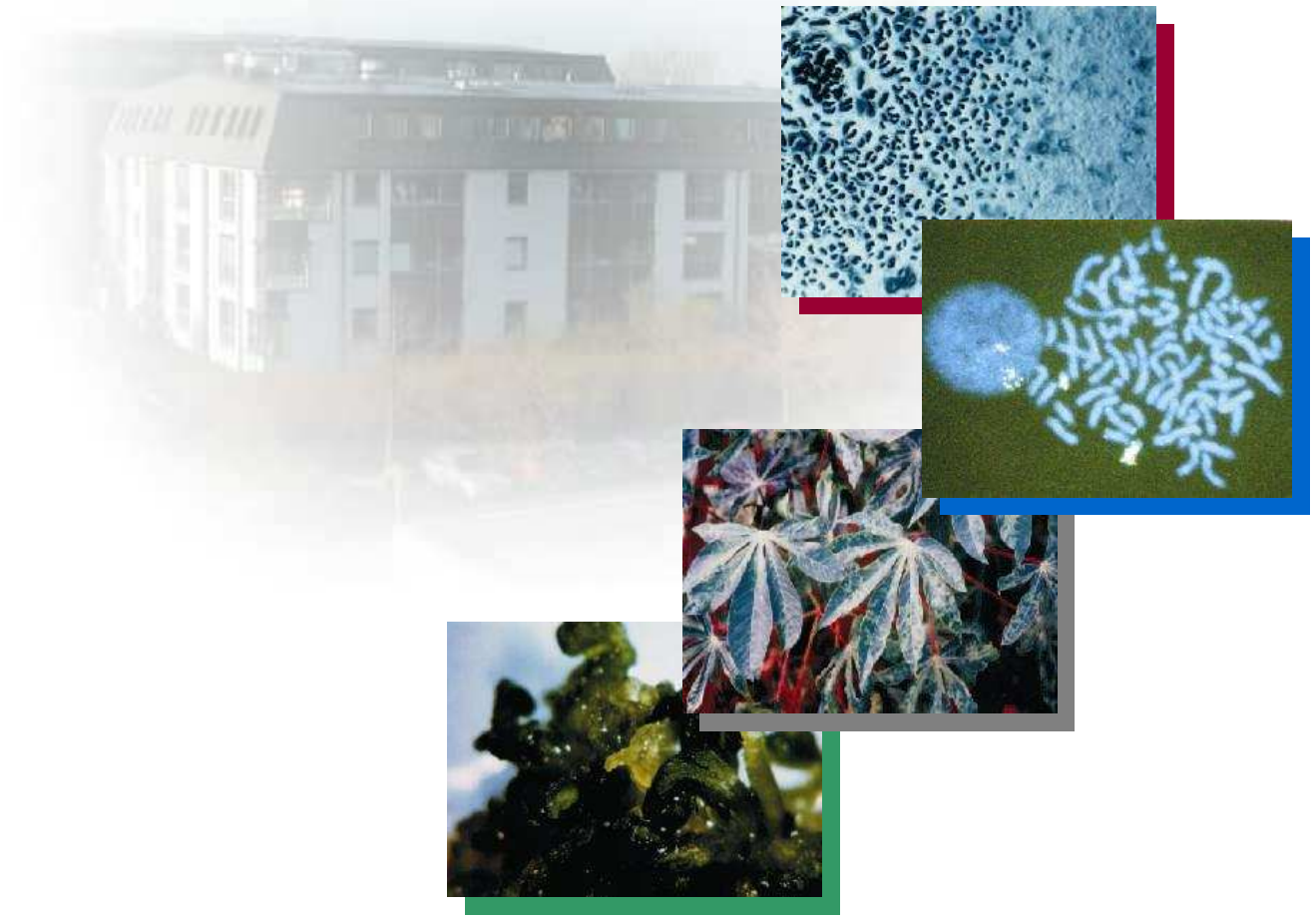
DSMZ - The German Collection of Microorganisms and Cell Cultures

Company



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Deutsche Sammlung von Mikroorganismen und Zellkulturen GmbH

History of DSMZ

- Founded 1969 in Göttingen under the Name of “Deutsche Kulturensammlung” by External Grants
- from 1979: Department of GBF, Braunschweig (DSM)
- in 1987: moved to Braunschweig
- since 1988: Limited Liability Company (Ltd)
- since 1990: Institut of the so called „Blaue Liste“ (Blue List), Public Grants: 50% Federal Government – 50% Federal State (DSMZ)
- since 1996: Member of the **Leibniz-Association,** 84 non-university research institutes and service facilities

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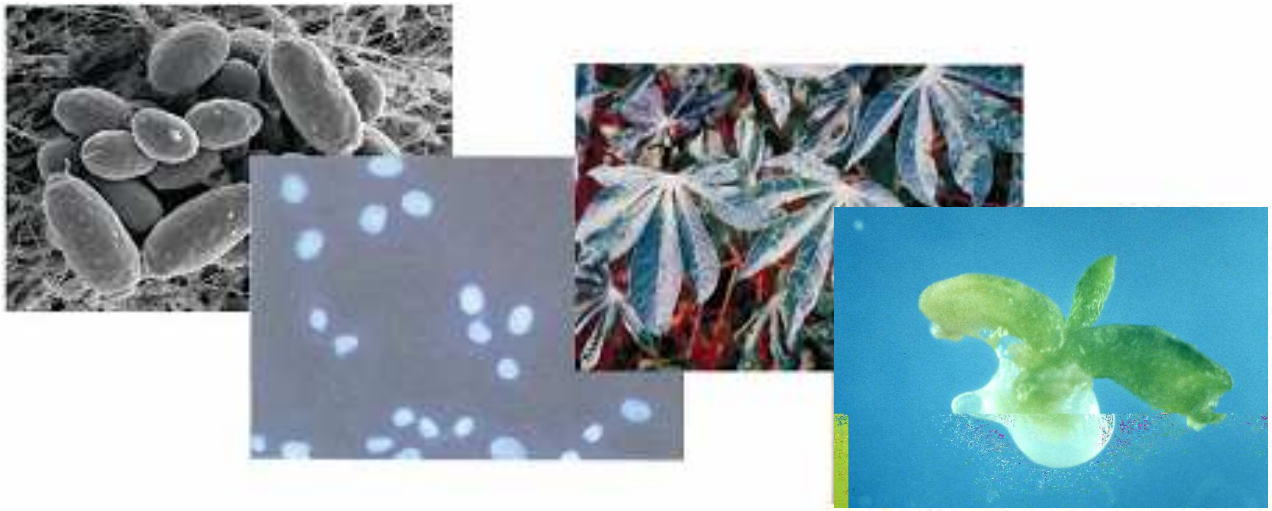

Biological Diversity in Safe Hands . . .

- Collection of Prokaryotes, Fungi and Yeasts
- Collection of Human and Animal Cell Lines
- Collection of Plant Cell Lines
- Collection of Plant Viruses and Antisera

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Duties and Resposibilities

- Collection, Conservation and Supply the Biodiversity in the Fields of Microorganisms, Cell Cultures and Plant Viruses
- Innovative Research concerning Preservation, Collection, Taxonomy, etc.
- Worldwide Cooperation with Collections and associated Organisations (e. g. WFCC, ECCO, CABRI, EBRCN, UNESCO, GBIF, EUROCAT, ENBI, OECD)

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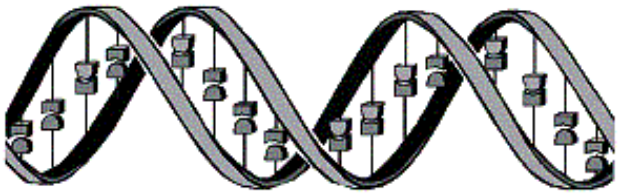
Service

- International Depositary Authority for Patent Deposits under the Budapest Treaty
- Safe Deposit



- Identification Service
- Individual Training :
  Preservation of Cultures
  Identification
  Chemotaxonomy
  Collection and Data Management

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Research

- Development of Preservation Methods and Methods for the Identification and Characterization of Strains
- Research relevant to the Needs of the Collections
- Member of International Organizations
- International Co-operation

European Culture Collections Organization

Quality Management

Introduction of International Quality Standards:

DIN EN ISO 9001:2000

Certification:

DQS Deutsche Gesellschaft zur Zertifizierung von Managementsystemen GmbH

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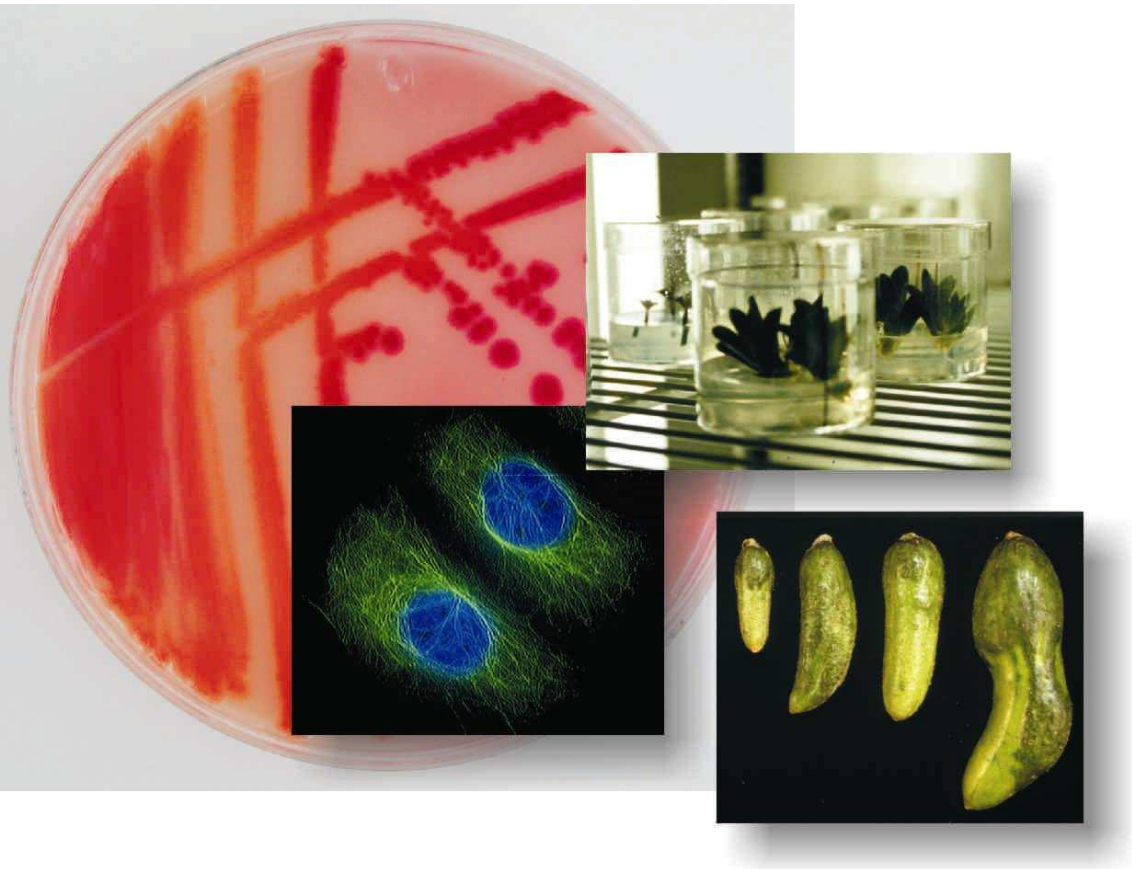
DSMZ . . .
recognized as a „Large Scale Facility“

by the European Commission



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DSMZ Collection of Microorganisms

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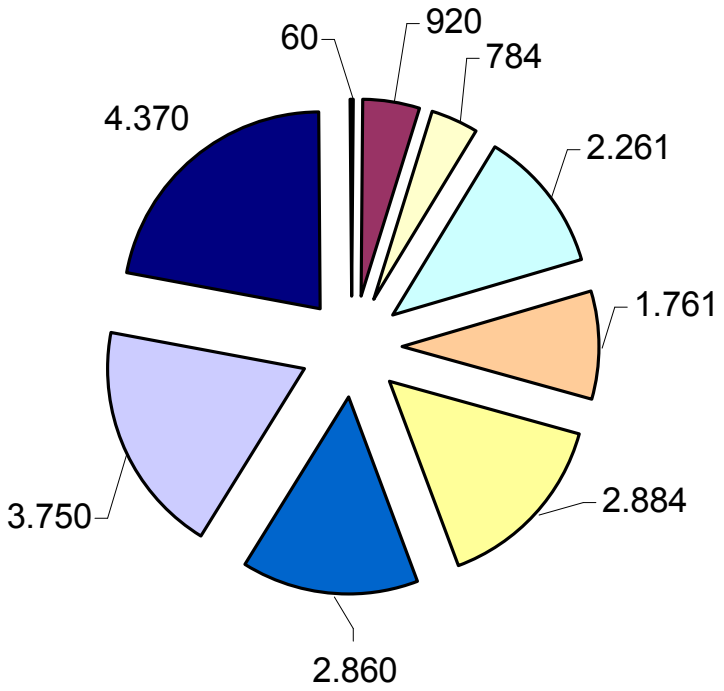
Curators of the Microbiology



- FILAMENTOUS BACTERIA: Dr. Verbarg
- PLASMIDS & PHAGES: Dr. Rohde
- MEDICAL IMPORTANT BACTERIA: PD Dr. Gronow
- HALOPHILIC + PHOTOTROPHIC BACTERIA: Dr. Tindall
- ARCHAEA + EXTREMOPHILES: Dr. Spring
- GRAM-POSITIVES: Dr. Pukall
- FUNGI & YEASTS: Dr. Hoffmann
- ACTINOMYCETES: PD Dr. Klenk
- GRAM-NEGATIVES: Dr. Lang

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Archaea and Extremophiles

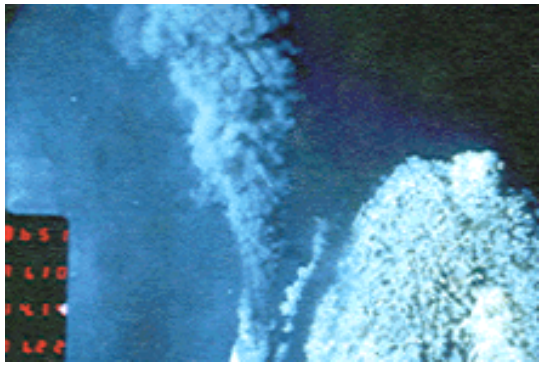
The DSMZ collection of Archeae and Extremophiles is the most extensive in the world

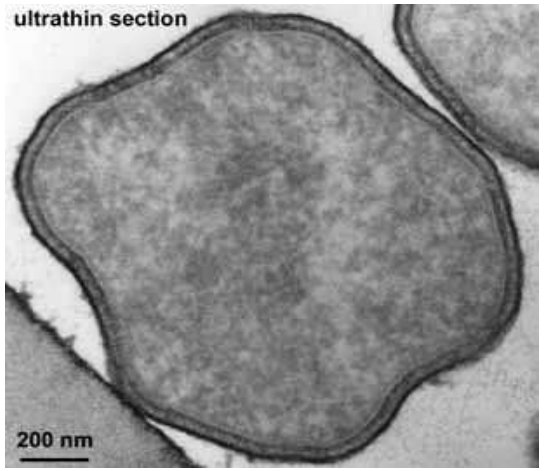
Example: *Pyrolobus fumarii* DSM 11204^T

Currently holds the world record in hyperthermophily:

- Max. growth temperature: 113 °C
- Survives one hour in the autoclave at 121 °C
- Isolated from a seafloor hydrothermal vent (black smoker)
- Deposited in 1996 in the DSMZ.

At present still available only from the DSMZ.





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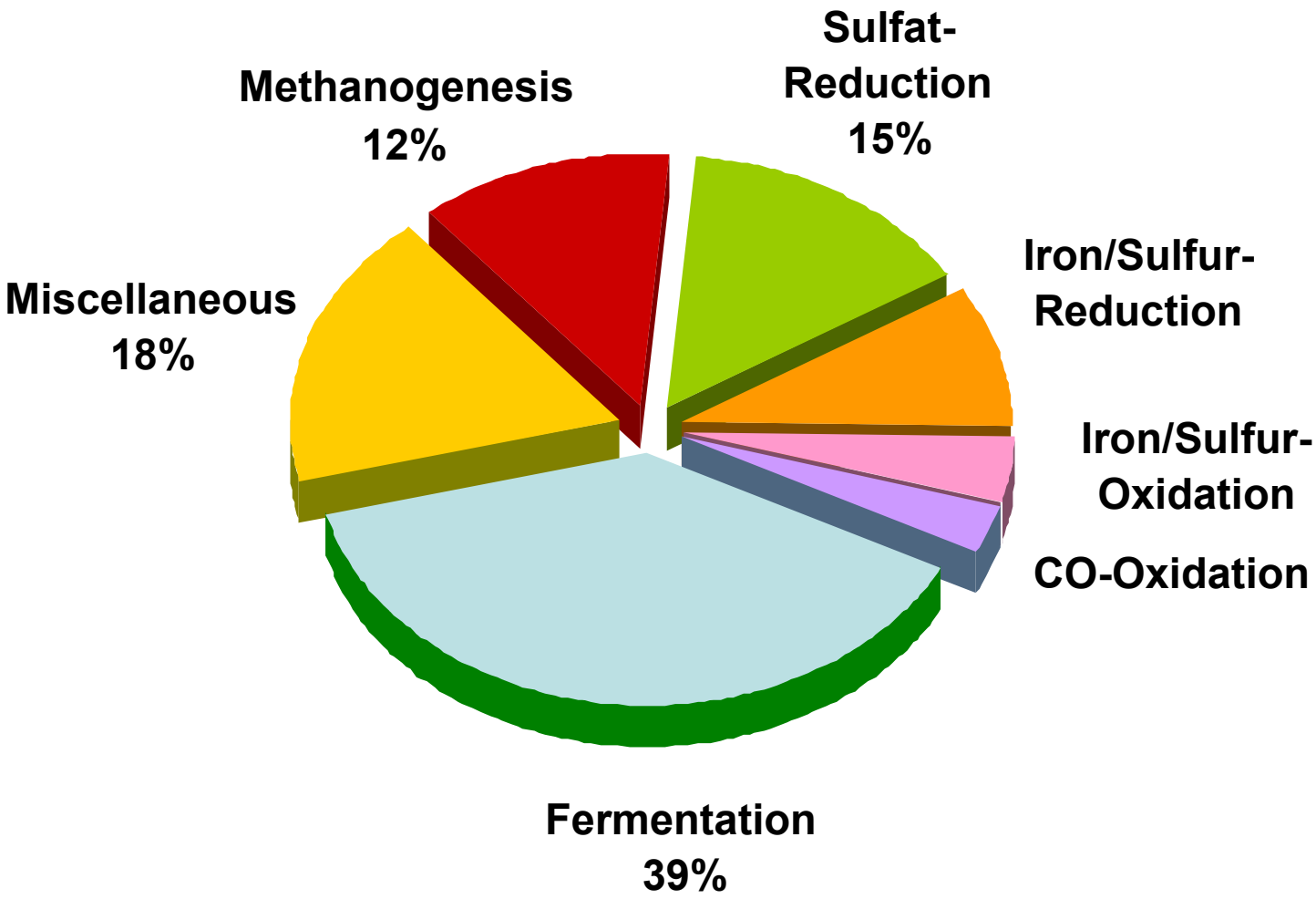
Archaea and Extremophiles

Diversity of metabolic Types



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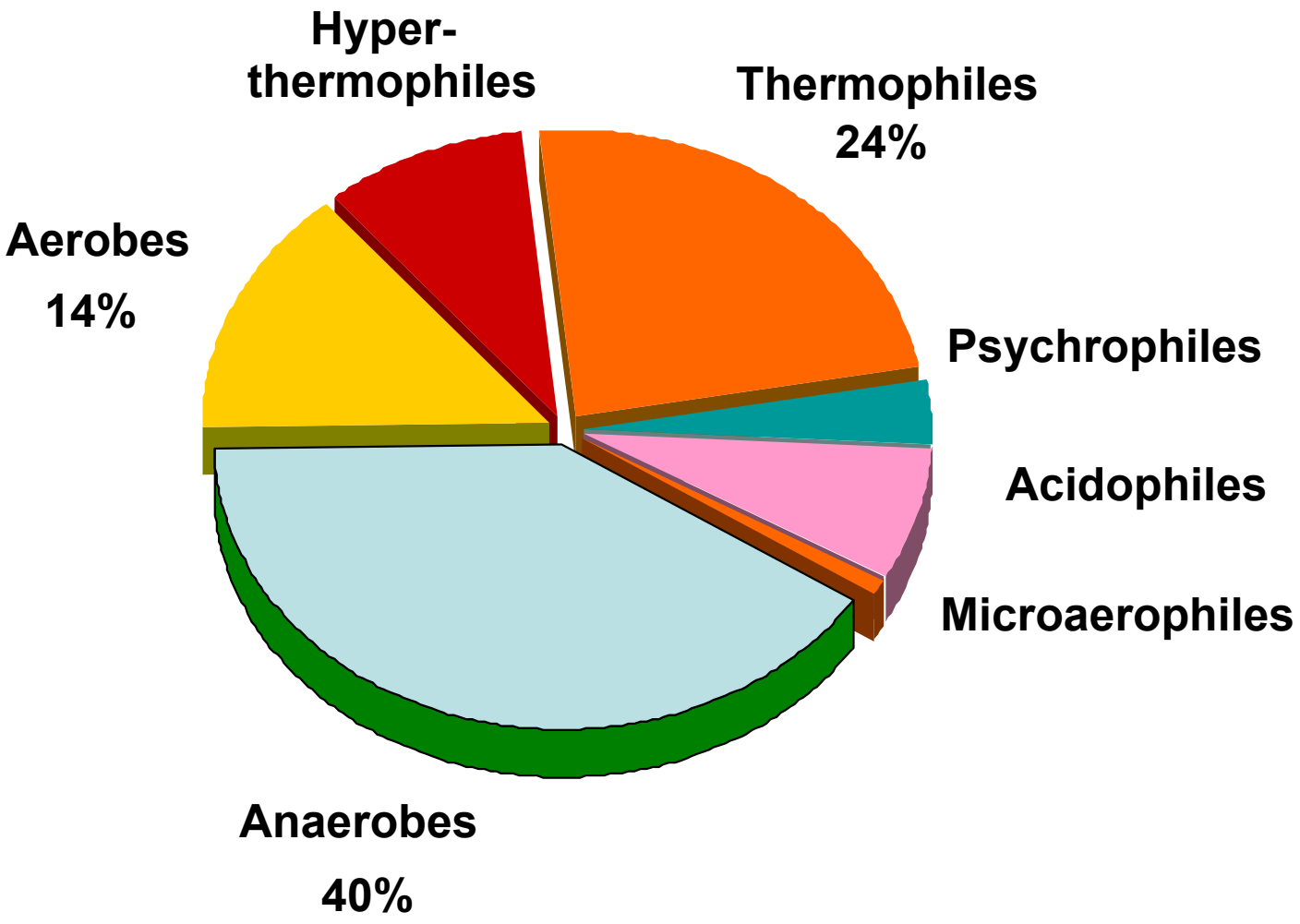
Archaea and Extremophiles

Diversity of growth Conditions



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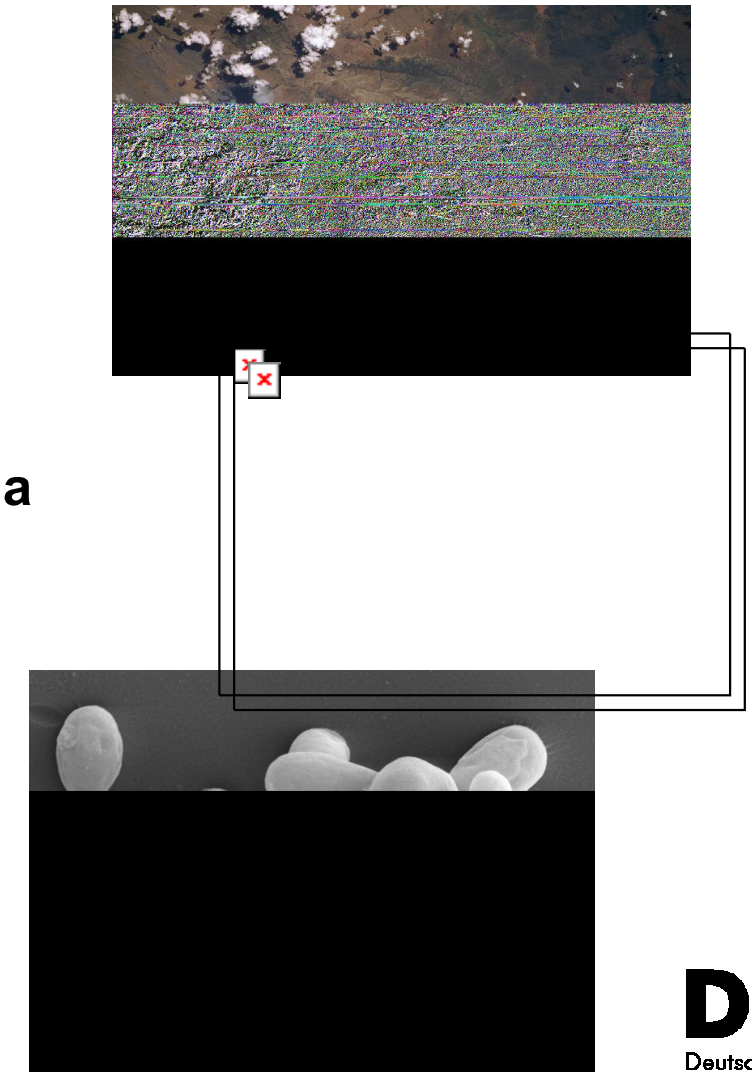
Archaea, Extremophiles, Phototrophs
Curator Dr. Brian J. Tindall



- Extreme Halophiles
- Acetic Acid Bacteria
- Methylo- and Methanotrophs
- Budding and Appendaged Bacteria
- Gram-negative Marine Bacteria
- Anoxygenic Phototrophs
- Diazotrophs (N_2 fixing)
- *Thermaceae*

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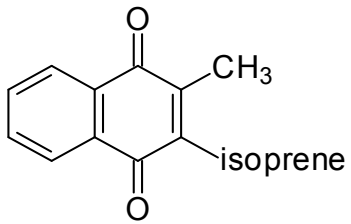
Service and Research

Expertise in Chemotaxonomy (Archaea and Bacteria)

Support for the Identification Service in Respiratory Lipoquinone and Polar Lipid Analysis of non-Actinomycete



Menaquinone

Unique International Expertise in Prokaryote Nomenclature and the Bacteriological Code
Vice-Chairmean of the ICSP Judicial Commision

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Gram-negative Bacteria (except obligate Anaerobes) Curator Dr. Elke Lang

Main Interests

Strains with confirmed degradation abilities

- halogenated aromatic and aliphatic compounds
- aromatic compounds
- polycyclic hydrocarbons

Myxobacteria 3000

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Myxobacteria – Unique Bacteria

Metabolite Production is Strain Sependent

Justification for Accessing a Collection of 4500 Strains of Myxobacteria from the Working Group Natural Products at the GBF

10,900 frozen samples registered by the GBF lab

4535 strains available with strain data

started in February 2000

3070 strains preserved to date

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Gram-negative Bacteria of clinical Importance

Curator PD Dr. Sabine Gronow

Taxonomic groups of medical/clinical importance

- *Enterobacteriacae*
- Campylobacterales *(*phylum Epsilonproteobacteria*)*
- *Borrelia*
- *Neisseriaceae*
- *Pasteurella-Haemophilus* complex

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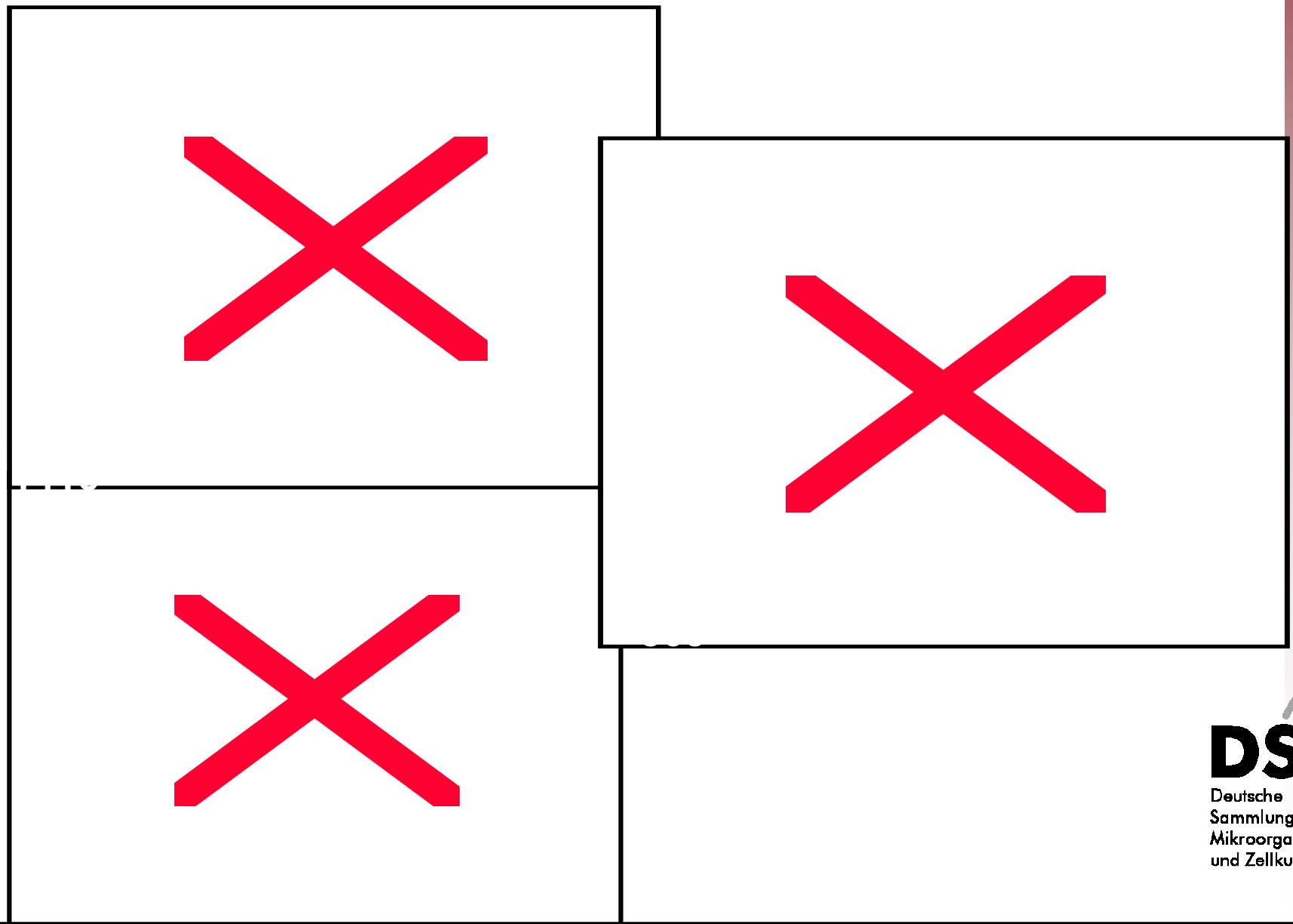
Filamentous Gram-negative Bacteria

Curator Dr. Susanne Verbarg



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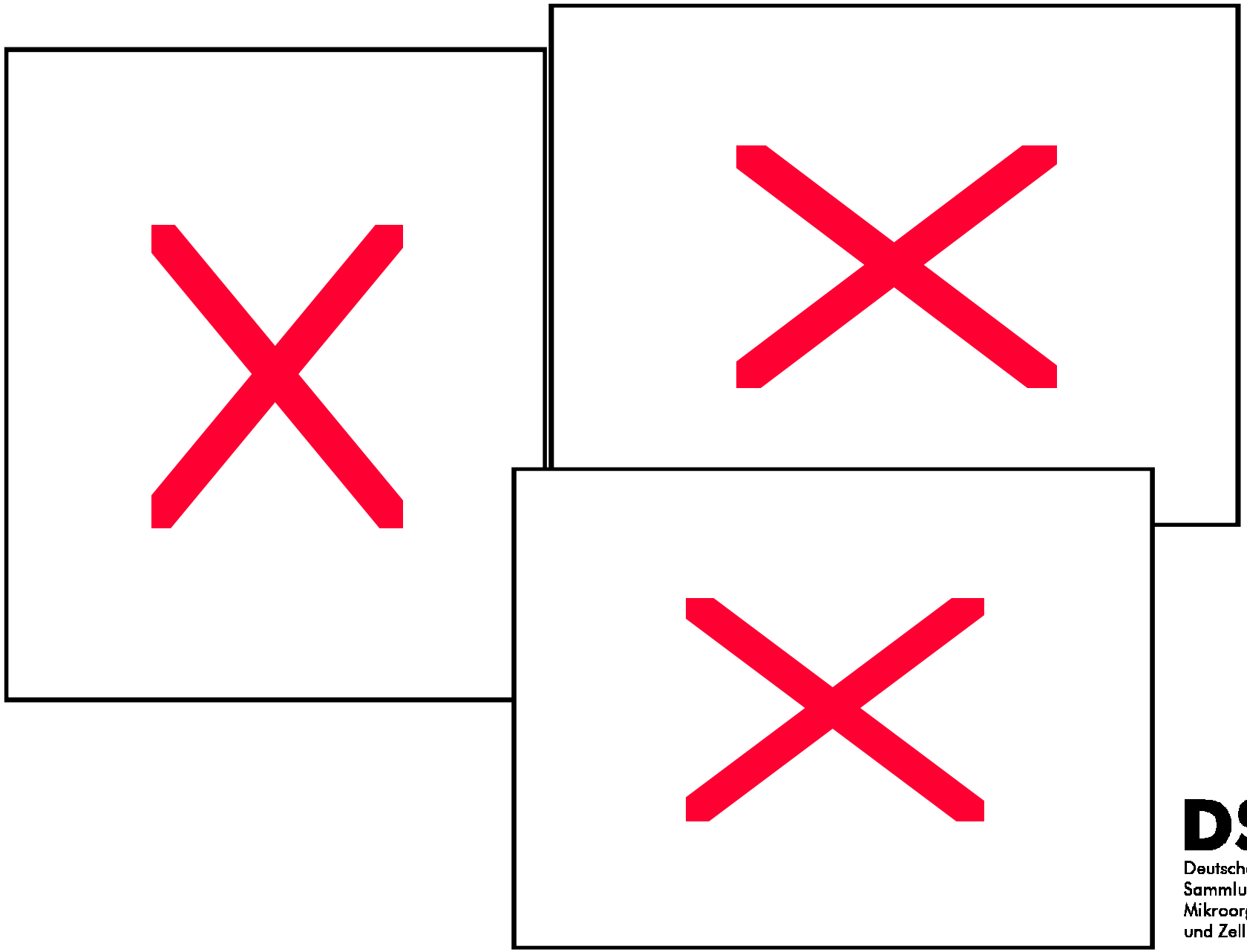
Plasmids, Phages and Test Strains
Curator Dr. Christine Rohde



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Gram-positive Bacteria excluding Actinomycetes (+ Obligate Anaerobic Gram-negatives)
Curator Dr. Rüdiger Pukall

Actinomyces
Arthrobacter
Bacteroides
Bifidobacterium
Brevibacterium
Cellulomonas
Conexibacter
Dermatophilus
Dichelobacter
Enterococcus
Eubacterium
Fusobacterium
Intrasporangium
Lactobacillus
Microbacterium
Nocardioides
Peptoniphilus
Staphylococcus
Streptococcus
Varibaculum

Service:

- Incorporation of new type strains and biotechnologically relevant strains into the culture collection

  > 870 species affiliated to over 130 different genera

- Preservation and long term storage of bacteria
- Polyphasic characterization and identification of microorganisms (API, DNA-fingerprinting)
- Scientific consultancy and individual training

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Validly Published Generic and Species Names of the Aerobic Endospore Forming Bacteria since 1980

Company

Approved Lists of Bacterial Names	1980	until 2004	
		Alicyclobacillus Wisotzkey et al. (1992)	8
		Ammoniphilus Zaitsev et al. (1998)	2
		Amphibacillus Niimura et al. (1990)	3
		Aneurinibacillus Shida et al. (1996)	2
		Anoxybacillus Pikuta et al. (2000)	3
Bacillus Cohn (1872)	31	*Bacillus*	88
		Brevibacillus Shida et al. (1996)	11
		Filobacillus Schlesner et al. (2001)	1
		Geobacillus Nazina et al. (2001)	10
		Gracilibacillus Wainoe et al. (1999)	2
		Halobacillus Spring et al. (1996)	5
		Jeotgalibacillus Yoon et al. (2001)	1
		Lentibacillus Yoon et al.(2002)	
1			
		Marinibacillus Yoon et al.(2001)	1
		Oceanobacillus Lu et al.(2002)	1
		Paenibacillus Ash et al. (1994)	45
		Salibacillus (1999)	-
Sporolactobacillus Kitahara & Suzuki (1963)	1	*Sporolactobacillus*	5
Sporosarcina Kluyver & van Niel (1936)	1	*Sporosarcina*	6
		Sulfobacillus Golovacheva & (1991)	3
		Thermaerobacter Takai (1999)	
3			
Thermoactinomyces Tsilinsky (1899)	5	*Thermoactinomyces*	6
		Thermobacillus Touzel et al. (2000)	1
		Ureibacillus Fortina et al. (2001)	2
		Virgibacillus Heyndrickx et al. (1998)	7

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Actinomycetales excluding *Micrococcineae*

Curator Prof. Dr. Reiner M. Kroppenstedt

Collection

Service

Identification of Actinomycetes

Determination of Chemical Markers
Cell Wall Analyses and Lipid Analyses by TLC, GLC and HPLC
(Amino Acids, Sugars, Fatty and Mycolic Acids, Polar Lipids, Quinones)

Research

Isolation, Characterization and Description of New Taxa

Development of Databases for a better Identification

Studies of Biosynthesis Pathways (Co-operation)

Studies on the Metabolic Capabilities of Actinomycetes
(eleminating xenobiotics, toxin producers)

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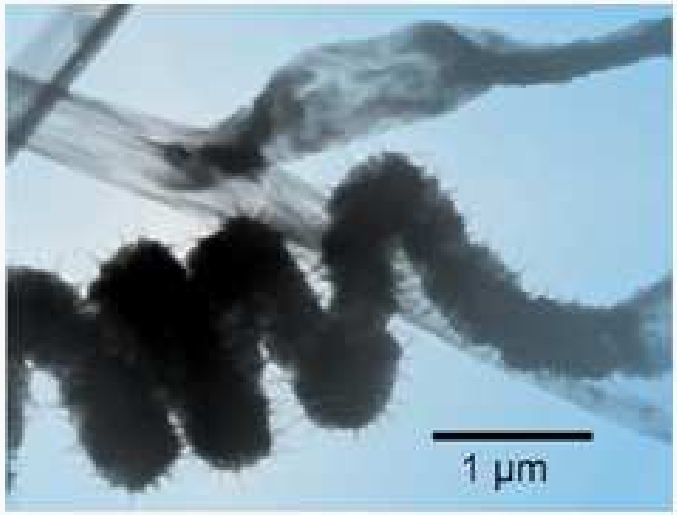
Collection of

Actinomycetales



Look-ups

- Colors
- Spore Surfaces
- Chain Morphology
- Literature
- Genera
- Species
- Strains

Data Entering (new data, amendsments)

Select strain by

- DSM No
- ISP Name
- Species
- All Strains
- All strains, DNA Homology

Reports

Select by DSM-Number(s)

- Combo Boxes
- Multiselection List Box

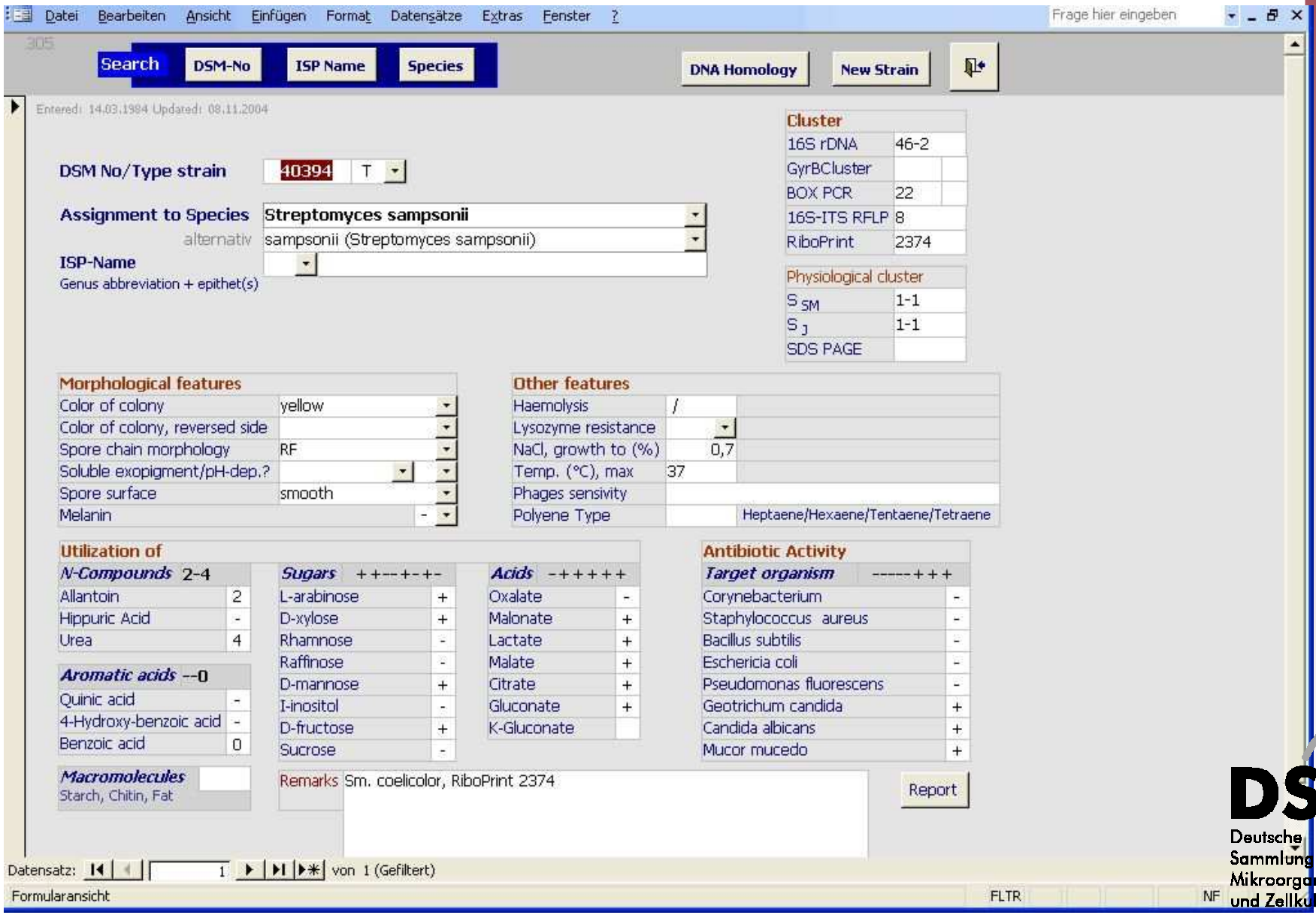
Select by Identical Strain Features

- Color, Chain Morph., Melanin, Spore Surface
- Any Features (16S rRNA Gene, RiboPrint)

Database Window

Quit MS Access

Search Criteria of the Data Base



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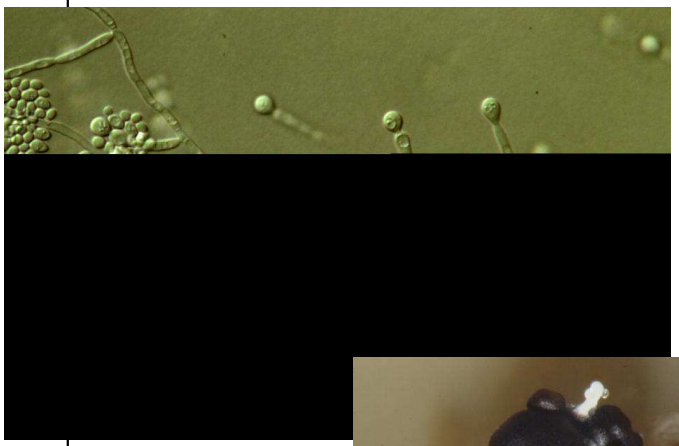
Yeasts and Fungi
Curator Dr. Peter Hoffmann

Candida albicans



Penicillium crustosum

Pleurotus sp.

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Yeasts and Fungi
Curator Dr. Peter Hoffmann

Service

Identification of Yeasts and Fungi by Morphology and Physiology

Research

Studies on the Effect of Mouldy Hay on Bovine Rumen Fermentation Causing Poliencephalomalacia

Development of Diagnostic Tools for *Brettanomyces* Moitoring Cause of Off Flavor Production in Wine (EU Co-operative Research Project)

Research on Wood Rotting Fungi

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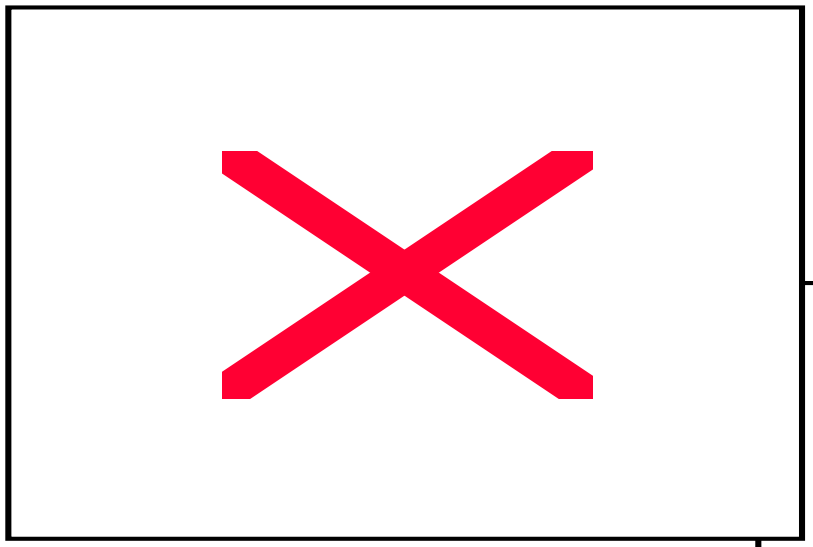
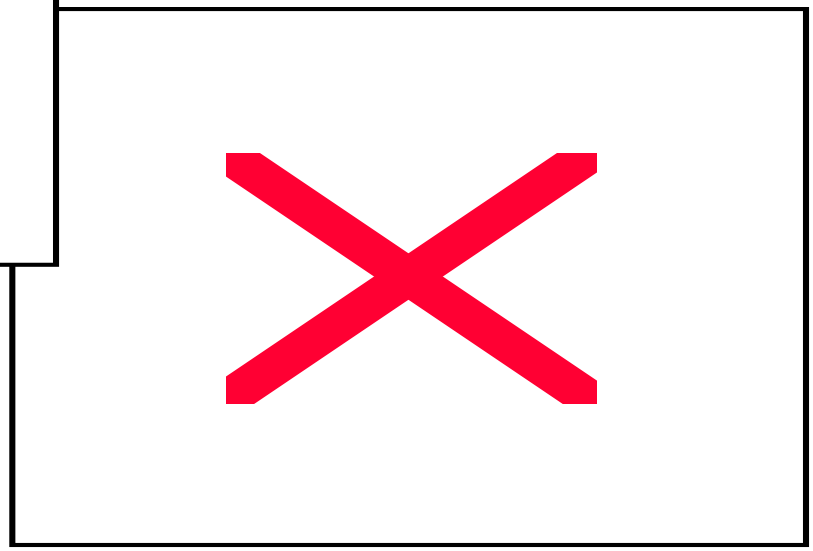
Wood infested with Moulds



Antique desk infested by
Aspergillus versicolor



Beam infested by dry rot
Serpula himantoides

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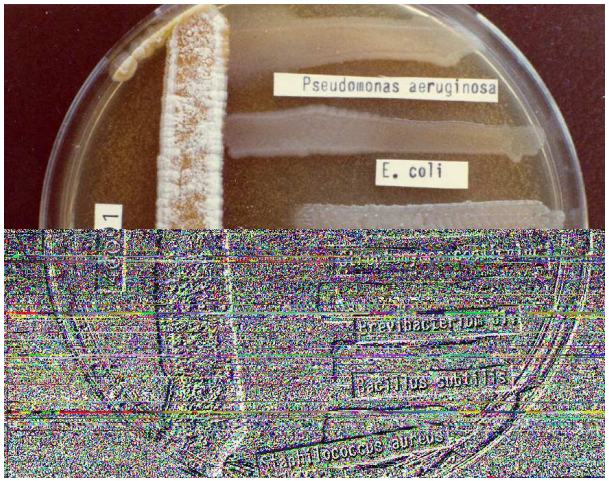
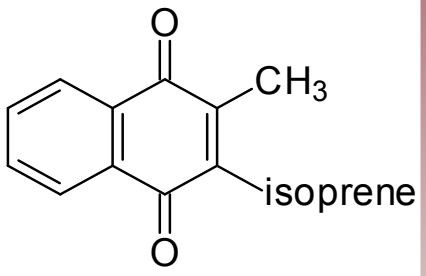
Services

Identification of Microorganisms and Authenticy Check of Cultures

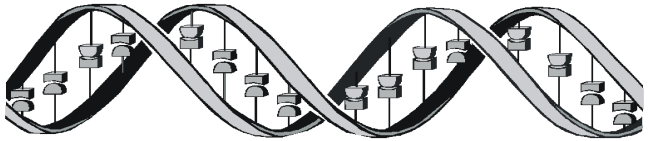




Menaquinone

Cultivating Cell Material for specific analyses or for Customers

Contract Preservation Work



Training in the Area of Culture Collection Management, Taxonomy, Identification and Laboratory Safety

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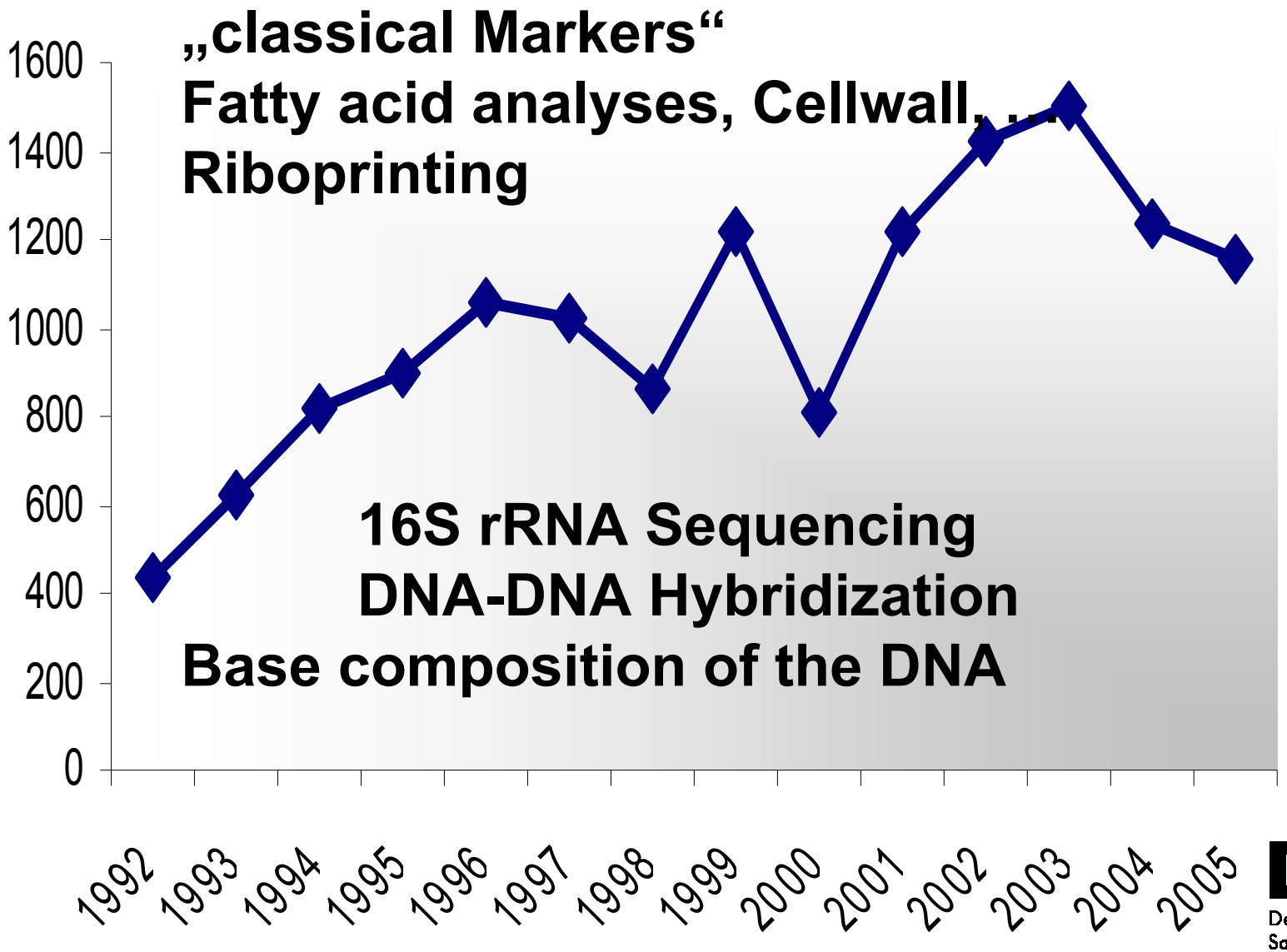
Identification Service



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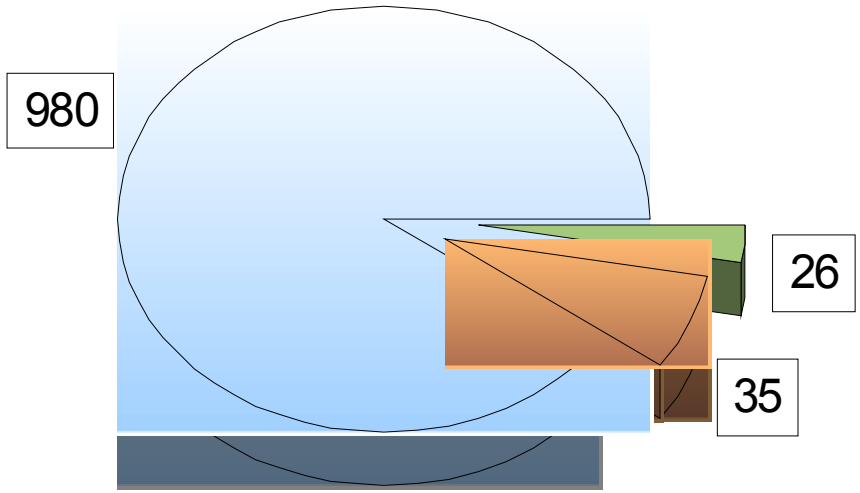
Identifications 2006

Microorganisms



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Research in Microbiology

Isolation, Characterization, Identification and Description of novel alkaliphilic Micro-organismen isolated from Soil of the Yunnan, Qinghai and Xinjiang Province.

Prof. Cheng-Lin Jiang, Dr. Wen-Jun Li and Dr. Xiaolong Cui
The Key Laboratory for Microbial Resources of Ministry of Education, P. R. China and Yunnan Institute of Microbiology, Yunnan University
Dr. Chang-Jin Kim and Guo-Zhong Chen, Korean Research Institue fo Bioscience and Biotechnology. Yuson Daejeon, Republic of Korea
Deutsche Sammlung von Mikroorganismen und Zellkulturen

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Research in Microbiology

Biosynthesis of Iso-Fatty Actids in Myxobacteria:Iso-Even Fatty Acids are derived by alpha Oxidation from Iso-Odd Fatty Acids

A Novel Biosynthesis Pathway Providing Precursors for Fatty acid Biosynthesis and Secondary Metabolite Formation in Myxobacteria

Prof. Helge Bode and Prof. Rolf Müller, Universität des Saarlandes
Prof. Gerhard Höfle, GBF Braunschweig
Dr. Jeroen Dickschat and Prof. Stefan Schulz, TU Braunschweig
Dr. Taifu Mahmud and Prof Mingjie Xu, University of Washington
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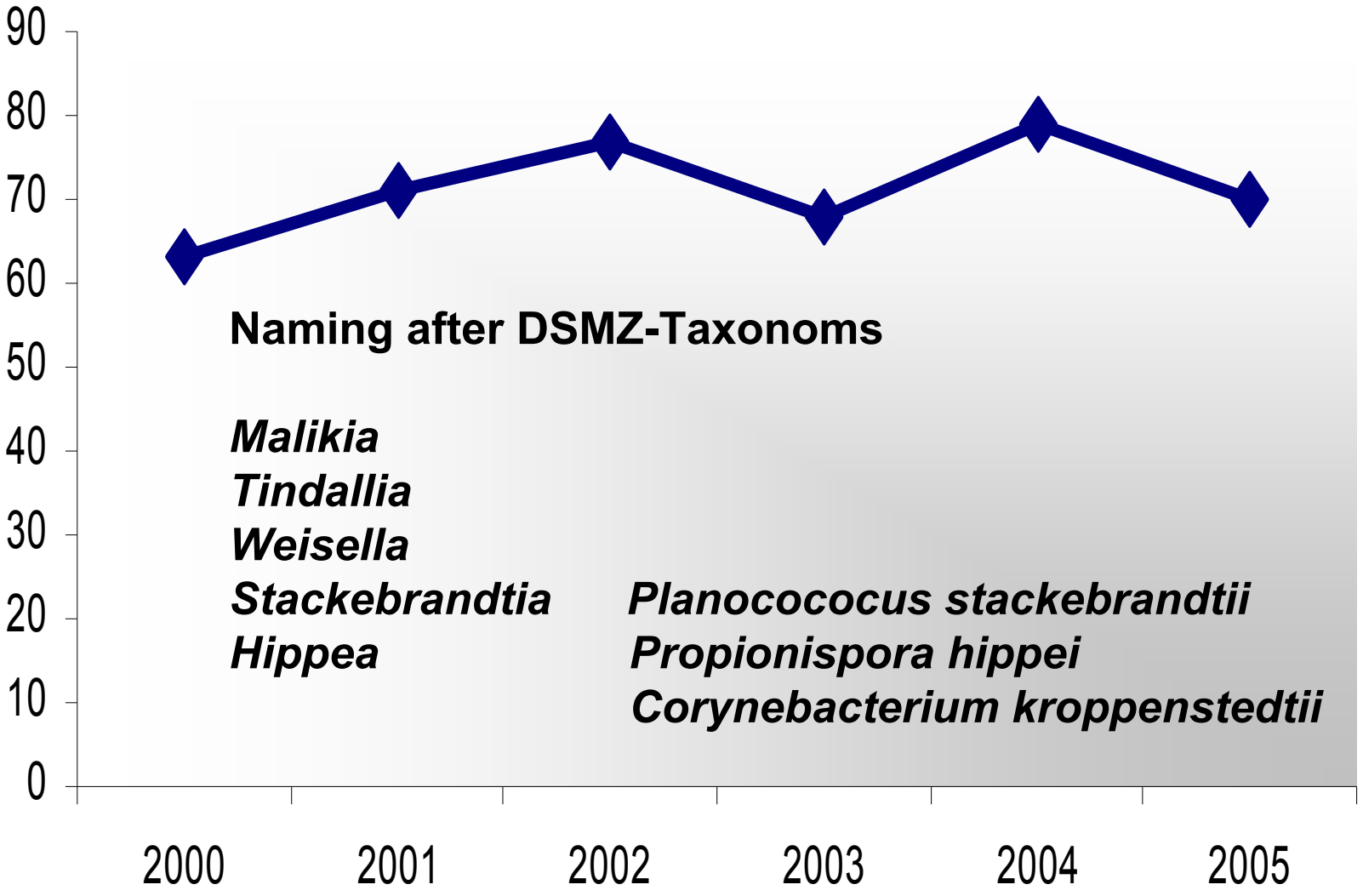
Research

Description of new Taxa



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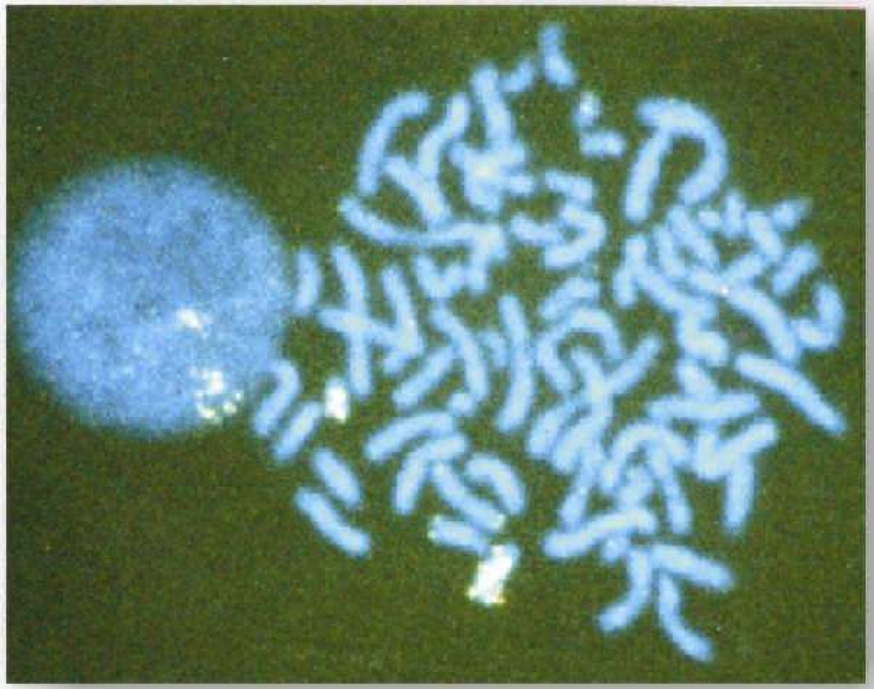
DSMZ Collection of Human and Animal Cell Lines



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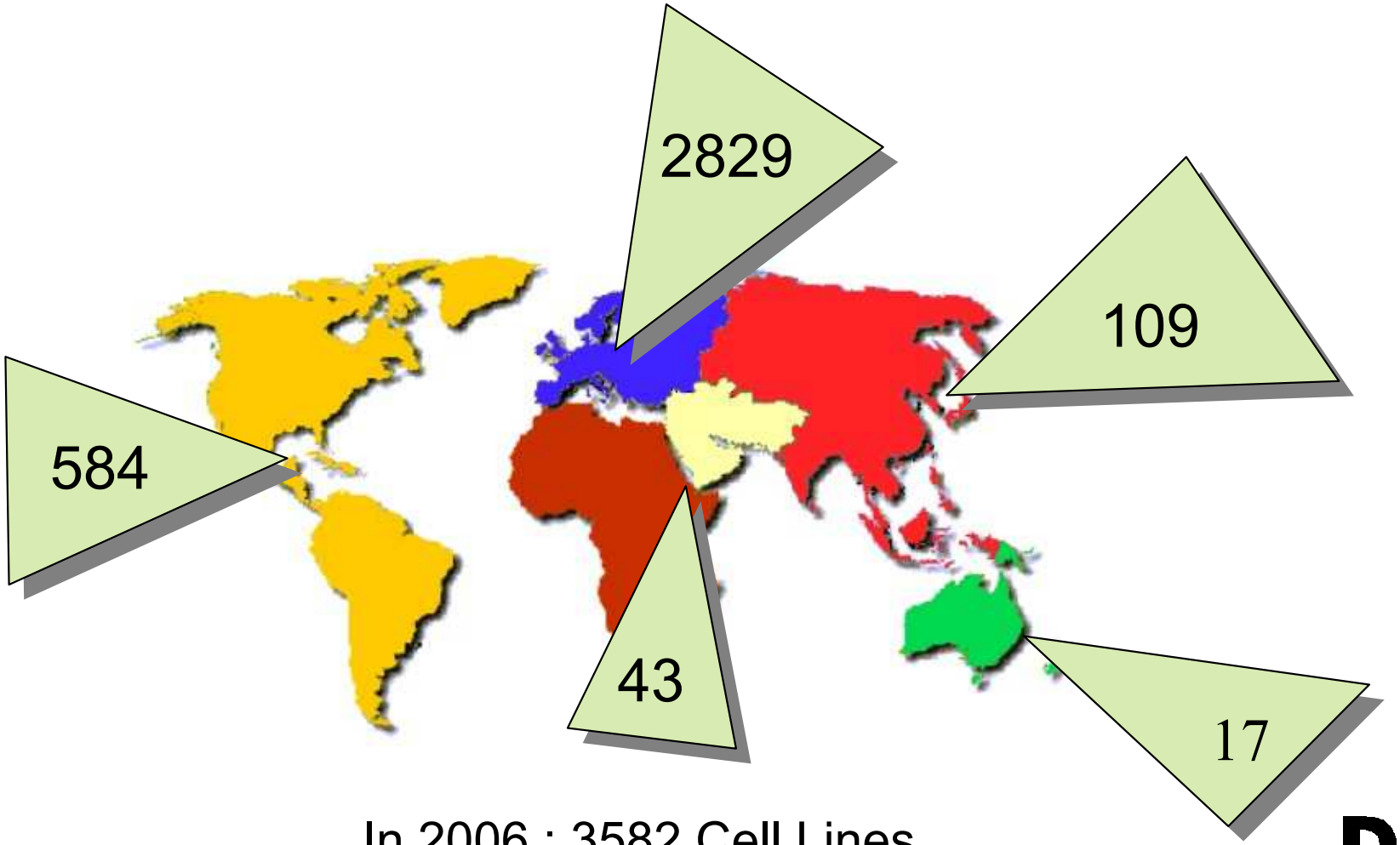
Department of Human and Animal Cell Lines

World Wide Distribution of Cell Cultures



In 2006 : 3582 Cell Lines

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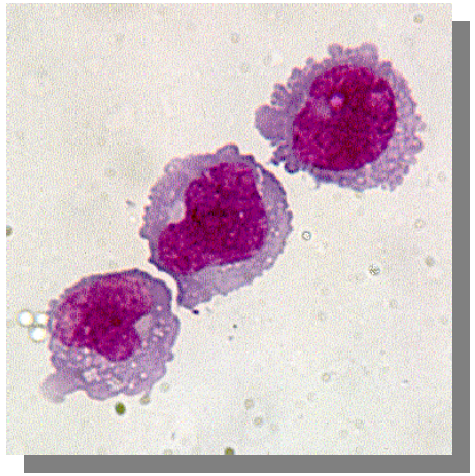
Cell Line Authentication



What am I ?

Species Identification by:

- Cytogenetics
- Immunostaining
- Isoenzyme Analysis
- DNA-Analysis

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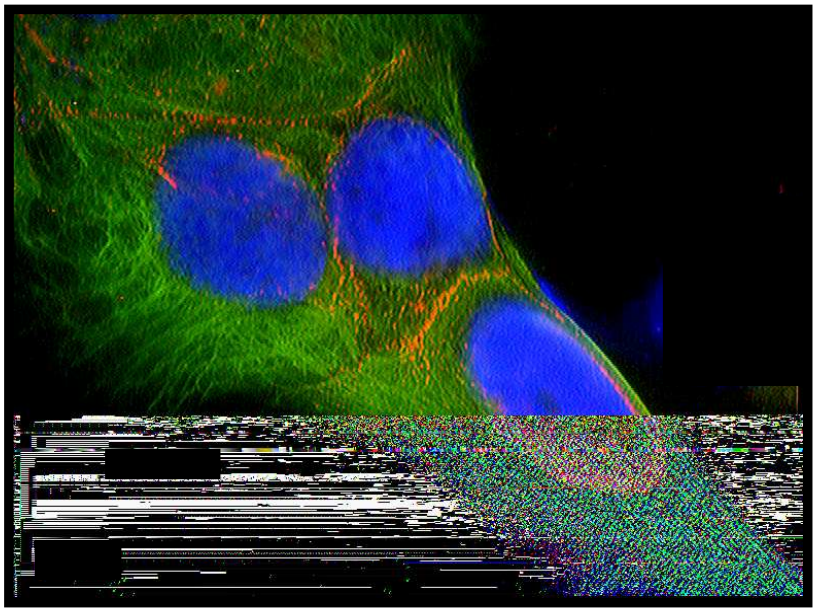
Immunophenotyping:

Histological Analysis of Cell Lines

Markers for Cell Lines
Derived from Solid Tumors:

Carcinoma:	Cytokeratin 7
	Cytokeratin 8
	Cytokeratin 17
	Cytokeratin 18
Neuroblastoma:	Neurofilament
Glioblastoma:	GFAP
Myosarcoma:	Desmin
	Vimentin
Melanoma:	HMB-45



From: Quentmeier et al.,
J. Histochem. Cytochem. 49: 1369-1378 (2001)

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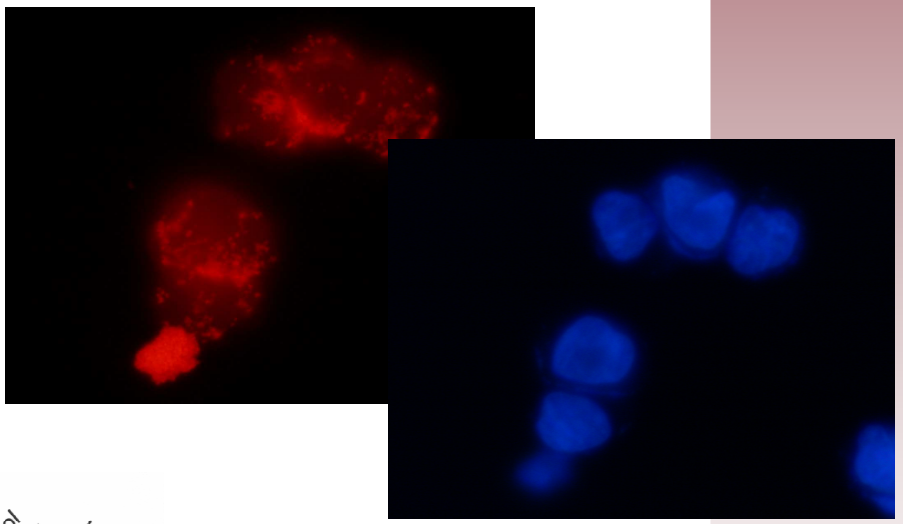
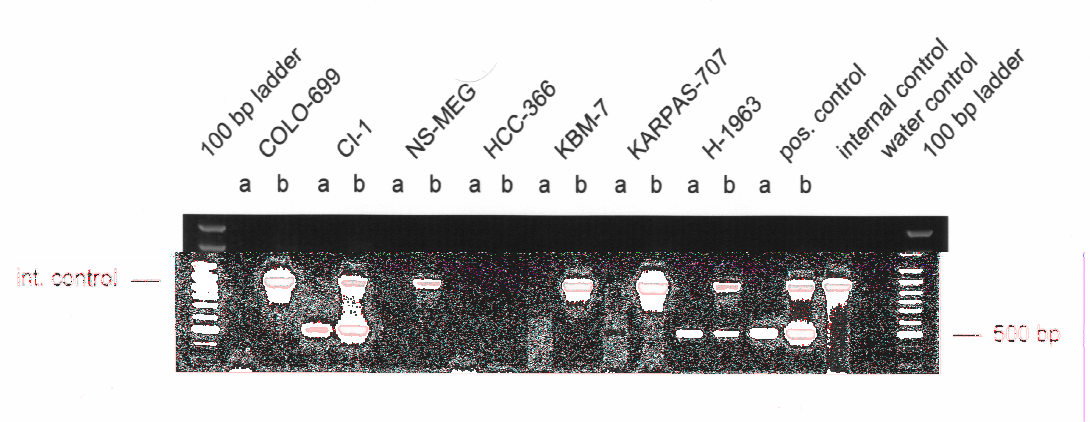
Methods for the Detection of Mycoplasma Contamination

- Microbiological Culture Method

- Fluorescence in-situ Hybridization (FISH)



- PCR



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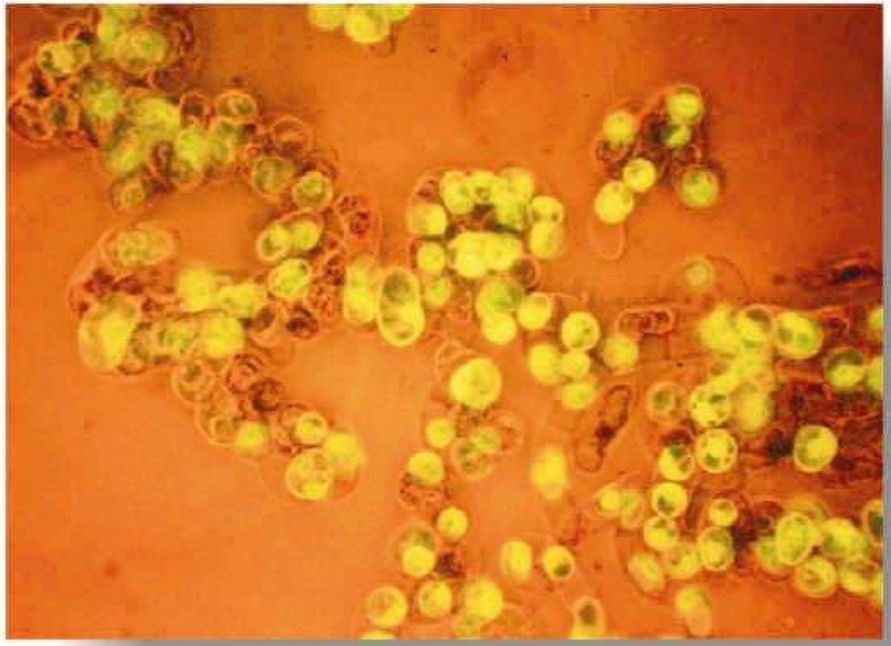
DSMZ Collection of Plant Cell Lines



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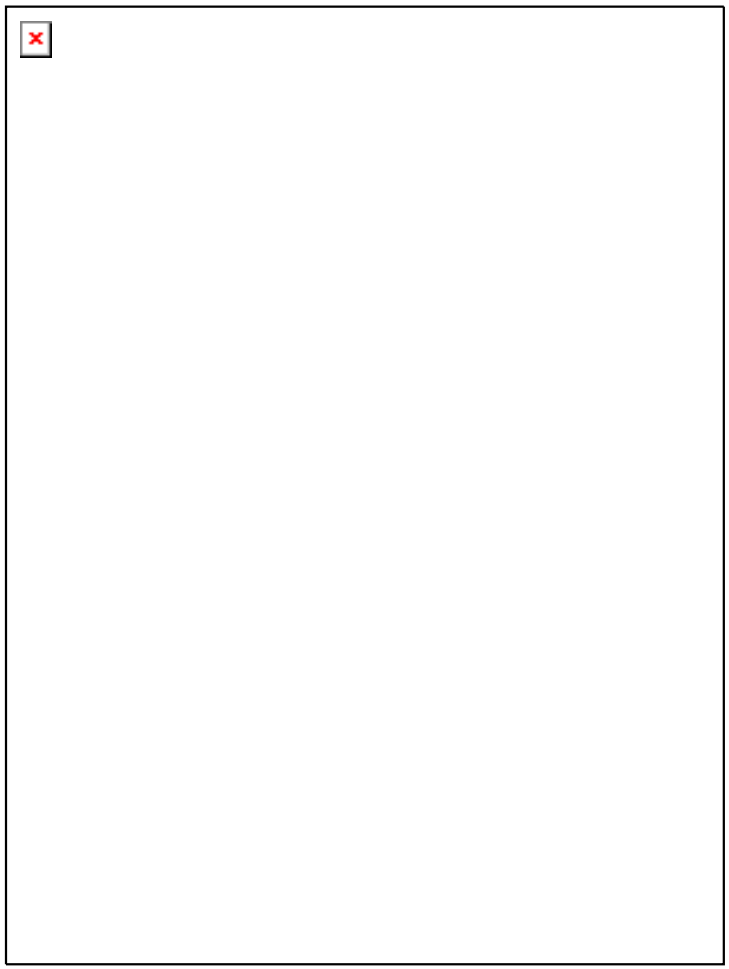
Routine Maintenance of Undifferentiated Plant Cell Lines at DSMZ



1. Cell lines are maintained as callus cultures
2. Callus cultures are maintained by continuous sub-culturing
3. Callus cultures are transferred to fresh medium every four weeks

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Suspension cultures represent the biotechnological application form of plant cell lines

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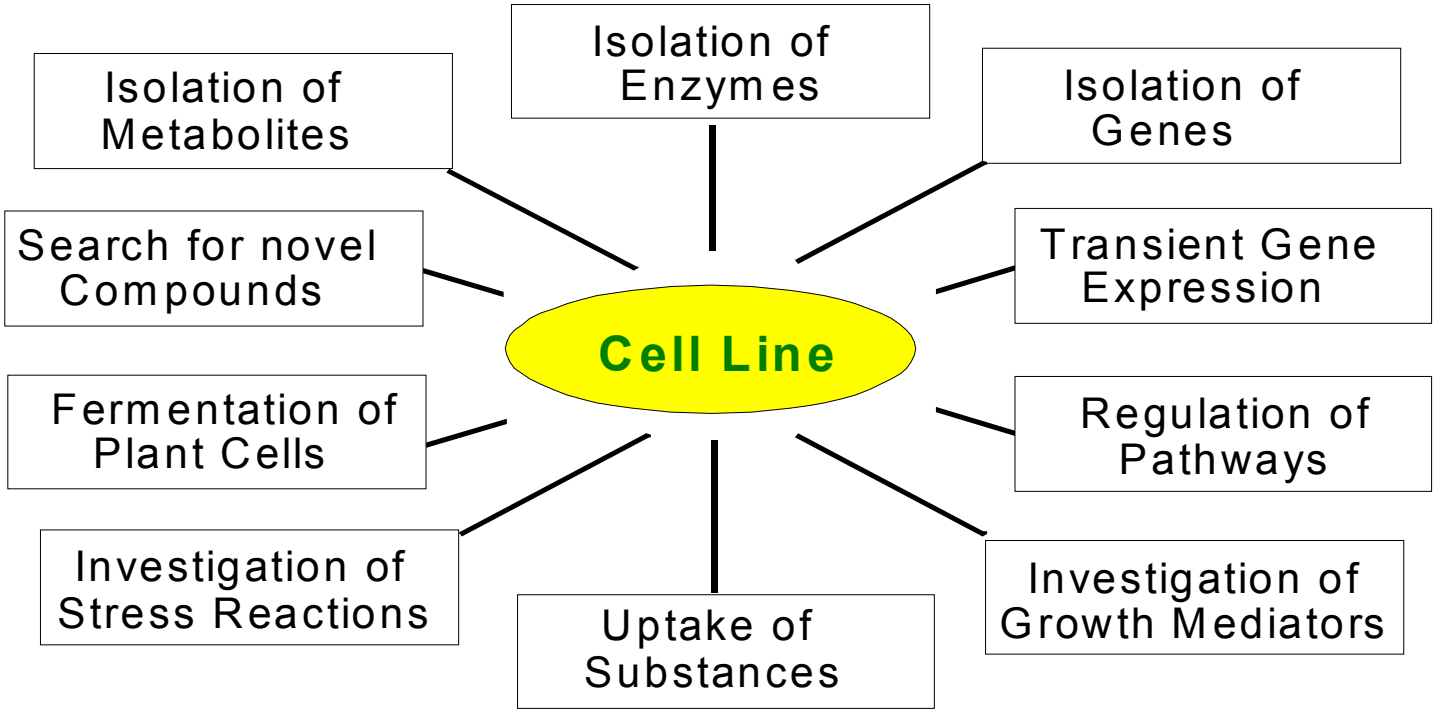
Biotechnological Applications of Undifferentiated Plant Cell Lines



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DSMZ Collection of Plant Viruses

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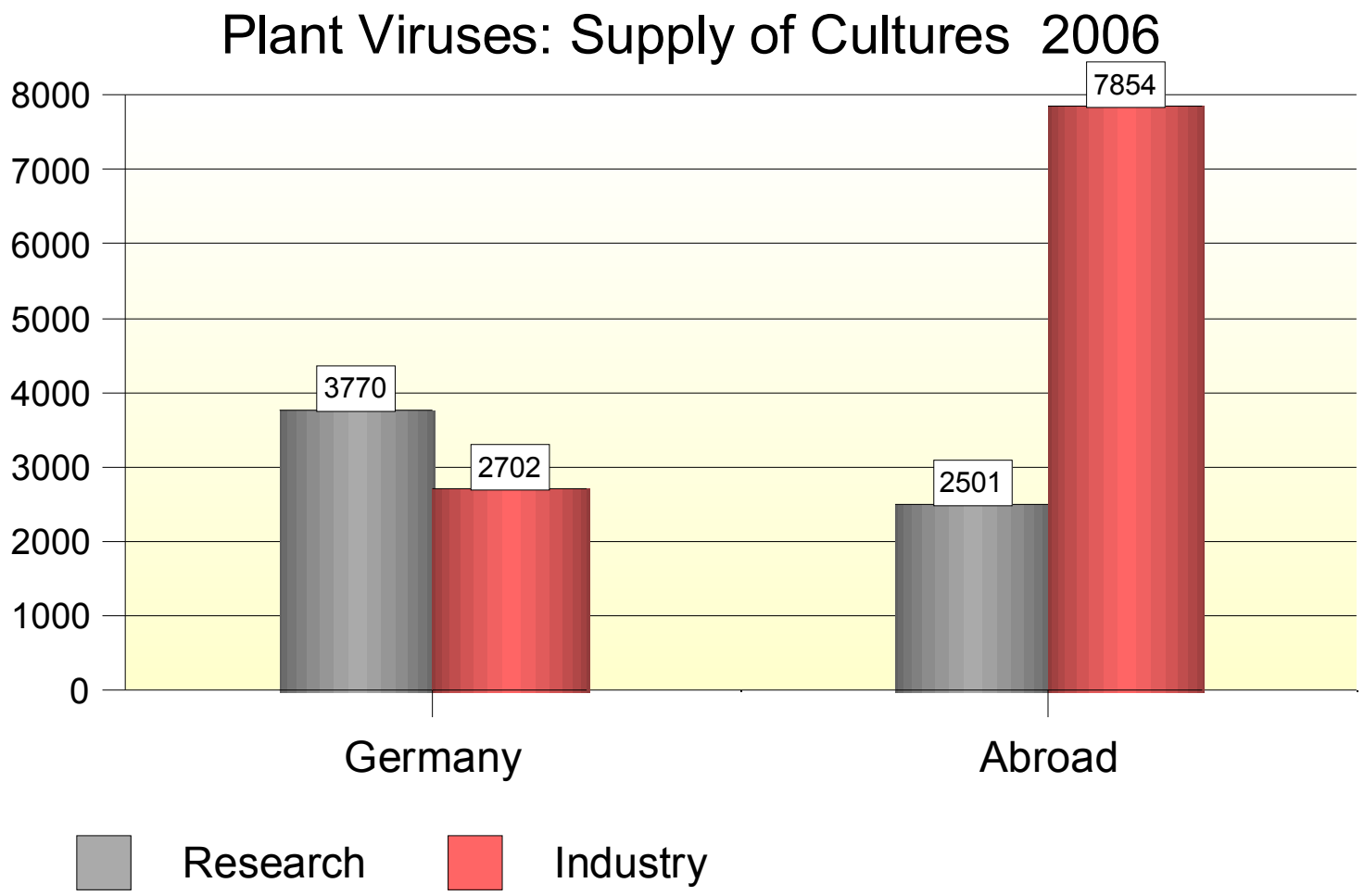

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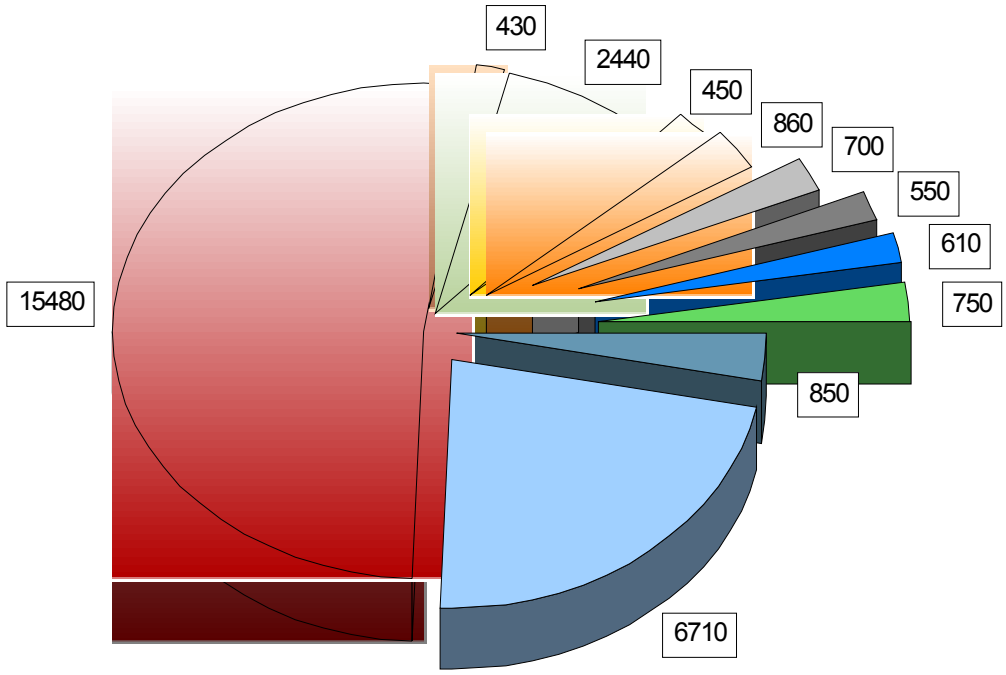
DSMZ Stock 2007: 29.830 Cultures



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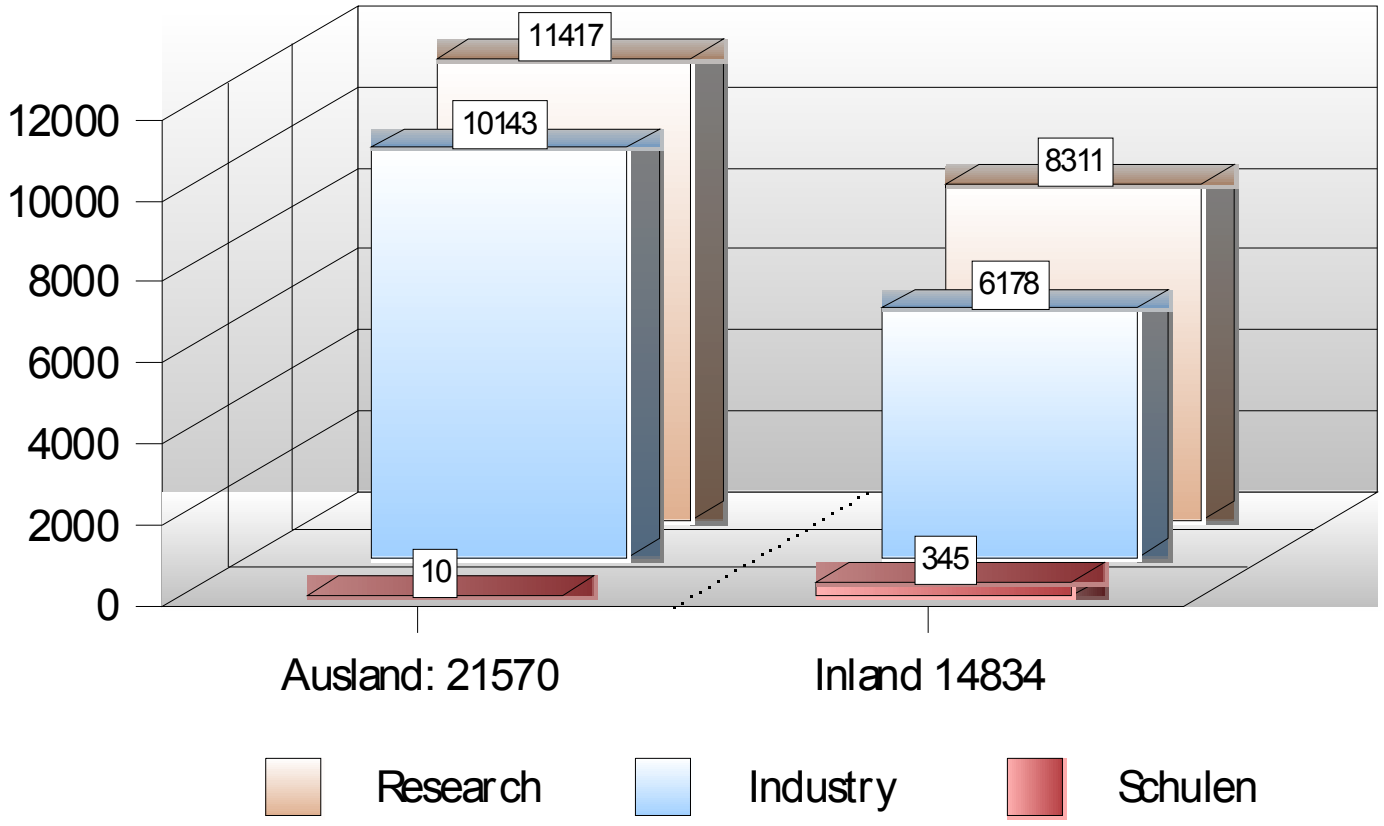
Supply of Cultures 2006 (36404)



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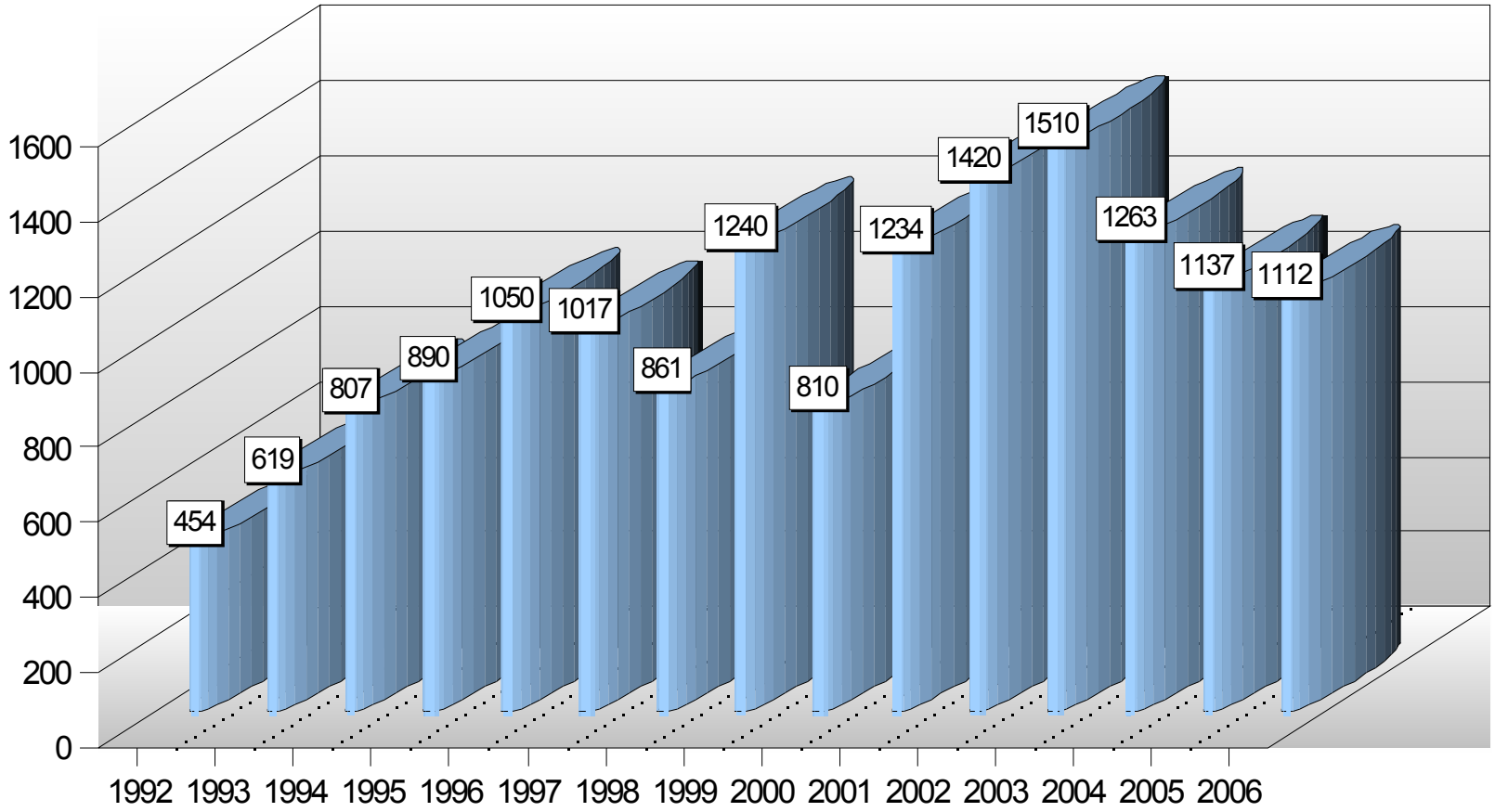
Identifications

1992 - 2006



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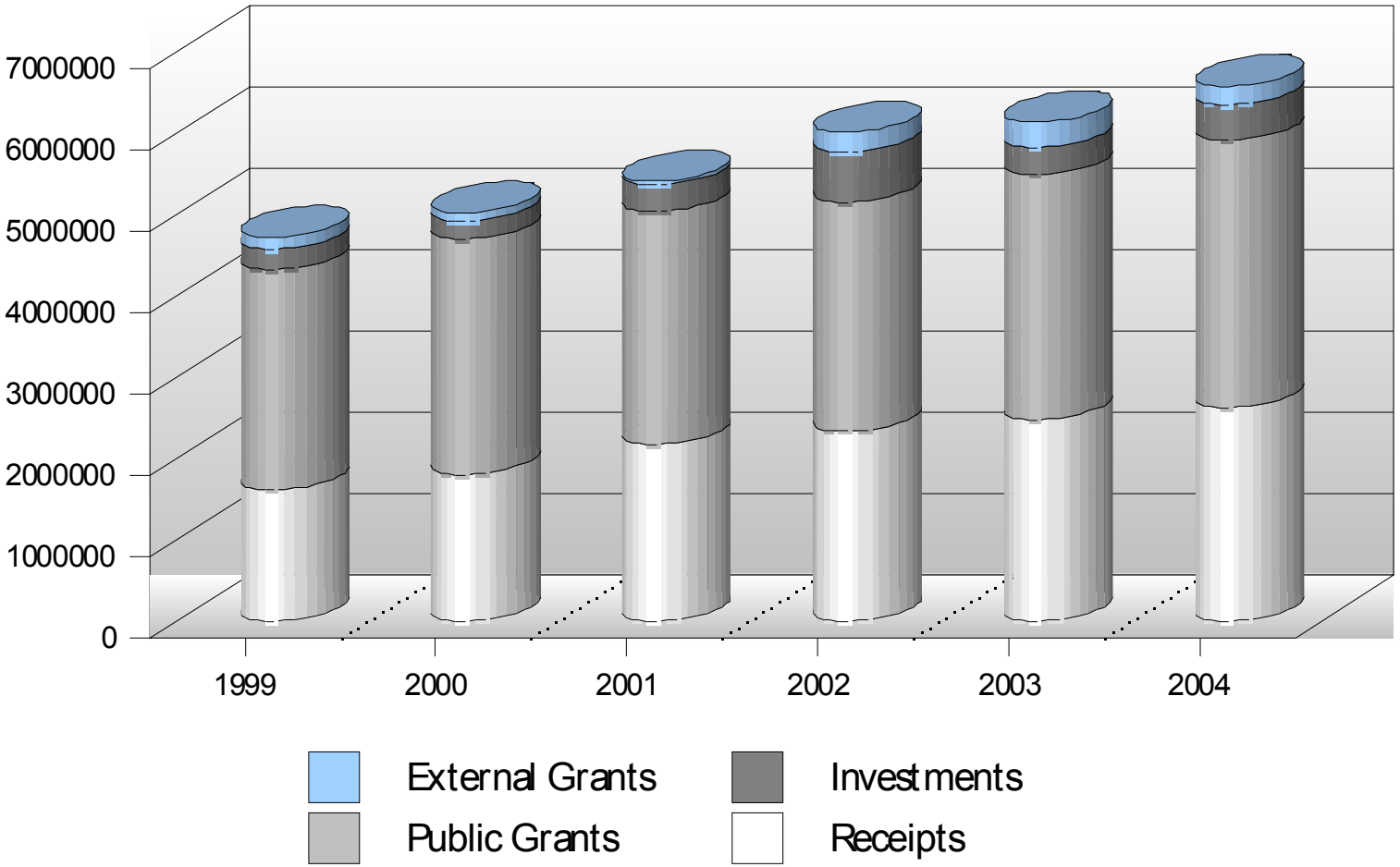
DSMZ Budget 1999 - 2004



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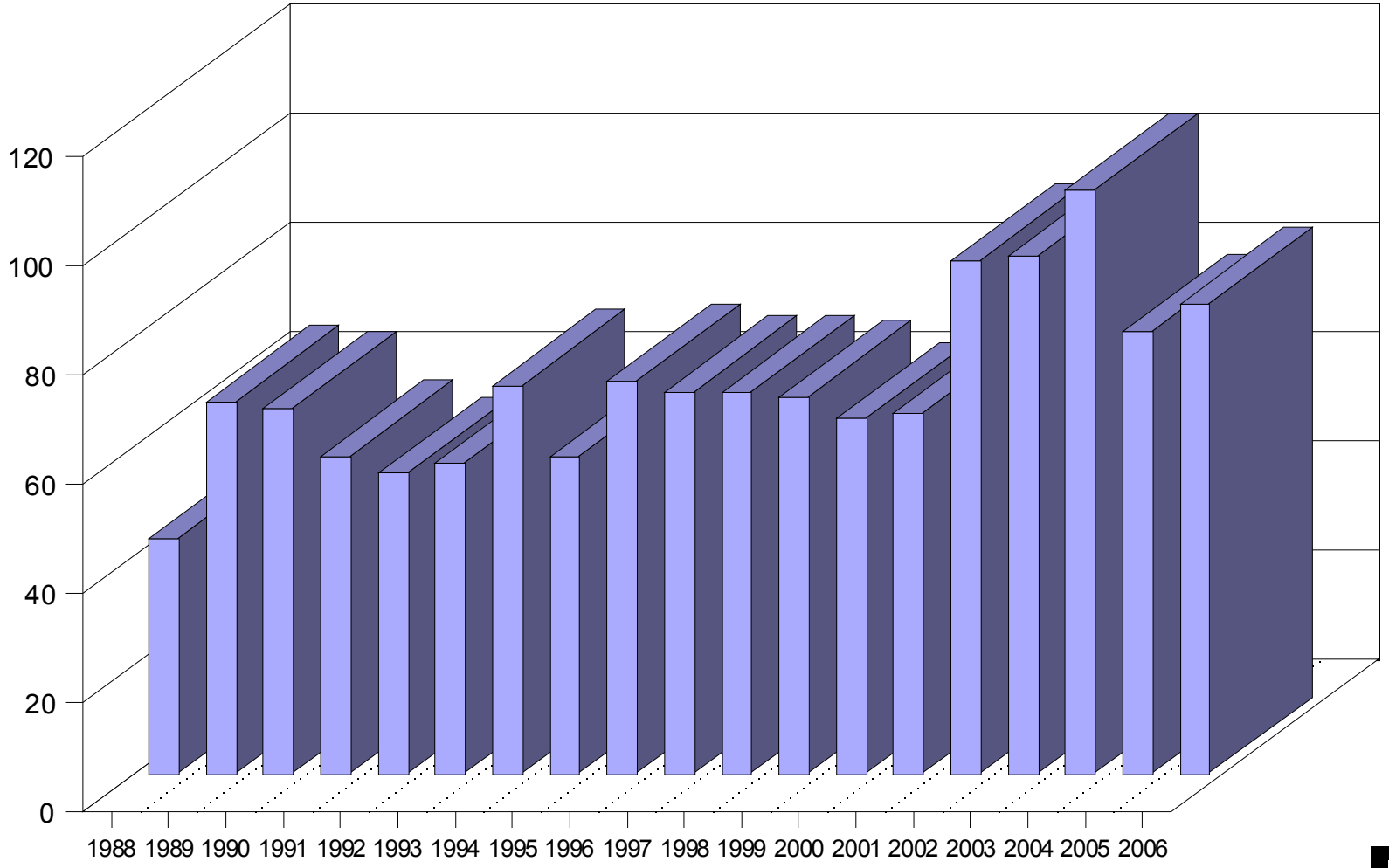
Publications



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Members of Staff

Scientific Staff

1 Professors (Microbiology)
1 Professor (Cell- and Molekular-Biology)

~ 30 PhD Biologists
1 PhD Agronomist
1 PhD Physician

Technical and Administrative Staff

~ 60 BTAs, CTAs, MTAs, LTAs
Computer Scientists, Buisnesswomen,
Science Journalist, Graphic Designer

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