

Panorama of plant research funding in Denmark

Denmark is a country with a long tradition for higher learning and research in almost every academic field. According to Danmarks Statistik, Denmark invested 2.46% of its GDP in R&D in 2006 (DKK39.9 billion, about €5.35 billion), of which public expenditure represented 0.81%. The latest government figures show that public research R&D expenditure has increased to 0.89% in 2008 and is foreseen to reach 0.94% in 2009.

Five main universities

More than 95 % of all public research activities take place at universities with five main universities housing the main research performers. The research system has been concentrated in 2007 following the merger of several universities and most of the public sector institutes.

The five main universities are:

- [The Copenhagen University](#), one of the largest Health and Life Science centres in Northern Europe, consisting of four of the University's faculties: the Faculty of Health Sciences, the Faculty of Life Sciences, the Faculty of Pharmaceutical Sciences and the Faculty of Science.
- [The Aarhus University](#) that regroups a broad range of fields with a specialisation in sciences covering environmental issues and natural resources,
- [The Technical University of Denmark](#) that focuses on the development and application of research-based technologies
- [The University of Southern Denmark](#) that is particularly strong in areas such as communication, information technology, and biotechnology
- [The Aalborg University](#) that conducts research within a wide range of fields, spanning from research in discourse to social integration and differentiation to nanotechnology and space satellites

The main university department involved in plant biotechnology research are regrouped in a research consortium, Plant Biotech Denmark¹ (PBD), comprising departments from five universities including The University of Copenhagen (KU), The University of Aarhus (AU), Aalborg University (AAU), The University of Southern Denmark (SDU), and The Technical University of Denmark (DTU). PBD participants are involved in basic research activities on plants employing molecular biology and biotechnology methodologies, including genomics, functional genomics, proteomics, metabolomics, bioinformatics, bioimaging and molecular genetics

Similarly, several universities pooled their research efforts in organic farming by creating in 2008 of the International Centre for Research in Organic Food Systems (ICROFS)². The new centre is an expansion of the former Danish Agricultural Research Centre for Organic Farming (DARCOF). ICROFS coordinates the FP6 ERA-NET CORE Organic and also manages the Danish research programme in organic food and farming called 'International research cooperation and organic integrity'. The research programme consists of 15 projects with a total budget of approximately €23 million for the period 2006-2010.

Funding bodies

Denmark has a well-developed and centralised research funding system. The main player is the Ministry of Science, Technology and Innovation, which coordinates all research and innovation policies and most of the funding. Another important ministry concerned with research issues is the Ministry of Food, Agriculture and Fisheries

Under the ministry are several agencies. The Council for Research policy plays an advisory role whereas two research councils allocate funds: the Danish Council for Independent Research (DCIR) for basic research and the Danish Council for Strategic Research for applied research. In addition, two independent foundations, the Danish National Research Foundation and the Danish National Advanced Technology Foundation also provide funding for basic and applied research, respectively.

¹ <http://www.plant-biotech.dk/>

² <http://www.icrofs.org/>

The funding to academia and other organisations that conduct fundamental research not earmarked for specific thematic priorities is either transferred to the universities directly or channeled through DCIR. In 2005, the higher education institutions received 74.3% of the total government funding of R&D (Eurostat). The Council supports research projects (competitive funding) based on the research initiatives of the researchers themselves.

The business sector gives little funding to Danish public research institutions. In 2005, only 2.4% of the R&D performed in the higher education sector was funded by the business sector.

Funding from the Danish Council for Independent Research (DCIR)

With a total budget of DKK1155.6 million (about €155.2 million) in 2008, DCIR is the main funding source for independent research projects carried out at Danish universities. This umbrella organisation regroups five scientific research councils, with the Natural Sciences Research Council being the most relevant to plant scientists.

DCIR runs typically two grant rounds per year, with deadlines for application in March and September. Grant allocation follows a bottom-up approach. Funding are provided for research projects (one to three years with a budget of DKK 1.5 to 4 million) and for postdoctoral grants for one to three years. The application guidelines clearly state that “if you are a foreign citizen or a Danish citizen employed outside Denmark, you may also apply for funding, but in all cases, the assessment of your proposal will be based on the extent to which the project applied for promotes/strengthens Danish research.” Up to 20% of applicants are non-Danish citizens – most are administered by Danish institutions.

Funding from the Danish Council for Strategic Research (DCSR)

DCSR supports strategic and policy-oriented research (“targeted” research) through various instruments supporting new research trends and initiatives that help strengthen strategic research. For example, in 2006, the Council allocated DKK420 million (€56.34 million) to ten ‘Innovation Accelerating Research Platforms’, among which €1.41m to the ‘Systematised sustainable energy’ platform and €3.49m to the ‘Biological production from renewable resources’ platform.

The current thematic priorities are: sustainable energy production and use of energy; food, nutrition and health; nanotechnology, biotechnology and ICT. In 2008, the Council’s budget was DKK818.1 million (about €109.8 million). It is foreseen that the Council will offer more than DKK1 billion grants in 2009.

Other funding sources for plant scientists

In 2005, the directorate for Food, Fisheries and Agriculture launched the DKK73 million (about €9.81 million) programme “The future food sector: research activities that strengthen a competitive, a sustainable and a quality and consumption oriented food production sector”, which targets three areas: food quality, food safety and aquaculture. The programme, which runs until end 2009, also focuses on the utilisation of the potentials of new technologies.

The Danish Ministry of Food, Agriculture and Fisheries is coordinating the ICT-AGRI ERA-NET, which started on 1 May 2009 and will run for 51 months. The consortium behind the project comprises 18 partners from 20 countries. The first coordinated call is expected to be launched in 2010.

In 2006, the Carlsberg Foundation allocated about €22.06m (DKK164m) for research projects, mainly directed at early-stage researchers (postdoctoral research grants), in areas such as molecular diversity and climate change. The foundation also allocates ten PhD fellowships per year to students at science faculties in Danish Universities, who are preparing their final thesis in chemistry, biochemistry or biotechnology.

The Lundbeck Foundation provides grants for research projects, five-year professorships (€0.67m or DKK5m each), and five-year grants for young researchers (about €1.34m or DKK10m each). In 2007 the Lundbeck Foundation is going to allocate about €38.26m (DKK285m) to research projects in health and natural sciences.

Additional sources of funding for PhD students and postdocs

Most universities offer scholarships for PhD studies. For example, the Faculty of Science at the Copenhagen University offers a number of fully funded PhD scholarships³. Applications for these scholarships are due twice a year, usually mid-February and mid-August. The next deadline for

³ http://www.science.ku.dk/phd/applying/fundings/current_scholarships/

application for faculty scholarships is 22 February 2010.

In addition, the graduate schools – such as the Research School Team Horticulture⁴, the Research School for Biotechnology (FOBI)⁵ and the Graduate School of Agriculture, Food and Environment (SAFE)⁶, to name only a few – also offer “strategic PhD scholarships”, that are usually fully funded or partly funded through a research project. In that case grants are available for a specific project, supervisor and timeline. Please check the Research schools’ homepages for detailed information about these scholarships.

Industrial PhD programme⁷ is a programme set up by the Danish Agency for Science, Technology and Innovation. It is an opportunity to conduct PhD studies as an industrial research project, employed by a private company, but connected to the university. The PhD student is admitted to a PhD programme at a graduate school like all other PhD students, but shares the working time between the private company and the university. There are four application deadlines annually, the next one being 26 October 2009.

Within the framework of Danish development assistance, the Danish Ministry of Foreign Affairs allocates research grant to research institutions in developing countries, as well as PhD and postdoc fellowships to individuals. The deadline for application is usually at the beginning of the year. Each year, the Ministry sets up thematic priorities to allocate these grants. In 2009 thematic priorities included ‘Food security’ and ‘Climate, energy and sustainable use of natural resources’.

Upcoming deadlines:

26 October 2009 – Industrial PhD programme⁸ – Danish Agency for Science, Technology and Innovation

22 February 2010 – PhD scholarships⁹ – Faculty of Science, Copenhagen University

March 2010 – Research project grants – Danish Council for Independent Research

March 2010 – Postdoctoral grants – Danish Council for Independent Research

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⁴ <http://www.rshs.dk/>

⁵ <http://www.fobina.dk/>

⁶ http://www.agrsci.org/ny_navigation/uddannelse/forskeruddannelse

⁷ www.erhvervsphd.dk

⁸ www.erhvervsphd.dk

⁹ http://www.science.ku.dk/phd/applying/fundings/current_scholarships/