Encyclopedia of Molecular Mechanisms of Disease
Florian Lang (Ed.)

Encyclopedia of Molecular Mechanisms of Disease

With 646 Figures* and 213 Tables

*For color figures please see our Electronic Reference on www.springerlink.com
Preface

Pathophysiology describes mechanisms of disease and is thus at the interface between basic research and clinical medicine. The aim of this comprehensive encyclopedia is to supply the reader with concise information on molecular pathophysiology, a research area of breathtaking gain of knowledge. We trust that the book shall be a valuable companion for both basic scientists exploring the clinical hallmarks of the diseases they are interested in, and clinicians searching for insight into the molecular pathophysiology of their patients. The entries are structured to allow rapid retrieval of the desired information. For more detailed reading, each entry is followed by key references.

The editor is indebted to the section editors for their superb support in selecting the appropriate entries and choosing the leading experts in the respective areas of research. The editor further wishes to express his appreciation to the many brilliant authors who delivered outstanding state-of-the-art descriptions of pathophysiological mechanisms.

In addition, the book would not have come to reality without the dedicated, professional and creative support of my secretaries Tanya Loch and Jasmin Bühringer and by several staff members of the Springer Publishing house including Dr. Michaela Bilic, Jana Simniok, Hiltrud Wilbertz, Dr. Rolf Lange, and Dr. Thomas Mager.

FLORIAN LANG, March 2008
Editor-in-Chief

Prof. Dr. med. Florian Lang
Institute of Physiology
University of Tuebingen
Tuebingen, Germany
florian.lang@uni-tuebingen.de
Olaf Strauß  
Experimental Ophthalmology,  
Department of Ophthalmology,  
University Regensburg,  
Regensburg, Germany  
strauss@eye-regensburg.de  
(Section: Ophthalmology)

Hans-Peter Zenner  
Department of Otolaryngology and Head and  
Neck Surgery,  
University of Tuebingen,  
Tuebingen, Germany  
hans-peter.zenner@med.uni-tuebingen.de  
(Section: ENT)

Hugo Ten Cate  
Department of Internal Medicine and of Biochemistry,  
Maastricht University,  
Maastricht, The Netherlands  
h.tencate@BIOCH.Unimaas.nl  
(Section: Blood Disorders)

Eberhardt Zrenner  
University Eye Hospital,  
Tuebingen, Germany  
ezrenner@uni-tuebingen.de  
(Section: Ophthalmology)

Kurt Ullrich  
Children's Hospital,  
University Clinics Eppendorf,  
Hamburg, Germany  
ullrich@uke.uni-hamburg.de  
(Section: Amino Acid Metabolism)
List of Contributors

DIETRICH ABECK
Department of Dermatology and Allergology
Technische Universitaet Munich
Munich
Germany
Dietrich.Abeck@lrz.tu-muenchen.de

OLADAPO ADEWUYA
Department of Pathology
University of Texas Medical Branch
Houston, TX
USA

GUIDO ADLER
Department of Internal Medicine I
Ulm University
Ulm
Germany
guido.adler@uniklinik-ulm.de

ALI R. AZFAL
Department of Cardiological Sciences
St. George’s Hospital Medical School
London
UK
arafzal@sghms.ac.uk

VIMAL S. AGGARWAL
Department of Molecular Genetics
Albert Einstein College of Medicine
New York, NY
USA

PUSHPA AGRAWAL
Institute of Microbial Technology
Chandigarh
India
pushpa@imtech.res.in

WALID AHMAR
MonashHeart
Southern Health and Department of Medicine
Monash University
Melbourne, VIC
Australia
w_ahmar@yahoo.com

MINHONG AI
Department of Genetics and Center for Human Genetics
Case School of Medicine
Cleveland, OH
USA
minhong.ai@case.edu

NAIDU K. AKHILENDER
Department of Biochemistry and Nutrition
Central Food Technological Research Institute
Mysore
India
kanaidu@mailcity.com

SUHAIL ALAM
Department of Environmental and Biomolecular Systems
OGI School of Science and Engineering
Oregon Health and Science University
Beaverton, OR
USA

JESSY J. ALEXANDER
Section of Nephrology
University of Chicago
Chicago, IL
USA
jalexand@medicine.bsd.uchicago.edu

Gidon Almog
Department of Surgery
Hadassah University Hospital
Jerusalem
Israel

NURSEL ALPAN
Department of Cardiology, Ministry of Health
Ankara Diskapi Children’s Diseases Training and Research Hospital
Ankara
Turkey

Cristina Amat Di San Filippo
Medical Genetics/Pediatrics
University of Utah
Salt Lake City, UT
USA
cristina.Filippo@hsc.utah.edu

Richard F. Ambinder
Viral Oncology Program, Sidney Kimmel Cancer Center
Johns Hopkins University
Baltimore, MD
USA
Ambinri@jhmi.edu

CHRISTINA M. AMBROS-RUDOLPH
Department of Dermatology
Medical University of Graz
Graz
Austria
christina.ambros-rudolph@meduni-graz.at

Detlev Amelis
Department of Internal Medicine II
Evangelic Hospital Lutherhaus
Essen
Germany
detlev.ameis@lutherhaus.de

Katherine K. Anagnostopoulou
First Cardiology Department
Onassis Cardiac Surgery Center
Athens
Greece
Yumiko Ando  
Department of Diagnostic and Interventional Radiology  
Oita University Faculty of Medicine  
Oita  
Japan

Vicente Andrés  
Vascular Biology Unit  
Instituto de Biomedicina de Valencia (IBV-CSIC)  
Spanish Council for Scientific Research  
Valencia  
Spain  
vandres@ibv.csic.es

Braga Storstein Arendsen  
Institute of Human Genetics and Research Unit for Molecular Medicine  
Aarhus University  
Aarhus  
Denmark  
brage@ki.au.dk

Corrado Angelini  
Department of Neurosciences  
University of Padova  
Padova  
Italy  
corrado.angelini@unipd.it

Charles Antzelevitch  
Experimental Cardiology  
Masonic Medical Research Laboratory  
Utica, NY  
USA  
ca@mmrl.edu

Amelia Aráñega  
Department of Experimental Biology  
University of Jaén  
Jaén  
Spain  
aaranega@ujaen.es

Samuel J. Arbes  
Laboratory of Respiratory Biology, NIH/NIEHS  
Research Triangle Park, NC  
USA

Monica Arenas  
Purine Research Laboratory  
Guy’s Hospital  
London  
UK  
Monica.arenas_hernandez@kcl.ac.uk

Andres Arend  
Department of Anatomy  
University of Tartu  
Tartu  
Estonia  
Andres.Arend@ut.ee

Josep M. Argilés  
Departament de Bioquímica i Biologia  
Molecular Universitat de Barcelona  
Barcelona  
Spain  
jargiles@ub.edu

Gema Ariceta  
Division of Pediatric Kidney Diseases  
Hospital de Cruces  
Vizcaya  
Spain

Jelena S. Arnold  
Department of Molecular Genetics  
Albert Einstein College of Medicine  
New York, NY  
USA

Friedrich Asmus  
Department of Neurodegenerative Diseases  
Hertie-Institute for Clinical Brain Research  
Center of Neurology  
Tuebingen  
Germany  
friedrich.asmus@uni-tuebingen.de

John R. Asplin  
Department of Medicine, Section Nephrology  
University of Chicago  
Chicago, IL  
USA  
jasplin@litholink.com

Mohamed G. Attia  
Department of Nephrology  
Johns Hopkins University School of Medicine  
Baltimore, MD  
USA  
matta1@jhmi.edu

Massimo Attanasio  
Department of Pediatrics  
University of Michigan  
Ann Arbor, MI  
USA  
massimoa@med.umich.edu

Marina Aunapuu  
Department of Anatomy  
University of Tartu  
Tartu  
Estonia  
Marina.Aunapuu@ut.ee

Ingo B. Autenrieth  
Institute for Medical Microbiology and Hygiene  
University of Tuebingen  
Tuebingen  
Germany  
ingo.autenrieth@med.uni-tuebingen.de
Maurizio Averna
Department of Clinical Medicine and Emerging Diseases
University of Palermo
Palermo
Italy

Ma. Rosa Avila
Comprehensive Epilepsy Program, Epilepsy Genetics/
Genomics Laboratories and Epilepsy Center of Excellence
UCLA School of Medicine and VA GLAHS
Los Angeles, CA
USA

Juan Carlos Ayus
Renal Consultants of Houston
Houston, TX
USA

Gohar Azhar
University of Arkansas for Medical Sciences
GRECC and CAVHS
Little Rock, AR
USA
azhargohar@uams.edu

Shah Azmoon
Division of Cardiology
Veterans Affairs Greater Los Angeles Healthcare System and
The David Geffen School of Medicine at UCLA
Los Angeles, CA
USA

Fernando Azpiroz
Digestive System Research Unit
Hospital General Vall d’Hebron
Barcelona
Spain
fernando.azpiroz@telefonica.net

Angelo Azzi
Vascular Biology Laboratory JM USDA – HNRCA
Tufts University Boston
Boston, MS
USA
angelo.azzi@tufts.edu

Ulrike Bacher
Department of Stem Cell Transplantation
University of Hamburg
Hamburg
Germany
u.bacher@uke.de

Raffaele Badolato
Clinica Pediatrica
Università’ di Brescia
Brescia
Italy
badolato@med.unibs.it

Jonathan Baets
Neurogenetics Group
VIB Department of Molecular Genetics
University of Antwerp
Antwerp
Belgium
Jonathan.Baets@ua.ac.be

Mathias Bahr
Department of Neurology
National Reference Center for TSE Surveillance
Georg-August University
Goettingen
Germany
mbaehr@gwdg.de

Mei Bai
Division of Endocrinology, Diabetes and Hypertension
Brigham and Women’s Hospital
Boston, MA
USA
mbai@rics.bwh.harvard.edu

Damian Miles Bailey
Neurovascular Research Laboratory
Faculty of Health, Science and Sport
University of Glamorgan
Pontypridd
UK
dbailey1@glam.ac.uk

Alfonso Baldi
Department of Biochemistry, Section of Pathology
Second University of Naples
Naples
Italy
alfonsobaldi@tiscali.it

Nicola Baldini
Laboratorio di Fisiopatologia degli Impianti Ortopedici
Istituto Ortopedico Rizzoli
Bologna
Italy

Wendy Balemans
Department of Medical Genetics
University and University Hospital of Antwerp
Antwerp
Belgium
wendy.balemans@ua.ac.be

Manfred Ballmann
Department of Pediatric Pneumology and Neonatology
Medical School Hannover
Hannover
Germany
Ballmann.Manfred@MH-Hannover.de

Manisha Balwani
Department of Genetics and Genomic Sciences
Mount Sinai School of Medicine of New York University
New York, NY
USA
ANNEMIEKE M. BAMS-MENGERINK  
Department of Pediatrics  
Emma Children’s Hospital  
Academic Medical Center  
Amsterdam  
The Netherlands  
am.m.mengerink@amc.uva.nl

ALESSANDRA BAUMER  
Institute of Medical Genetics  
University of Zurich  
Scherzenbach  
Switzerland  
baumer@medgen.uzh.ch

IRIS BARTELS  
Institute of Human Genetics  
University Goettingen  
Goettingen  
Germany  
ibartel@gwdg.de

JEROEN J. BAX  
Department of Cardiology  
Leiden University Medical Center  
Leiden  
The Netherlands  
jbax@knoware.nl

ANDREAS BARTHEL  
Endokrinologikum Ruhr  
Bochum  
Germany

JOHANNES BAYER  
Department of Dermatology  
University of Muenster  
Muenster  
Germany

DEBORAH BARTHOLODI  
Institute of Medical Genetics  
University of Zurich  
Zurich  
Switzerland  
deobarth@yahoo.com

NIKOLAOS E. BECHRakis  
Department of Ophthalmology  
Medical University of Innsbruck  
Innsbruck  
Austria  
nikolaos.bechrakis@i-med.ac.at

OLIVER BARTSCH  
Institute of Clinical Genetics  
Dresden University of Technology  
Dresden  
Germany  
obartsch@rcs.urz.tu-dresden.de

MICHAEL BECK  
Children’s Hospital  
University of Mainz  
Mainz  
Germany  
beck@kinder.klinik.uni-mainz.de

PETER BARTSCH  
Department of Internal Medicine VII  
Division of Sports Medicine  
Medical University Clinic  
Heidelberg  
Germany  
peter.bartsch@med.uni-heidelberg.de

HEINZ BECK  
Laboratory of Experimental Epileptology and Cognition Research  
Department of Epileptology  
Life and Brain Center  
Bonn  
Germany  
Heinz.Beck@ukb.uni-bonn.de

MURAT BAS  
HNO  
Technische Universitaet  
Munich  
Germany

MICHAEL A. BECKER  
Department of Medicine  
University of Chicago  
Pritzker School of Medicine  
Chicago, IL  
USA  
mbecker@medicine.bsd.uchicago.edu

DANIEL BATLLE  
Division of Nephrology and Hypertension  
Feinberg School of Medicine  
Northwestern University  
Chicago, IL  
USA  
d-batlle@northwestern.edu

AGATINO BATTAGLIA  
The Stella Maris Clinical Research Institute for Child and Adolescent Neurology and Psychiatry  
Calambrone  
Italy  
agatino.battaglia@inpe.unipi.it

ALAN H. BEGGS  
Genetics Division and Program in Genomics  
Children’s Hospital  
Harvard Medical School  
Boston, MA  
USA  
beggs@enders.tch.harvard.edu
ROSSANA BERARDI  
Clinica di Oncologia Medica  
Università Politecnica delle Marche  
Ospedali Riuniti Umberto I – GM Lancisi – G Salesi di Ancona  
Ancona  
Italy

JO H. M. BERDEN  
Nephrology Research Laboratory  
Nijmegen Centre for Molecular Life Sciences  
Division of Nephrology  
Radboud University Nijmegen Medical Centre  
Nijmegen  
The Netherlands  
J.Berden@nier.umcn.nl

WOLFGANG BERGER  
Division of Medical Molecular Genetics and Gene Diagnostics  
Institute of Medical Genetics  
University of Zurich  
Schwerzenbach  
Switzerland  
berger@medgen.uzh.ch

MARGHERITA BERGOMI  
Department of Public Health Sciences  
University of Modena and Reggio Emilia  
Modena  
Italy  
bergomi@unimore.it

SAMUEL F. BERKOVIC  
Epilepsy Research Centre  
Department of Medicine  
University of Melbourne  
West Heidelberg, VIC  
Australia

MAURO BERNARDI  
Dipartimento di Medicina Interna, Cardioangiologia, Epatologia  
Alma Mater Studiorum Università di Bologna  
Bologna  
Italy  
mauro.bernardi@unibo.it

MARK BERNEBURG  
Department of Dermatology  
Eberhard Karls University  
Tuebingen  
Germany  
mark.berneburg@med.uni-tuebingen.de

FELIX BEUSCHELIN  
Medical Clinic  
Ludwig-Maximilians-University  
Munich  
Germany  
felix.beuschlein@med.uni-muenchen.de
RUDI BEYAERT
Department of Molecular Biology
Ghent University, Zwijnaarde
Ghent
Belgium
Rudi.Beyaert@dmb.rug.be

KATRIN BEYER
Department of Pathology
Hospital Universitari Germans Trias i Pujol
Barcelona
Spain
katrinbeyer@hotmail.com

FRIEDHELM BEYERSDORF
Department of Cardiovascular Surgery
University Medical Center Freiburg
Freiburg
Germany

ROBERT J. BEYNON
Department of Veterinary Preclinical Sciences
University of Liverpool
Liverpool
UK
t.beynon@liv.ac.uk

KONRAD BEYREUTHER
ZMBH
University of Heidelberg
Heidelberg
Germany
beyreuther@zmbh.uni-heidelberg.de

MICHALA BEZDEKOVA
Department of Pathology and
Laboratory of Molecular Pathology
Palacky University
Olomouc
Czech Republic

RAVI BHARGAVA
Department of Radiology
Stollery Children’s Hospital
University of Alberta
Edmonton, AB
Canada
rbhargav@cha.ab.ca

JAVEED I. BHAT
Department of Pediatrics
Shere-Kashmir Institute of Medical Sciences (SKIMS)
Srinagar, Kashmir
India

MUSHTAQ A. BHAT
Department of Pediatrics
Shere-Kashmir Institute of Medical Sciences (SKIMS)
Srinagar, Kashmir
India
mbhat47@rediffmail.com

KAILASH P. BHATIA
Sobell Department of Motor Neuroscience
and Movement Disorders
Institute of Neurology
London
UK
kailash.p.bhatia@ion.ucl.ac.uk

CHRISTIAN G. BIEN
Department of Epileptology
University of Bonn
Bonn
Germany
christian.bien@ukb.uni-bonn.de

MARTINA BIENOVÁ
Department of Dermatovenerology
Palacky University and University Hospital
Olomouc
Czech Republic
martina.bienova@fhol.cz

HANS K. BIESALSKI
Department of Biological Chemistry and Nutrition
University Hohenheim
Stuttgart
Germany
biesal@uni-hohenheim.de

BEVERLY M. K. BILLER
Neuroendocrine Unit
Massachusetts General Hospital
Boston, MA
USA
bbiller@partners.org

MARCELO GUSTAVO BINKER
CBRHC Institute
Buenos Aires
Argentina

RIFAT BIRCAN
Department of Medical Biology
Marmara University Medical School
Istanbul
Turkey

MICHELE BISCEGLIA
Department of Pathology
IRCCS “Casa Sollievo della Sofferenza” Hospital
San Giovanni Rotondo
Italy
m.bisceglia@operapadrepio.it

STEPHAN C. BISCHOFF
Nutritional Medicine and Prevention
University of Hohenheim
Stuttgart
Germany
bischoff.stephan@uni-hohenheim.de
<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Affiliation</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roland Bitsch</td>
<td>Institute for Nutrition Friedrich-Schiller-University Jena, Jena, Germany</td>
<td><a href="mailto:Roland.Bitsch@uni-jena.de">Roland.Bitsch@uni-jena.de</a></td>
</tr>
<tr>
<td>Jerry G. Blaivas</td>
<td>Department of Urology Suny Downstate Medical School, New York, NY, USA</td>
<td><a href="mailto:urojock@a.l.com">urojock@a.l.com</a></td>
</tr>
<tr>
<td>Nenad Blau</td>
<td>Division of Clinical Chemistry and Biochemistry, University Children’s Hospital, Zurich, Switzerland</td>
<td><a href="mailto:Nenad.Bluai@kispi.uzh.ch">Nenad.Bluai@kispi.uzh.ch</a></td>
</tr>
<tr>
<td>Anthony J. Bleyer</td>
<td>Section of Nephrology Wake Forest University School of Medicine, Winston-Salem, NC, USA</td>
<td><a href="mailto:ableyer@wfubmc.edu">ableyer@wfubmc.edu</a></td>
</tr>
<tr>
<td>Nikolaus Blin</td>
<td>Department of Molecular Pathology, University Hospital of Tuebingen, Tuebingen, Germany</td>
<td></td>
</tr>
<tr>
<td>Gerard C. Blobé</td>
<td>Medicine, Pharmacology and Cancer Biology, Duke University, Durham, NC, USA</td>
<td><a href="mailto:abley001@mc.duke.edu">abley001@mc.duke.edu</a></td>
</tr>
<tr>
<td>Anna Blonska</td>
<td>Department of Molecular Genetics, Albert Einstein College of Medicine, New York, NY, USA</td>
<td></td>
</tr>
<tr>
<td>Hubert E. Blum</td>
<td>Department of Medicine II, University Hospital, Freiburg, Germany</td>
<td><a href="mailto:hubert.blum@uniklinik-freiburg.de">hubert.blum@uniklinik-freiburg.de</a></td>
</tr>
<tr>
<td>Olaf A. Bodamer</td>
<td>Biochemical Genetics and National Neonatal Screening, Laboratories Department of General Pediatrics, University Children’s Hospital Vienna, Austria</td>
<td><a href="mailto:olaf.bodamer@univie.ac.at">olaf.bodamer@univie.ac.at</a></td>
</tr>
<tr>
<td>Johannes G. Bode</td>
<td>Department of Gastroenterology, Hepatology and Infectiology, University-Hospital, Heinrich-Heine University Duesseldorf, Duesseldorf, Germany</td>
<td><a href="mailto:Johannes.Bode@med.uni-duesseldorf.de">Johannes.Bode@med.uni-duesseldorf.de</a></td>
</tr>
<tr>
<td>Cornelius F. Boerkoel</td>
<td>Centre for Molecular Medicine and Therapeutics, Child and Family Research Institute, Department of Medical Genetics, University of British Columbia, Vancouver, BC, Canada</td>
<td><a href="mailto:nboerkoel@cmmt.ubc.ca">nboerkoel@cmmt.ubc.ca</a></td>
</tr>
<tr>
<td>Markus Böhm</td>
<td>Department of Dermatology, University Hospital of Muenster, Muenster, Germany</td>
<td><a href="mailto:bohmm@uni-muenster.de">bohmm@uni-muenster.de</a></td>
</tr>
<tr>
<td>Regina Bökenkamp</td>
<td>Department of Anatomy and Embryology, Leiden University Medical Center, Leiden, The Netherlands</td>
<td><a href="mailto:R.Bokenkamp@lumc.nl">R.Bokenkamp@lumc.nl</a></td>
</tr>
<tr>
<td>Jacky Bonaventure</td>
<td>Institut Curie, Centre Universitaire Paris Sud, Orsay, France</td>
<td><a href="mailto:jacky.bonaventure@curie.u-psud.fr">jacky.bonaventure@curie.u-psud.fr</a></td>
</tr>
<tr>
<td>Brigitta Bondy</td>
<td>Section Psychiatric Genetics and Neurochemistry, Psychiatric Hospital of Munich University, Munich, Germany</td>
<td><a href="mailto:brigitta.bondy@med.uni-muenchen.de">brigitta.bondy@med.uni-muenchen.de</a></td>
</tr>
<tr>
<td>Herbert L. Bonkovsky</td>
<td>Research Cannon Research Center, Carolinas Medical Center, Charlotte, NC, USA</td>
<td><a href="mailto:Bonkovsky@uchc.edu">Bonkovsky@uchc.edu</a></td>
</tr>
<tr>
<td>Gisèle Bonne</td>
<td>Institut de Myologie UPMC, Groupe Hospitalier Pitié-Salpêtrière, Paris, France</td>
<td><a href="mailto:g.bonne@institut-myologie.org">g.bonne@institut-myologie.org</a></td>
</tr>
</tbody>
</table>
KEVIN M. BONNEY
Departments of Pathology and Microbiology-Immunology
Northwestern University Feinberg School of Medicine
Chicago, IL
USA
k-bonney@northwestern.edu

CHRISTOPHER J. BOOS
Hemostasis, Thrombosis and Vascular Biology Unit
University Department of Medicine
City Hospital
Birmingham
UK

FRANCESCO BORGIA
Institute of Dermatology
Policlinico Universitario
Messina
Italy

JULIAN ILCEFF BORISSOFF
Laboratory for Clinical Thrombosis and Hemostasis
Department of Internal Medicine
University of Maastricht
Maastricht
The Netherlands

STEVEN R. BORNSTEIN
Medical Clinic III
University Hospital Dresden
Dresden
Germany
Stefan.Bornstein@uniklinikum-dresden.de

CARL BORREBAECK
Department of Immunotechnology
Lund University
Lund
Sweden
carl.borrebaeck@immun.lth.se

NIELS BORREGAARD
Department of Hematology
Rigshospitalet University of Copenhagen
Copenhagen
Denmark
niels.borregaard@rh.regionh.dk

DORIN-BOGDAN BORZA
Division of Nephrology
Vanderbilt University School of Medicine
Nashville, TN
USA
Bogdan.Borza@vanderbilt.edu

MARK BOTHWELL
Department of Physiology and Biophysics
University of Washington
Seattle, WA
USA
mab@u.washington.edu

HENRI BOUnameaux
Angiology and Hemostasis
University Hospitals of Geneva
Geneva
Switzerland
henri.bounameaux@medecine.unige.ch

THOMAS BOURGERON
Pasteur Institute
University Denis Diderot
Paris
France
thomashb@pasteur.fr

PATRICIA T. BOZZA
Immunopharmacology Laboratory
Instituto Oswaldo Cruz
Fundação Oswaldo Cruz
Rio de Janeiro
Brazil
pbozza@ioc.fiocruz.br

MARIA LUISA BRANDI
Regional Center for Hereditary Endocrine Tumours
Department of Internal Medicine
University of Florence
Florence
Italy
m.brandi@dfc.unifi.it

THOMAS BRANDT
Department of Neurology
Ludwig-Maximilians-University
Klinikum Großhadern
Munich
Germany
thomas.brandt@med.uni-muenchen.de

MARKUS BRAUN-FALCO
Department of Dermatology
University of Freiburg
Freiburg
Germany
markus.braun-falco@uniklinik-freiburg.de

ALANNA F. BREE
Texas Children’s Hospital
Houston, TX
USA
afbree@TexasChildrensHospital.org

RANDOLF BREHMER
Department of Dermatology
University Hospital of Muenster
Muenster
Germany
Allergologie@mednet.uni-muenster.de

MICHAEL BRIGGS
Wellcome Trust Centre for Cell Matrix Research
University of Manchester
Manchester
UK
mike briggs@manchester.ac.uk
PEDRO BRITES
Laboratory of Genetic Metabolic Disorders
Academic Medical Center
University of Amsterdam
Amsterdam
The Netherlands
p.m.brites@amc.uva.nl

Knut Brockmann
Department of Pediatrics and Pediatric Neurology
University of Goettingen
Goettingen
Germany
kbrock@med.uni-goettingen.de

Stefan Bröer
School of Biochemistry and Molecular Biology
Australian National University
Canberra, ACT
Australia
Stefan.broeer@anu.edu.au

Eirini I. Brokalaki
Department of Dermatology, Allergology and Venerology
University of Duisburg-Essen
Essen
Germany
Eirini.Brokalaki@uk-essen.de

David W. Brown
Department of Cardiology
Children’s Hospital
Boston, MA
USA
david.brown@cardio.chboston.org

Edward M. Brown
Division of Endocrinology, Diabetes and Hypertension
Brigham and Women’s Hospital
Boston, MA
USA
embrown@rics.bwh.harvard.edu

Leena Bruckner-Tuderman
Department of Dermatology
University Medical Center
Freiburg
Germany
tuderman@uni-muenster.de

Anna Brunn
Department of Neuropathology
University of Cologne
Cologne
Germany

Martina Brunner
Department of Dermatology, Venerology, Allergology and Immunology
Dessau Medical Center
Dessau
Germany
martina.brunner@klinikum-dessau.de

Tomas Brychta
SPEA Olomouc, s.r.o.
Olomouc
Czech Republic
tomas.brychta@volny.cz

Svetlana Brychtova
Department of Pathology and Laboratory of Molecular Pathology
Palacký University
Olomouc
Czech Republic
svetlana.brychtova@seznam.cz

Jan Bubeník
Department of Tumour Immunology
Institute of Molecular Genetics
Academy of Sciences of the Czech Republic
Prague
Czech Republic
bubenik@img.cas.cz

Thorsten Buch
University Clinic Zurich
Zurich
Switzerland
thorsten.buch@neuroimm.uzh.ch

Karen Buckingham
Department of Obstetrics and Gynaecology
University of Auckland
Auckland, AUK
New Zealand
karen@onlinecom.co.nz

Mark G. Buckley
Infection, Inflammation and Repair
University of Southampton
School of Medicine
Southampton
UK

Dennis E. Bulman
Ottawa Health Research Institute
Ottawa, ON
Canada
dbulman@ohri.ca

Carsten Buning
Department of Gastroenterology, Hepatology and Endocrinology
Charité University Hospital
Berlin
Germany
carsten.buening@charite.de

Günter Burg
Department of Dermatology
University Hospital Zurich
Zurich
Switzerland
burg@derm.unizh.ch
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annika Burow</td>
<td>Swiss Cardiovascular Center Bern University Hospital Bern Switzerland</td>
<td></td>
</tr>
<tr>
<td>Haran Burri</td>
<td>Cardiovascular Department Hôpital de La Tour Meyrin Switzerland</td>
<td></td>
</tr>
<tr>
<td>Andrew K. Burroughs</td>
<td>Department of Liver Transplantation and Hepatobiliary Surgery Royal Free Hospital Hampstead, London UK</td>
<td><a href="mailto:Andrew.Burroughs@royalfree.nhs.uk">Andrew.Burroughs@royalfree.nhs.uk</a></td>
</tr>
<tr>
<td>Barbara Busert</td>
<td>Institute of Human Genetics Bonn Germany</td>
<td></td>
</tr>
<tr>
<td>Luca Busetto</td>
<td>Department of Medical and Surgical Sciences University of Padova Padova Italy <a href="mailto:luca.busetto@unipd.it">luca.busetto@unipd.it</a></td>
<td></td>
</tr>
<tr>
<td>Kate Bushby</td>
<td>Institute of Human Genetics Newcastle University International Centre for Life Newcastle upon Tyne Newcastle UK</td>
<td><a href="mailto:kate.bushby@ncl.ac.uk">kate.bushby@ncl.ac.uk</a></td>
</tr>
<tr>
<td>Silvia Busquets</td>
<td>Departament de Bioquímica i Biologia Molecular Universitat de Barcelona Barcelona Spain <a href="mailto:silviabusquets@ub.edu">silviabusquets@ub.edu</a></td>
<td></td>
</tr>
<tr>
<td>Janine Büttner</td>
<td>Department of Gastroenterology, Hepatology and Endocrinology Charité University Hospital Berlin Germany <a href="mailto:janine.buettner@charite.de">janine.buettner@charite.de</a></td>
<td></td>
</tr>
<tr>
<td>Kenneth Calamia</td>
<td>Department of Rheumatology Mayo Clinic Jacksonville, FL USA <a href="mailto:calamia.kenneth@mayo.edu">calamia.kenneth@mayo.edu</a></td>
<td></td>
</tr>
<tr>
<td>Cecilia Camacho-Hübner</td>
<td>Pediatric Endocrinology Section Department of Endocrinology St. Bartholomew’s Hospital London UK <a href="mailto:c.camcho-hubner@mds.qmw.ac.uk">c.camcho-hubner@mds.qmw.ac.uk</a></td>
<td></td>
</tr>
<tr>
<td>MaryAnn Cameron</td>
<td>Center for Mineral Metabolism and Clinical Research University of Texas Southwestern Medical Center Dallas, TX USA <a href="mailto:MaryAnn.Cameron@utsouthwestern.edu">MaryAnn.Cameron@utsouthwestern.edu</a></td>
<td></td>
</tr>
<tr>
<td>Michael Cantz</td>
<td>Institute of Pathology University of Heidelberg Heidelberg Germany <a href="mailto:Michael.Cantz@med.uni-heidelberg.de">Michael.Cantz@med.uni-heidelberg.de</a></td>
<td></td>
</tr>
<tr>
<td>Giovambattista Capasso</td>
<td>Department of Medicine Second University of Naples Naples Italy <a href="mailto:gb.capasso@unina2.it">gb.capasso@unina2.it</a></td>
<td></td>
</tr>
<tr>
<td>Jonathan R. Carapetis</td>
<td>Menzies School of Health Research Charles Darwin University Darwin, NT Australia <a href="mailto:jonathan.carapetis@rch.org.au">jonathan.carapetis@rch.org.au</a></td>
<td></td>
</tr>
<tr>
<td>Martin C. Carey</td>
<td>Gastroenterology Division, Harvard Medical School Brigham and Women’s Hospital Boston, MA USA <a href="mailto:mccarey@rics.bwh.harvard.edu">mccarey@rics.bwh.harvard.edu</a></td>
<td></td>
</tr>
<tr>
<td>Michelle A. Carey</td>
<td>Laboratory of Respiratory Biology NIH/NIEHS Research Triangle Park, NC USA</td>
<td></td>
</tr>
<tr>
<td>Natalia Casamitjana</td>
<td>Servei d’Immunologia Hospital de Sant Pau Barcelona Spain</td>
<td></td>
</tr>
<tr>
<td>Marcia Spinelli Casanova</td>
<td>Department of Oral Diagnosis UNICAMP, Piracicaba Dental School São Paulo Brazil <a href="mailto:mscasanova@uol.com.br">mscasanova@uol.com.br</a></td>
<td></td>
</tr>
</tbody>
</table>
Stefano Cascinu  
Clinica di Oncologia Medica  
Università Politecnica delle Marche  
Ospedali Riuniti Umberto I – GM Lancisi – G Salesi di  
Ancona  
Ancona  
Italy  
cascinu@yahoo.com

Marco Castori  
Medical Genetics, Experimental Medicine Department  
University La Sapienza  
S. Camillo-Forlanini Hospital  
Rome  
Italy  
m.castori@idi.it

Patrizio Caturegli  
Department for Pathology and Immunology  
Johns Hopkins University  
Baltimore, MD  
USA

Andrea Cavani  
Laboratory of Immunology and Allergology  
Istituto Dermopatico dell’Immacolata  
IDI-IRCCS  
Rome  
Italy  
vcavani@idi.it

Fernando Cendes  
Department of Neurology  
University of Campinas – UNICAMP  
Campinas, SP  
Brazil  
fcendes@gmail.com

Lorenzo Cerroni  
Department of Dermatology  
Medical University of Graz  
Graz  
Austria  
lorenzo.cerroni@meduni-graz.at

Eliza F. Chakravarty  
Division of Immunology and Rheumatology  
Stanford University School of Medicine  
Palo Alto, CA  
USA  
elizac@stanford.edu

Stephen Challacombe  
Department of Oral Medicine  
Kings College London Dental Institute  
London  
UK

Larry Chamley  
Fertility Plus  
Greenlane Clinical Centre  
Auckland, AUK  
New Zealand  
l.chamley@auckland.ac.nz

Anthony Chang  
Section of Nephrology  
University of Chicago  
Chicago, IL  
USA

Peter Charbel Issa  
Department of Ophthalmology  
University of Bonn  
Bonn  
Germany

Saurabh Chatterjee  
Immunology and Hyperthermia Section  
Radiation Biology and Health Sciences Division  
Bhabha Atomic Research Centre  
Mumbai  
India

Kazuaki Chayama  
Department of Medicine and Molecular Science  
Graduate School of Biomedical Sciences  
Hiroshima University  
Hiroshima  
Japan  
chayama@mba.ocn.ne.jp

Roy F. Chemaly  
Department of Infectious Diseases, Infection Control and  
Employee Health  
The University of Texas M. D. Anderson Cancer Center  
Houston, TX  
USA  
rchemaly@mdanderson.org

Zhuang Chen  
Department of Pediatrics,  
Biochemistry and Molecular Biology  
Indiana University School of Medicine  
Herman B Wells Center for Pediatric Research  
Indianapolis, IN  
USA

S. R. Wayne Chen  
Libin Cardiovascular Institute of Alberta  
University of Calgary  
Calgary, AB  
Canada  
wchen@ualberta.ca

Alfredo Chetta  
Department of Clinical Sciences, Respiratory Disease Section  
University of Parma  
Parma  
Italy  
chetta@unipr.it

Kavitha M. Chinnaiyan  
Division of Cardiology, Department of Internal Medicine  
William Beaumont Hospital  
Royal Oak, MI  
USA  
kchinnaiyan@beaumont.edu
Percy Chiu  
Department of Obstetrics and Gynecology  
College of Medicine  
Pennsylvania State University  
Hershey, PA  
USA  

Paul Cheung-Lung Choi  
Department of Anatomical and Cellular Pathology  
Prince of Wales Hospital  
Chinese University of Hong Kong  
Hong Kong Special Administrative Region  
People’s Republic of China  

Evangelos Cholongitis  
Department of Liver Transplantation and Hepatobiliary Surgery  
Royal Free Hospital  
Hampstead, London  
UK  

Janice Y. Chou  
Section on Cellular Differentiation, Heritable Disorders Branch  
National Institute of Child Health and Human Development  
National Institutes of Health  
Bethesda, MD  
USA  
Chouja@mail.nih.gov  

Chiu-Wing Winnie Chu  
Department of Diagnostic Radiology and Organ Imaging  
Prince of Wales Hospital  
Hong Kong Special Administrative Region  
People’s Republic of China  

Kirpal S. Chugh  
Department of Nephrology  
Postgraduate Institute of Medical Education and Research  
Chandigarh  
India  
chughks_chd@dataone.in  

Roberto Ciccone  
Genetica Medica  
Università di Pavia  
Pavia  
Italy  

Andrea Cignarella  
Department of Pharmacological Sciences  
University of Milan  
Milan  
Italy  
andrea.cignarella@unimi.it  

Daniela Cilloni  
Department of Clinical and Biological Sciences  
University of Turin, S.Luigi Hospital  
Turin  
Italy  
daniela.cilloni@unito.it  

Adrian J. L. Clark  
Pediatric Endocrinology Section  
Department of Endocrinology  
St. Bartholomew’s Hospital  
London  
UK  

Anthony J. Cleare  
Institute of Psychiatry  
Kings College London  
London  
UK  
a.cleare@iop.kcl.ac.uk  

Angel Cogolludo  
Department of Pharmacology  
School of Medicine  
University Complutense of Madrid  
Madrid  
Spain  
acogolludo@ift.csic.es  

Denis V. Cokkinos  
First Cardiology Department  
Onassis Cardiac Surgery Center  
Athens  
Greece  
cokkino1@otenet.gr  

Nananda F. Col  
Center for Outcomes Research and Evaluation  
Maine Medical Center  
Portland, ME  
USA  
NCol@lifespan.org  

David E. C. Cole  
Departments of Laboratory Medicine and Pathobiology, Medicine and Pediatrics (Genetics)  
University of Toronto  
Toronto, ON  
Canada  

Giuseppina Coppola  
Unit of Rheumatology, Department of Clinical Medicine and Immunological Sciences  
University of Siena  
Siena  
Italy  
coppola@unisi.org  

Valérie Cormier-Daire  
Département de Génétique and INSERM  
Université Paris V  
Hôpital Necker Enfants Malades  
Paris  
France  

Catherine E. Correia  
Division of Pediatric Endocrinology  
University of Florida College of Medicine  
Gainesville, FL  
USA
List of Contributors

JONATHAN CORREN
Allergy Research Foundation
Los Angeles, CA
USA
jcorren@ucla.edu

LAURA IRIS COSEN-BINKER
Cátedra de Gastroenterología y Enzimología Clínica – Departamento de Bioquímica Clínica, Facultad de Farmacia y Bioquímica
Universidad de Buenos Aires
Buenos Aires
Argentina
laura.cosen.binker@utoronto.ca

CORNELIUS COURTS
Department of Neuropathology
University of Cologne
Cologne
Germany

PATRICK COUTURE
Institute on Nutraceuticals and Functional Foods
Laval University
Québec, QC
Canada

JACK B. COWLAND
Department of Hematology
Rigshospitalet University of Copenhagen
Copenhagen
Denmark
jack.cowland@rh.regionh.dk

JAMES E. CROWE JR.
Program in Vaccine Sciences
Vanderbilt University
Nashville, TN
USA
james.crowe@vanderbilt.edu

ANNETTE CRYER
Department of Otorhinolaryngology
Klinikum Karlsruhe gGmbH
Karlsruhe
Germany

ANTONIO L. CUETO-MUNOZ
Centre for the Study of Monogenic Diseases of Pancreatic Beta-cell
Fundación IMABIS, Carlos Haya Hospital
Málaga
Spain
antoniol.cuesta.exts@juntadeandalucia.es

VANESSA F. CURY
Departments of Pharmacology and Oral Pathology
Universidade Federal de Minas Gerais
Belo Horizonte
Brazil

PEDRO R. CUITILLAS
Luwig Institute for Cancer Research
London
UK
pedro@ludwig.ucl.ac.uk

BRUNO DALLAPICCOLA
Department of Experimental Medicine
University La Sapienza and CSS-Mendel Institute
Rome
Italy
dallapiccola@css-mendel.it

ROBERT DALLA POZZA
Department of Pediatric Cardiology
Ludwig-Maximilians-University Munich
Germany
Robert.DallaPozza@med.uni-muenchen.de

HENRYK DANCYGIER
Department of Internal Medicine II
Klinikum Offenbach GmbH
Offenbach
Germany
henryk.dancygier@klinikum-offenbach.de

ADRIAN DANEC
Department of Neurology
Ludwig-Maximilians-University Munich
Munich
Germany
danek@lmu.de

RUTH DANZEISEN
Department of Neurology
University of Ulm
Ulm
Germany
ruth.danzeisen@medizin.uni-ulm.de

SUKRAN DARCAN
Department of Pediatric Endocrinology and Metabolism
Faculty of Medicine
Ege University
Bornova İzmir
Turkey
sukran.darcan@ege.edu.tr

NIKLAS DARIN
Department of Pediatrics
Sahlgrenska University Hospital
Göteborg
Sweden
niklas.darin@vgregion.se

WALTER DAUBENER
Institute of Medical Microbiology and Hospital Hygiene
University Clinic
Heinrich-Heine-University Duesseldorf
Germany
Walter.Daeubener@uni-duesseldorf.de
SANDEEP S. DAVE
Department of Medicine, Oncology Division
Institute for Genome Sciences and Policy
Duke University
Durham, NC
USA
daves@mail.nih.gov

GLORIA L. DAVID
Laboratory of Respiratory Biology
NIH/NIEHS
Research Triangle Park, NC
USA

BATYA B. DAVIDOVICI
The Dermatology Unit
Kaplan Medical Center
Rechovot
Israel

H. DELE DAVIES
Department of Pediatrics
Alberta Children’s Hospital
University of Calgary
Calgary, AB
Canada

TERRY F. DAVIES
Division of Endocrinology
Mount Sinai School of Medicine
New York, NY
USA
terry.davies@mountsinai.org

MANNING R. DAVIS
Department of Physiology and Biophysics
University of Mississippi Medical Center
Jackson, MS
USA
dmanning@physiology.umsmed.edu

PETER DE JONGHE
Neurogenetics Group
VIB Department of Molecular Genetics
University of Antwerp
Antwerp
Belgium
peter.dejonghe@ua.ac.be

OSCAR DE LA CALLE-MARTIN
Servei d’Immunologia
Hospital de Sant Pau
Barcelona
Spain
odlcalle@santpau.es

KLAS-MICHAEL DEBATA
Division of Pediatric Endocrinology and Diabetes
University of Ulm
Ulm
Germany

HANNA DEBIEC
University Pierre et Marie Curie
Paris
France
hanna.debiec@chusa.jussieu.fr

MARTINA DECKERT
Department of Neuropathology
University of Cologne
Cologne
Germany
martina.deckert@uni-koeln.de

CHARUNGTHAI DEJTHEVAPORN
Centre for Neuromuscular Disease and Department of
Molecular Neuroscience
Institute of Neurology
University College London
London
UK

ETIENNE DELACRETAAZ
Swiss Cardiovascular Center Bern
University Hospital
Bern
Switzerland
etienne.delacretaz@insel.ch

ANTONIO V. DELGADO-ESCUETA
Comprehensive Epilepsy Program, Epilepsy Genetics/
Genomics Laboratories and Epilepsy Center of Excellence
UCLA School of Medicine and VA GLAHS
Los Angeles, CA
USA
escueta@ucla.edu

LUIZ DE MARCO
Departments of Pharmacology and Oral Pathology
Universidade Federal de Minas Gerais
Belo Horizonte
Brazil
ldemarco@ufmg.br

S. DE MARIE
Department of Medical Microbiology and Infectious Diseases
Erasmus University Medical Centre
Rotterdam
The Netherlands

JONAS DENECKE
Department of Pediatrics
University of Rostock
Rostock
Germany
deneckj@uni-muenster.de

LEE A. DENSON
Division of Gastroenterology, Hepatology, and Nutrition
Cincinnati Children’s Hospital Medical Center
Cincinnati, OH
USA
lee.denson@yale.edu
Gordon Dent
Institute of Science and Technology in Medicine
Keele University
Keele, Staffordshire
UK
g.dent@hfac.keele.ac.uk

Flavia de Paula
Human Genome Research Center
Department of Genetics and Evolutionary Biology
Institute of Biosciences
University of São Paulo
São Paulo
Brazil

Christophe Depre
Cardiovascular Research Institute
Department of Cell Biology and Molecular Medicine
UMDNJ
Newark, NJ
USA
depreh@umdnj.edu

Marco C. de Ruiter
Department of Anatomy and Embryology
Leiden University Medical Center
Leiden
The Netherlands
M.C.de_Ruiter@lumc.nl

Eloisa de Sá Moreira
Human Genome Research Center
Department of Genetics and Evolutionary Biology
Institute of Biosciences
University of São Paulo
São Paulo
Brazil
eloisamoreira@bol.com.br

Marcus Deschauer
Department of Neurology
University of Halle-Wittenberg
Halle/Saale
Germany
marcus.deschauer@medizin.uni-halle.de

Robert J. Desnick
Department of Genetics and Genomic Sciences
Mount Sinai School of Medicine of New York University
New York, NY
USA
robert.desnick@mssm.edu

Darryl C. De Vivo
Colleen Giblin Laboratories for Pediatric Neurology Research
Department of Neurology
Columbia University
New York, NY
USA
ded1@columbia.edu

Olivier Devuyst
Division of Nephrology
UCL Medical School
Brussels
Belgium
olivier.devuyst@uclouvain.be

Jean-Charles Deybach
Centre Français des Porphyries
INSERM
Hôpital Louis Mourier
Colombes
France
jean-charles.deybach@nck.aphp.fr

Roel De Weger
Department Pathology
Molecular and Immuno-Pathology
University Medical Center Utrecht
Utrecht
The Netherlands
r.deweger@umcutrecht.nl

Naranjan S. Dhall
St. Boniface General Hospital Research Centre
University of Manitoba
Winnipeg, MB
Canada
nsdhalla@sbrc.ca

Alessia Diana
Dipartimento Clinico Veterinario
Università degli Studi di Bologna
Bologna
Italy
adiana@vet.unibo.it

Martin Dichgans
Department of Neurology
Ludwig-Maximilians-University Munich
Munich
Germany
mdichgan@brain.nefo.med.uni-muenchen.de

Arne W. J. H. Die
t Laboratory for Clinical Thrombosis and Hemostasis
Departments of Internal Medicine and Biochemistry
Maastricht University
Maastricht
The Netherlands

Thomas Dierks
Department of Biochemistry
University of Bielefeld
Bielefeld
Germany
thomas.dierks@uni-bielefeld.de

Wolfgang Dietmaier
Institute of Pathology
University of Regensburg
Regensburg
Germany
wolfgang.dietmaier@klinik.uni-regensburg.de
M. Cristina Digilio
Medical Genetics
Bambino Gesù Hospital
Rome
Italy
digilio@opbg.net

Gerhard-Paul Diller
Adult Congenital Heart Centre and Centre for Pulmonary Hypertension, Royal Brompton Hospital and the National Heart and Lung Institute
Imperial College
London
UK
g.diller@imperial.ac.uk

Haner Direskeneli
Marmara University Medical School
Istanbul
Turkey
direskeneli@superonline.com

Angela Dispenzieri
Division of Hematology and Internal Medicine
Mayo Clinic and Mayo Foundation
Rochester, MN
USA
dispenzieri.angela@mayo.edu

Klaus Dittmann
Division of Radiobiology & Molecular Environmental Research
Department of Radiation Oncology
Eberhard-Karls University
Tuebingen
Germany

Maria Teresa Divizia
Laboratory of Molecular Genetics
G. Gaslini Institute
Department of Pediatrics
University of Genova
Genova
Italy

Matthew B. Dobbs
Department of Orthopedic Surgery
Washington University School of Medicine
Saint Louis, MO
USA
mattdobbs@earthlink.net

Markus G. Donner
Clinic for Gastroenterology, Hepatology and Infectiology
Heinrich-Heine-University Duesseldorf
Germany
Markus_Donner@yahoo.de

Dan Donoghue
Department of Chemistry and Biochemistry
University of California
San Diego, CA
USA
djd@chem.ucsd.edu

Olivier Dorseuil
Département de Génétique et Développement
Institut Cochin
INSERM Université Paris Descartes
Paris
France
dorseuil@cochin.inserm.fr

Adel Driss
Winship Cancer Institute
Emory University
Atlanta, GA
USA
driss@ncnp.go.jp

Maarten R. Drost
Department of Movement Sciences
Maastricht University
Maastricht
The Netherlands
maarten.drost@bw.unimaas.nl

Olivier Dulac
Department of Pediatric Neurology
Hôpital Necker Enfants Malades
Paris
France
olivier.dulac@nck.aphp.fr

Reinhard Dummer
Department of Dermatology
University Hospital Zurich
Zurich
Switzerland
dummer@unizh.ch

Marie-Estelle Dupont
Département de Psychiatrie de l’Adolescent et du Jeune Adul’t
Institut Mutualiste Monsouris
Paris
France
marieestelledupont@gmail.com

Marinus Duran
Department of Clinical Chemistry
University of Amsterdam
Amsterdam
The Netherlands

Reyna M. Duron
Comprehensive Epilepsy Program, Epilepsy Genetics/Genomics Laboratories and Epilepsy Center of Excellence
UCLA School of Medicine and VA GLAHS
Los Angeles, CA
USA

Pirooz Eghtesady
Division of Cardiothoracic Surgery
Cincinnati Children’s Hospital Medical Center
Cincinnati, OH
USA
pirooz.eghtesady@cchmc.org
JAN EHRCHEN  
Department of Dermatology  
University of Muenster  
Muenster  
Germany

GEORGE E. EHRLICH  
University of Pennsylvania School of Medicine  
Philadelphia, PA  
USA  
g2e@mindspring.com

HENK EIJER  
Orthopedic Department  
Sonnenhof Clinic  
Bern  
Switzerland  
henkeijer@sonnenhof.ch

CLAUS FERDINAND EISENBERGER  
Department of General, Visceral and Pediatric Surgery  
University Hospital Dusseldorf  
Heinrich Heine University  
Duesseldorf  
Germany  
eisenberger@uni-duesseldorf.de

GRAEME EISENHOFER  
Clinical Neurocardiology Section  
NINDS, National Institutes of Health  
Bethesda, MD  
USA  
grae.me.eisenhofer@uniklinikum-dresden.de

CHRISTIAN ELGER  
Department of Epileptology  
University of Bonn  
Bonn  
Germany  
christian.elger@ukb.uni-bonn.de

LEAH I. ELIZONDO  
Interdepartmental Program in Cell and Molecular Biology  
Baylor College of Medicine  
Houston, TX  
USA  
leahe@bcm.edu

KAM-LUN ELLIS HON  
Department of Pediatrics, Prince of Wales Hospital  
The Chinese University of Hong Kong  
Hong Kong Special Administrative Region  
People’s Republic of China

SARAH H. ELSEA  
Departments of Pediatrics and Human Genetics  
Medical College of Virginia Campus  
Virginia Commonwealth University  
Richmond, VA  
USA  
selsea@vcu.edu

HOLGER K. ELTZSCHIG  
Mucosal Inflammation Program  
Department of Anesthesiology and Perioperative Medicine  
University of Colorado Health Sciences Center  
Denver, CO  
USA  
holger.eltzschig@uchsc.edu

MICHAEL EMBERGER  
Department of Dermatology  
Paracelsus Private Medical University  
Salzburg  
Austria

FUMIO ENDO  
Department of Pediatrics  
Kumamoto University Graduate School of Medical Science  
Kumamoto  
Japan

MAYUMI ENDO  
Department of Medicine  
Teine Keijinkai Hospital  
Teine, Sapporo  
Japan  
nephrogirl@gmail.com

ANDREW G. ENGEL  
Department of Neurology  
UCLA School of Medicine  
Reed Neurologic Research Center  
Mayo Clinic  
Rochester, MN  
USA  
age@mayo.edu

JUTTA ENGEL  
Institute of Physiology Department II and Tuebingen Hearing  
Research Center  
Tuebingen  
Germany  
jutta.engel@uni-tuebingen.de

DAVID M. ENGMAN  
Departments of Pathology and Microbiology-Immunology  
Northwestern University Feinberg School of Medicine  
Chicago, IL  
USA  
d-engman@northwestern.edu

REGINA ENSENAUER  
Dr. von Haunersches Kinderspital  
Ludwig-Maximilians-University  
Munich  
Germany  
regina.ensenauer@med.uni-muenchen.de

GIULIANO ENZI  
Department of Medical and Surgical Sciences  
University of Padova  
Padova  
Italy
List of Contributors

CHARLES J. EPSTEIN
Department of Neurology and Neurological Sciences
Stanford University
Palo Alto, CA
USA
Charles.epstin@ucsf.edu

ELARDUS ERASMUS
School of Biochemistry
North-West University
Potchefstroom
South Africa
bchee@puk.ac.za

ANDREAS ERHARDT
Department of Gastroenterology, Hepatology and Infectious Diseases
Heinrich-Heine University of Duesseldorf
Duesseldorf
Germany
erhardt@uni-duesseldorf.de

SEHSUVAR ERTÜRK
Department of Nephrology
Ankara University School of Medicine
Ankara
Turkey
erturk@medicine.ankara.edu.tr

JOAQUIN ESCRIBANO
Pediatric Nephrology Unit
Hospital Universitari Sant Joan
Reus
Spain
jescribano@grupsagessa.com

MICHAEL ESCUDIER
Department of Oral Medicine
Kings College London Dental Institute
London
UK

DANIELA ESER
Department of Psychiatry
Ludwig-Maximilian-University Munich
Munich
Germany
Daniela.Eser@med.uni-muenchen.de

MICHELLE M. ESTRELLA
Department of Nephrology
Johns Hopkins University School of Medicine
Baltimore, MD
USA
mestrel1@jhmi.edu

MARKUS ESZLINGER
III. Medical Department
University of Leipzig
Leipzig
Germany
Markus.Eszlinger@medizin.uni-leipzig.de

ANALEE J. ETHEREDGE
Institute of Biosciences and Technology
Texas A&M University System Health Science Center
Houston, TX
USA

AMOS ETZIONI
Department of Immunology
Meyer Children’s Hospital
Haifa
Israel
etzioni@rambam.health.gov.il

CEM EVERKLIÖGLU
Department of Ophthalmology
Erciyes University Medical Faculty
Kayseri
Turkey
evereklioglu@hotmail.com

DAVID B. EVERMAN
Greenwood Genetic Center
Greenwood, SC
USA
deverman@ggc.org

VINCENT EVERTS
Department of Oral Cell Biology
Academic Centre for Dentistry
University of Amsterdam and VU University Amsterdam
Amsterdam
The Netherlands

JUSTIN A. EZEKOWITZ
Division of Cardiology
Walter Mackenzie Center
University of Alberta
Edmonton, AB
Canada
Justin.Ezekowitz@capitalhealth.ca

LYNETTE D. FAIRBANKS
Purine Research Laboratory
Guy’s Hospital
London
UK
lynette.fairbanks@kcl.ac.uk

MUHAMMAD F AIYAZ-UL-HAQUE
Department of Genetics
The Hospital for Sick Children
Toronto, ON
Canada
muhammad@genet.sickkids.on.ca

ALBERTO FALCHETTI
Regional Center for Hereditary Endocrine Tumours
Department of Internal Medicine
University of Florence
Florence
Italy
RONNIE FASS
Southern Arizona VA Health Care System and Arizona Health Sciences Center
University of Arizona
Tucson, AZ
USA
Ronnie.Fass@med.va.gov

PAVEL FENCIL
Department of Nuclear Medicine
PET Centre
Na Homolce Hospital
Prague
Czech Republic
fencil42@seznam.cz

PETER FERENCI
Department of Internal Medicine III, Gastroenterology and Hepatology
Vienna Medical University
Vienna
Austria
peter.ferenci@meduniwien.ac.at

ALBERTO FERLIN
Department of Histology, Microbiology and Medical Biotechnologies
Section of Clinical Pathology and Centre for Male Gamete Cryopreservation
University of Padova
Padova
Italy
alberto.felrin@unipd.it

ATTEYET-ALLA FETOUH YASSIN
Institute of Medical Microbiology, Immunology and Parasitology
Friedrich-Wilhelms-University
Bonn
Germany
yassin@mibi03.meb.uni-bonn.de

GIOIA Z. FEUERSTEIN
Wyeth Research
Discovery Translational Medicine
Collegeville, PA
USA
FEUERSG@wyeth.com

BÄRBEL FIEDLER
University of Muenster
Children’s Hospital
Muenster
Germany

JOSHUA FIERER
Division of Infectious Diseases, Department of Medicine
University of California at San Diego
San Diego, CA
USA
jfierer@ucsd.edu

DOMINIQUE FIGARELLA-BRANGER
Laboratoire de Biopathologie Nerveuse et Musculaire
Faculté de Médecine de Marseille
Marseille
France
Dominique.Figarella-Branger@medecine.univ-mrs.fr

VOLKER FINGERLE
Bavarian Health and Food Safety Authority
Munich
Germany
Fingerle@m3401.mpk.med.uni-muenchen.de

JOHN W. FINLEY
USDA ARS
Grand Forks Human Nutrition Research Center
Grand Forks, ND
USA
finleyjz@amtodd.com

RICHARD H. FINNELL
Institute of Biosciences and Technology
Texas A&M University System Health Science Center
Houston, TX
USA

JOSEF FINSTERER
KA Rudolfstiftung
Vienna
Austria
fipaps@yahoo.de

ANTONELLA FIORAVANTI
Unit of Rheumatology
Department of Clinical Medicine and Immunological Sciences
University of Siena
Siena
Italy
fioravanti7@virgilio.it

TOBIAS W. FISCHER
Department of Dermatology, Venerology and Allergy
University Hospital Schleswig-Holstein
University of Luebeck
Luebeck
Germany
Tobias.Fischer@uk-sh.de

AVI FISCHER
Division of Cardiac Electrophysiology and Arrhythmia Service
Mount Sinai Hospital and School of Medicine
New York, NY
USA

M. DOMINIK FISCHER
Centre for Ophthalmology
Institute for Ophthalmic Research
University Tuebingen
Tuebingen
Germany
PAMELA FISCHER POSOVZKY  
Division of Pediatric Endocrinology and Diabetes  
University of Ulm  
Ulm  
Germany

JEAN FRANCIS  
Department of Internal Medicine  
Hospital of St. Raphaël  
New Haven, CT  
USA

MONIKA FLECKENSTEIN  
Department of Ophthalmology  
University of Bonn  
Bonn  
Germany

DIEGO FRANCO  
Department of Experimental Biology  
University of Jaen  
Jaen  
Spain  
dfranco@ujaen.es

THOMAS A. FLEISHER  
Department of Laboratory Medicine  
Clinical Center  
National Institute of Health, DHHS  
Bethesda, MD  
USA  
TFleishe@cc.nih.gov

JORGESTON FLEISHER  
Department of Laboratory Medicine  
Clinical Center  
National Institute of Health, DHHS  
Bethesda, MD  
USA  
TFleishe@cc.nih.gov

JUSTINE H. S. FONG  
Asian Medical Centre  
University of Calgary Medical Clinic  
Calgary, AB  
Canada

JORGESTON FLEISHER  
Department of Laboratory Medicine  
Clinical Center  
National Institute of Health, DHHS  
Bethesda, MD  
USA  
TFleishe@cc.nih.gov

KAREL FRASCH  
Department of Psychiatry II  
University of Ulm  
Guenzburg  
Germany  
Karel.Frasch@bkh-guenzburg.de

BERTRAND FONTAINE  
INSERM  
Université Pierre et Marie Curie, UMR  
Paris  
France

KENDALL S. FRAZIER  
Safety Assessment  
GlaxoSmithKline  
King of Prussia, PA  
USA  
kendall.s.frazier@gsk.com

CARLO FORESTA  
Department of Histology, Microbiology and Medical  
Biotecnologies  
Section of Clinical Pathology and Centre for Male Gamete  
Cryopreservation  
University of Padova  
Padova  
Italy

ROGER A. FREEDMAN  
Division of Cardiology  
University of Utah  
Salt Lake City, UT  
USA  
roger.freedman@hsc.utah.edu

DOUGLAS FORREST  
NIDDK, National Institutes of Health  
Bethesda, MD  
USA  
forrestd@niddk.nih.gov

BARRY I. FREEDMAN  
Internal Medicine, Section on Nephrology  
Wake Forest University School of Medicine  
Winston-Salem, NC  
USA  
bfreedman@wfubmc.edu

IRMGARD FörSTER  
Institut für Umweltmedizinische Forschung gGmbH  
University of Duesseldorf  
Duesseldorf  
Germany  
irmgard.foerster@uni-duesseldorf.de

NORBERT FREY  
Department of Cardiology  
University of Heidelberg  
Heidelberg  
Germany  
norbrett.frey@med.uni-heidelberg.de

FEDERICO FRACASSI  
Dipartimento Clinico Veterinario  
Università degli Studi di Bologna  
Bologna  
Italy  
ffracassi@vet.unibo.it

GÉRARD FRIEDLANDER  
INSERM  
University of Paris  
Paris  
France  
Gérard.Friedlander@bichat.inserm.fr
THOMAS FRIELING
Medical Clinic II
Helios Klinikum Krefeld
Krefeld
Germany
to frieling@Klinikum-Krefeld.de

ANDREAS FRITSCH
Department of Internal Medicine
Division of Endocrinology, Angiology, Nephrology and Clinical Chemistry
University Hospital Tuebingen
Tuebingen
Germany

STEPHAN J. FROEHILICH
Eye Clinic
Ludwig-Maximilians-University Munich
Munich
Germany
Stephan.Froehlich@med.uni-muenchen.de

EDWARD D. FROHLICH
Ochsner Clinic Foundation
New Orleans, LA
USA

MICHAEL FROMM
Clinical Physiology
Campus Benjamin Franklin
Charité
Berlin
Germany
michael.fromm@charite.de

PATRICK FROSK
Department of Biochemistry and Medical Genetics
University of Manitoba
Winnipeg, MB
Canada
pfrosk@gmail.com

DIETMAR FUCHS
Department of Biological Chemistry
Biocenter
Medical-University of Innsbruck
Innsbruck
Austria
Dietmar.Fuchs@i-med.ac.at

ARNO FUCHSHUBER
University Children’s Hospital
Freiburg
Germany
arno.fuchshuber@t-online.de

TOSHIRO FUJITA
Department of Nephrology and Endocrinology
University of Tokyo Graduate School of Medicine
Tokyo
Japan
fujita-dis@h.u-tokyo.ac.jp

MASAFUMI FUKAGAWA
Division of Nephrology & Kidney Center
Kobe University School of Medicine
Kobe
Japan
fukagawa@med.kobe-u.ac.jp

KEICHI FUKUDA
Department of Regenerative Medicine and Advanced Cardiac Therapeutics
Keio University School of Medicine
Tokyo
Japan
kfukuda@sc.i tc.keio.ac.jp

GÉRARD GACon
Département de Génétique et Développement
Institut Cochin
INSERM
Université Paris Descartes
Paris
France
gacon@cochin.inserm.fr

WILLIAM A. GAHL
Section of Human Biochemical Genetics, Heritable Disorders Branch
National Human Genome Research Institute
Bethesda, MD
USA
bgahl@helix.nih.gov

MARCIAL FRANCIS GALERA
Faculdade de Medicina
Universidade de Cuiabá
Cuiabá
Brazil

NATALIE GALL
Department of Dermatology and Allergology
University of Ulm
Ulm
Germany

CARLOS GALLIANI
Department of Pathology
Cook Children’s Hospital
Fort Worth, TX
USA
cgalliani@cookchildrens.org

JÜRGEN GALLINAT
Department of Psychiatry and Psychotherapy
Charité Berlin
Berlin
Germany
juergen.gallinat@charite.de

VICTOR M. GARCA NIETO
Pediatric Nephrology Unit, Hospital Ntra.
Sra. de Candelaria
Santa Cruz de Tenerife
Spain