

Recent advances in the life sciences are proving the prediction that this will be the century of biotechnology. In two to three decades, new treatments and drugs, genetically modified foods, biologically controlled production processes, new materials, biologically based computing and many other applications may well be part of our everyday lives, improving health, the environment, and industrial, agricultural and energy production.

Data on business sector expenditure for biotechnology research and development (R&D) performed within the country are available for 17 OECD countries and two non-member countries. However, data on biotechnology R&D expenditure are not available for Denmark, Japan and the United Kingdom, countries which have substantial business sector capabilities in biotechnology.

Business sector expenditure on biotechnology R&D is highest in the United States (USD 25 101 million current PPP). This represents 75% of firms' total biotechnology R&D expenditures in the 19 countries for which data are available.

Total business expenditure on biotechnology R&D as a share of total business sector R&D expenditure is an indicator of a research focus on biotechnology. The average share for the 19 countries is 6.14%. Eight countries have an above-average focus on biotechnology R&D. It accounts for 21.7% of all business sector R&D in Ireland, followed by Belgium (13.1%), Canada (11.1%) and the United States (10.4%).

An alternative measure of research focus on biotechnology is biotechnology R&D intensity, defined as biotechnology R&D expenditure as a share of total value added of the industry sector. The average share for the 19 countries is 0.12%. Seven countries have above-average biotechnology R&D intensities. The United States leads with 0.31%, followed by Switzerland (0.28%), Ireland (0.27%), Belgium (0.26%) and Sweden (0.24%).

The share of total biotechnology R&D (in all sectors) performed in the services sector is available for biotechnology R&D firms in 13 countries. It ranges from 2% in Belgium to 86% in France, with an average of 41% for the 13 countries. In the United States, 73% of all biotechnology R&D firms are in the non-manufacturing sector, but only 27% of all biotechnology R&D is attributed to the non-manufacturing sector (which includes services, mining, construction and utilities). In Switzerland, 75% of all biotechnology R&D is performed outside the services sector.

Although most biotechnology firms have fewer than 50 employees, most biotechnology R&D is performed by large firms with over 250 employees. For the United States and France, the two countries spending the most on biotechnology R&D, some 75% of all biotechnology R&D is performed by large biotechnology R&D firms.

Biotechnology firms

Biotechnology firms can be broken down into three types:

1. Biotechnology firm: a firm engaged in biotechnology using at least one biotechnology technique (as defined in the OECD list-based definition of biotechnology techniques) to produce goods or services and/or to perform biotechnology R&D. Some firms may be large, with only a small share of total economic activity attributable to biotechnology.

Two subgroups of biotechnology firms are largely defined by the data collection method.

2. Dedicated biotechnology firm: a firm whose main activity involves the application of biotechnology techniques to produce goods or services and/or to perform biotechnology R&D.

3. Biotechnology R&D firm: a firm that performs biotechnology R&D. Dedicated biotechnology R&D firms, a subset of this group, are firms that devote 75% or more of their total R&D to biotechnology R&D.

The data available on firm type depends on the way biotechnology data are collected.

Source

OECD (2009), "OECD Biotechnology Statistics 2009", www.oecd.org/dataoecd/4/23/42833898.pdf.

Going further

OECD (2005), "A Framework for Biotechnology Statistics", www.oecd.org/dataoecd/5/48/34935605.pdf.

Figure notes

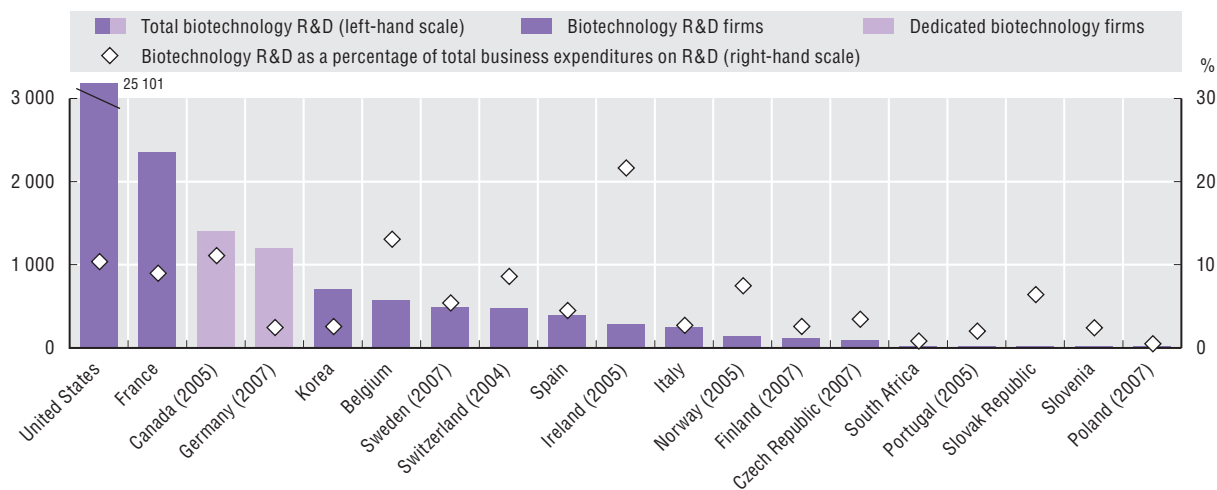
Data for Slovenia are underestimated.

The services sector is defined as non-manufacturing for the United States. Biotechnology R&D firms for the United States, Switzerland and Norway. Data for Ireland are underestimated.

Small biotechnological firms refer to dedicated biotechnology firms only for Germany and Canada. Small biotechnological firms refer to biotechnological firms with fewer than 100 employees in Switzerland and to all biotechnology firms in Poland.

Total biotechnology R&D expenditures in the business sector, 2006

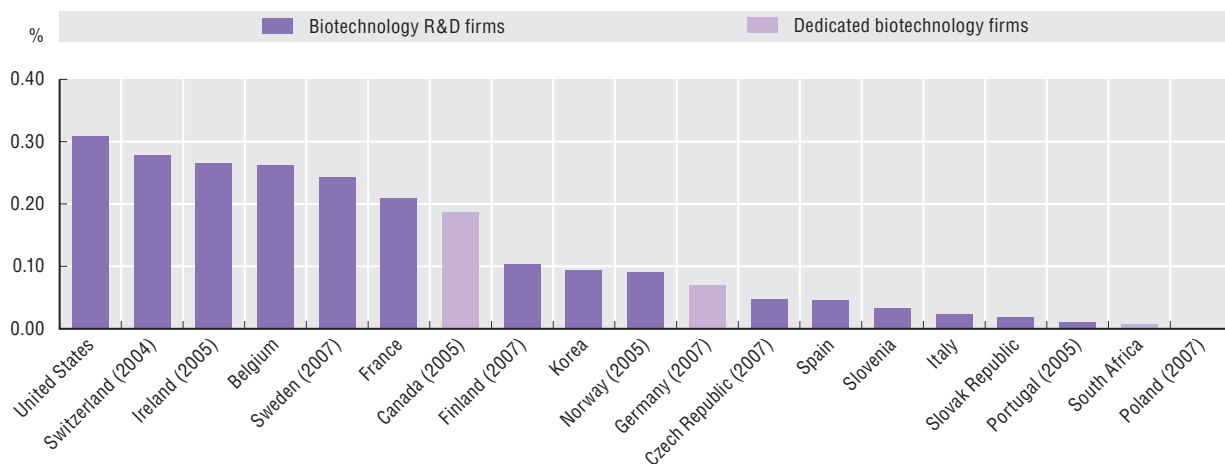
Millions of USD PPP



StatLink <http://dx.doi.org/10.1787/743350060163>

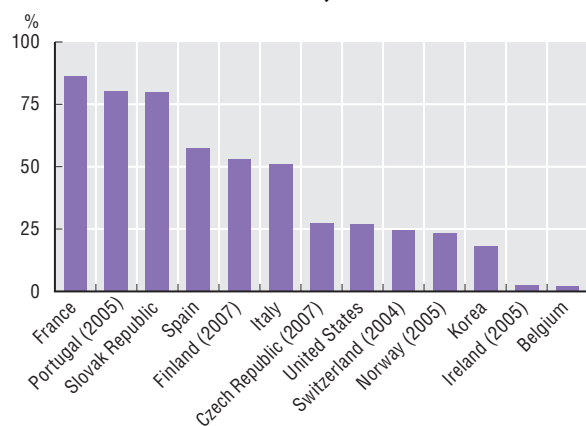
Biotechnology R&D intensity, 2006

Biotechnology R&D as a percentage of industry value added



StatLink <http://dx.doi.org/10.1787/743376071204>

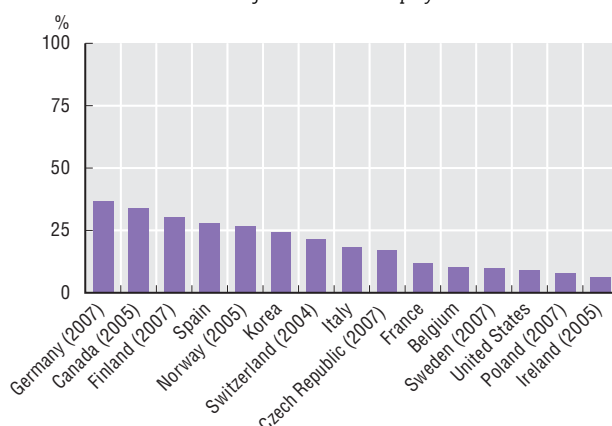
Percentage of biotechnology R&D performed in the services sector by dedicated biotechnology R&D firms, 2006



StatLink <http://dx.doi.org/10.1787/743412400851>

Percentage of biotechnology R&D performed by small biotechnology R&D firms, 2006

Firms with fewer than 50 employees



StatLink <http://dx.doi.org/10.1787/743424631181>



From:
**OECD Science, Technology and Industry
Scoreboard 2009**

Access the complete publication at:
https://doi.org/10.1787/sti_scoreboard-2009-en

Please cite this chapter as:

OECD (2006), "Biotechnology R&D", in *OECD Science, Technology and Industry Scoreboard 2009*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/sti_scoreboard-2009-23-en

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.