

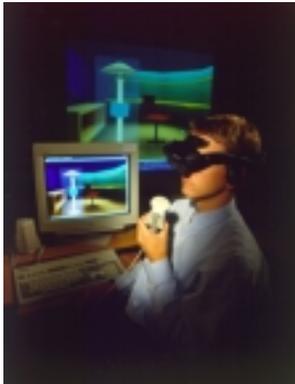


VTT BIOTECHNOLOGY



VTT AS THE TECHNOLOGY LEADER BRINGS SUCCESS

Through creating and applying technology, we actively enhance the competitiveness of industry and other business sectors, and thus increase the welfare of society.

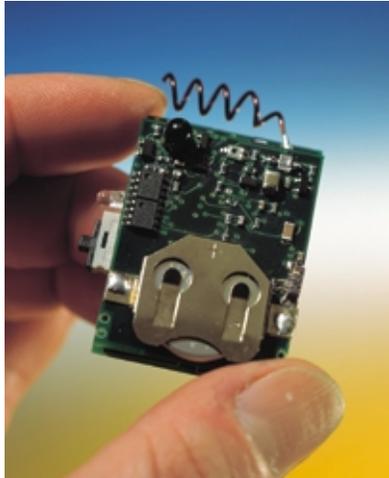


Staff: 3000

Turnover: 214 Million €

- Basic government funding to research on VTT's own initiative
34 Million €
- Jointly funded projects
92 Million €
- Commercial activities
88 Million €

VTT UNITS



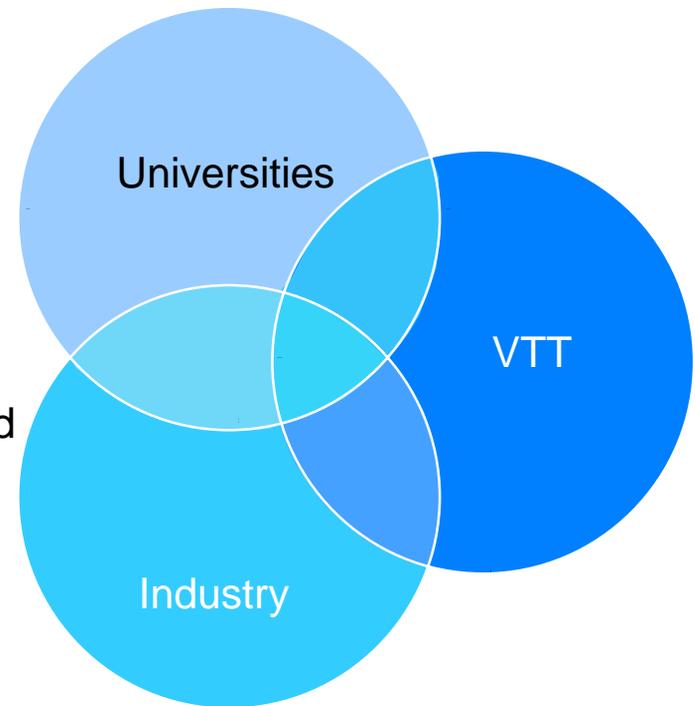
VTT Electronics
VTT Information Technology
VTT Industrial Systems
VTT Processes
VTT Biotechnology
VTT Building and Transport

VTT Information Service
VTT Corporate Management and Services



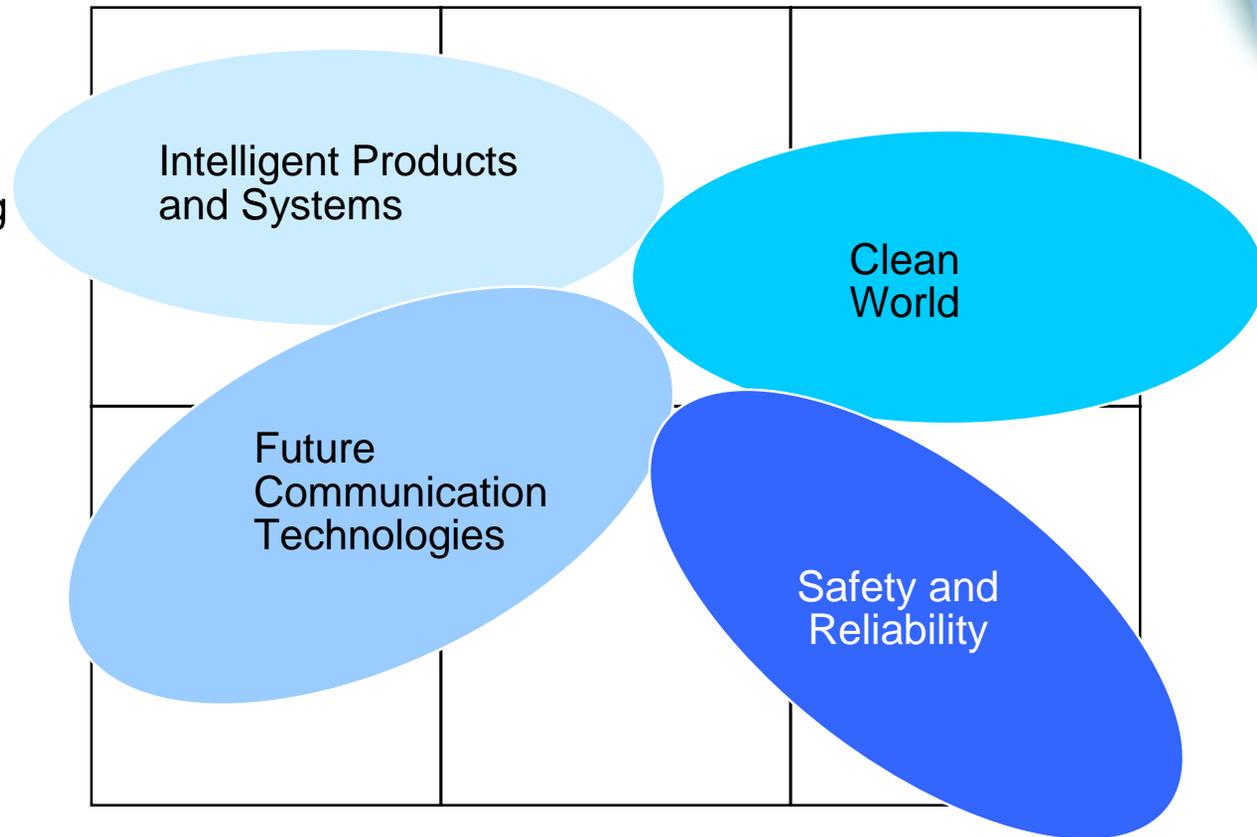
WAY OF ACTION

- VTT directs and develops its activities in close interaction with industry, research institutes and universities, as well as government authorities responsible for coordinating technology policy and the financing of R&D.
- VTT operates in accordance with Finland's technology, industrial and energy policies, and plays an active role in their formulation.
- In fulfilling its mission, the primary role of VTT's research institutes is to carry out research and development work, technology transfer and testing. R&D work is performed as projects.
- VTT is a not-for-profit organization.



STRATEGIC TECHNOLOGY THEMES OF VTT

- Combine VTT's research units and competence
- Technically and technologically challenging
- International top quality
- Networking with best possible partners
- Synergetic co-operation



VTT KNOWLEDGE PORTALS

A knowledge portal is a networking operational model linking the research institutes of VTT.

The knowledge portals can provide customers with more efficient and comprehensive access to portal-related expertise at all research units.

VTT Environment

VTT Materials

VTT Pulp & Paper

VTT ICT

VTT Nuclear

VTT Renewables

VTT Transport

VTT Life Science

VTT LIFE SCIENCE Knowledge Portal

- **Biotechnology for Health:** drug discovery, diagnostics, analytical tools
- **Bioproduction and biomaterials:** microbial physiology, metabolic engineering, fermentation, biocomposites, metabolites, fibres, proteins, enzymes, bioactive compounds
- **Food design:** functional foods, novel processes, food structure
- **Safety:** risk assessment, microbial safety, allergies



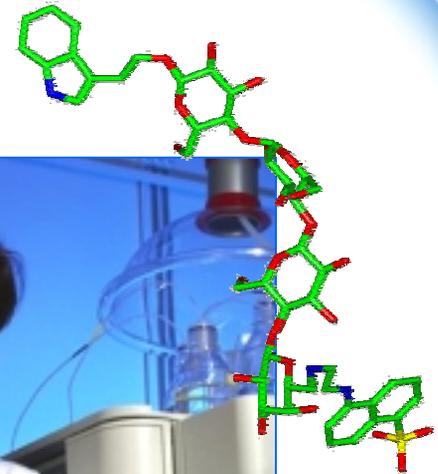
VTT BIOTECHNOLOGY

VTT Biotechnology is a pioneer in the development of bioscience applications to meet the requirements of the industry.

Core competences:

- Bioprocesses
- Functionalization of foods
- Systems biology
- Metabolic engineering
- Industrial biomolecules

Research and development work is carried out in interdisciplinary joint projects with research partners in industry and research institutes.



CLIENTS

Biotechnological and chemical industry

Pharmaceutical and diagnostic industry

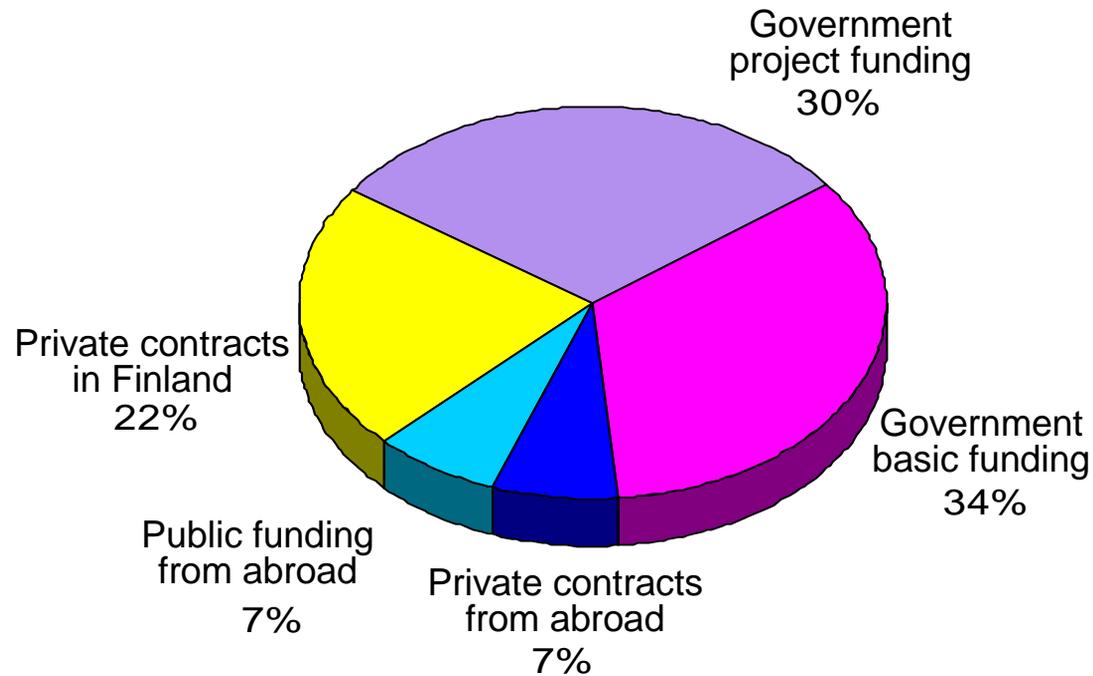
Malting and brewing industry

Food industry

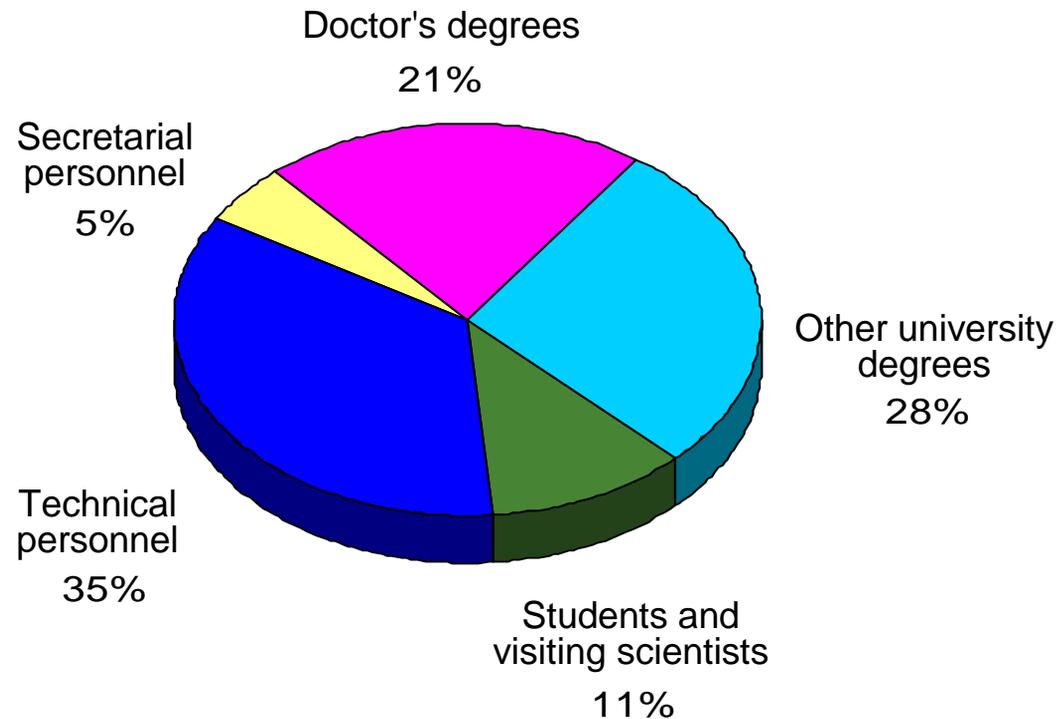
Paper and packaging industry



FINANCING



STAFF



340 persons work at VTT Biotechnology.

VTT BIOTECHNOLOGY 2004



RESEARCH FIELDS

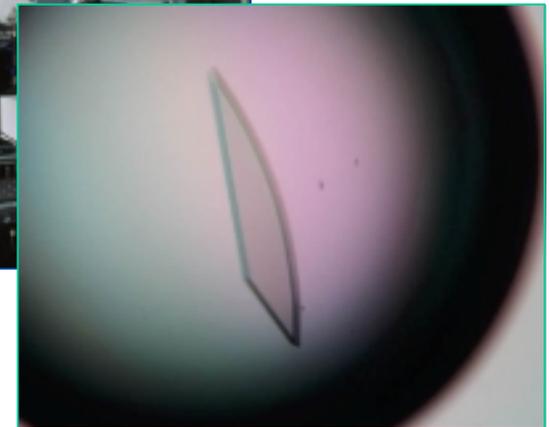
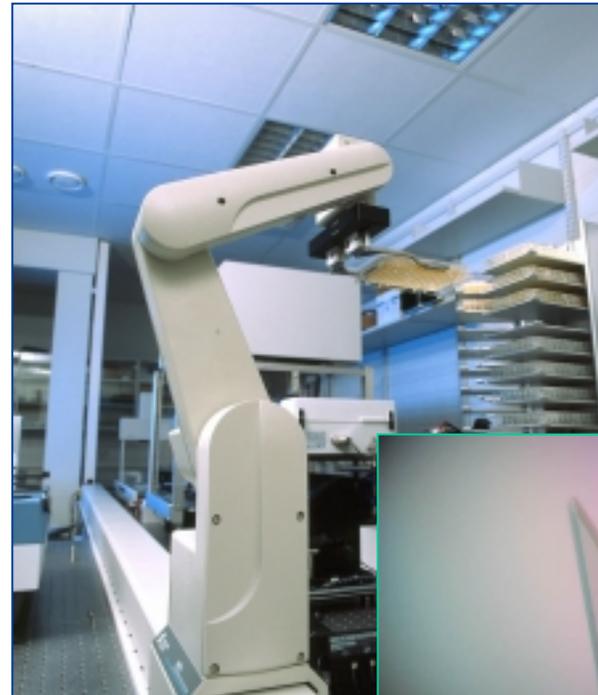
BIOMOLECULES Dr. R. Fagerström, Manager Prof. O. Kallioniemi	CELL FACTORY Dr. T. Nakari-Setälä, Manager Prof. M. Penttilä	MICROBIOLOGICAL SAFETY Dr. M. Saarela, Manager	PRODUCT ENGINEERING Dr. J. Buchert, Manager Prof. K. Poutanen Prof. L. Viikari	GENERAL FUNCTIONS Ms. K. Pietilä, Manager
Medical Biotechnology	Metabolic Engineering	Microbial Diagnostics and Taxonomy	Food Processing and Stability	General Management
Protein Engineering	Yeast Genetics	Microbiological Risk Management	Food Structure Engineering	Financial Management
Immunotechnology	Fungal Molecular Biology	Environmental Biotechnology	Consumer and Sensory Studies	Technical Support
Enzyme Technology	Bioprocess Physiology		Fibre Engineering	Office
Molecular Structure	Plant Biotechnology		Packaging Technology	
	Fermentation Technology			
	Germination Physiology			

RESEARCH FIELD BIOMOLECULES

The research field focuses on screening, characterisation and improvement of antibodies, enzymes and other biomolecules as well as on developing key methods for early drug development according to industrial needs.

RESEARCH GROUPS

- Medical Biotechnology
- Protein Engineering
- Immunotechnology
- Enzyme Technology
- Molecular Structure



RESEARCH FIELD CELL FACTORY

The research field focuses on gaining fundamental understanding of molecular biology and physiology of industrially important organisms and plant material. We develop improved strains for biotechnical processes and production of proteins and metabolites from renewable resources.

RESEARCH GROUPS

- Metabolic Engineering
- Yeast Genetics
- Fungal Molecular Biology
- Bioprocess Physiology
- Plant Biotechnology
- Fermentation Technology
- Germination Physiology

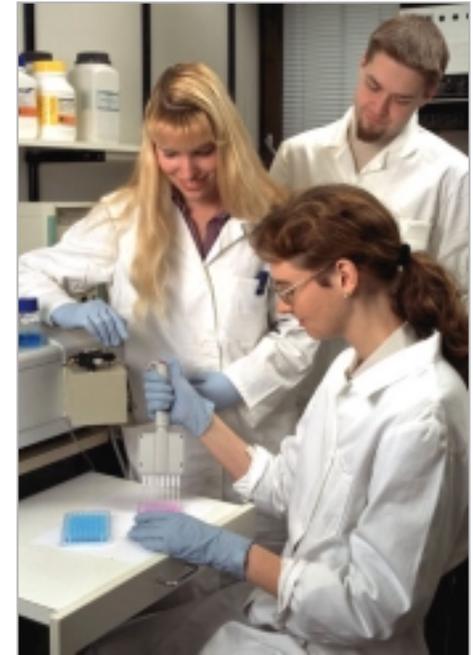


RESEARCH FIELD PRODUCT ENGINEERING

The research field is focused on processing and engineering of biomaterials to competitive products. The focus is also to develop novel packaging technologies.

RESEARCH GROUPS

- Food Processing and Stability
- Food Structure Engineering
- Consumer and Sensory Studies
- Fibre Engineering
- Packaging Technology



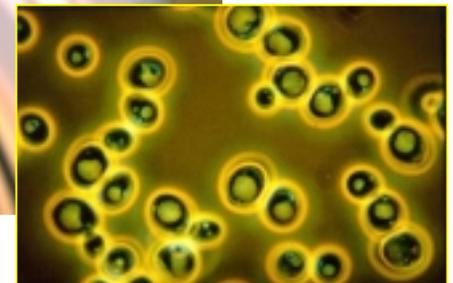
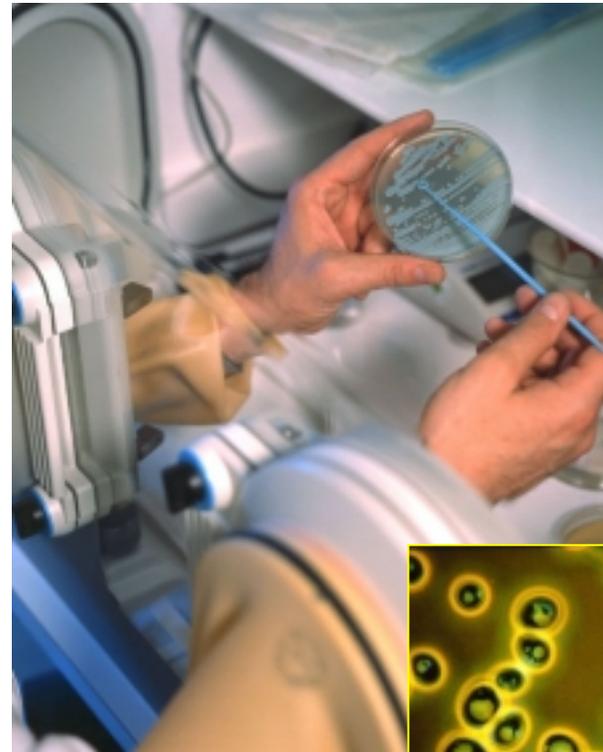
RESEARCH FIELD MICROBIOLOGICAL SAFETY

The Microbiological Safety research field develops methods to minimise safety risks caused by harmful microbes and exploits the properties of beneficial microbes especially regarding their health effects and their ability to break down organic compounds.

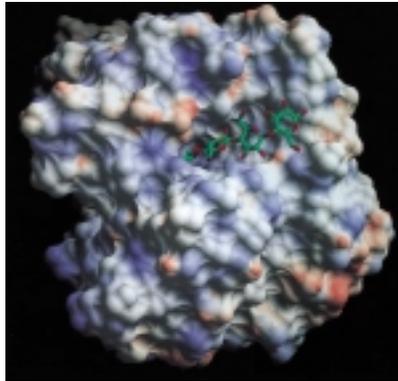
Our main activities focus on microbiological safety of industrial processes and bioprocesses and on stability and functionality of microbial products.

RESEARCH GROUPS

- Microbial Diagnostics and Taxonomy
- Microbiological Risk Management
- Environmental Biotechnology



RESEARCH PROGRAMMES



Industrial Biotechnology 2000 - 2006

- making use of renewable natural resources as raw materials and useful substrates
- part of a centres-of-excellence programme of the Academy of Finland

Tailored Technologies for Future Foods 2001 - 2005

- developing of technologies based on enzymes, living plant cells, microbes and the exploitation of biomaterials, as well as expertise in understanding food quality criteria

