



Institute/department: .....  
 Contact person: ..... Tel: ..... e-mail: .....

## R&D in Biotechnology

Biotechnology is an area of high priority in Europe and in all countries investing in R&D, innovation and science based entrepreneurship. There is an increasing acknowledgment that competence within basic research is of significant importance for innovation and entrepreneurship based on R&D. On this background OECD has worked out a new definition of biotechnology which also includes the production of knowledge.

### **Provisional single definition (OECD):**

The application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services.

### **The (indicative, not exhaustive) list of biotechnologies as an interpretative guideline to the single definition is:**

- DNA (the coding): genomics, pharmaco-genetics, gene probes, DNA sequencing/synthesis/amplification, genetic engineering.
- Proteins and molecules (the functional blocks): protein/peptide sequencing/synthesis, lipid/protein glyco-engineering, proteomics, hormones, and growth factors, cell receptors/signalling/pheromonics.
- Cell and tissue culture and engineering: cell/tissue culture, tissue engineering, hybridisation, cellular fusion, vaccine/immune stimulants, embryo manipulation.
- Process biotechnologies: bioreactors, fermentation, bioprocessing, bioleaching, biopulping, biobleaching, biodesulphurization, bioremediation and biofiltration.
- Sub-cellular organisms: gene therapy, viral vectors.
- Other – please specify.

*Norway's investment in biotechnology covers marine and biomedical applications, and also other biological R&D covered by the new definition. The survey includes the subject fields listed below, if the activities are in accordance with OECD's new definition of biotechnology.*

- |  |   |
|--|---|
| 1. Human biomedicine and biopharmacy       | 6. Environmental and ecological biotechnology |
| 2. Veterinary biomedicine and biopharmacy  | 7. Basic biosciences                          |
| 3. Agricultural biotechnology              | 8. Bioinformatics                             |
| 4. Marine biotechnology, incl. aquaculture | 9. Ethics                                     |
| 5. Nutritional biotechnology               | 10. Other fields                              |

**Question 1** Please estimate the share (%) of biotechnological R&D of the institute's total R&D activity in 2003 according to OECD's new definition.

Please estimate the share of gene technology (%) of total R&D biotechnology.

**Question 2** Please estimate the number of FTE's in biotechnology in 2003 by source of funds.

Finances	FTE	
	Ac. staff/researchers	Support staff
General University Funds (GUF)		
External funding		
Industry		
Ministries, counties, communities		
The Research Council of Norway		
Abroad (excl. EU)		
EU		
Other sources (funds, charity org., own funds etc.)		
<b>Total</b>		

**Question 3** Please distribute the biotechnological R&D (from question 1) according to the fields below (%):

	Human biomedicine and biopharmacy
	Veterinary biomedicine and biopharmacy
	Agricultural biotechnology
	Marine biotechnology, incl. aquaculture
	Nutritional biotechnology
	Environmental and ecological biotechnology
	Basic biosciences
	Bioinformatics
	Ethics
	Other fields, please specify :.....)
<b>100 %</b>	<b>Total biotechnological R&amp;D</b>

**Question 4** Innovation/results/commercialisation within biotechnological R&D

If the institute has applied for patents in 2003, please specify the number:

If patent applications have been approved in 2003, please specify the number:

Does the institute have formalised collaboration with biotechnological firms? Yes  No

If yes, please specify the number:

Please specify the number of notifications addressed to the institution's commercialisation unit about the presence of results or inventions of commercial interest:

Specify the number of notifications which have been: a) rejected by the commercialisation unit:

b) further examined by the commercialisation unit:

**Question 5** International collaboration in biotechnological R&D

Does your institute have formalised international collaboration? Yes  No

If yes, specify the type of partner (s): Universities and colleges

Research institutes

Private firms

**Question 6** Please specify the number of academic staff/researchers participating in biotechnological R&D in 2003:

Whereof women:

**Question 7** Has the institute advertised academic positions including biotechnological R&D during the last two years:

Yes  No

If yes, specify the number of positions distributed on:

Tenured positions: .....

Recruitment positions: .....

Other (externally paid researchers, other external): .....

How has application for these positions been?

Very good (a large number of competent applicants)

Good (many competent applicants)

Bad (very few competent applicants)

Very bad (no competent applicants)

Tenured	Recruitment	Other

If you want to comment on other matters concerning biotechnological R&D, please attach another sheet.