Dako	1
Danfoss	1
Dyrup	1
Gartneriet PKM	1
Janssen Cilag	1
Organic Fuel Technology	1
SCF TECHNOLOGIES	1
Teknologisk Innovation	1
TK ENERGI	1
Aarhus-Karlshamn	1

Source: DAMVAD 2012

Pat 29. Mechanical engineering: Engines, pumps, turbines

Firms	No. of patents
Total	**779**
MAN Diesel	308
Danfoss	219
Sauer-Danfoss	98
VESTAS	54
Grundfos	46
LM Glasfiber	15
Haldor Topsøe	8
Bahner.dk	5
NEG MICON	5
Wave Star	3
APV	2
Valcon	2
YORK DENMARK	2
AC-Sun	1
Aktieselskabet Beauvais	1
Alfa Laval Kolding	1
ATEA	1
Bellinger	1
Contec	1
EC Power	1
Econet	1
Gits	1
Hove	1
Oxydice	1
Velux	1

Pat 30. Chemistry: Materials, metallurgy / Surface technology, coating

Firms	No. of patents
Total	**27**
Danfoss	6
ISOVER	6
NKT	5
Haldor Topsøe	3
ROCKWOOL	2
SCF TECHNOLOGIES	2
Uddeholm	2
Danish Steel Works	1

Source: DAMVAD 2012

Pat 31. Chemistry: Chemical engineering

Firms	No. of patents
Total	**109**
DANISCO	16
Grundfos	15
Haldor Topsøe	8
COMETAS	8
Nilfisk Advance	7
Aquaporin	7
Danfoss	6
Novozymes	4
STOBBE TECH CERAMICS	4
NKT	2
Novo Nordisk	2
Alfa Laval Nakskov	2
BIOCONTRACTORS	2
BioGasol	2
DISA AS	2
Envotherm	2
ALK ABELLO	1
APC	1
APV	1
Dako	1
INROPA	1
LIFECYCLE PHARMA	1
PAJ SYSTEMTEKNIK	1
SCF TECHNOLOGIES	1
Sophion Bioscience	1
TORSANA	1
UpFront Chromatography	1
Alpharma	1
Econet	1
Foss	1
GE HEALTHCARE	1
Green Farm Energy	1
Sauer-Danfoss	1
SCF TECHNOLOGIES	1
Watertech	1
Aalborg Ind	1

Source: DAMVAD 2012

Pat 32. Chemistry: Materials, metallurgy

Firms	No. of patents
Total	**73**
Uddeholm	25
Haldor Topsøe	10

DISA Ind	8
AMMINEX	6
ROCKWOOL	5
Hydro Aluminium	3
Danfoss	2
FLS Miljo	2
Grundfos	2
ISOVER	2
MAN-B&W DIESEL	2
NCC ROADS	2
CBD	1
DANIONICS	1
DONG	1
NKT	1

Source: DAMVAD 2012

Pat 33. Electrical engineering: Computer technology

Firms	No. of patents
Total	**70**
LEGO	16
Nordic Bioscience Clin Studies	6
Novo Nordisk	5
MedCom	3
SOLUM	3
Bang & Olufsen	2
Delta	2
GMF	2
Intellix	2
Retinalyze	2
SerEnergy	2
Unisense	2
3Shape	1
7TM PHARMA	1
Balslev	1
Bellinger	1
CBD	1
CCBR	1
CNC	1
Configit	1
Contec	1
Danfoss	1
Deloitte	1
DIMAC	1
Excite	1
GATEHOUSE	1
GN RESOUND	1
IDEGO	1
Oticon	1
Pharmexa	1
Pnn Medical	1
Scape Technologies	1
VISIBLE DIAGNOSTICS	1
VISIOPHARM	1
VIVOX	1

Source: DAMVAD 2012

Pat 34. Mechanical engineering: Machine tools

Firms	No. of patents
Total	**114**
Danfoss	29
Enkotec	15
MAN-B&W DIESEL	14
CemeCon	7
CNC	5
Unimerco	5
Strecon	4
Kiermar Technology	3
Sauer-Danfoss	3
Varo	3
Contec	2
LM Glasfiber	2
ROCKWOOL	2
Tempress	2
VESTAS	2
YOKE interaction design	2
Alfa Laval Kolding	1
Bang & Olufsen	1
DANISCO	1
DISA Ind	1
Eltronic	1
Eva Denmark	1
GE HEALTHCARE	1
Linddana	1
NKT	1
Novozymes	1
Nycomed	1
Prodan	1
RoboTool	1
Uddeholm	1

Source: DAMVAD 2012

Pat 35. Electrical engineering: Digital communication / Tel-ecommunications

Firms	No. of patents
Total	**19**
Oticon	6
Zensys	4
Prodan	2
Contec	1
ESN	1
GN Netcom	1
MOBILETHINK	1
Novo Nordisk	1
TC Electronic	1
Widex	1

Source: DAMVAD 2012

Pat 36. Chemistry: Pharmaceuticals

Firms	No. of patents
Total	**1195**
Novo Nordisk	267
Nycomed	150
Lundbeck	128
GE HEALTHCARE	50
TopoTarget	47
Pharmexa	45
Alpharma	40
Almirall	36
LIFECYCLE PHARMA	35
ALK ABELLO	29
NeuroSearch	26
Biolab	25
DANISCO	21
Egalet	20
GENECARE	18
LiPlasome Pharma	17
LEO PHARMA	16
Osteologix	12
Nutri Pharma	11
CP Kelco	10
Novozymes	10
NsGene	9
OSTEOMETER Biotech	9
Neurokey	8

Nordic Bioscience Clin Studies	8
Rheosci	8
Sanos Biosci	8
Santaris Pharma	8
APC	7
Ferrosan	7
Genmab	7
Gastrotech Pharma	6
Pronova Biocare	6
SLA	6
Coloplast	5
Colotech	5
Ferring	5
HEMEBIOTECH	5
MediMush	4
Scandinavian Clinical Nutrition	4
Dako	3
Danion	3
NORDISK REBALANCE	3
Thrombologic	3
ZGene	3
Biomonitor	2
BIOPLAN	2
Biosa	2
Carmo	2
Danfoss	2
Forward Pharma	2
Interface Biotech	2
IRD	2
Nordic Vaccine	2
Pharma Nord	2
Reapplix	2
CHR HANSEN	1
7TM PHARMA	1
GEA Farmaceutisk Fabrik	1
ACURE	1
Bahner.dk	1
BioImage	1
Bridge Bioresearch Danmark	1
Cureon	1
Curix Biotech	1
Dandrit Biotech	1
DB LAB	1
Develco	1
Emri	1
ENKAM PHARM	1
Evolva	1
MARINOVA	1
Ridley's	1
Symphogen	1
Viuff	1
Zealand Pharma	1

Source: DAMVAD 2012

Pat 37. Electrical engineering: Electrical machinery, apparatus, energy

Firms	No. of patents
Total	**325**
Danfoss	125
Martin Professional	60
VESTAS	41
Grundfos	24
LINAK	12
NKT	8
Sauer-Danfoss	8
DANIONICS	7
AXA Power	4
Brother, Brother & Sons	4
Greenwave Reality	3
Siemens Wind Power	3
APC	2
Bahner.dk	2
Haldor Topsøe	2
Lumodan	2
NESA	2
Oticon	2
SerEnergy	2
Sonion Roskilde	2
Acta	1
APC Denmark	1
DKI PLAST	1
E.ON Sverige	1
EC Power	1
Nordic Light	1
NS System	1
SIMI	1
Solarcap	1
SP System Danmark	1

Source: DAMVAD 2012

Pat 38. Electrical engineering: Audiovisual technology

Firms	No. of patents
Total	**26**
Bang & Olufsen	13
Oticon	2
TC Electronic	2
GN Netcom	1
GN RESOUND	1
Lyngdorf Audio	1
Martin Professional	1
Widex	1
Contec	1
Trifork	1
RINAS	1
Gits	1

Source: DAMVAD 2012

Pat 39. Chemistry: Organic fine chemistry

Firms	No. of patents
Total	**305**
H. Lundbeck	105
Novo Nordisk	40
GE HEALTHCARE	23
NeuroSearch	22
LEO PHARMA	16
Almirall	14
Haldor Topsøe	14
DANISCO	13
Nycomed	10
TopoTarget	9
Cheminova	7
Santaris Pharma	6
Biolab	5
Nuevolution	4
Novozymes	3
ACURE	2
Alpharma	2
Cureon	2
7TM PHARMA	1
GEA Farmaceutisk Fabrik	1
Dako	1
Janssen Cilag	1
MYCO TEO	1
Osteologix	1

Prozymex	1
Unest	1

Source: DAMVAD 2012

Pat 40. Chemistry: Biotechnology

Firms	No. of patents
Total	**1808**
Novozymes	545
DANISCO	410
Novo Nordisk	304
Symphogen	49
DAKO DENMARK	40
Nuevolution	25
NsGene	24
Pharmexa	23
Genmab	19
H. Lundbeck	17
CP Kelco	16
Nycomed	16
TopoTargert	16
NeuroSearch	13
ALK ABELLO	12
GENECARE	11
BioImage	10
Fluxome	10
AdvanDx	9
Biolab	9
Borean Pharma	9
CBD	9
CLLUONE THERAPEUTICS	9
Eurofins	9
Alpharma	8
Chr Hansen	8
Evolva	8
PharmaZell Denmark	8
Zealand Pharma	8
BioGasol	7
GE HEALTHCARE	6
Santaris Pharma	6
SerEnergy	6
ZGene	6
Prozymex	5
Unisense	5
Biomonitor	4
HEMEBIOTECH	4
Leukotech	4
Nordic Bioscience Clin Studies	4
Norpharma	4
Vipergen	4
Delta	3
DLF - TRIFOLIUM	3
DONG Energy Power	3
Ferrosan	3
IN Situ RCP	3
POALIS	3
Sophion Bioscience	3
Terranol	3
7TM PHARMA	2
Acta	2
Asetek	2
Carlsberg	2
DrugMode	2
ExpreS2ion Biotechnologies	2
Foss	2
IRD	2
LEO PHARMA	2
Natimmune	2
Pipeline Biotech	2
QuantiBact	2
Radiometer	2
Radiometer Medical	2
Ridley's	2
Smart Biosystems	2
Unest	2
AntibodyShop	1
Bifodan	1
BIOINFORMATICS	1
Biosynergy	1
Clou-Thürmer	1
CMC Biologics	1
Contec	1
Cureon	1
Danfoss	1
Dansk Kvægavl	1
Dianova	1
ENKAM PHARM	1
GATEHOUSE	1
Genomic Expression	1
GN Netcom	1
INAGEN	1
Inbicon	1
Inoxell	1
Medi Cult	1
NUNC	1
Osteometer Biotech	1
PentaBase	1
Pharma Nord	1
Pharmos Biosci	1
Pride Proteomics	1
Synarc Imaging Technologies	1
Taconic	1
TORSANA	1
UpFront Chromatog	1
VersaMatrix	1
Østjysk Innovation	1

Source: DAMVAD 2012

Pat 41. Chemistry: Basic materials chemistry / Macromolecular chemistry, polymers

Firms	No. of patents
Total	**46**
ISOVER	17
Coloplast	8
Hempel	4
CP Kelco	3
ROCKWOOL	3
Contec	2
DANISCO	2
Icopal Danmark	2
Biolab	1
Chr Hansen	1
Novozymes	1
Pharmexa	1
VersaMatrix	1

Source: DAMVAD 2012

Pat 42. Instruments: optics

Firms	No. of patents
Total	**60**
NKT	31
Crystal Fibre	13
Hymite	5
ViZoo	3
Martin Professional	2

Micro Managed Photons	2
Xenia Pharma	2
Bellinger	1
Bioscan	1

Source: DAMVAD 2012

Pat 43. Chemistry: Food chemistry / Pharmaceuticals

Firms	No. of patents
Total	**19**
DANISCO	4
CP Kelco	3
Novozymes	3
Biovelop	2
Chew Tech or Gumlink	1
Dandy	1
Ferrosan	1
Gumlink	1
Multimerics	1
Nor-Feed	1
TOMS GRUPPEN	1

Source: DAMVAD 2012

Pat 44. Chemistry: Surface technology, coating

Firms	No. of patents
Total	**33**
Danfoss	14
CemeCon	8
NKT	2
Novozymes	2
Coloplast	1
MAN-B&W DIESEL	1
Nycomed	1
SCF TECHNOLOGIES	1
Topsoe Fuel Cell	1
Traeger	1
Treat	1

Source: DAMVAD 2012

Pat 45. Chemistry: Basic materials chemistry / Organic fine chemistry

Firms	No. of patents
Total	**82**
Cheminova	23
Haldor Topsøe	16
DANISCO	14
Pronova Biocare	7
Novozymes	5
Novo Nordisk	4
CP Kelco	2
Dako	2
Evolva	2
SEMuS	2
Chr Hansen	1
Coloplast	1
H. Lundbeck	1
Taconic	1
VersaMatrix	1

Source: DAMVAD 2012

Pat 46. Mechanical engineering: Mechanical elements

Firms	No. of patents
Total	**223**
Danfoss	105
Sauer-Danfoss	74
LINAK	9
MAN-B&W DIESEL	6
Grundfos	4
Xperion	3
APV	2
Damcos	2
Dantherm	2
DIMAC	2
GN Netcom	2
LeanVent	2
LEGO	2
WELLTEC	2
Aktieselskabet Beauvais	1
ATV	1
Bellinger	1
Codan Gummi	1
Mosbaek	1
VESTAS	1

Source: DAMVAD 2012

Publication based core competences

Pub 1. Biochemistry Molecular Biology / Life Sciences & Biomedicine - Other Topics / Cell Biology

Firms	No. of publications
Total	**40**
NOVO Nord	20
Ferrosan	5
Exiqon	3
NeuroSearch	2
Zealand Pharma	2
Coloplast	1
DakoCytomat	1
DBMA	1
Enkam Pharmaceut	1
H Lundbeck & Co	1
Interface Biotech	1
Novozymes Biopolymer	1
NUNC	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
University of Southern Denmark
Technical University of Denmark
University of Copenhagen
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 2. Surgery / Transplantation

Firms	No. of publications
Total	**10**
Novo Nordisk	7
LifeCycle Pharma	2
Antibodyshop	1

Source: DAMVAD 2012

Participating universities
None

Source: DAMVAD 2012

Pub 3. General & Internal Medicine / Research & Experimental Medicine

Firms	No. of publications
Total	**53**
Novo Nordisk	29
H Lundbeck & Co	8
MUUSMANN Res & Consulting	5
NYCOMED	3
Incent Partners	2
Ctr Clin & Basic Res	1
Gen Practice Clin	1
Janssen Cilag	1
LEO Pharma	1
Pfizer Denmark ApS	1
Synarc	1

Source: DAMVAD 2012

Participating universities
Frederiksberg University Hospital
Odense University Hospital
University of Copenhagen

Source: DAMVAD 2012

Pub 4. Chemistry / Engineering

Firms	No. of publications
Total	**120**
Haldor Topsoe	81
Novo Nordisk	6
Novozymes	6
CALSEP	3
Alfa Laval Copenhagen	2
DONG Energy	2
Hampen Traeforarbejdning	2
Mekoprint	2
PrepChrom	2
Vattenfall	2
AnPro ApS	1
Babcock & Wilcox Volund ApS	1
Cheminova	1
Danfoss	1
Danisco	1
Dinex Filter Technol	1
DK Tekn Energy & Environm	1
ENERGI E2	1
EnPro ApS	1
FLS Miljo	1
Rockwool Int	1
SCF Technol	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 5. Health Care Sciences & Services / Public, Environmental & Occupational Health

Firms	No. of publications
Total	**13**
Novo Nordisk	9
ALK Abello	2
MarselisborgCentret	1
Muusmann Res & Consulting	1

Source: DAMVAD 2012

Participating universities
Glostrup University Hospital
Odense University Hospital
University of Copenhagen
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 6. Veterinary Sciences / Zoology

Firms	No. of publications
Total	**38**
Novo Nordisk	17
Scanbur	6
M&B	4
Ellegaard Minipigs Aps	2
H Lundbeck & Co	2
LEO Pharma	2
Pixiegene	2
Danmeter Res Grp	1
LAB Res Scantox	1

Tacon Europe	1

Source: DAMVAD 2012

Participating universities
National University Hospital
Odense University Hospital
University of Copenhagen
University of Southern Denmark
University of Aarhus

Pub 7. Transplantation

Firms	No. of publications
Total	**24**
Novo Nordisk	9
Nebo	3
H Lundbeck & Co	2
LifeCycle Pharma	2
NsGene	2
Antibodyshop	1
Bang & Olufsen Med	1
Bioneer	1
Genzyme	1
Nunc	1
Pharmacosmos	1

Source: DAMVAD 2012

Participating universities
Aarhus University Hospital
National University Hospital
Odense University Hospital
University of Copenhagen
University of Southern Denmark
University of Aarhus

Source: DAMVAD 2012

Pub 8. Anesthesiology

Firms	No. of publications
Total	**27**
NeuroSearch	10
Novo Nordisk	9
Cyncron	2
Danmeter	1
DanTrials	1
EvidenceProfile ApS	1
Ferring Pharmaceut	1
Norpharma	1
Radiometer Med	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Herlev University Hospital
Hvidovre University Hospital
Odense University Hospital
University of Copenhagen
University of Aalborg
Aarhus University
Aarhus University Hospital

Source: DAMVAD 2012

Pub 9. Rehabilitation

Firms	No. of publications
Total	**16**
Neurodan	3
Oticon	2
Alectia	1
BiomedIQ	1
C4Pain	1
Coloplast	1
Ctr Clin & Basic Res	1
Hammel Neuro Ctr	1
KLIFO	1
Mikro Vaerkstedet	1
Nordic Bioscience	1
Pharma Nord ApS	1
Widex Widex	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Odense University Hospital
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 10. Orthopedics / Rheumatology

Firms	No. of publications
Total	**60**
Nordic Bioscience Diagnost	32
Ctr Clin & Basic Res	15
Synarc Imaging Technol	3
Ferrosan	2
Pharmos Biosci	2
AnyBody Technol	1
KLIFO	1
Novo Nordisk	1
Nycomed Danmark	1
Parker Inst	1
Visiopharm ApS	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Gentofte University Hospital
IT University of Copenhagen
University of Copenhagen
University of Southern Denmark

Source: DAMVAD 2012

Pub 11. Medical Laboratory Technology

Firms	No. of publications
Total	**68**
DakoCytomat	17
Nordic Bioscience Clin Studies	10
Novo Nordisk	8
Radiometer Med	7
ALK Abello	4
Ctr Clin & Basic Res	4
Medi Lab	2
Steno Diabet Ctr	2
AROS Appl Biotechnol	1
Chempaq	1
Cobento Biotech	1
Colotech Ltd	1
Ferring Pharmaceut	1
Hagedorn Res Inst	1
Klin Farsoe	1
Med Prognosis Inst	1
NBG	1

Nunc	1
Osteometer BioTech	1
Sanos Biosci	1
Synarc Imaging Technol	1
Zymenex	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Glostrup University Hospital
Hillerod University Hospital
Hvidovre University Hospital
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 12. Cardiovascular System & Cardiology / Neurosciences & Neurology

Firms	No. of publications
Total	**21**
Novo Nordisk	18
H Lundbeck & Co	2
Nord Genzyme	1

Source: DAMVAD 2012

Participating universities
University of Copenhagen
University of Copenhagen Hospital
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 13. Integrative & Complementary Medicine

Firms	No. of publications
Total	**13**
Sprunk Jansen	3
Ferrosan	2
Novo Nordisk	2
Chr Hansen	1
H Lundbeck & Co	1
Inst Drug Anal	1
Narayana Res	1
Santaris Pharma	1
Sven Bugge Acupuncture Clin	1

Source: DAMVAD 2012

Participating universities
University of Copenhagen
University of Aalborg

Source: DAMVAD 2012

Pub 14. Physics / Science & Technology - Other Topics / Optics

Firms	No. of publications
Total	**34**
CAPRES	6
Haldor Topsoe Res Labs	6
SCF Technol	3
NIL Technol ApS	2
OFS Fitel Denmark ApS	2
Danfoss	1
Danish Inst Fundamental Metrol	1
Denmark & BioNanoPhoton	1
Dicon	1
Ferrosan Med Devices	1
Geol Survey Denmark & Greenland	1
GEUS	1
Grundfos	1
Image Metrol ApS	1
JJ Xray Syst ApS	1
NanoDTU	1
Nunc	1
SMB APS	1
SunFlake	1
T Cell	1
Vestas Wind Syst	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 15. Respiratory System

Firms	No. of publications
Total	**48**
Statens Serum Inst	14
Novo Nordisk	10
ALK Abello	3
AstraZeneca	3
Pfizer Denmark ApS	3
Boehringer Ingelheim Denmark	2
LEO Pharma	2
MUUSMANN Res & Consulting	2
Nycomed	2
7TM Pharma	1
AdvanDx	1
Bioneer	1
Cyncron Clin Res Unit	1
Eli Lilly Danmark	1
GlaxoSmithKline Pharma	1
Novozymes	1

Source: DAMVAD 2012

Participating universities
Gentofte University Hospital
Herlev University Hospital
Hvidovre University Hospital
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
Aarhus University
Aarhus University Hospital

Source: DAMVAD 2012

Pub 16. Physics / Science & Technology - Other Topics / Materials Science

Firms	No. of publications
Total	**32**
CAPRES	6
Haldor Topsoe Res Labs	6
SCF Technol	3
NIL Technol ApS	2
Danfoss	1

Danish Inst Fundamental Metrol	1
Denmark & BioNanoPhoton	1
Dicon	1
Ferrosan Med Devices	1
Geol Survey Denmark & Greenland	1
GEUS	1
Grundfos	1
Image Metrol ApS	1
JJ Xray Syst ApS	1
NanoDTU	1
Nunc	1
SMB APS	1
SunFlake	1
T Cell	1
Vestas Wind Syst	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 17. Mycology

Firms	No. of publications
Total	**49**
Carlsberg Res Lab	32
Novozymes	6
Novo Nordisk	3
Fluxome Sci	2
Biol	1
Danisco Innovat Copenhagen	1
DLF Trifolium	1
Janssen Cilag	1
Micro Clean Ltd	1
Statens Serum Inst	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg

Source: DAMVAD 2012

Pub 18. Cell Biology / Oncology

Firms	No. of publications
Total	**12**
DakoCytomat	2
NsGene	2
7TM Pharma	1
Danish Canc Soc	1
Display Syst Biotech Inc	1
ENKAM Pharmaceut	1
H Lundbeck & Co	1
Novo Nordisk	1
Pharmexa	1
ZGene	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
Rigshospitalet
University of Copenhagen
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 19. Microscopy

Firms	No. of publications
Total	**13**
Haldor Topsoe Res Labs	3
Micro Managed Photons	2
Berlock ApS	1
Cant	1
Coloplast	1
HKL Technol ApS	1
Nordic Bioscience	1
Novo Nordisk	1
Santaris Pharma	1
Statens Serum Inst	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 20. Biochemistry Molecular Biology / Biophysics

Firms	No. of publications
Total	**274**
Novo Nordisk	68
Carlsberg Res Lab	46
Novozymes	40
NeuroSearch	20
Danisco Cultor	11
H Lundbeck	9
ENKAM Pharmaceut	5
Aquaporin	4
Hagedorn Res Inst	4
VersaMatrix	4
7TM Pharma	3
ALK Abello	3
Chr Hansen	3
Ctr Clin & Basic Res Herlev Ballerup	3
DakoCytomat	3
LEO Pharma	3
Nordic Bioscience	3
PolyPeptide Labs	3
SPOCC Ctr	3
Nordic Vaccine	2
Pharmexa	2
RiboTask ApS	2
Struct Bioinformat Adv Technol	2
TPR Grp ApS	2
ZGene	2
Albeda Res	1
Biomage	1
Bioneer	1
Chashude	1
CMC Biopharmaceut	1
Coloplast	1
Danish Technol Inst	1
LiPlasome Pharma	1
Lundbeck	1
M&E Biotech	1
MEMPHYS Ctr Biomembrane Phys	1
Microlytic ApS	1
NANOKO	1
NatImmune	1

OSTEOPRO	1
Pharma	1
Prozymex	1
Radiometer Med	1
RandD	1
Rheoscience	1
Sanos Biosci	1
Santaris Pharma	1
Symphogen	1
TopoTarget	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Odense University Hospital
Roskilde University
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 21. Endocrinology & Metabolism / Physiology

Firms	No. of publications
Total	**45**
Novo Nordisk	40
NeuroSearch	2
Maxygem	1
MDS Protana	1
Rheosci	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Gentofte University Hospital
Herlev University Hospital
University of Copenhagen
Glostrup University Hospital
Aarhus University Hospital

Source: DAMVAD 2012

Pub 22. Fisheries

Firms	No. of publications
Total	**31**
BioMar	11
Aquapri Danmark	2
Bioconsult	2
Daka amba	2
Danish Aquaculture	2
Orbicon	2
ACE Biosci	1
AKVA Grp Denmark	1
Alfa Laval Prot Technol Inc	1
AquaSearch Vet	1
Billund Aqvakulturserv APs	1
ConStat	1
Dana Feed	1
Danisco Cultor	1
Danish Trout Breeding	1
Novozymes	1

Source: DAMVAD 2012

Participating universities
Roskilde University
Technical University of Denmark
University of Copenhagen
University of Aalborg
Aarhus University

Source: DAMVAD 2012

Pub 23. Allergy

Firms	No. of publications
Total	**251**
ALK Abello	194
Reference Lab Aps	14
LEO Pharm	6
Novozymes	4
Phadia ApS	4
Allergi Lunge Klinikken	3
Curalog	2
MUUSMANN Res & Consulting	2
Novo Nordisk	2
Pharmacia	2
Pharmexa	2
Prozymex	2
Unizyme Labs	2
ALECTIA	1
Allergy & Lung Clin	1
AstraZeneca	1
Brogarden	1
Carlsberg Lab	1
Chr Hansen	1
H Lundbeck & Co	1
Mekos Labs	1
Niels Clauson Kaas	1
Santaris Pharma	1
Symphogen	1
Zapera Com	1

Source: DAMVAD 2012

Participating universities
Glostrup University Hospital
Aarhus University Hospital
Odense University
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 24. Nutrition & Dietetics / Food Science & Technology

Firms	No. of publications
Total	**18**
Novozymes	5
Arla Foods Amba	2
Danisco	2
Novo Nordisk	2
Carlsberg Lab	1
CP Kelco ApS	1
DMRI	1
Eurofins Steins Lab	1
Ferrosan	1
SFK Technol	1
AarhusKarlshamn Denmark	1

Source: DAMVAD 2012

Participating universities

Roskilde University
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aarhus

Source: DAMVAD 2012

Pub 25. Pharmacology & Pharmacy / Psychiatry

Firms	No. of publications
Total	**254**
H Lundbeck & Co	169
NeuroSearch	75
Pfizer Denmark	5
Novo Nordisk	3
Eli Lilly	1
ICR	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Technical University of Denmark
Frederiksberg University Hospital
Psychiat Univ Ctr Bispebjerg
Psychiat Univ Ctr Glostrup
University of Copenhagen
University of Copenhagen Hospital
Aarhus University
Aarhus University Hospital

Source: DAMVAD 2012

Pub 26. Engineering / Environmental Sciences & Ecology / Water Resources

Firms	No. of publications
Total	**211**
GEUS	31
Kruger	19
COWI	18
Novozymes	11
Babcock & Wilcox Volund ApS	8
Odense Water Ltd	8
ENVICARE ApS	7
Ramboll Denmark	7
Avedoere Wastewater Serv	5
Lynettefaellesskabet IS	5
Danfoss Analyt	4
DHI Water & Environm	4
Hedeselskabet	4
NIRAS	4
Orbicon	4
PH Consult ApS	4
Wastewater Control ApS	4
Brodrene Hartmann	3
Burmeister & Wain Scandinavian Contractor	3
Eurofins Danmark	3
Bacess & Transform 1994 Aps	2
Copenhagen Energy	2
Econet	2
Force Technol	2
Haldor Topsoe	2
IEA	2
JPS Management	2
Mekoprint	2
Rockwool Int	2
Saxo Bank	2
Aalborg Portland	1
Alfa Laval Nakskov	1
Arla Foods Amba	1
Celtor Biosyst	1
Chr Hansen	1
Consulting Engineers & Planners	1
Copenhagen Water	1
CPKelco ApS	1
CTR IS	1
Danish Technol Inst	1
DONG Energy	1
DSM Nutrit Prod	1
Elkraft Syst	1
Elsam	1
EMD Int	1
Environm & Energy	1
Environm sessment Inst	1
Erik K Jorgensen	1
Grundfos Management	1
Hvidovre Forsyning	1
IS Vestforbroending	1
Kemira Water	1
Kobenhavns Energi	1
Municipal Aarhus Water & Wastewater	1
N Amer Filtrat Inc	1
NKT Res Ctr	1
Novo Nordisk	1
Rovesta Miljo IS	1
Siemens Wind Powers	1
Sophus Berendsen	1
Sorbisense	1
Spildevandsctr Avedore	1
Unisense	1
UPS	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 27. Engineering / Optics

Firms	No. of publications
Total	**70**
Crystal Fibre	18
OFS Fitel Denmark ApS	15
Lucent Technol Denmark	5
NKT Res	4
Koheras	3
Tellabs Denmark	3
Alight Technol	2
Danish Fundamental Metrol Ltd	2
NIL Technol ApS	2
SCF Technol	2
3Shape Inc	1
Antenna Syst Consulting ApS	1
BioNanoPhoton	1
Grundfos	1
Haldor Topsoe Res Labs	1
IBSEN Micro Struct	1
Intel Copenhagen ApS	1
Micro Managed Photons	1
Microtron	1
NKT Integrat	1
Nunc	1
R&D Tellabs Denmark	1

Sectra Pronosco A S	1
SMB APS	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Aalborg

Source: DAMVAD 2012

Pub 28. Optics / Physics

Firms	No. of publications
Total	**51**
Crystal Fibre	11
OFS Fitel Denmark ApS	9
NKT Res	4
Lucent Technol Denmark	3
SCF Technol	3
Alight Technol	2
Koheras	2
NIL Technol ApS	2
Tellabs Denmark	2
3Shape Inc	1
Danfysik	1
Danish Fundamental Metrol Ltd	1
Grundfos	1
Haldor Topsoe Res Labs	1
IBSEN Micro Struct	1
Intel Copenhagen ApS	1
MedArt	1
NanoDTU	1
Novo Nordisk	1
Nunc	1
Optilink	1
SMB APS	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
Aarhus University

Source: DAMVAD 2012

Pub 29. Neurosciences & Neurology / Physiology

Firms	No. of publications
Total	**24**
Novo Nordisk	10
NeuroSearch	8
H Lundbeck & Co	4
Alectia	1
Sophion Bioscience	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Hvidovre University Hospital
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 30. Virology

Firms	No. of publications
Total	**14**
Novo Nordisk	6
Novozymes	2
Symphogen	2
7TM Pharma	1
Chr Hansen	1
DAKO	1
Pharma	1

Source: DAMVAD 2012

Participating universities
Hvidovre University Hospital
Technical University of Denmark
University of Copenhagen
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 31. Immunology / Infectious Diseases

Firms	No. of publications
Total	**17**
ACE Biosci	3
Loke Diagnost	3
TD Vaccines	2
Bioneer	1
BL Consult	1
Chr Hansen	1
Ciphergen Biosyst	1
DACS	1
Ferring Pharmaceut	1
NatImmune	1
Novo Nordisk	1
Sanofi Pasteur MSD	1

Source: DAMVAD 2012

Participating universities
Gentofte University Hospital
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
Aarhus University
Aarhus University Hospital

Source: DAMVAD 2012

Pub 32. Chemistry / Science & Technology - Other Topics / Materials Science

Firms	No. of publications
Total	**67**
Haldor Topsoe Res Labs	14
Exiqon	4
Novo Nordisk	3
Aquaporin	2
Bioneer	2
Capres	2
Coloplast	2
Danish Technol Inst	2
DONG Energy	2
JJ X Ray ApS	2
Novozymes	2
QuantumWise	2
Radiometer Med	2
Scandinavian Micro Biodevices ApS	2
SMB	2
SCF Technol	2
SunFlake	1
Atomistix	1
Biodet	1

Chempaq Microinstruments	1
CLC Bio	1
Danfoss	1
Danish Steel Works	1
Dantec Dynam	1
DELTA Microelect	1
Denmark & BioNanoPhoton	1
Dicon	1
Ferrosan Med Devices	1
GIGA ApS	1
Haldor Topsoe A S	1
NanoNord	1
OVC Aps	1
Oxford Instruments HKL	1
Son MEMS	1
Sophion Biosci	1
T Cell	1
VIR Biosensor	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 33. Genetics & Heredity / Research & Experimental Medicine

Firms	No. of publications
Total	**21**
NsGene	6
Santaris Pharma	3
ZGene	3
FCMB	2
Novo Nordisk	2
Virogates	2
Zymenex	2
Dandrit Biotech	1

Source: DAMVAD 2012

Participating universities
Glostrup University Hospital
Hvidovre University Hospital
Odense University Hospital
Roskilde University
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 34. Materials Science / Metallurgy & Metallurgical Engineering

Firms	No. of publications
Total	**35**
DONG Energy	7
Haldor Topsoe	5
Vattenfall	5
Energi E2	3
Fynsvaerket Elsam	3
ALECTIA	1
COWI	1
Danfoss Corp Ventures	1
DISA Ind	1
ENKOTEC	1
FLSmidth	1
HKL Technol	1
Oxford Instruments HKL	1
Sauer Danfoss ApS	1
Skamol	1
Tarconord	1
Topsoe Fuel Cell	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
Aarhus University

Source: DAMVAD 2012

Pub 35. Biotechnology applied microbiology / Food Science & Technology

Firms	No. of publications
Total	**24**
Novozymes	8
Chr Hansen	4
Danisco	2
FOSS	2
Alfa Laval Copenhagen	1
Carlsberg Lab	1
CPKelco ApS	1
Fluxome Sci	1
Hojmarklab	1
Int Food Sci Ctr	1
Novo Nordisk	1
Q Interline	1

Source: DAMVAD 2012

Participating universities
University of Copenhagen
Technical University of Denmark

Source: DAMVAD 2012

Pub 36. Medical informatics

Firms	No. of publications
Total	**20**
Novo Nordisk	5
AstraZeneca	3
Judex Datasystemer	3
ALK Abello	1
Amgros IS	1
CSC Scandihlth	1
CSO Santaris Pharma	1
DIMAC	1
Ferring Pharmaceut	1
H Lundbeck & Co	1
MedLeap ApS	1
Muusmann Res & Consulting	1

Source: DAMVAD 2012

Participating universities
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 37. Neurosciences & Neurology / Pharmacology & Pharmacy

Firms	No. of publications
Total	**335**
H Lundbeck & Co	190
NeuroSearch	131
Pfizer	5
Novo Nordisk	4
C4Pain & CCBR	1
Eli Lilly	1
ENKAM Pharmaceut	1
ICR	1
Leo Pharmaceut Prod	1

Source: DAMVAD 2012

Participating universities
Copenhagen University Hospital
Technical University of Denmark
Frederiksberg University Hospital
Psychiatric University Center Bispebjerg
Psychiatric University Center Glostrup
SDU Odense University
University of Copenhagen
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 38. Geriatrics & Gerontology / Neurosciences & Neurology

Firms	No. of publications
Total	**18**
H Lundbeck & Co	8
Ciphergen Biosyst	5
Pfizer Denmark	2
DSI Inst	1
NsGene	1
Statens Serum Inst	1

Source: DAMVAD 2012

Participating universities
Bispebjerg University Hospital
Hillerod University Hospital
Hvidovre University Hospital
University of Copenhagen
University of Copenhagen Hospital
Aarhus University
Aarhus University Hospital

Source: DAMVAD 2012

Pub 39. Engineering / Instruments & Instrumentation

Firms	No. of publications
Total	**44**
Danfoss	9
Grundfos	4
Siemens Flow Instruments	3
Aquaporin	2
DELTA Microelect	2
Novo Nordisk	2
Vestas Wind Syst	2
Danfysik	1
Danish Inst Fundamental Metrol	1
Dantec Dynam	1
Ferroperm Piezoceram	1
Haldor Topsoe Res Labs	1
Image Metrol	1
InSensor	1
Intentia Danmark	1
Kamstrup	1
KK Elect	1
MAN Diesel & Turbo SE	1
Microtron	1
NetTest	1
OPDI Technol	1
OVC Aps	1
Powre Lynx	1
Son MEMS	1
Sophion Biosci	1
Trescal	1
Vir Biosensor	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
Aarhus University

Source: DAMVAD 2012

Pub 40. Electrochemistry / Materials Science

Firms	No. of publications
Total	**13**
IRD Fuel Cells	4
Topsoe Fuel Cell	4
Haldor Topsoe Res Labs	2
Computat Mat Design ApS	1
Dinex Filter Technol	1
ENKOTEC	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Southern Denmark
University of Aalborg

Source: DAMVAD 2012

Pub 41. Energy & Fuels / Engineering

Firms	No. of publications
Total	**138**
DONG Energy	26
Haldor Topsoe	13
FL Smidth & Co	8
Vestas Wind Syst	8
Babcock & Wilcox Volund	6
Elsam	6
ENERGI E2	6
Vattenfall	6
Danfoss	5
Calsep	4
Alectia	3
EMD Int	3
LM Glasfiber	3
Maersk Olie & Gas	3
Siemens Wind Power	3
Danish Technol Inst	2
Ea Energy Anal	2
Gamesa Wind Engn ApS	2
Grundfos Microrefinery	2
Mekoprint	2
Motorola Inc	2

Stobbe Tech	2
COWI Consulting Engineers & Planners	1
Energinet Dk	1
ENFOR	1
FASAN WiE Plant	1
Forecasting & Optimizat Energy Sector	1
Incoteco Denmark ApS	1
IS FASAN	1
Kalaschnikow	1
KK Elect	1
MAN Diesel	1
Midtkraft Energy Co	1
Neg Micon	1
Noreco A	1
Novozymes	1
OJ Electronics	1
ReaTech	1
Rockwool Int	1
SCF Technol	1
Tech Wise	1
Xergi	1
Aalborg Ind Inc	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Roskilde
University of Southern Denmark
University of Aalborg
Aarhus University

Source: DAMVAD 2012

Pub 42. Reproductive biology

Firms	No. of publications
Total	**135**
Ferring Pharmaceut	55
Novo Nordisk	25
Unisense FertiliTech	25
DakoCytomat Denmark	4
Ciconia R&D Aps	3
Loke Diagnost ApS	3
Fertilitech ApS	2
Lattec IS	2
Medicult	2
Sandrini Acupuncture IS	2
BioImage	1
BK Med	1
BL Consult ApS	1
Cryos Int Sperm Bank	1
Ctr Clin & Basic Res	1
Danish Fertil Clin	1
Dansire	1
Inst Drug Anal	1
Maxygen	1
Narayana Res	1
Nordic Bioscience	1
Protana	1

Source: DAMVAD 2012

Participating universities
Herlev University Hospital
Odense University Hospital
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 43. Endocrinology & Metabolism / Nutrition & Dietetics

Firms	No. of publications
Total	**47**
Novo Nordisk	14
Ctr Clin & Basic Res	6
NeuroSearch	6
Steno Diabet Ctr	6
Cyncron	3
Rheoscience	3
Reduce Aps	2
Azign Biosci	1
DESC	1
Exiqon	1
Jyllandsposten	1
Medilab	1
Meyers Madhus IS	1
Nutri Pharma	1

Source: DAMVAD 2012

Participating universities
Frederiksberg University Hospital
Glostrup University Hospital
Hvidovre University Hospital
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aarhus

Source: DAMVAD 2012

Pub 44. Otorhinolaryngology

Firms	No. of publications
Total	**48**
Oticon	31
GN Resound	9
NeuroSearch	2
Widex	2
GRAS Sound & Vibrat	1
Nycomed	1
Pfizer APS	1
William Demant Holding	1

Source: DAMVAD 2012

Participating universities
Koge University Hospital
Odense University Hospital
Technical University of Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 45. Engineering / Geology

Firms	No. of publications
Total	**33**
Maersk Olie & Gas	8
COWI	4
DONG Energy	4
Carl Bro	2
DHI	2
Odegaard	2
SEAS	2
ALECTIA	1
Danish Meteorol Inst	1

FLSmidth	1
Fundal Consult	1
Jardfeingi Faroese Earth & Energy Directorate	1
Noreco A	1
Ramboll Danmark	1
Aalborg Portland	1
Aarhus Geophys ApS	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aalborg
Aarhus University

Source: DAMVAD 2012

Pub 46. Food Science & Technology / Microbiology

Firms	No. of publications
Total	**18**
Chr Hansen	7
Danisco	4
Bioneer	1
Novo Nordisk	1
Novozymes	1
Royal Greenland Seafood Ltd	1
Statens Serum Inst	1
Thomsen Biosci	1
Unisense	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen

Source: DAMVAD 2012

Pub 47. Nursing

Firms	No. of publications
Total	**11**
Novo Nordisk	9
ALK Abello	1
Coloplast	1

Source: DAMVAD 2012

Participating universities
Glostrup University Hospital
University of Copenhagen

Source: DAMVAD 2012

Pub 48. Zoology

Firms	No. of publications
Total	**66**
Novo Nordisk	28
Scanbur	6
M&B	4
Orbicon Consulting	4
Ornis Consult Ltd	4
Ctr Clin & Basic Res	2
DDH Consulting	2
Ellegaard Gottingen Minipigs ApS	2
H Lundbeck & Co	2
LEO Pharma	2
Pixiegene	2
CCKonsult	1
Cheminova	1
Chr Hansen	1
Dako Denmark	1
Danmeter Res Grp	1
LAB Res Scantox	1
Tacon Europe	1
Unisense	1

Source: DAMVAD 2012

Participating universities
Bispebjerg University Hospital
Odense University Hospital
Roskilde University
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 49. Biophysics

Firms	No. of publications
Total	**344**
Novo Nordisk	91
Novozymes	54
Carlsberg Res Lab	48
NeuroSearch	39
H Lundbeck & Co	13
Danisco	11
ENKAM Pharmaceut	5
7TM Pharma	4
Aquaporin	4
GE Healthcare	4
Symphogen	4
VersaMatrix	4
ALK Abello	3
Chr Hansen	3
Ctr Clin & Basic Res Herlev Ballerup	3
DakoCytomat	3
LEO Pharma	3
Nordic Bioscience	3
PolyPeptide Labs	3
Albeda Res	2
Bioimage	2
Nordic Vaccine	2
Pharmexa	2
RiboTask ApS	2
Struct Bioinformat Adv Technol	2
TPR Grp ApS	2
ZGene	2
ALECTIA	1
AnyBody Technol	1
Biodet	1
Bioneer	1
Chashude	1
Cheminova	1
CMC Biopharmaceut	1
Coloplast	1
Danish Technol Inst	1
InSensor	1
LiPlasome Pharma	1
M&E Biotech	1
MDS Proteom	1
Microlytic ApS	1
NANOKO	1
NatImmune	1
OSTEOPRO	1
Pharma	1
Poseidon Pharmaceut	1

Prozymex	1
Radiometer Med	1
Rheoscience	1
Sanos Biosci	1
Santaris Pharma	1
TopoTarget	1
VIR Biosensor	1

Source: DAMVAD 2012

Participating universities
Frederiksberg University Hospital
Odense University Hospital
Roskilde University
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aalborg
University of Aarhus
Aalborg Hospital
Aarhus University Hospital

Source: DAMVAD 2012

Pub 50. Entomology

Firms	No. of publications
Total	**10**
Carlsberg Lab	2
Cheminova Res & Dev	1
Exiqon	2
Hardi Int	2
Orbicon	1
Ramboll Grp	1
Teicher	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aarhus

Source: DAMVAD 2012

Pub 51. Mathematical & computational biology

Firms	No. of publications
Total	**28**
Novo Nordisk	10
NeuroSearch	4
Bioinformat ApS	2
CLC Bio	2
H Lundbeck & Co	2
Alfa Laval Copenhagen	1
Bording Data	1
Ferring Pharmaceut	1
Fluxome Sci	1
Hagedorn Res Inst	1
MedLeap ApS	1
Santaris Pharma	1
Topotarget	1

Source: DAMVAD 2012

Participating universities
Arhus University Hospital
Glostrup University Hospital
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 52. Mineralogy

Firms	No. of publications
Total	**10**
FLSmidth	3
IRD	2
Avannaa Resources Ltd	1
Calsep	1
Danish Lithosphere Ctr	1
Fundal Consult	1
HKL Technol	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Aarhus
Aarhus University

Source: DAMVAD 2012

Pub 53. Agriculture

Firms	No. of publications
Total	**257**
Danisco	33
Novozymes	27
Chr Hansen	23
AgroTech	22
Arla Foods Amba	15
Carlsberg	10
Lattec IS	9
DLF Trifolium	8
Novo Nordisk	8
DONG Energy Power	4
FOSS	4
Foss Analyt	4
Hardi Int	4
Boehringer Ingelheim Denmark	3
Burmeister & Wain Scandinavian Contractor	3
	3
Cheminova	3
Eurofins Danmark	3
FLSmidth	3
Steins Lab	3
Xergi	2
COWI	2
CP Kelco	2
Danagro Adviser	2
EnerDry ApS	2
Grundfos Biobooster	2
Inbicon	2
Neltec Denmark	2
Nordic Sugar	2
StrateKo Aps	2
Supertrae	2
Techwise	1
AKV Langholt Amba	1
Babcock & Wilcox Volund	1
Beratungszentrale Dan Landwirtschaft	1
BioGasol ApS	1
BioMar	1
Bioneer	1
Biotest Aps	1
Boss Produkter	1
Cobento Biotech	1
Daehnfeldt	1

DANESPO	1
Danish Distillers	1
Danish Meteorol Inst	1
Danish Technol Inst	1
Destron Fearing	1
DSM Nutr Prod Inc	1
Elsam Engn	1
ENERGI E2	1
Epivetko Aps	1
Evolva	1
Gasa Odense Frugt Gront Amba	1
Genencor Inc	1
GPL Int	1
Grodania	1
GX Biosyst Symbion	1
Hamlet Prot	1
Kemira Miljo	1
Knud Jepsen	1
KoNet Praksis Aps	1
Nor Feed	1
Norsk Hydro	1
NUNC	1
Ramboll Denmark	1
ReaTech ReAddit	1
Sanos Biosci	1
Sanovo Foods	1
Scanbur	1
Sejet Planteforaedling IS	1
SKOV	1
Teicher	1
Vestas Wind Syst	1
VKR Res Ctr Proact Plants	1
Zealand Pharmaceut	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 54. Physical Geography

Firms	No. of publications
Total	**10**
BioConsult	1
DONG Energy	1
EMD Int	1
Faxe Kalk	1
Geomat ApS	1
Grontmij Carl Bro	1
Orbicon A S	1
Ramboll	1
SkyTEM Aps	1
Watertech	1

Source: DAMVAD 2012

Participating universities
University of Copenhagen
University of Aalborg
University of Aarhus

Source: DAMVAD 2012

Pub 55. Behavioral Sciences

Firms	No. of publications
Total	**90**
NeuroSearch	44
H Lundbeck & Co	42
Novo Nordisk	3
SKOV	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Copenhagen Hospital
University of Southern Denmark
University of Aarhus
Aarhus University Hospital

Source: DAMVAD 2012

Pub 56. Biotechnology applied microbiology / Microbiology

Firms	No. of publications
Total	**123**
Chr Hansen	31
Carlsberg Res Lab	30
Novozymes	19
Bioneer	8
Novo Nordisk	8
Danisco	6
Fluxome Sci	4
BioMar	2
FOSS Analyt	2
Unisense	2
Alpharma ApS	1
Arla Foods Amba	1
BioGasol ApS	1
Biol	1
Biotechnol Inst (Bioneer)	1
Ilochip	1
Pantheco	1
Poalis	1
Royal Greenland Seafood Ltd	1
Solum	1
Steins Lab	1

Source: DAMVAD 2012

Participating universities
Technical University of Denmark
University of Copenhagen
University of Southern Denmark
University of Aarhus

Source: DAMVAD 2012

Appendix 4. List of firms, by industry sector

This appendix lists all the Danish companies that have generated patents and/or publications during the period 2000 to 2001, both years included, *and* for which a company registration number (CVR-number) has been identified. Based on this registration number, the companies are linked to industry sectors.

Industry sector	Company name	
Agriculture, forestry and fishery	Aquapri Denmark	Gartneriet PKM
	Aquasearch Vet. v/Torben Fejer Nielsen	Hededanmark
	DLF-Trifolium	Knud Jepsen
	Ellegaard Göttingen Minipigs	Sejet Planteforædling
Natural ressource extraction	Avannaa Logistics	Mærsk Olie og Gas
	DONG E&P	Schlumberger Danmark
	Hess Denmark	WELLTEC
Food, drink and tobacco	Agroferm	International Food Science Center
	Arla Foods AmbA	International Nutrition Co. Ltd.
	Beauvais	KMC International
	Bifodan	Kohberg Brød
	Biomar	Lactosan
	Boss Produkter	Lantmännen Cerealia
	CP Kelco	Lantmännen Schulstad
	Crown-Foods	MARINOVA
	Daka A.m.b.A.	Nordic Sugar
	Daloon	Palsgaard
	Dana Feed	Pernod Ricard Denmark
	Dragsbæk	Pharma Nord
	DSM Nutritional Products	Ridley's
	Dupont Nutrition Biosciences	Royal Greenland Seafood
	Easyfood	Toms Gruppen
	Ferrosan	AarhusKarlshamn
	Hamlet Protein	
Textiles and leather	FIBERTEX	Lilly
	KE Fibertec	VIKING LIFE - SAVING EQUIPMENT
Wood, paper and printing	Brdr. Hartmann	NS System
	Brødrene Hartmann	Palsgaard Træ
	Hampen Træforarbejdning	
Chemicals	Biolocus	Plum
	Cheminova	Prozymex
	Glycom	Ribotask
	Hempel	Rosco Diagnostica
	Koppers Denmark	Topsil Semiconductor Materials
	Novadan	Unizyme Laboratories
	Novozymes	
Pharmaceuticals	ALK-Abello	LEO Pharma
	Alpharma	Loke Diagnostics
	BASF	Mekos Laboratories
	Bavarian Nordic	Multimerics
	Chr. Hansen	Nordic Vaccine
	CMC Biologics	Novo Nordisk
	Colotech	Nycomed
	Decumed	Pharmacosmos
	FEF Chemicals	PharmaZell Denmark
	H. Lundbeck	Polypeptide Laboratories
Plastics, gas and concrete	ABEO	Icopal Danmark
	AVK Plast	ISOVER
	Carmo	NCC ROADS
	Coloplast	Nunc
	Confac	Photosolar
	Contec	Rockwool
	DKI PLAST	RPC Superfos
	Dupont Lightstone	Skamol
	Falck Schmidt ACE	Spæncom
	Faxe Kalk	Xperion
	Fiberline	Aalborg Portland

Industry sector	Company name	
Metals	Babcock & Wilcox Volund Cemecon Scandinavia Cubic-Modulsystem GMF Logstor Mekoprint Mosbaek	Nassau Door Prodan PROMECON Sapa Profiler Sintex Aalborg Ind
Electronics	Anritsu Asetek Bang & Olufsen Bang & Olufsen Operations Brüel & Kjær Sound & Vibration Measurement Danfoss solar inverters Dantec Dynamics DEIF Dynatest Denmark Emri Ericsson Danmark Foss Analytical GN ReSound Ibsen Photonics IDEGO Ignis Photonyx Interacoustics Judex Datasystemer Kamstrup KIRK ACOUSTICS Laser Interface Photonics Medart	Meggitt Mikrolab Aarhus Neltec Denmark NKT Photonics OJ Electronics Opdi Technologies Oticon Oxford Instruments HKL Phase One Radiometer Medical Reson RhinoMetrics ScanSpeak Sennheiser Communications Sonion Tempress Thermo Fisher Scientific Chromatography Holdings Triax Unisense Videometer Widex William Demant Holding
Manufacturing of electrical equipment	Actulux AXA Power Crystal Fibre Dalmatic, Lystrup Danfoss Drives Danfysik Danion DANIONICS EC Power	Elektro-Isola Gaia Solar KK-Electronic LINAK Martin Professional NKT Cables OFS Fitel Denmark SerEnergy TC Electronic

Industry sector	Company name	
Mechanical engineering	Acta	Hydrema Produktion
	Alfa Laval Copenhagen	IWT
	Alfa Laval Kolding	Kiermar Technology
	Alfa Laval Nakskov	Knudsen Køling
	Alfa Laval Aalborg	LeanVent
	APV	Linco Food Systems
	AVN Energy	Linddana
	BilWinco	LM Glasfiber
	Cabinplant	LM Wind Power
	CCBR	MAN Diesel
	Damas	Møller & Devicon
	Damcos	PAJ SYSTEMTEKNIK
	Danfoss	Samson Agro
	Dantherm Air Handling	Sauer-Danfoss
	Disa Industries	Schur Technology
	E.ON Sverige	SFK Systems
	Enkotec	Siemens Wind Power
	Envotherm	Simatek
	Epoke	SKIOLD
	Exhausto	Skov Glyngøre
	Flex Coil	Strecon
	GEA Liquid Processing	Struers
	GEA Process Engineering	Suzlon Energy
	GeoHeat Ex	Systemair
	Grundfos	Tetra Pak Hoyer
	Hardi International	Varo
	HMF Group	VESTAS
	HOH Water Technology	YORK DENMARK
	Hove	Aasted-mikroverk
Transport and transportation equipment	Composhield	DONG Energy Power
	Dampskibsselskabet Norden	MSC Denmark
	DFDS	Odense Staalskibsværft
	Dinex	Scandinavian Airlines System
Other manufacturing	Aproxi	LEGO System
	Bang & Olufsen Medicom	Microbotic
	BORRINGIA	MRR Produktion
	Carpenter	Proxeon Biosystems
	DITENS	Sahva
	DPA Microphones	Unomedical
	Elos Medtech-Pinol	VIVOX
	K. F. Ventilation	
Energy	DONG Energy	Oxydice
	NESA	Vattenfall
Water and waste	AffaldPlus	Lynettefællesskabet
	Aquaporin	Organic Fuel Technology
	Grundfos	Vandcenter Syd
	Grundfos Biobooster	Vestforbrænding
Construction	Brøndum	RBE
	Lumodan	Sydfynsk Håndværk
	NCC	Viuff
Publishing, TV and radio	ALOC	Nordic Light
	Configit	SimCorp
	Hugin Expert	Swantec Software And Engineering
	Image Metrology	Targit
	JP/Politikens Hus	Teklatech
	Mikro Værkstedet	ViZoo
	Milestone Systems	Weekendavisen
	Nangate	

Industry sector	Company name	
IT and information services	3Shape	Mjølner Informatics
	A. E. Consulting v/Anders Esbensen	MOBILETHINK
	Anybody Technology	Neurotech
	APC	NNIT
	CLC Bio	Nokia Danmark
	CRYPTOMATHIC	Nordunet
	Deltek Danmark	Percepton
	Develco	Prevas
	Dimac	Prolog Development Center
	Dynaway	Qualiware Consulting
	EMD International	Quantumwise
	Enfor	Rehfeld Partners
	GATEHOUSE	Retinalyze
	GomSpace	RINAS
	Greenwave Reality	Rovsing
	IFAD TS	Scanrate Financial Systems
	I-GIS	Scape Technologies
	Image House	Sharecon
	Informi Gis	Structural Vibrations Solutions
	INROPA	Technoconsult
	Intec Telecom Systems Denmark	Tellabs Denmark
	Intramed	Visiopharm
	KMD	Wirtek
	Lakeside	Xefion
	Lawson Software Danmark	YOKE interaction design
	Logos Smart Card	Zensys
	Lyngsoe Systems	Zitelab
Consultancy and advisory services	3H Inventors	Green Farm Energy
	AC-Sun	Grontmij
	Alectia	Habitat Vis
	Amplexa Genetics	Haldor Topsøe
	ASC, Antenna Systems Consulting	Hollensen Energy
	Bahner.dk	Højmarklaboratoriet
	Balslev	Incentive Partners
	Berendsen	Incoteco (Denmark)
	Burmeister & Wain Scandinavian Contractor	JJK 2012
		Jubile Kinase
	Buro Happold	Krüger
	Catcon	Københavns Energi
	Chemometec	Lading Arkitekter
	Chempilots	Langebæk Logistik
	Cleanfield	LIC Engineering
	Computational Materials Design	Lotcon
	Cowi	Milana
	Crisplant	MSC
	Dall Energy	Muusmann
	Damptech	Mærsk Industri
	Danish Power Systems	NIL Technology
	Dansk Cater	Niras
	Deloitte	NNE Pharmaplan
	Det Norske Veritas, Business Assurance	Odeon
	DSS Silkeborg	Pulse Mems
	E&M Holding	QuantiBact
	EA Energianalyse	Rambøll Danmark
	Ecatrisk	Saphire
	Econet	Schafer - N
	Ejlskov	Seir-Materialeanalyse
	EKJ Rådgivende Ingeniører	SK Power v/Sven Richard Kjær
	Eltronic	Skytem Surveys
	Enerdry	SLA
	ES GI Consult	Solarcap
	Eurofins Miljø	Stensborg
	Eurofins Steins Laboratorium	Synarc Imaging Technol
	Fischer Bioconsult	TPR-Group
	FLSmidth / FLS Miljo	Traeger
	Force Technology	Trescal

Industry sector	Company name	
	Franck Geoteknik	Trifork
	Fundal Consulting v/Erling Fundal	Valcon
	Gade & Mortensen Akustik	Waste Water Control
	Garrad Hassan Denmark	Watertech
	GEO	Wave Star
	Geographic Resource Analysis & Science	Ødegaard & Danneskiold-Samsøe
	Germanischer Lloyd AG	Aagren Dermaconsulting
	GODevelopment	
Research and development	2curex	IRD
	7TM PHARMA	Jurag Separation
	Abbott Laboratories	Klifo
	Acadia Pharmaceuticals	Lattec
	Ace Biosciences	LIFECYCLE PHARMA
	Action Pharma	LiPlasome Pharma
	Affitech	Maxygen
	Agrotech	Medi Cult
	Albeda Research	Medical Prognosis Institute
	Alight Photonics	Mermaid Care
	Alpcon	Microlytic
	Alphalyse	MYCO TEO
	Amminex	Nanonord
	Analog Devices	Natimmune
	Aneedle	Neurodan
	AntibodyShop	Neurokey
	Aros Applied Biotechnology	NeuroSearch
	Ascendis Pharma	Niels Clauson-Kaas
	Azanta Danmark	Nordic Bioscience Clinical Studies
	Azign Bioscience	NORDISK REBALANCE
	BioGasol	NS GENE
	Bioligands	NsGene
	BIOMODICS	Nuevolution
	Biomonitor	Origio
	Bioneer	PentaBase
	Bioporto Diagnostics	Pharmexa
	Biosynergy	Pharmos Bioscience
	Biovelop	Pipeline Biotech
	B-K Medical	Pixiegene
	Borean Pharma	PNN Medical
	Bridge Bioresearch Danmark	POALIS
	Capres	Poseidon Pharmaceuticals
	Carlsberg	Precisense
	Chew Tech	Prepchrom v/Jørgen Malthe Mollerup
	Cismi	Pride Proteomics
	Citoxlab Scantox	Q-Interline
	CLLUONE DIAGNOSTICS	Radiocomp
	COMETAS	Reapplix
	Core	Recepticon
	Curix Biotech	Reduce
	Dako	Rheoscience
	Danalab	Rose Pharma
	Dandrit Biotech	Sanos Bioscience
	Danfoss Development	Sanovo Biotech
	Danish Fluid Bed Technology	Santaris Pharma
	Dansk Fundamental Metrologi	Scandinavian Micro Biodevices
	DB Lab	SCF Technologies
	DELTA - Dansk Elektronik, Lys & Akustik	Slagteriernes Forskningsinstitut
	DHI	Smart Biosystems
	DrugMode	Sophion Bioscience
	Ecron Acunova	Sorbisense
	Egalet	Statens Serum Institut
	Enkam Pharmaceuticals	Stobbe Tech
	Entomopharm	Sunflake
	Epiconsult	Symphogen
	Evidence Profile	Taconic
	Evolva Biotech	TD Vaccines
	Exiqon	Teknologisk Institut

Industry sector	Company name	
	ExpreS2ion Biotechnologies	Terranol
	FCMB	Texas Instruments Denmark
	Ferring Pharmaceuticals	Thrombologic
	Fluisense	TK ENERGI
	Fluxome Sciences	TKS
	Fonden Lindoe Offshore Renewables	TopoTarget
	Center	Topsoe Fuel Cell
	Forward Pharma	Torsana
	Gastrotech Pharma	Unisense Fertilitech
	GENECARE	Upcon Technology
	Genmab	Upfront Chromatography
	Genomic Expression	Valderm
	Genzyme	Veloxis Pharmaceuticals
	Gubra	VersaMatrix
	HEMEBIOTECH	Vipergen
	Henriksholm	Virogates
	Hypo-Safe	Visiana
	Højbjerg Maskinfabrik	Vitesse Semiconductor Corporation
	IN Situ RCP	Zealand Pharma
	INAGEN	Zgene
	Inbicon	Zymenex
	InMold Biosystems	Osteologix
	Interface Biotech	
Other business services	Albihns	Høiberg
	BARDOW CONSULT	Infineon Technologies Nordic
	BIOCONTRACTORS	Inspicos
	BIOINFORMATICS	Larix
	CBD	Leukotech
	Chas. Hude	Miljøkonsulenten
	CPH Design	NLM Combineerin
	Designit	Vestfyns Dyrlæger
	ESN	Wordmaster
	Excite	Xenia Pharma
	Hestedoktoren	Yougov Nordic & Baltic
Healthcare	Clinical Research	Steno Diabetes Center
	eMEDLink	Unilabs
Other services	Landbrug & Fødevarer	Nensius Research
	MedCom	
Other / unknown *E.g. holding companies*	ACURE	Intervet Danmark
	AdvanDx	IONAS
	Akva Group Denmark	Ivzw Institute Of Computer Science
	Almirall	Janssen-Cilag
	Alpharma	Jydsk Tele
	Amcor Flexible ON	Jyllands-Posten Holding
	Amgros	Kemira Water Danmark
	Anico	Kruuse
	APC Denmark	Kvadrat
	APM Terminals	L. Dæhnfeldt
	ASAH Medico	LEGO
	Ascent	Lundbeck
	Astrazeneca	Lyngdorf Audio
	ATEA	Lyngsøe
	ATV	MAN-B&W DIESEL
	Axeltorvs Apotek Helsingør	Master International
	Barco	MediMush
	Barsmark	Merck
	BaySystems	Meyers Madhus
	Bekaert Handling	Micro Clean
	Bellinger	Micro Managed Photons
	Besam	MOBILE INTERNET TECHNOLOGY
	Better Place	Motorola Solutions Danmark
	Bevola	NEG MICON
	Biogen Idec (Denmark)	Nilfisk Advance
	BioImage	Noliac
	Biolab	Nordic Biotech Advisors

Industry sector	Company name	
	BIOPLAN	Nordic Immotech
	Bioscan	Nor-Feed
	Boehringer Ingelheim Danmark	NORFRIG
	Carometec	Norpharma
	CFS Slagelse	Novator PG Holding
	Clou-Thürmer	Nutri Pharma
	CNC	Ordyhna
	Codan Gummi	OSTEOMETER Biotech
	Cureon	OSTJYSK INNOVATION
	DACS	OVC Holding
	DANAPAK FLEXIBLES	PERSONICS
	Dandy	Pfizer
	Danespo	Pharmakon
	DANISCO	PRO-MOVEC
	Danisco Sugar	Pronova Biocare
	Danish Crown	RoboTool
	Danish Steel Works	Rosti
	Dansk Bygningsanalyse Holding	Sandoz
	Dansk Fugt- og Miljøkontrol	Sanofi Pasteur MSD
	DANTECH	Saxo Bank
	Demex Holding	Scanbur
	Destron Fearing	Scandinavian Clinical Nutrition
	Dianova	Scion DTU
	DISA	Sectra Pronosco
	Dyrup	SEMuS
	ECCO SKO	Siemens Healthcare Diagnostics
	Eli Lilly Danmark	SIMI
	Equity Datterholding	SKJ Holding af 2006
	Euro Steel Danmark	Solum
	Eva Denmark	Sonion Roskilde
	Falck Danmark	SP System Danmark
	Flemingco	Sparinvest Fondsmæglerselskab
	Friland	Strateko
	Frydendahl Im og Export	Sunarc
	GE Healthcare	Synoptik
	GEA Farmaceutisk Fabrik	Teknologisk Innovation
	Germann Instruments	Thermex
	Gits	Treat
	GlaxoSmithKline Pharma	Trelleborg Sealing Solutions Denmark
	GN Netcom	UCB Nordic
	GPL International	Uddeholm
	Grundfos Management	Unest
	Gumlink	Unimed
	Houghton Danmark	Unimerco
	Hydro Aluminium	Velux
	Hymite	Vikteam
	INNOVISION	VISIBLE DIAGNOSTICS
	Inoxell	VKR
	Intel Copenhagen	WaterCare
	Intellix	

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