This publication is available also as

Library of Congress Control Number: 2001012345

Bibliographic information published by Die Deutsche Bibliothek.
Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie;
detailed bibliographic data is available in the Internet at: http://dnb.ddb.de

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in other ways, and storage in data banks. Duplication of this publication or parts thereof is only permitted under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer is part of Springer Science+Business Media

© Springer-Verlag Berlin Heidelberg New York 2006
Printed in Germany

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Product liability: The publishers cannot guarantee the accuracy of any information about the application of operative techniques and medications contained in this book. In every individual case the user must check such information by consulting the relevant literature.

Development Editor: Dr. Michaela Bilic, Dr. Natasja Sheriff, Heidelberg
Production Editor: Frank Krabbes, Heidelberg
Cover design: Frido Steinen-Broo, Girona
Printed on acid free paper

SPIN: 10893219 2109fk - 5 4 3 2 1 0
Preface

The development of molecular medicine is closely linked with the rapidly growing knowledge in molecular biology, molecular genetics and genome research. Research findings in these fields have led to a shift in therapeutic targets. Whilst until recently only gene products such as enzymes and cell receptors represented targets of diagnostic processes, today the information carriers DNA and RNA themselves are evolving into target molecules, or medicinal drugs. Alongside researching into interactive processes on a cellular level – drawn from the biochemical advances made in the past century – mutation and disorders of mechanisms of gene expression are becoming the object of clinical research and of application in diagnosis and therapy. Hence, genomics and proteomics are developing into new fields of research, and their results are substantially influencing the future orientation of the fundamentals for diagnosis and therapy.

These new research fields including molecular biology have generated a huge amount of new terms, abbreviations (acronyms) which need explanation. Therefore these encyclopedic references are aimed at making all those acquainted with selected terms most frequently used in genomics and proteomics in molecular medicine who are not directly involved in those termini by their research.

The theoretical background of molecular medicine is based on the assumption that one or more molecular and/or genetic causes (e.g. changes caused by point mutation, deletions, shift in the reading frame etc.) underlie the outbreak of all diseases. Inversely, however, this does not necessarily imply that every mutated gene leads to a disorder in the sense of genetic determinism. There are forms of mutation that result in a transformed gene product without triggering any disease. For an illness to take shape many other factors besides a changed gene play a role, such as the endogenous disposition (e.g. inherent damage caused by previous illnesses) and exogenous factors (of environmental nature, strain through incompatibility of medication, drinking and smoking etc.). Genomics and proteomics are evolving into key technologies of advances in molecular medicine.

The transfer of molecular biological knowledge into therapeutic treatment is still at the initial stage. So far, results in gene therapy have fallen short of high-flying expectations. Instead, diagnostic methods based on molecular biology have found their way into medical practice.

Molecular medicine is scientifically based both on classical medicine, which is characterized by a phenotypical description of symptoms, and on the specific genotypical characterization of methods employed in molecular biology and genetic engineering. For the first time, this enabled a systematic analysis of the molecular causes of illnesses in a precise and rapid manner hitherto unattained. Molecular biological methods such as high-throughput techniques based on biochips are already being applied in various medical fields, and have significantly improved diagnosis, for instance in the prediction of risk estimation in certain illnesses, or with regard to sensitivity and specificity of treatment. This widens diagnostic scope in areas such as hereditary diseases of monogenetic origin, which until now could only be described phenomenologically, and enables preventive treatment and causal therapy of such diseases in the future. Evidently, even the molecular causes of uninfluenceable pleiotropic diseases are becoming increasingly tangible, moving their therapeutic treatment within reach.

This has a decisive impact on medical work. Nevertheless, molecular medicine, too, will retain its basic character which is precise clinical observation and integral medical care. Without thorough medical examination and detailed phenotypical description neither phenotype-genotype association of any significance can be derived, nor can the possibilities of detailed gene standardisation be fully exploited. The conventional physical examination and the analysis of the gene profile remain of equal importance in the domains of both research as well as medical care.

The spectacular publication on the human genome comprising 3.2 billion base sequences, which appeared simultaneously in the journals “Nature” (International non-commercial project, Head: Francis Collins) and “Science” (Genetic engineering company Celera Genomics, Head: Craig Venter) on the 50th anniversary of the double helix discovery by James Watson and Francis Crick in April 2003, marked a new era in biological basic research and in the knowledge of the components of human life. The successful decoding of the sequence raises the question about its function in the organism.
Recent sequencing of the human genome (published in 2004; Nature 431, p.915, p.927, p.933) revealed that (with an accuracy of 99.999%) 2.85 billions of base pairs out of a total of 3.08 billions of base pairs have been determined; thus 99% of the genome which contains the genes have been identified. Consequently, the number of genes had to be corrected to 20,000-25,000 from the estimated 100,000 genes in the 90’s, and 30,000-40,000 in 2001. The genetic information for proteins comprises only 1.5% of the genome. 98.5% of the genome may be assigned to the so-called junk-DNA with so far largely unknown functions. Such data are erroneous. As parts of the gene expression products, introns, for example, contain regulative sequences for gene expression and sequences that are responsible for correct splicing. These sequences must be allocated to a specific gene as essential constituents and can therefore affect the assessment significantly.

Decoding the entire sequence of the genome is but the first step of a far more complex task: Understanding the functional significance of the sequences. So the determination of the sequences logically entails their functional deciphering as the following step. This field of research is known as “Functional genomics”. It deals with the allocation of parts of the entire sequence to defined gene structures. This also includes the attribution of intron sequences to functions within the regulation process of gene expression that are only partly understood so far, as well as the control of all subsequent steps up to the final protein synthesis.

Alternative splicing is a major cause of transcriptome diversification. A single primary transcript yields different mature RNAs which lead to the production of proteins with various functions. This can be performed by alternative promoters. For 23,245 gene loci in the human genome over 43,000 transcripts are known. The alternative transcripts range from 2 to 40 (for details see Functional genomics).

Comparison with analysed genomes of other organisms are extremely useful in the process of allocating sequence parts to whole gene sequences. In the meantime a number of gene sequences have been fully deciphered, as for example those of prokaryote micro-organisms such as Escherichia coli and Helicobacter pylori, and eukaryote microorganisms such as baker’s yeast Saccharomyces cerevisiae and of polycellular organisms like the worm Caenorhabditis elegans, or those of the fruit fly Drosophila melanogaster and of different vertebrates: e.g. man, mouse, rat and the green puffer-fish Tetraodon nigroviridis. Also the sequence of the bovine genome is available in a rough sketch with the exact decoding to be expected in 2005. These comparative studies revealed only 1183 species specific genes in the human genome. In all, about 200 genomes of various species have been sequenced and published.

The human chromosomes 21, 22, 14, 7, 6, and Y have been fully analysed and the results were published in 2003. Recently, an academic research team decoded the base sequence of the second smallest human chromosome 22 and made it accessible to the researching public. Chromosome 22 has 33 million base pairs with 545 genes. Defects on this chromosome are likely to be the cause of diseases such as schizophrenia, leukemia, immune deficiencies, bone cancer and brain tumours. Similarly, a German-Japanese research team succeeded in completely decoding the smallest carrier of genetic information in humans (chromosome 21) with 225 genes, some of which play a role in diseases like Alzheimer, ALS (amyotrope lateral sclerosis), myoclonic epilepsy, innate deafness, and Down’s syndrome.

Two further chromosomes whose anomalies cause diseases are chromosomes 5 and 6. Chromosome 6 represents the largest human chromosome with 166.880 million base pairs. It has 1557 functional genes for, inter alia, the major histocompatibility complex (MHC), hereditary haemochromatosis with multi-organ dysfunction, juvenile-onset form of Parkinson’s disease, and gene abnormalities are implicated as a contributory cause of schizophrenia, epilepsy, cancer and heart disease. Chromosome 5 has 177.7 million base pairs with 923 protein coding genes including for instance those for protocadherine and the interleukine gene families. In some regions deletion can generate disorders including spinal muscular dystrophy.

After enormous 12 years lasting efforts, recently (2005), the sequence of the human X-chromosome (the determining chromosome for women: XX = female, XY = male) was completely deciphered. It comprises 1098 native genes as compared with only 78 genes of the male Y-chromosome. It is of interest that about 10% of the X-chromosome play an important role in man and do not have any function in women. The X-chromosome contains only 4% of all human genes but is linked with every 10th hereditary monogenetic disease.
Recently, American scientists succeeded in introducing a human gene associated with the generation of Parkinson’s disease into the genome of *Drosophila*, which produced impaired balance and other typical symptoms of nervous disease similar to those of people suffering from Parkinson’s. This example demonstrates the immense significance of model organisms within the framework of functional genomics in the quest of grasping the human genome in its entirety.

So far a functional role could be allocated to specific gene products of about 5,000 genes, accounting for about 20% of the estimated total of 20,000 to 25,000 genes and about 3% of the total stock of human DNA. Thus a large number of genes still needs to be similarly allocated, and their molecular structures to be determined. This is the basic content of proteomics which in analogy to genomics has two complimentary objectives: the functional analysis and localization of gene products and the comprehension of their molecular structure.

As in the quest of the genome sequence which united scientists of six different nations to cooperate in a joint project, once again in 2001 a team of international researchers founded the Human Proteome Organisation (HUPO) to investigate into the significance of the enzymes coded by the genes. Proteome stands for the entire protein in a cell. In view of the magnitude of the task it seems quite plausible that the main project was split into 5 individual sub-projects: Human Plasma Proteome Project (HPPP), Sweden, USA; Human Liver Proteome Project (HLPP), Canada, China, France; Proteomics Standard Initiative (PSI), all countries; Human Brain Proteome Project (HBPP), Germany; International Mouse and Rat Proteome Project (MRPP) Canada, Germany.

All projects aim at decoding the functional network of proteins in the human organism, at the characterization and localization of proteins in normal and diseased humans and those of model organisms, and at disseminating knowledge and respective technologies so as to find clues for the treatment of diseases.

The second objective of proteomics is to determine the structure of gene products, a field that is primarily a part of basic research. Any overview of the latest developments in molecular medicine in this encyclopedia would be incomplete if it were restricted to clinical findings alone. The fundamental principles of molecular medicine are essentially based on the knowledge of cellular and molecular biological processes which are introduced into clinical practice through application in diagnosis. Moreover, the application of the whole range of genetic engineering tools resulted in radical changes in biotechnology and medical drug research. The application of genetic engineering in the pharmaceutical industry has led to a notable rationalization of production processes. In some cases the application of the processes made production of certain substances available that had so far been inaccessible for medical treatment. This marked the onset of the therapeutic use of medical drugs which could previously only be produced in chemical synthetic processes, rendering them unsuitable for large scale production.

The forthcoming gain in knowledge in functional genomics and proteomics with regard to very complex processes of growth, cell division and differentiation, and their respective mechanisms of regulation (such as first, second and third messenger, transcription factors and the corresponding cis-elements on the promoters) also pave the way for new strategies in the development of medical drugs.

Transforming these scientific results into useful medical drugs requires the knowledge of the structure of molecules, which is necessary for understanding the functional interaction of nucleic acids, proteins and ligands on a molecular level. This is made possible by ascertaining the molecular structures through X-ray radiation, synchrotrone radiation, nuclear magnetic resonance by super-conducting high performance magnets (up to 900 MHz) or other spectroscopic methods. All these processes complement each other in terms of applicability and significance of the evidence yielded. Another possibility of structure determination is the application of theoretical methods for predictive structure assessment of potential drugs. In this way pharmacological effects can be estimated. These techniques utilize highly sophisticated electronic simulation methods. When linking methods of the combination theory with the knowledge of the topography of bonding points, structure based drug design becomes feasible.

To date (i.e. in 2003) biotechnology and genetical engineering have brought forth approximately 10,800 products world-wide. Of these about 15% have been commercialized, a further 15-20% are in the licensing phase or are on the verge of coming on the market, 30% are in the clinical test phase (Phase III) and the remaining 40% are in the clinical study phase (Phase I and II). The decoding of the human genome and its functional analysis through genomics and proteomics will further enhance this process as a multitude of further molecule structures is
unravelled, thus considerably widening the range of rational drug development. It was the comprehension of biotechnological methods that made the production of certain therapeutic drugs possible as for example in the case of human insulin, erythropoetin, coagulation factor VIII, and interferon, resulting in their widespread therapeutic application.

Until now, however, only a few drugs have been developed with the help of structure based drug design. Among these are an inhibitor of HIV-1 protease 1 and an inhibitor substance of neuroaminidase of the influenza virus 2. These findings form the fundamental principles of molecular medicine. They enable rationally developed drugs to influence new target structures such as gene regulators (transcription factors), or the gene itself to become the object of therapeutic manipulation, for instance by functioning as a substance-producing drug.

We would like to point out that although substantial efforts were made to compose factually correct and well understandable presentations, there may be places where a definition is incomplete or a phrase in an essay is flawed. All contributors to this encyclopedia will be extremely happy to receive corrections or revised passages for inclusion in future editions of the “Encyclopedic Reference of Genomics and Proteomics in Molecular Medicine”.

This encyclopedia endeavours to accompany current developments and convey the present level in knowledge on molecular causes of illnesses from a practice-oriented point of view. Acknowledged experts from various specialized fields such as human genetics, molecular biology, cell biology, biochemistry, physics and other bioscience disciplines explain the most important terms, complementing information by topical surveys, numerous figures and tables, and keywords. It is to be hoped that this compendium may contribute to understanding the advances in molecular medicine and may find many interested readers.

Berlin, 2005

Detlev Ganten
Klaus Ruckpaul
Editors-in-Chief

PROF. DR. DETLEV GANTEN
Charité
University Medicine Berlin
Berlin, Germany

PROF. EM. DR. KLAUS RÜCKPAUL
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

Field Editors

PROF. DR. WALTER BIRCHMEIER
Cancer Research Program, Division of Signal Transduction, Invasion, and Metastasis of Epithelial Cell
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

PROF. DR. JÖRG T. EPPLEN
Department of Neurogenetics and Behavioural Genetics
Institute of Human Genetics
Ruhr University Bochum
Bochum, Germany

PROF. DR. KLAUS GENSER
Department of Proteomics and Molecular Mechanisms of Neurodegenerative Diseases
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

DR. MANFRED GOSSEN
Cancer Research Program, Division of Control of DNA Replication
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

DR. BERGIT KERSTEN
Department of Proteomics and Molecular Mechanisms of Neurodegenerative Diseases
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

PROF. DR. HANS LEHRACH
Department of Vertebrate Genomics
Max Planck Institute for Molecular Genetics
Berlin, Germany

PROF. DR. HARTMUT OSCHKINAT
Department of NMR-Supported Structural Biology
Forschungsinstitut für Molekulare Pharmakologie (FMP)
Berlin-Buch
Berlin, Germany

PROF. DR. PATRIZIA RUIZ
Division of Molecular Genetics
Center for Cardiovascular Research
Charité University Medicine
Berlin, Germany

DR. PETER SCHMIEDE
Department of NMR-Supported Structural Biology
Forschungsinstitut für Molekulare Pharmakologie (FMP)
Berlin-Buch
Berlin, Germany

PROF. DR. ERICH WANKER
Department of Proteomics and Molecular Mechanisms of Neurodegenerative Diseases
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany

Editorial Assistant

DR. CHRISTIANE NOLTE
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin, Germany
List of Contributors

SALIM ABDELILAH-SEYFRIED
Max Delbrück Center (MDC) for Molecular Medicine
Berlin
Germany
salim@mdc-berlin.de

TILL ACKER
Edinger Institute, Neuropathology
Johann-Wolfgang Goethe University
Frankfurt
Germany
till.acker@med.uni-frankfurt.de

DAVID J. ADAMS
Wellcome Trust Genome Campus Hinxton
The Sanger Institute
Cambridge
UK

UELI AEBI
M.E. Müller Institute for Structural Biology, Biozentrum
University of Basel
Basel
Switzerland
ueli.aebi@unibas.ch

SAIMA AIJAZ
Division of Cell Biology
Institute of Ophthalmology
University College London
London
UK

LEILA N. ALBERS
Department of Chemistry
University of Minnesota
Minneapolis, MN
USA

REGINA ALBERT
Molecular Genome Analysis
DKFZ
Heidelberg
Germany

ta1mann@rz.uni-potsdam.de

THOMAS ALTMANN
Institute of Biochemistry and Biology
University Potsdam
Potsdam-Golm
Germany

PETER ANGEL
Deutsches Krebsforschungszentrum, Division of Signal Transduction and Growth Control
Heidelberg
Germany
p.angel@dkfz-heidelberg.de
p.angel@dkfz.de

MARTIN HRABÉ DE ANGELIS
GSF Research Center for Environment and Health
Neuherberg
Germany
hrabe@gsf.de

ADAM ANTEBI
Baylor College of Medicine
Huffington Center on Aging
Houston, TX
USA
aantebi@bcm.tmc.edu

STYLIANOS E. ANTONARAKIS
University Hospital of Geneva
Geneva
Switzerland
stylianos.antonarakis@medecine.unige.ch

RAJESH ARASADA
Adolf-Butenandt-Institute/Cell Biology
Ludwig-Maximilians-University
Munich
Germany

HAYLEY ARCHER
Institute of Medical Genetics
University Hospital of Wales, Heath Park
Cardiff
UK
archerhl@cardiff.ac.uk

HANS-HENNING ARNOLD
Cell and Molecular Biology
Technical University of Braunschweig
Braunschweig
Germany
h.arnold@tu-bs.de

KHUSRU ASADULLAH
Corporate Research Business Area Dermatology
Schering AG
Berlin
Germany
khusrasasadullah@schering.de

MANFRED AUER
Laboratory of Sensory Neuroscience
The Rockefeller University, New York
NY
USA
auerm@mail.rockefeller.edu

ANDREAS G. BADER
The Scripps Research Institute
La Jolla, CA
USA
List of Contributors

Maria S. Balda
Division of Cell Biology
Institute of Ophthalmology
University College London
London
UK
m.balda@ucl.ac.uk

Melisa J. Baptista
National Institute on Aging and National Institute of Neurological Diseases and Stroke
National Institutes of Health
Bethesda, MD
USA
baptista@mail.nih.gov

Ralf Bargou
Department of Hematology, Oncology and Tumor Immunology
Robert Rössle Clinic at the HELIOS Clinical Center Berlin-Buch
Charité
Berlin
Germany

Oliver Bartsch
Institute of Human Genetics
Mainz University School of Medicine
Mainz
Germany
bartsch@humgen.klinik.uni-mainz.de

Amanda E. Bass
Departments of Pathology, Dermatology, and the Robert H. Lurie Cancer Center
Northwestern University Feinberg School of Medicine
Chicago, IL
USA
bass@northwestern.edu

Ingo Bechmann
Experimental Neuroimmunology, Institute of Anatomy, Cell and Neurobiology
University Hospital Charité
Berlin
Germany
ingo.bechmann@charite.de

Stephanie Bechtel
Department of Molecular Genome Analysis
German Cancer Research Center
Heidelberg
Germany
s.bechtel@dkfz.de

Johannes Beckers
GSF Research Center for Environment and Health
Neuherberg
Germany

Roland Beckmann
Institute for Biochemistry
Charité University Medicine Berlin
Germany
roland.beckmann@charite.de

Mark T. Bedford
The University of Texas M.D. Anderson Cancer Center
Science Park – Research Division
Smithville, MO
USA
mtbedford@mdanderson.org

David J. Beebe
Biomedical Engineering
University of Wisconsin
Madison, WI
USA
djbeebe@wisc.edu

Christian Behl
Department of Pathobiocchemistry
Johannes Gutenberg University
Mainz
Germany
cbehl@uni-mainz.de

Dietrich Behne
Department of Molecular Trace Element Research in the Life Sciences
Hahn Meitner Institute Berlin
Berlin
Germany
behne@hmi.de

Jurgen Behrens
Nikolaus-Fiebiger-Center for Molecular Medicine
University Erlangen-Nürnberg
Erlangen
Germany
jbehrens@molmed.uni-erlangen.de

Saverio Bellusci
Developmental Biology Program, Department of Surgery
USC Keck School of Medicine and the Saban Research Institute of Childrens Hospital Los Angeles
Los Angeles, CA
USA
sbellusci@chla.usc.edu

Olivier Bensaude
Régulation de l’Expression Génétique
Ecole Normale Supérieure (ENS)
Paris
France
bensaude@wotan.ens.fr

Lee Bergman
Department of Molecular Genome Analysis
German Cancer Research Center
Heidelberg
Germany

Ernest Beutler
The Scripps Research Institute
Department of Molecular and Experimental Medicine
La Jolla, CA
USA
beutler@scripps.edu
MARTIN BEUTLER
Randall Division of Cell and Molecular Biophysics
King’s College
London
UK
martin.beutler@kcl.ac.uk

GIUSEPPE BIAMONTI
Istituto di Genetica Molecolare, CNR
Pavia
Italy
biamonti@igm.cnr.it

ETHAN BIER
UCSD, and The Burnham Institute
La Jolla, CA
USA

WALTER BIRCHMEIER
Max-Delbrück-Center for Molecular Medicine
Berlin
Germany
wbirch@mdc-berlin.de

MARIEL BIRNBAUMER
Receptor Regulation Section, Laboratory of Signal Transduction
National Institute of Environmental Health Sciences
Research Triangle Park, NC
USA
birnbau2@niehs.nih.gov

CAROLINE BODEN
Max Delbrück Centre for Molecular Medicine
Berlin
Germany

ROLF BODMER
UCSD, and The Burnham Institute
La Jolla, CA
USA

JUDITH M. BOER
Center for Human and Clinical Genetics
Leiden University Medical Center
Leiden
The Netherlands
j.m.boer@lumc.nl

KENNETH R. BOHELER
Kenneth R. Boehler, Laboratory of Cardiovascular Science
NIA/NIH
Baltimore, MD
USA
bohelerkr@grc.nia.nih.gov

GUILLAUME BOSSIS
University of Göttingen
Göttingen
Germany

DONALD W. BOWDEN
Center for Human Genomics
Wake Forest University School of Medicine
Winston-Salem, NC
USA
dbowden@wfubmc.edu

ALAN BRADLEY
Wellcome Trust Genome Campus Hinxton
The Sanger Institute
Cambridge
UK
abradley@sanger.ac.uk

OLE BRANDT
Functional Genome Analysis
Deutsches Krebsforschungszentrum
Heidelberg
Germany

SUSANNE BRAUN
Department of Biology
Institute of Cell Biology
ETH Zurich, Zurich
Switzerland

THOMAS BRAUN
M.E. Müller Institute for Structural Biology, Biocenter
University of Basel
Basel
Switzerland

ALVIS BRAZMA
European Bioinformatics Institute
European Molecular Biology Laboratory
Outstation-Hinxton
Cambridge
UK
brazma@ebi.ac.uk

MICHAEL BREITENBACH
Department of Cell Biology
University of Salzburg
Salzburg
Austria
michael.breitenbach@sbg.ac.at

KENNETH J. BRESLAUER
Department of Chemistry and Chemical Biology, Rutgers
State University of New Jersey
Piscataway, NJ
USA
kjbdna@rci.rutgers.edu

WILLIAM R. BRINKLEY
Department of Molecular and Cellular Biology
Baylor College of Medicine
Houston, TX
USA
brinkley@bcm.tmc.edu
STEFAN BRITSCH
Max Delbrück Center for Molecular Medicine (MDC)
Berlin-Buch
Berlin
Germany
sbritsch@mdc-berlin.de

M. JULIA BROSnan
BHF Glasgow Cardiovascular Research Centre
University of Glasgow
Scotland
UK
mjb8n@clinmed.gla.ac.uk

SHIRLEY R. BRUCE
Department of Immunology
The University of Texas
MD Anderson Cancer Center
Houston, TX
USA

CHRISTIAN BUCHHOLZ
Paul-Ehrlich-Institute
Division of Medical Biotechnology
Langen
Germany

MALTE BUCHHOLZ
Department of Internal Medicine I
University of Ulm
Ulm
Germany
malte.buchholz@medizin.uni-ulm.de

MARGARET E. BUCKINGHAM
Department of Developmental Biology
CNRS, Pasteur Institute
Paris
France
margab@pasteur.fr

HEIKE BUDDE
MOLISA GmbH
Mageburg
Germany

JEAN-MARIE BUERSTEDDE
Institute of Molecular Radiobiology, GSF
Neuherberg
Germany
buersted@gsf.de

ALEXANDER BORKLE
Molecular Toxicology, Department of Biology
University Konstanz
Konstanz
Germany
alexander.borkle@uni-konstanz.de

KONRAD BÖSSOW
Max Planck Institute for Molecular Genetics
Berlin
Germany
buessow@molgen.mpg.de

ANNA MARIA CALELLA
European Molecular Biology Laboratory
Mouse Biology Unit
Monterotondo
Italy

M. CRISTINA CARDOSO
Max Delbrueck Center for Molecular Medicine
Berlin
Germany
cardoso@mdc-berlin.de

MICAELA CASERTA
Istituto di Biologia e Patologia Molecolari
CNR
Rome
Italy
micaela.caserta@uniroma1.it

GIUSEPPE CASTALDO
CEINGE – Biotecnologie Avanzate, scarl and Dipartimento di Biochimica e Biotecnologie Mediche
University of Napoli “Federico II”
Napoli
Italy
Facoltà di Scienze Matematiche, Fisiche e Naturali
University of Molise
Isernia
Italy

ANDREW C.B. CATO
Forschungszentrum Karlsruhe
Institute of Toxicology and Genetics
Karlsruhe
Germany
andrew.cato@itg.fzk.de

DORA CAVALLO-MEDVED
Department of Pharmacology
Wayne State University and Barbara Ann Karmanos Cancer Institute
Detroit, MI
USA

FLORENCE CHAINIAUX
University of Namur
Namur
Belgium

SANG YUN CHO
Yonsei Proteome Research Center
Biomedical Proteome Research Center
Seoul
Korea

ALINE CHRÉTIEN
University of Namur
Namur
Belgium
MARKUS CHRISTMANN  
Department of Toxicology  
University of Mainz  
Mainz  
Germany  

RICHARD I. CHRISTOPHERSON  
School of Molecular and Microbial Biosciences  
University of Sydney  
Sydney, NSW  
Australia  
ric@mmb.usyd.edu.au  

GEORGE P. CHRÓUSOS  
National Institute of Child Health and  
Human Development  
Pediatric and Reproductive Endocrinology Branch  
Bethesda, MD  
USA  
chrousos@mail.nih.gov  

ELENA CIBRIÁN-ÚHÁLTE  
Max Delbrück Center  
Berlin  
Germany  

SVEN CICHON  
Department of Medical Genetics  
University of Antwerp  
Belgium  

Institute of Human Genetics  
University of Bonn  
Germany  
sven.cichon@uni-bonn.de  

KLAUS CICHTUEK  
Paul-Ehrlich-Institute  
Division of Medical Biotechnology  
Langen  
Germany  
cickl@pei.de  

ANGUS J. CLARKE  
Institute of Medical Genetics  
University Hospital of Wales, Heath Park  
Cardiff  
UK  
clarkeaj@cardiff.ac.uk  

JAMES E. CLEAVER  
Auerback Melanoma Laboratory, UCSF Cancer Center  
University of California  
San Francisco, CA  
USA  
jcleaver@cc.ucsf.edu  

JOHN M. COFFIN  
Department of Molecular Biology and Microbiology  
Tufts University  
Boston, MA  
USA  
john.coffin@tufts.edu  

PIERRE COLAS  
Aptanomics  
Lyon  
France  
pierre.colas@aptanomics.com  

ALASTAIR COMPSTON  
University of Cambridge Neurology Unit  
Cambridge  
UK  
alastair.compston@medschl.cam.ac.uk  

KATJA CONRATH  
Cellular and Molecular Immunology, Vlaams  
Inter-University Institute of Biotechnology  
Free University of Brussels  
Brussels  
Belgium  

MARK R. COOKSON  
National Institute on Aging and National Institute of  
Neurological Diseases and Stroke  
National Institutes of Health  
Bethesda, MD  
USA  

KEITH D. COON  
The Translational Genomics Research Institute  
Phoenix, AZ  
USA  

DAVID N. COOPER  
Institute of Medical Genetics  
University of Wales  
College of Medicine  
Cardiff  
UK  
cooperdn@cardiff.ac.uk  

RICHARD D. CUMMINGS  
University of Oklahoma Health Services Center  
Department of Biochemistry and Molecular Biology  
Oklahoma City  
Oklahoma, OK  
USA  
richard-cummings@ouhsc.edu  

KERSTIN DANKER  
Institute for Biochemistry und Molecular  
Biology, Campus Benjamin Franklin  
Charité-University Medicine Berlin  
Berlin  
Germany  
kerstin.danker@charite.de  

PHILIPPE DAUBAS  
Department of Developmental Biology  
CNRS, Pasteur Institute  
Paris  
France  

EDOUARD DELAIVE  
University of Namur  
Namur  
Belgium
SAMUEL DEUTSCH  
Department of Genetic Medicine and Development  
University of Geneva Medical School  
Geneva  
Switzerland  
samuel.deutsch@medecine.unige.ch

JEAN-FRANÇOIS DIERICK  
Biovallee  
Gosselies  
Belgium  
jf.dierick@biovallee.be

MARTIN DIGWEED  
Institute of Human Genetics  
Charité University Medicine Berlin  
Berlin  
Germany  
martin.digweed@charite.de

MARK D. DISTEFANO  
Department of Chemistry  
University of Minnesota  
Minneapolis, MN  
USA  
distefan@chem.umn.edu

OLIVER DISTLER  
Center of Experimental Rheumatology  
University Hospital Zurich  
Zurich  
Switzerland  
oliver.distler@usz.ch

GUNNAR DITTMAR  
Max Delbrück Center for Molecular Medicine  
Berlin  
Germany

ANNA F. DOMINICZAK  
BHF Glasgow Cardiovascular Research Centre  
University of Glasgow  
Scotland  
UK  
anna.dominiczak@clinmed.gla.ac.uk

ANJA DRÖGE  
Max Delbrück Center for Molecular Medicine (MDC)  
Berlin  
Germany  
a.droege@mdc-berlin.de

RAINER DUDEN  
School of Biological Sciences  
Royal Holloway University of London  
Egham, Surrey  
UK  
rainer.duden@rhul.ac.uk

TRAVIS DUNCKLEY  
The Translational Genomics Research Institute  
Phoenix, AZ  
USA

ELAINE DZIERZAK  
Department of Cell Biology and Genetics  
Erasmus University Medical Center  
Rotterdam  
The Netherlands  
e.dzierzak@erasmusmc.nl

CLAUDIA EDER  
Institute of Physiology  
Medical Faculty Charité  
Berlin  
Germany  
claudia.eder@charite.de

ANN EHRENSHOFER-MURRAY  
Otto-Warburg-Laboratories  
Max-Planck-Institute of Molecular Genetics  
Berlin  
Germany  
ehrenhof@molgen.mpg.de

MICHEL EICHELBAUM  
Dr Margarete Fischer-Bosch Institute of Clinical Pharmacology  
Stuttgart  
Germany  
michel.eichelbaum@ikp-stuttgart.de

PETER EKBLOM  
Department of Cell and Molecular Biology  
Lund University  
Lund  
Sweden  
peter.ekblom@medkem.lu.se

JAMES ELLIS  
Developmental Biology Program  
Hospital for Sick Children  
Toronto, ON  
Canada  
jellis@sickkids.ca

NATHAN A. ELLIS  
Department of Medicine  
University of Chicago  
Chicago, IL  
USA  
nellis@medicine.bsd.uchicago.edu

ANDREAS ENGEL  
M.E. Müller Institute for Structural Biology, Biocenter  
University of Basel  
Basel  
Switzerland  
andreas.engel@unibas.ch

MARTIN ENGELHARD  
Max Planck Institute of Molecular Physiology  
Dortmund  
Germany  
martin.engelhard@mpi-dortmund.mpg.de
CLEMENS FRANZ  
Ludwig Institute for Cancer Research, Royal Free and University College School of Medicine, Department of Biochemistry and Molecular Biology  
University College London  
London  
UK

CHRISTIAN FREUND  
Freie Universität Berlin and Institute for Molecular Pharmacology  
Berlin  
Germany  
freund@fmp-berlin.de

JEAN-NOËL FREUND  
INSERM U682  
Strasbourg  
France

MATI FRIDKIN  
Departments of Biological Chemistry and Organic Chemistry  
Weizmann Institute of Science  
Rehovot  
Israel  
mati.fridkin@weizmann.ac.il

EVELYNE FRIEDERICH  
Laboratory of Molecular Biology, Genetic Analysis and Modelling  
Public Research Center for Health  
Luxembourg  
evelyne.friederich@crp-sante.healthnet.lu

MATTHIAS G. FRIEDRICH  
Department of Cardiac Sciences  
University of Calgary  
Calgary, AB  
Canada  
matthias.friedrich@ucalgary.ca

GERHARD FRITZ  
Division of Applied Toxicology, Institute of Toxicology  
University of Mainz  
Mainz  
Germany

CORNELIUS FRÖMMEL  
Faculty of Medicine  
Georg August University  
Göttingen  
Germany  
c.froemmel@med.uni-goettingen.de

MASATOSHI FUJITA  
Virology Division  
National Cancer Center Research Institute  
Chuohku, Tokyo  
Japan  
mafujita@gan2.res.ncc.go.jp

YASUYUKI FUJITA  
MRC Laboratory of Molecular Cell Biology and Cell Biology Unit, and Department of Biology  
University College London  
London  
UK  
y.fujita@ucl.ac.uk

YASUHIRO FURUICHI  
GeneCare Research Institute  
Kamakura  
Japan  
furuichi@genecare.co.jp

ALFREDO FUSCO  
Istituto di Endocrinologia ed Oncologia Sperimentale  
University “Federico II”  
Naples  
Italy  
a fusco@napoli.com

GIULIO GABBANI  
Department of Pathology  
CMU-University of Geneva  
Geneva  
Switzerland  
giulio.gabbiani@medecine.unige.ch

UDO S. GAIPL  
Institute of Clinical Immunology and Rheumatology, Department of Internal Medicine III  
Friedrich-Alexander University of Erlangen-Nuernberg  
Erlangen  
Germany

NIELS H. GEHRING  
University Clinic Heidelberg  
Children’s Hospital  
Heidelberg  
Germany  
niels.gehring@med.uni-heidelberg.de

ROBERT GERLAI  
Psychology Department  
University of Toronto at Mississauga  
Mississauga, ON  
Canada  
robert_gerlai@yahoo.com

PHILIP F. GIAMPIETRO  
Department of Medical Genetic Services  
Marshfield Clinic  
Marshfield, WI  
USA  
giampietro.philip@marshfieldclinic.org

MARK H. GINSBERG  
Department of Medicine, Division of Rheumatology  
University of California  
San Diego, La Jolla, CA  
USA  
mhginsberg@ucsd.edu
WILLIAM C. HAHN
Department of Medical Oncology
Dana-Farber Cancer Institute
Boston, MA
USA
william_hahn@dfci.harvard.edu

HIROSHI HANDA
Tokyo Institute of Technology
Graduate School of Bioscience and Biotechnology,
Midori-ku
Yokohama
Japan
hhanda@bio.titech.ac.jp

CHRISTINE HARTMANN
Research Institute for Molecular Pathology
Vienna
Austria
hartmann@imp.univie.ac.at

FRANZ HARTNER
Research Centre Applied Biocatalysis, Institute of
Molecular Biotechnology
Graz University of Technology
Austria

VOLKER HAUKE
Institute for Chemistry-Biochemistry
Free University
Berlin
Germany
vhaucke@chemie.fu-berlin.de

THOMAS HAUPL
Department of Rheumatology, Charité
Humboldt-University
Berlin
Germany
thomas.haeupl@charite.de

JIAN-QING HE
University of British Columbia McDonald Research
Laboratories / iCAPTURE Center
Vancouver, BC
Canada
jhe@mrl.ubc.ca

MARGARETE M.S. HECK
Wellcome Trust Centre for Cell Biology
University of Edinburgh
Edinburgh
UK
margaret.heck@ed.ac.uk

ULF HEDIN
Department of Surgical Sciences
Karolinska Hospital
ulf.hedin@kirurgi.ki.se

UDO HEINEMANN
Max Delbrück Center for Molecular Medicine
Berlin
Germany
heinemann@mdc-berlin.de

RAINER HEINTZMANN
Randall Division of Cell and Molecular Biophysics
King’s College
London
UK
rainer.heintzmann@kcl.ac.uk

CARL-HENRIK HELDIN
Ludwig Institute for Cancer Research
Uppsala
Sweden
c-h.heldin@licr.uu.se

FRITJOF HELMCHEN
Brain Research Institute
University of Zurich
Switzerland
helmchen@hifo.unizh.ch

VOLKWARD HELMS
Center for Bioinformatics
Saarland University
Saarbrücken
Germany
volkward.helms@bioinformatik.uni-saarland.de

GEOFFREY N. HENDY
Calcium Research Laboratory,
Royal Victoria Hospital
and Departments of Medicine, Physiology and
Human Genetics
McGill University
Montreal, QC
Canada
geoffrey.hendy@mcgill.ca

LUDGER HENGST
Biocenter-Innsbruck Medical University
Innsbruck
Austria
ludger.hengst@uibk.ac.at

STEFFEN HENNIG
RZPD - Deutsches Ressourcenzentrum
für Genomforschung
Berlin
Germany
hennig@rzpd.de

ANDREAS HERRMANN
Institute of Biology, and Center of Biophysics and
Bioinformatics
Humboldt University Berlin
Berlin
Germany
andreas.herrmann@rz.hu-berlin.de

BERNHARD G. HERRMANN
Department of Developmental Genetics
Max Planck Institute for Molecular Genetics
Berlin
Germany
herrmann@molgen.mpg.de
NORBERT HÜBNER
Max Delbrück Center for Molecular Medicine (MDC)
Berlin
Germany
nhuebner@mdc-berlin.de

ULRICH HÜBSCHER
Institute of Veterinary Biochemistry and Molecular Biology
University of Zürich
Zürich
Switzerland
hubscher@vetbio.unizh.ch

JOERG HUELSKEN
Epithelial Stem Cell Biology
ISREC
Epalinges
Switzerland
joerg.huelsken@isrec.unil.ch

TAKUYA IMAMURA
Ecole Pratique des Hautes Etudes
Evry
France

BEAT A. IMHOF
Department of Pathology and Immunology and Department of Cellular Physiology and Metabolism
University of Geneva
Geneva
Switzerland
beat.imhof@medecine.unige.ch

AKIHlRO INAZU
Molecular Biochemistry and Molecular Biology Laboratory, Graduate School of Medical Sciences
Kanazawa University
Kanazawa
Japan
inazua@mhs.mp.kanazawa-u.ac.jp

ZOLTÁN IVICS
Max Delbrück Center for Molecular Medicine
Berlin
Germany
zivics@mdc-berlin.de

ZSUZSANNA IZSVÁK
Max Delbrück Center for Molecular Medicine
Berlin
Germany

ANETTE JACOB
Functional Genome Analysis
Deutsches Krebsforschungszentrum
Heidelberg
Germany

TIMO JAEGER
MOLISA GmbH
Magdeburg
Germany

WOLFGANG JAHNKE
Novartis Institutes for BioMedical Research, Novartis Pharma AG
Discovery Technologies
Basel
Switzerland
wolfgang.jahnke@novartis.com

MICHAL JANITZ
Max Planck Institute for Molecular Genetics
Department Vertebrate Genomics
Berlin
Germany
janitz@molgen.mpg.de

DIETER E. JENNE
Dieter E. Jenne, Max Planck Institute of Neurobiology
Martinsried
Germany
djenne@neuro.mpg.de

HENRICK K. JENSEN
Department of Cardiology
Aarhus University Hospital, Skejby Hospital
Aarhus
Denmark
hkjensen@dadlnet.dk

MATTHEW C. JONES
The Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus
Hinxton
Cambridgeshire
UK
mcj@sanger.ac.uk

PETER R. JUNGBLUT
Max Planck Institute for Infectious Diseases, Protein Analysis
Berlin
Germany
jungblut@mpiib-berlin.mpg.de

JERZY JURKA
Genetic Information Research Institute
Mountain View, CA
USA
jurka@girinst.org

KLAUS H. KAESTNER
Department of Cell and Developmental Biology
University of Pennsylvania
Philadelphia, PA
USA
kaestner@mail.med.upenn.edu

BERND KAINA
Division of Applied Toxicology, Institute of Toxicology
University of Mainz
Mainz
Germany
kaina@uni-mainz.de
BERND KAINA
Department of Toxicology
University of Mainz
Mainz
Germany

CHAYA KALCHEIM
Department of Anatomy and Cell Biology
Hebrew University-Hadassah Medical School
Jerusalem
Israel
kalcheim@nn-shum.cc.huji.ac.il

JOACHIM R. KALDEN
Institute of Clinical Immunology and Rheumatology,
Department of Internal Medicine III
Friedrich-Alexander University of Erlangen-Nuernberg
Erlangen
Germany

WOLFGANG E. KAMINSKI
Institute for Clinical Chemistry and Laboratory Medicine
University Regensburg
Regensburg
Germany
wolfgang.kaminski@klinik.uni-regensburg.de

VLADIMIR V. KAPITONOV
Genetic Information Research Institute
Mountain View, CA
USA

MARTA KARTALOU
Division of Biological Engineering and Center for
Environmental Health Sciences
Massachusetts Institute of Technology
Cambridge, MA
USA

TACIANA KASCIUKOVIC
Division of Gene Regulation and Expression, Wellcome
Trust Biocentre
University of Dundee
UK

RONI KASHER
Departments of Biological Chemistry and Organic Chemistry
Weizmann Institute of Science
Rehovot
Israel
roni.kasher@weizmann.ac.il

EPIRAHM KATCHALSKI-KATZIR
Departments of Biological Chemistry and Organic Chemistry
Weizmann Institute of Science
Rehovot
Israel
ephraim.katzir@weizmann.ac.il

THOMAS C. KAUFMANN
M.E. Müller Institute for Structural Biology, Biocenter
University of Basel
Basel
Switzerland

AJAMETE KAYKAS
Department of Pharmacology, Howard Hughes
Medical Institute
University of Washington School of Medicine
Seattle, WA
USA

MICHELE KEDINGER
INSERM U682
Strasbourg
France
michele.kedinger@inserm.u-strasbg.fr

GERD KEMPERMANN
Gerd Kempermann, Max-Delbrück-Center for Molecular
Medicine (MDC) Berlin-Buch
Berlin
Germany
gerd.kempermann@mdc-berlin.de

BIRGIT KERSTEN
Department of Neuroproteomics
Max Delbrück Center for Molecular
Medicine Berlin-Buch
Berlin
Germany
b.kersten@mdc-berlin.de

TOMOSHIGE KINO
National Institute of Child Health and
Human Development
Pediatric and Reproductive Endocrinology Branch
Bethesda, MD
USA
kinot@mail.nih.gov

FRANK KIRCHHOFF
Max Planck Institute of Experimental Medicine
Göttingen
Germany
kirchhoff@em.mpg.de

GERHARD KLEBE
Institute of Pharmaceutical Chemistry
Philipps-University
Marburg
Germany
klebe@mail.uni-marburg.de

CHRISTOPH A. KLEIN
Institute of Immunology
Ludwig Maximilian University
Munich
Germany
christoph.klein@med.uni-muenchen.de
THOMAS KLEIN  
Institute for Genetics  
University of Cologne  
Cologne  
Germany  
th.klein@uni-koeln.de

MICHAEL W. KLYMKOWSKY  
Molecular, Cellular and Developmental Biology  
University of Colorado  
Boulder, CO  
USA  
klym@spot.colorado.edu

KARL-WILHELM KOCH  
Division of Biochemistry, Institute of Biology and Environmental Sciences  
Carl von Ossietzky University  
Oldenburg  
Germany  
karl.w.koch@uni-oldenburg.de

ZOLTÁN KONTHUR  
Department of Vertebrate Genomics  
Max Planck Institute of Molecular Genetics  
Berlin  
Germany  
konthur@molgen.mpg.de

JOACHIM KOPKA  
Max Planck Institute of Molecular Plant Physiology  
Golm  
Germany  
kopka@mpimp-golm.mpg.de

PETER KOPP  
Division of Endocrinology, Metabolism & Molecular Medicine, Feinberg School of Medicine  
Northwestern University  
Chicago, IL  
USA  
p-kopp@northwestern.edu

ULRIKE KORF  
Molecular Genome Analysis, DKFZ  
Heidelberg  
Germany  
u.korf@dkgz.de

BERNHARD KORN  
RZPD  
Deutsches Ressourcenzentrum für Genomforschung GmbH  
Heidelberg  
Germany  
korn@rzpd.de

MICHAEL KRACHT  
Medizinische Hochschule Hannover  
Hannover  
Germany  
kracht.michael@mh-hannover.de

ACHIM KRAMER  
Institute for Medical Immunology, Laboratory of Chronobiology  
Charité University Medicine  
Berlin  
Germany  
achim.kramer@charite.de

DANIEL KRAPPMANN  
Max Delbrück Center for Molecular Medicine  
Berlin  
Germany  
scheiderereit@mdc-berlin.de

EBERHARD KRAUSE  
Institute for Molecular Pharmacology  
Berlin  
Germany  
ekrause@fmp-berlin.de

MICHAEL KRAUSS  
Institute for Chemistry-Biochemistry  
Free University  
Berlin  
Germany

MICHAEL KRAWCZAK  
Institute for Medical Informatics und Statistics  
Christian-Albrechts-University Kiel  
Kiel  
Germany  
krawczak@medinfo.uni-kiel.de

HANS A. KRETZSCHEMAR  
Institute for Neuropathology  
Ludwig Maximilian University  
Munich  
Germany  
hans.kretzschmar@inp.med.uni-muenchen.de

ULRICH KUBITSCHKE  
Institute of Physical and Theoretical Chemistry  
Bonn  
Germany  
u.kubitscheck@uni-bonn.de

RONALD KÜHNE  
Research Institute for Molecular Pharmacology  
Berlin  
Germany  
kuehne@fmp-berlin.de

RYOKO KURIYAMA  
Department of Genetics, Cell Biology, and Development  
University of Minnesota, MN  
USA  
ryoko@lenti.med.umn.edu

DAVID J. KWIATKOWSKI  
Brigham & Woman’s Hospital  
Boston, MA  
USA  
dk@rics.bwh.harvard.edu
MIN-SEOK KWON  
Yonsei Proteome Research Center  
Biomedical Proteome Research Center  
Seoul  
Korea

Department of Biochemistry  
Yonsei University  
Seoul  
Korea

ANTONIOS KYRIAKOPOULOS  
Department of Molecular Trace Element Research in the Life Sciences  
Hahn Meitner Institute Berlin  
Berlin  
Germany

PATRICIA A. LABOSKY  
Department of Cell and Developmental Biology  
University of Pennsylvania  
Philadelphia, PA  
USA  
plabosky@mail.med.upenn.edu

APARNA LAKKARAJU  
Margaret M. Dyson Vision Research Institute and Departments of Cell Biology and Ophthalmology  
Weill Medical College of Cornell University  
New York, NY  
USA

SEAN LAL  
Muscle Research Unit, Institute for Biomedical Research  
University of Sydney  
Sydney, NSW  
Australia  
sean@anatomy.usyd.edu.au

VICTOR S. LAMZIN  
European Molecular Biology Laboratory (EMBL), Hamburg c/o DESY  
Hamburg  
Germany  
victor@embl-hamburg.de

E. BIRGITTE LANE  
Division of Cell & Developmental Biology  
University of Dundee School of Life Sciences  
MSI/WTB Complex  
Dundee  
UK  
e.b.lane@dundee.ac.uk

ULRICH LANGENBECK  
Institute of Human Genetics  
University Hospital  
Frankfurt/Main  
Germany  
u.langenbeck@em.uni-frankfurt.de

STIJW P DE LANGHE  
Developmental Biology Program, Department of Surgery  
USC Keck School of Medicine and the Saban Research Institute of Childrens Hospital Los Angeles  
Los Angeles, CA  
USA

CLAUDIA LANGLAIS  
RZPD  
Deutsches Ressourcenzentrum für Genomforschung GmbH  
Heidelberg  
Germany  
langlais@rzpd.de

NILS-GÖRAN LARSSON  
Karolinska Institute, Department of Laboratory Medicine, NOVUM  
Karolinska University Hospital-Huddinge  
Stockholm  
Sweden  
nils-goran.larsson@labmed.ki.se

PETER LAUN  
Department of Cell Biology  
University of Salzburg  
Austria

JEANNIE T. LEE  
Howard Hughes Medical Institute, Department of Molecular Biology, Massachusetts General Hospital, Department of Genetics  
Harvard Medical School  
Boston, MA  
USA  
lee@molbio.mgh.harvard.edu

JEAN LEHMANN  
Theoretical Biophysics, Department of Physics  
Royal Institute of Technology  
Stockholm  
Sweden  
jean@theophys.kth.se

HANS LEHRACH  
Max Planck Institute for Molecular Genetics  
Berlin  
Germany  
lehrach@molgen.mpg.de

TROND P. LEREN  
Medical Genetics Laboratory, Department of Medical Genetics  
Rikshospitalet University Hospital  
Oslo  
Norway  
trond.leren@rikshospitalet.no

ANCY LEROY  
Laboratory of Experimental Cancerology  
Ghent University Hospital  
Ghent  
Belgium  
ancy.leroy@ugent.be
JEFFREY M. LEVSKY
Anatomy & Structural Biology
Albert Einstein College of Medicine
Bronx, New York, NY
USA

The Wellcome Trust Sanger Institute, Wellcome Trust
Genome Campus
Hinxton
Cambridgeshire, UK
kem@sanger.ac.uk

CHIN LI
Institute of Biomedical Sciences
Academia Sinica
Taipei
Taiwan

MICHAEL LIETZ
Department of Medical Biochemistry and
Molecular Biology
University of Saarland Medical Center
Homburg
Germany

CHOONG-CHIN LIEW
Harvard Medical School
Boston, MA
USA
eliew@rics.bwh.harvard.edu

DIETER LINK
Department Robotics & Screening
Xantos Biomedicine AG
Munich
Germany
d.link@xantos.de

SANDY H.M. LIJTENS
Division of Cell Biology
The Netherlands Cancer Institute
Amsterdam
The Netherlands
s.lijtens@nki.nl

EVELINE S. LITSCHER
Brookdale Department of Molecular
Cell & Developmental Biology
Mount Sinai School of Medicine
New York, NY
USA
eveline.litscher@mssm.edu

ESTHER LIZANO
Institute for Biochemistry
University of Leipzig
Leipzig
Germany
elizano@uni-leipzig.de

FELIX LOOSLI
Developmental Biology Programme
European Molecular Biology Laboratory, EMBL
Heidelberg
Germany
felix.loosli@embl.de

DANIEL LOUVARD
Subcellular structure and cellular dynamics, UMR 144
CNRS/IC
Institute Curie – Research Division
Paris
France
daniel.louvard@curie.fr

JOACHIM LÜBKE
Institute of Medicine
Research Centre Jülich
Jülich
Germany
j.luebke@fz-juelich.de

WOLF-DIETER LUDWIG
Department of Hematology, Oncology and
Tumor Immunology
Robert Rössle Clinic at the HELIOS Clinical
Center Berlin-Buch
Charité, Berlin
Germany
ludwig@rrk.charite-buch.de

FRIEDRICH C. LUFT
Franz Volhard Clinic, HELIOS Clinical Center Berlin
Max Delbrück Center for Molecular Medicine, Medical
Faculty of the Charité
Berlin
Germany
luft@fvk-berlin.de

RODNEY LUI
Muscle Research Unit, Institute for Biomedical Research
University of Sydney
Sydney, NSW
Australia
rod@anatomy.usyd.edu.au

ALBERTO LUINI
Department of Cell Biology and Oncology
Laboratory of Molecular Neurobiology
S. Maria Imbaro (Chieti)
Italy
luini@negrisud.it

JAMES R. LUPSKI
Department of Molecular and Human Genetics
Baylor College of Medicine
Houston, TX
USA
jlupski@bmc.tmc.edu

BARBARA LUSTIG
Clinic for Abdominal, Endocrine and Thoracic Surgery
Clinical Center Nürnberg
Nürnberg
Germany

HIROSHI MABUCHI  
Molecular Biochemistry and Molecular Biology Laboratory,  
Graduate School of Medical Sciences  
Kanazawa University  
Kanazawa  
Japan

ARNAUD A. MAILLEUX  
Developmental Biology Program, Department of Surgery  
USC Keck School of Medicine and the Saban Research  
Institute of Childrens Hospital Los Angeles  
Los Angeles, CA  
USA

MARY L. MARAZITA  
Craniofacial and Dental Genetics, School of Dental Medicine  
University of Pittsburgh, Pittsburgh  
PA  
USA  
marazita@sdmgenetics.pitt.edu

MARC MAREEL  
Laboratory of Experimental Cancerology  
Ghent University Hospital  
Ghent  
Belgium

FLORIAN MARKOWETZ  
Max Planck Institute for Molecular Genetics  
Berlin Center for Genome Based Bioinformatics  
Berlin  
Germany

KENKICHI MASUTOMI  
Department of Medical Oncology  
Dana-Farber Cancer Institute  
Boston, MA  
USA

KARL MATTER  
Division of Cell Biology, Institute of Ophthalmology  
University College London  
London  
UK

MATTHIAS P. MAYER  
Center for Molecular Biology Heidelberg (ZMBH)  
Heidelberg  
Germany  
m.mayer@zmbh.uni-heidelberg.de

NAYEF A. MAZLOUM  
Weill College of Medicine  
Cornell University  
New York, NY  
USA

KIRSTEN E. MCLAY  
The Wellcome Trust Sanger Institute  
Wellcome Trust Genome Campus  
Hinxton  
Cambridgeshire, UK  
kem@sanger.ac.uk

KARYN MEGY  
Sygen International plc, Department of Pathology  
University of Cambridge  
Cambridge  
UK  
km369@cam.ac.uk

FRAUKE MELCHIOR  
University of Göttingen  
Göttingen  
Germany  
f.melchior@medizin.uni-goettingen.de

DIETER K. MEYER  
Institute for Experimental and Clinical Pharmacology and  
Toxicology  
Albert Ludwig University Freiburg  
Freiburg  
Germany  
dieter.meyer@pharmakol.uni-freiburg.de

BURKHARD MICHEL  
Institute of Biochemistry and Biology  
Department of Biotechnology  
University of Potsdam  
Germany  
bmichel@rz.uni-potsdam.de

ERIC MILOT  
Centre de Recherche Guy-Bernier  
Hôpital Maisonneuve-Rosemont  
Montreal, QC  
Canada  
ericmilot.hmr@ssss.gouv.qc.ca

LILIANA MINICHIELLO  
European Molecular Biology Laboratory  
Mouse Biology Unit  
Monterotondo  
Italy  
minichiello@embl-monterotondo.it

ALEXANDER A. MIRONOV  
Department of Cell Biology and Oncology  
Laboratory of Molecular Neurobiology  
S. Maria Imbaro (Chieti)  
Italy

CHANDRA MOHAN  
Simmons Arthritis Research Center and Department of  
Internal Medicine/Rheumatology  
The University of Texas Southwestern Medical  
Center at Dallas  
Dallas, TX  
USA  
chandra.mohan@utsouthwestern.edu

ROLAND MOLL  
Institute of Pathology  
Philipp University  
Marburg  
Germany  
mollr@med.uni-marburg.de
KARL H. PLATE  
Neurological Institute, Clinical Center of the 
Johann Wolfgang Goethe University  
Frankfurt  
Germany  
karl-heinz.plate@kgu.de

G. ERIC PLUM  
Department of Chemistry and Chemical Biology, 
Rutgers State University of New Jersey  
Piscataway, NJ  
USA

IBET, Inc.,  
Columbus, OH  
USA

ROMAN S. POLISHCHUK  
Department of Cell Biology and Oncology  
Laboratory of Molecular Neurobiology  
S. Maria Imbaro (Chieti)  
Italy

THOMAS POLLMÄCHER  
Center of Mental Health  
Clinical Center Ingolstadt  
Ingolstadt  
Germany  
thomas.pollmaecher@klinikum-ingolstadt.de

THOMAS POMORSKI  
Institute of Biology, and Center of Biophysics  
and Bioinformatics  
Humboldt University Berlin  
Berlin  
Germany  
thomas.pomorski@rz.hu-berlin.de

HELMUT POSPIECH  
Department of Biochemistry  
National University of Ireland  
Galway  
Ireland  
Biocenter Oulu and Department of Biochemistry  
University of Oulu  
Oulu  
Finland

THOMAS PREISS  
Victor Chang Cardiac Research Institute  
Molecular Genetics Program  
Darlinghurst/Sydney, NSW  
Australia  
t.preiss@victorchang.unsw.edu.au

GABRIELE PROETZEL  
The Jackson Laboratory  
Maine, ME  
USA  
g.proetzel@scil.com

KATY RADDATZ  
MDC  
Berlin  
Germany

SALLY RADOVICK  
Section of Pediatric Endocrinology  
The University of Chicago  
Chicago, IL  
USA  
sradovici@peds.bsd.uchicago.edu

TIM W. RATZLAF  
Department of Neurology  
University of Pennsylvania School of Medicine  
Philadelphia, PA  
USA

BERND RAUTENSTRAUB  
Friedrich-Alexander-University, Institute of Human Genetics  
Erlangen  
Germany  
bernd.rautenstrauss@humgenet.uni-erlangen.de

GURU REDDY  
Ciphergen Biosystems, Inc.  
Fremont, CA 94555  
USA

WESTLEY H. REEVES  
Division of Rheumatology & Clinical Immunology, Center  
for Autoimmune Diseases  
University of Florida, Gainesville  
FL  
USA  
whreeves@ufl.edu

ANDREAS S. REICHERT  
Department of Physiological Chemistry  
Ludwig-Maximilians-University Munich  
Munich  
Germany  
andreas.reichert@med.uni-muenchen.de

Evan Reid  
Department of Medical Genetics  
University of Cambridge  
Cambridge  
UK  
ereid@hgmp.mrc.ac.uk

JÖRG REIMANN  
Institute for Medical Microbiology and Immunology  
University of Ulm  
Ulm  
Germany

T. REINISCH  
Institute for Physical Chemistry  
WWU Münster  
Münster  
Germany

CRISTOBAL G. DOS REMEDIOS  
Muscle Research Unit, Institute for Biomedical Research  
University of Sydney  
Sydney, NSW  
Australia  
crisdos@anatomy.usyd.edu.au
HERVÉ-W. RÉMIGY  
M.E. Müller Institute for Structural Biology, Biocenter  
University of Basel  
Basel  
Switzerland

RAINER RENKAWITZ  
Institute for Genetics  
Justus-Liebig-University  
Giessen  
Germany  
rainer.renkawitz@gen.bio.uni-giessen.de

ALEXANDRE REYMOND  
Center for Integrative Genomics  
University of Lausanne  
Lausanne  
Switzerland  
alexandre.reymond@medecine.unige.ch

GABRIELE RICHARD  
Department of Dermatology and Cutaneous Biology, and  
Jefferson Institute of Molecular Medicine  
Thomas Jefferson University  
Philadelphia, PA  
USA

ISABELLE RICHARD  
Génethon CNRS  
Evry  
France  
richard@genethon.fr

ANNE RIDLEY  
Ludwig Institute for Cancer Research, Royal Free and  
University College School of Medicine, Department of  
Biochemistry and Molecular Biology  
University College London  
London  
UK  
anne@ludwig.ucl.ac.uk

MARCELLA RIELTSCHEL  
Division of Genetic Epidemiology in Psychiatry  
Central Institute of Mental Health  
Mannheim  
Germany  
rietschel@zi-mannheim.de

LEONIE RINGROSE  
Centre for Molecular Biology (ZMBH)  
University of Heidelberg  
Germany  
l.ringrose@zmbh.uni-heidelberg.de

SILVANO RIVA  
Istituto di Genetica Molecolare, CNR  
Pavia  
Italy  
riva@igm.cnr.it

ELIZABETH A. ROCHOWICZ  
Section of Pediatric Endocrinology  
The University of Chicago  
Chicago, IL  
USA

MARINA V. RODNINA  
Institutes of Molecular Biology and  
Physical Biochemistry  
University of Witten/Herdecke  
Germany  
rodnina@uni-wh.de

ENRIQUE RODRIGUEZ-BOULAN  
Margaret M. Dyson Vision Research Institute and  
Departments of Cell Biology and Ophthalmology  
Weill Medical College of Cornell University  
New York, NY  
USA  
boulan@med.cornell.edu

STEPHANE ROMBAUTS  
Department of Plant Systems Biology  
University of Ghent  
Ghent  
Belgium

JOSEF ROSSGEN  
Institute of Human Biological Chemistry and Genetics  
University of Texas Medical Branch  
Galveston, TX  
USA

ROSSELLA ROSSI  
Istituto di Genetica Molecolare  
CNR, Pavia  
Italy

WOLFGANG ROTTBÄUER  
University Clinic Heidelberg  
Inner Medicine III  
Heidelberg  
Germany  
wolfgang.rottbauer@med.uni-heidelberg.de

PIERRE ROUZÉ  
Department of Plant Systems Biology  
University of Ghent  
Ghent  
Belgium  
pierre.rouze@psb.ugent.be

ANANDA L. ROY  
Departments of Pathology and Biochemistry, Programs in  
Immunology and Genetics  
Tufts University School of Medicine  
Boston, MA  
USA  
ananda.roy@tufts.edu
JOY ROY  
Department of Surgery  
St Gorans Hospital  
Stockholm  
Sweden  
ulf.hedin@kirurgi.ki.se

RICHARD RUBIN  
Ciphergen Biosystems, Inc.  
Fremont, CA 94555  
USA

THOMAS VON RÜDEN  
MorphoSys AG  
Martinsried  
Germany  
vonRueden@morphosys.com

PATRICIA RUIZ  
Center for Cardiovascular Research  
Charité University Medicine Berlin and  
Max Planck Institute for Molecular Genetics  
Berlin  
Germany  
ruiz@molgen.mpg.de

LAURA J. RUSH  
The Ohio State University  
Columbus, OH  
USA  
rush.61@osu.edu

DIRK SAERENS  
Cellular and Molecular Immunology, Vlaams Inter-University Institute of Biotechnology  
Free University of Brussels  
Brussels  
Belgium

FREDERIC SALA  
Developmental Biology Program, Department of Surgery  
USC Keck School of Medicine and the Saban Research Institute of Childrens Hospital Los Angeles  
Los Angeles, CA  
USA

FRANCESCO SALVATORE  
CEINGE – Biotecnologie Avanzate, scarl and Dipartimento di Biochimica e Biotecnologie Mediche  
University of Napoli “Federico II”  
Napoli  
Italy  
salvator@unina.it

LEONA D. SAMSON  
Division of Biological Engineering and Center for Environmental Health Sciences  
Massachusetts Institute of Technology  
MA  
USA  
lsamson@mit.edu

ANDREW SANDFORD  
University of British Columbia McDonald Research Laboratories / iCAPTURE Center  
Vancouver, BC  
Canada  
asandford@mrl.ubc.ca

ROZANNE M. SANDRI-GOLDIN  
Department of Microbiology and Molecular Genetics  
University of California  
Irvine, CA  
USA  
rmsandri@uci.edu

MASAYUKI SANO  
Gene Function Research Center  
National Institute of Advanced Industrial Science and Technology (AIST)  
Tsukuba Science City  
Japan

HANS MARTIN SASS  
Kennedy Institute of Ethics  
Georgetown University  
Washington DC  
USA  
sash@georgetown.edu

BRIAN SAUER  
Stowers Institute for Medical Research, Kansas City  
MO  
USA  
bls@stowers-institute.org

SASCHA SAUER  
Max-Planck-Institute for Molecular Genetics  
Berlin  
Germany  
sauer@molgen.mpg.de

CAROLINE O.S. SAVAGE  
Renal Immunobiology, The Medical School  
University of Birmingham  
Birmingham  
UK

ELLADA SAVVIDOU  
Wellcome Trust Centre for Cell Biology  
University of Edinburgh  
Edinburgh  
UK  
elladasav@hotmail.com

UTE SCHAEPER  
Max Delbrück Center for Molecular Medicine  
Berlin  
Germany  
uschaep@mde-berlin.de
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Christopher Schofield</td>
<td>The Oxford Centre for Molecular Sciences and The Chemistry Research Laboratory</td>
</tr>
<tr>
<td></td>
<td>Oxford</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:christopher.schofield@chem.ox.ac.uk">christopher.schofield@chem.ox.ac.uk</a></td>
</tr>
<tr>
<td>Marina Schorpp-Kistner</td>
<td>Deutsches Krebsforschungszentrum, Division of Signal Transduction and Growth Control</td>
</tr>
<tr>
<td></td>
<td>Heidelberg</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:marina.schorpp@dkfz.de">marina.schorpp@dkfz.de</a></td>
</tr>
<tr>
<td>Anja Schramme</td>
<td>Laboratories of Molecular Tumour Pathology and of Functional Genomics, Charité</td>
</tr>
<tr>
<td></td>
<td>University Medicine Berlin</td>
</tr>
<tr>
<td></td>
<td>Berlin</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Stefan Schreiber</td>
<td>Institute for Clinical Molecular Biology and Department of General Internal Medicine</td>
</tr>
<tr>
<td></td>
<td>Christian-Albrechts-University</td>
</tr>
<tr>
<td></td>
<td>Kiel</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:s.schreiber@mucosa.de">s.schreiber@mucosa.de</a></td>
</tr>
<tr>
<td>Peter Schuck</td>
<td>Division of Bioengineering and Physical Science, OD National Institutes of Health</td>
</tr>
<tr>
<td></td>
<td>Bethesda, MD</td>
</tr>
<tr>
<td></td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:pschuck@helix.nih.gov">pschuck@helix.nih.gov</a></td>
</tr>
<tr>
<td>Jörg Schultz</td>
<td>Department of Bioinformatics, Biocenter</td>
</tr>
<tr>
<td></td>
<td>Würzburg University</td>
</tr>
<tr>
<td></td>
<td>Würzburg</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:joerg.schultz@biozentrum.uni-wuerzburg.de">joerg.schultz@biozentrum.uni-wuerzburg.de</a></td>
</tr>
<tr>
<td>Ingo Schupp</td>
<td>Molecular Genome Analysis</td>
</tr>
<tr>
<td></td>
<td>DKFZ</td>
</tr>
<tr>
<td></td>
<td>Heidelberg</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Matthias Schwab</td>
<td>Dr. Margarete Fischer-Bosch Institute of Clinical Pharmacology</td>
</tr>
<tr>
<td></td>
<td>Stuttgart</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Manfred Schwab</td>
<td>DKFZ</td>
</tr>
<tr>
<td></td>
<td>Heidelberg</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:m.schwab@dkfz.de">m.schwab@dkfz.de</a></td>
</tr>
<tr>
<td>Annemarie Schwan</td>
<td>Human Genetics</td>
</tr>
<tr>
<td></td>
<td>Ruhr-University Bochum</td>
</tr>
<tr>
<td></td>
<td>Bochum</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Matthias Schweizer</td>
<td>Paul-Ehrlich-Institute</td>
</tr>
<tr>
<td></td>
<td>Division of Medical Biotechnology</td>
</tr>
<tr>
<td></td>
<td>Langen</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Petra Schwille</td>
<td>Institute for Biophysics/BioTec</td>
</tr>
<tr>
<td></td>
<td>Dresden University of Technology</td>
</tr>
<tr>
<td></td>
<td>Dresden</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:petra.schwille@biotec.tu-dresden.de">petra.schwille@biotec.tu-dresden.de</a></td>
</tr>
<tr>
<td>Eva Seemanova</td>
<td>Institute of Biology and Medical Genetics</td>
</tr>
<tr>
<td></td>
<td>2nd Medical School, Charles University</td>
</tr>
<tr>
<td></td>
<td>Prague</td>
</tr>
<tr>
<td></td>
<td>Czech Republic</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:eva.seemanova@lfmotol.cuni.cz">eva.seemanova@lfmotol.cuni.cz</a></td>
</tr>
<tr>
<td>Aarón J. Shatkin</td>
<td>Center for Advanced Biotechnology and Medicine</td>
</tr>
<tr>
<td></td>
<td>Piscataway, NY</td>
</tr>
<tr>
<td></td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:shatkin@cabm.rutgers.edu">shatkin@cabm.rutgers.edu</a></td>
</tr>
<tr>
<td>Liubov Shatkina</td>
<td>Forschungszentrum Karlsruhe</td>
</tr>
<tr>
<td></td>
<td>Institute of Toxicology and Genetics</td>
</tr>
<tr>
<td></td>
<td>Karlsruhe</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Denise Sheer</td>
<td>Human Cytogenetics Laboratory</td>
</tr>
<tr>
<td></td>
<td>Cancer Research UK London Research Institute</td>
</tr>
<tr>
<td></td>
<td>London</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:denise.sheer@cancer.org.uk">denise.sheer@cancer.org.uk</a></td>
</tr>
<tr>
<td>Ahmed Sheriff</td>
<td>Institute of Clinical Immunology and Rheumatology, Department of Internal Medicine III</td>
</tr>
<tr>
<td></td>
<td>Friedrich-Alexander University of Erlangen-Nuernberg</td>
</tr>
<tr>
<td></td>
<td>Erlangen</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:sherriff@genethor.com">sherriff@genethor.com</a></td>
</tr>
<tr>
<td>Igor Shevelev</td>
<td>Institute of Veterinary Biochemistry and Molecular Biology</td>
</tr>
<tr>
<td></td>
<td>University of Zürich</td>
</tr>
<tr>
<td></td>
<td>Zürich</td>
</tr>
<tr>
<td></td>
<td>Switzerland</td>
</tr>
<tr>
<td>Sebastian M. Shimeld</td>
<td>Department of Zoology</td>
</tr>
<tr>
<td></td>
<td>University of Oxford</td>
</tr>
<tr>
<td></td>
<td>Oxford</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td><a href="mailto:sebastian.shimeld@zoo.ox.ac.uk">sebastian.shimeld@zoo.ox.ac.uk</a></td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>HANS-UWE SIMON</td>
<td>Department of Pharmacology, University of Bern, Bern, Switzerland</td>
</tr>
<tr>
<td>JEREMY C. SIMPSON</td>
<td>Cell Biology and Biophysics Programme, European Molecular Biology Laboratory (EMBL), Heidelberg, Germany</td>
</tr>
<tr>
<td>ROBERT H. SINGER</td>
<td>Anatomy &amp; Structural Biology, Albert Einstein College of Medicine, Bronx, New York, NY, USA</td>
</tr>
<tr>
<td>KARL SKRINER</td>
<td>Department of Rheumatology and Clinical Immunology, Charité University Medicine Berlin, Berlin, Germany</td>
</tr>
<tr>
<td>SCOTT SLATTERY</td>
<td>Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston, Texas, USA</td>
</tr>
<tr>
<td>BONNIE F. SLOANE</td>
<td>Department of Pharmacology, Wayne State University and Barbara Ann Karmanos Cancer Institute, Detroit, MI, USA</td>
</tr>
<tr>
<td>ALAN J. SLUSARENKO</td>
<td>Institute Bio III (Plant Physiology), RWTH Aachen, Aachen, Germany</td>
</tr>
<tr>
<td>ERIK LEE SNAPP</td>
<td>Department of Anatomy and Structural Biology, Albert Einstein College of Medicine, Bronx, NY, USA</td>
</tr>
<tr>
<td>DIAN SOEWARTO</td>
<td>GSF Research Center for Environment and Health, Neuherberg, Germany</td>
</tr>
<tr>
<td>THOMAS SOMMER</td>
<td>Max Delbrück Center for Molecular Medicine, Berlin, Germany</td>
</tr>
<tr>
<td>RALF J. SOMMER</td>
<td>Max Planck Institute for Developmental Biology, Department of Evolutionary Biology, Tübingen, Germany</td>
</tr>
<tr>
<td>ARNOUT SONNENBERG</td>
<td>Division of Cell Biology, The Netherlands Cancer Institute, Amsterdam, The Netherlands</td>
</tr>
<tr>
<td>LEV SÖRENSEN</td>
<td>Karolinska Institute, Department of Laboratory Medicine, NOVUM, Karolinska University Hospital-Huddinge, Stockholm, Sweden</td>
</tr>
<tr>
<td>NATALIA SOSNIKOVA</td>
<td>Max-Delbrueck-Center for Molecular Medicine, Berlin, Germany</td>
</tr>
<tr>
<td>CLAUDIO SOTO</td>
<td>Department of Pharmaceutical Chemistry, Philippus-University, Marburg, Germany</td>
</tr>
<tr>
<td>CHRISTOPH A. SOTRIFER</td>
<td>Department of Pharmacology, Wayne State University and Barbara Ann Karmanos Cancer Institute, Detroit, MI, USA</td>
</tr>
<tr>
<td>SERHIY SOUCHENYTSKYI</td>
<td>Ludwig Institute for Cancer Research, Uppsala, Sweden</td>
</tr>
<tr>
<td>RAINER SPANG</td>
<td>Max Planck Institute for Molecular Genetics, Berlin Center for Genome Based Bioinformatics, Berlin, Germany</td>
</tr>
<tr>
<td>JAGAN SRINIVASAN</td>
<td>Max Planck Institute for Developmental Biology, Department of Evolutionary Biology, Tübingen, Germany</td>
</tr>
<tr>
<td>Name</td>
<td>Institution</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Hengli Tang</td>
<td>Department of Biological Science Florida State University</td>
</tr>
<tr>
<td>Woan-Yuh Tarn</td>
<td>Institute of Biomedical Sciences Academia Sinica Taipei Taiwan</td>
</tr>
<tr>
<td>J. Paul Taylor</td>
<td>Department of Neurology University of Pennsylvania School of Medicine</td>
</tr>
<tr>
<td>Peter C. Taylor</td>
<td>The Kennedy Institute of Rheumatology Division, Faculty of Medicine Imperial College London London, UK</td>
</tr>
<tr>
<td>Charles Tease</td>
<td>Department of Biological Sciences University of Warwick Coventry UK</td>
</tr>
<tr>
<td>Heinrich Terlau</td>
<td>Institute of Experimental and Clinical Pharmacology and Toxicology University of Schleswig-Holstein, Campus Lübeck Lübeck Germany</td>
</tr>
<tr>
<td>Kay Terpe</td>
<td>Proteins and Nucleic Acids IBA GmbH Göttingen Germany</td>
</tr>
<tr>
<td>Gerald Thiel</td>
<td>Department of Medical Biochemistry and Molecular Biology University of Saarland Medical Center Homburg Germany</td>
</tr>
<tr>
<td>Katsushi Tokunaga</td>
<td>University of Tokyo, Graduate School of Medicine, Department Of Human Genetics Tokyo Japan</td>
</tr>
<tr>
<td>Ian Tomlinson</td>
<td>London Research Institute Cancer Research UK London UK</td>
</tr>
<tr>
<td>Niels Tommerup</td>
<td>Department of Medical Biochemistry and Genetics, Wilhelm Johannsen Center for Functional Genome Research University of Copenhagen Copenhagen Denmark</td>
</tr>
<tr>
<td>Olivier Toussaint</td>
<td>University of Namur Namur Belgium</td>
</tr>
<tr>
<td>Mary Truscott</td>
<td>Departments of Biochemistry, Medicine, and Oncology McGill University Montreal, QC Canada</td>
</tr>
<tr>
<td>Jack Uetrecht</td>
<td>Pharmacy and Medicine University of Toronto Toronto, ON Canada</td>
</tr>
<tr>
<td>Peter Uetz</td>
<td>Institute for Genetics Forschungszentrum Karlsruhe Karlsruhe Germany</td>
</tr>
<tr>
<td>Jouni Utitto</td>
<td>Department of Dermatology and Cutaneous Biology, and Jefferson Institute of Molecular Medicine Thomas Jefferson University, Philadelphia Pennsylvania, MA</td>
</tr>
<tr>
<td>Meena Upadhyaya</td>
<td>Institute of Medical Genetics University of Wales College of Medicine Cardiff UK</td>
</tr>
<tr>
<td>Seppo J. Vainio</td>
<td>Biocenter Oulu and Department of Biochemistry, Linnanmaa, Faculties of Science and Medicine University of Oulu Oulu Finland</td>
</tr>
</tbody>
</table>

xxxviii List of Contributors
List of Contributors

LOUISE VAN DER WEYDEN
Wellcome Trust Genome Campus Hinxton
The Sanger Institute
Cambridge
UK

ROBERT J. WHITE
Institute of Biomedical and Life Sciences
University of Glasgow
Glasgow
UK
rwhite@udcf.gla.ac.uk

CAROL WICKING
The Institute for Molecular Bioscience
The University of Queensland
St Lucia, QLD
Australia
c.wicking@imb.uq.edu.au

STEFAN WIECZOREK
Human Genetics
Ruhr-University
Bochum
Germany
stefan.wieczorek@rub.de

STEFAN WIEHMANN
Department of Molecular Genome Analysis
German Cancer Research Center
Heidelberg
Germany
s.wiemann@dkfz.de

BÉ WIERINGA
Department of Cell Biology, Nijmegen
Center for Molecular Life Sciences
Radboud University Nijmegen Medical Center
Nijmegen
The Netherlands
b.wieringa@ncmls.ru.nl

MICHAEL WIESE
Rheinische Friedrich-Wilhelms University
Bonn
Germany
mwiese@uni-bonn.de

BURKHARD WIESNER
Research Institute for Molecular Pharmacology
Berlin
Germany
wiesner@fmp-berlin.de

SUSAN WIJNHOVEN
National Institute of Public Health and the Environment
Laboratory of Toxicology, Pathology and Genetics
Bilthoven
The Netherlands
susan.wijnhoven@rivm.nl

MICHAEL V. WILES
The Jackson Laboratory
Maine, ME
USA
mvwiles@jax.org

MILES F. WILKINSON
Department of Immunology
The University of Texas, MD Anderson Cancer Center
Houston, TX
USA
mwilkins@mdanderson.org

JULIE M. WILLIAMS
Renal Immunobiology
The Medical School, University of Birmingham
Birmingham
UK
j.m.williams.med@bham.ac.uk

MATTHIAS WILMANNS
EMBL Hamburg Outstation
c/o DESY
Hamburg
Germany
wilmanns@embl-hamburg.de

WOLFGANG WINTERMEYER
Institutes of Molecular Biology and Physical Biochemistry
University of Witten/Herdecke
Germany
winterme@uni-wh.de

ERHARD WINTERSBERGER
Institute of Medical Biochemistry, Division of Molecular Biology
Medical University of Vienna
Vienna
Austria
erhard.wintersberger@univie.ac.at

JOACHIM WITTBRODT
Developmental Biology Programme, European Molecular Biology Laboratory
EMBL
Heidelberg
Germany
jochen.wittbrodt@embl.de

STEFAN WÖLFL
Institut für Pharmazie und Molekulare Biotechnologie, Abteilung Biologie, Arbeitsgruppe Bioanalytik und Molekularbiologie
Ruprecht-Karls-Universität Heidelberg
Heidelberg
wolfl@uni-hd.de

CHUN XIE
Simmons Arthritis Research Center and Department of Internal Medicine/Rheumatology
The University of Texas Southwestern Medical Center at Dallas
Dallas, TX
USA
JU-HUA XU  
Department of Chemistry  
University of Minnesota  
Minneapolis, MN  
USA

YUKI YAMAGUCHI  
Tokyo Institute of Technology  
Graduate School of Bioscience and Biotechnology  
Midori-ku, Yokohama  
Japan

UWE ZANGEMEISTER-WITTKE  
Department of Oncology  
University of Zurich  
Zurich  
Switzerland  
uwe.zangemeister@usz.ch

MAŁGORZATA Z. ZDZIENICKA  
Department of Molecular Cell Genetics, The L. Rydygier Collegium Medicum  
Nicolaus Copernicus University  
Bydgoszcz  
Poland

ULRIKE ZIEBOLD  
Max Delbrück Centre for Molecular Medicine  
Berlin  
Germany  
uziebold@mdc-berlin.de

WALTER ZIEGLGÄNSBERGER  
Max Planck Institute of Psychiatry  
Munich  
Germany  
zieglgaensberger@mpipsykl.mpg.de

HEIKE ZIMDAHL  
Max Delbrück Center for Molecular Medicine (MDC)  
Berlin  
Germany

JOOST C.B.M. ZOMERDIJK  
Division of Gene Regulation and Expression, Wellcome Trust Biocentre  
University of Dundee  
UK  
j.zomerdijk@dundee.ac.uk

EBERHART ZRENNER  
University Eye Hospital  
Eberhard Karl University Tübingen  
Germany  
ezrenner@uni-tuebingen.de