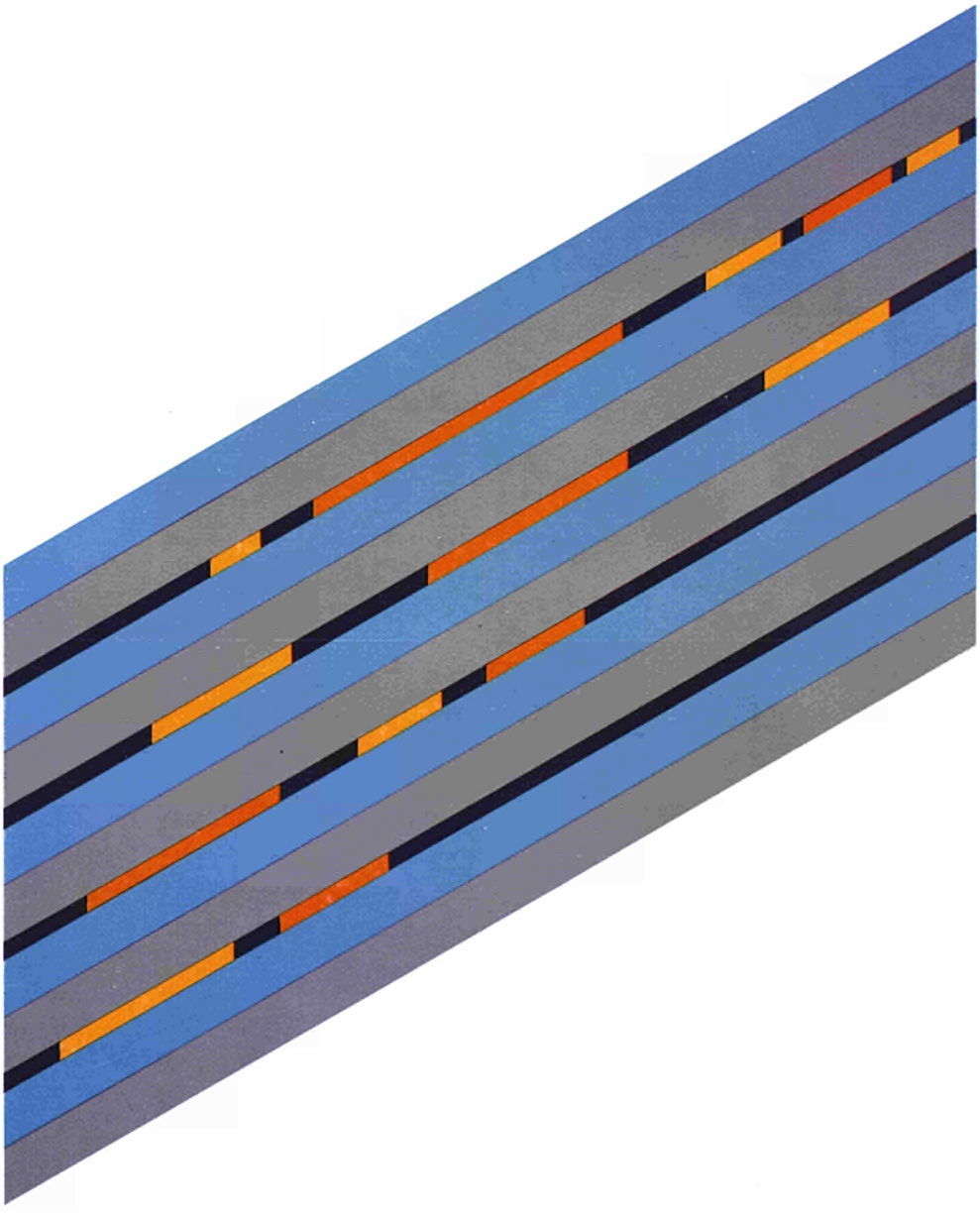
BAP

Biotechnology Action Programme (1985-1989)

CATALOGUE OF CONTRACTS WITH CLASSIFICATION OF ACTIVITIES



Commission of the European Communities
EUR 10954 EN

Biotechnology Action Programme

BAP

1985-89

CATALOGUE OF CONTRACTS WITH CLASSIFICATION OF ACTIVITIES

Edited by:
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Directorate 'Biology'
Division 'Biotechnology'

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INTRODUCTION

The Commission of the European Community is implementing several priority actions specifically designed for improving the competitiveness of European Biotechnology. One of these actions aims at the establishment of a Community network for training and research and has been executed, since 1982, in the framework of two successive Community programmes, the Biomolecular Engineering Programme (BEP) from April 1982 to March 1986, and the ongoing Biotechnology Action Programme (BAP), for the period 1985-1989.

BAP, the current programme, aims at :

- the establishment of a supportive infrastructure for biotechnology research in Europe.

- the elimination, of bottlenecks which prevent the exploitation by industry and agriculture of the methodologies originating from modern biology.

To this effect, BAP contributes to the development of the most promising techniques in the field of enzyme and protein engineering, genetic engineering, cell culture technology and culture collections, bio-informatics, and "in-vitro" pharmacological and toxicological screening.

These activities are conducted at two different levels : research and training.

Research actions

Approximately 1400 research proposals of which 80 % are transnational were submitted to the Commission services. Budgetary constraints were such that only 270 of these proposals could be adopted for funding. Each of these laboratories participates, with an average contribution of the Commission amounting to 50.000 ECU for year, in one of the 94 projects described in the present catalogue. Almost all of these projects are transnational, and fifteen per cent of them include one industrial partner participating actively in the research work. The proportion of projects which are supported by an expression of interest from one or several industrial firms amounts to 83 %.In addition, there is now a massive demand from industries to attend various types of contractor meetings ("sectoral", "horizontal", "spontaneous") which the Commission services organise at regular intervals in the framework of BAP and to have access to all data and information (proceedings of meetings, book of abstracts, annual reports ...) arising from these programmes.

Recently, industrial firms have proposed to co-finance with the Commission one of the transnational grouping of universities which have been constituted within BAP for joint research in a specific area of modern biotechnology. In the area of plant cell genetic engineering a group of industries recently establish the "green industrial platform" which emanates directly from one of the BAP study groups created by the Commission services.

For the convenience of the reader, the cost-shared research activities are briefly summarised in this catalogue on the basis of their specific objectives, materials and methods. This summary is followed by a list of names and addresses of projectleaders for each of subsector of the programme.

TRAINING ACTIVITIES

Information of the training activities implemented by the Commission services in the framework of BAP is presented elsewhere (1).

Results

A detailed description of the first scientific results is provided in the Annual Report 1986-1987 which has been issued in the fall of 1987 by the Commission services (2).

F. Van Hoeck
Director

D. de Nettancourt
Head of Division Biotechnology

Directorate Biology

Directorate General for Science, Research and Development

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(1) "Training activities implemented in the framework of BAP". M. Mongini and D. de Nettancourt, in preparation.

(2) BAP Progress Report 1987 (Magnien, E., ed.), Vol. 1 and 2, Commission of the European Community, EUR 11138 EN, 1987.

COMPOSITION OF THE MANAGEMENT AND ADVISORY COMMITTEE
(CGC BIOTECHNOLOGY)

Members of the Advisory Committee for the Management and Coordination of the Biotechnology Action Programme.
(CGC - Biotechnology)

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F. Van Hoeck
D. de Nettancourt

(*) from 1985
(**) from 1986
(***) from 1987

(<) Chairman
( ) Substitutes
(+) Resigned

BIOTECHNOLOGY ACTION PROGRAMME (1985-1989)

SUBPROGRAMME : I

CONTEXTUAL MEASURES

I. Contextual Measures.

In this sub-programme, "contextual measures" are defined as measures to improve the supportive infrastructure for biotechnology R&D in two areas, namely : bio-informatics and collections of biotic materials.

Scope of the sub-programme.

1. Bio-informatics.

1.1. Data capture technologies, such as gel reading and image processing, their acceleration, standardization, simplification and automation.

1.2. Updating and design of data banks related to biotic materials. Their design should be flexible enough to respond to present and future user needs in academic and industrial research and for practical applications. They should aim at improving the quality of infrastructure for scientific R&D and the advancement of scientific knowledge relevant to biotechnology.

1.3. Modelling techniques and algorithms, preferably of a general predictive capability, describing structure and complexity of biotic materials and systems.

2. Collections of biotic materials.

2.1. Upgrading of existing collections of importance as supporting resources for biotechnology R&D, such as of microorganisms, viruses, plant and animal cells and tissues, and creation of new collections, required and made possible by the advances of science.

2.2. Development and improvement of technical methods of storage and resuscitation in order to prolong the viability of materials held in collections, methods to assure freedom from contamination, as well as improved methods of identification description and classification.

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
	Sector 1.1 : Data Capture		
Electrophoresis of proteins: Data capture, analysis and construction of databanks. (see p. 52)	K. KERSTERS Rijksuniversiteit Gent (B)	Development of software and databank for analysis of 1-D SDS-PAGE protein patterns of bacteria important in biotechnology.	LKB densitometer, Apple microcomputer, Siemens mainframe (Identification and taxonomy of bacteria).
	L.R. HILL National Collection of Type Cultures Colindale, London (UK)	Development of software and databank for 1-D patterns of pathogenic bacteria. 2-D patterns for study of microbial relationships.	LKB densitometers (2202 & XL). Apple IIe & Type Compaq 386 microcomputers. Identification and taxonomy of bacteria, recognition of pathogenicity features.
	M.J. DUNN Royal Postgraduate Medical School London (UK)	Development of databank of 2-D patterns for study of human genetic disorders, portable version of PDQUEST® software for 32-bit UNIX systems.	Datacopy digitizer, Orion supermicro-computer, PDQUEST® software. Analysis of 2-D gel maps.
	R.G. WHALEN Institut Pasteur Paris (F)	Development of databank of 2-D patterns of eukaryotic cells. Improvement of software.	Mass Comp MCS 5500 computer (32-bit-UNIX), PDQUEST® software. Optronics P-1000 densitometer, Data General MV 10 000 computer. Running and analysis of 2-D gels.
	R. HILLS Joyce-Loebl Tyne & Wear (UK)	Contribution to the commercial outcome of the research project.	
	K. SMITH Queen Mary College London (UK)	Applications of DAP technology to analysis of 2-D patterns.	

Key words: SDS-PAGE, Protein electrophoresis, Taxonomy, Xanthomonas, Bacterial proteins, Human proteins, Data-processing, Computer analysis, Genetic disorders, Electrophoresis, Two-dimensional electrophoresis, PDQUEST®, Cell differentiation, Protein databases, Identification, Classification, Databanks, Numerical classification.

Automation of DNA Sequencing. (see p. 53)	M.S. BECK University of Manchester Manchester (UK)	Automation of plating-out and culture inoculation. Software for imaging and image analysis.	High resolution CCD camera, Apple & IBM microcomputer.
	F. POHL Universität Konstanz Konstanz (D)	Software development and improved biochemistry for obtaining ordered sub-clones.	Film scanner, micro-computers
	J.E. BATEMAN Rutherford Appleton Lab. Didcot (UK)	Design of multi-wire proportional counter (MWPC) autoradiographic system including software.	MWPC, IBM PC/AT, Digisolve graphics system.
	R. MASSEN Transferzentrum Konstanz Konstanz (D)	Development of vision system hardware and software.	VME-BUS vision systems, all types of CCD-sensors real-time feature extraction image processors.

Key words: Automation, DNA sequencing, Genomic charting, Direct blotting electrophoresis, Nucleic acids, Sequencing data collection, Exonuclease III, Digital, Autoradiography, MWPC, Machine vision, Image processing, Culture harvesting, Robot.

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
Structural bases of specificity and affinity in antigen-antibody reactions. (see p. 54)	R.J. POLJAK Institut Pasteur Paris (F)	High resolution analysis of 3-D structure of lysozyme-antibody complexes.	PS 300/VAX, X-ray source, diffractometer.
	C. MILSTEIN MRC Laboratory of Molecular Biology Cambridge (UK)	Site-directed mutagenesis.	PS 300/VAX.
	S.E.V. PHILLIPS Leeds University Leeds (UK)	Development of interactive computer graphics for the prediction of structure and affinity changes, molecular dynamics and conformational energy refinement calculation. Networking.	PS 300/VAX.
	G. BRICOGNE LURE, C.N.R.S. Orsay (F)	Development of an electronic area detector with software for on-line treatment of raw x-ray diffraction data on a array processor.	Synchrotron radiation source, high-speed detector, PS 300/VAX, ST-100 array processor.
Key words: Antigen-antibody complexes, Three-dimensional structure, Site-directed mutagenesis, Monoclonal antibodies, Computer graphics.			
Three-dimensional and super-resolution scanning analytical laser microscopy. (see p. 55)	G. BRAKENHOFF Univ. Amsterdam (NL) with: E. PIKE King's College London (UK) M. BERTERO Univ. Genova (I) W. LINNEMANS State Univ. Utrecht (NL) M. DOWNS Nat. Physical Laboratory Teddington (UK) K. SCHADE Leitz GmbH Wetzlar (D) D. CLARKE Microbial Technology Laboratory Porton Down (UK)	3-D confocal microscopy with super-resolution, development optical probes, 3-D image processing and representation, applications to biology.	
Key words: Confocal microscopy, 3-D microscopy, Inversion methods, Multi-channel fluorescence microscopy, 3-D image processing, Matrix-cytoskeleton interactions, Protein-DNA/RNA interactions.			

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
	Sector 1.2 : Data Banks		
A European network of microbial culture collection databanks: Integrated catalogue. (see p. 56)	M.A.A. SCHIPPER Centraalbureau voor Schimmelcultures Baarn (NL) J. DE BRABANDERE SPPS Brussels (B)		
	D.L. HAWKSWORTH CAB International Mycological Institute Kew (UK) D. CLAUS Deutsche Sammlung von Mikroorganismen Braunschweig (B) N.J. VAN UDEN Gulbenkian Institute of Science Oeiras (P)	Development of a decentralised system for providing on-line information on microbial strains. MINE - Microbial Information Network Europe.	On-line information on the microorganisms held in the affiliated collections.
Key words: Micro-organisms, MINE, Microbiology, Biotechnology, Fungi, Databank, Network, Catalogue (integrated), Database (distributed), Patent deposits, Plasmid collection, Plasmid stability, Preservation methods, recombinant DNA.			
Research and diffusion for a portable European system of access and analysis of biosequences. (see p. 57)	J. SALLANTIN CNRS - CRIM Montpellier (F)	Development of software for sequence analysis and peptide synthesis using AI-techniques, and of a suitable man-machine interface.	
	P. M. SHARP Trinity College Dublin (IRL)	Implementation and optimisation of ACNUC nucleic acid sequence data base and retrieval system.	On-line access (via HEANET) to the ACNUC data base and retrieval system.
Key words: Biosequences, Homologies, Sequence analysis, Homology searches, FORTRAN 77, Workstation editor, Machines communication, Sequence databases.			
Protein sequence data bank. (see p. 57)	H. W. MEWES Max-Planck-Institut für Biochemie Martinsried (D)	Establishment of a European Node in a world-wide network of protein sequence data banks. Data input and on-line distribution, development of software.	Micro-VAX. On-line access to protein sequence data. Software for sequence analysis, training courses.
Key words: Protein sequence, Data collection, Sequence data analyses, Software.			
	Sector 1.3 : Computer Models		
Simulation of an enzymatic process using an immobilised biocatalyst. (see p. 58)	W. J. DE WIJN Stamicarbon B.V. Geleen (NL)	Data on kinetics, hydraulic aspects and mass transfer of the immobilised enzyme. Development of simulation model.	Laboratory scale and pilot plant reactors. Programmes for process control, optimisation techniques and bio-technology research.
	H.J. LEPERS Fachhochschule Aachen Aachen (D)	Development of simulation model, introduction of didactic aspects. Setting up of process simulator.	Computer with graphics for process control. Didactic programmes for training of engineers.
Key words: Enzymatic process, Immobilised enzyme, Process simulation, Modelling, Scientific education.			

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
Advanced monitoring and computer control of biotechnological processes. (see p. 58)	A. CHERUY I.N.P.G. - E.N.S.I.E.G. St. Martin d'Heres (F)	Development of a work-station for experimentation, analysis and control of biotechnological processes.	Apollo Computer. Computer controlled pilot plant.
	G. BASTIN UCL Louvain-la-Neuve (B)	Design of software sensors for on-line estimation of biological parameters. Development of adaptive controllers.	Pilot plant.
	B. PERRET INRA-LGPBA Thiverval Grignon (F)	Design of reactor/computer interface hardware and software.	Pilot plant.
	A. G. ROZZI IRSA - CNR Bari (I)	Development of hardware sensors for process control.	Inorganic carbon automatic analysers. Pilot plants.

Key words: Bioprocess, Adaptive Control, Bio-informatics, Software sensors, Bicarbonate, Anaerobic digestion, Mathematical modelling, Estimation, Process control, Monitoring, Bioreactors, Real time monitoring, Hardware interface, Computer control, Automation, Biotechnological processes, Automatic analysers.

Fermentor modelling for automation and optimal process control. (see p. 59)	B. RAYMOND Soc. Bertin & Cie Tarnos (F)	Application of the model to the automation of a production process.	Fixed and mobile pilot plant installations.
	H. MÄRKL TU Hamburg-Harburg Hamburg (D)	Modelling of the fermentation process, identification of parameters, test of the model.	HPLC and gas chromatography, lab fermentors.

Key words: Modelling, Fermentation, Automation, Software, Optimisation, Antibiotics, Process control.

Sector 1.4 : Advanced Software

Computer-aided peptide and protein engineering software development. (see p. 60)	J. GARNIER INRA Orsay (F)	Development of software for the prediction of secondary and tertiary structures of proteins, of epitopic sites and design of artificial vaccines, for use on VAX with on-line array processor and PS 300.	VAX with on-line array processor. PS 300.
	B. ROBSON UMAN Manchester (UK)	Development of software for the prediction of tertiary structure of proteins, of epitopic sites and design of artificial vaccines, for use with VAX-CYBER 205 and Vector General and Spectrographics.	VAX-CYBER 205, Vector General and Spectrographics display.
	R. BOMFORD Wellcome Research Lab. Beckenham (UK)	Preparation of databases and test programmes. Validation of predictions.	

Key words: Protein folding, Protein engineering, Synthetic vaccine, Secondary structure prediction, Energy calculation.

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
Artificial intelligence approach to protein structure prediction by development of a knowledge base. (see p. 60)	S. WODAK ULB Bruxelles (B)	Development of inference algorithms and analysis of derived structural and sequence patterns.	SUN-Microsystem MV 10000 Data General Convex-C1. PS350, PS390
	J.-M. CLAVERIE Institut Pasteur Paris (F)	Re-organisation of sequence data bases, development of optimal alignment algorithms, improvement and automation of screening of sequence data banks.	SUN-Microsystem, MV/10 000 and MV/8000 Computers.
	C. SANDER EMBL Heidelberg (D)	Development of learning algorithms for prediction of protein structure from DNA sequence, pattern recognition.	VAX cluster (8600/785) SUN-3/110, SUN-3/260 EMBL sequence data library, NETSERVaEMBL BITNET file server.
	Y. D. WILLEMS KU Leuven Leuven (B)	Formal specification of logic language for protein knowledge base, implementation of an interpreter and of a knowledge base management system.	
	R. VENKEN BIM Everberg (B)		

Key words: Protein structure prediction, Logic programming, Artificial intelligence, Protein database, Molecular model building.

Sector 2.1 : Culture Collections

European resource centre for plasmid-bearing bacterial strains. (see p. 62)	L. R. HILL PHLS London (UK)	Collection, preservation and quality control of medically important plasmid bearing bacterial strains.	Catalogue. Distribution of medically important plasmid bearing strains. Depository for these strains.
	D. CLAUS DSM Braunschweig (D)	Collection, preservation and quality control of plasmid bearing strains of prokaryotic and eukaryotic microorganisms of general scientific and biotechnological relevance.	Catalogue. Distribution of plasmid bearing strains of general scientific and biotechnological relevance. Depository for these strains.

Key words: Plasmid collection, Genetic stability, Host strains, Transposons, Recombinant DNA, Patent deposits, Plasmid stability, Plasmid database, Preservation methods.

European human genetic mutant cell bank. (see p. 62)	A. DOYLE ECACC London (UK)	Preservation and quality Control of cells from persons with single mendelian disorders, from affected and non-affected relatives.	Catalogue. Distribution of cell lines for R & D and diagnostic work.
	H. GALJAARD Erasmus University Rotterdam (NL)	Collection of cells from patients with single mendelian disorders, from affected and non-affected relatives, together with computerized family data.	Supply of computerized family data related to cell lines.

Key words: Genetic disease, Human, Cell bank, Lymphoblastoid, Human cultured fibroblasts, DNA-markers, Family studies.

TITLE	PROJECT LEADERS	OBJECTIVES	SERVICES AND EQUIPMENT AVAILABLE
Creation of a lactic acid cultures collection. Modelling and control techniques of thermophilic mixed cultures. (see p. 63)	G. KALATZOPOULOS Agricultural College of Athens Athens (GR)	Collection, identification and preservation of lactic acid bacteria. Testing of models and algorithms.	Supply of lactic acid bacteria. Depository. Training courses.
	G. CORRIEU INRA Lille (F)	Identification of wild strains from mediterranean diary products. Studies of metabolic pathways of mixed microbial cultures in dairy products.	Supply of lactic acid bacteria. Computer controlled fermentors.

Key words: Lactic acid bacteria, Thermophilic bacteria, Modelling and Control techniques of Thermophilic mixed culture, Collection culture, Mixed culture.

Bank of immunogenetically defined human B-lymphoblastoid cell lines. (see p. 63)	H. GROSSE-WILDE Universitätsklinikum Essen (D)	Collection of EBV transformed B cell lines from persons homozygous with respect to HLA typing and other linked markers, from persons with diseases proven or supposed to be of genetic origin, and of their families. Quality control, HLA-typing.	Catalogue. Distribution of cell lines.
	G.B. FERRARA IST Genova (I)		Cataloque. Distribution of cell lines.

Key words: Epstein-Barr-Virus, HLA homozygous lines, HLA linked diseases, Leukemia, Gluten enteropathy, Juvenile diabetes mellitus, Psoriasis vulgaris.

Sector 2.2 : Preservation Techniques

Development of improved techniques for the preservation of fungal strains of biotechnological importance. (see p. 64)	D. SMITH CAB Kew (UK)	Testing of morphology, cooling rates, viability. Cryo-microscopy. Preservation.	-20°C, -40° C freezers, liquid N.
	Subcontractor: J.A. STALPERS CBS Baarn (NL)		-20°C and -40°C freezers liquid N.
	C. DE BIEVRE Institut Pasteur Paris (F)	Testing of lipid composition, plasmid stability and extrachromosomal DNA.	-80°C freezer, spectrophotometer.
	G. L. HENNEBERT UCL Louvain-la-Neuve (B)	Testing of morphology, form of colonies, physiology.	
	N. NOLARD-TINTIGNER Institut d'Hygiène et d'Epidémiologie Bruxelles (B)	Testing of pathogenicity, immunogenicity and allergenicity.	-80°C freezer.
	M.-F. ROQUEBERT Muséum National d'Histoire Naturelle Paris (F)	Testing of growth parameters.	Electrophoresis, X-ray absorption.

Key words: Fungal strains, Preservation methods, Stability, Metabolite production, Yeast stability, Lyophilisation, Cryo-preservation, Trichophyton rubrum, Lipids, Phospholipids, Sterols, Biopreservation, Cryo-microscopy, Freeze-drying, Micro-organisms.

BIOTECHNOLOGY ACTION PROGRAMME (1985-1989)

SUBPROGRAMME : II

BASIC BIOTECHNOLOGY

II. Basic Biotechnology.

In this sub-programme, "basic biotechnology" is defined as the array of disciplines where mission oriented research is a prerequisite for the transfer of academic knowledge to industry and agriculture and for the removal of technical and scientific bottlenecks to large scale applications of recent discoveries in cellular and molecular biology.

Scope for the sub-programme.

1. Enzyme engineering.

1.1. Development of bio-reactors (multienzymatic, multiphasic, co-factor requiring or utilizing viscous media) for industrial and medical applications, depollution and detoxification.

1.2. Stability of enzymes during industrial exploitation.

1.3. Protein design including new concepts in enzyme catalysis, structural and functional predictions, chemical and genetic modifications, construction of artificial enzymes.

2. Genetic engineering.

2.1. Microorganisms : gene characterization and gene transfer for potential applications by industries (e.g. yeasts, bacilli, methanotrophs, chemoautrotrophs, anaerobes, aspergilli, actinomyces, extremophiles).

2.2. Plants : analyses of the structure and regulation of plant genomes (nuclear and cytoplasmic).

2.3. Plants : transfer and cloning of genetic material in plant cells.

2.4. Microorganisms and plants : improvement of associations (in particular symbiotic relations) between crop plants and microorganisms.

2.5. Plants : early detection of genetic or pathological modifications in cultivated plants.

2.6. Animals (livestock, including fish) : cloning of substances important for animal husbandry (vaccines, hormones ...), cloning vectors for animal cells, cloning of genetic material in animal cells.

3. Technology of cells and tissues cultured in vitro.

3.1. Physiological and genetic factors governing yield and stability during continuous cultivation of microbial species important to industry (e.g. yeasts, bacilli, methanotrophs, chemoautotrophs, anaerobes, aspergilli, actinomyces, extremophyles).

3.2. Control of the differentiation of plant cells and of their regeneration in entire plants.

3.3. Novel methodologies of animal cell cultures.

4. Assessment of risks : development of new methods for detecting contamination and for the assessment of possible risks associated with applications in industry (particularly during downstream processing) and agriculture of biomolecular engineering. Major attention to be given in this sector to the development of methods for the assessment of risks resulting from the release of genetically engineered organisms.

5. In vitro evaluation of the toxicity and of the pharmacological activity of molecules.

Field covered

New approaches to in vitro screening related to :

- Pharmacological compounds of potential therapeutic benefit.
- Toxicology (with particular reference to drugs and food additives) with emphasis on tissue or organ specificity.

Within the wide field of in vitro screening the scope of the proposals considered was limited as follows :

Type of research : Emphasis to be placed on the improvement of scientific knowledge and on the study of biological mechanisms.

Restrictions : The programme will not include research related to mutagenicity and carcinogenicity (teratogenicity is included). Concerning toxicology, work based on sub-cellular fractions alone will be excluded.

TITLE	PROJECT LEADERS	SUBSTRATES	PRODUCTS	ENZYMES / ORGANISMS	COMMENTS
Sector 1.1 : Development of Bioreactors					
Microbial production of commercially important hydroxylated compounds from halo-aromatics. (see p. 68)	J. DE BONT U. Wageningen (NL) A. MAULE PHLS Centre Porton Down (UK)	halogenated aromatic compounds	1,3,5 trihydroxybenzene 4-hydroxyphenylglycine tyrosine DOPA 4-hydroxyphenylacetate m- and p-hydroxybenzaldehyde m- and p-hydroxyacetophenon 3,5-dihydroxybenzoic acid	Arthrobacter sp.	Strain selection. Purification of dehalogenase/ hydroxylase.
Key words: 4-Chlorobenzoate, 4-Hydroxybenzoate, Dehalogenase, Hydroxylated aromatic compounds, Haloaromatics, Hydroxylation, Microbial transformation.					
Continuous synthesis of fine chemicals by cofactor dependent enzymes with simultaneous cofactor regeneration. (see p. 68)	A.F. BÜCKMANN G.B.F. Braunschweig (D) G. CARREA CNR, Milano (I) K.D. KULBE Fraunhofer- IGB, Stuttgart (D)	cholate derivatives neutral steroids long chain alcohols D-glucose D-fructose	12-ketochenodeoxycholoic acid 12-keto ursodeoxycholic acid 20- B hydroxysteroids 15N-L-Phenylalanine and mannitol L-Ascorbic acid	Hydroxysteroid dehydrogenase Alcohol dehydrogenase Mannitol dehydrogenase Glucose dehydrogenase Formate dehydrogenase.	Purification of oxido-reductases. NAD(P)(H) regeneration. Multiphase system. Membrane reactor. Down stream processes.
Key words: NAD(P)(H) dependent enzymes, Fine chemicals, Dehydrogenases, Cofactor regeneration, Macromolecular cofactors, Membrane reactors, Oxidoreductases (NAD/NADP/FAD), Enzyme-membrane reactor, Gluconic acid, Mannitol, Sorbitol, L-sorbose, L-Ascorbic acid, Electrodialysis.					
Control of the microenvironment of biocatalysts by coimmobilisation. (see p. 69)	W. HARTMEIER RWTH Aachen (D) P. ROUXHET UCL Louvain-la-Neuve (B)	glucose	bacitracin alcaloids	Catalase Claviceps purpurea Bacillus sp.	Coimmobilisation of cells and enzymes. Cell surface properties.
Key words: Alkaloids, Bacillus, Bacitracin, Claviceps, Co-immobilisation, Co-entrapment, Catalase, Hydrogen peroxide.					
Bioconversion of hydrophilic & hydrophobic compounds by enzyme systems. (see p. 70)	M.-D. LEGOY U. Techn. de Compiègne (F) M. ROSSI U. di Napoli (I) F. KOLISIS Nat. Hell. Research Foundation (GR) K. SCHÜGERL U. Hannover (D)	long chain alcohols olive oil malic acid	long chain aldehydes high value lipids lactic acid	Alcohol dehydrogenase Lipases Lipid transesterases DNA polymerase B-Galactosidase Sulfolobus solfataricus	Thermoresistant enzyme. Multiphase system. NAD(P)(H) regeneration.
Key words: Cofactor regeneration, Multiphasic reactors, Water activity, Lipases, Alcohol dehydrogenase, Archaebacteria, Thermostable enzymes, Malic enzyme, B-galactosidase, Microemulsions, Enzyme immobilisation, Liquid membrane reactor, Liquid membrane emulsions, Enantioselective synthesis.					

TITLE	PROJECT LEADERS	SUBSTRATES	PRODUCTS	ENZYMES / ORGANISMS	COMMENTS
Electrode-immobilised enzyme systems for electro-chemically driven chiral reduction reactions. (see p. 71)	C. VAN DIJK TNO Delft (NL) H. SIMON Techn. Univ. München (D)	electricity enoates 2-oxocarboxylates	chiral products a-methyl cinnamic acid phenylpyruvate	Enoate reductase 2-Oxocarboxylate reductase	Enzyme immo-bilised at the electrode surfaces. NAD(P)(H) regeneration driven by electricity.
Key words:	Bio-electro catalysis, Immobilised reductases, Conducting polymers, Redox mediators, Carbon electrodes.				
Construction of enzyme-loaded ery-throcytes as bio-reactors. (see p. 71)	C. ROPARS CNRS Tours (F) A. DE FLORA U. di Genova (I) L. SILENGO U. di Torino (I) M. MAGNANI U. di Urbino (I)	glucose asparagine ethanol pro-drugs	glucose-6-phosphate aspartate acetaldehyde drugs	Cloning and production of human enzymes (e.g., hexo-kinase) by genetic engi-neering.	Red blood cell-encapsulated enzymes. Engineered red blood cells as bio-reactors.
Key words:	Bioreactors, Erythrocyte encapsulation, Enzymes, Targeting, Pro-drugs, Hexokinase, Expression vector, Immunological screening, Fusion protein.				
Microbial transformation of fatty acids to dicarboxylic acids. (see p. 72)	C. RATLEDGE Univ. Hull (UK) MEUSSDOERFFER F. Henkel KGaA Düsseldorf (D)	fatty acids	long chain dicarboxylic acids	Pseudomonas sp. Corynebacteria sp. Candida sp.	Strain selection. Enzyme purification.
Key words:	Fatty acids, Dicarboxylic acids, Transformation, Enzyme stability, Development of bioreactor.				

TITLE	PROJECT LEADERS	PROTEIN STUDIED	SOURCE	PROPERTIES STUDIED	METHODS, TECHNIQUES USED	POTENTIAL APPLICATION
Sector 1.2 : Enzyme stability and folding						
Enzymes from thermophilic bacteria : properties, stability & biotechnological applications. (see p. 73)	A. FONTANA U. di Padova (I) R. JAENICKE U. Regensburg Regensburg (D)	Dehydrogenases Proteases Amylase Lactate dehydrogenase Thermolysin	Extreme thermophiles,e.g. Pyrodictium occultum Sulfolobus solfataricus Bacillus stearothermophilus Bacillus caldotenax Thermus aquaticus Methanococcus thermolithotrophicus Bacillus thermoproteolyticus	(Thermo)stability Folding & assembly Functional & structural properties Structure-function, relationships Folding Role of metal ions for stability	Large-scale fermentation. Protein chemistry. Spectroscopy. Anal. ultracentrifugation. Enzyme kinetics Thermodynamics. Immobilisation onto solid support (water-soluble polymers). Reverse micelles.	Enzyme technology Enzymatic synthesis of peptide using proteases. Basic understanding of stability.
Key words: Bacillus stearothermophilus, Folding, Lactate dehydrogenase, Pyruvate dehydrogenase, Thermal stability, Thermotoga, Archaebacteria, Thermophilic enzymes.						
Sector 1.3 : Protein Design						
Folding, assembly, stability and genetic modification of penicillin acylase and its precursor. (see p. 73)	R.H. PAIN U. Newcastle (UK) G.SCHUMACHER Boehringer Mannheim Penzberg (D) A. BÖCK U. Ludwig-Maximillians München (D)	Penicillin acylase (subunits)	E. coli	Cloning & expression of the gene(s). Isolation and purification of mature & precursor enzyme. Proteolytic processing. Conformation in solution. Unfolding, folding and reassembly. Immunoblotting.	Urea gradient gel electrophoresis. Spectroscopic, hydrodynamic and immunological techniques. rDNA.	Engineer penicillin acylase for new applications in the modifications of penicillins & cephalosporins.
Key words: Penicillin acylase, Precursor, Folding, Stability, Assembly, Secretion, Processing.						
Model systems for production folding and assembly of stable proteins overexpressed in E. coli. (see p. 74)	P. AROSIO U. Milano (I) G. CESARENI EMBL Heidelberg (D) P. HARRISON U. Sheffield (UK) KOKKINIDIS. M. IMBB Crete (GR)	Rop Ferritin	E. coli human	a-Helix folding. Subunit assembly. High recovery. Stability. Physico-chemical properties. Expression vector construction. Thermostability. antibodies.	X-ray crystallography. Site directed mutagenesis. Computer graphics. Immunogenic reactivity. Monoclonal	De novo design & synthesis of new enzymes to catalyse industrial processes.
Key words: Ferritin, Recombinant proteins, Mutagenesis, Self-assembly, 3-D structure, Iron proteins, Protein stability, Protein folding, Protein overproduction, Subunit assembly, Protein crystallography, Synchrotron, FPLC, Heptad pattern.						

TITLE	PROJECT LEADER	PROTEIN STUDIED	SOURCE	PROPERTIES STUDIED	METHODS TECHNIQUES USED	POTENTIAL APPLICATION
Conversion of pancreatic phospholipase A2 into triglyceride degrading lipase. (see p. 75)	G.H.DE HAAS U. Utrecht (NL) R. VERGER CNRS-CBM Marseille (F)	Phospholipase A1 and A2	E. coli porcine pancreas Staphylococcus sp.	Enzyme substrate complex. 3-D structure. Stability. Substrate specificity	Monomolecular surface film kinetics. Site-directed mutagenesis.	Fat degrading enzymes in detergents.
Characterisation of the staphylococcal lipases at genetic and biochemical level. (see p. 76)	F. GÖTZ Univ. Tübingen (D)	Lipases	Staphylococcus sp.	DNA sequence. Promotor activity. Substrate specificity. Kinetic parameters. Catalytic center. Substrate specificity.	Protein fusion. Enzyme purification & crystallisation. Site-directed mutagenesis.	Ester synthesis in organic solvents. Lipases with high specificity for water insoluble substrate.

Key words: Phospholipase, Lipase, Phospholipids, Lipolysis, Lipid monolayers, Enzyme kinetics, Surface tension, Staphylococcus carnosus, Staphylococcus hyicus, Purification, Plasmid.

Construction and biological function of altered proteins defined by their spatial structure. (see p. 76)	B. CLARK U. Aarhus (DK) L. BOSCH U. Leiden (NL) PARMEGGIANI A., Ecole Polytechnique Palaiseau (F)	Elongation factor Tu	E. coli Streptomyces ramocissimus	3-D structure. Structure function relationships in mutant and wild type enzyme. Gene expression. Interaction EF-Tu and aa-tRNA.	X-ray diffraction. Molecular graphics refinement. Purification and cristallisation of mutant enzymes. Site-directed mutagenesis. Monoclonal antibodies. Proteolytic digests. High resolution NMR.	The design of new catalysts for the field of bio-inorganic chemistry.

Key words: Protein engineering, Molecular graphics, Elongation factor Tu, GTP-binding proteins, Site-directed mutagenesis, Kirromycin, Structure-function relationships, Tuf genes, Streptomyces, G-proteins.

Engineering of an extracellular ribonuclease by gene modification. (see p. 77)	S. WODAK ULB Brussels (B) P. STANSSENS P.G.S., Gent (B) A. FERSHT Imperial College London (UK) J. JANIN U. Paris-Sud Orsay (F)	Barnase	Bacillus amyloliquefaciens	Structure-function relationships. Substrate specificity. Kinetic parameters. Stability of native state. Folding.	Site-directed mutagenesis. Steady state, fast kinetics. Purification. X-ray crystallography. Molecular graphics/molecular dynamics. Prediction methods.	Development of RNA restriction enzymes. Protein engineering in general.

Key words: Proteins, Protein engineering, Ribonuclease, Model building, Enzymology, Barnase, Ribonuclease, Expression, Crystallography.

TITLE	PROJECT LEADERS	PROTEIN STUDIED	SOURCE	PROPERTIES STUDIED	METHODS, TECHNIQUES USED	POTENTIAL APPLICATION
Structure function relationships in a peptide hormone & enzymes. The application of protein engineering. (see p. 78)	S.B.PETERSEN Novo A/S Bagsvaerd (DK) G. DODSON U. York (UK)	Alpha-amylase	Bacillus sp Aspergillus sp Mammalian cells	Enzyme purification. Suitable cloning system. Sequence. Enzyme function. Reaction mechanism. 3-D structure.	Synchrotron radiation. Molecular graphics. Molecular modelling. Site-directed mutagenesis. Mutant enzymes.	Design of protein with prespecified characteristics.
Key words:	Engineering, Molecular modelling, Protein crystallography, Insulin, X-ray area detector, Protein engineering, Molecular graphics.					
DD-peptidases and B-lactamases. From gene expression to protein engineering. (see p. 78)	J. GHUYSEN U. Liège Sart Tilman (B) B.SPRATT U. Sussex Brigthon (UK)	DD-peptidases B-lactamases	Streptomyces R61 Bacillus licheniformis Enterobacter cloacae P99 Citrobacter freundii Streptomyces cacaoi Streptomyces albus G	Structure-activity relationships. 3-D structure. Substrate binding. Kinetic parameters. Physico-chemical properties. Expression in E. coli and Streptomyces lividans.	X-ray crystallography. Site-directed mutagenesis. Molecular graphics. Molecular modelling. Construction of chimeric proteins.	Design of novel antibiotics.
Key words:	Active-site serine DD-peptidase, Active-site serine B-lactamase, Metallo (Zn^{++}) DD-peptidase, Gene amplification and expression, Site-directed mutagenesis, Protein X-ray crystallography, Computer graphics, Molecular modelling.					
Biocatalysis by novel metal clusters and hydrogenase. Structure, reactivity and immobilisation. (see p. 79)	J. MOURA U. de Lisboa (P) J. CABRAL Inst. Sup. Técnico Lisboa (P) P. LESPINAT A.R.B.S. Saint-Paul lez-Durance (F)	Rubredoxin, Ferredoxin hydrogenase.	Desulfovibrio gigas	Modification of native iron sulfur center. Assisted synthesis of novel mixed-metal clusters. Reactivity & stability of new catalysts. Immobilisation. Multiphase biocatalysis.	Chemical modification of active center. Reconstitution of metal core. D/H exchange. Chromatographic & spectroscopic methods.	The design of new catalysts for the field of bio inorganic chemistry.
Key words:	Enzyme immobilisation, Hydrogenase, Multiphase biocatalysis, Hydrogenation reactions, Reversed micelles, Hydrogen activation, Iron-sulfur proteins, Biocatalysis, Mixed metal clusters.					

GENETIC ENGINEERING OF AGRICULTURAL SPECIES.

This section of the programme comprises the following research sub-sectors :

2.2. Plants : analysis of the structure and regulation of plant genomes (nuclear and cytoplasmic).

2.3. Plants : transfer and cloning of genetic material in plant cells.

2.4. Microorganisms and plants : control of associations (in particular symbiotic relations) between crop plants and microorganisms.

2.5. Plants : early detection of genetic or pathological modifications in cultivated plants.

3.2. Control of differentiation of plant cells and of their regeneration in entire plants.

This formal presentation, convenient for the purpose of inviting specific research proposals has been abandoned, however, during the execution of the programme to avoid artificial academic boundaries between related projects. It was replaced by a distribution of work into selected research areas (see figure 1), to allow groups addressing analogous problems with different technical approaches to complement each other in a multidisciplinary manner. This distribution also envisages interfacial zones between connected areas (figure 1, self explanatory), therefore underlining the "catalytic" potentialities of the programme.

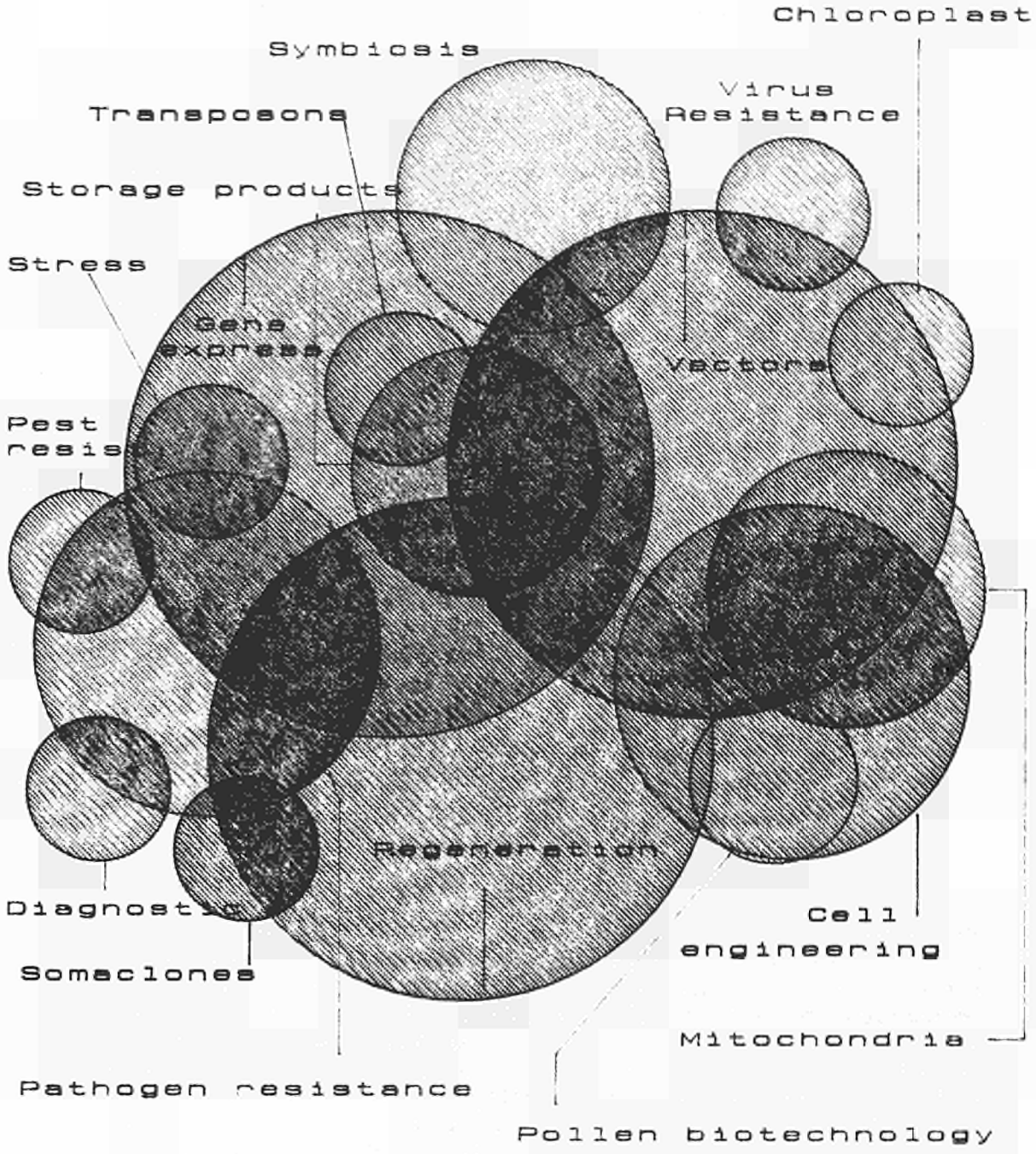

Fig. 1: Distribution of transnational contracts into European laboratories without walls (E.L.W.W.), as achieved in the area of BAP-Programme dealing with agricultural biotechnology

Legend of figure 1:

SYMBIOSIS: Boistard, O'Connel, Hirsch, Pühler, Marcker, Van Montagu

VIRUS RESISTANCE: Hull, Brunstedt

CHLOROPLAST: De Block, Schell

TRANSPOSONS: Hernalsteens, Gerats, Motto, Rohde

STORAGE PRODUCTS: von Wettstein, Sarx, Flavell, Joudrier, Kreis, Motto, Rohde

STRESS: Mol

GENE EXPRESSION: Mol, Wingender-Drissen, Terzi, de Vries, Libbenga, Klämbt, Ballio, Venis, Hall, Flavell, Joudrier, Kreis, von Wettstein, Sarx, Motto, Rohde, Gerats, Hernalsteens, Marcker, Pühler, van Montagu, Schilperoort

PEST RESISTANCE: Croy, Stirpe

DIAGNOSTIC: Fry, de Wit

SOMACLONES: Ingram, Buiatti, Sala

PATHOGEN RESISTANCE: Mol, Wingender-Drissen, Croy, Stirpe, Toussaint, Kotoujansky, Robert-Baudouy, Chambost, Salmond, Fry, de Wit, Olesen, Rajagopal, Roberts, Ingram, Buiatti

REGENERATION: Olesen, Rajagopal, Roberts, Ingram, Buiatti, Terzi, de Vries, Libbenga, Klämbt, Ballio, Venis, Hall, Schilperoort, Lorz, Dattée, Jones, Tempelaar, Caboche, Van Vloten-Doting, Sala

POLLEN BIOTECHNOLOGY: Cresti, Dumas, Van Went

CELL ENGINEERING: Cresti, Dumas, Van Went, Lorz, Dattée, Jones, Tempelaar, Van Vloten-Doting, Sala, Jacobs, Briquet, Cornu, Davies, Nijkamp, Caboche, Quétier

MITOCHONDRIA: Leaver, Schell, Briquet, Cornu, Davies, Nijkamp, Quétier

VECTORS: van Montagu, Flavell, Joudrier, Kreis, Lorz, Schilperoort, Dattée, Jones, Tempelaar, Caboche, Van Vloten-Doting, Briquet, Cornu, Davies, Nijkamp, Quétier, Leaver, Schell, De Block, Brunstedt, Tempé, Costantino, Sala, Jacobs

GENETIC ENGINEERING OF AGRICULTURAL SPECIES

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Genetic manipulation and regeneration in model and crop plants in vitro. (see p. 80)	M. JONES Rothamsted Exp. Stat. (UK) M.TEMPELAAR University Groningen (NL) M. JACOBS/ I. NEGRUTI V.U.B. Brussels (B) L.VAN VLOTEN-DOTING I.T.A.L. Wageningen (NL) F. SALA University Pavia (I) M. CABOCHE INRA, Versailles (F)	Cellular engineering Regeneration Vector development Somaclonal variation	Potato Tomato Tobacco Oil seed rape Sugar Beet	Specific potato pest/pathogen resistances. Amino acid over-producing potato and tobacco lines. Nitrate reductase-less tobacco mutants. Various auxotrophs. Methotrexate resistant lines. Water stress, NaCl, disease resistance in tomato. Fertility restoring genes from radish.	Isolation/ characterisation of selectable mutants. Cell cycle analysis and synchronisation. Cell-mediated transfer. Chromosome-mediated transfer. DNA-mediated transfer. Liposome-mediated transfer. Regeneration techniques. Cytological and molecular analysis of transformants.	Transfer of genetic elements and complexes, varying from well defined DNA fragments into plant DNA vectors to complete nuclei by means of cell fusion. In between the two extremes, transfer of e.g. naked DNA or cell organelles through an array of cellular engineering techniques is the core of the project. Investigation into integration and expression of the transferred material.

Key words: Protoplasts, Potato, Electroporation, Electrofusion, Gene expression, Transformation, Gamma-fusion, Asymmetric hybrid plants, Direct gene transfer, Chromosome isolation, Synchronisation, Chromosome transfer, Micronuclei, Microinjection, Flow cytometry, Cultured cells, Somaclonal variation, Lycopersicon esculentum, Repetitive DNA, Gene transfer.

Research on genetic transformation and plant regeneration from protoplasts of wheat and barley. (see p. 81)	Y. DATTEE Univ.Paris-Sud, Orsay (F) H. LÖRZ M.P.I, Köln (D)	Cellular engineering Regeneration Vector development	Barley Wheat Rice	Marker genes (antibiotic resistances). Genes of agronomical interest developed in M.P.I.	Establishment of embryogenic calli. Protoplasts from embryogenic calli. Genetic transformation (DNA transfer, electroporation, micro-injection, delivery to multicellular systems). Regeneration methods. Molecular and genetic analysis of transformants.	Establishment of new methodologies for the genetic improvement of cereals. Regeneration of cells and protoplasts from wheat and barley, transformation by genetic engineering methods.

Key words: Cereals, Regeneration, Somatic embryogenesis, mt DNA variations, Gramineae, Protoplasts, Gene transfer, Genetic manipulation.

Molecular analysis of carrot somatic embryogenesis. (see p. 82)	S. DE VRIES Agric. Univ. Wageningen (NL) M. TERZI CNR, Pisa (I)	Regeneration Control of gene expression	Carrot	Temperature-sensitive development mutants.	Cytological and genetical analysis of mutants. Bidimensional analysis of protein patterns Antibodies against altered protein of mutants, and corresponding gene cloning.	Genetic dissection of embryogenic development, using available and induced carrot cell mutants unable to complete normal embryogenesis at non-permissive temperature.

Key words: Carrot, Extracellular glycoproteins, Somatic embryogenesis, Antibodies, Protein microsequencing, Developmental mutants, Daucus carota, Phosphorylation.

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Plant hormone receptors. (see p. 82)	A. BALLIO Univ. Roma, (I) M. HALL Univ. Coll. Wales, (UK) D. KLÄMBT Univ. Bonn (D) K. LIBBENGA Univ. Leiden (NL) M. VENIS East Malling Res. Stat. (UK)	Regeneration Control of gene expression	Tobacco Maize Phaseolus vulgaris Spinach	Membrane-bound & soluble auxin receptors. Ethylene receptors. Fusicoccin and naphthylphthalamic acid receptors. Auxin-transport inhibitors.	Purification of receptors (FPLC). Antibody preparation to develop immunoprobes for receptors. Monoclonal antibodies against auxin-binding domain of auxin receptors. cDNA clones of auxin-activated genes. cDNA clones of membrane auxin receptors, genomic clones and study of the regulated expression of the genes. Characterisation of enzymes and factors involved in receptor affinity. Auxin-dependent transcription activation in reconstituted systems.	Study of the perception and transduction of plant hormones : technical improvement of identification, isolation, localisation, quantitation and analysis of the function of plant-hormone receptors.

Key words: Chromatography, Endogenous ligands, Fusicoccin, Proteoliposomes, Receptors, Ethylene, Proteins, Antibodies, Immunoassay, Plant hormone, Auxin, In vitro transcription, Phytotropin, Plant membranes, Corn coleoptile, Monoclonal antibodies.

Control of the differentiation of plant cells and of their regeneration into entire plants with special emphasis on cell membrane. (see p. 84)	P. OLESEN De Danske Sukkerfabrikker Copenhagen (DK) K. ROBERTS John Innes Institute Norwich (UK) R. RAJAGOPAL Royal Vet. Agric. Univ. Copenhagen (DK)	Regeneration Pathogen resistance	Carrot Sugar Beet Pythium		Isolation/ characterisation of membrane proteins. Radioactive labelling of membrane proteins with surface markers and with elicitors. Differential protein patterns in relation with the tissue or with the sensitivity of the variety to the pathogen. Preparation of fluorescent monoclonal antibodies against IAA, cytokinins and their metabolites. Tissue culture combined with controlled regulation of somatic embryogenesis, using also quantitative cytology and biochemical markers of development.	Investigation on the plant cell surface in a model system (carrot) and an economic crop (sugar beet). Development of analytical methods to be used in the control of differentiation and regeneration of cells into plants, as well as in cell-cell interactions.

Key words: Regeneration, Sugar beet, Hormones, Histology, Habituation, Monoclonal antibody, Plasma membrane, Plant hormones, Immunogen synthesis, Immunoadsorption, Immunoassays.

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Study of hairy root transformation : new strategy for plant genetic engineering. (see p. 84)	J. TEMPE Univ. Paris-Sud, Orsay (F) P.COSTANTINO Univ. Rome (I)	Vector development Regeneration	Tobacco Carrot	Various opine types as markers of co-transformation events. Hairy root T-DNA genes responsible for altered phenotypes of transformants.	Multiple transformation monitored through opine analysis, following co-inoculation with bacteria harbouring T-DNA constructs which vary by the presence of distinct genes for various opine syntheses. Transformation without selectable marker genes by co-inoculation of a foreign gene associated with virulence functions and of a wild type hairy-root T-DNA. Progeny analysis of T-DNA segregation patterns from multiple transformants.	Studies on the origin of T-DNA complexity in a multiple transformation system, using different Agrobacterium rhizogenes strains and different DNA constructs.

Key words: Agrobacterium rhizogenes, Transgenic plants, Rhizogenesis, T-DNA.

Mechanisms controlling transfer and expression of developmentally regulated plant genes. (see p. 85)	SCHILPEROORT R., Univ. Leiden (NL) M. KREIS Rothamsted Exp. Stat. Harpenden (UK)	Vector development Control of gene expression Regeneration Storage products	Tobacco Potato Rice Barley Lily	Hordeins. T-DNA genes. Hormone-controlled genes. Sequences homologous to growth-controlled genes from animals or yeast.	Structural analysis of putative control regions. Functional analysis via transformation and site-directed mutagenesis ; heterologous analysis with solanaceous plants or lily as recipients ; homologous analysis, with the need to develop recipient cell systems for monocots. Transformation with single T-DNA genes and functional analysis of these at various expression times and levels. cDNA and genomic cloning of hormone-controlled genes.	Isolation and characterisation of control regions of genes. Development of systems for the rapid functional analysis of putative control regions. Identification of genes involved in plant growth regulation.

Key words: Plant gene expression, Agrobacterium onc-genes, Cytokinin induced genes, Auxin induced genes, Plant development, Hordein, Glutamine synthetase, Patatin.

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Analysis and manipulation of wheat protein genes related to grain quality. (see p. 85)	R. FLAVELL P.B.I. Cambridge (UK) P. JOUDRIER INRA Montpellier (F)	Storage products Control of gene expression	Wheat Durum Wheat	Glutenin Gliadin	Functional analysis of the regulatory regions of the gene for HMW glutenin by deletion analysis and heterologous as well as homologous transformation. Comparison of alleles encoding subunits of HMW glutenin which are related to functional properties, via an heterologous expression system and site-directed mutagenesis. The same for gliadin subunits of durum wheat.	Understanding of the regulation of gene expression during endosperm development. Manipulation of protein genes to improve nutritional and baking quality of wheat varieties.
Key words:	Glutenin, Gene, Wheat, Seed, Tobacco, Gene cloning, Endosperm protein, Technological quality.					
Improvement of protein quality in barley by means of genetic engineering. (see p. 86)	D. VON WETTSTEIN Carlsberg Laboratory Copenhagen (DK) H. SARX Friedrich Weissheimer Malzfabrik Andernach (D)	Storage products Control of gene expression	Barley	Hordein Protein Z	Structural analysis of genomic clones hybridising to Hor 1 and Hor 2 cDNAs; reconstitution of the complex loci with intercalating sequences by chromosome walking. Comparison with simple loci Hor 3 and Paz 1. Using a yeast-*E. coli* expression vector, functional analysis of hordein domains essential for packaging and of protein Z domains important for protease inhibition.	Elucidation of the molecular structure of the Paz 1, Hor 1, Hor 2 & Hor 3 loci and their regulation in barley endosperm.
Key words:	Hordein genes, Glucanase gene, Anther culture, Antibody screening.					
Molecular studies of the high lysine genes opaque-2 and opaque-6 in maize. (see p. 86)	M. MOTTO Ist. Sper. Cerealicoltura. Bergamo (I) W. ROHDE MPI Köln (D)	Storage products Control of gene expression Transposable elements	Maize	Opaque-2 Opaque-6	02 genes should be isolated from 02 mutants, resulting from the insertion of well-known transposable elements (Ds, Mu) into the region of the gene. 06 genes will be searched by probing a DNA bank with cDNA obtained from the product synthesized by the gene.	Elucidation of the molecular mechanisms controlling the accumulation of zein, the major storage protein of the maize endosperm, by characterisation of the genes Opaque-2 and Opaque-6 which modulate the zein level.
Key words:	Maize, Opaque-2, Transposon tagging, Gene regulation, High lysine gene, Molecular, Regulation.					

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Isolation of transposable elements from Petunia hybrida. (see p. 87)	J.P. HERNALSTEENS VUB, Sint Genesius Rode (B) A. GERATS Free Univ. Amsterdam (NL)	Transposable elements Vector development	Petunia hybrida	Alcohol dehydrogenase (ADH) Gene 2 of T-DNA	Selection of transposon insertions into genes for which probes are available : into pollen-specific ADH gene, and selection in presence of alcohol; into gene 2 of a Petunia line harboring transposable elements, and selection under high concentrations of an auxin precursor.	Isolation of transposable elements from Petunia hybrida.
Key words:	Petunia hybrida, Transposable elements, T-DNA, Insertion mutagenesis, Auxin toxicity, Flavonoid synthesis, Alcohol dehydrogenase.					
Development of inducible gene expression systems for higher plants and plant cell cultures. (see p. 87)	R.WINGENDER-DRISSEN MPI Köln (D) J. MOL Free Univ. Amsterdam (NL)	Pathogen resistance Control of gene expression	Petunia Soybean	Chalcone synthase (CHS)	Identification of stress-induced CHS genes. Isolation and sequencing of regulatory DNA. Identification, through homologous expression of chimeric genes, of essential sequences by site-directed mutagenesis. Analysis of the mechanism of induction of transcription by elicitors. Construction of resistance genes to degrade toxins.	Development of inducible gene expression systems with a wide host range for plants and plant cell cultures. Molecular mechanisms of the induction of gene expression by stress. Exploitation of these mechanisms for the construction of chimeric genes under stress control.
Key words:	Elicitor induction, Soybean chalcone synthase, Resistance genes, Induced transcription, UV-induction, Flavonoid genes, Plant productivity, Plant cell culture.					
Molecular biological approach to the control of beet yellows virus. (see p. 88)	R. HULL John Innes Institute Norwich (UK) J.BRUNSTEDT De Danske Sukkerfabrikker, Copenhagen (DK)	Virus resistance	Sugar Beet Beet Yellows-Virus (BYV)	Various parts of BYV genome. Unidentified sugar beet gene.	Elucidation of the genomic structure of BYV and of the modalities of viral expression. Construction of clones to give antisense RNA to the regions of BYV coding for each gene product. The same against model sugar beet genes. Transformation into beet cells with disarmed Ti-plasmid-derived vectors or through direct transformation.	Molecular biological approach to the control of beet yellows virus (BYV). An assessment of the capacity of BYV antisense RNA to inhibit the replication of the virus. Development of a transformation system for sugar beet.
Key words:	Beet yellows virus, Virus purification, Virus characterisation, Plant viruses, Antisense RNA, Virus resistance, Transient gene expression, CAT-Activity.					

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Lectins and ribosome inactivating proteins (R.I.P.) as pathogen and pest resistance factors in plants. (see p. 88)	R. CROY Univ. Durham (UK) F. STIRPE University Bologna (I)	Pathogen resistance Pest resistance	Saponaria officinalis Abrus precatorius Ricinus communis Phaseolus vulgaris Tobacco Spodoptera spp. Heliothis spp. Callosobruchus maculatus Anthonomus grandis	Genes coding for : Saponaria R.I.P. abrin ricin lectin	Bio-assays of various toxins. cDNA cloning of the various R.I.P.'s and lectins. Transformation of tobacco with toxin genes and bio-assays of transformed tissues. Structure/ toxicity relationship studies through controlled structural alterations.	Lectin and ribsome inactivating proteins (R.I.P.) as pathogen and pest resistance factors in plants.

Key words: Lectins, Ribosome inactivating proteins (RIPs), Pathogen resistance, Insect resistance, Pest pathogen resistance.

Development of methods for selection in vitro for resistance to pathogens. (see p. 89)	D. INGRAM University Cambridge (UK) M. BUIATTI University Bologna (I)	Pathogen resistance Somaclonal variation Regeneration	Brassica spp. Alternaria spp. Leptosphaeria maculans Sclerotinia sclerotorium Pyrenopeziza brassicae Plasmodiophora brassicae Carnation Tomato Potato Fusarium oxysporum Phytophtora infestans	Pathogen resistance	Selection with culture filtrates. Selection with pathotoxins. Selections with pathogen propagules. Identification of biochemical markers correlated with resistance.	Methods for the in vitro selection of novel disease resistance factors previously generated by in vitro cell manipulations (mutagenesis, somaclonal variation,...).

Key words: Brassica spp., Resistance, Selection, Tissue culture, Pathogens.

Apoplastic enzymes and biologically-active oligosaccharides as markers of early pathogenesis (see p. 89)	S. FRY University Edinburgh (UK) P. DE WIT Agric. Univ. Wageningen (NL)	Pathogen resistance Diagnostic	Tomato Cladosporium fulvum	Elicitors of phytoalexin synthesis. Triggers of the hypersensitive response	Chemical analysis of hydrolase activities and of biologically active oligosaccharides which evoke defence responses. Identification of marker substances that would predict the outcome of specific race/ cultivar encounters.	Molecular test for early infection at the level of apoplastic fluid from tomato leaf material. The test should be instrumental in exploring enzyme/substrate relations which direct the course of early pathogenesis.

Key words: Apoplast, Oligosaccharides, Pathogenicity, Glycosylhydrolases, Cell wall, Cladosporium fulvum, Apoplastic proteins/enzymes, Pathogenicity factors, Elicitors (race-specific), Mono/oligosaccharides.

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Analysis of the pathogenicity genes and mechanism of extracellular enzyme export in Erwiniae. Molecular biology of phytopathogenic Erwiniae. (see p. 90)	A.TOUSSAINT-POURBAIX U.L.B. Bruxelles (B) A.KOTOUJANSKY INA, Paris, (F) J.CHAMBOST CNRS, Marseille, (F) J.ROBERT-BAUDOUY INSA Villeurbanne (F) G. SALMOND University Warwick (UK)	Pathogen resistance	Potato Saint-Paulia Erwinia carotovora Erwinia chrysanthemi	Genes coding for extracellular enzymes involved in early pathogenesis. Other as yet unidentified pathogenicity genes.	Induction of non-pathogenic mutants, molecular cloning of the different mutations, gene characterisation. Structure, synthesis, regulation and export of extracellular enzymes. Characterisation of products of the secretary apparatus, and of other products of previously unidentified pathogenicity genes.	Investigation of the mechanism of plant disease caused by Erwinia through the combination of genetic, biochemical and molecular biological approaches.
Key words:	Erwinia, Pathogenicity, Transposons, Secretion, Pectinolysis, Erwinia chrysanthemi, Regulation, Cellulase, Sequencing, Enzyme export, Phytopathogenicity, Protein secretion, Molecular biology, Plant-bacteria-interactions.					
Comparison of late SYM genes in Rhizobium species and construction of improved strains. (see p. 91)	P. BOISTARD INRA, Castanet Tolosan (F) P. HIRSCH Rothamsted Exp. Stat. Harpenden (UK) M. O'CONNELL NIHE Dublin (IRL) A.PÜHLER/ U. PRIEFER University Bielefeld (D)	Symbiosis	Alfalfa Pea Faba bean Rhizobium meliloti Rhizobium leguminosarum Rhizobium phaseoli	Late SYM genes	Identification of late SYM genes by coordinated research on several organisms. Sequential cloning and deletion analysis of pSYM megaplasmid. Transposon mutagenesis to detect other chromosomal or plasmid genes. Exchanges of plasmid/chromosomal fragments between strains and species. Gene fusions to study gene expression.	Identification and study of expression of late symbiotic (SYM) genes in Rhizobium. Late SYM genes are supposed to control symbiotic efficiency of the association Rhizobium legume. Attempts at improving this efficiency by genetic engineering of late SYM genes and by achieving new combinations of these in interspecific hybrids are considered.
Key words:	Rhizobium meliloti, Fix genes, Regulation, Nitrogen fixation, Symbiotic plasmid, Symbiotic genes, DNA homology, Gene cloning, Interspecific complementation, Cell surface polysaccharides, Rhizobium leguminosarum, Late symbiotic genes, Nodulin genes, Soybean, Broad bean, Conserved regulation signals.					

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Regulation of expression of genes involved in biological nitrogen fixation. (see p. 92)	K. MARCKER University Aarhus (DK) A. PÜHLER University Bielefeld (D) M. VAN MONTAGU University Gent (B) J. SCHELL MPI Köln (D)	Symbiosis Control of gene expression	Soybean Faba bean Lotus corniculatus Sesbania rostrata	Nodulin genes Rhizobial activating signals.	Screening of DNA libraries with heterologous probes. Sequencing of the clones and characterisation of regulatory sequences. Functional studies through deletion analysis and heterologous expression in Lotus. Purification of factors specifically binding to regulatory regions. Effects of Rhizobial extracts on nodule activation in vitro. Development of improved vectors for transformation of legumes.	Regulation of both plant and bacterial genes involved in the formation of effective root nodules upon the establishment of symbiosis with Rhizobia. Identification of nodule specific DNA sequences, of components interacting with these sequences for gene activation, of Rhizobial signals triggering expression of nodule specific plant genes.
Key words:	Nitrogen fixation, Leghemoglobin, Nodulin, Regulation, Gene expression, Sesbania rostrata, Azorhizobium, Chloroplast, Chimeric genes.					
The transformation of chloroplasts with Agrobacterium tumefaciens and naked DNA. (see p. 93)	M.DE BLOCK Plant Genetic Systems, Gent (B) J. SCHELL/ P.SCHREIER MPI Köln (D)	Chloroplast Vector development	Tobacco	Streptomycin (Sm) resistance. Lincomycin (Ln) resistance. Chloroplast specific promoters (Ls RuBPCase, 32K protein)	Comparative appraisal of naked DNA transformation and Agrobacterium infection (organisation and stability of integrated DNA, sequences used for integration,..). Development of chimeric genes with chloroplast promoters. Isolation and characterisation of Sm and Ln genes. Behaviour of marker genes in transformants and progenies.	Development of a transfer system to engineer chloroplast DNA.
Key words:	Plastids, Transformation, Marker genes, Agrobacterium, Chloroplast transformation.					
Genetic transformation of plant mitochondria : development of a general strategy. (see p. 93)	C. LEAVER University Edinburgh (UK) J. SCHELL MPI Köln (D)	Mitochondria Vector development	Tobacco Maize Sorghum	Subunits I and II of cytochrome c oxidase (Cox I and II). Apocytochrome b (COB). Alpha-subunit of F1 ATP synthase (ATPA). CMS trait.	Characterisation of mitochondrial specific promoters. Development of chimeric constructs using the bacterial CAT marker gene. Analysis of location, structure and expression of the inserted CAT genes. Incorporation in mitochondrial vectors of sequences associated with the male sterility phenotype.	Construction of chimeric genes specifically active in the mitochondrial genome.
Key words:	Mitochondria, Transformation, Homologous recombination, Chloramphenicol selection, Plant mitochondria, Genetic transformation, Mitochondrial genes.					

TITLE	PROJECT LEADERS	SELECTED RESEARCH AREAS	TEST MATERIALS DONOR/RECIPIENT HOST/PATHOGEN	SELECTED TRAITS OR ENGINEERED GENES	METHODS	OBJECTIVE OF RESEARCH
Mitochondrial molecular genetics in relation to crop improvement. (see p. 94)	M. BRIQUET UCL, LLN (B) A. CORNU INRA, Dijon (F) D. DAVIES John Innes Institute Norwich, (UK) H. NIJKAMP Free University Amsterdam (NL) F. QUETIER Université Paris-Sud (F)	Mitochondria Vector development Cellular engineering	Petunia Wheat Maize Faba bean Sugar beet	Apocytochrome b Subunits I, II and III of cytochrome c oxidase. Subunits of the ATPase complex. CMS trait.	Structure and expression of the genome : cloning and comparison of sequences, identification of genes, isolation of origins of replication, promoters, enhancers, characterisation of plasmids and RNA containing particles. Transfer of mitochondria : by means of somatic hybridisation, of microinjection, of wide sexual crosses. Direct transformation : construction of mitochondrial vectors.	Elucidation of the structure and function of genetic systems of plant mitochondria. Methods to manipulate these genetic systems for crop plant improvement, with particular reference to cytoplasmic male sterility (CMS).

Key words: Cytoplasmic male-sterility, Plasmids, Mitochondrial transformation, Protoplasts, Faba bean, Wheat, Organelle DNA, Transfer of mitochondria, Virus-like particles, Nuclear atp genes, Sugar beet, Microinjection, Petunia hybrida, Lycopersicon (tomato), Replication origins (organelles), Selectable cell organelle marker, Cybridisation, Expression, Mitochondrial genome, Higher plants.

Pollen biotechnology in cultivated crops. (see p. 95)	M. CRESTI Univ. of Siena (I) C. DUMAS Univ. of Lyon (F) J.VAN WENT/ H. WILMS Univ. of Wageningen (NL)	Pollen biotechnology	Bi-celled pollen species : Tobacco Tomato Tri-celled pollen species : Wheat Maize Spinach Brassica sp Sugar beet Euphorbia	Gross biochemical (membranes, DNA, ..) and immunocytological (cell-surface changes) markers.	Male Germ Unit (MGU) characterisation in the in vivo conditions (cytokinetics of microgametogenesis, 3D-reconstruction,...) in vitro MGU characterisation (sperm cell isolation, viability, cytological and biochemical analysis,...) Identification of male/female recognition phenomena, towards the development of in vitro fertilisation techniques.	Investigations on plant reproductive biology, focussed on the pollen grain and the male germ unit (MGU). Transfer of knowledge from the understanding of in vivo conditions towards the development of in vitro techniques.

Key words: Pollen biotechnology, Reproductive biology, Pollen quality, Pollen storage, Male Germ Unit, Sperm cell isolation, Gametes.

TITLE	PROJECT LEADERS	BIOLOGICAL MATERIALS	GENES TO BE CLONED AND/OR STUDIED	OTHER GENETIC MANIPULATIONS
SECTOR 2.1. : Microorganisms/Genetic Engineering.				
Genetic manipulation of lactic acid bacteria for improved dairy fermentations. (see p. 97)	C. DALY Univ. College Cork (IRL) M.J. GASSON Food Res. Inst. Norwich (UK) M. TEUBER Bundesanstalt f. Milchforschung Kiel (D) W.M. DE VOS NIZO, Ede (NL) G. VENEMA Univ. Groningen (NL)	S. lactis S. cremoris E. coli B. subtilis Lactobacillus sp. Leuconostoc sp. B. subtilis	Proteinase (prt) genes. Determination of the nucleotide sequence of the SK11 proteinase (prt) gene and to compare it with those of various streptococcal strains. Phage resistant genes. Phospho-beta-galactosidase gene.	Study of promoter-operator sequences in streptococci. Bacteriophage resistance mechanisms and phage-host interactions. Manipulation by transposons Tn 916 and Tn 919 of the chromosomal DNA from lactic streptococci. Development of pCK vectors from S. lactis 712, as expression vectors. Enhancing of transformation by means of liposomes. Production of lactic streptococcal proteases by B. subtilis. Production of foreign (exo) proteins by lactic streptococci. Development of genetic systems for Lactobacillus Analysis of in vivo DNA rearrangements observed in the lactic streptococci.
Key words:	Lactic streptococci, Plasmid vectors, Proteinase, Gene cloning systems, Expression signals, Secretion, Sequence, Processing, Phage resistance, Phage receptors, Transposons.			
Construction of a baker's yeast secreting legume lipoxygenase during production of bread dough. (see p. 99)	R. CASEY John Innes Inst. Norwich (UK) D. VON WETTSTEIN Carlsberg Lab. Copenhagen (DK) A. PETERSEN Danish Distilleries Copenhagen (DK)	Pisum sativum	cDNA and genomic clones for pea lipoxygenase	Verification of integrity of cDNA by expression in a transcription plasmid Transfer of the lipoxygenase sequence to baker's yeast.
Key words:	Lypoxygenase, Pisum sativum, Bread-making, Baker's yeast, Legume, Wheat flour, Dough.			
Development of host-vector systems in dairy yeasts. (see p. 98)	L. FRONTALI Univ. Roma (I) H. FUKUHARA Inst. Curie Orsay (F) C.P.HOLLENBERG Inst. Mikrob. Düsseldorf (D)	K. drosophilarum K. lactis Kluyveromyces sp. S. cerevisiae Other yeast species	Various genes from Kluyveromyces lactis	Genetic and functional organisation of the pKD1 plasmid (sequencing, transcript mapping for gene identification, etc). Construction of expression vectors for K. lactis. Characterisation of other Kluyveromyces plasmids. Study of plasmid stability.
Key words:	Transformation, Gene vectors, Plasmids, Kluyveromyces, Dairy yeast, Yeast, pKD1.			
Engineering of Gram-negative bacteria with industrial potential. (see p. 102)	I. DAVISON ICP Brussels (B) B. WITHOLT Biotech. Cent. Groningen (NL)	Gram-negative micro-organisms : Xanthomonas Alcaligenes Acetobacter Rhodopseudomonas Pseudomonas sp.	alk promoter (inducible by alkanes) and alkyl sulphatase promoter (inducible by SDS). Genes involved in lignin and detergent degradation and cloning in methylotrophs.	Development of a cloning vector based on a 1.5 Kb cryptic plasmid from Pseudomonas. Introduction of the alk regulator in a variety of gram-negative bacteria, namely : Xanthomonas, Alcaligenes , Acetobacter, and Rhodopseudomonas.
Key words:	Pseudomonas, Methylotroph, Lignin, Vanillate, Repressor, Alkane oxidation, Multiphase catalysis, Hydroxylase, Cell engineering.			

TITLE	PROJECT LEADERS	BIOLOGICAL MATERIALS	GENES TO BE CLONED AND/OR STUDIED	OTHER GENETIC MANIPULATIONS
Development of host-vector systems in clostridia of industrial and agricultural importance. (see p. 103)	N.P. MINTON CAMR Porton Down (UK) W.L.STAUDENBAUER Techn. Univ. München (D) M. YOUNG University College Wales Aberystwyth (UK)	Several Clostridium sp. E. coli B. subtilis S. lactis S. aureus	Promoter of ferredoxin gene of C. pasteurianum. Promoters of a-amylase and glucamylase of C. acetobutylicum and C. thermohydrosulfuricum. Chloramphenicol acetyltransferase thermostable gene of S. aureus, in C. thermohydrosulfuricum.	Study of the replication of clostridial plasmids. Protoplast transformation of C. acetobutylicum and C. pasteurianum. Transfer of Tn916 into C. acetobutylicum genes, leading to insertional mutagenesis. Transfer of genes for cellulose and starch degradation from thermophilic clostridia to C. thermohydrosulfuricum. Improvement of ethanol production in C. thermohydrosulfuricum by increase of product tolerance and elimination of competing fermentation pathways.
Key words:	Clostridium acetobutylicum, Ferredoxin, Plasmid pAMB1, Replicon, Cointegration.			
Studies of segregational and structural plasmid stability in B. subtilis. (see p. 104)	K.M. DEVINE Trinity College Dublin (IRL) S.D. EHRLICH Inst. Jacques Monod Univ. Paris (F)	Bacillus subtilis	Many recombinant DNA techniques will be used in the project.	Development of a stable inducible high copy number replicon, based on plasmid pBA1. Isolation of the partition locus of pBA1. Development of thermo-inducible promoter systems (heat shock promoter and promoters with temperature sensitive repressors. Recombination via ssDNA, large amounts of ssDNA are generated during plasmid replication. Recombination at interruptions of one DNA strand (nicks).
Key words:	Plasmid stability, Plasmid segregation, DNA rearrangements, Recombination.			
Genetic manipulation of the anaerobe Zymomonas mobilis for fermentation of fruit juices. (see p. 101)	G. DRAINAS Univ. Ioannina (G) M.A. TYPAS Univ. Athens (G) H. SAHM Jülich (D)	Zymomonas mobilis Aspergillus awamori E. coli	Genes coding for enzymes which reduce sorbitol, raffinose or maltose will be transferred to Z. mobilis. Controlling sequences of the pyruvate decarboxylase (pdc) gene. Glucoamylase gene from Aspergillus awamori, first in E. coli and thereafter in Z. mobilis.	Optimisation of the transformation conjugation system of Z. mobilis. Development of a protoplast fusion technique to construct hybrids that ferment different carbohydrates. Strains construction by mutagenesis and mutant enrichment. Construction of specialised transducing phage lines. Tests of new strains for ethanol production.
Key words:	Zymomonas mobilis, Ethanol production, Transformation, Plasmids, Zymomonas genetics, Ethanol tolerance, Glutamine uptake, Zymomonas strain construction.			

TITLE	PROJECT LEADERS	BIOLOGICAL MATERIALS	GENES TO BE CLONED AND/OR STUDIED	OTHER GENETIC MANIPULATIONS
Genetic regulation of yeast glycolysis. (see p. 99)	F.K. ZIMMERMANN Tech. Univ. Darmstadt (D) B.S. HARTLEY Imperial College London (UK) D.J. McCONNELL Trinity College Dublin (IRL)	Saccharomyces cerevisiae Escherichia coli	Structural (PDC1) and regulatory genes PDC2 and PDC4) of pyruvate decarboxylase. Genes BYP1, BYP2, BYP3 involved in a alternative pathway in glycolysis	To study the genetic control sites of the genes which mediate switches in carbon metabolism (e.g. (PDC1) by in vitro mutagenesis in two stages. First, deletions will be constructed to obtain a general map of the control sites. Second, point mutations will be introduced in the genetic control sites. To study the alternative pathway in glycolysis that bypasses the phosphofructo kinase reaction (PFK) in vivo. Nuclear Magnetic Resonance (NMR) will be used. This should enable the measurement of the metabolic intermediates which accumulate when the three genes required for the new pathway BYP1, BYP2 and BYP3 are mutated. To develop methods combining NMR spectroscopy with continuous culture to determine changes in the detailed physiological state of yeast strains as they pass from respiratory to fermentative growth.
Key words:	Pyruvate decarboxylase, Glycolysis, Phosphofructokinase, Yeast.			
Genetic engineering and transposon mutagenesis in amino acid producing corynebacteria. (see p. 103)	J.F. MARTIN Univ. Leon (E) L.K. DUNICAN Univ. Galway (IRL)	Brevibacterium lactofermentum Corynebacterium glutanicum E. coli	Cloning of genes for amino acid biosynthesis in corynebacteria. Cloning of promoters and characterisation of the replication origin of pBL1.	Construction of highly efficient plasmid vectors (by inserting antibiotic resistance genes and strong homologous and heterologous promoters). Molecular mechanisms of expression of cloned genes and amplification of the expression. Removal of feedback regulatory mechanisms and enzyme bottlenecks. Plasmids delivery systems for Corynebacterium glutanicum. Transposon mutagenesis.
Key words:	Cloning vectors, Amino acids, Promotor, Plasmid, Corynebacteria.			
Genetic and molecular biology of Streptomyces : mapping, plasmids, instability and MLS-resistance. (see p. 100)	H. SCHREMPF Lehrstuhl für Mikrobiologie München (D) M. GUERINEAU Univ. Paris XI Orsay (F)	Streptomyces sp. Escherichia coli	Resistance to macrolide antibiotics (oleandomycin, cirramycin, chalcomycin) Amplified sequences. Resistance determinants to Spiramycin. The project involves extensively gene cloning techniques.	To develop specific vectors from plasmid pSAM2 from S. ambofaciens to study the amplification of chromosome sequences involved in genetic instability. To map auxotrophic markers of S. ambofaciens, and to locate the integration site of pSAM2.
Key words:	Streptomyces, Macrolide antibiotics, Antibiotic resistance, Amplifiable DNA sequences.			
Development of a gene mediated transfer and selection system for filamentous fungi. (see p. 101)	J.R. KINGHORN Univ. St. Andrews (UK) H.P. POUWELS Medical Biological Lab. TNO Rijswijk (NL) W. FIERS University of Gent (B)	Aspergillus oryzae Aspergillus niger Neurospora crassa E. coli Penicillium chrysogenum	General cloning for filamentous fungi. The isolation of fungal promoter terminator and secretion signals. The development of a gene transfer systems.	Isolation of fungal nitrate reductase and glucoamylase genes by cross-hybridisation. The functional expression of mammalian genes in filamentous fungi.
Key words:	Filamentous fungi, Transformation systems, Nitrate assimilation, Heterologous expression, Fungal gene structure, Fungal transformation, Aspergillus oryzae, Nitrate reductase, Recombinant DNA.			

SECTOR 3.1 : Yield & Stability during continuous culture of microorganisms.

OBJECTIVES OF RESEARCH	PROJECT LEADERS	BIOLOGICAL MATERIALS	GENES TO BE CLONED AND/OR STUDIED	OTHER GENETIC MANIPULATIONS
Study of baker's yeast growth and product formation in view of industrial applications. (see p. 105)	M. GRENSON Univ. Libre Bruxelles (B) P. GERMAIN Inst. Nat. Polytech de Lorraine (F)	Saccharomyces cerevisiae	Metabolite export in genetically manipulated strains	Strain construction by both classical and recombinant DNA techniques. Kinetics and physiology of growth and of product formation in batch and continuous cultures. Optimisation and automation of the fermentation process.
Key words:	Recombinant DNA, Yeast, Fermentation, Transport.			
Environmental control of metabolic fluxes as a basis for biotechnological processes. (see p. 105)	D.W. TEMPEST Univ. Sheffield (UK) W. HARDER Univ. Groningen (NL)	Bacillus stearothermophilus Methylotrophic bacilli	Development of basic cloning techniques for methylotrophic bacilli. (Transformation, expression of foreign genetic elements, etc.).	To investigate the metabolic behaviour of B. stearothermophilus in both, carbon substrate limited, and carbon substrate sufficient chemostat culture, to examine quantitatively patterns of regulation of carbon substrate, metabolism and to asses their bioenergetic consequences To extend the available number of endorpose-forming methylotrophes and conduct a preliminary characterisation of their metabolic potential and taxonomic position.
Key words:	Bacillus, Continuous culture, Cloning vectors, Methylotrophic bacilli.			

RISK ASSESSMENT

TITLE	PROJECT LEADERS	ORGANISM TESTED	HAZARD TESTED	METHODOLOGY	OBJECTIVES OF RESEARCH
Assessment of environmental risks and containment of biotechnological scale up processes. (see p. 106)	G. LEAVER Warren Spring Laboratory Stevenage (UK) I. ROUSSEAU TNO, Zeist (NL)	Bacillus subtilis v. niger	Release from process plants of microorganisms.	Environmental monitoring : developing of internal standards and selection of suitable methods. Unit operation testing : design and construction of test rigs. Targeting : testing procedures to validate integrity of process components unit operation.	Containment of biological scale up processes. Evaluation of current aerobiological monitoring methods. Identification of problematic components of bioprocessing.
Key words:	Biotechnology risk assessment, Aerobiological Monitoring, Rapid detection, Containment, Droplet size measurement.				
Assessing the risks involved in the release of genetically manipulated microorganisms. (see p. 106)	N. AMARGER INRA, Dijon (F) KLINGMÜLLER W., Univ. Bayreuth (D) P. HIRSCH Rothamsted Exp. Station Harpenden (UK)	Rhizobium leguminosarum Rhizobium meliloti Enterobacter agglomerans	Release in soil and monitoring of manipulated Rhizobium. Release and monitoring of manipulated E. agglomerans.	Inoculation of host plant pea with R. leguminosarum. Search for the presence of markers. Genetic manipulation, release and monitoring of manipulated bacteria inoculated in fields. Selection of antibiotic resistance markers.	Assessing of risks involved in release. Testing release of Rhizobium in french soil. Monitoring persistence of manipulated bacteria in agricultural soils. Construction of manipulated Rhizobium leguminosarum.
Key words:	Rhizobium, Symbiotic plasmid, Enterobacter, Nif genes, Tn5, Releasing of bacteria, Plasmid transfer, Environmental release, Gene-transfer.				
Risk assessment: Field release of genetically manipulated baculoviruses. (see p. 107)	P. ENTWISTLE NERC Inst. of Virology (UK) J. HUBER Biol. Bundes-Anstalt Land- & Forstwiss. Darmstadt (D)	Baculoviruses Panolis flammea Mamestra brassicae	Release and monitoring of manipulated baculoviruses.	Insertion of marker nucleotide in insect virus genome. Preparation of polyhedrin minus virus. Release of genetically engineered "marker" virus into a model ecosystem, study of its dissemination and degradation.	Field release of genetically manipulated insect virus. Control of agricultural (forest) pests.
Key words:	Risk assessment, Baculoviruses, Marker virus release, oligonucleotide marker, controlled release.				

TITLE	PROJECT LEADERS	TEST MATERIAL (DONOR, RECIPIENT)	GENE ENGINEERED	METHODS
SECTOR 2.6. : Genetic engineering for animal husbandry.				
Genetic analysis and biologic assessment of virulence determinants of Staphylococcus aureus. (see p. 108)	T. FOSTER Trinity College Dublin (IRL) A. BRAMLEY IRAD Compton (UK)	Staphylococcus aureus to E. coli or Bacillus subtilis or St. aureus	Protein A Coagulase Beta-hemolysin	Cloning of virulence genes and site directed mutagenesis.
Key words :	Staphylococcus aureus, Mastitis, Alpha-toxin, Coagulase, Protein A, Virulence, Toxins, Neutrophils, Staphylococci.			
The development of transgenic animals (including fish) with novel characteristics. (see p. 111)	F. GANNON University College Galway (IRL) J. SREENAN Agric. Institute Galway Belclare (IRL) L. HOUDEBINE INRA Jouy en Josas (F) V. NIGON Université de Lyon (F)	Bovine, sheep, Salmon Trout, Rabbit Mouse Chicken	Bovine growth hormone Salmon growth hormone E. coli Beta-galactosidase Candida lipolyticus Delta-12 desaturase	Microinjection in eggs. Retrovirus.
Key words:	Transgenic, Cattle, Salmonids, Promoters, Growth hormone, Pronucleus, Microinjection, Bovine, Fish, Transgenic fishes, Transgenic rabbits, Rabbit milk protein genes, Retrovirus, Vectors, Chicken, Helper.			
Gene cloning of Brucella antigens which as vaccines do not interfere with a specific diagnosis. (see p. 112)	G. DUBRAY INRA Tours (F) J. LIMET MEXP/ICP Bruxelles (B)	Brucella abortus or Brucella melitensis to E. coli	Smooth lipopolysaccharide Proteins 25-27 K, 31K and 36-38 K A2 antigen	Cloning in E. coli.
Key words:	Brucella, Antigens, Genes, Vaccine.			
Non-group A rotaviruses : characterisation contribution to disease and vaccine construction. (see p. 108)	M. McCRAE University of Warwick Coventry (UK) J. COHEN INRA Grignon (F)	Rotavirus E.coli	Viral proteins	Cloning in E. coli DNA probes.
Key words:	Rotaviruses, Non-group A rotaviruses, Viral vaccines, Viral gastroenteritis.			
Linear plasmids and artificial chromosomes as vectors for gene transfer in eukaryotes. (see p. 115)	P. DONINI Università di Roma (I) H. LIPPS Univ. Tübingen (D) C. BOSTOCK IADR Pirbright (UK)	Xenopus laevis yeast mammalian cells E. Coli Ciliated protozoa e.g.Tetrahymena Stylonychia Animal viruses e.g.BPV, EBV	Eukaryotic telomeres and origins of replication	Production of linear vectors derived from Coturnix japonica DNA, yeast plasmids, viral DNAs and Tetrahymena DNA.
Key words:	Linear plasmids, Artificial chromosomes, Gene transfer, Eukaryotic vectors.			

TITLE	PROJECT LEADERS	TEST MATERIAL (DONOR,RECIPIENT)	GENE ENGINEERED	METHODS
Production of glycopolypeptide antigens of porcine transmissible gastroenteritis virus (TGEV). (see p. 115)	D. GARWES AFRC, Newbury (UK) S. GASCON Univ. de Oviedo (E)	Transmissible gastroenteritis virus (of pig) E. coli yeast vaccina virus	Glycopolypeptide and structure protein genes	cDNA cloning and sequencing E. coli/yeast/ vaccina virus vectors. Monoclonal antibodies.
Key words:	Virus, Gastroenteritis, TGE, Vaccine, Epitope, Glycosylation, Yeast, Pigs.			
Genetically engineered vaccines against porcine and bovine herpes viruses. (see p. 114)	H.RZIHA, G. KEIL Bundesforschungsanstalt für Viruskrankheiten der Tiere, Tübingen (D) J. VAN OIRSCHOT Centr. Diergenees-kundig Inst. Lelystad (NL)	Pseudorabies virus (pig, mouse) Bovine Herpes Virus 1 E. coli	Viral proteins	DNA sequencing Expression in E. coli.
Key words:	Herpesviruses, Pseudorabies, BHV-1, Glycoproteins, DNA-recombinant, Monoclonal antibodies, Immunogenicity, Virulence.			
Evasion of African Swine Fever Virus from the immune system; search for an antigen able to induce a neutralizing antibody. (see p. 116)	E. VINUELA Univ. Autonoma de Madrid (E)	African swine fever virus Pigs E. coli	viral proteins	Identification of viral proteins Monoclonal antibodies gene mapping of the virus.
Key words:	African swine fever, Genetic variation, Neutralising antibodies, Critical antigens, Immune evasion.			
Parvovirus-based linear animals vectors for production of vaccines and other useful proteins. (see p. 111)	A. FALASCHI CNR Pavia (I) J. ROMMELAERE ULB Bruxelles (B) D'OULTREMONT SOLVAY S.A. Bruxelles (B)	Human cells HL60 Parvovirus E. coli Yeast	Chicken parvovirus antigen	Production of a linear vector derived from mammalian DNA and parvoviruses.
Key words:	Linear vector, Replication origins, Parvoviruses, Oncolysis, Linear eukaryotic vector.			
Baculovirus expression vectors for animal virus vaccines. (see p. 109)	P. ROY NERC Oxford (UK) A. FLAMAND CNRS Gif-sur-Yvette (F)	Bluetongue and rabies virus Baculovirus cultivation on Autographa californica	Antigens of Bluetongue virus Antigens of rabies	Engineering of Baculovirus cultivated on insect cells (Autographa californica).
Key words:	Bluetongue virus vaccines, Rabies virus, Subunit vaccine, Glycoprotein gene, Baculovirus expression vector.			
High level expression of foot and mouth disease virus antigens using a Baculovirus vector. (see p. 113)	A. KING IADR Pirbright (UK) J. VLAK Landbouwuniversiteit Wageningen (NL)	Foot-and-Mouth Disease virus Baculovirus Cells of Spodoptera frugiperdor	Capsid proteins of Foot-and-Mouth Disease virus	Engineering of Baculovirus (Autographa-californica) in cultivated insect cells.
Key words:	Foot-and-Mouth Disease (virus), Expression, Baculovirus, Capsid, Proteases, Subunit vaccines, High-level expression.			

TITLE	PROJECT LEADERS	TEST MATERIAL (DONOR,RECIPIENT)	GENE ENGINEERED	METHODS
Molecular mechanisms of liver specific gene expression and production of proteins of medical interest. (see p. 109)	C. BABINET, M. WEISS M. YANIV Institut Pasteur Paris (F) G. CILIBERTO Università di Napoli (I) R. CORTESE EMBL Heidelberg (D)	Man, rat and mouse Hepatic cells (hepatomas)	Serum proteins and various liver proteins Oncogenes myc and ras	Microinjection of fertilised eggs of mouse.
Key words:	Acute phase, c-reactive protein, Transgenic animals, Inducible promoter, Hepatocyte stimulating factors, Plasmaproteins, Gene expression, Protein overproduction, Liver, Albumin, Hepatoma cells, Transfection, Transcription factors.			
Hepatitis B surface antigen particle as a carrier for presentation of Foot-and-Mouth Disease virus antigens. (see p. 113)	P. POUWELS TNO Rijswijk (NL) K. MURRAY University of Edinburgh (UK) F. BROWN Wellcome Pirbright, Woking (UK)	Food and Mouth Disease virus Yeast Animal cells Hepatitis B virus E. coli	Viral protein VP1	Cloning of protein VP1 of FMDV in the surface antigen region of Hepatitis B virus.
Key words:	Vaccine, FMDV, Hepatitis, Recombinant DNA, Immunogen.			

TITLE	PROJECT LEADERS	TEST CELLS (SPECIES, TYPE OF CELLS)	TECHNOLOGY
Sector 3.3. : Novel technologies of animal cells culture.			
Biochemical-physical knowledge, control, optimization of animal cell cultures in bioreactors. (see p. 117)	K. SCHÜGERL Universität Hannover (D) J. LEHMANN GBF Braunschweig (D) P. NABET Université de Nancy (F) J. ENGASSER Institut National Polytechnique de Lorraine Nancy (F) J. HACHE Soc. Bertin & Cie Plaisir (F)	Baby hamster kidney cells Hybridoma Normal pituitary cell	Suspended cells or hollow fiber reactors Low intensity ultrasonic field New markers to evaluate the physiological status of cells in a reactor.
Key words:	Animal cells, Shear forces, Pressure load, Hydrodynamic stress, Interfacial forces, Membrane stirrer, Bubble free oxygenation, Carrier mixing, Reactor scale up, Eukaryotic cell culture, Enzymatic markers, Metabolism markers, BHK cells, Microcarriers, Kinetics, Bioreactor, Aeration, High density, Ultrasound, Hybridoma.		
Novel techniques to produce pig IgA Hybridomas. (see p. 116)	A. PARAF INRA Nouzilly (F) C. STOKES University of Bristol (UK) D. SAGE Université de Lyon (F)	Pig and mouse Leukocytes and spleen cells.	Isolation of immunocompetent cells on plastics microinjection and electroporation of transforming genes.
Key Words:	Mucosal immunology, Pig, Vaccine, IgA, GALT.		
New methodology in cultures of human tumour cells. (see p. 117)	P. COMOGLIO Dept. of Biomedical Sciences University of Torino (I) S. FISCHER INSERM Paris (F)	Human epithelial & mesenchymal tumour cells	Detection of new growth factors and growth factor receptors.
Key words:	Growth factors, Receptors, Tyrosine kinases, Cell adhesion, Transformed cells, Cellular onc.		

TITLE	PROJECT LEADERS	TEST CELLS (SPECIES, TYPE OF CELLS)	TESTED SUBSTANCES	ACTIVITY TESTED
Sector 3.4. : In vitro toxicology and pharmacology.				
Nephrotoxicity mechanisms using kidney perfusions and animal and human renal tissue and cells. (see p. 119)	P. BACH Robens Institute Guildford (UK) H. STOLTE Med. Hochschule Hannover (D)	Rat, fish, pig, man Kidney (organ perfused, tissue slices, cells)	Hexachlorobutadiene N-acetyl-cysteine paracetamol puromycin aminonucleoside adriamycin 2-bromo-ethanamine N-phenylanthranylic acid	Nephrotoxicity
Key words:	Nephrotoxicity, Perfused Kidney, Renal tissue slices, Cultured renal cells, Cell lines, Histochemistry, Immunohistochemistry, Renal function, Biochemistry, Animal tissue, Human tissue.			
Reconstruction in vitro of human skin for pharmacological and toxicological studies. (see p. 119)	L. DUBERTRET Hôpital H. Mondor Créteil (F) C. LAPIERE Hôpital de Bavière Liège (B) T. KRIEG Univ. München (D) M. GREAVES St. Thomas Hospital London (UK) R. MARKS University Wales Cardiff (UK)	Man skin cells : keratinocytes, fibroblasts, melanocytes, etc.	Growth factors (insulin, leukotriene B4, 12 HETE, PDGF). Drugs effective in psoriasis (corticosteroids, retinoids, anthraline derivatives).	Trophic effects on skin. Anti psiorasis drugs.
Key words:	Skin, Epidermis, Dermis, Tissue culture, Cell biology, Pharmacology, in vitro, Toxicology.			
Altered immune gene expression as a new approach to in vitro immunotoxicological screening. (see p. 122)	K. MILLER BIBRA Carshalton (UK) A. VECCHI Ist. Mario Negri Milano (I)	Mouse Peritoneal macrophages & splenic T cells	Immunomodulating agents : cyclosporin A, mafosfamide, gelonin, biostim.	Immunoregulation at molecular functional levels.
Key words:	Immune, Toxicology, In vitro, In vivo.			
In vitro screening for anticonvulsant teratogenesis in neural primary cultures and cells lines. (see p. 120)	C. REGAN University College Dublin (IRL) A. SCHOUSBOE Univ. Copenhagen (DK)	Primary and tumour cells, clonal cell lines : neuro 2A and C6	Anticonvulsants	Neural teratogenesis, cytotoxicity (LDH release), anti-mitotic (thymidine incorporation), differentiation, adhesivity.
Key words:	Anticonvulsants, Cell culture, Glia, Neurons, Teratogenesis.			

TITLE	PROJECT LEADERS	TEST CELLS (SPECIES, TYPE OF CELLS)	TESTED SUBSTANCES	ACTIVITY TESTED
New in vitro integrated approach to pharmaco-toxicology and metabolism in cancer chemotherapy. (see p. 121)	M. CLYNES School Biol. Sciences Dublin (IRL) J. CANO Faculté Pharmacie Marseille (F) M. ROBERFROID UCL Bruxelles (B)	Cell cultures from human tumours, cell lines of tumour origin. Isolated hepatocytes, liver and kidney slices.	Anti-tumour drugs and metabolites	Cytotoxicity (kidney, liver), growth inhibition of tumour cells, growth factors production.
Key words:	Pharmacology, Toxicology, Drug metabolism, Human hepatocytes, Primary human cell cultures Kidney slices, Liver slices, Cancer chemotherapy, in vitro.			
The effect of neuroactive drugs on neuroendocrine function using incubated hypothalamus and pituitary tissues in vitro. (see p. 122)	M. JONES St. Thoma's Hospital Medical School London (UK) C. KORDON INSERM Paris (F)	Rat and guinea-pig Perfusion of hypothalamus, perifusion of pituitary fragments, culture of pituitary tumour cells.	Messengers, either intracellular (polyamins) or intercellular (neuropeptides, neurotransmitters)	Secretion of hypothalamus (releasing factors) and hypophysis.
Key words:	Perfused hypothalamus, Perfused pituitary, Messengers, Neuroactive drugs.			

LIST OF RESEARCH CONTRACTS IN THE BIOTECHNOLOGY ACTION PROGRAMME (1985-1989)

BIOTECHNOLOGY ACTION PROGRAMME (1985-1989)

SUBPROGRAMME : I

CONTEXTUAL MEASURES

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme I - CONTEXTUAL MEASURES

Sector 1.1 : Data Capture

Electrophoresis of proteins : Data capture, analysis and construction of databanks.

BAP - 0138 - B (01/07/86-31/12/89)
K. KERSTERS
Rijksuniversiteit Gent
Lab. voor Microbiologie
K.L. Ledeganckstraat 35
B - 9000 GENT

TEL. +32.91.227821 EXT.442

BAP - 0133 - UK (01/07/86-31/12/89)
L.R. HILL
National Collection of Type Cultures
Central Public Health Laboratory
61 Colindale Avenue
UK - LONDON NW9 5HT

TEL. +44.1.2004400 EXT.3707/3708
TX. 8953942 DEFEND G

BAP - 0142 - UK (01/07/86-31/12/89)
M.J. DUNN
Jerry Lewis Muscle Research Centre
Royal Postgraduate Medical School
DuCane Road
UK - LONDON W12 OHS

TEL. +44.1.7432030 EXT.2124
TX. 8951182 GECOMS G

BAP - 0145 - F (01/07/86-31/12/89)
R.G. WHALEN
Institut Pasteur
Dept. of Molecular Biology
25, rue du Dr. Roux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688483
TX. 250609 PASTEUR F

WITH THE PARTICIPATION OF :
R. HILLS
Joyce-Loebl
Marquisway
Team Valley Trading Estate
UK - GATESHEAD,
TYNE & WEAR NE11 OQW

TEL. +44.91.4822111 EXT.32
TX. 53257

AND

K. SMITH
Queen Mary College
DAP Support Unit
Computer Centre
Mile End Road
UK - LONDON E1 4NS

TEL. +44.1.9804811
TX. 893750
EASYLINK 19019285

Automation of DNA sequencing.

BAP - 0029 - UK (01/07/86-31/12/89)
M.S. BECK
Manchester Biotechnology Centre
UMIST - Dept. of Instrumentation
and Analytical Science
P.O. BOX 88
UK - MANCHESTER M60 IQD

TEL. +44.61.2363311 EXT. 2589/2123
TX. 666094 UMIST G

BAP - 0135 - D (01/07/86-31/12/89)
F.M. POHL
Universität Konstanz
Fakultät für Biologie
Postfach 5560
D - 7750 KONSTANZ

TEL. +49.7531.882134
TX. 733359 UNIV D

BAP - 0035 - UK (01/07/86-31/12/89)
J.E. BATEMAN
Rutherford Appleton Laboratory
Chilton
UK - DIDCOT, OXON OX 11 OQQ

TEL. +44.235.21900 EXT.6262/6614
TX. 83159

BAP - 0036 - D (01/07/86-31/12/89)
R. MASSEN
Transfer Centre for Image Data
Processing - TCIDP
Reichenaustrasse 81c
D - 7750 KONSTANZ

TEL. +49.7531.57502
TX. 733459 TZKN D

Structural basis of specificity and affinity in antigen-antibody reactions.

BAP - 0221 - F (01/04/87-31/12/89)
R.J. POLJAK
Institut Pasteur
25, rue du Dr. Roux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688610
TX. 250609 PASTEUR F

BAP - 0222 - UK (01/04/87-31/12/89)
S.E.V. PHILLIPS
University of Leeds
Astbury Department of Biophysics
UK - LEEDS LS2 9JT

TEL. +44.532.431751 EXT.7581
TX. 556473

BAP - 0223 F (01/04/87-31/03/90)
G. BRICOGNE
L.U.R.E.
Bâtiment 209 C
F - 91405 ORSAY CEDEX

TEL. +33.1.64468130
TX. 690369 LALORS F

WITH THE PARTICIPATION OF :
C. MILSTEIN
MRC Molecular Biology Lab.
Hills Road
UK - CAMBRIDGE CB2 2QH

TEL. +44.223.248011 EXT.248
TX. 81532 MRCLMB G

Three-dimensional and super-resolution scanning analytical laser microscopy.

G.J. BRAKENHOFF
University of Amsterdam
Dept. of Electron Microscopy
and Molecular Cytology
Plantage Muidergracht 14
NL - 1018 TV AMSTERDAM

TEL. +31.20.5252189
+31.20.5252187

BAP - 0293 - NL
MULTI PARTY CONTRACT
(01/07/87-31/12/89)

E.R. PIKE
King's College
Physics Department
The Strand
UK - LONDON WR2R 2LS

TEL. +44.1.8365454 EXT. 2156

M. BERTERO
University of Genova
Dipartimento di Fisica
Via Dodecaneso 33
I - 16146 GENOVA

TEL. +39.10.5993221
TX. 211154

W.A. LINNEMANS
State University of Utrecht
Dept. of Molecular Cell Biology
Padualaan 8
NL - 3548 CH UTRECHT

TEL. +31.30.533349

M.J. DOWNS
National Physical Laboratory
Div. of Mechanical and Optical Metrology
UK - TEDDINGTON TW11 OLW

TEL. +44.1.9773222 EXT.3103
TX. 262344

K.H. SCHADE
Ernst Leitz Wetzlar GmbH
D - 6330 WETZLAR

TEL. +49.6441.292270
TX. 483849 LEIZ D

D.J. CLARKE
Microbial Technology Laboratory
UK - PORTON DOWN, SALISBURY SP4 OJG

TEL. 44.980.610391 EXT.454
TX. 47683 PHCAMR G

A European network of microbial culture collection databanks : integrated catalogue.

BAP - 0005 - NL (01/01/86-31/12/87)
N.A.A. SCHIPPER
Centraalbureau voor Schimmelcultures
P.O. BOX 273
NL - 3740 AG BAARN

TEL. +31.2154.11841

BAP - 0134 - B (01/04/86-31/03/90)
J. DE BRABANDERE
Services de Programmation de la
Politique scientifique
8, rue de la Science
B - 1040 BRUXELLES

TEL. +32.2.2304100
TX. 24501 PROSCI B

BAP - 0004 - UK (01/01/86-31/12/87)
D.L. HAWKSWORTH
CAB - International Mycological
Institute
Ferry Lane
UK - KEW, SURREY TW9 3AF

TEL. +44.1.9404086
TX. 847964 COMAG G (mark "ATTN CMI")
Telecom Dialcom Gold 84: CAU009

BAP - 0003 - D (01/04/86-31/12/89)
D. CLAUS
Deutsche Sammlung von Mikroorganismen - DSM
Gesellschaft für Biotechnologische
Forschung mbH
Mascherorder Weg 1
D - 3300 BRAUNSCHWEIG

TEL. +49.531.61870
TX. 952667 GEBIO D

BAP - 0193 - P
N.J. VAN UDEN (01/03/87-31/12/89)
Gulbenkian Institute of Science
Apartado 14
P - 2781 OEIRAS CODEX

TEL. +35.1.2431436 EXT.397

Research and diffusion for a portable European system of access and analysis of biosequences.

BAP - 0136 - F (01/07/86-31/12/89)
J.F. SALLANTIN
Centre de Recherche en
Informatique de Montpellier
U.A. C.N.R.S. no. 815
860, rue de Saint Priest
F - 34100 MONTPELLIER CEDEX

TEL. +33.67630460 EXT. 324

BAP - 0137 - IRL (01/07/86-31/12/89)
P.M. SHARP
Trinity College
Dept. of Genetics
IRL - DUBLIN 2

TEL. +353.1.772941 EXT.1035
TX. 25442 TCD EI

Protein sequence data bank.

BAP - 0224 - D (01/06/87-31/05/90)
H. W. MEWES
Max-Planck-Institut für Biochemie
Am Klopferspitz
D - 8033 MARTINSRIED

TEL. +49.89.8578 EXT.2386
TX. 521740 MPIBD

Simulation of an enzymatic process using an immobilized biocatalyst.

BAP - 0034 - NL (01/07/86-31/12/89)
W.J. DE WIJN
Stamicarbon B.V.
P.O. BOX 53
NL - 6160 AB GELEEN

TEL. +31.4490.65417
TX. 36058 DSM NL

BAP - 0033 - D (01/07/86-31/12/89)
H.J. LEPERS
Fachhochschule Aachen
FB 3 - Chemieingenieurwesen
Kurbrunnenstrasse 22
D - 5100 AACHEN

TEL. +49.241.806537
+49.241.806500

Advanced monitoring and computer control of biotechnological processes.

BAP - 0030 - F (01/07/86-31/12/89)
A. CHERUY
Laboratoire d'Automatique
E.N.S.I.E.G. - I.N.P.G.
B.P. 46
F - 38402 ST. MARTIN D'HERES

TEL. +33.76448245
TX. 320205 F

BAP - 0032 - B (01/07/86-31/12/89)
G. BASTIN
Université Catholique de Louvain
Bâtiment Maxwell
Place du Levant 3
B - 1348 LOUVAIN-LA-NEUVE

TEL. +32.10.432591
TX. 59315 TELHY B

BAP - 0031 - F (01/07/86-31/12/89)
B. PERRET
INRA - Centre de Biotechnologie
Agro-Industrielle - L.G.P.B.A.
F - 78850 THIVERVAL-GRIGNON

TEL. +33.1.30544510
TX. 697388 F

BAP - 0162 - I (01/07/86-31/12/89)
A.G. ROZZI
IRSA - CNR
Via de Blasio 5
I - 70123 BARI

TEL. +39.80.372015
+39.80.372099
TX. 810350 IRSA BA

Fermentor modelling for automatisation and optimal process control.

BAP - 0194 - F (01/02/87-31/12/89)
B. RAYMOND
Société Bertin & Cie
Zone Industrielle
F - 40220 TARNOS

TEL. +33.59648648
TX. 570026

BAP - 0195 - D (01/03/87-31/12/89)
H. MAERKL
TU Hamburg-Harburg
Arbeitsbereich Biotechnologie I
Bioprozess und Bioverfahrenstechnik
Harburger Schlossstrasse 37-39
D - 2100 HAMBURG 90

TEL. +49.40.771702694

Computer-aided peptide and protein engineering software development.

BAP - 0150 - UK (01/07/86-31/12/89)
R. BOMFORD
The Wellcome Research Laboratories
UK - BECKENHAM, KENT BR3 3BS

TEL. +44.1.6582211 EXT.218
TX. 23937 WELLAB BECKENHM

BAP - 0149 - UK (01/07/86-31/12/89)
B. ROBSON
Epsitron Protein & Peptide Engineering Research Unit
University of Manchester
Dept. of Biochemistry
Stopford House
UK - MANCHESTER M13 9PT

TEL +44.61.2738241 EXT.97
TX. 668932 MCHRUL G

BAP - 0148 - F (01/07/86-31/12/89)
J. GARNIER
Université de Paris-Sud
Lab. de Biochimie Physique
Bâtiment 433
F - 91405 ORSAY CEDEX

TEL. +33.1.69416429
TX. 692166 FACORS

Artificial intelligence approach to protein structure prediction by development of a knowledge base.

BAP - 0225 - B (01/06/87-31/12/89)
S. J. WODAK
Université Libre de Bruxelles - CP 160
Unité Conformation des Macro-
molécules Biologiques
Av. Paul Héger P2
B - 1150 BRUXELLES

TEL. +32.2.6485200
TX. 20005

BAP - 0226 - F (01/04/87-31/12/89)
J.M. CLAVERIE
Institut Pasteur
Unité Informatique Scientifique
25, rue du Dr. Roux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688510
TX. 250609 PASTEUR

BAP - 0227 - D (01/05/87-30/04/90)
C. SANDER
European Molecular Biology Laboratory
Meyerhofstrasse 1
D - 6900 HEIDELBERG

TEL. +49.6221.3870
TX. 461613 EMBL D

BAP - 0228 - B (subcontract) (01/06/87-31/12/89)
Y.D. WILLEMS
Katholieke Universiteit Leuven
Dept. Computerwetenschappen
Celestijnenlaan 200a
B - 3030 HEVERLEE

TEL. +32.16.200656 EXT.3564
TX. 23674 KULEUV B

BAP - 0228 - B (01/06/87-31/12/89)
R. VENKEN
Belgian Institute of Management
Kwikstraat 4
B - 3078 EVERBERG

TEL. +32.2.7595925
TX. 63518

European resource centres for plasmid-bearing bacterial strains.

BAP - 0002 - UK (01/11/85-31/12/89)
L.R. HILL
National Collection of Type Cultures
Central Public Health Laboratory
61 Colindale Avenue
UK - LONDON NW9 5HT

TEL. +44.1.200.4400 EXT.3707/8
TX. 8953942 DEFEND G

BAP - 0007 - D (01/04/86-31/12/89)
D. CLAUS
Deutsche Sammlung von Mikroorganismen - DSM
Gesellschaft für Biotechnologische
Forschung mbH
Mascheroder Weg 1
D - 3300 BRAUNSCHWEIG

TEL. +49.531.61870
TX. 952667 GEBIO D

European human genetic mutant cell bank.

BAP - 0001 - UK (01/04/86-31/12/89)
A. DOYLE
ECACC - PHLS
Centre for Applied Microbiology
& Research
Porton Down
UK - SALISBURY, WILTS. SP4 OJG

TEL. +44.980.610391 EXT. 511/12
TX. 47683 PHCAMR G

BAP - 0006 - NL (01/01/86-31/12/89)
H. GALJAARD
Erasmus University
Dept. Cell Biology & Genetics
P.O. BOX 1738
NL - 3000 DR ROTTERDAM

TEL. +31.10.4087215

Creation of a lactic acid cultures collection. Modelling and control technics of thermophilic mixed culture.

BAP - 0143 - GR (01/07/86-31/12/89)
G. KALATZOPOULOS
Agricultural College of Athens
Dept. of Postgraduate Studies
Dairy Section
Votanikos
GR - ATHENS 118 55

TEL. +30.301.3465333
TX. 225018 AGSA GR

BAP - 0144 - F (01/07/86-31/12/89)
G. CORRIEU
INRA - L.G.P.B.A.
Centre de Biotechnologie Agro-
Industrielles
F - 78850 THIVERVAL-GRIGNON

TEL. +33.1.30544510
TX. 697388 F

Bank of immunogenetically defined human betalymphoblastoid cell lines.

BAP - 0037 - D (01/07/86-31/12/89)
H. GROSSE-WILDE
Institut für Immungenetik
Universitätsklinikum Essen - GHS
Virchowstrasse 171
D - 4300 ESSEN 1

TEL. +49.201.7232526
TX. 8579573 KLIES D

BAP - 0072 - I (01/07/86-31/12/89)
G.B. FERRARA
Istituto Nazionale per la
Ricerca sul Cancro
Viale Benedetto XV, 10
I - 16132 GENOVA

TEL. +39.10.300767
TX. 216353 ISTEX I

Development of improvement techniques for the preservation of fungal strains of biotechnological importance.

M.-F. ROQUEBERT
Museum National d'Histoire Naturelle
Laboratoire de Cryptogamie
12, rue Buffon
F - 75005 PARIS

TEL +33.1.43313521

N.M. NOLARD-TINTIGNER
Institut d'Hygiène et d'Epidémiologie
Section Mycologie
14, rue Juliette Wytsman
B - 1050 BRUXELLES

TEL. +32.2.6425630
TX. 21034 IHEBRU

G.L. HENNEBERT
Université Catholique de Louvain
Lab. de Mycologie Systématique et Appliquée
3, Place Croix du Sud, Bte 8
B - 1348 LOUVAIN-LA-NEUVE

TEL +32.10.433742
TX. 59037 UCL B

C. DE BIEVRE
Institut Pasteur
Unité de Mycologie
25, rue du Dr. Roux
F - 75015 PARIS

TEL. +33.1.45688357
TX. 250609 PASTEUR F

BAP - 0028 - UK
(MULTIPARTY CONTRACT)
(01/05/86-31/01/90)

D. SMITH
CAB - International Mycological
Institute
Ferry Lane
UK - KEW, SURREY TW9 3AF

TEL. +44.1.9404086
TX. 847964 COMAGG G (mark "ATTN CMI")
Telecom Gold Dialcom 84: CAU009

BIOTECHNOLOGY ACTION PROGRAMME (1985-1989)

SUBPROGRAMME : II

BASIC BIOTECHNOLOGY

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - Enzyme Engineering

Sector 2.1.1 : Development of Bioreactors

Microbial production of commercially important hydroxylated compounds from halo-aromatics.

BAP - 0043 - NL (01/07/86-31/12/89)
J.A.M. DE BONT
Agricultural University
Dept. of Microbiology
Hesselink van Suchtelenweg 4
NL - 6703 CT WAGENINGEN

TEL. +31.8370.83754

BAP - 0140 - UK (01/07/86-31/12/89)
A. MAULE
Microbial Technology Laboratory
PHLS Centre for Applied
Microbiology and Research
UK - PORTON DOWN, SALISBURY SP4 0JG

TEL. +44.980.610391 EXT.395
TX. 47683 PHCAMR G

Continuous synthesis of fine chemicals by cofactor dependent enzymes with simultaneous cofactor regeneration.

BAP - 0060 - D (01/07/86-31/12/89)
A.F. BÜCKMANN
Gesellschaft für Biotechnologische Forschung mbH.
Abt. Enzymtechnologie
Mascheroder Weg 1
D - 3300 BRAUNSCHWEIG

TEL. +49.531.6181306
TX. 952667 GEBIO D

BAP - 0065 - I (01/07/86-31/12/89)
G. CARREA
Istituto di Chimica degli Ormoni, CNR
Via Mario Bianco 9
I - 20131 MILANO

TEL. +39.2.2847737
+39.2.2853348

BAP - 0059 - D (01/07/86-31/12/89)
K.D. KULBE
Fraunhofer-Institut für Grenzflächen- und
Bioverfahrenstechnik
Nobelstrasse 12
D - 7000 STUTTGART 80

TEL. +49.711.6868 EXT.440
TX. 7255168 IZS D

Control of the microenvironment of biocatalysts by coimmobilization.

BAP - 0054 - D (01/07/86-31/12/89)
W. HARTMEIER
RWTH Aachen
Institut für Mikrobiologie
Worringer Weg 1
D - 5100 AACHEN

TEL. +49.241.806601
TX. 0832704

BAP - 0069 - B (01/07/86-31/12/89)
P.G. ROUXHET
Université Catholique de Louvain
Unité de Chimie des Interfaces
1, Place Croix du Sud
B - 1348 LOUVAIN-LA-NEUVE

TEL. +32.10.473587
TX. 59037 UCL B

Bioconversion of hydrophilic and hydrophobic compounds by enzyme systems.

BAP - 0053 - F (01/07/86-31/12/89)
M-D. LEGOY
Université Technologie
de Compiègne
Laboratoire de Technologie
Enzymatique
B.P. 233
F - 60206 COMPIEGNE CEDEX

TEL. +33.44200037
TX. 150110 UNITECH F

BAP - 0052 - I (01/07/86-31/12/89)
M. ROSSI
Università di Napoli
Dipartimento di Chimica
Organica e Biologica
Via Mezzocannone 16
I - 80134 NAPOLI

TEL. +39.81.206411

BAP - 0051 - GR (01/07/86-31/12/89)
F. KOLISIS
The National Hellenic
Research Foundation
Center of Biological Research
Department of Biochemistry
48, Vas. Constantinou Ave.
GR - 11635 ATHENS

TEL. +30.1.7239965

BAP - 0070 - D (01/07/86-31/12/89)
K. SCHÜGERL
Universität Hannover
Institut für Technische Chemie
Callinstrasse 3
D - 3000 HANNOVER

TEL. +49.511.762 EXT.2253
TX. 923868 UNIHN D

Electrode-immobilized enzyme systems for electrochemically driven chiral reduction reactions.

BAP - 0251 - NL (01/04/87-31/12/89)
C. VAN DIJK
TNO
P.O. BOX 217
NL - 2600 AE DELFT

TEL. +31.15.569330
TX. 38071 ZPTNO NL

BAP - 0250 - D (01/07/87-31/12/89)
H. SIMON
Technical University Munich
Institute for Organic Chemistry
Lichtenbergstrasse 4
D - 8046 GARCHING

TEL. +49.89.3209 EXT.3340/3341
TX. 17898174 TUMGAR D

Construction of enzyme-loaded erythrocytes as bio-reactors.

BAP - 0067 - F (01/07/86-31/12/89)
C. ROPARS
Laboratoire de Biopharmacologie
Transfusionnelle - CNRS
Centre Régional de Transfusion Sanguine
2, Brd. Tonnellé
F - 37044 TOURS

TEL. +33.47376683
TX. 750605 F

BAP - 0056 - I (01/07/86-31/12/89)
A. DE FLORA
Università di Genova
Istituto Policattedra di Chimica Biologica
Viale Benedetto-XV 1
I - 16132 GENOVA

TEL. +39.10.515365

BAP - 0068 - I (01/07/86-31/12/89)
L. SILENGO
Università di Torino
Istituto di Igiene
Via Santena 5bis
I - 10126 TORINO

TEL. +39.11.6963106

BAP - 0055 - I (01/07/86-31/12/89)
M. MAGNANI
Università degli Studi di Urbino
Istituto di Chimica Biologica
Via A. Saffi 2
I - 61029 URBINO PS

TEL. +39.722.320188

Microbial transformation of fatty acids to dicarboxylic acids.

BAP - 0291 - UK (01/07/87-31/12/89)
C. RATLEDGE
University of Hull
Department of Biochemistry
UK - HULL HU6 7RX

TEL. +44.482.465243
+44.482.465144
TX. 592530

BAP - 0290 - D (01/07/87-31/12/89)
F. MEUSSDOERFFER
Henkel KGaA
Abt. TFB-Biotechnologie
Postfach 1100
D - 4000 DÜSSELDORF 1

TEL. +49.211.797 EXT.9352
TX. 858170 HD D

Sector 2.1.2 : Enzyme stability and folding

Enzymes from thermophilic bacteria : properties, stability and biotechnological applications.

BAP - 0249 - I (01/07/87-31/12/89)
A. FONTANA
Università degli Studi di Padova
Dipartimento di Chimica Organica
Via Marzolo 1
I - 35131 PADOVA

TEL. +39.49.831242
TX. 430176 UNIPADU I

BAP - 0257 - D (01/04/87-31/12/89)
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Sector 2.1.3 : Protein Design

Folding, assembly, stability and genetic modification of penicillin acylase and its precursor.

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BAP - 0041 - D (01/10/87-31/03/89)
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TX. 527742 BMTU D

BAP - 0040 - D (01/07/86-31/12/89)
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Institut für Genetik/Mikrobiologie
Maria-Ward-Strasse 1a
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TEL. +49.89.177084
TX. 529860

Model systems for production folding and assembly of stable proteins overexpressed in E. coli.

BAP - 0246 - I (01/04/87-31/12/89)
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Via Olgettina 60
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BAP - 0252 - D (01/08/87-31/1/89)
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BAP - 0253 - UK (01/04/87-31/12/89)
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BAP - 0247 - GR (01/04/87-31/12/89)
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Institute of Molecular Biology & Biotechnology (IMBB)
P.O. BOX 1527
GR - 71110 HERAKLIO, CRETE

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TX. 262728 MPUC GR

Conversion of pancreatic phospholipase A2 into triglyceride-degrading lipase.

BAP - 0071 - NL (01/07/86-31/12/89)
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Laboratory of Biochemistry
Padualaan 8
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NL - 3584 CH UTRECHT

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TX. 70353 BITRA NL

BAP - 0062 - F (01/07/86-31/12/89)
R. VERGER
Centre de Biochimie et de
Biologie Moléculaire du CNRS
31, Chemin Joseph-Aiguier
B.P. 71
F - 13402 MARSEILLE CEDEX 9

TEL. +33.91715857
TX. 430225 CNRSMAR F

Characterization of the staphylococcal lipases at genetic and biochemical level.

BAP - 0196 - D (01/03/87-31/12/89)
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Mikrobiolle Genetik
Auf der Morgenstelle 28
D - 7400 TÜBINGEN 1

TEL. +49.7071.296939
TX. 7262867 UTZV D

Construction and biological function of altered proteins defined by their spatial structure.

BAP - 0058 - DK (01/07/86-31/12/89)
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Department of Chemistry
Division of Biostructural Chemistry
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BAP - 0057 - NL (01/07/86-31/12/89)
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BAP - 0066 - F (01/07/86-31/12/89)
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F - 91128 PALAISEAU CEDEX

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TX. 691596 ECOLEX F

Engineering of an extracellular ribonuclease by gene modification.

BAP - 0139 - B (01/07/86-31/12/89)
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Unité Conformation des
Macromolécules Biologiques
Avenue Paul Héger P2
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TX. 23069 UNILIB B

BAP - 0050 - UK (01/07/86-31/12/89)
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TEL. +44.1.5895111 EXT.4578
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BAP - 0049 - F (01/07/86-31/12/89)
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Plant Genetic Systems NV
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B - 9000 GENT

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Structure-function relationships in a peptide hormone and enzymes. The application of protein engineering.

BAP - 0155 - DK (01/07/86-31/12/89)
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UK - YORK YO1 5DD

TEL. +44.904.430000
TX. 57933 YORKUL G

DD-peptidases and B-lactamases. From gene expression to protein engineering.

BAP - 0197 - B (01/04/87-31/12/89)
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B - 4000 SART TILMAN (LIEGE 1)

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BAP - 0198 - UK (01/04/87-31/12/89)
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Microbial Genetics Group
Falmer
UK - BRIGHTON BN1 9QG

TEL. +44.273.606755 EXT.2678

Biocatalysis by novel metal clusters and hydrogenase. Structure, reactivity and immobilization.

BAP - 0259 - P (01/04/87-31/12/89)
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Universidade Nova de Lisboa
Centro de Quimica estrutural
Complexo I
Av. Rovisco Pais
P - 1000 LISBOA

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BAP - 0258 - P (01/04/87-31/12/89)
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TX. 63423 ISTUTL P

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BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - GENETIC ENGINEERING OF AGRICULTURAL SPECIES

Genetic manipulation and regeneration in model and crop plants in vitro.

BAP - 0101 - UK (01/07/86-31/12/89)
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+31.50.632092
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BAP - 0111 - B (01/07/86-31/12/89)
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Vrije Universiteit Brussel
Laboratorium voor Plantengenetica
Paardenstraat 65
B - 1640 SINT GENESIUS RODE

TEL. +32.2.3584547
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BAP - 0083 - NL (01/04/86-30/09/89)
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BAP - 0084 - I (01/07/86-31/12/89)
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BAP - 0085 - F (01/07/86-31/12/89)
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+33.1.39507522
TX. 695269 INRAVER F

Research on genetic transformation and plant regeneration from protoplasts of wheat and barley.

BAP - 0013 - D (01/04/86-30/06/89)
H. LÖRZ
Max-Planck-Institut für Züchtungsforschung
Egelspfad
D - 5000 KÖLN 30

TEL. +49.221.5062316
TX. 8881028 MPIZ D

BAP - 0014 - F (01/01/86-31/12/89)
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Université Paris-Sud
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Bât. 360
F - 91405 ORSAY CEDEX

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+33.1.69416334
TX. 692166 FACORS F

Molecular analysis of carrot somatic embryogenesis.

BAP - 0092 - I (01/07/86-31/12/89)
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Istituto di Mutagenesi e Differenziamento,
CNR
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BAP - 0093 - NL (01/07/86-31/12/89)
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NL - 6703 BC WAGENINGEN

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Plant hormone receptors.

BAP - 0209 - I (01/05/87-31/12/89)
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BAP - 0206 - NL (01/02/87-31/12/89)
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TX. 39427

BAP - 0205 - UK (01/03/87-31/12/89)
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East Malling Research Station
East Malling
UK - MAIDSTONE, KENT ME19 6BJ

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TX. 957251

Control of the differentiation of plant cells and of their regeneration into entire plants with special emphasis on cell membrane.

BAP - 0078 - DK (01/07/86-31/12/89)
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De Danske Sukkerfabrikker
Biotechnology Section
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BAP - 0098 - UK (01/07/86-31/12/89)
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Dept. of Physiological Botany
Thorvaldsensvej 40
DK - 1871 COPENHAGEN V

TEL. +45.1.351788 EXT.2642
TX. 15061

Study of hairy root transformation : new strategy for plant genetic engineering.

BAP - 0015 - F (01/01/86-31/12/89)
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Université de Paris-Sud
Institut de Microbiologie
Bât. 409
F - 91405 ORSAY CEDEX

TEL.+33.1.69417706
TX. 692166 FACORS F

BAP - 0018 - I (01/01/86-31/12/89)
P. COSTANTINO
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e Biologia Molecolare
c/o Ist. Fisiologia Generale
P.le A. Moro 5
I - 00185 ROMA

TEL. +39.6.491721

Mechanisms controlling transfer and expression of developmentally regulated plant genes.

BAP - 0076 - NL (01/07/86-31/12/89)
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BAP - 0099 - UK (01/07/86-31/12/89)
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Molecular Sciences Division
Biochemistry Department
UK - HARPENDEN, HERTS AL5 2JQ

TEL. +44.5827.63133 EXT.2721
TX. 825726

Analysis and manipulation of wheat protein genes related to grain quality.

BAP - 0106 - UK (01/07/86-30/06/89)
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Maris Lane, Trumpington
UK - CAMBRIDGE CB2 2LQ

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TX. 818280 PBICAM G

BAP - 0106 - UK (sub-contract) (01/07/86-30/06/89)
P. JOUDRIER
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Lab. de Technologie des Céréales
9, place Viala
F - 34060 MONTPELLIER CEDEX

TEL. +33.67612433
TX. 490818 INRAMON F

Improvement of protein quality in barley by means of genetic engineering.

BAP - 0090 - D (01/07/86-31/12/89)
H.G. SARX
Friedrich Weissheimer Malzfabrik
Kirchstrasse 31
D - 5470 ANDERNACH

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TX. 865866

BAP - 0091 - DK (01/07/86-31/12/89)
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Dept. of Physiology
Gamle Carlsberg Vej 10
DK - 2500 COPENHAGEN VALBY

TEL. +45.1.221022 EXT.5225
TX. 15434 CARLS DK

Molecular studies of the high lysine genes opaque-2 and opaque-6 in maize.

BAP - 0214 - I (01/03/87-31/12/89)
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Istituto Sperimentale per la Cerealicoltura
Sezione di Bergamo
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Abteilung Züchtungsforschung und Ertragsphysiologie
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D - 5000 KÖLN 30

TEL. +49.221.5062237
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Isolation of transposable elements from Petunia hybrida.

BAP - 0089 - B (01/07/86-31/12/89)
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Vrije Universiteit Brussel
Laboratorium Genetische Virologie
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Dept. Applied Genetics
De Boelelaan 1087
NL - 1007 MC AMSTERDAM

TEL. +31.20.5485754
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TX. 11329 DPVVU NL

Development of inducible gene expression systems for higher plants and plant cell cultures.

BAP - 0087 - D (01/07/86-31/12/89)
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Max-Planck-Institut für Züchtungsforschung
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Molecular biological approach to the control of beet yellows virus.

BAP - 0097 - UK (01/07/86-31/12/89)
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Lectins and ribosome inactivating proteins as pathogen and pest resistance factors in plants.

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Development of methods for selection in vitro for resistance to pathogens.

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Apoplastic enzymes and biologically-active oligosaccharides as markers of early pathogenesis.

BAP - 0103 - UK (01/07/86-31/12/89)
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BAP - 0074 - NL (01/07/86-31/12/89)
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TX. 45917

Analysis of the pathogenicity genes and mechanism of extracellular enzyme export in Erwiniae. Molecular biology of phytopathogenic Erwiniae.

BAP - 0210 - F (01/03/87-31/12/89)
J.M. ROBERT-BAUDOUY
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20, Av. Albert Einstein
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BAP - 0191 - UK (01/03/87-31/12/89)
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BAP - 0212 - F (01/04/87-31/12/89)
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BAP - 0211 - F (01/02/87-31/12/89)
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Comparison of late Sym genes in Rhizobium species and construction of improved strains.

BAP - 0079 - F (01/07/86-31/12/89)
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BAP - 0100 - UK (01/07/86-31/12/89)
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BAP - 0081 - D (01/07/86-31/12/89)
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Regulation of expression of genes involved in biological nitrogen fixation.

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(MULTI PARTY CONTRACT)
(01/07/86-31/12/89)

WITH THE PARTICIPATION OF :
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TX. 8881028 MPIZ D

The transformation of chloroplasts with Agrobacterium tumefaciens and naked DNA.

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J. Plateaustraat 22
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Genetic transformation of plant mitochondria : development of a general strategy.

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Abt. Genetische Grundlagen der Pflanzenzüchtung
Egelspfad
D - 5000 KÖLN 30

TEL. +49.221.5062336
+49.221.5062350
TX. 8881028 MPIZ D

Mitochondrial molecular genetics in relation to crop improvement.

BAP - 0019 - B (01/01/86-31/12/89)
M. BRIQUET
Université Catholique de Louvain
Faculté des Sciences Agronomiques
Laboratoire d'Etude de l'Hérédité
Cytoplasmique
Place Croix du Sud 1
B - 1348 LOUVAIN-LA-NEUVE

TEL. +32.10.433615
TX. 59037 UCL B

BAP - 0016 - F (01/04/86-31/12/89)
A. CORNU
Station de Génétique et
d'Amélioration des Plantes
I.N.R.A.
B.P. 1540
F - 21034 DIJON CEDEX

TEL. +33.80633000
TX. 350507 INRADJ F

BAP - 0017 - UK (01/04/86-30/09/88)
D.R. DAVIES
John Innes Institute
Colney Lane
UK - NORWICH NR4 7UH

TEL. +44.603.52571 EXT.347
TX. 975122 JIINOR G

BAP - 0020 - NL (01/01/86-31/12/89)
H.J.J. NIJKAMP
University of Amsterdam
Dept. of Genetics
De Boelelaan 1087
NL - 1007 MC AMSTERDAM

TEL. +31.20.5485753
+31.20.5485752
TX. 11329 DPVVU NL

BAP - 0022 - F (01/04/86-31/12/89)
F. QUETIER
Université de Paris XI
Lab. de Biologie Moléculaire Végétale
U.A. 1128, Bâtiment 430
F - 91405 ORSAY CEDEX

TEL. +33.1.69417135
+33.1.69417960
TX. 692166 F

Pollen biotechnology in cultivated crops.

BAP - 0204 - I (01/03/87-31/12/89)
M. CRESTI
Università degli Studi di Siena
Dipt. Biologia Ambientale
Via Mattioli 4
I - 53100 SIENA

TEL. +39.577.281228
+39.577.281248
TX. 572459 UNIVSI I

BAP - 0203 - F (01/02/87-31/12/89)
Ch. DUMAS
Reconnaissance Cellulaire et
Amélioration des Plantes
UM CNRS 380 024 UCB-Lyon 1
Bât. 741 / 5ème
43, Boulevard du 11 Nov. 1918
F - 69622 VILLEURBANNE CEDEX

TEL. +33.78898124 EXT.3302
TX. 310810 BUSLYON F

BAP - 0202 - NL (01/03/87-31/12/89)

J.L. VAN WENT
Agricultural University
Dept. of Plant Cytology and
Morphology
Arboretumlaan 4
NL - 6703 BD WAGENINGEN

TEL. +31.8370.82658
+31.8370.82155
TX. 45015 BLHWG NL
45917 BURLH NL

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - GENETIC AND CELLULAR ENGINEERING OF MICROBIAL SPECIES IMPORTANT TO INDUSTRY

Sector 2.2.1 : Microorganisms / Genetic Engineering

Genetic manipulation of lactic acid bacteria for improved dairy fermentations.

BAP - 0008 - IRL (01/01/86-31/12/89)
C. DALY
University College
Dairy of Food Microbiology Department
Western Road
IRL - CORK

TEL. +353.21.276871 EXT.2647
TX. 26050 UNIC EI

BAP - 0009 - UK (01/04/86-31/12/89)
M.J. GASSON
AFRC Institute of Food Research
Colney Lane
UK - NORWICH NR4 7UA

TEL. +44.603.56122
TX. 975453

BAP - 0010 - D (01/04/86-31/12/89)
M. TEUBER
Bundesanstalt für Milchforschung
Institut für Mikrobiologie
Hermann-Weigmannstrasse 1
D - 2300 KIEL

TEL. +49.431.609340
TX. 292966 MIFO D

BAP - 0011 - NL (01/01/86-31/12/89)
W.M. DE VOS
Netherlands Institute for Dairy
Research (NIZO)
P.O. BOX 20
NL - 6710 BA EDE

TEL. +31.8380.19013
TX. 37205

BAP - 0012 - NL (01/01/86-31/12/89)
G. VENEMA
University of Groningen
Institute of Genetics
Kerklaan 30
NL - 9751 NN HAREN

TEL. +31.50.632093
+31.50.632092

Development of host-vector systems in dairy yeasts.

BAP - 0061 - I (01/07/86-31/12/89)
L. FRONTALI
University of Rome
Dept. of Cell and Developmental Biology
Piazzale A. Moro
I - 00185 ROMA

TEL. +39.6.4953950

BAP - 0026 - F (01/07/86-31/12/89)
H. FUKUHARA
Institut Curie
Section de Biologie, Bât. 110
Centre universitaire
F - 91405 ORSAY

TEL. +33.1.69076467
TX. 692166 FACORS F

BAP - 0199 - D (01/02/87-31/12/89)
C.P. HOLLENBERG
Institut für Mikrobiologie
Universitätsstrasse 1
Geb. 26.12
D - 4000 DÜSSELDORF 1

TEL. +49.211.3114720
TX. 8587348 UNI D

Construction of a baker's yeast secreting legume lipoxygenase during production of bread dough.

BAP - 0063 - UK (01/10/86-31/12/89)
R. CASEY
John Innes Institute
Colney Lane
UK - NORWICH NR4 7UH

TEL. +44.603.52571
TX. 975122 JIINOR G

BAP - 0025 - DK (01/07/86-31/12/89)
D. VON WETTSTEIN
Carlsberg Laboratory
Department of Physiology
Gamle Carlsberg Vej 10
DK - 2500 COPENHAGEN Valby

TEL. +45.1.221022 EXT.5225
TX. 15434

BAP - 0023 - DK (01/07/86-31/12/89)
A. PETERSEN
Danish Distilleries Ltd.
Raffinaderivej 10
DK - 2300 COPENHAGEN S

TEL. +45.1.571180
TX. 31301

Genetic regulation of yeast glycolysis.

BAP - 0264 - D (01/07/87-31/03/90)
F.K. ZIMMERMANN
TH Darmstadt
Institut für Mikrobiologie
Schnittspahnstrasse 10
D - 6100 DARMSTADT

TEL. +49.6151.162855
TX. 419579

BAP - 0263 - IRL (01/04/87-31/12/89)
D. MCCONNELL
Trinity College
Department of Genetics
IRL - DUBLIN 2

TEL. +353.1.772941 EXT.1872

BAP - 0265 - UK (01/04/87-31/12/89)
B. HARTLEY
Imperial College
Centre for Biotechnology
UK - LONDON SW7 2AZ

TEL. +44.1.5895111 EXT.7088
TX. 261503 IMPOL G

Genetic and molecular biology of Streptomyces : mapping, plasmids instability and MLS-resistance.

BAP - 0266 - D (01/04/87-31/12/89)
H.I. SCHREMPF
Institut für Genetik und Mikrobiologie
Lehrstuhl für Mikrobiologie
Maria-Ward-Strasse 1a
D - 8000 MÜNCHEN 19

TEL. +49.89.177084

BAP - 0268 -F (01/05/87-31/01/90)
M. GUERINEAU
Université Paris-Sud
Laboratoire de Biologie et
Génétique Moléculaire
Bâtiment 400
F - 91405 ORSAY CEDEX

TEL. +33.1.69416917

Development of a gene mediated transfer and selection system for filamentous fungi.

BAP - 0039 - UK (01/07/86-31/12/89)
J.R. KINGHORN
University of St. Andrews
Dept. of Biochemistry and
Microbiology
Irvine Building
North Street
UK - ST.ANDREWS, FIFE KY16 9AL

TEL. +44.334.76161 EXT.296

BAP - 0064 - NL (01/07/86-31/12/89)
P.H. POUWELS
TNO
Medical Biological Laboratory
P.O. BOX 45
NL - 2280 AA RIJSWIJK

TEL. +31.15.138777
TX. 38034 PMTNO NL

BAP - 0248 - B (01/04/87-31/12/89)
W. FIERS
Laboratory of Molecular Biology
K.L. Ledeganckstraat 35
B - 9000 GENT

TEL. +32.91.227821 EXT.404
TX. 11995 GENGEN B

Genetic manipulation of the anaerobe Zymomonas mobilis for fermentation of fruit juices.

BAP - 0153 - GR (01/07/86-31/12/89)
C. DRAINAS
University of Ioannina
Department of Chemistry
Division of Organic Chemistry/
Biochemistry
GR - 45332 IOANNINA

TEL. +30.651.92210
+30.651.37208
TX. 032216

BAP - 0152 - GR (01/07/86-31/12/89)
M.A. TYPAS
University of Athens
Panepistemiopolis
Kouponia
GR - ATHENS T.K. 15701

TEL. +30.1.7240091 EXT.638
TX. 223815

BAP - 0200 - D (01/01/87-31/12/89)
H. SAHM
Kernforschungsanlage Jülich
Institut für Biotechnologie 1
Postfach 1913
D - 5170 JÜLICH

TEL. +49.2461.613294
TX. 833556 KFA D

Engineering of gram negative bacteria with industrial potential.

BAP - 0048 - B (01/07/86-31/12/89)
J. DAVISON
International Institute of
Cellular and Molecular Pathology
Unit of Molecular Biology
Avenue Hippocrate 75
B - 1200 BRUSSELS

TEL. +32.2.7647463
TX. 23722 UCLWOL B

BAP - 0047 - NL (01/08/86-31/07/89)
B. WITHOLT
Groningen Biotechnology Centre
Nijenborgh 16
NL - 9747 AG GRONINGEN

TEL. +31.50.634165

Genetic engineering and transposon mutagenesis in amino acid producing corynebacteria.

BAP - 0271 - E (01/08/87-31/12/89)
J.F. MARTIN
University of Leon
Department of Microbiology
Faculty of Biology
Campus de Vegazana
E - 24071 LEON

TEL. +34.87.240451 Ext.269
TX. 89892 EDUCI E

BAP - 0262 - IRL (01/04/87-31/12/89)
L.K. DUNICAN
University College
Dept. of Microbiology
IRL - GALWAY

TEL. +353.191.24411 EXT.294
TX. 28823 UCG EI

Development of host/vector systems in clostridia of industrial and agricultural importance.

BAP - 0046 - UK (01/07/86-31/12/89)
N.P. MINTON
Microbial Technology Laboratory
PHLS Centre for Applied
Microbiology and Research
UK - PORTON DOWN, SALISBURY SP4 OJG

TEL. +44.980.610391 EXT.367
TX. 47683 PHCAMR G

BAP - 0045 - D (01/07/86-31/12/89)
W.L. STAUDENBAUER
Technische Universität München
Lehrstuhl für Mikrobiologie
Arcisstrasse 21
D - 8000 MÜNCHEN

TEL. +49.89.2105 EXT.2372/2375

BAP - 0044 - UK (01/07/86-31/12/89)
M. YOUNG
University College of Wales
Department of Botany and Microbiology
UK - ABERYSTWYTH, DYFED SY23 3DA

TEL. +44.970.3111 EXT.3058
TX. 35181 ABYUCW G

Studies of segregational and structural plasmid stability in Bacillus subtilis.

BAP - 0038 - IRL (01/07/86-31/12/89)
K.M. DEVINE
Trinity College
Department of Genetics
IRL - DUBLIN 2

TEL. +353.1.772941 EXT.1872
TX. 25442 TCD EI

BAP - 0141 - F (01/07/86-31/12/89)
S.D. EHRLICH
Université Paris VII
Institut Jacques Monod
Tour 43, ler étage
2 place Jussieu
F - 75251 PARIS CEDEX 05

TEL. +33.43295370
TX. 200094

Environmental control of metabolic fluxes as a basis for biotechnological processes.

BAP - 0270 - UK (01/04/87-31/12/89)
D.W. TEMPEST
University of Sheffield
Department of Microbiology
UK - SHEFFIELD S10 2TN

TEL. +44.742.78555 EXT.4404
TX. 54348 ULSHEF G

BAP - 0267 - NL (01/04/87-31/12/89)
W. HARDER
State University of Groningen
Laboratory of Microbiology
Kerklaan 30
NL - 9751 NN HAREN

TEL. +31.50.632153

Study of baker's yeast growth and product formation in view of industrial applications.

BAP - 0261 - B (01/04/87-31/12/89)
M. GRENSON
Université Libre de Bruxelles
Faculté des Sciences
Laboratoire de Microbiologie
Campus de la Plaine, CP 244
Boulevard du Triomphe
B - 1050 BRUXELLES

TEL. +32.2.6400015 EXT.5310/5311
TX. 23069 UNILIB BRUX B

BAP - 0260 - F (01/07/87-31/03/90)
P. GERMAIN
E.N.S.A.I.A
2, Avenue de la Fôret de Haye
F - 54500 VANDOEUVRE LES NANCY

TEL. +33.83574868

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - RISK ASSESSMENT

Assessment of environmental risks and containment of biotechnological scale up processes.

BAP - 0110 - UK (01/07/86-31/12/89)
G. LEAVER
Warren Spring Laboratory
Gunnels Wood Road
UK - STEVENAGE, HERTFORDSHIRE SG1 2BX

TEL. +44.438.741122
TX. 82250

BAP - 0109 - NL (01/07/86-31/12/89)
I. ROUSSEAU
ITC-TNO
Institute of Applied Chemistry
P.O. BOX 108
NL - 3700 AC ZEIST

TEL. +31.3404.55444
TX. 40022 CIVO NL

Assessing the risks involved in the release of genetically manipulated microorganisms.

BAP - 0108 - FR (01/07/86-31/12/89)
N. AMARGER
Laboratoire de Microbiologie des Sols
I.N.R.A.
17, rue Sully
B.P. 1540
F - 21034 DIJON CEDEX

TEL. +33.80633000
TX. 350507 INRADIJ F

BAP - 0107 - D (01/05/86-31/10/89)
W. KLINGMÜLLER
Lehrstuhl für Genetik
Universitätsstrasse 30
Postfach 3008
D - 8580 BAYREUTH

TEL. +49.921.552701

BAP - 0024 - UK (01/07/86-31/12/89)
P. HIRSCH
Rothamsted Experimental Station
UK - HARPENDEN, HERTS AL5 2JQ

TEL. +44.5827.63133 EXT.2669
TX. 825726 REXPST G

Risk Assessment : Field release of genetically manipulated baculoviruses.

BAP - 0192 - UK (01/04/87-31/12/89)
P.F. ENTWISTLE
NERC Institute of Virology
Mansfield Road
UK - OXFORD OX1 3SR

TEL. +44.865.512361
TX. 83147 VIROX G

BAP - 0201 - D (01/02/87-31/12/89)
J. HUBER
Biologische Bundesanstalt für Land- und Forstwirschaft
Institut für Biologische Schädlingsbekämpfung
Heinrichstrasse 243
D - 6100 DARMSTADT

TEL. +49.6151.44061

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - GENETIC ENGINEERING OF ANIMAL HUSBANDRY / NOVEL METHODOLOGIES OF ANIMAL CELL CULTURES

Sector 2.2.6 : Genetic engineering for animal husbandry

Genetic analysis and biologic assessment of virulence determinants of Staphylococcus aureus.

BAP - 0131 - IRL (01/07/86-31/12/89)
T.J. FOSTER
Trinity College
Moyne Institute
Microbiology Dept.
IRL - DUBLIN 2

TEL. +353.1.722941 EXT.1814/1345
TX. 25442 TCD EI

BAP - 0146 - UK (01/07/86-31/12/89)
A.J. BRAMLEY
Institute for Animal Disease Research
Compton Laboratory
Compton
UK - NEWBURY, BERKS RG16 ONN

TEL. +44.635.578411 EXT.322

Non-group A rotaviruses : characterization, contribution to disease and vaccine construction.

BAP - 0156 - F (01/07/86-31/12/89)
J. COHEN
INRA
Station de recherches de
Virologie de Thiverval
Route de Thiverval
F - 78850 THIVERVAL-GRIGNON

TEL. +33.1.30544545

BAP - 0114 - UK (01/07/86-31/12/89)
M.A. MCCRAE
University of Warwick
Dept. of Biological Sciences
UK - COVENTRY CV4 7AL

TEL. +44.203.523524
TX. 31406 UNILIB COVENTRY G

Baculoviruses expression vectors for animal virus vaccines.

BAP - 0120 - UK (01/07/86-31/12/89)
P. ROY
Natural Environment Research
Council (NERC)
Institute of Virology
Mansfield Road
UK - OXFORD OX1 3SR

TEL. +44.865.512361
TX. 83147 VIROX G

BAP - 0151 - F (01/07/86-31/12/89)
A. FLAMAND
CNRS
Laboratoire de Génétique des Virus
F - 91190 GIF-SUR-YVETTE

TEL. +33.1.69077828 EXT.384/320
TX. 691137 CNRS GIF F

Molecular mechanisms of liver specific gene expression and production of proteins of medical interest

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BAP - 0117 - F (01/07/86-31/12/89)
C. BABINET
Institut Pasteur
Dept. of Immunology
25, rue du Dr. Roux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688559
TX. 250609 PASTEUR F

BAP - 0116 - I (01/07/86-31/12/89)
G. CILIBERTO
Università Napoli
Istituto di Scienze Biochimie
II Facoltà di Medicina
Via S. Pansini 5
I - 80131 NAPOLI

TEL. +39.81.253026

BAP - 0115 - D (01/07/86-31/12/89)
R. CORTESE
European Molecular Biology Laboratory
Meyerhofstrasse 1
D - 6900 HEIDELBERG 1

TEL. +49.6221.387200
TX. 461613

BAP - 0117 - F (01/07/86-31/12/89)
M.C. WEISS
Institut Pasteur
Unité de Génétique de la Différenciation
25, rue du Dr. Droux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688500
TX. 250609 PASTEUR F

BAP - 0117 - F (01/07/86-31/12/89)
M. YANIV
Institut Pasteur
Dept. of Molecular Biology
25, rue du Docteur Droux
F - 75724 PARIS CEDEX 15

TEL. +33.1.45688512
TX. 250609 PASTEUR F

Parovirus-based linear animal vectors for production of vaccines and other useful proteins.

BAP - 0122 - I (01/07/86-31/12/89)
S. RIVA
Istituto di Genetica Biochimica
ed Evoluzionistica del
Consiglio delle Ricerche
Via Abbiategrasso 207
I - 27100 PAVIA

TEL. +39.382.422384
+39.382.422411
TX. 32883 IGBEPV I

BAP - 0121 - B (01/07/86-31/12/89)
J. ROMMELAERE
Université Libre de Bruxelles
Laboratoire de Biophysique et Radiologie
67, rue des Chevaux
B - 1640 RHODE-ST-GENESE

TEL. +32.2.35.83530 EXT.223
TX. 23069 UNILIB B

BAP - 0121 - B (subcontract) (01/07/86-31/12/89)
P. D'OULTREMONT
Solvay & Cie
310, rue de Ransbeek
B - 1120 BRUXELLES

TEL. +32.2.2662111

The development of transgenic animals (including fish) with novel characteristics.

BAP - 0125 - IRL (01/07/86-31/12/89)
F. GANNON
University College
Dept. of Microbiology
IRL - GALWAY

TEL. +353.91.24411 EXT.284
TX. 28823 UGG EI

BAP - 0147 - IRL (01/07/86-31/12/89)
J.M. SREENAN
Agricultural Institute
Belclare Tuam
IRL - CO. GALWAY

TEL. +353.93.55455
TX. 28962 AFT EI

BAP - 0179 - F (01/07/86-31/12/89)
L.-M. HOUDEBINE
Laboratoire de Physiologie de la Lactation
CNRS - INRA
F - 78350 JOUY-EN-JOSAS

TEL. +33.34652346
TX. 695431 INRA CRZ F

BAP - 0124 - F (01/07/86-31/12/89)
V.M. NIGON
Université de Lyon 1
Dept. de Biologie Générale et Appliquée
43, Bd. du 11 Novembre 1918
F - 69622 VILLEURBANNE CEDEX

TEL. +33.78898124 EXT.3320
TX. 330208 UCBL F

Gene cloning of Brucella antigens which as vaccines do not interfere with a specific diagnosis.

BAP - 0157 - F (01/07/86-31/12/89)
G.L. DUBRAY
Station de Pathologie de la Reproduction
INRA - Tours - Nouzilly
F - 37380 MONNAIE

TEL. +33.47427867
TX. 750954 INRATOU F

BAP - 0123 - B (01/07/86-31/12/89)
J. LIMET
International Institute of Cellular
and Molecular Pathology
MEXP - ICP 7430
75, Avenue Hippocrate
B - 1200 BRUXELLES

TEL. +32.2.76.47.430
TX. 23722 UCL WOL B

High level expression of foot and mouth disease virus antigens using a Baculovirus vector.

BAP - 0118 - NL (01/07/86-31/12/89)
J.M. VLAK
Agricultural University
Dept. of Virology
P.O. BOX 8045
NL - 6700 EM WAGENINGEN

TEL. +31.8370.83089
TX. 45015 BLHWG NL

BAP - 0119 - UK (01/07/86-31/12/89)
A. KING
Animal Virus Research Institute
Genetics Dept.
Pirbright
UK - WOKING, SURREY GU24 0NF

TEL. +44.483.232441
TX. 859137 AVRI G

Hepatitis B surface antigen particle as a carrier for presentation of FMDV antigens.

BAP - 0231 - UK (01/04/87-31/12/89)
K. MURRAY
University of Edinburgh
Dept. of Molecular Biology
King's Buildings
UK - EDINBURGH EH 3JR

TEL. +44.31.6671081

BAP - 0232 - UK (01/04/87-31/12/89)
F. BROWN
Wellcome Biotechnology
Ash Road
Pirbright
UK - WOKING, SURREY GU24 0NF

TEL. +44.483.235331

BAP - 0230 - NL (01/04/87-31/12/89)
P.H. POUWELS
TNO
Medical Biological Laboratory
NL - 2280 AA RIJSWIJK

TEL. +31.15.138777
TX. 38934 PMTNO NL

Genetically engineered vaccines against porcine and bovine herpesviruses.

BAP - 0233 - D (01/04/87-31/12/89)
H.-J. RZIHA
Bundesforschungsanstalt für
Viruskrankheiten der Tiere
Paul-Ehrlich-Strasse 28
D - 7400 TÜBINGEN 1

TEL. +49.7071.603213
+49.7071.603324

BAP - 0234 - NL (01/04/87-31/12/89)
J.T. VAN OIRSCHOT
Central Veterinary Institute
Virology Dept.
P.O. BOX 36
NL - 8200 AJ LELYSTAD

TEL. +31.3200.73911
TX. 40227 CDI NL

BAP - 0233 - D (01/04/87-31/12/89)
G.M. KEIL
Bundesforschungsanstalt für
Viruskrankheiten der Tiere
Institut für Mikrobiologie
Paul-Ehrlich-Strasse 28
D - 7400 TÜBINGEN 1

TEL. +49.7071.603323
+49.7071.603253
TX. 17707131

Linear plasmids and artificial chromosomes as vectors for gene transfer in eukaryotes.

BAP - 0236 - I (01/04/87-31/12/89)
P. DONINI
Università Roma
Dipartimento di Biologia Cellulare
Via degli Apuli 1
I - 00185 ROMA

TEL. +39.6.493232

BAP - 0237 - UK (01/04/87-31/12/89)
C.J. BOSTOCK
Animal Virus Research Institute
Pirbright
UK - WOKING, SURREY GU24 ONF

TEL. +44.483.232442
TX. 859137 AVRI G

BAP - 0256 - D (01/09/87-31/05/90)
H.J. LIPPS
Universität Tübingen
Institut für Biologie II
Auf der Morgenstelle 28
D - 7400 TÜBINGEN

TEL. +49.7071.294631

Production of glycopolypeptide antigens of porcine transmissible gastroenteritis virus (TGEV).

BAP - 0235 - UK (01/04/87-31/12/89)
D.J. GARWES
AFRC
Division of Microbiology
Compton
UK - NEWBURY, BERKS RG16 ONN

TEL. +44.6.352241l EXT.226

BAP - 0219 - E (01/05/87-31/01/90)
S. GASCON
Depto. de Bioquimica
Facultad de Medicina
E - 33071 OVIEDO

TEL. +34.85.232983

Evasion of African Swine Fever Virus from the immune system : Search for an antigen able to induce a neutralizing antibody.

BAP - 0220 - E (01/04/87-31/12/89)
E. VINUELA
Centro de Biologia Molecular
C.S.I.C. y U.A.M.
Canto Blanco
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TEL. +34.1.7349300

Sector 2.3.3 : Novel methodologies of animal cell cultures

Design of novel techniques to produce pig IgA hybridomas.

BAP - 0178 - F (01/07/86-31/12/89)
A.A. PARAF
INRA
Pathologie Porcine
Laboratoire d'Immunologie
F - 37380 NOUZILLY

TEL. +33.47427700 EXT.7884
TX. 750954 INRATOU F

BAP - 0126 - UK (01/07/86-31/12/89)
C.R. STOKES
University of Bristol
Dept. of Veterinary Medicine
Langford House
UK - LANGFORD, BRISTOL BS18 7DU

TEL. +44.934.852851
TX. 449174

BAP - 0178 - F (01/07/86-31/12/89)
D. SAGE
Université "Claude Bernard"
UA CNRS Nr. 507
Lab. d'Etudes des Matériaux
43, Bd. du 11 Novembre 1918
F - 69622 VILLEURBANNE CEDEX

TEL. +33.78898124 EXT.4158
TX. 900225 CNRS VILRB F

New methodology in cultures of human tumour cells.

BAP - 0113 - I (01/07/86-31/12/89)
P.M. COMOGLIO
Università di Torino
Dipartimento di Scienze Biomedichi
e Oncologia - Sezione di Istologia
Corso Massimo D'Azeglio, 52
I - 10126 TORINO

TEL. +39.11.687516
+39.11.6690416

BAP - 0112 - F (01/07/86-31/12/89)
S. FISHER
INSERM
24, rue du Faubourg Saint Jacques
F - 75014 PARIS

TEL. +33.1.43201240 EXT.392
+33.1.40460411

Biochemical-physical knowledge, control, optimization of animal cell cultures in bioreactors.

BAP - 0130 - D (01/07/86-31/12/89)
J. LEHMAN
Gesellschaft für Biotechnologische
Forschung mbH (GBF)
Mascheroder Weg 1
D - 3300 BRAUNSCHWEIG

TEL. +49.531.6181102
TX. 952667 GEBIO D

BAP - 0127 - F (01/07/86-31/12/89)
J. HACHE
Bertin & Cie
Chemical & Biomedical Engineering Division
F - 78373 PLAISIR CEDEX

TEL. +33.1.34818692
TX. 690231 F

BAP - 0128 - F (01/07/86-31/12/89)
J.-M. ENGASSER
Institut National Polytechnique
de Lorraine
E.N.S.A.I.A.
2, Avenue de la Forêt de Haye
F - 54500 VANDOEUVRE-LES-NANCY

TEL. +33.83574841
TX. 260024

BAP - 0132 - D (01/07/86-31/12/89)
K. SCHÜGERL
Universität Hannover
Institut für Technische Chemie
Callinstrasse 3
D - 3000 HANNOVER

TEL. +49.511.7622253
TX. 923868 UNIHN D

BAP - 0129 - F (01/07/86-31/12/89)
P. NABET
Université de Nancy
INSERM
Faculté de Médecine
F - 54505 VANDOEUVRE-LES-NANCY CEDEX

TEL. +33.83565656 EXT.314

BIOTECHNOLOGY ACTION PROGRAMME (BAP)

Subprogramme II - IN VITRO EVALUATION OF THE TOXICITY AND PHARMACOLOGICAL ACTIVITY OF MOLECULES

Nephrotoxicity mechanisms using kidney perfusion and animal and human renal tissue and cells.

BAP - 0282 - UK (01/07/87-31/12/89)
P.H. BACH
University of Surrey
Robens Institute
UK - GUILDFORD, SURREY GU2 5UH

TEL. +44.483.571281 EXT.3233
TX. 859331

BAP - 0283 - D (01/07/87-31/12/89)
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Medical School Hannover
Konstanty-Gutschow Strasse 8
D - 3000 HANNOVER 61

TEL. +49.511.532 EXT.3780
TX. 922044 MHHWI D

Reconstruction in vitro of human skin for pharmacological and toxicological studies.

BAP - 0277 - F (01/07/87-31/12/89)
L. DUBERTRET
Dept. de Dermatologie
Hôpital Henri Mondor
F - 94010 CRETEIL

TEL. +33.1.42075141 EXT.9623

BAP - 0278 - B (01/07/87-31/12/89)
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Dept. de Dermatologie
Hôpital de Bavière
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+32.41.562456
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BAP - 0279 - D (01/07/87-31/12/89)
T.M. KRIEG
Dermatologie Klinik der Ludwig-Maximilians
Universität München
Frauenlobstrasse 9-11
D - 8 MÜNCHEN 2

TEL. +49.89.5397 EXT.676

BAP - 0280 - UK (01/07/87-31/12/89)
M.W. GREAVES
St. Thomas' Hospital
The Institute of Dermatology
Lambeth Palace Road
UK - LONDON SE1 7EH

TEL. +44.1.9289292

BAP - 0281 - UK (01/07/87-31/12/89)
R. MARKS
University of Wales College of Medicine
Dept. of Medicine (Dermatology)
Heath Park
UK - CARDIFF CF4 4XN

TEL. +44.222.755944 EXT.2885

In vitro screening for anticonvulsant teratogenesis in neural primary cultures and cell lines.

BAP - 0254 - IRL (01/07/87-31/12/89)
C.M. REGAN
University College
Pharmacology Dept.
Foster Avenue
IRL - BLACKROCK CO. DUBLIN

TEL. +353.1.693244 EXT.408
TX. 32693 UCD EI

BAP - 0255 - DK (01/08/89-31/12/89)
A. SCHOUSBOE
University of Copenhagen
Dept. of Biochemistry, A
Panum Institute
DK - 2200 COPENHAGEN N

TEL. +45.1.357900 EXT.2348

New in vitro integrated approach to pharmaco-toxicology and metabolism in cancer chemotherapy

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BAP - 0274 - IRL (01/07/87-30/06/90)
M. CLYNES
School of Biological Sciences
National Institute for Higher Education
Glasnevin
IRL - DUBLIN 9

TEL. +353.1.370077 EXT.289/278

BAP - 0275 - F (01/07/87-31/12/89)
J.P. CANO
INSERM U-278
Faculté de Pharmacologie
27, Bd. Jean Moulin
F - 13385 MARSEILLE CEDEX 5

TEL. +33.91787943

BAP - 0276 - B (01/07/87-31/12/89)
M.B. ROBERFROID
Université Catholique de Louvain
Unité de Biochimie Toxicologie
et Cancérologie
BCTC 73.69
B - 1200 BRUXELLES

TEL. 32.2.7647369
TX. 23722 UCLWOL B

The effect of neuroactive drugs on neuroendocrine function using incubated hypothalamus and pituitary tissues in vitro.

BAP - 0284 - UK (01/07/87-31/12/89)
M.T. JONES
St. Thoma's Hospital Medical School
Dept. of Obstetrics and Gynecology
Lambeth Palace Road
UK - LONDON SE1 7EH

TEL. +44.1.9289292 EXT.2562/2729

BAP - 0285 - F (01/07/87-31/12/89)
C. KORDON
U. 159 INSERM
Centre Paul Broca
2ter, rue d'Alésia
F - 75014 PARIS

TEL. +33.1.45898907

Altered immune gene expression as a new approach to in vitro immunotoxicological screening.

BAP - 0272 - UK (01/07/87-31/12/89)
K. MILLER
The British Imperial Biological
Research Association
Immunotoxicology Dept.
Woodmansterne Road
UK - CARSHALTON, SURREY SM5 4DS

TEL. +44.1.6434411 EXT.236
TX. 25438

BAP - 0273 - I (01/07/87-31/12/89)
A. VECCHI
Istituto Ricerche Farmacologie
"Mario Negri"
Laboratory Immunology/Oncology
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I - 20157 MILANO

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TX. 331268 NEGRI I

CONTRACTANT

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