Letter from the President

In 2000, the Georg August University of Göttingen, together with the Max Planck Society for the Advancement of Science established two international MSc/PhD programs, namely *Neurosciences* and *Molecular Biology*.

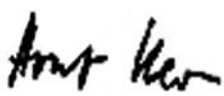
Both programs met with immediate success: Some 500 students from more than 70 countries applied for the 40 study places available.

These intensive research oriented programs are taught by internationally renowned scientists from five Göttingen University faculties, from the Max Planck Institutes of Biochemistry and Experimental Medicine as well as from the German Primate Centre. International guest lecturers also participate in the programs. The Max Planck Society contributes through its newly established International Max-Planck Research School.

Both programs keep close contacts with the relevant industries in order to also meet market requirements thus enhancing the chances for successful graduates to find attractive professional careers.

I would very much like to thank all scientific bodies and institutions for their keen support in establishing our new international programs and, last but not least, the German Academic Exchange Service (DAAD) as well as the Lower Saxony Ministry of Science and Culture.

The Georg August University of Göttingen is proud of its long international experience and very much looks forward to offering two attractive and innovative programs within the setting of a lively urban cultural and social background, a prerequisite for creative teaching and research.



Prof. Dr. Horst Kern
(President of the Georg August University, Göttingen)

Introduction

The Yearbook 2001/2002 is intended to inform about the international MSc/PhD Program *Molecular Biology* in Göttingen, Germany which started in October 2000 for the first time. Students, faculty, program committee and coordination staff are introduced on the following pages together with general information regarding the program.

The MSc/PhD Program *Molecular Biology* is carried out by the Georg August University of Göttingen, the Max Planck Institute for Biophysical Chemistry, and the Max Planck Institute for Experimental Medicine. The participating departments and research groups of the University of Göttingen are joined together in the Göttingen Center for Molecular Biosciences (GZMB). The contribution to the program by the Max Planck Institutes is through the newly established International Max Planck Research Schools. The entire program is based on the close cooperation between the above-mentioned partner institutions.

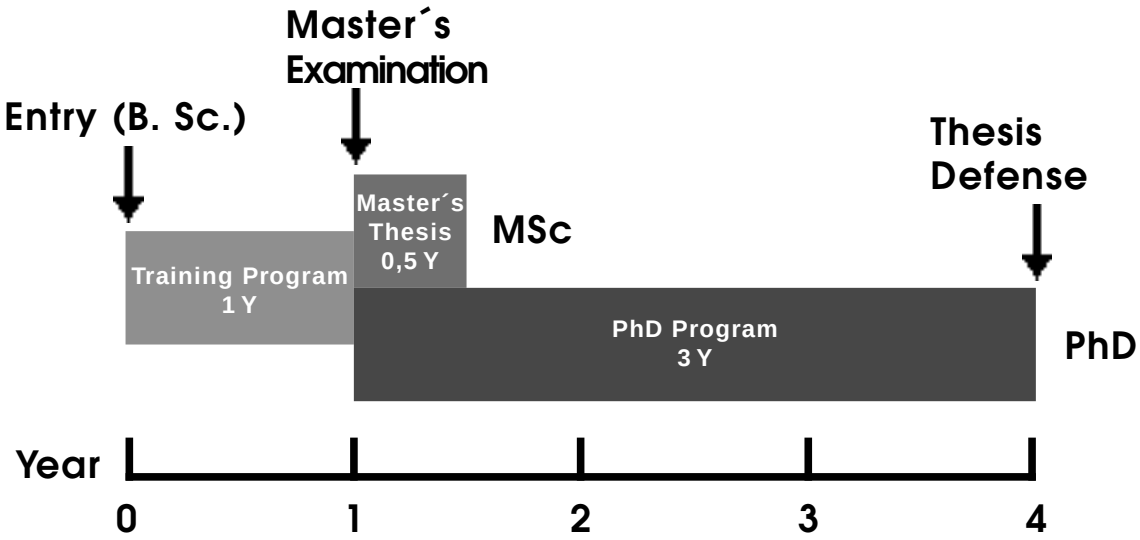
Funding

- German Academic Exchange Service (DAAD), Bonn, Germany
- Max Planck Society for the Advancement of Science, Munich, Germany
- Ministry of Lower Saxony for Science and Culture, Hannover, Germany

- Bayer AG, Leverkusen, Germany
- Biotest Pharma GmbH, Dreieich, Germany
- Carl Roth GmbH & Co. KG, Karlsruhe, Germany
- Carl Zeiss Lichtmikroskopie, Göttingen, Germany
- DeveloGen AG, Göttingen, Germany
- Hellma GmbH & Co. KG, Müllheim / Baden, Germany
- Helmut Saur Laborbedarf, Reutlingen, Germany
- KWS Saat AG, Einbeck, Germany
- Qiagen GmbH, Hilden, Germany
- Solvay Pharmaceuticals, Hannover, Germany
- Stifterverband für die Deutsche Wissenschaft, Essen, Germany

The Georg August University of Göttingen, the Max Planck Institute for Biophysical Chemistry, and the Max Planck Institute for Experimental Medicine offer an international graduate and postgraduate program in molecular biology leading to a Master of Science (MSc) degree and a PhD / Dr. rer. nat. degree, respectively. The intensive, multidisciplinary and research-oriented program is taught in English by internationally renowned scientists. To assure individual training on a high standard, the number of participants is limited to twenty students per year. Selection and admission of highly qualified students involves several steps, including a subject test and personal interviews with each candidate.

All successful applicants holding a Bachelor's degree (or equivalent) are guided through one year of intensive course work. The typical semester structure at German universities has been replaced by a modular training program during the first year, covering course work equivalent to three semesters. Good or excellent results after one year qualify for direct admission to a three-year PhD project in one of the participating research groups without being required to complete a Master's thesis. Alternatively, students may conclude the program with a six-month Master's thesis project, leading to a Master of Science (MSc) degree.



The intensive, research oriented MSc/PhD program is taught by internationally renowned scientists. To assure individual training on a high standard, the number of participants in the program is limited to 20 students per year. A special emphasis is put on individual training in small groups. All courses are taught in English.

Intensive Training Program (First Year)

Throughout the first year, current topics in molecular biology are covered by

- lectures
- tutorials
- methods courses
- laboratory rotations
- seminars

Lectures and Tutorials

A comprehensive lecture series is organized into a sequence of 7-11 week units. The following topics are taught on an advanced level throughout the first year (36 weeks, 4 hours per week):

A. Biochemistry and Structural Biology

- The Prokaryotic and Eukaryotic Cell
- Thermodynamics, Kinetics, Enzyme Catalysis, Regulation
- Protein Structure, Crystallography, NMR
- Biophysics of Membranes
- DNA and Chromatin Structure
- Energy Metabolism
- Photosynthesis

B. Molecular Genetics and Biotechnology

- DNA Replication and Repair
- Transcription
- RNA-processing and Translation
- Signal Transduction
- Genomics, Biotechnology, Bioinformatics

C. Functional Organization of the Cell

- Membranes: Structure and Transport
- Protein Sorting, Vesicular Transport, Organelle Biogenesis
- Cytoskeleton
- Cell Adhesion
- Cell Cycle, Cancer, Apoptosis
- Viruses

D. Model Systems of Molecular Biology

- Fungi
- *C.elegans*
- Arabidopsis
- Drosophila
- *Xenopus*, Zebrafish
- Chicken, Mouse
- Human Genetics
- Immunology
- Nervous System

Each lecture is accompanied by a tutorial session, where students meet with a tutor in small groups. Tutorials involve exercises, review of lecture material, and discussion of related topics.

During the first months of the training program, students participate in a series of methods courses to introduce them to principles and practical aspects of basic scientific techniques and the handling of model organisms. The methods courses are organized in the following teaching units:

A. Nucleic Acids

- Purification and electrophoresis of nucleic acids
- Polymerase chain reaction I
- cDNA synthesis, cloning
- DNA sequence analysis and bioinformatics
- Chemical and enzymatic analysis of RNA structure
- Spectroscopic characterization of nucleic acids

B. Proteins

- Protein preparation and characterization by gel electrophoresis and Western blot
- Chromatographic protein separation
- Identification of proteins by mass spectroscopy / NMR spectroscopy
- Structural Analysis of Proteins
- *In vivo* and *in vitro* expression of recombinant proteins
- Analysis of protein-protein and nucleic acid-protein interaction

C. Cell Biology and Genetics

- Light microscopy
- Electron microscopy
- Biochemical cell fractionation
- Cell culture
- Yeast genetics
- Expression analysis / whole mount *in situ* hybridisation / detection of reporter activity

Laboratory Rotations

Starting in January, every student carries out three independent research projects (laboratory rotations) in participating laboratories. Each project is individually supervised and involves seven weeks of experimental work, followed by one week for data analysis and presentation. For each project, a report must be completed which has the format of a scientific research publication. The laboratory rotations must cover three different subjects.

Seminars

Seminars start in February. The class meets weekly for two hours to discuss two student presentation. The presentations are research reports based on work from the laboratory rotations.

Examinations

After the first year of intensive training, all students take one written and two oral Master's examinations. The Master's examinations explore the students' theoretical background in topics covered by lectures and tutorials. Each oral examination investigates the qualification in two of the following disciplines:

- biochemistry
- cell biology
- developmental biology
- developmental physiology
- genetics
- microbiology
- molecular pharmacology
- neurobiology
- structural biology

PhD Program

Students who have passed the Master's examinations with good or excellent results qualify for direct admission to a three-year doctoral project in one of the participating research groups without being required to complete a Master's thesis first.

The PhD training program emphasizes independent research of the students. PhD students select three faculty members as their advisory committee which closely monitor progress and advise students in their doctoral project. Laboratory work is accompanied by seminars, training of scientific writing and oral presentation skills, elective courses, and participation in international conferences or workshops.

At the end of the PhD training program, a doctoral thesis is submitted either in the traditional format, or as a collection of scientific publications in internationally recognized journals along with a general introduction and a discussion of the results. The degree PhD or, alternatively, Dr. rer. nat. will be awarded after the successful defense of the doctoral thesis.

Master's Program

After the first year of intensive training, students may conclude the program with a six-month thesis project, leading to a Master of Science degree. The thesis project involves experimental work under the supervision of faculty member of the Molecular Biology Program.

Application, Selection and Admission 2001

Applicants must hold a Bachelor's degree or equivalent in biology, biochemistry, chemistry, medicine, agriculture, or related fields. They are required to document their proficiency in English and should not be older than 27 years.

In the year 2001, the coordination office received 315 applications from 61 countries.

Continent	Applications	Admissions (% of Applications)	
Europe (total)	**93**	**10**	**(10.8)**
Germany	27	6	(22.2)
other West Europe	21	1	(4.8)
East Europe	45	3	(6.7)
America (total)	**11**	**2**	**(10.2)**
North America	4	1	(25.0)
Latin America	7	1	(14.3)
Africa(total)	**87**	**2**	**(2.3)**
North Africa	5	0	(-)
Central/South Africa	82	2	(2.4)
Asia (total)	**124**	**6**	**(4.8)**
Near East	10	0	(-)
Central Asia/ Far East	114	6	(5.2)

Orientation, Language Courses, Social Activities

A four-week orientation prior to the program provides assistance and advice for managing day-to-day life, including arrangements for bank account, health insurance, residence permit, housing, and enrollment. Students have the opportunity to meet faculty members and visit laboratories of the participating institutions. In addition, the orientation program informs students about computing and library facilities, the city and university of Göttingen, sports facilities, and cultural events.

An intensive basic language course in German is offered in cooperation with *Lektorat Deutsch als Fremdsprache* to facilitate the start in Göttingen. Additional language courses and social activities accompany the program.

Students 2001/2002

Name		Highest Degree	Home Country
Berktan Ragip	Akyildiz	BSc Molecular Biology, Genetics	Turkey
Maria	Andrei	BSc Biochemistry	Romania
Patrick Kobina	Arthur	BSc (Hons) Biochemistry	Ghana
Heiko	Blaser	Diplom HTL, BSc Chemistry	Switzerland
Jochen	Deckert	Diplom (FH) Biotechnology	Germany
Sean Patrick	Gordon	BSc Genetics	USA
Ralf	Jauch	Vordiplom Biology	Germany
Nadja	Jung	Diplom (FH) Biotechnology	Germany
Ersin	Karatayli	BSc Molecular Biology, Genetics	Turkey
Tiemo	Klisch	Vordiplom Biology	Germany
Daniel N.	Maldonado Martinez	BSc Biology	Mexico
Ivan	Ndamukong	BSc (Hons) Biochemistry	Cameroon
Fong Cheng	Pan	BSc (Hons) Molecular Biology, Microbiology	Malaysia
Ajaybabu	Pobbati Venkatesan	MSc Life Sciences, Biotechnology	India
Anand	Radhakrishnan	BSc (Hons) Biochemistry, Toxicology	Malaysia
Carsten	Richter	Vordiplom Biochemistry	Germany
Madhumati	Sevvana	MSc Biochemistry	India
Tabrez J.	Siddiqui	BSc (Hons) Biochemistry	India
Kristina	Theusner	Vordiplom Biology	Germany
Peixin	Zhu	BSc Biology	P.R. China

Berktan Ragip Akyildiz

First Name:
Berktan R.

Last Name:
Akyildiz

Date of birth:
8 July1979

Country:
Turkey

EDUCATION

College / University:
1997 - 2001: Bogazici University
Highest Degree:
B.Sc. (July 2001)
Major Subjects:
Molecular biology and genetics
Projects / Research:
Department of Molecular Biology and Genetics, Bogazici University, Istanbul,Turkey: "Molecular Analysis of Hemophilia A and Thermophilia in Turkish Families" (1999), "Tenascin Expression in Meningiomas" (2000), "Fibroblast growth factor-9 and Fibroblast-growth-factor receptor-1 Expression in Meningiomas" (2001)
Max Planck Institute for Biochemistry, Department of Structural Research, Martinsried/ Germany: "Cloning, Expression, Purification and Characterisation of Recombinant Azurin from *Pseudomonas aeruginosa*" (2000), "In-vitro synthesis and purification of recombinant Green Fluorescent Protein" (2001).
Scholarships:
Bogazici University Foundation's Textbook Scholarship (1997 - 2001)
Bogazici University Foundation's Achievement Scholarship (1997 - 1998)
Turkish Government Scholarship (1997 - 2001)
Honours (1997 - 1998 / first semester; 1999 - 2001 / all semesters)

SCIENTIFIC INTERESTS AND GOALS:

I find the molecular biology of protein synthesis and its extremely complex machinery very exciting, and I am truly impressed by the precise mechanism of interpretation of genetic material to proteins. I would like to be a competent academician and scientist in molecular biology and to be closely involved with the scientific researches carried out in molecular biology world in order to put effort to researches to increase the quality of life.

Maria Alexandra Andrei

First Name:
Maria Alexandra

Last Name:
Andrei

Date of birth:
27 May 1979

Country:
Romania

EDUCATION

College / University:
1997 - 2001: University of Bucharest, Faculty of Biology
Highest Degree:
B. Sc., June 2001
Major Subjects:
Biochemistry
Lab Experience:
Basic molecular biology techniques involving nucleic acids and proteins; enzyme purification by chromatography, enzyme kinetics assays; bacteriology procedures; analytical chemistry
Projects / Research:
Bachelor thesis at the Cantacuzino Institute, Bucharest, Department of Molecular Epidemiology : ''Molecular markers for subtyping *Streptococcus pneumoniae* strains"
Scholarships:
1998/2001: Scholarship of the Educational Ministry

SCIENTIFIC INTERESTS AND GOALS:

My main interests are in signalling pathways involved in gene regulation and by following this program I wish to obtain the knowledge and skills necessary to continue with my research in the field of molecular pharmacology.

Patrick Kobina Arthur

First Name:
Patrick Kobina

Last Name:
Arthur

Date of birth:
14 February 1978

Country:
Ghana

EDUCATION

College / University:
1997 - 2001: University of Ghana, Legon

Highest Degree:
B.Sc. (Hons.) Biochemistry, May 2001

Major Subjects:
Biochemistry, organic chemistry, molecular biology and immunology.

Lab Experience:
Hands-on experience in using electrophoresis, chromatography, centrifugation and spectrophotometry, assays on biologically active molecules, synthesis and assay of organic compounds, basic techniques in molecular biology.

Projects / Research:
Determination of existence of polymorphism in Full Length Clones of mild strains of Cocoa Swollen Shoot Virus (CSSV)

Scholarships:
2001: GBL Award for Academic Excellence

SCIENTIFIC INTERESTS AND GOALS:

Working in research in areas of molecular biology and biotechnology, including completing my Ph.D., is my medium term goal. In the long term, I will be involved in the technical application of science in the biotechnology industry, working at both the scientific and business frontiers.

Heiko Blaser

First Name:
Heiko

Last Name:
Blaser

Date of birth:
16 February 1976

Country:
Switzerland

EDUCATION

College / University:
1996 - 1999: Zurich University of Applied Sciences Winterthur Switzerland, Dept. of Chemistry and Biotechnology
01 - 08/2000: University of Maastricht, Dept. of Pharmacology and Toxicology, Maastricht, The Netherlands
2000 - 2001: University of Zurich, Institute of Veterinary Biochemistry and Molecular Biology, Switzerland

Highest Degree:
Chemist HTL (B.Sc.)

Major Subjects:
Biotechnology, biology, organic and bio-analytical chemistry, chemical engineering

Lab Experience:
Biotechnology: fermentation of bacteria and yeast cells
Molecular Biology: common used methods, yeast two-hybrid system

Projects / Research:
S-piperazine-2-carboxylic acid production out of R,S-piperazine-2-carboxylamide in whole cells used *Klebsiella terrigena* (ZHW, Lonza AG), "Effect of Fenprocumon to gene expression of MGP in chicken embryo" (University of Maastricht), Research in the "Direct association of Bloom's syndrome gene products with the human mismatch repair protein MLH1", (University of Zurich)

Scholarships:
2001/2002 Bayer AG Stipend

Publications:
G. Pedrazzi, C. Perrera, H. Blaser, P. Kuster, G. Marra, S. L. Davies, G.-H. Ryu, R. Freire, I. D. Hickson, J. Jiricny and I. Stagljar (2001) Direct association of Bloom's syndrome gene products with the human mismatch repair protein MLH1. Nucleic Acids Research 29 (21)

SCIENTIFIC INTERESTS AND GOALS:

Interested in mismatch repair (MMR), recombination and replication to get further links to cancer research. Interested in doing functional genomics and proteomics.

Jochen Deckert

First Name:
Jochen

Last Name:
Deckert

Date of birth:
18 October 1975

Country:
Germany

EDUCATION

College / University:
1996 - 2001: University of Applied Sciences Weihenstephan (FH), Germany
Highest Degree:
Dipl. Ing. (FH)
Major Subjects:
Biotechnology
Projects / Research:
Purification and characterisation of proteasomes and tripeptidyl peptidase II (Max-Planck-Institute of Immunbiology)
Function of an N-terminal basic region of the coat protein of Flock-House-Virus in specific recognition of the viral RNAs during assembly (The Scripps Research Institute)
mRNA stability in early embryos of *Drosophila melanogaster* (University of Massachussetts Medical School)
Scholarships:
1999: Stipend from the University of Applied Sciences Weihenstephan and State of Bavaria
1999: DAAD travel award

SCIENTIFIC INTERESTS AND GOALS:

I am very interested in RNA-RNA and RNA-protein interactions as well as in regulation of gene expression. I want to get a Ph.D. degree, become a competitive scientist and do a postdoc in the States.

Sean Gordon

First Name:
Sean

Last Name:
Gordon

Date of birth:
10 October 1978

Country:
USA

EDUCATION

College / University:
Universtity of Kansas
Highest Degree:
B.Sc.
Major Subjects:
Genetics
Lab Experience:
Standard techniques in molecular biology, molecular genetic techniques using P-elements, GFP tagged chromosomes, UAS-Gal4 inducible constructs
Projects / Research:
Generation, molecular mapping, and partial characterization of mutant deletions of a gene in *Drosophila* required for the fusion of muscle precursor cells during embryogenesis to form multinucleated muscle fibers.
Use of transgenes to characterize the required domains of the neurogenic gene Big Brain in *Drosophila*.
Scholarships:
KU Honors Program Undergraduate Research Award,
C.E. Spahr Sciences Scholarship,
KU Kitos and Edson Awards for Excellence in Undergraduate Research,
US National Science Foundation REU Scholarship,
Honorable Mention for US National Science Foundation Graduate Fellowship, US State Department Fulbright Fellow

SCIENTIFIC INTERESTS AND GOALS:

Interested in adaptations of themes in nature to practical uses in molecular biology, such as using chaperone proteins and their modified targeting regulators to stabilize proteins for spectral analysis.

Ralf Jauch

First Name:
Ralf

Last Name:
Jauch

Date of birth:
28 June 1977

Country:
Germany

EDUCATION

College / University:
1998 - 2000 Friedrich-Schiller Universität Jena
2000 - 2001 University of Manchester

Highest Degree:
Vordiplom Biologie

Major Subjects:
Cell physiology, developmental biology, genetics

Lab Experience:
Patch clamp studies of the HERG potassium channel; electron microscopy, x-ray mutagenesis and fly genetics; purification and characterisation of cancer related proteins; RNA interference in *C. elegans*

Projects / Research:
2000: Working group Molecular Biophysics of the FSU Jena under the supervision of Prof. H. Heinemann (6 months), 2000/01: Developmental genetics of *Drosophila* at the University of Manchester supervised by Dr. Martin Baron (6 months), 2001: Biochemistry unit at the Roche Diagnostics GmbH supervised by Dr. Petra Rüger (3 months)

Scholarships:
Stipend of the Friedrich-Naumann-Foundation since March 2001
2001/2002 Qiagen Stipend

Publications:
Poster: Chen, Jauch, Beekhuizen, Schönherr, Heinemann: Inhibition of hERG Potassium Channels by Quinolones. International Congress Toronto, 2000

SCIENTIFIC INTERESTS AND GOALS:

Life sciences offer plenty of topics which may allow interesting and productive research. As I try to maintain flexibility concerning my prospective area of research, I do rather focus on the working conditions and atmosphere than on the topic as long as there is a link to molecular biological sciences or medicine. I intend to go for a scientific career and hope to be able to work independently on my own projects as soon as possible.

Nadja Jung

First Name:
Nadja

Last Name:
Jung

Date of birth:
26 Juni 1977

Country:
Germany

EDUCATION

College / University:
1996 - 2001: University of Applied Sciences Weihenstephan (FH), Germany

Highest Degree:
Dipl. Ing. (FH)

Major Subjects:
Biotechnology

Projects / Research:
Introduction of PCR as analytical method for the detection of microbial contamination in biological samples (Landesgewerbe-anstalt), Research in autoimmunity: influence of cytokines on the onset of type I diabetes (The Scripps Research Institute), Expression of FcRn in bacteria cells, in vitro refolding and generation of FcRn specific polyclonal antisera; Contribution of minor histocompatibility antigens to graft versus host disease (The Jackson Laboratory)

Scholarships:
Stipend from the University of Applied Sciences Weihenstephan and State of Bavaria (1999), DAAD Scholarship for diploma thesis work in the United States (10/ 2000 - 3/2001)
2001/2002 KWS Saat Stipend

Publications:
La Cava A, Balasa B, Good A, van Gunst K, Jung N, Sarvetnick N. (2001) J Immunol. 167(2): 1066-71
Balasa B, Boehm BO, Fortnagel A, Karges W, Van Gunst K, Jung N, Camacho SA, Webb SR, Sarvetnick N. (2001) Clin Immunol. 99(2): 241-52
Balasa B, Van Gunst K, Jung N, Balakrishna D, Santamaria P, Hanafusa T, Itoh N, Sarvetnick N. (2000) J Immunol.165(5): 2841-9
Balasa B, Van Gunst K, Jung N, Katz JD, Sarvetnick N. (2000) Cell Immunol. 202(2): 97-102

SCIENTIFIC INTERESTS AND GOALS:

My interest is focused on immunology, especially on autoimmunity. I am fascinated by the complex way the immune system works and though fails in some cases. My goal is to obtain deep knowledge in various fields of biology to be able to choose an appropriate area for performing my Ph.D. studies.

Ersin Karatayli

First Name:
Ersin

Last Name:
Karatayli

Date of birth:
15 March 1978

Country:
Turkey

EDUCATION

College / University:
1996 - 2000: Middle East Technical University (METU)
Highest Degree:
B.Sc., June 2000
Major Subjects:
Molecular biology and genetics
Lab Experience:
Electrophoresis, chromatography, spectroscopy, FTIR, Southern blotting, software supported paternity testing (CRIMAP) and linkage analysis, microsatellite analysis and genotyping of individuals
Projects / Research:
In the Research Institute for the Biology of Farm animals (FBN, Germany):
"Marker controlled inheritance of polled locus in Simmental Cattle" (1999), "QTLs affecting body weight and fatness from a mouse line selected for extreme high growth" (2000/2001), "Age-dependent quantitative trait loci affecting body weight in a cross between mouse lines NMRI and DBA/2" (2000/2001), "Single QTL effects, epistasis and pleiotropy account for two thirds of the phenotypic F2 variance of growth and obesity in DU6i x DBA/2 mice" (2000/2001). 1999 - 2000: "Effect of Tamoxifen on model membrane fluidity is concentration dependent".
Scholarships / Honor / Activities:
1996 - 2000: METU Fundamental Science Scholarship
1996 - 2000: Turkish Education Foundation undergraduate scholarship
2001: Poster presentation in "15th International Mouse Genome conference" in Edinburg
6 High honor and 1 honor degree out of 8 semesters

SCIENTIFIC INTERESTS AND GOALS:

I aim to improve myself both in theoretical knowledge and practical skills to finish my M.Sc., Ph.D. and post doctoral studies succesfully.

Tiemo Klisch

First Name:
Tiemo

Last Name:
Klisch

Date of birth:
5 July 1978

Country:
Germany

EDUCATION

College / University:
1988 - 2000: Albert-Ludwigs-Universität, Freiburg
Highest Degree:
Vordiplom
Major Subjects:
Developmental biology
Lab Experience:
Various molecular biological techniques
Scholarships:
1995 - 1996: ASSIST Scholarship as a collage exchange student in Dublin, NH, USA
2000 - 2001: Matsuyama - Freiburg sister city scholarship in Matsuyama, Japan, Ehime University

SCIENTIFIC INTERESTS AND GOALS:

I am eager to learn more about the additional quality of consciousness or sense of life, which is inherent to any organism with a central nervous system. Another field of biological interest is developmental biology, and I am intrigued by the cross-link between developmental and neurobiology.
How neurons develop and connect in order to store information, is what I believe to be the study field of the future. If scientists were able to manipulate the processes involved in the development of the brain, it would revolutionize science and change the way we understand ourselves forever. Armed with such understanding and knowledge, it would be possible for the scientific community, in particular medical doctors and researchers, to go about the process of developing cures for devastating diseases such as Alzheimer.

Daniel Maldonado Martinez

First Name:
Daniel

Last Name:
Maldonado Martinez

Date of birth:
7 October1974

Country:
Mexico

EDUCATION

College / University:
1996 - 2000: Facultad de Ciencias, Universidad Nacional Autonoma de Mexico (UNAM), Mexico City, Mexico.

Highest Degree:
B.Sc. (Biology)

Major Subjects:
Cellular and molecular biology

Lab Experience:
Southern heterolog hybridization, computational sequence analysis

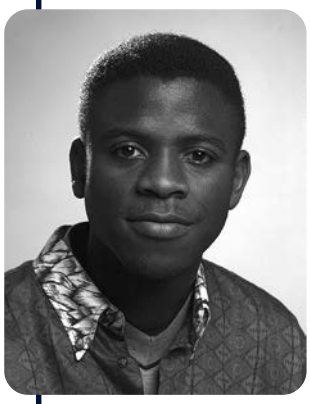
Projects / Research:
Bachelor thesis: Search of nitroreductases in the genome of *Giardia lamblia* and its relation to the bioactivation of xenobiotic compounds.

Scholarships:
Telmex Foundation 1997 - 2000.

SCIENTIFIC INTERESTS AND GOALS:

I am interested in the application of genomic science to toxicology and pharmaceutics. Particularly I would like to work in the studying of genetic polymorphisms related to cancer susceptibility and to variations in drug success among and between populations. Nevertheless regulation of gene expression, signal transduction and cellular physiology are the subjects that like me the most.

Ivan Ndamukong



First Name:
Ivan

Last Name:
Ndamukong

Date of birth:
7 November 1977

Country:
Cameroon

EDUCATION

College / University:
1996 - 1999, University of Buea, Cameroon

Highest Degree:
B.Sc. (Hons) Biochemistry

Major Subjects:
Biochemistry and medical laboratory technology

Lab Experience:
Biochemical techniques, molecular biology techniques in the analysis of *Plasmodium* genes; clinical and analytic techniques in medical laboratory technology; techniques in biotechnology for innovation and discovery (c/o the Fobang Foundation); introduction to crystalisation, and bioinformatic analysis of proteins

Projects / Research:
1999/2000: Molecular characterisation of Malaria drug resistance in Buea, supervised by Dr. W. F. Mbacham, University of Yaounde

Scholarships:
1997: Government Scholarship for Excellent Acedamic Performance 2001: Participation in bioinformatics course-organised by universities of Buea (Cameroon) and Lund (Sweden)

SCIENTIFIC INTERESTS AND GOALS:

I desire to make a major contribution in solving the problems that plague humanity, by the application of molecular biology and bioinformatics in biomedical research. I look forward to completing my Ph.D. and getting into the field of research as well as in the industrial application of molecular biology.

Fong Cheng Pan

First Name:
Fong Cheng

Last Name:
Pan

Date of birth:
26 June 1976

Country:
Malaysia

EDUCATION

College / University:
1995 - 1998: University Science of Malaysia (Medical School), Malaysia
1998 - 2000: National University of Malaysia, Bangi, Malaysia

Highest Degree:
B.Sc. (first class honours)

Major Subjects:
Molecular biology, microbiology

Lab Experience:
Diagnostic microbiology, parasitology, clinical biochemistry, haematology and blood banking, histopathology; basic training in the field of genetic, biochemistry analysis, industrial fermentation and molecular biology techniques.

Projects / Research:
1997 - 1998: Diploma final year project "The Use of PCR for the detection and Identification of *Helicobacter pylori*"
1999: "Genetic Transformation of *Vibrio cholerae*" (project during industrial training of bachelor studies)
1999 - 2000: Bachelor thesis "Subcloning of gene cry1B *Bacillus thuringiensis subspecies entomocidus HD-9"*

SCIENTIFIC INTERESTS AND GOALS:

I'm interested in studying cell signalling pathways, cell cycle and apoptosis and cancer. I aim to obtain the necessary theoretical and practical skills which will enable me to be prepared to work in the research area that fascinates me the most and to contribute significantly to the development of science. I also hope to be able to join the collaborative efforts of the scientific community to produce various effective treatment against cancer. After finishing Ph.D., I would like to continue with post doctorate studies in the field of cancer research

Ajaybabu Pobbati Venkatesan

First Name:
Ajaybabu

Last Name:
Pobbati Venkatesan

Date of birth:
18 February 1979

Country:
India

EDUCATION

College / University:
1996 - 2001: Bharathidasan University

Highest Degree:
M.Sc.

Major Subjects:
Lifesciences, biotechnology

Lab Experience:
Histochemistry, Tuberculosis Research Center, Chennai, India;
basic techniques in molecular biology, University of Delhi South Campus, India

Projects / Research:
Project elucidating the specificity of the interaction between
G-quadruplex and growth factors using Bio sym InsightII package, University of Madras, India.
Masters degree project " Studies on the function of cis acting motifs of plants in gene expression in *Escherichia coli* and identification of novel GATA binding repressor", National Botanical Research Institute, India

Scholarships:
2001/2002 DeveloGen Stipend

SCIENTIFIC INTERESTS AND GOALS:

I am very much interested in exploiting the medicinal compounds in plants. I would also like to use biochemical and molecular biological techniques to decipher the compound´s mode of action.

Anand Radhakrishnan

First Name:
Anand

Last Name:
Radhakrishnan

Date of birth:
25 June 1977

Country:
Malaysia

EDUCATION

College / University:
1997 - 2001: University of Malaya
Highest Degree:
B.Sc. (Hons)
Major Subjects:
Biochemistry, toxicology
Lab Experience:
DNA analysis in molecular epidemiology and phylogenetic studies: Polymerase Chain Reaction, DNA sequencing and bioinformatics to analyze the DNA sequences obtained; collecting samples in the field for Malaria studies
Projects / Research:
1999: Polymerase Chain Reaction studies on *Salmonella enteritidis*.
2000: Evolutionary studies on *Plasmodium*
Scholarships:
Rotary Club of Johor Bahru
2001/2002 Solvay Pharmaceuticals Stipend

SCIENTIFIC INTERESTS AND GOALS:

I am very interested in studying the interactions involved in parasite adaptation to the host immune system for tropical parasites. I would like to accomplish this with biophysical and structural biology methods.

Carsten Richter

First Name:
Carsten

Last Name:
Richter

Date of birth:
1 July1977

Country:
Germany

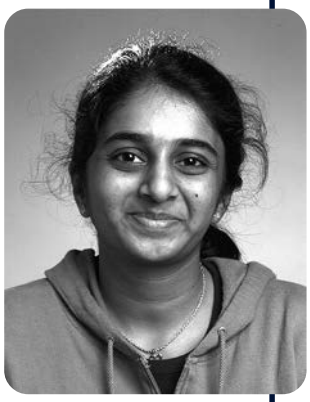
EDUCATION

College / University:
1997 - 2000: Universität Regensburg
2000 - 2001: University of Oxford/St. Catherine´s College
Highest Degree:
Vordiplom
Major Subjects:
Biochemistry
Lab Experience:
Basic methods of protein biochemistry and molecular biology
Projects / Research:
Last year the focus of my interest was on cytochrome cd1, a bacterial respiratory enzyme that catalyses the reduction of nitrite, oxygen and hydroxylamine. Using a kinetic approach it could be demonstrated that the enzyme can be activated by reduction.
Scholarships:
since 1997: „Stipendium für besonders Begabte“ of Freistaat Bayern
2000 - 2001: financial assistance by DAAD
Publications:
Richter et al. (2001): Cytochrome cd1: Reductive activation and
kinetic analysis of a multifunctional respiratory enzyme, accepted by JBC

SCIENTIFIC INTERESTS AND GOALS:

I am interested in a broad range of topics in biochemistry and molecular biology and hope that participation in this programme will help me select a field for my PhD thesis.

Madhumati Sevvana



First Name:
Madhumati

Last Name:
Sevvana

Date of birth:
29 July 1978

Country:
India

EDUCATION

College / University:
1996 - 2001: University of Hyderabad, India
Highest Degree:
M.Sc. (biochemistry)
Major Subjects:
Biochemistry, molecular biology, immunolgy, structural biology, computer applications in biology, biophysical and bioorganic chemistry
Projects / Research:
Summer training in protein biochemistry laboratory, University of Hyderabad (purification and isolation of lectins from plant source, assay of their activity, preparation of acetone powders and training in other techniques related to protein purification)
Scholarships:
6/1999 - 5/200: University merit scholarship for securing first in the entrance examination conducted by the university
6/2000 - 4/2001: University merit scholarship for securing first in first year of M.Sc. Honours (1997 - 1998/first semester; 1999 - 2001/all semesters)

SCIENTIFIC INTERESTS AND GOALS:

Biochemistry, the molecular basis of life is being greatly transformed by genetic engineering and this has led to integration of protein biochemistry and molecular genetics: my area of interest includes protein biochemistry (structural and functional genomics) and I am interested in understanding and interpreting structure and conformation of a wide variety of proteins, which is going to be a challenging task in the world of biotechnology: this would be helpful in drug discovery, therapies for disease due to protein folding defects etc.

Tabrez Siddiqui

First Name:
Tabrez

Last Name:
Siddiqui

Date of birth:
10 April 1976

Country:
India

EDUCATION

College / University:
1997 - 2001: Department of Biochemistry, Aligarh Muslim University, India
Highest Degree:
B.Sc. (Honours)
Major Subjects:
Biochemistry, molecular biology, cell biology
Lab Experience:
Basic molecular biology techniques
Projects / Research:
2/2001 - 8/2001: Development of novel pre-natal Down's Syndrome Diagnosis technique, Carrier Detection in Hemophilia, Human Genetics and Genomics Laboratory, Indian Institute of Chemical Biology, Calcutta, India
6/2001: Research methods in bioinformatics
Scholarships:
Pfizer Pharmaceuticals' Academic support scholarship
Bata Centenary Award for Excellence

SCIENTIFIC INTERESTS AND GOALS:

I have broad interests and I am presently open to new ideas and fields of research. I would like to work towards my PhD and beyond in areas that are challenging and are essentially inter-disciplinary in nature. Some of my present areas of interest are RNA dynamics, especially ribozymes, drug delivery systems, regulation of gene expression, Cellular Organization Dynamics involving studies on gene expression, signal transduction, membrane trafficking and the role of cytoskeletal networks, molecular mechanisms of vesicular protein transport, protein targeting, functional genomics, molecular biology of cancer, protein folding, DNA repair and molecular modelling with some mathematical component.

Kristina Theusner

First Name:
Kristina

Last Name:
Theusner

Date of birth:
12 May 1977

Country:
Germany

EDUCATION

College / University:
1998 - 2000: Universität Hannover, Germany, Vordiplom 09/2000
2000 - 2001: University of the West of England, Bristol, UK

Highest Degree:
B.Sc. (biochemistry and molecular biology, 2001)

Major Subjects:
Virology, cell signalling, protein engineering

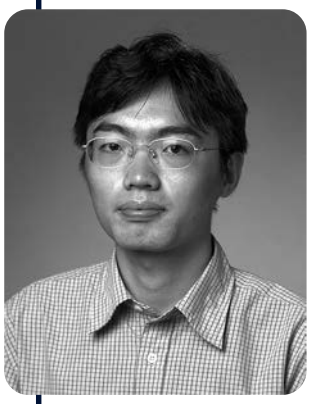
Lab Experience:
Inorganic analysis, organic synthesis of natural compounds, physical characterisation of DNA, DNA isolation, restriction mapping, gel electrophoresis, plaque test, horizontal plasmid transfer by electroporation, cell culture, viral titrations, PCR, in-vitro mutagenesis

Projects / Research:
10/2000 - 04/2001: The growth rates of HeLa cells and Herpes Simplex Virus Type 1 in the presence and absence of methylxanthines. Faculty of Applied Sciences, University of the West of England, Bristol, UK, Supervisor: Dr. David Shaw.

SCIENTIFIC INTERESTS AND GOALS:

I am most interested in virology, cell signalling and protein engineering. I find it fascinating to study the ingenious methods which viruses use to escape the host's immune system. I am very interested in the molecular background of viruses and their replication. Furthermore I am interested in developing drugs for diseases like AIDS or CJD. After completing my M.Sc. I would like to go for a Ph.D. and work in research.

Peixin Zhu



First Name:
Peixin

Last Name:
Zhu

Date of birth:
16 June 1978

Country:
P.R.CHINA

EDUCATION

College / University:
Beijing Normal University

Highest Degree:
B.Sc.

Major Subjects:
Biology

Lab Experience:
Common techniques in microbiology and bacterial genetics, e.g.: induction of enzyme transcription, yeast genetics, transposon mutagenesis, differentiation of filamental funghi; immunological techniques, bioinformatic analyses, techniques in biochemistry

Projects / Research:
1999 - 2000: Research assistant in the Institute of Ecology, directed by Prof. Dayong Zhang, Beijing Normal University
1997 and 1998: Research fieldwork, Xiaolongmen Forestpark Beijing
1999: Research fieldwork in Yantai, Shandong Prov.
2000: Teaching assistant in Beijing Jingshan Middle School.

SCIENTIFIC INTERESTS AND GOALS:

Biochemistry, cell and molecular biology, cell-to-cell communication, the function of and the regulation in both nervous system and immune system; signal transduction, gene expression and regulation; mathematics.

Graduate Program Committee

Prof. Dr. Gerhard Braus
Prof. Dr. Reinhard Jahn
Prof. Dr. Wolfgang Liebl
Prof. Dr. Tomas Pieler
Prof. Dr. Christiane Gatz
Dr. Wilfried Kramer
Steffen Lemke
Ralf Jauch

GZMB Board Members

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Prof. Dr. Christiane Gatz
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Prof. Dr. Axel Zeeck
Dr. Rainer Merkl
Dr. Anke Schürer
Willi Gräber

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Dr. Steffen Burkhardt
(Program Coordinator)

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(Senior Faculty, Group Leaders, Lecturers)

Mathias	Bähr	Neurology	U Göttingen
Botho	Bowien	Microbiology	U Göttingen
Gerhard H.	Braus	Molecular Microbiology	U Göttingen
Bertram	Brenig	Molecular Biology of Livestock	U Göttingen
Nils	Brose	Molecular Neurobiology	MPI em
Detlef	Doenecke	Biochemistry	U Göttingen
Wolfgang	Engel	Human Genetics	U Göttingen
Ralf	Ficner	Molecular Structural Biology	U Göttingen
Kurt	Figura, von	Biochemistry	U Göttingen
Gabriele	Fischer-v.-Mollard	Biochemistry	U Göttingen
Hans-Joachim	Fritz	Molecular Genetics	U Göttingen
Dieter	Gallwitz	Molecular Genetics	MPI bpc
Christiane	Gatz	General and Developmental Physiology of the Plant	U Göttingen
Gerhard	Gottschalk	Microbiology	U Göttingen
Christian	Griesinger	NMR-based Structural Biology	MPI bpc
Uwe	Groß	Bacteriology	U Göttingen
Peter	Gruss	Molecular Cell Biology	MPI bpc
Eberhard	Günther	Immunogenetics	U Göttingen
Volker	Haucke	Biochemistry and Molecular Cell Biology	U Göttingen
Hans Walter	Heldt	Plant Biochemistry	U Göttingen
Herbert	Jäckle	Molecular Developmental Biology	MPI bpc
Reinhard	Jahn	Neurobiology	MPI bpc
Thomas M.	Jovin	Molecular Biology	MPI bpc
Kurt	Jungermann	Biochemistry and Molecular Biology	U Göttingen
Michael	Kessel	Molecular Biology	MPI bpc
Willhart	Knepel	Molecular Pharmacology	U Göttingen
Wolfgang	Liebl	Microbiology	U Göttingen
Reinhard	Lührmann	Cellular Biochemistry	MPI bpc
Frank	Mayer	Structural Microbiology	U Göttingen
Rainer	Merkl	Computer Scientist	U Göttingen
Erwin	Neher	Membrane Biophysics	MPI bpc
Mary	Osborn	Biochemistry and Cell Biology	MPI bpc
Katharina	Pawlowski	Plant Biochemistry	U Göttingen
Tomas	Pieler	Developmental Biochemistry	U Göttingen
Erez	Raz	Developmental Biology	MPI bpc
Christian	Rosenmund	Membrane Biophysics	MPI bpc
Thomas	Schneider	Structural Chemistry	U Göttingen
Ekkehard	Schulze	Developmental Biology	U Göttingen
George Michael	Sheldrick	Structural Chemistry	U Göttingen
Thomas	Tuschl	Molecular Cell Biology	MPI bpc
Axel	Zeeck	Biomolecular Chemistry	U Göttingen

Mathias Bähr

Professor of Neurology

1985 MD, University of Tübingen Medical School, Training in Neurology at University Hospitals in Tübingen and Düsseldorf
DFG and Max Planck Fellow at the Max Planck Institute for Developmental Biology Tübingen and at the Department of Anatomy and Cell Biology, Washington University St.Louis
Schilling Foundation Professor for Clinical and Experimental Neurology, University of Tübingen
Director at the Department of Neurology, University of Göttingen since 2001

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Major Research Interests:

We are interested to understand 2 basic questions in cellular and molecular neurobiology:
1. Which factors support survival of adult CNS neurons and
2. What kills these cells under pathological conditions

Up to now, only little is known about the mechanisms that support survival of a postmitotic cell like a human neuron for eventually more than 100 years under physiological conditions. However, by examining the molecular regulation of cell survival and cell death during development and in the lesioned adult CNS, one may get some clues to answer this question.
In our group, several in vitro and in vivo model systems are used which allow examination of neuronal de- and regeneration. Our basic model is the rodent retino-tectal projection. Here, we can study development, de- and regeneration of the respective projection neurons, the retinal ganglion cells (RGCs) in single cell cultures, explants or in vivo. Transection or crush-axotomy of the optic nerve induces retrograde death more than 80% of RGCs within two weeks. This secondary cell loss is mainly apoptotic and involves specific changes in gene expression pattern of transcription factors (e.g. c-jun or ATF-2), pro- and anti-apoptotic genes (e.g. bcl-2 or bax) and growth-associated genes (like GAP-43). Thus, long term survival and initiation of regeneration programmes of RGCs critically depends on inhibition of apoptotic cell death. To that end, we have used a variety of techniques to interfere with the cell death cascades that follow lesions of the optic nerve in adult rats. Inhibition of neuronal apoptosis can be afforded by pharmacological administration of trophic factors or by gene therapy approaches using adenovirus vectors that can deliver neurotrophic factors directly into neurons or into surrounding glial cells. These, an other new strategies like using transduction-domains to deliver anti-apoptotic proteins across the blood-brain-barrier are now used to develop new experimental therapy strategies in animal models of human neurological disorders like stroke, trauma, multiple sclerosis od neurodegenerative diseases (e.g. Alzheimer ‘s or Parkinson’s disease).

Selected Recent Publications:

P. Kermer, N. Klöcker, M. Labes and M. Bähr (2000) Insulin-like growth factor-I protects axotomized rat retinal ganglion cells from secondary death via PI3K-dependent Akt-phosphorylation and inhibition of caspase-3 *in vivo*. *J. Neurosci.* 20: 722-728.

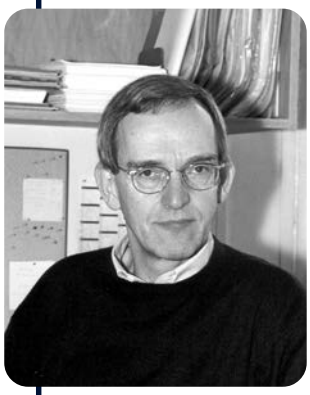
N. Klöcker, P. Kermer, J. H. Weishaupt, M. Labes, R. Ankerhold and M. Bähr (2000) BDNF mediated neuroprotection of adult rat retinal ganglion cells *in vivo* does not exclusively depend on PI-3-K/PKB signalling. *J.Neurosci.* 20: 6962-6967

M. Bähr (2000) Live and let die – Survival and cell death in the developing and lesioned adult CNS. *TINS* 23(10):483-490.

R.Diem, R.Meyer, J.Weisshaupt and M. Bähr (2001) Reduction of potassium currents and PI3-K-dependent Akt phosphorylation by tumor necrosis factor a rescues axotomized retinal ganglion cells from secondary cell death *in vivo. J. Neurosci* 21(6):2058-2066.

R. Meyer, R. Weissert, K. de Graaf *, R. Diem and M. Bähr (2001) Acute neuronal apoptosis in a rat model of multiple sclerosis. *J. Neurosi.*21: 6214-6220.

Botho Bowien



Professor of Microbiology

Dr. rer. nat., Georg-August-Universität Göttingen, 1970
Postdoc, Case Western Reserve University, Cleveland, Ohio, USA, 1973 - 1975
Habilitation (Microbiology), Georg-August-Universität Göttingen, 1978
Professor of Microbiology, Georg-August-Universität Göttingen, 1983

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Major Research Interests:

Carbon dioxide (CO_2) is an essential gas for all organisms. Assimilation of CO_2 by autotrophs such as the photosynthetic higher plants, algae and cyanobacteria constitutes the primary biosynthetic activity in the biosphere. In addition to these organisms there is a great diversity of photo- and/or chemoautotrophic bacteria and archaea. Such organisms are often facultative autotrophs, i.e. they are able to grow either autotrophically or heterotrophically. The mutual shift between autorophy and heterotrophy requires a sophisticated regulation on the metabolic as well as genetic level.

Ralstonia eutropha is an aerobic, facultatively chemoautotrophic bacterium that assimilates CO_2, like the majority of autotrophs, via the Calvin-Benson-Bassham (CBB) carbon reduction cycle. A main interest of our laboratory concerns the transcriptional control of the *cbb* operons encoding most of the CBB enzymes in *R. eutropha*. The regulatory components of the *cbb* system, their response to metabolic signals and the interlocking of the *cbb* control with larger regulatory networks are the prime research subjects.

Apart from hydrogen formate serves as an energy source during organoautotrophic growth of *R. eutropha*. Formate is oxidized to CO_2 by formate dehydrogenases which are molybdo- or tungstoenzymes in this organism. Another research topic addresses the genetic organization and transcriptional regulation of the formate dehydrogenases. We are also interested in the biosynthesis of the molybdo-/tungstopterin cofactor.

The third field of research is the basal CO_2 metabolism in *R. eutropha* and *Escherichia coli*. It focusses on the physiological role(s) of carbonic anhydrase(s) and potential CO_2/bicarbonate uptake systems.

Selected Recent Publications:

Burgdorf, T., D. Bömmer, B. Bowien. Involvement of an unusual *mol* operon in molybdopterin cofactor biosynthesis in *Ralstonia eutropha*. J. Mol. Microbiol. Biotechnol. 3: 619-629, 2001.

Grzeszik, C., T. Jeffke, J. Schäferjohann, B. Kusian, B. Bowien. Phosphoenolpyruvate is a signal metabolite in transcriptional control of the *cbb* CO_2 fixation operons in *Ralstonia eutropha*. J. Mol. Microbiol. Biotechnol. 2: 311-320, 2000.

Jeffke, T., N.-H. Gropp, C. Kaiser, C. Grzeszik, B. Kusian, B. Bowien. Mutational analysis of the cbb operon (CO_2 assimilation) promoter of *Ralstonia eutropha*. J. Bacteriol. 181: 4374-4380, 1999.

Oh, J.-I., B. Bowien. Dual control by the regulatory gene *fdsR* of the *fds* operon encoding the NAD^+-linked formate dehydrogenase of *Ralstonia eutropha*. Mol. Microbiol. 34: 365-376, 1999.

Oh, J.-I., B. Bowien. Structural analysis of the *fds* operon encoding the NAD+-linked formate dehydrogenase of *Ralstonia eutropha*. J. Biol. Chem. 273: 26349-26360, 1998.

Gerhard H. Braus

Professor of Molecular Microbiology

Diploma (Biology), Albert-Ludwig University, Freiburg i. Br. (Germany), 1983
Dr.sc.nat., Swiss Federal Institute of Technology (ETH), Zürich (Switzerland), 1987
Habilitation (Microbiology), Swiss Federal Institute of Technology (ETH), Zürich (Switzerland), 1991
Associate Professor of Biochemistry, Friedrich Alexander University, Erlangen (Germany), 1993 - 1996

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Major Research Interests:

Metabolism and Development in Yeasts and Filamentous Fungi

Amino acids are essential precursors of translation and their biosynthesis is carefully regulated at both the transcriptional and the enzymatic level. In yeast and filamentous fungi, amino acid starvation activates a complex genetic network including a signal transduction pathway and the transcriptional activator Gcn4p/CpcAp. This network coordinately regulates more than 50 genes in numerous biosynthetic pathways.

We are interested in the components of this genetic system, the crosstalk to other metabolic genetic networks in the cell (N-metabolism, purine biosynthesis), the trancriptional regulation and the chromatin structure of target genes.

In addition, the amino acid network interacts with developmental programs like filamentous growth in yeast or the formation of fruitbodies in the filamentous fungus *A. nidulans*. We analyse the control points and the molecular switches which connect metabolism and development.

Another interest of the laboratory is the construction of amino acid biosynthetic enzymes with altered regulatory response. Therefore we analyse the intramolecular signal transduction pathway within regulated allosteric enzymes from the regulatory site to the catalytic center. The crystal structures of several mutant chorismate mutases served as one example which gave us first hints how different effectors act on this enzyme.

Selected Recent Publications:

Hoffmann B, Wanke C, Kirchner SK, Braus GH (2000) c-Jun and RACK1 homologs regulate a control point for sexual development in *Aspergillus nidulans*. Mol. Microbiol. 37, 28-41.

Irniger S, Bäumer M, Braus GH (2000) Glucose and RAS activity influence the ubiquitin ligases APC and SCF in *Saccharomyces cerevisisae*. Genetics. 154, 1509-1521.

Krappmann S, Lipscomb WN, Braus GH (2000) Co-evolution of transcriptional and allosteric regulation of enzyme activities at the metabolic branch point in *Saccharomyces cerevisiae*. Proc. Natl. Acad. Sci. USA. 97, 13585-13590
.

Mösch HU, Köhler T, Braus GH (2001) Different domains of the essential GTPase Cdc42 required for growth and development of *S. cerevisiae*. Mol. Cell. Biol. 21, 235-248.

Taheri N, Köhler T, Braus GH, Mösch HU (2000) Asymmetrically localized Bud8p and Bud9p proteins control yeast cell polarity and development. EMBO J. 19, 6686-6696.

Bertram Brenig

Full Professor of Molecular Biology of Livestock

Director of the Institute of Veterinary Medicine
Dr. med. vet., University of Munich, Munich 1987

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Major Research Interests:

The main interest of the laboratory is in the structural and functional analysis of mammalian genes and genomes. So far our main focus was on porcine genes and their function. However, in recent years we have also started to look at genes in other species, e.g. cattle, dog, sheep, and buffalo. The molecular analysis of complex eukaryotic organisms needs several sophisticated tools. For the mapping and identification of novel genes genome screening and megabase cloning techniques are required. We have cloned several megabase libraries of pig, which are used by a number of labs around the world. Since several years we are analysing genes in skeletal muscle development and differentiation, e.g. RYR1, SMTRD, and DAG. Another interest of the laboratory is in the analysis of disorders in mammals. Currently we are investigating the cause of different economical important genetic defects in livestock and other domesticated animals, e.g. „pink tooth“ disease in sheep, Morbus Perthes disease in dogs, cryptorchidism and hernia inguinalis in dogs and pigs, and bulldog in Dexter cattle.

Selected Recent Publications:

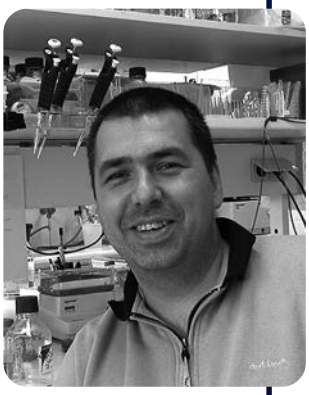
Knorr C., Uibeleisen A. C., Kollers S., Fries R., and Brenig B. (2001). Assignment of the Homeobox A10 gene (HOXA10) to porcine chromosome SSC18q23-->q24 by FISH and confirmation by hybrid panel analyses. Cytogenet. Cell Genet. 93: 145-146.

Leeb T., Neumann S., Deppe A., Breen M., and Brenig B. (2000). Genomic Organization of the Dog Dystroglycan Gene DAG1 Locus on Chromosome 20q15.1-q15.2. Genome Res 10: 295-301.

Spotter A., Drogemuller C., Kuiper H., Brenig B., Leeb T., and Distl O. (2001). Molecular characterization and chromosome assignment of the porcine gene for leukemia inhibitory factor LIF. Cytogenet. Cell Genet. 93: 87-90.

Thomsen H., Reinsch N., Xu N., Bennewitz J., Looft C., Grupe S., Kuhn C., Brockmann G. A., Schwerin M., Leyhe-Horn B., Hiendleder S., Erhardt G., Medjugorac I., Russ I., Forster M., Brenig B., Reinhardt F., Reents R., Blumel J., Averdunk G., and Kalm E. (2001). A whole genome scan for differences in recombination rates among three Bos taurus breeds. Mamm. Genome 12: 724-728.

Nils Brose



Professor, Director at the Max Planck Institute for Experimental Medicine

Dr. rer. nat. (Ph.D.) 1990, Ludwig Maximilians University Munich
Appointed as Director at the Max Planck Institute for Experimental Medicine 2001

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Major Research Interests:

Research in the Department of Molecular Neurobiology focuses on the molecular mechanisms of synapse formation and function in the vertebrate central nervous system. Typically, synapses are formed between cellular processes of a sending and a receiving nerve cell. They are the central information processing units in the vertebrate brain where some 10^{12} nerve cells are connected by 10^{15} synapses to form an elaborate and highly structured neuronal network that is the basis for all forms of behaviour. Signal transmission at synapses is mediated by the regulated release of signal molecules (neurotransmitters) which then diffuse to the receiving nerve cell and change its physiological state. In the Department of Molecular Neurobiology, we combine biochemical, morphological, mouse genetic, behavioural, and physiological methods to elucidate the molecular basis of synapse formation and transmitter release processes. Our synaptogenesis research concentrates on synaptic cell adhesion proteins of the Neuroligin family and their role in synapse formation. Studies on the molecular mechanisms of neurotransmitter release focus on components of the presynaptic active zone (Munc13s, RIM, Complexins) and their regulatory function in synaptic vesicle fusion.

Selected Recent Publications:

Song, J., Ichtchenko, K., Südhof, T.C. and Brose, N. (1999) Neuroligin 1 is a postsynaptic cell-adhesion molecule of excitatory synapses. *Proc. Natl. Acad. Sci. U.S.A.* 96, 1100-1105.

Augustin, I., Rosenmund, C., Südhof, T.C. and Brose, N. (1999) Munc13-1 is essential for fusion competence of glutamatergic synaptic vesicles. *Nature* 400, 457-461.

Augustin, I., Korte, S., Rickmann, M., Kretzschmar, H.A., Südhof, T.C., Herms, J.W., and Brose, N. (2001) The cerebellum-specific Munc13 isoform Munc13-3 regulates cerebellar synaptic transmission and motor lerning in mice. *J. Neurosci.* 21, 10-17.

Reim, K., Mansour, M., Varoqueaux, F., McMahon, H.T., Südhof, T.C., Brose, N., and Rosenmund, C. (2001) Complexins regulate a late step in Ca^{2+}-dependent neurotransmitter release. *Cell* 104, 71-81.

Betz, A., Thakur, P., Junge, H.J., Ashery, U., Rhee, J.-S., Scheuss, V., Rosenmund, C., Rettig, J. and Brose, N. (2001) Functional interaction of the active zone proteins Munc13-1 and RIM1 in synaptic vesicle priming. *Neuron* 30, 183-196.

Detlef Doenecke

Professor of Biochemistry

MD, 1967, University Saarland Medical School
Postdoc at the Universities of San
Francisco (UCSF) and Marburg
Professor of Biochemistry, 1987, University of Göttingen
Head of Dept. Molecular Biology at the Institute of Biochemistry and Molecular Cell Biology

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Doenecke.htm

Major Research Interests:

The main interest of the laboratory is in mammalian histones and histone genes, and in the multiple subtypes of individual histone classes. Histones are the major structural proteins of eukaryotic chromosomes. DNA replication during the S-phase of the cell cycle requires the coordinate synthesis of histones (H1, H2A, H2B, H3 and H4) in stoichiometric amounts for the assembly of chromatin on replicated DNA. The major human histone gene cluster has been mapped to chromosome 6p21.1-6p22.2. It was isolated and more than 50 histone genes were identified and sequenced. In contrast to these clustered, S phase-dependent genes, several S phase-independent histone genes (replacement histone genes) map as solitary genes to other chromosomes. Current work in this project is focused on the regulation of individual histone gene subtypes. A second project deals with the factors mediating the transport of histone proteins from the cytoplasm to the nucleus. Thirdly, we work on structural transitions of chromatin during programmed cell death.

Selected Recent Publications:

Jäkel, S., Albig, W., Kutay, U., Bischoff, F.R., Schwamborn, K., Doenecke, D. & Görlich, D. (1999)The importin 1 b/importin 7 heterodimer is a functional nuclear import receptor for histone H1. EMBO J. 18: 2411-2423

Drabent, B., Saftig, P., Bode, C. & Doenecke D. (2000) Spermatogenesis proceeds normally in mice without linker histone H1t. Histochem. Cell Biol. 113: 433-442

Kratzmeier M., Albig, W., Hänecke, K. & Doenecke, D. (2000) Rapid dephosphorylation of H1 histones after apoptosis induction. J. Biol. Chem. 275: 30478-30486.

Baake, M., Doenecke, D. & Albig, W. (2001) Core histones do not enter the nucleus simply by diffusion, and each contains more than one nuclear localization signal. J. Cell Biochem. 81: 333-346.

Olins, A.L., Herrmann, H., Lichter, P., Kratzmeier, M., Doenecke, D. & Olins, D.E. (2001) Retinoic acid and phorbol ester induced changes in nuclear components of HL-60 cells. Exp. Cell Res. 268: 115-127.

Wolfgang Engel

Professor of Human Genetics

Dr. med., Universität Freiburg, 1967
Physician, Hospital Schorndorf, 1966 - 1968
Postdoc, Institute of Human Genetics and Anthropology, Universität Freiburg, 1968 - 1977
Habilitation (Human Genetics), Universität Freiburg, 1974
Professor of Human Genetics and Director of the Institute, Universität Göttingen, 1977

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Major Research Interests:

7% of men are infertile and in about 37% of them, infertility is suggested to be due to genetic defects. We are interested in the isolation, characterization and functional analysis of genes which are involved in the differentiation of male germ cells. Functional analysis is studied in transgenic and knock-out mice. The characterized genes could be candidate genes for male infertility.

Cryptorchidism (abdominal or inguinal position of the testes) occurs in 0.5 to 1% of men and results in male infertility. Furthermore, cryptorchid men have an increased risk for testicular tumors. We have isolated the Insl3 gene which is only expressed in testicular Leydig cells. Mice deficient for the Insl3 gene show bilateral, abdominal cryptorchidism. Therefore these mice can be used as a model system for the study of cryptorchidism in human and for the evaluation of downstream and upstream target genes in the gene cascade.

Testicular seminomas are the most frequently occuring tumors in young men. To date it is unknown from which type of germ cells seminomas derive from. Using transgenic mice, in which an oncogene is under the control of germ cell specific promoters, this question can be answered. Furthermore, these mouse models are suitable for the isolation and characterization of genes which are involved in malignant germ cell transformation and seminoma development.

Selected Recent Publications:

Zimmermann, S., Schwärzler, A., Buth, S., Engel, W., Adham, I. M.: Transcription of the Leydig Insulin-like gene is mediated by steroidogenic factor-1. Molecular Endocrinology 12, 706-713 (1998)

Zimmermann, S., Steding, G., Emmen, J.M.A., Brinkmann, A.O., Nayernia, K., Holstein, A.F., Engel, W., Adham, I.M.: Targeted disruption of the *Insl3* gene causes bilateral cryptorchidism. Molecular Endocrinology 13, 681-691 (1999)

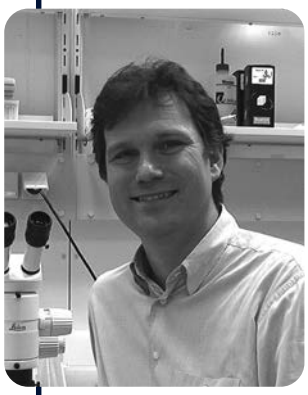
Shamsadin, R., Adham, I.M., Nayernia, K., Heinlein, U.A.O., Oberwinkler, H., Engel, W.: Male mice deficient for germ-cell Cyritestin are infertile. Biology of Reproduction 61, 1445-1451 (1999)

Tascou, S., Nayernia, K., Samani, A., Schmidtke, J., Vogel, T., Engel, W., Burfeind, P.: Immortalization of Murine Male Germ Cells at a Discrete Stage of Differentiation by a Novel Directed Promotor-Based Selection Strategy. Biology of Reproduction 63, 1555-1561 (2000)

Neesen, J., Kirschner, R., Ochs, M., Schmiedl, A., Habermann, B. Mueller, C. Holstein, A., F., Nuesslein, T., Adhman, I. Engel, W.(2001) Disruption of an inner arm dynein heavy chain gene results in asthenozoospermia and reduced ciliary beat frequency. Human Molecular Genetics, 109 (11): 1117-1128

Professor of Structural Biology

Dr. rer. nat. (1992) and Postdoc (1993), Max-Planck Institute for Biochemistry, Martinsried
Postdoctoral fellow, EMBL Heidelberg, 1994-1996
Junior Group Leader, University of Marburg, 1997-2000
Appointed 2001 as Head of the Department of Molecular Structural Biology at the University of Göttingen



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Major Research Interests:

Our major interest is the structure – function relationship of biological macromolecules. We determine the three-dimensional structure of proteins and protein-RNA complexes by means of X-ray crystallography to understand their function at atomic level. Besides the crystal structure analysis, the overexpression, purification and crystallization of proteins is an important aspect of our work. We are currently working on proteins involved in the splicing and modification of RNA and, as well, on proteins required for the nucleocytoplasmic transport.

Selected Recent Publications:

Vidovic, I., Nottrott, S., Hartmuth, K., Lührmann, R. & Ficner, R. (2000). Crystal structure of the spliceosomal 15.5kD protein bound to a U4 snRNA fragment. *Mol. Cell* 6, 1331-1342.

Grimm, C., Maser, E., Möbus, E., Klebe, G., Reuter, K. & Ficner, R. (2000). The crystal structure of 3?-hydroxysteroid dehydrogenase/carbonyl reductase from *Comamonas testosteroni* shows a novel oligomerisation pattern within the short chain dehydrogenase/reductase family *J. Biol. Chem.* 275, 41333-41339.

Reuter, K., Mofid, M.R., Marahiel, M.A. & Ficner, R. (1999). Crystal structure of the surfactin synthetase activating enzyme Sfp: a prototype of the 4'-phosphopantetheinyl transferase superfamily. *EMBO J.* 18, 6823-6831.

Reuter, K., Nottrott, S., Fabrizio, P., Lührmann, R. & Ficner, R. (1999). Identification, characterization and crystal structure analysis of the human spliceosomal U5 snRNP-specific 15kD protein. *J. Mol. Biol.* 294, 515-525.

Romier, C., Reuter, K., Suck, D. & Ficner, R. (1996). Crystal structure of tRNA-guanine transglycosylase from *Zymononas mobilis*: RNA modification by base exchange. *EMBO J.* 15, 2850-2857.

Kurt von Figura

Professor of Biochemistry

M.D., University of Tübingen, 1970.
Appointed 1986 as head of the Department of Biochemistry II in the Center of Biochemistry and Molecular Cell Biology, Georg-August-University Göttingen.

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Major Research Interests:

The interest of our group in the biogenesis of lysosomes is stimulated by the existence of a spectrum of congenital disorders in man that affect the function of lysosomes. Our work includes the identification of new molecular defects in human congenital disorders. Transgenic mice are generated to study the function of lysosomal proteins and proteins involved in lysosome biogenesis and used as models for human congenital disorders for the study of the pathophysiology and the effectiveness of new therapeutic approaches. A number of studies have focussed on the identification of lysosomal trafficking signals in membrane proteins, and their recognition by the transport machinery. Current projects focus on the regulation of the interaction of cytoplasmic adaptors with the lysosomal transport signals in membrane proteins, the function of several major lysosomal membrane proteins, a novel protein modification that is required for the catalytic activity of sulfatases and deficient in a human disease and the molecular defects and pathophysiology of a new group of human congenital disorders in which the N-glycosylation of glycoproteins is defective.

Selected Recent Publications:

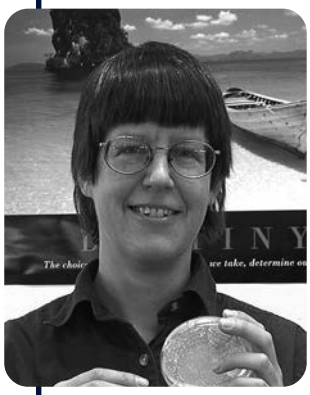
Grimme, S., Höning, S., von Figura, K., Schmidt, B.: Endocytosis of insulin-like growth factor II by a mini-receptor based on repeat 11 of the mannose 6-phosphate/insulin-like growth factor II receptor. J. Biol. Chem. 275, 33697-33703 (2000)

Meyer, C., Zizioli, D., Lausmann, S., Eskelinen, E.L., Hamann, J., Saftig, P., von Figura, K., Schu P.: µ1A-adaptin-deficient mice: lethality, loss of AP-1 binding and rerouting of mannose 6-phosphate receptors. EMBO J. 19, 2193-2203 (2000)

Tanaka, Y., Guhde, G., Suter, A., Eskelinen, E.L., Hartmann, D., Lüllmann-Rauch, R., Janssen, P.M.L., Blanz, J., von Figura, K., Saftig, P.: Accumulation of autophagic vacuoles and cardiomyopathy in LAMP-2-deficient mice. Nature 406, 902-906 (2000)

Tikkanen, R., Obermüller, S., Denzer, K., Pungitore, R., Geuze, H. J., von Figura, K., Höning, S.: The dileucine motif within the tail of MPR 46 is required for sorting of the receptor in endosomes. Traffic 1; 631-640 (2000)

Lübke, T., Marquardt, T., Etzioni, A., Hartmann, E., von Figura, K., Körner, C.: Complementation cloning identifies CDG-IIc, a new type of congenital disorders of glycosylation, as a GDP-fucose transporter deficiency. Nature Gentics 28, 73-76 (2001)



Junior Group Leader at the Department of Biochemistry II

Dr. rer. nat. (Ph.D.) 1992, Freie Universität Berlin
Postdoctoral fellow, University of Oregon, Eugene (USA), 1994 - 1998
Junior group leader in the Department of Biochemistry II, Medical Faculty, Universität Göttingen since 8/1998

Major Research Interests:

One of the fundamental questions in cell biology is how proteins are transported between different organelles. This transport requires transport vesicles which bud from the donor and fuse with the target organelle. Our group is interested in the family of SNARE proteins which are required for recognition between transport vesicle and target membrane and for their subsequent fusion. Different SNARE proteins are found on transport vesicle and target membranes and form specific complexes. We focus on SNAREs which are required in transport between the Golgi, endosome and lysosome/ vacuole. As these proteins are conserved in evolution we can study similar processes in yeast and mammals.

We use baker's yeast as one model system because of powerful genetic approaches. Mutant genes can be generated easily and defects analyzed. Genes required in the same step can be identified by genetic interactions. Using these techniques we demonstrated that two SNAREs act in several different transport pathways and identified amino acid residues in the SNARE interaction domain which are important for function. Our second focus are endosomal SNAREs in mouse. We are studying their subcellular distribution using immunofluorescence and are identifying SNARE partners by co-immunoprecipitation. Currently, we are using the yeast two hybrid system to identify new binding proteins for SNAREs. We generated a SNARE knock out mouse and are studying it's phenotype as well as cell lines derived from this mouse.

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mollard/fvmweb200.html

Selected Recent Publications:

Götte, M., Fischer von Mollard, G. (1998) A new beat for the SNARE drum. TICB 8, 215 - 218

Fischer von Mollard, G., Stevens, T.H. (1999) The *Saccharomyces cerevisiae* v-SNARE Vti1p is required for multiple membrane transport pathways to the vacuole. Mol. Biol. Cell 10, 1719-1732.

Antonin, W., Riedel, D., Fischer von Mollard, G. (2000) The SNARE Vti1a-ß is localized to small synaptic vesicles and participates in a novel SNARE complex. J. Neuroscience 20, 5724-5732

Antonin, W., Holroyd, C., Fasshauer, D., Pabst, S., Fischer von Mollard, G., Jahn, R (2000) A SNARE complex mediating fusion of late endosomes defines conserved properties of SNARE structure and function. EMBO J. 19, 6453-6464

Dilcher, M., Köhler, B., Fischer von Mollard, G. (2001) Genetic interactions with the yeast Q-SNARE *VTI1* reveal novel functions for the R-SNARE *YKT6.* J. Biol. Chem. 276, 34537-34544

Dieter Gallwitz

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Professor, Director at the Max Planck Institute for Biophysical Chemistry

M.D. degree, University of Frankfurt/Main, Germany, (1964)
Postdoctoral Fellow, Dept. Physiological Chemistry, Univ. of Marburg, Germany, (1965 - 1967) and McArdle Laboratory for Cancer Research, Univ. of Wisconsin, Madison, Wisc. USA (1967 - 1969)
Research Assistant and Professor, Dept. Physiological Chemistry, Univ. of Marburg, Germany (1970 - 1986)
Visiting Professor, Dept. Biochemistry and Biophysics, UC San Francisco, USA (1977)
Professor, Director, Dept. Molecular Genetics, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany (1986 - present)

Major Research Interests:

Molecular mechanisms governing protein traffic in exo- and endocytosis

We study various aspects of vesicular protein and membrane traffic in eukaryotic cells. The focus of our group is on the role and the mode of action of Ras-like GTPases (Ypt/Rab), key regulators of protein transport that we first discovered in yeast and in mammalian cells some 15 years ago. An important area of interest is the structure-function relationship of proteins that directly interact with these regulators, organelle-specific receptors, GTPase-activating and guanine nucleotide exchange proteins. By using genetic and biochemical approaches, we have also isolated and are studying different components of the complex machineries involved in budding, targeting and fusion of transport vesicles at different cellular organelles in yeast (endoplasmic reticulum, Golgi, lysosome/vacuole).

Selected Recent Publications:

Votsmeier, C. and Gallwitz, D. (2001) An acidic sequence of a putative yeast Golgi membrane protein binds COPII and facilitates ER export. EMBO J. 20, in press.

Will, E. and Gallwitz, D. (2001) Biochemical characterization of Gyp6p, a Ypt/Rab-specific GTPase-activating protein from yeast. J. Biol. Chem. 276, 12135-12139.

Rak, A., Fedorov, R., Alexandrov, K., Albert, S., Goody, R.S., Gallwitz, D. and Scheidig, A.J. (2000). Crystal structure of the GAP domain of Gyp1p: first insights into interaction with Ypt/Rab proteins. EMBO J. 19, 5105-5113.

Matern, H., Yang, X., Andrulis, E., Sternglanz, R., Trepte, H.-H. and Gallwitz, D. (2000). A novel Golgi membrane protein is part of a GTPase-binding protein complex involved in vesicle targeting. EMBO J. 19, 4485-4492.

Peng, R., De Antoni, A. and Gallwitz, D. (2000). Evidence for overlapping and distinct functions in protein transport of coat protein Sec24p family members. J. Biol. Chem. 275, 11521-11528.

Christiane Gatz

Professor of Plant Molecular Biology

Dr. rer.nat. (1985) at the Institute for Biochemistry, Technical University Darmstadt
Postdoctoral fellow at the University of Wisconsin, Madison, USA
Habilitation in Molecular Genetics at the Freie Universität Berlin in 1992
Professor at the University of Bielefeld (1993 – 1995)
Awards: Alfred Krupp von Bohlen und Halbach-Prize for young University lecturers (1994)
Department General and Developmental Physiology of the Plant of Institute for Plant Sciences, University of Göttingen since 1996

Major Research Interests:

Plants are constantly exposed to pathogen attack, e.g. to fungi, viruses, bacteria, insects and nematodes. As a result of this selection pressure, plants have evolved efficient defense responses, many of them requiring induction of gene expression. A particularly interesting phenomenon is the systemically acquired resistance (SAR). If a pathogen is locally recognized by the plant, hypersensitive cell death occurs at the site of the infection, which limits spread of the pathogen. Subsequently, the levels of salicylic acid (SA) rise throughout the plant. SA is sufficient and necessary to induce a subset of defense genes. Our group is interested in the molecular mechanisms, how expression of defense genes is activated by SA.

We are focussing on promotors encoding a specific regulatory DNA-sequence, the *as-1* element. Presently we have isolated five different cDNAs encoding bZIP transcription factors (TGA factors) binding to the element. A heterodimer of a subset of two different bZIP transcription factors seems to be the activating principle. Ongoing research activities concentrate on the isolation of interacting proteins regulating the activity of this heterodimer.

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Selected Recent Publications:

Rieping, M., Fritz, M., Prat, S., Gatz, C. (1994) A dominant negative mutant of PG13 suppresses transcription from a Cauliflower Mosaic Virus 35S truncated promoter in transgenic tobacco plants. Plant Cell 6, 1087-1098.

Thiele, A., Herold, M., Lenk, I., Quail, P.H., Gatz, C. (1999) Heterologous expression of *Arabidopsis thaliana* phytochrome B in transgenic potato influences photosynthetic performance and tuber development. Plant Phys. 120, 73-82.

Böhner, S., Lenk, I., Rieping, M., Herold, M., Gatz, C. (1999) Transcriptional activator TGV mediates dexamethasone-inducible and tetracycline-inactivatable gene expression. Plant J. 19, 87-95.

Niggeweg R, Thurow C, Weigel R, Pfitzner U, Gatz C (2000) Tobacco TGA factors differ with respect to interaction with NPR1, activation potential
and DNA-binding properties. Plant Mol. Biol. 42, 775-788.

Niggeweg, R., Thurow, C., Kegler, C., Gatz, C. (2000) Tobacco transcription factor TGA2.2 is the main component of ASF-1/SARP and is involved in salicyclic acid- and auxin-inducible expression of as-1-containing target promoters. J. Biol. Chem. 275, 19897-19905.

Gerhard Gottschalk

Professor of Microbiology

Head of the Department of General Microbiology at the Institute of Microbiology and Genetics, University of Göttingen

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Major Research Interests:

Our work focusses on various aspects of the biochemistry, bioenergetics and genetics of Archaea and Bacteria. Current research topics are:

Membrane-bound electron transfer and mechanisms of energy conservation in methanogenic archaea (together with Uwe Deppenmeier), recently a new cofactor, methanophenazine, was discovered; molecular and biochmical characteriza-tion of genes and geneproducts involved in the anaerobic conversion of glycerol to 1,3-propanediol (together with Rolf Daniel), studies concentrate now on coenzyme B12-containing glycerol-dehydratase.

Screening of environmental DNA libraries for enzymes of interest and sequence analysis (together with Ruth Schmitz and Rolf Daniel), new lipases were discovered; functional and sequence analysis of linear plasmids from *Rhodococcus* species (together with Beate Averhoff), the currently studied linear plasmid pBD2 contains genes for the degradation of aromatic compounds and for arsenite and mercury resistence.

Role of sodium ion translocating NADH dehydrogenases in marine organisms (together with Vera Allerheiligen); anaerobic oxidations coupled to ferric III-reduction (together with Rolf Daniel), a syntrophic system of methanol oxidation and ferric reduction was just discovered.

We are involved in the Göttingen Genomics Laboratory and are currently sequencing the genome of *Methanosarcina mazei* strain Gö1.

Selected Recent Publications:

Deppenmeier, U., Lienard, T., Gottschalk, G. Novel reactions involved in energy conservation by methanogenic archaea. FEBS Letters 457, 291-297 (1999)

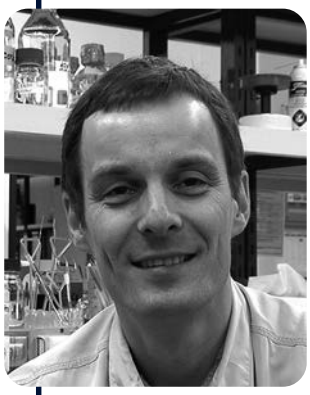
Daniel, R., Bobik, T., Gottschalk, G. Biochemistry of coenzyme B_{12}-dependent glycerol and diol dehydratases and organization of the encoding genes. FEMS Microbiology Reviews 22, 553-566 (1999)

Henne, A., Daniel, R., Schmitz, R. A., Gottschalk, G. Construction of environmental DNA libraries in *Escherichia coli* and screening for the presence of genes conferring utilization of 4-Hydroxy-butyrate. Appl. and Environm. Microbiol. Vol. 65, No. 9, 3901-3907 (1999)

Saeki, H., Akira, M., Furuhashi, K., Averhoff, B., Gottschalk, G. Degradation of trichlorethene by a linear-plasmid-encoded alkene monooxygenase in *Rhodococcus corallinus* (*Nocardia corallina*) B-276. Microbiology 145, 1721-1730 (1999)

Daniel, R., Warnecke, F., Potekhina, J. S., Gottschalk, G. Identification of the syntrophic partners in a coculture coupling anaerobic methanol oxidation to Fe(III) reduction. FEMS Microbiol. Lett. 180, 197-203 (1999)

Christian Griesinger



Professor, Director at the Max Planck Institute for Biophysical Chemistry, Göttingen

Dr. phil. nat. University of Frankfurt (1986, Prof. Dr. H. Kessler))
Postdoctoral Fellow at Lab. for Physical Chemistry, ETH Zürich (1986 - 1989, Prof. Dr. R. R. Ernst)
Full Professor for Organic Chemistry at the University of Frankfurt (1990 - 2000)
Appointed as Director at the Max Planck Institute for Biophysical Chemistry (1998)

Major Research Interests:

Our group focuses on the structure and dynamics of biomolecules and their complexes. We use to this end nuclear magnetic resonance (NMR) spectroscopy as well as X-ray crystallography. We apply solution state and solid state NMR spectroscopy to biomolecules and their complexes in their physiological environment, be it water for cytosolic proteins or lipids for membrane proteins. The methods developments are pursuing the following goals:
Relaxation compensated methods to increase the molecular weight of biomolecules that are amenable for NMR investigations. This is tackled by new NMR pulse techniques, novel schemes for labelling the biomolecules with isotopes and the usage of optimized expression schemes. New NMR derived parameters that allow to define biomolecular structure and dynamics better are derived and applied e.g. to DNA binding proteins, spliceosomal RNA, a bacterial sensor and proteins involved in signal transduction and apoptosis and for the investigation of enzyme mechanisms.
Development of NMR methods to assign and determine the structure of isotopically labeled membrane-proteins and peptides with solid state NMR spectroscopy on oriented samples or using magic angle sample spinning on several systems including a 150 kD membrane-Protein and the complex of a peptide and a G-protein coupled receptor.

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Selected Recent Publications:

"Direct Measurement of Angles between Bond Vectors in High Resolution NMR", B. Reif, M. Hennig, and C. Griesinger, *Science*, 276, 1230-33 (1997)

"J-coupling restraints for structural refinements of RNA", J.P. Marino, H. Schwalbe, and C. Griesinger, *Acc. Chem. Res.* 32, 614-632 (1999)

"Unusual Structural Properties of a Complex of Calmodulin with a Binding Peptide of the Ca^{2+}-Pump : A NMR Study" B. Elshorst, M. Hennig, H. Försterling, A. Diener, M. Maurer, P. Schulte, H. Schwalbe, C. Griesinger and J. Krebs, H. Schmid, T. Vorherr, E. Carafoli, *Biochemistry* 38, 12330-12332 (1999)

"Three Molecules of Ubiquinone Bind Specifically to Mitochondrial Cytochrome bc_1 Complex", S. Bartoschek, M. Johannson, B. H. Geierstanger, J. G. Okun, C. R. D. Lancaster, E. Humpfer, L. Yu, C.-A. Yu, C. Griesinger and U. Brandt, *J. Biol. Chem.* 276, 35231-35234 (2001)

"Model free Analysis of Protein Backbone Motion from Residual Dipolar Couplings", W. Peti, J. Meiler, R. Brüschweiler and C. Griesinger, *J. Am. Chem. Soc.* in press

Uwe Groß

Professor of Bacteriology

M.D., University of Hamburg 1987
Postdoctoral fellow, UC Los Angeles, California, 1987 - 1989
Professor of Medical Parasitology, University of Würzburg 1998/1999
Appointed 1999 as head of the Department of Bacteriology, University of Göttingen

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Major Research Interests:

The protozoan parasite *Toxoplasma gondii* usually causes asymptomatic infections in immunocompetent adults leading to lifelong persistence especially in the brain and in muscle tissue. Life-threatening reactivation of such infection might occur in immuno-compromised individuals (i. e. patients suffering from AIDS). This parasite serves as a model organism for studying evasion mechanisms of intracellular pathogens.

We are interested in the cross-talk between the parasite and its host cell on a molecular level. We could demonstrate that the parasite (i) modulates the host cell capacity for MHC-restricted antigen presentation and (ii) inhibits apoptosis of the infected cell. Both mechanisms allow intracellular persistence. Vice versa, the host's immune response determines the fate of the parasite by direct interference with differentiation processes of *Toxoplasma gondii*. The precise molecular events for these strategies of intense interplay between both partners are currently under our investigation.

Selected Recent Publications:

Bohne, W., U. Groß, D. J. P. Ferguson, and J. Heesemann. 1995. Cloning and characterization of a bradyzoite-specifically expressed gene (*hsp30/bag1*) of *Toxoplasma gondii*, related to genes encoding small heat-shock proteins of plants. Mol. Microbiol. 16: 1221-1230.

Bohne, W., A. Wirsing, and U. Groß. 1997. Bradyzoite-specific gene expression in *Toxoplasma gondii* requires minimal genomic elements. Mol. Biochem. Parasitol. 85: 89-98.

Lüder, C. G. K., T. Lang, and U. Groß. 1998. Down-regulation of MHC class II molecules on murine macrophages after infection with *Toxoplasma gondii*. Clin. Exp. Immunol. 112: 308-316.

Bohne, W., C. A. Hunter, M. W. White, D. J. P. Ferguson, U. Groß, and D. S. Roos. 1998. Targeted disruption of the bradyzoite-specific gene *BAG1* does not prevent tissue cyst formation in *Toxoplasma gondii*. Mol. Biochem. Parasitol. 92: 291-301.

Goebel, S., C. G. K. Lüder, and U. Groß. 1999. Invasion by *Toxoplasma gondii* protects human-derived HL-60 cells from actinomycin D-induced apoptosis. Med. Microbiol. Immunol. 187: 221-226.

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Professor, Director and Scientific Member at the Max Planck Institute of Biophysical Chemistry

Honorary Professor at the University of Göttingen (since 1990).

Major Research Interests:

Molecular mechanisms of mammalian development (Eye Development):

The visual system can serve as an excellent model system to study the molecular aspects of the development of complex structures. Eye development was experimentally approached already by Hans Speman around the turn of the century. Ever since, the questions asked by Speman as to the precise functions of the tissue interactions in generating either the lens or the retina have not been answered satisfactorily. We have identified a number of vertebrate genes, defined their function and placed the genes in the hierarchy of events required to build a functional eye. Our laboratory initially discovered and subsequently studied *Pax6*, *Pax2*, *Prox1*, *Vax1* and the *Sine occulis* family members, *Six3* and *Six6*, all of which play a distinct role in eye development. Functions were assigned by knockout experiments in mice or dominant gain experiments in mice, frogs or fish. With the help of these tools, we were able to identify the interactions required for the development of the lens as well as the retina and optic nerve. These data revealed that even though the same key players are active in lens and retina development, their interactions are quite distinct. These experiments allowed us to address some of the questions originally asked by Speman and provide a definite answer. In particular, our recent set of experiments in which we conditionally ablated *Pax6* in the surface ectoderm clearly revealed an autonomous function of *Pax6* in lens development. They also revealed that the lens is not required for the generation of an appropriately structured retina. These studies further showed that *Pax6* is critical to maintain the pluripotent state of retina precursor cells. In absence of *Pax6*, only Amacrine cells are being formed, indicating that the potency of the precursor cells is limited.

(Brain development):

The emphasis has been on the regionalization and differentiation processes in the forebrain and will further shift towards the cerebral cortex. We have used the winged helix transcription factor Foxb1 as a model, which is being expressed in the mamillary body. Our detailed analyses indicate that Foxb1 is essential for the diencephalic histogenesis and that it exerts its effect by controlling access to one target (the thalamus) by one particular axonal branch. To study the development of the telencephalon as well as the most complex structure of mammals, the cerebral cortex, we have initially utilized available genes that appeared to be good candidates for controlling cerebral cortex development. We also initiated a number of attempts that allow us to identify novel genes involved in either the lamination or the area specification of the cerebral cortex. In an attempt to identify new genes involved either in governing the lamination or the areal specification process we established a substractive hybridization screen that revealed interesting candidates. One of the genes cloned, *Svet1*, is specifically expressed in the cells of the subventricular, but not the ventricular zone. By help of this marker, we were able to show that the specification of deep cortical layers occurs in the ventricular zone, while the subventricular zone is important for the proper specification of upper layers.

Selected Recent Publications:

Stoykova, A., M. Götz, D. Treichel, M. Hallonet and P. Gruss (2000). Pax6 modulates the dorso-ventral patterning of the mammalian telencephalon. *Journal of Neuroscience* 20, 8042-8050.

Ashery-Padan, R., T. Marquardt, X. Zhou and P. Gruss (2000). Pax6 activity in the lens primordium is required for lens formation and for correct placement of a single retina in the eye. *Genes & Development* 14, 2701-2711.

Thomas, T., A. Voss, K. Chowdhury and P. Gruss (2000). Querkopf, a MYST family histone acetyltransferase, is required for normal cerebral cortex development. *Development* 127, 2537-2548.

Seale, P., L. A. Sabourin, A. Girgis-Gabardo, A. Mansouri, P. Gruss and M. A. Rudnicki (2000). Pax7 is required for the specification of myogenic satellite cells from pluripotential muscle stem cells. *Cell* 102, 777-786.

Marquardt, T., R. Ashery-Padan, P. Gruss: Pax6 is required for the Multi-Potent State of Retinal Progenitor Cells; Cell 105: 43-55, 2001.

Eberhard Günther

Professor of Immunogenetics

Dr. med. University of Freiburg/Br. 1968
Physician at the University Hospital in Freiburg and other hospitals
Postdoctoral fellow and then scientific assistant at the Max Planck Institute for Immunobiology in Freiburg/Br.
Appointed as head of the Department of Immunogenetics, University of Göttingen, 1982

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Major Research Interests:

Our main research interest are function, genetics, genomics and evolution of the major histocompatibility complex. This group of genes has first been described because of its major role in determining graft rejection. It then turned out to control antigen-specific immune responsiveness, innate immune reactions and susceptibility to various diseases. Recently the complete nucleotide sequence of the human MHC, the HLA complex, has become available and revealed the presence of more than 120 expressed genes in this region of about 4 Mb. We are studying the MHC of the rat and of certain non-human primates. The rat is of particular interest because it provides several models of MHC-controlled diseases. We have cloned the complete rat MHC and mapped its genes, and are now studying the expression of the various genes from different MHC genotypes in normal and diseased tissues. The function of certain MHC linked genes, Sacm2l and Hsp70, is analysed in greater detail. A particular focus is the role of Hsp70 genes during the immune response.

Selected Recent Publications:

Walter L, Günther E. Identification of a novel highly conserved gene in the centromeric part of the major histocompatibility complex. Genomics 52: 298-304, 1998

Dressel R, Lübbers M, Walter L, Herr W, Günther E. Enhanced susceptibility to cytotoxic T lymphocytes without increase of class I antigen expression after conditional overexpression of heat shock protein 70 in target cells. Eur J Immunol 29: 3925-3935, 1999

Walter L, Günther E. Physical mapping and evolution of the centromeric class I gene containing region of the rat MHC. Immunogenetics 51: 829-837, 2000

Dressel R, Elsner L, Quentin T, Walter L, Günther E. Heat shock protein 70 is able to prevent heat shock-induced resistance of target cells to CTL. J Immunol 164: 2362-2371, 2000

Seo JW, Walter L, Günther E. Genomic analysis of MIC genes in rhesus macaques. Tissue Antigens 58: 159-165, 2001

Ioannidu S, Walter L, Dressel R, Günther E. Physical map and expression profile of genes of the telomeric class I region of the rat MHC. J Immunol 166: 3957-3965, 2001

Volker Haucke

Junior Group Leader at the Centre for Biochemistry and Molecular Cell Biology, University of Göttingen

Dr. phil. (Ph.D.) 1997, University of Basel, Switzerland
Postdoctoral Fellow at Yale University School of Medicine, New Haven, CT, USA 1997 - 2000
Appointed as leader of an independent junior research group at the Zentrum für Biochemie & Molekulare Zellbiologie 2000

Major Research Interests:

Our laboratory is interested in the molecular mechanisms of endocytosis and synaptic vesicle formation in neurons. Synaptic vesicles are small membrane-bounded organelles that store and secrete non-peptide neurotransmitters. Following exocytosis and the concomitant insertion of synaptic vesicle proteins and lipids into the presynaptic plasmalemma synaptic vesicles are retrieved by clathrin-mediated endocytosis. During this process the clathrin adaptor complex AP-2 is recruited to the presynaptic plasmamembrane along with a growing number of accessory proteins which assist in the formation and maturation of clathrin-coated pits. These coated pits eventually pinch off in a dynamin-dependent reaction giving rise to free clathrin-coated vesicles which become refilled with neurotransmitter and finally shed their coat resulting in the re-generation of synaptic vesicles.
We are interested in how the endocytic process is regulated at the molecular level both by proteins and lipids and how synaptic vesicles are formed in differentiating neuronal precursor cells. We have identified hStnB/ stonin 2, a novel component of the endocytic machinery which we hypothesize to negatively regulate the interaction of clathrin/ AP-2 with the membrane. How this protein precisely acts at the synapse is currently under intense investigation by the combined use of molecular biological, biochemical, and physiological techniques. Other projects are directed towards dissecting the role of phosphoinositides, a certain class of membrane lipids which interact with several components of the endocytic machinery, in clathrin-mediated endocytosis at the synapse. Finally, we are trying to understand the biogenesis pathway of synaptic vesicles during neuronal differentiation by establishing an in vitro system that allows the formation of neurons from differentiating non-neuronal precursor cells.

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Selected Recent Publications:

K. Takei and Haucke, V. (2001) Clathrin-mediated endocytosis: membrane factors pull the trigger. *Trends Cell Biol.*, 11, 385-391

Walther, K., Krauss, M., Diril, M.K., Lemke, S, Ricotta, D., Höning,, S., Kaiser, S. and Haucke, V. (2001) Human stoned B interacts with AP-2 and synaptotagmin and facilitates clathrin-coated vesicle uncoating. *EMBO Rep.*, 2, 634-640

Galli, T. and Haucke, V. (2001) Cycling of synaptic vesicles: How far? How fast! *Science's STKE*: http://www.stke.org/cgi/content/full/OC_sigtrans;2001/88/re1

Haucke, V. (2000) Dissecting the ins and outs of excitement: glutamate receptors on the move. *Nature Neurosci.*, 3, 1230-1232

Haucke, V., Wenk, M.R., Chapman, E.R., Farsad, K. and De Camilli, P. (2000) Dual interaction of synaptotagmin with µ2 and a-adaptin facilitates clathrin coated pit nucleation, *EMBO J.,* 19, 6011-6019

Haucke, V. and De Camilli, P. (1999) AP-2 recruitment to synaptotagmin stimulated by tyrosine-based endocytic motifs. *Science*, 285, 1268-1271

Takei, K., Slepnev, V.I., Haucke, V. and De Camilli, P. (1999) Functional partnership between amphiphysin and dynamin in clathrin-mediated endocytosis. *Nature Cell Biol.*, 1, 33-39

Takei, K., Haucke, V., Slepnev, V.I., Farsad, K.,Salazar, M., Chen, H. and De Camilli, P. (1998) Generation of coated intermediates of clathrin-mediated endocytosis on protein-free liposomes. *Cell* , 94, 131-141

Hans W. Heldt

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Major Research Interests:

Elucidation of metabolic transport processes.

In the past we have discovered and characterized various metabolite translocators in chloroplasts and mitochondria of higher plant cells. Recently, we have found that the transfer of metabolites across the peroxisomal membrane proceeds via a porin-like channel (6). The protein structure of this porin is presently investigated. Other studies deal with the transport processes involved in the loading of the phloem for long-distance transport of photoassimilates in plants (4). Moreover, transport processes in root nodules in the course of symbiotic nitrogen fixation by plants and the mechanism of the induction of root nodules are investigated at the molecular level (5). Other research topics are the mechanism of the acclimation of plants to a decreased water supply or to elevated CO2 concentration in the air (3). A biotechnologically oriented project deals with the identification of enzymes involved in a-tocopherol biosynthesis of Capsicum fruits (1).

Selected Recent Publications:

Arango, Y., Heise, K.-P. Tocopherol synthesis from homogentisate in Capsicum annuum L. (Yellow pepper) chromoplast membranes: evidence for tocopherol cyclase (1998). Biochem. J. 336, 531-533.

Heldt, H.W.(1997) Plant biochemistry and molecular Biology. Textbook, Oxford University Press, Oxford, New York, Tokyo, pp.1-522.

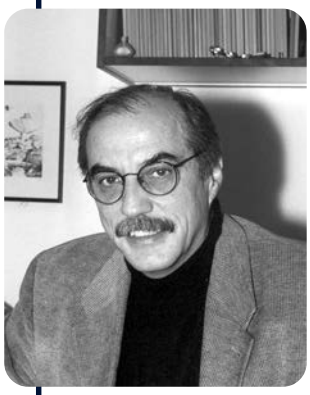
Heineke D., F. Kauder, W. Frommer, C. Kühn, B. Gillissen, F. Ludewig, U. Sonnewald (1999) Application of transgenic plants in understanding responses to atmospheric change. Plant Cell & Environment 22, 623-628.

Knop, C., Voitsekhovskaja, O., Lohaus, G. (2001) Sucrose transporters in two members of the Scrophulariaceae with different types of transport sugar. Planta 213, 80-91.

Laplaze, L., Duhoux, E., Franche, C., Frutz, T., Svistoonoff, S., Bisseling, T., Bogusz, D., Pawlowski, K. Actinorhizal prenodule cells display the same differentiation as the corresponding nodule cells (2000) Mol. Plant-Microbe Interact. 13, 107-112.

Reumann, S., Maier, E., Benz, R., Heldt, H.W. The membrane of leaf peroxisomes contains a porin-like channel. J. Biol. Chem. 270 (1995) 17559-17565.

Herbert Jäckle



Professor, Director at the Max Planck Institute for Biophysical Chemistry

Faculty member at the EMBL, Heidelberg (1980 - 1982)
Head of the group (associate professor), Max Planck Institute for Developmental Biology, Tübingen (1982 - 1988)
Professor and Chairman, Dept. of Genetics and Microbiology, Univ. of Munich (1988 - 1991)

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Major Research Interests:

How is the embryo generated from a single cell, the egg? We address this question by using the *Drosophila* embryo as an experimental system, applying the combined tools of classical embryology, genetics, molecular biology and biochemistry. We have focussed our efforts to isolate and characterize the factors underlying early pattern formation along the anterior-posterior axis of the embryo. We sought to unravel their mode of action und the molecular mechanism in which they function.
Many of the factors required to establish the basic body plan are also necesssary for organ formation, a process which involves local inductive interactions between groups of cells and/or epithelial cell layers. We have started to identify the genetic components and regulatory circuitries involved in organogenesis as well as in neural conductivity and function. We also use the fly to identify the components of novel biochemical pathways and cellular key components that control and maintain homeostasis and energy balance, and we initiated a gene discovery program to systematically characterize the function of genes on the *Drosophila* X-chromosome.

Selected Recent Publications:

Schöck F, Reischl J, Wimmer E, H. Taubert, Purnell B.A. and Jäckle H. 2000. Phenotypic supression of *empty spiracles* is prevented by buttonhead. Nature 405: 351-354.

Piepenburg O, Vorbrüggen G, and Jäckle.2000. *Drosophila* segment borders result from unilateral repression of hedgehog activity by Wingless signaling. Molecular Cell 6: 203-209.

Niessing, D., F. Sprenger, W. Driever, H. Taubert, H. Jäckle and R. Rivera-Pomar (2000) Homeodomain position 54 specifies transcriptional versus translational control by Bicoid. Mol. Cell 5: 595-401.

Linder, B., N. Gerlach and H. Jäckle. 2001. The *Drosophila* homolog of the human AF10 is a HP1-interacting suppressor of position effect variegation. EMBO reports 2, 211-216.

Benos, P.V. *et al*. 2001. From first base: The sequence of the tip of the *X*-chromosome of *Drosophila melanogaster*, a comparison of two sequencing strategies. Genome Research 11, 710-730.

Reinhard Jahn

Professor, Director at the Max Planck Institute for Biophysical Chemistry

Dr. rer. nat. (Ph.D.) 1981, University of Göttingen
Professor (since 1997 Adjunct Professor) of Pharmacology, Yale University School of Medicine
Appointed as Director at the Max-Planck-Institute for Biophysical Chemistry 1997

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Major Research Interests:

Our group is interested in the mechanisms of membrane fusion, with the main emphasis on regulated exocytosis in neurons. Since recent years it is known that intracellular membrane fusion events are mediated by a set of conserved membrane proteins, termed SNAREs. For fusion to occur, complementary sets of SNAREs need to be present on both of the fusing membranes. The neuronal SNAREs are among the best characterized. They are the targets of the toxins responsible for botulism and tetanus . To understand how these proteins make membranes fuse, we studied their properties in detail using biochemical and biophysical approaches. We found that they assemble into a tight complex which ties the membrane closely together and thus probably initiates bilayer mixing.

In our current approaches, we study membrane fusion at the level of isolated proteins as well as in semi-intact and intact cells. Thus, we are investigating conformational changes of the SNARE proteins before and during fusion. Furthermore, we use reconstitution of membrane fusion in cell-free assays and in proteoliposomes. Other projects of the group include the study of neurotransmitter uptake by synaptic vesicles and the function of Rab-GTPases in neuronal exocytosis.

Selected Recent Publications:

Jahn, R., Südhof, T.C. (1999) Membrane fusion and exocytosis. *Annu. Rev. Biochem.* 68, 863-911

Xu, T., Rammner, B., Margittai, M., Artalejo, A.R., Neher, E., Jahn, R. (1999) Inhibition of SNARE complex assembly affects kinetic components of exocytosis. *Cell* 99, 713-722

Takamori, S., Rhee, J.-S., Rosenmund, C., Jahn, R. (2000) Identification of a vesicular glutamate transporter that defines a glutamatergic phenotype in neurons. *Nature* 407, 189 - 194

Avery,J., Ellis, D.J., Holroyd, P., Lang, T., Riedel, D., Henderson, R.M., Edwardson, J.M., Jahn, R. (2000) A cell-free system for regulated exocytosis in PC12 cells. *J. Cell Biol.* 148, 317-324

Bruns, D., Klingauf, J., Jahn, R. (2000) Quantal release of serotonin *Neuron* 28, 205-220

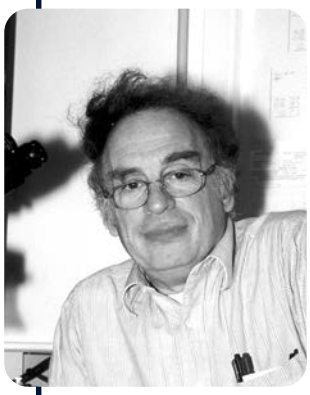
Ossig, R., Schmitt, H. D., Riedel, D., Keränen, S., Ronne, H., Jahn, R. (2000) Exocytosis requires asymmetry in the central layer of the SNARE complex. *EMBO J.*,19, 6000-6010

Lang, T., Bruns, D., Wenzel, D., Riedel, D., Holroyd, P., Thiele, C., Jahn, R. (2001) SNAREs are concentrated in cholesterol-dependent clusters that define docking and fusion sites for exocytosis. *EMBO J.* 20, 2202-2213

Thomas M. Jovin

Chairman, Department of Molecular Biology and Director at the Max Planck Institute for Biophysical Chemistry

B.S. California Institute of Technology, Pasadena, CA 1960
M.D. Johns Hopkins Medical School, Baltimore, MD 1964
Scientific Member, Max Planck Society 1969



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Major Research Interests:

- structural studies of nucleic acids; complexes with proteins and ligands

interactions of the tumor-suppressor protein p53 with DNA: binding of p53 (wild-type and the DNA-binding core domain) with supercoiled closed circular plasmid DNA and linear fragments; scanning force microscopy (SFM) and electron microscopy
DNA binding of the homeodomain protein Bicoid involved in embryonic development
parallel-stranded (ps) DNA: sequence-specific helical parameters and properties
ligand-DNA: binding of actinomycin to single-stranded DNA

- signal transduction of eukaryotic cells

Receptor tyrosine kinase activation and internalization, downstream signaling (MAPR cascade), and the mechanism of antibody-based tumor therapy. Further development of Fluorescence Resonance Energy Transfer (FRET) as a probe of protein-protein interactions in the cell, application of the quantitative microscope, and fusions of green fluorescent protein (GFP) with the EGF receptor and erB2 (oncogene involved in most breast tumors).

- optical and scanning-probe microscopy

Development of novel microscopes for cellular and molecular studies: scanning force (SFM) and near-field optical (SNOM), fluorescence lifetime (FLIM), fluorescence correlation (FCM) and programmable array (PAM).

Selected Recent Publications:

Brock, R. and Jovin, T. M. (2001). Heterogeneity of signal transduction at the subcellular level: Microsphere-based focal EGF receptor activation and stimulation of Shc translocation. *J. Cell. Sci.* 114, 2437-2447.

Creemers, T. M. H., Lock, A. J., Subramaniam, V., Jovin, T. M. and Völker, S. (2000). Photophysics and optical switching in green fluorescent protein mutants. *Proc. Natl. Acad. Sci. USA* 97, 2974-2978.

Heintzmann, R., Hanley, Q. S., Arndt-Jovin, D. and Jovin T. M. (2001). A dual path programmable array microscope (PAM): Simultaneous acquisition of conjugate and non-conjugate images. *J. Microsc.* 204, 119-135.

Jiao, Y., Cherny, D. I., Heim, G., Jovin, T. M. and Schäffer, T. E. (2001). Dynamic interactions of p53 with DNA in solution by time-lapse atomic force microscopy. *J. Mol. Biol.* 314, 221-231.

Shchyolkina, A. K., Borisova, O. F., Livshits, M. A., Pozmogova, G. E., Chernov, B. K., Klement, R. and Jovin T. M. (2000). Parallel-stranded DNA with mixed AT/GC composition: role of *trans* G·C base pairs in sequence dependent helical stability. *Biochemistry* 39, 10034-10044.

Subramaniam, V., Jovin, T. M. and Rivera-Pomar, R. V. (2001). Aromatic amino acids are critical for stability of the Bicoid homeodomain. *J. Biol. Chem.* 276, 21506-21511.

Kurt Jungermann

Professor of Biochemistry and Molecular Biology

MSc Medicinal Chemistry, University of Kansas, Lawrence, USA 1964
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Major Research Interests:

The aim of our studies is the elucidation of major functions of liver and small intestine on the cellular and molecular level: The liver is an effector and sensor organ. It is the glucose store of the organism, the main site of plasma protein synthesis and an important blood reservoir. The small intestine is *the* nutrient absorbing organ and the endocrine pancreas is the site of synthesis of the hormones insulin and glucagon; they are placed into the blood circulation directly before the liver (Fig). Therefore the liver is also a sensor for nutrients and hormones. The studies are focussed on

-Regulation of metabolism and hemodynamics of the liver as well as of absorption in the intestine by autonomic nerves, circulating hormones and mediators, focussing on intestinal glucose absorption regulated by hepatoenteral (between liver and intestine) nerves possibly involving glucagon-37 and prostaglandin E2. (Lab Molecular Physiology, Frank Stümpel)

-Communication between non-parenchymal and parenchymal cells in the liver, focussing on anaphylatoxin-induced prostanoid-mediated glucose output (Lab Cell Physiology, Irmelin Probst; Lab Molecular Cell Biology, Henrike Schieferdecker)

-Regulation of gene expression and its periportal-perivenous zonation in liver, focussing on the modulation by oxygen of the expression of the phospho-enolpyruvate carboxykinase and glucokinase genes (Lab Cellular Biochemistry, Thomas Kietzmann)

Selected Recent Publications:

Jungermann K, Kietzmann T. Oxygen: Modulator of metabolic zonation and disease of the liver. Hepatology 31 (2000) 255-260

Schieferdecker HL, Schlaf G, Koleva M, Götze O, Jungermann K. Induction of functional anaphylatoxin C5a receptors on hepatocytes by in vivo treatment of rats with interleukin-6. J Immunol 164 (2000) 5453-5458

Samoylenko A, Roth U, Jungermann K, Kietzmann T. The upstream stimulatory factor-2a inhibits the plasminogen activator inhibitor-1 gene expression by binding to a promotor element adjacent to the hypoxia inducible factor-1 binding site. Blood 97 (2001) 2657-2666

Krones A, Jungermann K, Kietzmann T. Cross-talk between the signals hypoxia and glucose at the glucose response element of the L-type pyruvate kinase gene. Endocrinology 142 (2001) 2707-2718

Krones A, Jungermann K, Kietzmann T. Cross-talk between the signals hypoxia and glucose at the glucose response element of the L-type pyruvate kinase gene. Endocrinology 142 (2001) 2707-2718

Mäck C, Jungermann K, Götze O, Schieferdecker H. Enhancement of ?2-macroglobulin mRNA expression in hepatocytes by interleukin-6 released from Kupffer cells following synergistic induction with anaphylatoxin C5a and lipopolysaccharide. J Immunol 167 (2001) 3972-3979

Stümpel F, Burcelin R, Jungermann K, Thorens B. Normal kinetics of intestinal glucose absorption in the absence of GLUT2: Evidence for a transport pathway requiring glucose phosphorylation and transfer into the endoplasmic reticulum. Proc Natl Acad Sci (USA) 98 (2001) 11330-11335

Michael Kessel

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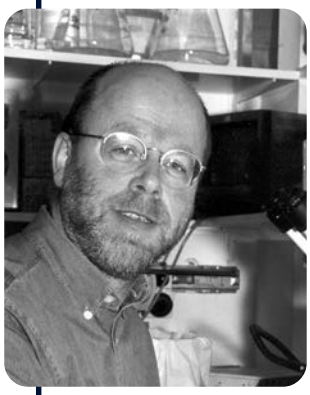
Until 1981 Biochemical Institute, Kiel University
1981 -1983 National Cancer Institute, NIH, Bethesda,USA
1983 -1986 Center for Molecular Biology (ZMBH), Heidelberg University
Since 1987 Max Planck Institute for Biophysical Chemistry, Goettingen



Major Research Interests:

The group studies patterning processes in early chick and mouse embryos, in particular during gastrula and neurula stages. The primitive embryonic ectoderm, the epiblast, gives
rise to the three germ layers, the definitive ecto-, endo- and mesoderm, which interact during the transition from pattern formation to organogenesis. We study these processes by applying molecular and embryological techniques, including expression analysis, transplantation in embryo culture, large scale screening of expressed sequence tags, in vivo gene transfer by electroporation, and gene knock-out technology. At present we follow four major lines of interest

1. We study neural crest formation at the interphase between epidermal and neural ectoderm.
2. We analyze processes involved in the induction of the forebrain anlage by signals from the anterior mesendoderm.
3. We investigate patterning processes in the early, prospective liver endoderm, and its interaction with prospective heart mesoderm.
4. We study patterning processes at the outflow tract of the heart, where cardiac mesoderm comes into contact with migrating neural crest cells.

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Selected Recent Publications:

E. Pera, S. Stein and M. Kessel. Ectodermal patterning in the avian embryo: Epidermis versus neural plate. Development 126, 63-73, 1999.

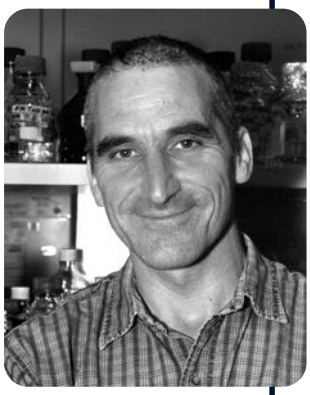
H. Knoetgen, C. Viebahn and M. Kessel. Head induction in the chick by primitive endoderm of mammalian, but not avian origin. Development 126, 815-125, 1999.

T. Boettger, L. Wittler and M. Kessel. FGF8 functions in the specification of the right body side. Current Biology, 9, 277-280, 1999.

T. Roeser, S. Stein and M. Kessel. Nuclear localization of b-catenin in normal and LiCl exposed chick embryos. Development 126, 2955-2965, 1999.

H. Knoetgen, U. Teichmann, L. Wittler, C. Viehbahn and M. Kessel. Anterior neural induction by nodes from rabbits and mice. Developmental Biology 225,370-380, 2000.

Willhart Knepel



Professor of Molecular Pharmacology

Dr. rer. nat., University of Freiburg i. Br., Germany, 1980;
Habilitation, University of Freiburg i. Br., Germany, 1985;
Research Fellow, Laboratory of Molecular Endocrinology, Harvard Medical School, Boston, MA, USA, 1987 - 1990;
Joined Medical Faculty of the University of Göttingen 1991

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Major Research Interests:

The main interest of the laboratory is in the molecular mechanisms of gene transcription. Transient transfections of reporter fusion genes, transgenic mice, and other molecular biology techniques are used to study the mechanisms of cell-specific and signal-induced gene transcription, and how drugs interfere with these mechanisms to produce pharmacological effects. 1. The pancreatic islet hormone glucagon is a biological antagonist of insulin and regulates blood glucose levels. Enhanced synthesis and secretion of glucagon contributes to increased hepatic glucose output and hyperglycemia in diabetes mellitus. We study the mechanisms which activate the glucagon gene in pancreatic islet a cells as well as signaling pathways to the glucagon gene induced by cAMP, membrane depolarization, and insulin. 2. We study the regulation of glucagon gene transcription by the new group of oral antidiabetic drugs, the thiazolidinediones. These so-called 'insulin sensitizers' may improve insulin action in part through an effect on glucagon. 3. The ubiquitously expressed, cAMP- and calcium-regulated transcription factor CREB is affected by several classes of drugs. We study how the immunosuppressive drugs cyclosporin A and FK506 (tacrolimus) inhibit CREB-mediated transcription. This effect may underlie their pharmacological effects, both desired and undesired. Using transgenic mice and an animal model of depression, we also study whether treatment with antidepressants alters CREB-mediated transcription in order to better understand the molecular mechansims of action of antidepressant drugs.

Selected Recent Publications:

Fürstenau U, Schwaninger M, Blume R, Jendrusch EM, Knepel W. Characterization of a novel calcium response element in the glucagon gene. J Biol Chem 274:5851-5860, 1999

Beimesche S, Neubauer A, Herzig S, Grzeskowiak R, Diedrich T, Cierny I, Scholz D, Alejel T, Knepel W. Tissue-specific transcriptional activity of a pancreatic islet cell-specific enhancer sequence/Pax6-binding site determined in normal adult tissues *in vivo* using transgenic mice. Mol Endocrinol 13:718-728, 1999

Siemann G, Blume R, Grapentin D, Oetjen E, Schwaninger M, Knepel W. Inhibition of cyclic AMP response element-binding protein/cyclic AMP response element-mediated transcription by the immunosuppressive drugs cyclosporin A and FK506 depends on the promoter context. Mol Pharmacol 55:1094-1100, 1999

Herzig S, Füzesi L, Knepel W. Heterodimeric Pbx-Prep1 homeodomain protein binding to the glucagon gene restricting transcription in a cell
type-dependent manner. J Biol Chem 275:27989-27999, 2000

Grzeskowiak R, Amin J, Oetjen E, Knepel W. Insulin responsiveness of the glucagon gene conferred by interactions between proximal promoter and more distal enhancer-like elements involving the paired-domain transcription factor Pax6. J Biol Chem 275:30037-30045, 2000

Wolfgang Liebl

Professor of Microbiology

1984 Diploma (Biology), Technische Universität München
1986 Ph.D. (Dr. rer. nat.), Technische Universität München
1986 - 1988 Postdoctoral Fellow, Massachusetts Institute of Technology, Cambridge, MA, USA
1997 Habilitation (Microbiology), Technische Universität München
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Major Research Interests:

One of the main interests of our group is the analysis of polysaccharide and oligosaccharide breakdown and utilization by microorganisms. In the last few years, we have focussed our work on xylan and starch degrading enzyme systems from hyperthermophiles, i. e. organisms that grow optimally at 80°C or higher. These organisms represent very deep branches within the prokaryotic lineages of the phylogenetic tree of organisms. We have detected and analysed unusual glycosyl hydrolases and transferases from *Thermotoga maritima*, the model organism of hyperthermophilic bacteria. Current projects are aimed at the elucidation of the biochemical properties, the molecular structure and catalytic mechanism, the function(s) of non-catalytic domains, and the cellular localization of selected enzymes of *T. maritima* and other extremely thermophilic organisms.
Another group of bacteria studied in the laboratory are the Gram-positive bacteria with a high G+C content. We employ molecular biological techniques to study and modify physiological traits of amino acid-producing corynebacteria and micrococci.
Also, the group is interested in the molecular biology of symbiotic rhizobia, with focus on the investigation of biotin- and stationary phase-regulated processes in *Sinorhizobium meliloti* and *Rhizobium* NGR234 (Dr. W. Streit). Finally, we are engaged in the characterization of microbial biotin biosynthesis genes isolated from environmental DNA libraries.

Selected Recent Publications:

Meissner, K., Wassenberg, D., and Liebl, W. (2000) The 'thermostabilising domain' of the modular xylanase XynA of the hyperthermophilic bacterium Thermotoga maritima represents a novel xylan-binding domain Mol. Microbiol, 36:898-912.

Raasch, C., Streit, W., Schanzer, J., Bibel, M., Gosslar, U., and Liebl, W. (2000) Thermotoga maritima AglA, an extremely thermostable NAD^+-, Mn^{2+}-, and thiol-dependent alpha-glucosidase. Extremophiles 4:189-200.

Entcheva, P., Liebl, W., Johann, A., Hartsch, T., and Streit, W. (2001) Direct cloning from enrichment cultures, a reliable strategy for isolation of complete operons and genes from microbial consortia. Appl. Environ. Microbiol. 67:89-99.

Roujeinikova, A., Raasch, C., Burke, J., Baker, P. J., Liebl, W. and Rice, D. W. (2001) The crystal structure of Thermotoga maritima maltosyltransferase and its implications for the molecular basis of the novel transfer specificity. J. Mol. Biol. 312:119-131.

Sterner, R., and Liebl, W. (2001) Thermophilic adaptation of proteins. Crit. Rev. Biochem. Mol. Biol. 36:39-106.

Reinhard Lührmann

Professor, Director at the Max Planck Institute for Biophysical Chemistry

Dr. rer. nat (Ph. D.), University of Münster (1975)
Research group leader, Max Planck Institute for Molecular Genetics, Berlin (1981 - 1988)
Professor of Biochemistry and Molecular Biology at the University of Marburg (1988 - 1999)
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Major Research Interests:

Processing and Transport of RNA

Splicing of nuclear pre-mRNA is an essential and regulated step of gene expression, which is catalyzed by a large multi-component molecular machine termed the spliceosome. Spliceosomes consist of the small nuclear ribonucleoproteins (snRNPs) U1, U2, U4/U6 and U5 and numerous non-snRNP proteins. The spliceosome is a dynamic molecular machine which forms anew onto each pre-mRNA intron. We are investigating the structure and function of the spliceosomal UsnRNPs and the assembly of the splicing machinery. We have purified the UsnRNPs from both human (HeLa) cells and the yeast *S. cerevisiae* and have characterized their protein components. The snRNPs contain more than 50 distinct proteins, most of which are evolutionarily highly conserved. We are now analyzing the function of the snRNP proteins, as well as non-snRNP splicing factors, in the recognition and functional pairing of the splice sites during spliceosome formation, and in splicing catalysis. As multiple snRNA-snRNA and snRNA-pre-mRNA interactions are formed and undergo dramatic conformational changes during splicing, we are particularly interested in understanding the role of snRNP proteins in the remodeling of the spliceosomal RNA network. The functional studies are carried out *in vitro* in HeLa cell, nuclear splicing extracts using biochemical methods, as well as *in vivo* employing yeast molecular genetic techniques. We are also aiming to reconstitute the spliceosome, at various stages of its assembly, from purified or reconstituted snRNPs and non-snRNP splicing factors.

In addition, we are investigating the ultrastructure of spliceosomal complexes using biochemical and structural biology techniques. High resolution cryo-electron microscopy is being employed to understand the 3D architecture of purified UsnRNPs and spliceosomes at defined functional stages. X-ray crystallography is being used to investigate the atomic structure of smaller spliceosomal RNA-protein and protein-protein complexes. The long-term objectives are to understand the chemical basis of pre-mRNA splicing and RNA-protein interactions in the spliceosome.

A third interest of my group is related to the cell biology of the splicing machinery. The biosynthesis of snRNPs occurs in both nuclear and cytoplasmic compartments and therefore nucleo-cytoplasmic transport plays an important role in this process. We are studying the cytoplasmic assembly of snRNPs and the mechanism of nuclear import of snRNPs using biochemical, microinjection, as well as real time light microscopy techniques. Moreover, we would like to understand the structural requirements for the intranuclear targeting of UsnRNPs and other splicing factors to certain nuclear structures termed „speckles“ and „coiled bodies“.

Selected Recent Publications:

Snurportin1, an m3G-cap-specific nuclear import receptor with a novel domain structure. Huber, J., Cronshagen, U., Kadokura, M., Marshallsay, C., Wada, T., Sekine, M. and Lührmann, R. (1998) EMBO J. 17, 4114-4126

Identification of both shared and distinct proteins in the major and minor spliceosomes. Will, C. L., Schneider, C., Reed, R. and Lührmann, R. (1999) Science 284, 2003-2005

A common core RNP structure shared between the small nucleolar box C/D RNPs and the spliceosomal U4 snRNP. Watkins, N. J., Segault, V., Carpentier, B., Nottrott, S., Fabrizio, P., Bachi, A., Wilm, M., Rosbash, M., Branlant, C. and Lührmann, R. (2000) Cell 103, 457-466

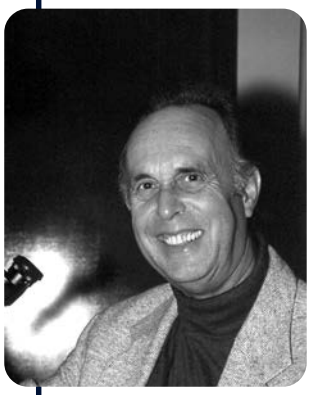
The 3-D arrangement for RNA and Proteins in the spliceosomal U1 snRNP. Stark, H., Dube, P., Lührmann, R. and Kastner, B. (2001) Nature 409, 539-542

Crystal structure of the spliceosomal 15.5kD protein bound to a U4 snRNA fragment. Vidovic, I., Nottrott, S., Hartmuth, K., Lührmann, R. and Ficner, R. (2001) Mol. Cell. 6, 1331-1342

Spliceosomal U snRNP biogenesis, structure and function. Will, C. L. and Lührmann, R.(2001) Current Op. in Cell Biol. 13, 290-301

RNP remodeling with DExH/D Boxes. Will, C. L. and Lührmann, R. (2001) Science 291, 1916-1917

Frank Mayer



Professor of Microbiology

Universities (1959 - 1965): Tübingen, Hamburg, Erlangen
Dr. rer. nat. (Plant Physiology) University Tübingen, 1965
Research Fellow - Wiss.Rat -University Erlangen, 1965 - 1970
Habilitation (Biology) University Erlangen, 1970
Prof. of Microbiology, University Göttingen, since 1973
Head of the Department of Structural Microbiology
Founder (1999) and Head of R&D of the Biotech Company IBIS GmbH
Bio Innovations (www.ibis-bio.com)

Major Research Interests:

Location and macromolecular architecture of enzymes determine their modes of action and their interrelationships with other cellular components and the environment. Hence, these parameters are most important for the living cell. Equally important for a better understanding of the biology of Prokaryotes is a detailed knowledge of structural organization at the cellular level.

By combination of various techniques (Biochemistry, Enzymology, Molecular Biology, Electron Microscopy, Immunology) we describe tertiary and quaternary enzyme structure, location of catalytic centers, location of enzymes within various functional compartments in the prokaryotic cell (cytoplasm, periplasm, membrane, extracellular), and influence of the organization of the immediate environment of the enzyme (water, surfaces) on enzyme activity and stability.

We are interested in a further substantiation of our preliminary finding pointing to the existence of a cytoskeleton also in the prokaryotic cell. To this end, respective proteins are isolated and characterized, and the genes coding for the structural components of such a cytoskeleton will have to be identified.

Activities of IBIS GmbH

We defined two major fields of interest:

-Innovative applications of poly-saccharides

-Design of bio-nanostructural elements for application in pharma, medicine, and cosmetics

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Selected Recent Publications:

Mayer F, Hillebrandt JO (1997) Potato pulp: Microbiological characterization, physical modification, and application of this agricultural waste product. *Appl.Microbiol.Biotechnol.* 48, 435 - 440.

Ducki A, Grundmann O, Konermann L, Mayer F, Hoppert M (1998) Glucoamylase from *Thermoanaerobacterium thermosaccharolyticum:* Sequence studies and analysis of macromolecular architecture of the enzyme. *J.Gen.Appl.Microbiol.* 44, 327 - 335.

Mayer F, Vogt B, Poc C (1998) Immunoelectron microscopic studies indicate the existence of a cell shape preserving cytoskeleton in Prokaryotes. *Naturwissensch.* 85, 278 - 282.

Hoppert M, Mayer F (1999) Principles of macromolecular organization and cell function in Bacteria and Archaea. *Cell Biochem.Biophys.* 31, 247 - 283.

Hoppert M, Mayer F (1999) Prokaryotes. Even without membrane-bounded compartments, prokaryotes display a high degree of subcellular organization. *Am.Sci.* 87, 518 - 525.

Regula JT, Boguth G, Görg A, Hegermann J, Mayer F, Frank R, Herrmann (in press) The protein composition of the Triton X-100 insoluble fraction of the bacterium *Mycoplasma pneumoniae* determined by 2-D gel electrophoresis and mass spectroscopy. *Microbiology* 147, 1045 - 1057.

Rainer Merkl

Computer Scientist

Dipl.-Ing. (Biomedical Engineering)
Dipl.-Inf. (Computer Scientist)
Dr. rer. nat., Georg-August-Universität Göttingen (1996)
Akademischer Rat since 1996

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und Genetik
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Major Research Interests:

Bioinformatics: The Göttingen Genomics Laboratory (G2L) at the Institute of Microbiology and Genetics is a major centre for microbial genome research within Germany. At the G2L I support all activities of automation and computation. G2L offers via www services to query the inhouse generated databases and genomic sequences.

The composition of DNA is a subject of modifications induced by both external, i.e. environmental, and internal, i.e. species-specific, factors. Examples for external forces varying DNA composition are oxidative or radiation-induced chemical modifications. The species-specific GC-content of a genome or variations in codon usage are indicators for the influence of internal factors like properties of the translational apparatus. Such alterations gradually adapt the DNA sequence to species-specific demands. I am interested in characterizing factors that might have an impact on the composition of DNA by using algorithms based on statistical methods or information-theoretic approaches. Thus it was possible to correlate the under- and overrepresentation of tetranucleotides with substrate preferences of the vsr DNA mismatch endonuclease of E. coli K-12. In microbial genomes, codon usage of strongly expressed genes is biased; the preferential use of a small set of codons is assumed to aid translational efficiency. I developed algorithms to identify preferentially used codons and to quantify codon usage bias. Such a measure contributes to the characterization of genes with unknown function.

Scientific Instrumentation: The incorporation of trinucleotides allows a controlled randomization of residues in synthetic genes. For this purpose we have developed a modified DNA-synthesizer. Fluorescence activated cell sorting is a technique that allows to screen rapidly large numbers of cells (up to 100 000 per sec) and to pick individual cells depending on fluorescence signals. I work on the optimization of a commercial cell sorter to further increase sensitivity and selectivity of the instrument.

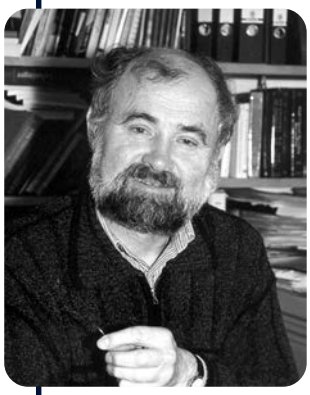
Selected Recent Publications:

R. Merkl, A survey of codon frequency bias in microbial genomes (submitted).

A. Zehl, A. Starke, D. Cech, T. Hartsch, R. Merkl, H. -J. Fritz, Efficient and flexible access to fully protected trinucleotides suitable for DNA synthesis by automated phosphoramidite chemistry, Journal of the Chemical Society / Chemical communications, 23:2677-2678, 1996.

R. Merkl, H.-J. Fritz, Statistical evidence for a biochemical pathway of natural, sequence-targeted G-C to C-G transversion mutagenesis in Haemophilus influenzae Rd. Nucleic Acids Research, 24:4146-4151, 1996.

W. Gläsner, R. Merkl, V. Schellenberger, H.-J. Fritz, Substrate preferences of Vsr DNA mismatch endonuclease and their consequences for the evolution of the E. coli K-12 genome. Journal of Molecular Biology, 245:1-7, 1995.



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M.Sc. (Physics), University of Wisconsin, (1967)
Ph.D. (Physics), Institute of Technology, Munich (1970)
Research associate at the Max Planck Institute for Biophysical Chemistry in Göttingen, Germany (1972 - 1975 and 1976 - 1982) and as a guest in the laboratory of Dr. Ch.F. Stevens at Yale University, Dept. of Physiology,
New Haven, Conn.
(1975 - 1976)
Fairchild Scholar, California Institute of Technology; Pasadena, USA (1989)
Director of the Membrane Biophysics Department at the Max-Planck-Institute for Biophysical Chemistry, Göttingen, Germany, since 1983

Major Research Interests:

Molecular Mechanisms of Exocytosis, Neurotransmitter and Release, and Short Term Synaptic Plasticity

In order to understand how the brain handles its information flow and adjusts synaptic connections on the second and subsecond timescale, one has to understand all aspects of synaptic transmission ranging from availability of presynaptic vesicles for exocytosis, presynaptic electrophysiology, Ca^{++} signalling, the process of exocytosis, and postsynaptic neurotransmitter action. Our work concentrates on presynaptic aspects. We study the basic mechanisms of exocytosis, using adrenal chromaffin cells as a model system and the patch-clamp method. This work, in which intracellular Ca^{++} is manipulated (caged Ca^{++}) and measured on the single cell level aims at understanding the role of specific synaptic proteins in the maturation and exocytosis of secretory vesicles. We use neuronal cell cultures and brain slices for studying mechanisms of short term plasticity, such as depression and paired pulse facilitation. The Calyx of Held, a specialized synapse in the auditory pathway, offers unique possibilities for simultaneous pre- and postsynaptic voltage clamping. This allows a quantitative analysis of the relationship

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Selected Recent Publications:

Klingauf, J. and Neher, E. (1997). Modeling buffered Ca^{2+} diffusion near the membrane: Implications for secretion in neuroendocrine cells. Biophys. J. 72, 674-690.

Neher, E. (1998). Vesicle pools and Ca^{2+} microdomains: new tools for understanding their roles in neurotransmitter release. Neuron 20, 389-399.

Xu, T., Binz, T., Niemann, H. and E. Neher (1998). Multiple kinetic components of exocytosis distinguished by neurotoxin sensitivity. Nature Neuroscience 1, 192-200.

Xu, T., Rammner, B., Margittai, M., Artalejo, A.R., Neher, E. and R. Jahn (1999). Inhibition of SNARE complex assembly differentially affects kinetic components of exocytosis. Cell 99, 713-722.

Schneggenburger, R., and E. Neher (2000). Intracellular calcium dependence of transmitter release rates at a fast central synapse. Nature 406, 889-893.

Voets, T., Toonen, R.F., Brian, E.C, deWit, H., Moser, T., Rettig, J., Suedhof, T.C., Neher, E. and M. Verhage (2001). Munc-18-1 promotes large dense-core vesicle docking. Neuron 31, 581-591.

Voets, T., Moser, T., Lund, P.-E., Chow, R.H., Geppert, M., Suedhof, T.C. and E. Neher (2001) Intracellular calcium dependence of large dense-core vesicle exocytosis in the absence of synaptotagmin I. PNAS 98, 11680-11680.

Mary Osborn

Professor, Scientist at the Max Planck Institute for Biophysical Chemistry

PhD, Pennsylvania State University, State College, Pa, 1967
Postdoc: J.D. Watson, Harvard University, Cambridge, Mass, 1967 - 1969
Positions:
MRC Laboratory Molecular Biology, Cambridge, England, 1969 - 1972
Cold Spring Harbor Laboratory, CSH, NY, 1972-1975
Max Planck Institute for Biophysical Chemistry, 1975
Honorary Professor, University of Göttingen, 1989
Doctorate „honoris causa“, Pomeranian Medical Academy, Szczecin, Poland 1997

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Major Research Interests:

Cellular organisation is based on a complex series of events involving gene expression, signal transduction, membrane traffic and the function of dynamic cytoskeletal networks. This department has pioneered the use of antibodies in immunofluorescence microscopy to understand the distribution and function of the two ubiquitous filament systems - microfilaments and microtubules - which have as their major proteins actin and tubulin respectively. Antibodies also allowed us to show that intermediate filaments in different cell types are built from distinct but related proteins. Applying this knowledge we showed that intermediate filament proteins are useful markers in differential tumor diagnosis, where they can distinguish the major tumor types
Certain antibodies also allow a particular cytoskeletal organisation to be manipulated. When microinjected into live cells they not only find their target but also disturb the organisation creating a new phenotype which can be detected by immunofluorescence microscopy. Fine analyses of complexes within particular supermolecular organisations have been helped by the use of recombinantly expressed proteins or their individual domains. These can be analysed in vivo by transfecting the corresponding cDNA constructs into cultured cells.
One example of this approach is work on NuMA. NuMA is an insoluble protein during interphase and translates to the spindle poles at mitosis. Microinjection of a particular NuMA antibody causes the formation of aberrant spindles and mitotic arrest as well as resulting in the formation of micronuclei. Transient overexpression of NuMA in HeLa cells also induced the formation of a three-dimensional lattice that fills the nucleus of interphase cells. This lattice can be observed by electron microscopy and use of mutant constructs showed that the lattice spacing is dependent on the length of the rod domain. *In vitro* experiments show that recombinant NuMA builds multiarm oligomers. Computer modeling with a 12-arm oligomer as the structural unit can explain the observed nuclear lattices and suggests that the same mechanism might be used to build more restricted NuMA lattices in normal cells. Other experiments are directed towards identifying and characterising proteins that bind to NuMA.
Thus, the research interests of the group are in the general area of cell biology and pathology - more specifically in certain proteins of the cell nucleus, in the cytoskeleton, and in the use of antibodies in cancer diagnosis.

Selected Recent Publications:

Gueth-Hallonet, C., J. Wang, J. Harborth, K. Weber and M. Osborn. Induction of a regular nuclear lattice by overexpression of NuMA. Exp Cell Res 243: 434-452, 1998.

Harborth, J., J. Wang, C. Gueth-Hallonet, K. Weber and M. Osborn. Self assembly of NuMA: multiarm oligomers as structural units of a nuclear lattice. EMBO J. 18: 1689-1700, 1999.

Harborth, J., K. Weber and M. Osborn. Epitope mapping and direct visualization of the parallel, in-register arrangement of the double-stranded coiled-coil in the NuMA protein. EMBO J. 14: 2447-2460, 1995.

Harborth, J., K. Weber and M. Osborn. GAS41, a highly conserved protein in eukaryotic nuclei, binds to NuMA. J. Biol. Chem. 275: 31979-31985, 2000.

Osborn, M. Immunofluorescence microscopy of cultured cells. In: Cell Biology: A Laboratory Handbook, Academic Press, 462-468, 1998.

Research Associate at the Department of Plant Biochemistry

Dr. rer nat. at the University of Cologne, 1989
Postdoc at the Max Planck Institute for Plant Breeding Research in Cologne, 1990 - 1991
Postdoc at the Department of Molecular Biology, Wageningen Agricultural University, 1991 - 1997
Scientific assistant at the Department of Plant Biochemistry at Göttingen University, since 1997

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Major Research Interests:

Legume/rhizobia and actinorhizal symbioses go back to a common ancestor which must have aquired a trait based on which a root nodule symbiosis could develop. The aim of my research is identify this basic trait that was necessary for the development of root nodule symbioses. For this purpose, we compare different features in diverse symbiotic systems to find out which are family-specific adaptations and which are common to all root nodule symbioses.

- Carbon partitioning in nodules
- Comparison of the expression patterns of homologous genes in different types of nodules
- Comparison of nodule induction mechanisms in legumes and intracellularly as well as intercellularly infected actinorhizal plants: search for marker genes
- Infection of cortical cells in actinorhizal symbioses: What is required for the stable internalization of the microsymbiont?
- Isolation and characterization of *Lotus japonicus* mutants affected in the establishment of an arbuscular mycorrhizal symbiosis with the aim to identfy genes encoding proteins involved in the stable internalization of a fungal microsymbiont

Selected Recent Publications:

Ribeiro A, Akkermans ADL, van Kammen A, Bisseling T, Pawlowski K (1995) A nodule-specific gene encoding a subtilisin-like protease is expressed in early stages of actinorhizal nodule development. Plant Cell 7, 785-794.

Guan C, Akkermans ADL, van Kammen A, Bisseling T, Pawlowski K (1997) *ag13* is expressed in *Alnus glutinosa* nodules in infected cells during endosymbiont degradation and in the nodule pericycle. Physiol. Plant. 99, 601-607.

Pawlowski K, Twigg P, Dobritsa S, Guan C, Mullin BC (1997) A nodule-specific gene family from *Alnus glutinosa* encodes glycine- and histidine-rich proteins expressed in the early stages of actinorhizal nodule development. Mol. Plant-Microbe Interact. 10, 656-664.

Okubara PA, Pawlowski K, Murphy TM, Berry AM (1999) Symbiotic root nodules of the actinorhizal Plant *Datisca glomerata* express rubisco activase mRNA. Plant Physiol. 120, 411-420.

Laplaze L, Duhoux E, Franche C, Frutz, T, Svistoonoff S, Bisseling T, Bogusz D, Pawlowski K (2000) Actinorhizal prenodule cells display the same differentiation as the corresponding nodule cells. Mol. Plant-Microbe Interact. 13, 107-112.

Tomas Pieler

Professor of Biochemistry

Dr. rer. nat. Biochemistry, Freie Universität Berlin, 1984
Guest Investigator, Rockefeller University, New York (1985/86)
Heisenberg fellow, Freie Universität Berlin and Rockefeller University, New York (1986/87)
Junior group leader, Max Planck Institut für Molekulare Genetik, Berlin (1988 - 92)
Professor of Biochemistry, Georg August Universität Göttingen since 1992
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Major Research Interests:

The differentiation of complex organisms has its origin in the asymmetric distribution of regulatory proteins or of the corresponding mRNAs in the egg, as well as in a complex system of cell/cell communication events via extracellular signalling molecules during early stages of embryogenesis. The genes that encode for these different activities form functional networks which provide the basis for the genetic programming of embryonic development. Our primary research interest is in the identification of such regulatory genes and networks in vertebrates, as well as in the definition of their regulation and function on the molecular level. For this purpose, we use Xenopus laevis, a frog from South Africa, as a model system. As a traditional object in experimental embryology and in comparison with other experimental systems such as the mouse, use of Xenopus offers a number of practical advantages. Oocytes and embryos are easy to collect in large numbers, they are easy to manipulate by relatively simple techniques, also because embryonic development proceeds in the petridish, and, more recently, it has even become possible to generate hundreds of transgenic frogs within a single experimental day. The research topics that we are focussing on are:
-nucleocytoplasmic transport routes for RNA and proteins
-signal transduction pathways in early vertebrate development (retinoic acid, Hedgehog, Notch and TGF- signalling)
-organogenesis: formation of brain, eye and liver in vertebrate embryos.

Selected Recent Publications:

Rudt, F. and Pieler, T. (1996) Cytoplasmic retention and nuclear import of 5S ribosomal RNA containing RNPs. EMBO J. 15, 1383-1391.

Bellefroid, E., Bourguignon, C., Hollemann, T., Ma, Q., Anderson, D.J., Kintner, C. and Pieler, T. (1996) X-MyT1a Xenopus C2HC type zinc finger protein with a regulatory function in neuronal differentiation. Cell 87, 1191-1202.

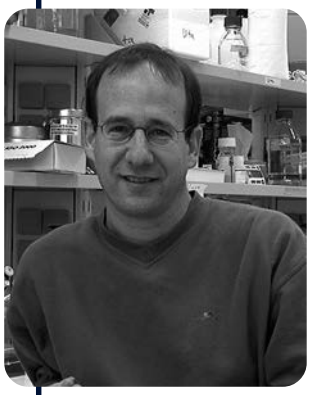
Panitz, F., Krain, B., Hollemann, T., Nordheim, A. and Pieler, T. (1998) The Spemann organizer-expressed zinc finger gene Xegr-1 responds to the MAP kinase/Ets-SRF signal transduction pathway. EMBO J. 17, 4414-4425.

Hollemann, T., Chen, Y., Grunz, H. and Pieler, T. (1998) Regionalized metabolic activity establishes boundaries of retinoic acid signalling. EMBO J. 17, 7361-7372.

Hollonet, M., Hollemann, T., Pieler, T. and Gruss, P. (1999). Mutation of *Vax1*, a novel homeobox-containing gene, leads to defective development of the basal forebrain and visual system. Genes and Dev., 13: 3106-3114.

Group Leader at the Max Planck Institute for Biophysical Chemistry

Ph.D. 1994, The Weizmann Institute of Science, Rehovot, Israel
Group leader at the University of Freiburg, Department of Developmental Biology, Freiburg, 1997
Group leader at the at the Max Planck Institute for Biophysical Chemistry



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Major Research Interests:

Our group is interested in two aspects of Primordial Germ Cell (PGC) development. First, we are studying the molecular mechanisms that enable these cells to migrate towards the region of the gonad where they differentiate into sperm or oocytes. The second direction is aimed at understanding the molecular basis for the specification and the differentiation of these cells. We have chosen to explore these processes using zebrafish, a vertebrate model organism. In this system we isolate and study the function of genes that are expressed in these cells. Using this strategy we have identified a number of genes whose function is essential for proper maintenance of germ cells as well as for their migration. In addition, analysis of the migration process in mutant embryos in which somatic tissues do not differentiate properly, showed that the PGCs obtain guidance cues from neighbouring cells which allow them to reach their target.

Selected Recent Publications:

Weidinger, G., Wolke, U. Köprunner, M., Klinger, M. and Raz, E. (1999) Identification of tissues and patterning events required for distinct steps in early migration of zebrafish primordial germ cells. *Development*. 126: 5295-5307.

Raz, E. (2000) The function and regulation of *vasa*- like genes in germ-cell development. *Genome Biology* 3: 1017.1-1017.6.

Köprunner, M., Thisse, C., Thisse, B. and Raz, E. (2001) A zebrafish *nanos* related gene is essential for the development of primordial germ cells. *Genes and Development*. 15: 2877-2885.

Weidinger, G., Wolke, U., Köprunner, M., Thisse, C., Thisse, B. and Raz, E. (2002) Regulation of zebrafish primordial germ cell migration by attraction towards an intermediate target. *Development. In press*.

Christian Rosenmund

Group Leader at the Max Planck Institute for Biophysical Chemistry

PhD Neurosciences, Vollum Institute, Portland, OR, USA 1993
Postdoctoral fellow Salk Institute, La Jolla, CA, USA 1993 - 1995
Helmholtz fellow, MPI biophysikalische Chemie 1995 - 1997
Heisenberg fellow and independent group leader, Dept. Membranbiophysik at the Max Planck Institute for Biophysical Chemistry, since 1998

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Major Research Interests:

Neurotransmission at the central synapse involves a series of functional highly coordinated steps. On the presynaptic site, synaptic vesicles tether, prime to fusion competence, and fuse Ca^{2+} triggered with the plasma membrane to release the neurotransmitter in the synaptic cleft. Postsynaptically, ionotropic receptors respond to binding of the neurotransmitter with distinct conformational steps that shape the postsynaptic response. We characterize synaptic properties with standard patch-clamp electrophysiology and optical techniques from cultured primary hippocampal neurons of transgenic mice that bear deletions or mutations of pre- or postsynaptic proteins. We have identified and/or characterized the vesicular neurotransmitter transporters VGLUT and VGAT, the vesicle priming factor Munc13, and the core complex associated proteins synaptotagmin 1 and complexin. Furthermore, knock-out mice are used to examine protein-domain and -residue function by gain of function rescue experiments by viral overexpression of wildtype and mutant proteins. Postsynaptically, we examine structural principles that control the gating properties of AMPA-type glutamate receptors.

Selected Recent Publications:

Fernandez-Chacon, R., Konigstorfer, A., Gerber, S. H., Garcia, J., Matos, M. F., Stevens, C. F., Brose, N., Rizo, J., Rosenmund, C., and Sudhof, T. C. (2001). Synaptotagmin I functions as a calcium regulator of release probability. Nature *410*, 41-49.

Mansour, M., Nagarajan, N., Nehring, R.; Clements, J., and Rosenmund, C. (2001). Heteromeric AMPA receptors assemble with a preferred subunit stoichiometry and spatial arrangement. Neuron *32*, in press.

Reim, K., Mansour, M., Varoqueaux, F., McMahon, H. T., Sudhof, T. C., Brose, N., and Rosenmund, C. (2001). Complexins regulate a late step in Ca2+-dependent neurotransmitter release. Cell *104*, 71-81.

Rosenmund, C., Stern-Bach, Y., and Stevens, C. F. (1998). The tetrameric structure of a glutamate receptor channel. Science *280*, 1596-1599.

Takamori, S., Rhee, J. S., Rosenmund, C., and Jahn, R. (2000). Identification of a vesicular glutamate transporter that defines a glutamatergic phenotype in neurons. Nature *407*, 189-194.

Thomas R. Schneider

Habilitand in Structural Chemistry

Physics Diploma, Technical University of Munich, 1991
PhD, European Molecular Biology Laboratory & Technical University of Munich, 1996
Postdoc, Max Planck Institute for Molecular Physiology, Dortmund, Germany
1996 - 1997
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Major Research Interests:

Methods for Macromolecular Crystallography & Structural Aspects of Enzyme Catalysis

Crystal structures of biological macromolecules and their assemblies are the corner stones of modern structural biology. The determination of a crystal structure still is an exciting endeavour and requires expertise in areas as diverse as molecular biology, protein chemistry, and experimental and computational crystallography.

To tackle ever more challenging problems, the methods for macromolecular crystallography need constant development. We are concentrating on the development of computational methods to facilitate the determination of larger and more complicated structures with the highest possible accuracy. In particular, we are interested in pushing the limits of MAD phasing and in the determination of protein structures at atomic (better than 1.2 Å) resolution. Another focus of our work is the development of algorithms for the objective comparison of three-dimensional structures.

On the experimental side, we are trying to understand the mechanism and the regulation of enzymes on a structural level, for example for enzymes envolved in the biosynthesis of aromatic amino acids. In order to exploit the full repertoire of modern biology, these projects are done in close interdisciplinary collaboration with biologically oriented groups in Göttingen and elsewhere.

Selected Recent Publications:

Schneider TR. Objective comparison of protein structures: error-scaled difference distance matrices. Acta Cryst. D56, 714-721 (2000).

Schneider TR, Kärcher J, Pohl E, Lubini P, Sheldrick GM. Ab initio structure determination of the lantibiotic mersacidin. Acta Cryst. D56, 705-713 (2000).

Schneider TR, Gerhardt E, Lee M, Lian P, Anderson KS, Schlichting I. Loop Closure and Intersubunit Communication in Tryptophan Synthase. Biochemistry, 37:5394-5406 (1998).

Garman EF, Schneider TR. Macromolecular Cryocrystallography. J.Appl.Cryst. 30:211-237 (1997).

Sheldrick GM, Schneider TR. SHELXL: High Resolution Refinement. Methods in Enzymology (R.M. Sweet and C.W. Carter Jr., eds.), Academic Press; Orlando, Florida, 277:319-343 (1997).

Ekkehard Schulze

Research Associate at the Third Department of Zoology

Dr. rer. nat. (Ph.D.) 1992, University of Göttingen
Principal investigator
1992 - 2000 akademischer Rat auf Zeit, University of Göttingen
1994 - 1995 Senior research associate at the
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Major Research Interests:

The concept of the gene and the concept of transcriptional regulation by transcription factors are not sufficient to explain all phenomena associated with gene regulation. Highly abundant chromatin proteins like the histones and high mobility group proteins and others package DNA into a higher order structure, which is complex, highly dynamic, and tightly regulated. These mechanisms are indispensable for concerted gene expression and they confer the ability to inherit the activation status of a gene from cell to cell for many generations. This field is called epigenetics. We use a combination of cytological, molecular, and reverse genetical approaches in the model organism *C. elegans* to investigate the biological functions of gene families encoding abundantly expressed chromatin proteins.

Further we are interested in functional genomics in *C. elegans*. Traditional (forward) genetics provided mutants and functional assignments for about 3000 genes of *C. elegans*. The complete genome, however, encodes almost 20,000 genes. Therefore for 85% of the genome the function is unknown. The advent of reverse genetics will finally close this gap in a systematic way. We determine the biological functions of selected uncharacterized *C. elegans* genes by RNA interference experiments. Additionally, in a mass approach we currently test all genes of chromosome I for implication in the formation of the dauer larva, a morphologically and physiologically deviating developmental state alternative to the third larval stage.

Selected Recent Publications:

Jedrusik, M. A., and Schulze, E. (2001). A single histone H1 isoform (H1.1) is essential for chromatin silencing and germline development in *Caenorhabditis elegans*. *Development* 128, 1069-1080.

S. Vogt, G. Schneider, A. Steuernagel, J. Lucchesi, E. Schulze, D. Rudolph and G. Schmahl (2000) X-ray microscopic studies of the *Drosophila* dosage compensation complex. *J. Struct. Biol.* 132, 123-132

George M. Sheldrick

Professor of Structural Chemistry and part-time programming technician at the University of Göttingen

PhD (1966) University of Cambridge with E.A.V. Ebsworth; thesis entitled „NMR Studies of Inorganic Hydrides“.
1966 - 1978: University Lecturer and Fellow of Jesus College, Cambridge.
Author of more than 700 scientific papers and of a computer program called SHELX (http://shelx.uni-ac.gwdg.de/SHELX/)
Director of the Institute of Inorganic Chemistry

Major Research Interests:

Interested in methods of solving and refining crystal structures (both small molecules and proteins) and in structural chemistry.
Holy Grail: the Crystallographic Phase Problem. If only there was an easy way of measuring the phases of X-ray reflections as well as their intensities, crystal structures could be determined directly. At resolutions of better than about 2.5A, there are more measured intensities than atomic coordinates, so the problem is overdetermined and there should be a solution. Recently we were able to increse the size of structures that can be solved from the intensity data alone by ‘ab initio direct methods’ from about 200 to 1000 unique atoms, given data to ‘atomic resolution’, but most interesting macromolecular structures are still out of the reach of such methods. Indirctly however the same techniques are proving very useful for the solution of large macromolecular structures when a little starting phase information is available, e.g. by incorporating heavy atoms into the crystal.

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Selected Recent Publications:

Schaefer, M., Schneider, T.R. & Sheldrick, G.M. Crystal structure of vancomycin. Structure 4 (1996) 1509-1515.

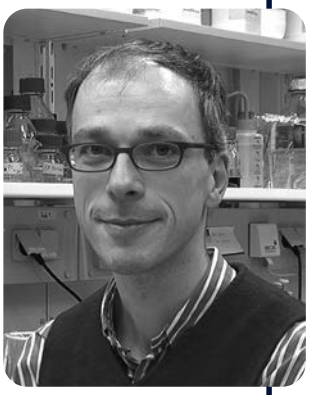
Sheldrick, G.M. SHELX: applications to macromolecules. In Direct Methods for Solving Macromolecular Structures. Ed. S. Fortier. Dordrecht: Kluwer Academic Publishers (1998) 401-411.

Herbst-Irmer, R. & Sheldrick, G.M. Refinement of twinned structures with SHELXL97. Acta Cryst. B54 (1998) 443-449.

Parasini, E., Capozzi, F., Lubini, P., Lamzin, V., Luchinat, C., and Sheldrick, G.M. Ab initio solution and refinement of two high-potential iron protein structures at atomic resolution. Acta Cryst. D55 (1999) 1773-1784.

Usón, I., Sheldrick, G.M. Advances in direct methods for protein crystallography. Current Opinion in Structural Biology, 9 (1999) 643-648

Thomas Tuschl



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Major Research Interests:

RNA is not only a carrier of genetic information, but also a catalyst and a guide for sequence-specific recognition and processing of other RNA molecules. Our group investigates the regulatory mechanisms of RNA interference (RNAi), microRNA-guided translational control, and nuclear pre-mRNA splicing. Classical and combinatorial biochemical techniques are used to analyze the function of the RNA and protein components involved in those processes.

RNA interference (RNAi) represents an evolutionary conserved cellular defense mechanism for controlling the expression of alien genes in protists, filamentous fungi, plants, animals and humans. RNAi is a consequence of sequence-specific mRNA degradation, which is triggered by double-stranded RNA (dsRNA) homologous in sequence to the target mRNA. We demonstrated that dsRNA is processed to duplexes of 21-nt small interfering RNAs (siRNAs), which guide sequence-specific degradation of homologous mRNAs. Transfection of siRNA duplexes in cultured somatic mammalian cells triggers sequence-specific degradation of homologous mRNAs, thus producing “knockdown” cells with characteristic “knockdown” phenotypes. siRNAs do not trigger sequence-unspecific effects in mammalian cells (interferon response). Therefore, siRNA duplexes provide a new tool for analysis of mammalian gene function and for target gene validation in therapeutic research. Our ultimate goal is to develop new gene-specific therapeutics.

More recently, we discovered a large family of expressed 21-nt RNAs. These novel gene products were termed “microRNAs” (miRNAs), and are excised from approximately 70-nt RNA stem-loop precursors by a mechanism related to dsRNA processing in RNAi. It is believed that miRNAs suppress the translation of target genes without triggering mRNA degradation.

Selected Recent Publications:

M. Lagos-Quintana, R. Rauhut, W. Lendeckel, T. Tuschl, Identification of novel genes coding for small expressed RNAs, Science, 2001, accepted for publication.

G. Hutvagner, J. McLachlan, E. Balint, T. Tuschl, P. D. Zamore, A cellular function for the RNA interference enzyme Dicer in small temporal RNA maturation, Science, 2001, 293, 834-838.

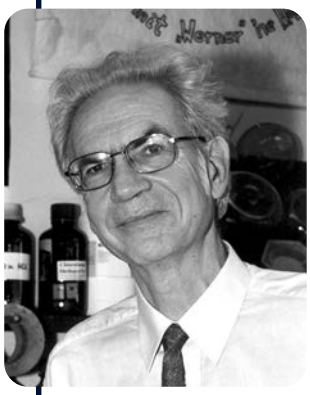
S. M. Elbashir, J. Harborth, W. Lendeckel, A. Yalcin, Klaus Weber, T. Tuschl, Duplexes of 21-nucleotide RNAs mediate RNA interference in cultured mammalian cells, Nature, 2001, 411, 494-498.

S. M. Elbashir, W. Lendeckel, T. Tuschl, RNA interference is mediated by 21 and 22 nt RNAs, Genes & Dev., 2001, 15, 188-200.

T. Tuschl, P. A. Sharp, D. P. Bartel. A ribozyme selected from variants of U6 snRNA promotes 2',5'-branch formation, RNA, 2001, 7, 29-43.

Professor of Biomolecular Chemistry

Dr. rer. nat. 1966
Habilitation 1974
Professor since 1980



Major Research Interests:

Natural products chemistry and biochemistry

Microorganisms are an important source for novel natural products, such as antibiotics and other active substances. For the isolation of chemically new and biologically active compounds we especially use actinomycetes and fungi imperfecti. In the search for new secondary metabolites two approaches have been applied successfully, both, the biological and chemical screening. For the latter we use TLC with different types of staining reagents or HPLC with varying detection methods (UV, MS, CD) to record all metabolites produced in the culture extracts. Most of the strains evaluated were isolated from earth samples and cultivated up to 50-litre fermenters in my group.
The chemical work starts with the isolation and structure elucidation of the novel natural products. Structural problems were solved by using modern spectroscopic methods (e.g. MS, high field 2D-NMR, X-ray analysis). We have established several hundreds of metabolites, which belong to different chemical classes (e.g. peptides, macrolides, quinones, glycosides, polyenes). Further investigations focus on the biosynthesis of the novel compounds, starting with feeding experiments with stable isotope precursors. We are interested in new biosynthetic pathways and try to modify the metabolites by applying the precursor-directed biosynthesis and by changing the cultivation conditions. The biological activity of our metabolites and derivatives is established in different test systems, mostly in cooperation with colleagues and industry.

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Selected Recent Publications:

S. Grabley, R. Thiericke and A. Zeeck: The chemical screening approach. In Drug discovery from nature (Eds S. Grabley, R. Thiericke), p. 124-148, Springer, Berlin 1999.

H. B. Bode and A. Zeeck: Structure and biosynthesis of kendomycin, a carbocyclic ansa-compound from *Streptomyces*. J. Chem. Soc. Perkin Trans.1, 2000, 323-328, 2665-2670.

R. Höfs, M. Walker and A. Zeeck: Hexacyclinic acid, a polyketide from Streptomyces with a novel carbon skeleton. Angew. Chem. Int. Ed. Engl. 2000, 39, 3258-3261.

S. Dröse, C. Boddien, M. Gassel, G. Ingenhorst, A. Zeeck and K. Altendorf: Semisynthetic Derivatives of Concanamycin A and C, as Inhibitors of V- and P-Type ATPases: Structure-Activity Investigations and Developments of Photoaffinity Probes. Biochemistry 2001, 40, 2816-2825.

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