

Erythrocytes, Thrombocytes Leukocytes

Recent Advances in Membrane
and Metabolic Research

And International Symposium, Vienna, June 1972

Erythrocytes Thrombocytes Leukocytes

Recent Advances in
Membrane and Metabolic
Research

Edited by
E. Gerlach, K. Moser,
E. Deutsch, W. Wilmanns

IInd International Symposium,
Vienna, June 1972

561 Illustrations, 154 Tables



1973
Georg Thieme Publishers
Stuttgart

Product names which are in fact registered trademarks have not been specifically designated as such. Thus, in those cases where a product has been referred to by its registered trademark it cannot be concluded that the name used is public domain. The same applies as regards patents or registered designs.

All rights, including the rights of publication, distribution and sales, as well as the right to translation, are reserved. No part of this work covered by the copyrights hereon may be reproduced or copied in any form or by any means – graphic, electronic or mechanical including photocopying, recording, taping, or information and retrieval systems – without written permission of the publisher.

© Georg Thieme Verlag, Stuttgart 1973 – Printed in Germany by F. Wolf, Heppenheim

ISBN 3 13 497901 2

Preface

Since the 1st International Symposium on "Metabolism and Membrane Permeability of Erythrocytes and Thrombocytes" took place in 1968 there has been a remarkable extension of our knowledge in these fields, equally significant for basic research and hematology. Furthermore, very essential progress has been made during the last years concerning metabolism and function of leukocytes. For these reasons a 11nd International Symposium was held in Vienna from June 14 through 16, 1972, devoted to recent advances in the fields of erythrocyte, thrombocyte and leukocyte research. This meeting was attended by a great number of experts from many countries of the world.

On comparing the first with the second symposium it is obvious that the topics in red cell and platelet research have changed remarkably. While in 1968 there was at least a numerical preponderance of presentations concerning basic metabolism in these cells, in the 1972 symposium emphasis was on erythrocyte and thrombocyte membranes, in particular on structure, constituents and function of membranes as well as on various aspects of membrane permeability. However, there were still some important topics regarding certain new aspects of metabolism and their implications with respect to normal and disturbed functions of erythrocytes and platelets. Examples of this include the metabolism of red cell 2,3-diphosphoglycerate and its significance for the oxygen transport function of blood, and the complex reactions in thrombocytes, which accompany the process of aggregation and deaggregation, respectively.

As far as leukocytes are concerned the present topical interest is mainly directed to basic metabolism in normal and leukemic white cells. This was also reflected in the symposium by the emphasis placed on proliferative metabolism, particularly on nucleic acid metabolism, on the importance of the "reverse transcriptase" with respect to an assumed virus etiology of leukemic diseases, and furthermore, on problems of membrane permeability in connection with cell proliferation and transformation of lymphocytes as well as with pharmacologic treatment of leukemic cells.

This book includes the lectures and papers presented at the symposium as well as the complete discussions following each presentation. In order to speed publication the manuscripts are published as submitted by the authors. The discussions were edited and shortened where necessary.

For their valuable assistance in the completion of this book the editors are very grateful to their associates, particularly to Dr. J. DUHM and Dr. J. SCHRADER, Aachen, to Dr. E. THALER and Dr. H. STYCH, Vienna, and to Dr. K. WILMS and Dr. H. SAUER, Tübingen.

The symposium was supported by the following sponsors, whose generosity is once again gratefully acknowledged:

Bundesministerium für Wissenschaft und Forschung, Wien
Bundesministerium für Gesundheit und Umweltschutz, Wien
Boehringer Mannheim GmbH, Wien
Chemie Gruenthal GmbH, Stolberg/Rhld.
Chemiewerk Homburg, Frankfurt/M.
Ciba-Geigy AG, Basel
Ciba-Geigy Ges. m. b. H., Wien
Cilag-Chemie Ges. m. b. H., Wien
Cyanamid GmbH, Abteilung Lederle, München
Eli-Lilly GmbH, Bad Homburg
Deutsche Farmitalia GmbH, Freiburg/Br.
Hoffmann-La Roche Ges. m. b. H., Wien
Heinrich Mack Nachf., Illertissen
Paul Martini-Stiftung der Medizinisch Pharmazeutischen Studiengesellschaft e.V., Frankfurt/M.
E. Merck, Darmstadt
A. Nattermann & Cie. GmbH, Köln
Österreichische Stickstoffwerke AG, Linz
Packard Instruments International S.A., European Division, Zürich
Panchemie Homburg, Wien
Pfizer Corporation Austria Ges. m. b. H., Wien
Sandoz AG, Basel
Sandoz-Forschungsinstitut, Wien
Schering AG Berlin/Bergkamen
Dr. Karl Thomae GmbH, Biberach/Riss
Deutsche Wellcome GmbH, Grossburgwedel

The overall organization of the symposium was again done in cooperation with the Vienna Academy of Medicine. Particular thanks are given Miss E. MAURER and Mrs. I. JARL for their continuous help.

Finally, the editors would like to express their gratitude to the THIEME Publishing Company for the very good cooperation which resulted in prompt publication of this book.

Aachen, Vienna and Tübingen, December 1972

E. GERLACH
K. MOSER
E. DEUTSCH
W. WILMANN

Editors

- DEUTSCH, E., I. Medizinische Universitätsklinik,
Spitalgasse 23, A-1090 Wien, Austria
- GERLACH, E., Abteilung Physiologie, Medizinische
Fakultät, Rhein.-Westf. Techn. Hochschule,
Alter Maastrichter Weg 1, D-5100 Aachen, Ger-
many

MOSER, K., I. Medizinische Universitätsklinik,
Spitalgasse 23, A-1090 Wien, Austria

WILMANN, W., Medizinische Universitätsklinik, Ot-
fried-Müller-Straße, 7400 Tübingen, Germany

Contributors

- AKKERMAN, J.W.N., Academisch Ziekenhuis, Cat-
hariesingel 101, Utrecht, The Netherlands,
pages 341-344
- ALZER, G., Medizinische Universitätsklinik Köln,
Joseph-Stelzmann-Straße 9, D-5000 Köln-
Lindenthal, Germany, pages 446-447, 448-450
- ANDO, Y., Brown University, Providence, Rhode Is-
land, USA, pages 216-220
- ANGELKORT, B., Poliklinik für Innere Medizin -
Abt. Innere Medizin II -, Medizinische Fakultät,
Rhein.-Westf. Techn. Hochschule, Goethestraße
27-29, D-5100 Aachen, Germany, pages 297-300
- ARDAILLOU, N., Hôpital Saint-Louis, 2 Place du
Docteur Fournier, Paris Xe, France,
pages 247-249
- ARNOLD, H., Medizinische Universitätsklinik, Hug-
stetter Straße 55, D-7800 Freiburg/Br., Germa-
ny, pages 177-180, 180-182
- ASTALDI, G., The Blood Research Foundation Cen-
ter, Ospedale Civile, 15057 Tortona, Italy,
pages 452-455
- BAK, I.J., Pharmakologisches Institut der Universität,
Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M.,
Germany, pages 220-223
- BARAN, D.T., University of Rochester, School of
Medicine, 260 Crittenden Boulevard, Rochester,
New York 14642, USA, pages 443-446
- BARBER, A.J., 4900 Battery La., Apt. 304, Bethesda,
Maryland 20014, USA, pages 211-213
- BARTLETT, G.R., Laboratory for Comparative Bio-
chemistry, 4620 Santa Fe Ave., San Diego,
California 92109, USA, pages 139-143, 146-148
- BENÖHR, H.Chr., Medizinische Universitätsklinik,
Auf dem Schnarrenberg, D-7400 Tübingen, Ger-
many, pages 29-30, 200-201
- BERTINO, J.R., Department of Pharmacology, Yale
University, School of Medicine, 333 Cedar
Street, New Haven, Connecticut 06510, USA,
pages 466-472, 492-495
- BETKE, K., Kinderklinik der Universität, Lindwurm-
str. 4, D-8000 München, Germany, pages 171-174
- BEUTLER, E., City of Hope National Medical Center,
1500 East Duarte Road, Duarte, California
91010, USA, pages 123-128, 176-177, 182-184
- BLUMBERG, A., Kantonsspital, Medizinische Klinik,
CH-5001 Aarau, Switzerland, pages 174-175
- BLUME, K.-G., Medizinische Universitätsklinik, Hug-
stetter Straße 55, D-7800 Freiburg/Br., Ger-
many, pages 176-177, 182-184
- BOBROW, N., Dept. of Health, Education and Wel-
fare, National Institutes of Health, Bld. 10,
Rm 6, B18, Bethesda, Maryland 20014, USA,
pages 348-356
- BODEVIN, E., Université de Paris, Hôpital Saint-Louis,
2 Place du Docteur Fournier, Paris Xe, France,
pages 303-306
- BÖNING, D., Physiologisches Institut der Deutschen
Sporthochschule Köln, Carl-Diem-Weg, D-5000
Köln-Müngersdorf, Germany, pages 168-170
- BOHN, B., Institut für Biochemie, Med. Fakultät,
Universität Heidelberg, Akademiestraße 5,
D-6900 Heidelberg, Germany, pages 28-29
- BORN, G.V.R., Department of Pharmacology, Royal
College of Surgeons of England, Lincoln's Inn
Fields, London, WC 2A 3PN, Great Britain,
pages 253-257
- BRAUSER, B., Kinderklinik der Universität,
Lindwurmstraße 4, D-8000 München, Germany,
pages 170-171
- BREDDIN, K., I. Medizinische Universitätsklinik,
Theodor-Stern-Kai, D-6000 Frankfurt/M., Ger-
many, pages 282-283, 291-292
- BRENNÉCKE, R., II. Physiologisches Institut und In-
stitut f. Zytologie u. Elektronenmikroskopie der
Universität, Homburg/Saar, Germany, pages
306-309
- BRINKHOUS, K.M., Department of Pathology, Uni-
versity of North Carolina, School of Medicine,
Chapel Hill, North Carolina 27514, USA,
pages 263-266
- BROSSMER, R., Institut für Biochemie II der Uni-
versität, Akademiestraße 5, D-6900 Heidelberg,
Germany, pages 28-29, 279-282, 284-287
- BRITTINGER, G., Medizinische Klinik und Poli-
klinik - Hämatologische Abteilung, Klinikum
Essen der Ruhr-Universität, Hufelandstraße 55,
D-4300 Essen, Germany, pages 432-437
- CAEN, J.P., Université de Paris, Hôpital Saint-Louis,

- 2 Place du Docteur Fournier, Paris Xe, France, pages 231-232, 303-306
- CALDWELL, P.R.B., Department of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461, USA, pages 157-159
- CARTER, W.A., The John Hopkins University, B2-South Baltimore City Hospitals, 4940 Eastern Avenue, Baltimore, Maryland 21221, USA, pages 386-388
- CASH, J.D., Blood Transfusion Service, Royal Infirmary, Edinburgh, EH3 9HB, Scotland, pages 213-216
- CHAILLEY, B., Institut de Pathologie Cellulaire, Hôpital de Bicêtre, F-94 Le Kremlin-Bicêtre, France, pages 45-48
- CHELLO, P.L., Department of Pharmacology and Medicine, Yale University, School of Medicine, 333 Cedar Street, New Haven, Connecticut 06510, USA, pages 492-495
- COHNEN, G., Medizinische Klinik und Poliklinik - Hämatologische Abteilung, Klinikum Essen der Ruhr-Universität, Hufelandstraße 55, D-4300 Essen, Germany, pages 432-437
- CORBET, H.M.A., Academisch Ziekenhuis, Catharijnesingel 101, Utrecht, The Netherlands, pages 341-344
- DALMARK, M., Department of Biophysics, University of Copenhagen, DK-2000 Copenhagen, Denmark, pages 71-76
- DAVID, J.L., Institut de Médecine, Université de Liège, 4000 Liège, Belgium, pages 309-312
- De Gier, J., Biochemisch Laboratorium, Rijksuniversiteit, Vondellaan 26, Utrecht, The Netherlands, pages 98-100
- DEINHARDT, J., Abteilung für Hämatologie, Medizinische Klinik, Medizinische Hochschule, Roderbruchstraße 101, D-3000 Hannover, Germany, pages 316-320
- DESSENT, M.P., Dept. of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27710, USA, pages 112-115
- DEUTICKE, B., Abteilung Physiologie, Medizinische Fakultät, Rhein.-Westf. Techn. Hochschule, Alter Maastrichter Weg 1, D-5100 Aachen, Germany, pages 81-87, 100-102
- DEUTSCH, E., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 383-386
- DQENECKE, C., Medizinische Universitätsklinik und Poliklinik, D-6650 Homburg/Saar, Germany, pages 333-340
- DÖRMER, P., Institut für Hämatologie d. Gesellschaft für Strahlen- und Umweltforschung, Landwehrstraße 61, D-8000 München-2, Germany, pages 356-362
- DOMENJOZ, R., Pharmakologisches Institut der Rheinischen Friedrich-Wilhelms-Universität, Reuterstraße 2b, D-5300 Bonn, Germany, pages 510-513
- DOUGLAS, St.D., Department of Medicine, Mount Sinai School of Medicine, City University of New York, New York 10029, USA, pages 392-398
- DOUWES, F.R., Medizinische Klinik und Poliklinik der Universität, Humboldtallee 1, D-3400 Göttingen, Germany, pages 398-401, 402-404
- DRINGS, P., Medizinische Universitätsklinik, Berger Straße 58, D-6900 Heidelberg, Germany, pages 489-491
- DUHM, J., Abteilung Physiologie, Medizinische Fakultät, Rhein.-Westf. Techn. Hochschule, Alter Maastrichter Weg 1, D-5100 Aachen, Germany, pages 149-157, 164-168
- EHRENSPECK, G., Max Planck Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 80-81
- EHRLY, A.M., Zentrum Innere Medizin der Universität, Theodor-Stern-Kai, D-6000 Frankfurt/Main-70, Germany, pages 52-53
- ENGELHARDT, R., Medizinische Universitätsklinik und Universitäts-Kinderklinik, Hugstetter Str. 55, D-7800 Freiburg/Br., Germany, pages 177-180, 180-182
- ERNST, P., Rigshospitalet Med. Afdeling A, Blegdamsvej 9, DK-2100 Copenhagen, Denmark, pages 472-473
- ESCHENBACH, C., Universitätskinderklinik, Deutschhausstraße 13, D-3550 Marburg/Lahn, Germany, pages 389-392
- FEIG, S., Childrens Hospital, Medical Center, 300 Longwood Avenue, Boston, Massachusetts 02115, USA, pages 118-121
- FEINGOLD, H., Naval Hospital, Blood Research Laboratory, Chelsea, Massachusetts 02150, USA, pages 312-316
- FERBER, E., Max-Planck-Institut für Immunbiologie, Stübeweg 51, D-7800 Freiburg/Br., Germany, pages 12-16
- FISCHER, H., Max-Planck-Institut für Immunbiologie, Stübeweg 51, D-7800 Freiburg/Br., Germany, pages 12-16, 17-20
- FOERSTER, J., University of Manitoba, Medical School, 700 Bannatyne Ave., Winnipeg, Manitoba R3E 0V9, Canada, pages 466-472
- FORTES, P.A.G., Department of Physiology, Yale University, School of Medicine, 333 Cedar Street, New Haven, Connecticut 06510, USA, pages 92-95

- FUCHSWANS, W., Physiologisches Institut der Universität Wien, Schwarzschanierstraße 17, A-1090 Vienna, Austria, pages 121-122
- FUHRMANN, G.F., Department of Pharmacology, University of Bern, Friedbühlstraße 49, CH-3008 Bern, Switzerland, pages 102-105
- GALLO, R.C., Dept. of Health, Education and Welfare, National Institutes of Health, Bldg. 10, Rm 6, B18, Bethesda, Md. 20014, USA, pages 348-356
- GALVIN, P.D., Special Thrombosis Research Center, Dept. Med., Temple Health Sci. Center, Philadelphia, Pennsylvania 19140, USA, pages 53-57
- GANZINGER, U., I. Medizinische Universitäts-Klinik, Spitalgasse 23, A-1090 Wien, Austria, pages 383-386
- GARBRECHT, M., II. Medizinische Universitätsklinik, Martinistraße 52, D-2000 Hamburg 20, Germany, pages 378-382
- GARBY, L., Department of Clinical Physiology and the Burn Unit, University Hospital, S-75014 Uppsala, Sweden, page 160
- GARDOS, G., National Institute of Haematology and Blood Transfusion, Dept. of Cell Metabolism, Budapest, XI Daróczi ut 24, Hungary, pages 31-33
- GAUGER, D., Pharmakologisches Institut der Universität, Theodor-Stern-Kai 7, D-6000 Frankfurt/M. 70, Germany, pages 194-196
- van GEET, J., Dept. of Hematology, University Hospital, Wilhelmina Gasthuis, Amsterdam, The Netherlands, pages 272-275
- GELDERBLOM, P., Pharmakologisches Institut der Rheinischen Friedrich-Wilhelms-Universität, Reuterstraße 2b, D-5300 Bonn, Germany, pages 510-513
- GERHARDT, S., Fachbereich Biologie, Lehrstuhl Physiologie I, Universitätsstraße 31, D-8400 Regensburg, Germany, pages 87-92
- GERRITSEN, J., Dept. of Hematology, University Hospital, Wilhelmina Gasthuis, Amsterdam, The Netherlands, pages 272-275
- GLASIUS, E., Dept. of Ophthalmology, University Hospital, Wilhelmina Gasthuis, Amsterdam, The Netherlands, pages 272-275
- GLATTHAAR, G., Medizinische Universitätsklinik Tübingen, Otfried-Müller-Straße, D-7400 Tübingen, Germany, pages 474-478
- GORTER, G., Academisch Ziekenhuis, Catharijnesingel 101, Utrecht, The Netherlands, pages 341-344
- GREIL, W., Institut für Biochemie II der Universität, Akademiestraße 5, D-6900 Heidelberg, Germany, pages 284-287
- GROBECKER, H., Pharmakologisches Institut der Universität, Theodor-Stern-Haus, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M., Germany, pages 220-223
- GROSS, R., Medizinische Universitätsklinik, D-5000 Köln-Lindenthal, Germany, pages 236-240, 456-459
- GUINEBAULT, R.P., Institut de Chimie des Substances Naturelles, Gif-sur-Yvette 91, France, pages 257-262
- GUNN, R.B., Department of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27710, USA, pages 62-66, 71-76, 77-79
- HABIB-MAHMOUD, A., Pharmakologisches Institut der Rheinischen Friedrich-Wilhelms-Universität, Reuterstraße 2b, D-5300 Bonn, Germany, pages 510-513
- HACKER, B., Division of Oncology, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 478-482
- van HAERINGEN, N.J., Department of Hematology, University Hospital, Wilhelmina Gasthuis, Amsterdam, The Netherlands, pages 272-275
- HAGEMANN, G., Med. Klinik-Krankenhaus Oststadt, Podbielskistraße 380, D-3000 Hannover, Germany, pages 266-270, 316-320
- HAHN, K.J., Institut für Zytologie und Elektronenmikroskopie der Universität, D-6650 Homburg/Saar, Germany, pages 293-297
- HALL, T.C., Division of Oncology, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 478-482
- HALMOS, H., Institut de Chimie des Substances Naturelles, Gif-sur-Yvette-91, France, pages 257-262
- HANAHAN, D.J., Department of Biochemistry, University of Arizona, College of Medicine, Tucson, Arizona 85724, USA, pages 9-12
- HARDEMAN, M.R., Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, P.O.B. 9190, Amsterdam, The Netherlands, pages 224-227
- HAVEMANN, K., Medizinische Klinik der Universität, Mannkopfstraße 1, D-3550 Marburg/Lahn, Germany, pages 409-414
- HEINRICH, D., Medizinische Universitätsklinik, Klinikstraße 32b, D-6300 Giessen, Germany, pages 244-247
- HELLENBRECHT, D., Pharmakologisches Institut der Universität, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M., Germany, pages 220-223
- HEMMER, B., Physiologisches Institut der Deutschen Sporthochschule Köln, Carl-Diem-Weg, D-5000 Köln-Müngersdorf, Germany, pages 168-170
- HIRSCHMANN, W.D., Medizinische Universitätsklinik, D-5000 Köln-Lindenthal, Germany, pages 456-459

- HOCKE, M., Medizinische Kliniken und Polikliniken der Universität, Klinikstraße 32b, D-6300 Gießen, Germany, pages 250-252
- HÖCKER, P., Hanusch-Krankenhaus, Ludwig-Boltzmann-Institut für Leukämieforschung, Heinrich-Collin-Straße 30, A-1140 Vienna, Austria, pages 383-386
- HOFFMAN, J.F., Department of Physiology, Yale University, School of Medicine, 333 Cedar Street, New Haven, Connecticut 06510, USA, pages 66-70, 92-95
- HOFFMANN, A., Medizinische Universitätsklinik, Hugstetter Straße 55, D-7800 Freiburg/Br., Germany, pages 177-180, 180-182
- HOLMSEN, H., Universitetet i Oslo, Institutt for Tromboseforskning, Rikshospitalet, Oslo, Norway, pages 228-230, 321-327
- HOLZHÜTER, H., Poliklinik für Innere Medizin - Abt. Innere Medizin II -, Medizinische Fakultät, Rhein.-Westf. Techn. Hochschule, Goethestraße 27-29, D-5100 Aachen, Germany, pages 297-300
- HOWE, R., Department of Medicine, University of Minnesota, Medical School, Minneapolis, Minnesota 55455, USA, pages 191-194
- HRNYIUK, W.M., University of Manitoba, Medical School, 700 Bannatyne Ave., Winnipeg, Manitoba R3E 0V9, Canada, pages 176-177, 466-472
- HÜBER, H., Medizinische Universitätsklinik, Anichstraße 35, A-6020 Innsbruck, Austria, pages 441-443
- HUENNEKENS, F.M., Scripps Clinic and Research Foundation, Department of Biochemistry, 476 Prospect street, La Jolla, California 92037, USA, pages 496-503, 504-506
- IATRIDIS, P.G., Department of Physiology, University of North Carolina, School of Medicine, Chapel Hill, North Carolina 27514, USA, pages 288-290
- JACKSON, R., Scripps Clinic and Research Foundation, Department of Biochemistry, 476 Prospect Street, La Jolla, California 92037, USA, pages 496-503
- JACOB, H., Section of Hematology, Dept. of Medicine, University of Minnesota, Medical School, Minneapolis, Minnesota 55455, USA, pages 58-61, 191-194
- JACOBASCH, G., Institut für Physiologische und Biologische Chemie, Humboldt-Universität, Hessische Straße 3/4, DX-104 Berlin, DDR, pages 131-135
- JACOBI, E., Medizinische Universitätsklinik, D-3000 Hannover, Germany, pages 266-270
- JACOBI, H., Medizinische Universitätsklinik, Hugstetter Straße 55, D-7800 Freiburg/Br., Germany, pages 180-182
- JAENICKE, L., Institut für Biochemie der Universität, An der Bottmühle 2, D-5000 Köln-Lindenthal, Germany, pages 362-368, 368-371
- JÄGER, W., I. Medizinische Universitätsklinik, D-6000 Frankfurt/M., Germany, pages 282-283, 291-292, 306-309
- JAFFÉ, E.R., Albert Einstein College of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461, USA, pages 157-159
- JAMIESON, G.A., The American National Red Cross Blood Res. Laboratory, 9312 Old Georgetown Road, Bethesda, Maryland 20014, USA, pages 209-210
- JENKINS, C., Laboratoire d'Hémostase, Centre Georges Hayem, Hôpital Saint-Louis, Paris 75010, France, pages 231-232
- JENSEN, M.C., Childrens Hospital, Medical Center, 300 Longwood Avenue, Boston, Massachusetts 02115, USA, pages 118-121
- KÄSER-GLANZMANN, R., Theodor-Kocher-Institut, Universität Bern, CH-3000 Bern, Switzerland, pages 211-213
- KAISER, G., Pharmakologisches Institut der Universität, Ludwig-Rehn-Str. 14, D-6000 Frankfurt/M.-70, Germany, pages 194-196
- KALBHEN, D.A., Pharmakologisches Institut der Universität Bonn, Reuterstraße 2b, D-5300 Bonn, Germany, pages 510-513
- KAULEN, H.D., Medizinische Universitätsklinik, Joseph-Stelzmann Str. 9, D-5000 Köln-Lindenthal, Germany, pages 236-240
- KELLER, H., CH-3123 Belp, Switzerland, pages 174-175
- KESSEL, D., Division of Oncology, Strong Memorial Hospital, 260 Crittenden Boulevard, Rochester, New York 1460, USA, pages 478-482
- KIM, H.D., Dept. of Physiology, University of Arizona, College of Medicine, Tucson, Arizona 85724, USA, pages 146-148, 164-168
- KIRKPATRICK, F.H., University of Rochester, School of Medicine, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 49-52
- KLEIHAUER, E., Department für Kinderheilkunde der Universität, Prittwitzstraße 43, D-7900 Ulm/Donau, Germany, pages 171-174
- KNAUF, P.A., Dept. of Physiology, Yale University, School of Medicine, New Haven, Connecticut 06510, USA, pages 66-70
- KNÜFERMANN, H., Max-Planck-Institut für Immunbiologie, Stübeweg 51, D-7800 Freiburg/Br., Germany, pages 12-16, 17-20
- KÖNIG, E., Medizinische Klinik und Poliklinik - Hämatologische Abteilung -, Klinikum Essen der Ruhr-Universität, Hufelandstraße 55, D-4300 Essen, Germany, pages 432-437

- KOHNE, E., Universitäts-Kinderklinik, Lindwurmstraße 4, D-8000 München, Germany, pages 171-174
- KOSTER, J.F., Department of Biochemistry, Medical Faculty, Rotterdam, The Netherlands, pages 128-131
- KRAMER, J., Physiologisch-chem. Institut, Philipps-Universität, D-3550 Marburg/Lahn, Germany, pages 301-302
- KRZYWANIEK, H.J., I. Medizinische Universitätsklinik, Theodor-Stern-Kai 7, D-6000 Frankfurt/M., Germany, pages 291-292, 306-309
- KUTSCHERA, J., I. Medizinische Universitätsklinik, Theodor-Stern-Kai 7, D-6000 Frankfurt/M., Germany, pages 282-283
- LACELLE, P.L., University of Rochester, School of Medicine, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 49-52
- LAMBE, C., Dept. of Physiology and Pharmacology, Duke University Medical Center, Durham, North Carolina 27706, USA, pages 135-139
- LANG, H.D., Medizinische Universitäts-Klinik, Ot-fried-Müller-Straße, D-7400 Tübingen, Germany, pages 474-478
- LASSEN, U.V., Zoophysiological Laboratory, University of Copenhagen, 13 Universitetsparken, DK-2100 Copenhagen, Denmark, pages 33-36, 37-39
- LAUF, P.K., Department of Physiology, Duke University Medical Center, Durham, Box 3709, North Carolina 27710, USA, pages 112-115
- LECHNER, D., Division of Oncology, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 478-482
- LEE, P., Department of Physiology and Biophysics, West Virginia University, School of Medicine, Morgantown, West Virginia 26506, USA, pages 105-108
- LEMMER, B., Pharmakologisches Institut der Universität, Theodor-Stern-Kai 7, D-6000 Frankfurt/M., Germany, pages 220-223
- LEVY-TOLEDANO, S., Laboratoire d'Hémostase, Centre Georges Hayem, Hôpital St. Louis, 2 Place du Docteur Fournier, Paris Xé, France, pages 303-306
- LICHTMAN, M.A., University of Rochester, School of Medicine, 260 Crittenden Boulevard, Rochester, New York 14620, USA, pages 443-446
- LIN, P.S., Dept. of Therapeutic Radiology, Tufts New England Medical Center, 136 Harrison Avenue, Boston, Massachusetts 02111, USA, pages 438-440
- LÖFFLER, H., Medizinische Kliniken und Polikliniken der Justus-Liebig-Universität, Klinikstraße 22b, D-6300 Giessen, Germany, pages 177-180
- LÖHR, G.W., Medizinische Universitätsklinik, Hug-stetter Straße 55, D-7800 Freiburg/Br., Germany, pages 177-180
- LOOS, J.A., Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, P.O. Box 9190, Amsterdam, The Netherlands, pages 423-428
- LOSSEN, O., Lehrstuhl Chemie II, Universität Regensburg, D-8400 Regensburg, Germany, pages 21-23
- LOWENSTEIN, S.R., Brown University, Providence, Rhode Island, USA, pages 216-220
- LOYEN, R., Pharmakologisches Institut der Rheinischen Friedrich-Wilhelms-Universität, Reuterstraße 2b, D-5300 Bonn, Germany, pages 510-513
- LÜSCHER, E.F., Theodor-Köcher-Institut, Universität Bern, Freie Straße 1, CH-3000 Bern, Switzerland, pages 211-213
- LUJF, A., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 450-451
- MAINZER, K., II. Medizinische Universitätsklinik, D-6500 Mainz, Germany, pages 196-199
- MARCHIONNI, L.D., US Naval Hospital, Chelsea, Massachusetts 02150, USA, pages 312-316
- MARCUS, A.J., Hematology Section, VA Hospital, 408 First Avenue, New York 10010, USA, pages 206-208, 233-235
- MARTI, H.R., Kantonsspital Aarau, Medizinische Klinik, CH-5001 Aarau, Switzerland, pages 174-175
- MARSHALL, L.W., The John Hopkins University, B2-South Baltimore, 4940 Eastern Avenue, Baltimore, Maryland 21221, USA, pages 386-388
- MASON, R.G., Department of Pathology, University of North Carolina, Chapel Hill, North Carolina 27514, USA, pages 263-266
- McMANUS, T.J., Department of Physiology and Pharmacology, Duke University Medical Center, Durham, Box 3709, North Carolina 27710, USA, pages 135-139, 146-148
- MENTZER, W.C., Childrens Hospital Medical Center, 300 Longwood Avenue, Boston, Massachusetts 02115, USA, pages 118-121
- MERTELSMANN, R., II. Medizinische Universitätsklinik, Martinistraße 52, D-2000 Hamburg-20, Germany, pages 378-382
- MESTER, L., Centre National de la Recherche Scientifique, Gif-sur-Yvette, France, pages 257-262
- MESTER, M., Institut de Chimie des Substances Naturelles, Gif-sur-Yvette 91, France, pages 257-262

- MICHEL, H., Université de Paris, Hôpital Saint-Louis, 2 Place du Docteur Fournier, Paris Xe, France, pages 231-232
- MICU, D., Academia de Stiinte Medicale, Sos. Stefan Cel Mare 1921, Bucarest, Rumania, pages 452-455
- MILES, P.R., Department of Physiology, West Virginia University, School of Medicine, Morgantown, West Virginia 26506, USA, pages 105-108
- MOORE, S., Blood Transfusion Service, Royal Infirmary Edinburgh EH3 9HB, Scotland, pages 213-216
- MORGENSTERN, E., Institut für Zytologie und Elektronenmikroskopie der Universität Homburg, D-6650 Homburg/Saar, Germany, pages 240-243, 293-297
- MOSER, K., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 25-27, 383-386, 419-422
- MÜLLER, D., Medizinische Universitätsklinik, Otfried-Müller-Straße, D-7400 Tübingen, Germany, pages 474-478
- MÜLLER-BERGHAUS, G., Medizinische Kliniken und Polikliniken der Justus-Liebig-Universität, Klinikstraße 32b, D-6300 Giessen, Germany, pages 250-252
- MUELLER-ECKHARDT, Ch., Medizinische Kliniken und Polikliniken der Justus-Liebig-Universität, Abteilung für Klinische Immunologie und Bluttransfusion, Klinikstraße 32b, D-6300 Giessen, Germany, pages 244-247
- NAGEL, R.L., Department of Medicine, Yeshiva University, 1300 Morris Park Avenue, Bronx, New York 10461, USA, pages 157-159
- NATHAN, D.G., Division of Hematology, Childrens Hospital Medical Center, 300 Longwood Ave., Boston, Massachusetts 02115, USA, pages 118-121
- NEEF, V., Department of Biochemistry, Scripps Clinic and Research Foundation, La Jolla, California 92037, USA, pages 496-503
- NEERHOUT, R.C., Department of Pediatrics, University of California, School of Medicine, Los Angeles, California 90024, USA, pages 24-25
- NIETHAMMER, D., Department für Kinderheilkunde der Universität, D-7900 Ulm, Germany, pages 496-503, 504-506
- OERKERMANN, H., Medizinische Universitätsklinik, Joseph-Stelzmann-Straße 9, D-5000 Köln-Lindenthal, Germany, pages 446-447, 456-459
- OKADA, K., Division of Oncology, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642, USA, 478-482
- OTTING, F., Department of Biochemistry, Scripps Clinic and Research Foundation, La Jolla, California 92037, USA, pages 496-503
- PALM, D., Pharmakologisches Institut der Universität, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M., Germany, pages 194-196
- PAPE, L., Zoophysiological Laboratory, University of Copenhagen, Universitetsparken, DK-2100 Copenhagen, Denmark, pages 33-36, 37-39
- PAPPAS, A., Medizinische Universitätsklinik und Poliklinik, D-6650 Homburg/Saar, Germany, pages 507-509
- PATSCHEKE, H., Institut für Biochemie II der Universität, Akademiestraße 5, D-6900 Heidelberg, Germany, pages 279-282, 284-287
- PARKER, J.C., Department of Medicine, University of North Carolina, School of Medicine, Chapel Hill, North Carolina 27514, USA, pages 109-111
- PASSOW, H., Max-Planck-Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 80-81
- PECK, W.A., University of Rochester, School of Medicine, 260 Crittenden Boulevard, Rochester, New York 14620, USA, pages 443-446
- PEPPER, D.S., Blood Transfusion Service, Royal Infirmary, Edinburgh, 3, Scotland, pages 213-216
- PETERS, J.H., Max-Planck-Institut für Biologie, Speemannstraße 34, D-7400 Tübingen, Germany, pages 428-432
- PFLEIDERER, Th., Medizinische Universitätsklinik, Bergheimer Straße 58, D-6900 Heidelberg, Germany, pages 270-272, 293-297
- PITHA, P.M., The John Hopkins University, B2-South Baltimore, 4940 Eastern Avenue, Baltimore, Maryland 21221, USA, pages 386-388
- PITTERMANN, E., Ludwig-Boltzmann-Institut für Leukämieforschung, Hanusch-Krankenhaus, Heinrich-Collin-Straße 30, A-1140 Wien, Austria, pages 383-386
- PLATEL, A., Institut de Chimie des Substances Naturelles, Gif-sur-Yvette 91, France, pages 257-262
- PLUTA, M., Medizinische Klinik, Medizinische Hochschule, Roderbruchstraße 101, D-3000 Hannover, Germany, pages 316-320
- POENSGEN, J., II. Physiologisches Institut und Institut für Zytologie u. Elektronenmikroskopie, Universität des Saarlandes, D-6650 Homburg/Saar, Germany, pages 21-23
- POHL, A., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 25-27
- POKUTECKY, H., Université de Paris, Hôpital Saint-Louis, 2 Place du Docteur Fournier, Paris Xe, France, pages 231-232
- POLIWODA, H., Abteilung für Hämatologie, Medizinische Klinik, Medizinische Hochschule, Roder-

- bruchstraße 101, D-3000 Hannover, Germany, pages 266-270, 316-320
- PORZIG, H., Department of Pharmacology, University of Bern, Friedbühlstraße 49, CH-3008 Bern,, Switzerland, pages 40-43
- POWARS, D., City of Hope National Medical Center, Duarte, California 91010, USA, pages 176-177
- PRALLE, H., Medizinische Universitätsklinik, Klinikstraße 32b, D-6300 Giessen, Germany, pages 189-190
- PRINS, H.K., Central Laboratory of The Netherlands Red Cross Blood Transfusion Service, P.O. Box 9190, Amsterdam, The Netherlands, pages 224-227
- QUIRING, K., Pharmakologisches Institut der Universität, Ludwig-Rehn-Str. 14, D-6000 Frankfurt/M.-70, Germany, pages 194-196
- RADER, J.I., Department of Biochemistry, Scripps Clinic Research Foundation, La Jolla, California 92037, USA, pages 496-503
- RAINER, H.G.J., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 383-386
- RAJEWSKY, M.F., Max-Planck-Institut für Virusforschung, Abt. Physikalische Biologie, Spemannstraße 35/I, D-7400 Tübingen, Germany, pages 460-465
- RAPOPORT, S., Institut für Physiologische und Biologische Chemie, Humboldt Universität, Hessische Straße 3-4, DX-104 Berlin, DDR, pages 131-135
- RAUCHFUSS, H., II. Medizinische Universitätsklinik, D-6500 Mainz, Germany, pages 196-199
- REITZ, S., Dept. of Health, Education and Welfare, National Institutes of Health, Bldg. 10, Rm 6, B18, Bethesda, Maryland 20014, USA, pages 348-356
- RENDU, F., Université de Paris, Hôpital Saint-Louis, 2 Place du Docteur Fournier, Paris Xe, France, pages 303-306
- RIEGEL, K.P., Kinderklinik der Universität, Lindwurmstraße 4, D-8000 München, Germany, pages 171-174
- ROBERT, M., Department of Clinical Physiology, University Hospital, S-75014 Uppsala, Sweden, page 160
- ROBERTS, D., Division of Oncology, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 478-482
- ROGERS, J.C., US Naval Hospital, Chelsea, Massachusetts 02150, USA, pages 321-316
- ROOS, D., Central Laboratory of the Netherlands Red Cross Blood Transfusion Service, Amsterdam, The Netherlands, pages 423-428
- ROSSBACH, P., Zentrum Innere Medizin der Universität, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M., Germany, pages 52-53
- ROZENBERG, M.C., Division of Hematology, Prince Henry Hospital, PO Box 233, Matraville, NSW, 2036, Australia, pages 275-278
- RUBIN, A.D., Lymphocytes Laboratories, Mount Sinai School of Medicine of the City of New York, Fifth Avenue and 100th Street, New York, New York 10029, USA, pages 414-418
- RUDLOFF, V., Max-Planck-Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 96-97
- SAFIER, L.B., Hematology Section, VA Hospital, 408 First Avenue, New York, New York 10010, USA, pages 233-235
- SALFNER, B., Medizinische Universitätsklinik, D-5000 Köln-Lindenthal, Germany, pages 446-447
- SARIN, P.S., Dept. of Health, Education and Welfare, National Institutes of Health, Bldg. 10, Rm 6, B18, Bethesda, Maryland 20014, USA, pages 348-356
- SARJI, K.E., University of North Carolina, School of Medicine, Chapel Hill, North Carolina 27514, USA, pages 288-290
- SARNGADHARAN, M.G., Dept. of Health, Education and Welfare, National Institutes of Health, Bldg. 10, Rm 6, B18, Bethesda, Maryland 20014, USA, pages 348-356
- SAUER, H., Institut für Biochemie der Universität, An der Bottmühle 2, D-5000 Köln-1, Germany, pages 368-371
- SAYEGH, A., Zentrum Innere Medizin der Universität, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M.-70, Germany, pages 282-283
- SCHARRER, I., I. Medizinische Universitäts-Klinik, Theodor-Stern-Kai 7, D-6000 Frankfurt/M.-70, Germany, pages 282-283, 291-292
- SCHEURLLEN, P.G., Medizinische Universitätsklinik und Poliklinik, D-6650 Homburg/Saar, Germany, pages 333-340, 344-346, 507-509
- SCHEWE, C., Institut für Physiologische und Biologische Chemie, Humboldt-Universität, Hessische Straße 3-4, DX-104 Berlin, DDR, pages 131-135
- SCHMIDT-ULLRICH, R., Max-Planck-Institut für Immunbiologie, Stübeweg 51, D-7800 Freiburg/Br., Germany, pages 12-16, 17-20
- SCHNEIDER, E., Pharmakologisches Institut der Rhein. Friedrich-Wilhelms-Universität, Reuterstraße 2b, D-5300 Bonn, Germany, pages 344-346, 510-513
- SCHNEIDER, W., Medizinische Universitätsklinik und Poliklinik, D-6650 Homburg/Saar, Germany, pages 333-340, 507-509
- SCHNELL, K.F., Lehrstuhl Chemie II, Universität Re-

- gensburg, Universitätsstraße 31, D-8400 Regensburg, Germany, pages 87-92
- SCHNELLBACHER, E., Medizinische Kliniken und Polikliniken der Justus-Liebig-Universität, Klinikstraße 32b, D-6300 Giessen, Germany, pages 189-190
- SCHÖCH, G., II. Medizinische Universitätsklinik, Martinistraße 52, D-2000 Hamburg-20, Germany, pages 378-382
- SCHÖPPE-FREDENSBURG, A., Lehrstuhl Physiologie I, Universitätsstraße 31, D-8400 Regensburg, Germany, pages 87-92
- SCHÖTT, D., Medizinische Klinik und Poliklinik der Universität, Humboldtallee 1, D-3400 Göttingen, Germany, pages 402-404
- SCHRADER, J., Abteilung Physiologie, Medizinische Fakultät, Rhein.-Westf. Techn. Hochschule, Alter Maastrichter Weg 1, D-5100 Aachen, Germany, pages 43-45
- SCHKAGER, S.M., Special Thrombosis Research Center, Dept. Med., Temple Health Sci. Center, Philadelphia, Pennsylvania 19140, USA, pages 53-57
- SCHRÖTER, W., Pädiatrische Abteilung der Universitätskliniken, Martinistraße 52, D-2000 Hamburg-20, Germany, pages 185-188
- SCHUBERT, D., Max-Planck-Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 21-23
- SCHULTZ, E., Lymphocytes Laboratories, Mount Sinai School of Medicine of the City of New York, Fifth Avenue and 100th Street, New York, New York 10029, USA, pages 414-418
- SCHUMACHER, K., Medizinische Universitätsklinik Köln, Joseph-Stelzmann-Straße 9, D-5000 Köln-Lindenthal, Germany, pages 446-447, 448-450
- SCHWARZMEIER, J.D., I. Medizinische Universitätsklinik, Spitalgasse 23, A-1090 Wien, Austria, pages 419-422, 450-451
- SCHWEIGART, U., Physiologisches Institut der Deutschen Sporthochschule Köln, Carl-Diem-Weg, D-5000 Köln, Germany, pages 168-170
- SCHWOCH, G., Max-Planck-Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 96-97
- SEGAL, G., Dept. Pediatrics, University of Rochester Medical Center, Rochester, New York 14642, USA, pages 118-121
- SEIDL, S., Blutspendedienst Hessen, Sandhofstraße 1, D-6000 Frankfurt/M.-Niederrad, Germany, pages 143-145
- SHERMER, R.W., Department of Pathology, University of North Carolina, School of Medicine, Chapel Hill, North Carolina 17514, USA, pages 263-266
- SHOHET, S.B., University of California, Medical Center, San Francisco, California 94122, USA, pages 115-118, 118-121
- SIXMA, J.J., Department of Internal Medicine, Division of Haemostasis and Thrombosis, University Hospital, Utrecht, The Netherlands, pages 228-230, 341-344
- SMITH, R., Dept. of Health, Education and Welfare, National Institutes of Health, Bldg. 10, Rm6, B18, Bethesda, Maryland 20014, USA, pages 348-356
- SOLD, M., Institut für Biochemie II der Universität, Akademiestraße 5, D-6900 Heidelberg, Germany, pages 284-287
- SPIELMANN, W., Blutspendedienst Hessen, Sandhofstraße 1, D-6000 Frankfurt/M.-Niederrad, Germany, pages 143-145
- SPRINGER-LEDERER, H., Physiologisches Institut der Universität, Schwarzspanierstraße 17, A-1090 Wien, Austria, pages 121-122
- SRIVASTAVA, S.K., City of Hope National Medical Center, Duarte, California 91010, USA, pages 182-184
- STAAL, G.E.J., Academisch Ziekenhuis, Cathariningsingel 101, Utrecht, The Netherlands, pages 128-131, 341-344
- STACHER, A., Ludwig-Boltzmann-Institut für Leukämieforschung, Hanusch-Krankenhaus, Heinrich-Collin-Straße 30, A-1140 Wien, Austria, pages 383-386
- STANULOVIC, M., Institute for Maternal and Child Health, 10 Hajduk veljkova street, 2100 Novi Sad, Yugoslavia, pages 202-204
- STEINER, M., Division of Hematologic Research, The Memorial Hospital, Brown University, Pawtucket, Rhode Island 02860, USA, pages 216-220
- STEWART, G., Thrombosis Research Center, Department of Medicine, Temple Health Sci. Center, 3400, North Broad Street, Philadelphia, Pennsylvania 19140, USA, pages 53-57
- SZABADOS, L., Institut de Chimie des Substances Naturelles, Gif-sur-Yvette 91, France, pages 257-262
- SZASZ, I., National Institute of Haematology and Blood Transfusion, Daroczi ut 24, Budapest, Hungary, pages 31-33
- TEN CATE, J.W., Department of Haematology, University Hospital, Wilhelmina Gasthuis, Amsterdam, The Netherlands, pages 272-275
- THOMAS, L., Max-Planck-Institut für Biophysik, Kennedyallee 70, D-6000 Frankfurt/M.-70, Germany, pages 301-302
- TIBES, U., Physiologisches Institut der Deutschen Sporthochschule Köln, Carl-Diem-Weg, D-5000 Köln-Müngersdorf, Germany, pages 168-170
- TIGGES, F.J., Medizinische Universitätsklinik, Auf

- dem Schnarrenberg, D-7400 Tübingen, Germany, pages 184-185
- TORELLI, G.M., Istituto di Patologia Speciale Medica et Metodologia Clinica Università degli Studi di Modena, Via del Pozzo 71, 41100 Modena, Italy, pages 372-378
- TORELLI, U., Istituto di Patologia Speciale Medica et Metodologia Clinica Università degli Studi di Modena, Via del Pozzo 71, 41100 Modena, Italy, pages 372-378
- TORRANCE, J.D., Department of Medicine, University of the Witwatersrand, Medical School, Hospital Street, Johannesburg, South Africa, pages 161-164
- TOSTESON, D.C., Department of Physiology, Duke University Medical Center, Box 3709, Durham, North Carolina 27710, USA, pages 62-66, 71-76
- TRIESCHNIGG, A.C.M., Institute for Thrombosis Research, Rikshospitalet, Oslo, Norway, pages 228-230
- TRINIDAD, F., City of Hope National Medical Center, 1500 East Duarte Road, Duarte, California 91010, USA, pages 176-177
- TSAI, S., Department of Therapeutic Radiology, Tufts New England Medical Center, 136 Harrison Avenue, Boston, Massachusetts 02111, USA, pages 438-440
- UDKOW, M., University of Rochester, School of Medicine, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 49-52
- UHLENBRUCK, G., Medizinische Universitätsklinik, D-5000 Köln-Lindenthal, Germany, pages 244-247, 446-447, 448-450
- ULLMAN, H.L., Hematology Section, VA Hospital, 408 First Avenue, New York, New York 10010, USA, pages 233-235
- VAINER, H., Hôpital Saint-Louis, 2 Place du Docteur Fournier, Paris Xe, France, pages 247-249
- VALERI, C.R., Naval Hospital, Blood Research Laboratory, Chelsea, Massachusetts 02150, USA, pages 312-316
- VERSMOLD, H., Kinderklinik der Universität, Lindwurmstraße 4, D-8000 München, Germany, pages 170-171, 171-174
- VESTERGAARD-BOGIND, B., Zoophysiological Laboratory B, University of Copenhagen, 13 Universitetsparken, DK-2100 Copenhagen, Denmark, pages 33-36, 37-39
- VETRELLA, M., Universitätskinderklinik und Poliklinik, Deutschhausstraße 12, D-3550 Marburg/Lahn, Germany, pages 405-408
- VOIGTMANN, R., Medizinische Kliniken und Polikliniken der Universität Giessen, Klinikstr. 32b, D-6300 Giessen, Germany, pages 244-247
- VREEKEN, J., Central Laboratory of The Netherlands Red Cross Blood Transfusion Service, P.O. Box 9190, Amsterdam, The Netherlands, pages 224-227
- WALKER, C.M., Division of Haematology, Prince Henry Hospital, Little Bay, N.S.W., Australia 2036, pages 275-278
- WALLACH, D.F.H., Department of Therapeutic Radiology, Tufts New England Medical Center, 136 Harrison Avenue, Boston, Massachusetts 02111, USA, pages 2-9, 12-16
- WALLER, H.D., Medizinische Universitätsklinik, Abteilung Innere Medizin II, Otfried-Müller-Straße, D-7400 Tübingen, Germany, pages 29-30, 200-201
- WALTER, E., Medizinische Universitätsklinik, Abteilung für Klin. Pharmakologie, Bergheimer Straße 58, D-6900 Heidelberg-1, Germany, pages 240-243, 270-272, 293-297
- WEBER, E., Medizinische Universitätsklinik, Abteilung für Klin. Pharmakologie, Bergheimer Str. 58, D-6900 Heidelberg-1, Germany, pages 240-243, 270-272, 293-297
- WEED, R.I., Haematology Unit, University of Rochester, School of Medicine and Dentistry, 260 Crittenden Boulevard, Rochester, New York 14642, USA, pages 45-48
- WEIDEKAMM, E., Max-Planck-Institut für Immunbiologie, Stübweg 51, D-7800 Freiburg/Br., Germany, pages 2-9
- WEISENBERGER, H., Dr. Karl Thomae Ges. m. b. H., Abt. Biologische Forschung, Birkendorfer Straße 65, D-7950 Biberach/Riß, Germany, pages 327-333
- WENZEL, E., Poliklinik für Innere Medizin - Abt. Innere Medizin II -, Medizinische Fakultät, Rhein-Westf. Techn. Hochschule, Goethestraße 27-29, D-5100 Aachen, Germany, pages 297-300
- WERNER, G., II. Physiologisches Institut und Institut für Zytologie und Elektronenmikroskopie der Universität, D-6650 Homburg/Saar, Germany, pages 21-23
- WESEMANN, W., Institut für Physiologische Chemie der Philipps-Universität, Lahnberge, D-3550 Marburg/Lahn, Germany, pages 300-301
- WEST, C., City of Hope National Medical Center, 1500 East Duarte Road, Duarte, California 91010, USA, pages 176-177
- WIETH, J., Department of Biophysics, University of Copenhagen, 28 Juliane Maries Vej, DK-2100 Copenhagen, Denmark, pages 62-66, 71-76
- WIETHOLD, G., Pharmakologisches Institut der Universität, Ludwig-Rehn-Straße 14, D-6000 Frankfurt/M., Germany, pages 220-223
- WILMANNS, W., Medizinische Universitätsklinik,

Otfried-Müller-Straße, D-7400 Tübingen, Germany, pages 368-371, 474-478, 483-488

WILMS, K., Medizinische Universitätsklinik, Abt. Innere Medizin II, Otfried-Müller-Straße, D-7400 Tübingen, Germany, pages 368-371, 474-478, 483-488

WOLFMAN, J., University of Manitoba, Medical School, 700 Bannatyne Avenue, Winnipeg, Manitoba R3E 0V9, Canada, pages 466-472

YAWATA, Y., Department of Medicine, University of Minnesota, Minneapolis, Minnesota 55455, USA, pages 191-194

ZAAR, B., Department of Clinical Physiology, University Hospital, S-75014 Uppsala, Sweden, page 160

ZÖLLNER, Chr., Abteilung Physiologie, Medizinische Fakultät, Rhein. Westf. Technische Hochschule, Alter Maastrichter Weg 1, D-5100 Aachen, Germany, pages 100-102

ZUCKER, W.H., Department of Pathology, University of North Carolina, Chapel Hill, North Carolina 27514, USA, pages 263-266

Table of Contents

Erythrocytes

Editors: E. Gerlach and K. Moser

Membranes: Structure and Function

The Microarchitecture of Erythrocyte Membranes by D.F.H. WALLACH and E. WEIDEKAMM	2
Biochemical Characteristics of the Erythrocyte Membrane by J. HANAHAN	9
Membrane Protein Patterns of Erythrocytes and Thymocytes by H. KNÜFERMANN, R. SCHMIDT-ULLRICH, E. FERBER, H. FISCHER and D.F.H. WALLACH	12
Use of Dansylation to Clarify the Orientation of Membrane Proteins by R. SCHMIDT-ULLRICH, H. KNÜFERMANN, H. FISCHER and D.F.H. WALLACH	17
Formation and Properties of Lipoprotein Membranes from Proteins and Lipids of the Human Erythrocyte Membrane by D. SCHUBERT, R. BRENNECKE, O. LOSSEN, J. POENSGEN and G. WERNER	21
Abnormal Metabolic Regulation of Lysolecithin Conversion in Red Blood Cells in Hereditary Spherocytosis by A. POHL and K. MOSER	25
Membrane Alterations of Human Red Cells by 2-Phenylethanol, 1,1-Dimethyl-phenylethanol, Periodate, and Succinic Anhydride and Their Consequences for Metabolism and Permeability by B. BOHN and R. BROSSMER	28
Influence of Drugs on SH Groups of Erythrocyte Membrane by H. Chr. BENÖHR and H.D. WALLER	29
Studies on the Leak Cation Transport of Human Erythrocytes by G. GÁRDOS and I. SZASZ	31
Membrane Potential of Amphiuma Red Cells: Effect of Calcium by U.V. LASSEN, L. PAPE and B. VESTERGAARD-BOGIND	33
Membrane Potential of Amphiuma Red Cells: Effect of Some Substituted Phenols by B. VESTERGARD-BOGIND, L. PAPE and U.V. LASSEN	37
ATP-Independent Calcium Net Movements and Calcium-Strontium Exchange in Human Red Cell Ghosts by H. PORZIG	40
Is the Human Erythrocyte Membrane Permeable to Calcium? by J. SCHRADER	43
The Disc-Echinocyte Shape Change of Erythrocytes Induced by External Agents: Role of Calcium by R.I. WEED and B. CHAILLEY	45
Relation of Altered Deformability, ATP, DPG and Ca ⁺⁺ Concentrations in Senescent Erythrocytes by P.L. LaCELLE, F.H. KIRKPATRICK and M. UDKOW	49

The Detection of Changes in Erythrocyte Shape by a Filtration Method Using 8 nm Filters by A.M. EHRLY and P. ROSSBACH	52
A Structural Protein from the Red Cell Membrane by G.J. STEWART, S.M. SCHRAGER and P.D. GALVIN	53
Defective Membrane Microfilaments in the Etiology of Hereditary Spherocytosis by H.S. JACOB	58

Membranes: Permeability and Transport

Chloride and Hydroxyl Ion Conductance of Sheep Red Cell Membrane by D.C. TOSTESON, R.B. GUNN and J.O. WIETH	62
The Mechanism of the Increased K Transport Induced by Ca in Human Red Blood Cells by J.F. HOFFMAN and P.A. KNAUF	66
The Transfer of Monovalent Inorganic Anions Through the Red Cell Membrane by J.O. WIETH, M. DALMARK, R.B. GUNN and D.C. TOSTESON	71
A Titratable Carrier for Monovalent and Divalent Inorganic Anions in Red Blood Cells by R.B. GUNN	77
Halide Fluxes in Liposomes Made from Red Blood Cell Lipids by G. EHRENSPECK and H. PASSOW	80
Transfer of Monovalent Organic Anions Across the Red Cell Membrane: Mechanisms and Experimental Alterations by B. DEUTICKE	81
Inhibition of the Sulfate Transfer in Human Erythrocytes by S. GERHARDT, A. SCHÖPPE-FREDENBURG and K.F. SCHNELL	87
Inhibition of Anion Permeability in the Human Red Cell by Fluorescent Probes by P.A.G. FORTES and J.F. HOFFMAN	92
Temperature Dependence of Sulfate Flux After Treatment of the Red Blood Cell Membrane with Chemical Modifiers by G. SCHWOCH, V. RUDLOFF, I. GUTH and H. PASSOW	96
Comparisons Between Membrane Model Systems and Erythrocyte Membranes by J. de GIER	98
Ion and Non-Electrolyte Permeability of the Cholesterol-Depleted Pig Red Cell Membrane by Chr. ZÖLLNER and B. DEUTICKE	100
Asymmetrical Properties of Glucose Transport in Human Erythrocytes by G.F. FUHRMANN	102
K and Na Transport in Erythrocytes of New-born Puppies by P. LEE and P.R. MILES	105

Table of Contents

Volume Regulation in Dog Red Blood Cells by J.C. PARKER	109	cytes on the Oxygen Affinity of Pig Blood by J. DUHM and H.D. KIM.	164
Different Response of LL and LM (LK) Sheep Red Cells to the Hemolytic and K ⁺ Pump Stimulating Actions of Anti-L Serum by P.K. LAUF and M.P. DESSENT.	112	The Influence of Physical Activity on the 2,3-Diphosphoglycerate Concentration of Erythrocytes and the Oxygen Dissociation Curve in Men by U. SCHWEIGART, D. BÖNING, U. TIBES and B. HEMMER	168
Abnormal Membrane Lipids and Abnormal Cation Fluxes in Human Erythrocytes by S.B. SHOHET	115	Improved Cellular Oxygenation by 2,3-Diphosphoglycerate: Quantitative Measurement of Tissue Hypoxia by Registration of Absorption Spectra of Cytochrome a and Hemoglobin in the Intact Organ by H. VERSMOLD and B. BRAUSER	170
Abnormal Cation Fluxes in Human Erythrocytes: Relation to ATP by G. SEGAL, S. FEIG, W.C. MENTZER, M.C. JENSEN, D.G. NATHAN and S.B. SHOHET	118	Oxygen Carrying Functions of Blood in Hereditary Methemoglobinemia: Ambivalent Effects of 2,3-Diphosphoglycerate by H. VERSMOLD, E. KOHNE, K. RIEGEL, K. BETKE and E. KLEIHAUER	171
Uptake of Zinc by Human Erythrocytes by W. FUCHSWANS and H. SPRINGER-LEDERER	121	Effect of Altitude on Erythropoiesis and Oxygen Affinity in Anemic Patients on Maintenance Hemodialysis by A. BLUMBERG, H.R. MARTI and H. KELLER	174
<i>Metabolism: General Aspects</i>		<i>Metabolism: Enzymes</i>	
Important Recent Advances in the Field of Red Cell Metabolism: Practical Implications by E. BEUTLER	123	Characterization of Two New Variants of Glucosephosphate Isomerase Deficiency with Hereditary Nonspherocytic Hemolytic Anemia by K.G. BLUME, W. HRYNIUK, D. POWARS, F. TRINIDAD, C. WEST and E. BEUTLER	176
The Role of Phosphofructokinase in Regulation of Glycolysis in Human Erythrocytes by G.E.J. STAAL and J.F. KOSTER	128	Purification and Kinetic Properties of Glucosephosphate Isomerase from Human Erythrocytes by H. ARNOLD, A. HOFFMANN, R. ENGELHARDT and G.W. LÖHR	177
The Behavior of the 1,3-DPG Level of Red Blood Cells Under Various Experimental Conditions by G. JACOBASCH, Ch. SCHEWE and S. RAPOPORT	131	GPI-Recklinghausen: A New Variant of Glucosephosphate Isomerase Deficiency with Hemolytic Anemia by R. ENGELHARDT, H. ARNOLD, A. HOFFMANN, H. JACOBI and G.W. LÖHR	180
Species Differences in Nucleoside Metabolism of Red Cells by T.J. McMANUS and C. LAMBE	135	Biochemical Studies on Galactokinase from Human Erythrocytes and Human Placenta by K.G. BLUME, S.K. SRIVASTAVA and E. BEUTLER	182
Changes of Red Cell Phosphate Compounds During Storage of Human Blood in ACD by G.R. BARTLETT	139	Properties of Fructose-Diphosphate-Aldolase in Aging Erythrocytes by F.-J. TIGGES	184
The Influence of Different Stabilizers on the Survival of Stored Red Cells by S. SEIDL and W. SPIELMANN	143	Biochemical Characterization of Two Clinically Different Types of Pyruvate Kinase Deficiency by W. SCHRÖTER	185
Transitory Changes in the Metabolism of Pig Red Cells During Neonatal Development by H.D. KIM, T.J. McMANUS and G.R. BARTLETT	146	Alkaline Phosphatase in Human Erythrocytes: A New Hereditary Disorder by H. PRALLE, E. SCHNELLBACHER and H. LÖFFLER	189
<i>Metabolism: 2,3-DPG and Oxygen Transport</i>		Acquired Deficiency of Hexosemonophosphate Shunt Metabolism in Uremic Red Cells by Y. YAWATA, R. HOWE and H. JACOB	
2,3-Diphosphoglycerate Metabolism of Erythrocytes and Oxygen Transport Function of Blood by J. DUHM	149	Adenyl Cyclase Activity in Reticulocyte-Containing Blood of Rats by K. QUIRING, D. GAUGER, G. KAISER and D. PALM	
The Content of 2,3-Diphosphoglycerate in Human Erythrocytes: Effects of pH and Oxygen and Their Role in Anemia by P.R.B. CALDWELL, E.R. JAFFÉ and R.L. NAGEL	157		
Non-Equivalent Oxygen-Linked Proton and Carboxyl Binding to Hemoglobin in Normal Human Blood by L. GARBY, M. ROBERT and B. ZAAR	160		
Erythrocyte 2,3-DPG in Various Mammalian Species by J.D. TORRANCE	161		
Effect of the Rapid Postnatal Increase of 2,3-Diphosphoglycerate Concentration in Erythro-			

Enzyme Activities in Red Blood Cells of Rabbits Treated with Phenylhydrazine by K. MAINZER and H. RAUCHFUSS	196	Rate of Methemoglobin Reduction: Additive Effects of Glucose and Malate on Erythrocytes in Vitro by M. STANULOVIC	202
Studies on the Reduction of Methemoglobin by Ascorbic Acid by H.D. WALLER and H.Chr. BENÖHR	200		

Thrombocytes

Editor: E. Deutsch

Membranes and Function

Observations on the Structure and Function of Human Platelet Membranes by A.J. MARCUS	206	ECKHARDT, R. VOIGTMANN and G. UHLENBRUCK	244
Role of Glycoproteins in Platelet Function by G.A. JAMIESON	209	Membrane Receptors and Platelet Function IV. Interaction of Platelet Populations with ¹²⁵ I-Fibrinogen by H. VAINER and N. ARDAILLOU	247
Characterization of the Carbohydrate Moiety of a Proteoglycan-Protein Complex with Heparin Neutralizing Activity (Platelet Factor 4) Released from Human Blood Platelets by A.J. BARBER, R. KÄSER-GLANZMANN and E.F. LÜSCHER	211	Platelet Aggregation Studied in Vitro and in Vivo in the Presence of Fibrinogen-Fibrin Monomer Complexes by G. MÜLLER-BERGHAUS, D. HEINRICH and M. HOCKE	250
Association of Human Platelet Factor 4 (Anti-Heparin) with Soluble (Released) Proteins and Platelet Membranes by D.S. PEPPER, S. MOORE and J.D. CASH	213	<i>Aggregation and Related Phenomena</i>	
Quantification of Sulfhydryl and Disulfide Groups in Platelet Membranes. Effect of Mercaptide Formation on Aggregation by M. STEINER, Y. ANDO and S.R. LOWENSTEIN	216	Applicability of In Vitro Observations on the Aggregation of Platelets to Their Function in Vivo by G.V.R. BORN	253
Human Blood Platelets and Erythrocytes as Cellular Models for Investigation of Membrane Active Drugs by B. LEMMER, G. WIETHOLD, I.J. BAK, D. HELLENBRECHT and H. GROBECKER	220	The Role of Sialic Acid in the Mechanism of Platelet Aggregation by L. MESTER, L. SZABADOS, T. HALMOS, M. MESTER, P.-R. GUINEBAULT and A. PLATEL	257
The Relation Between Serotonin Uptake, Response to Hypotonic Shock, and Glycolysis in Human Platelets by M.R. HARDEMAN, H.K. PRINS and J. VREEKEN	224	Platelets and Plasma Protein Reactions with Foreign Surfaces by R.G. MASON, R.W. SHERMER, W.H. ZUCKER and K.M. BRINKHOUS	263
Uptake of Adenine in Human Blood Platelets by J.J. SIXMA, H. HOLMSEN and A.C.M. TRISCHNIGG	228	Some Investigations into Clinical Pathophysiology of Platelet Adhesiveness by E. JACOBI, G. HAGEMANN and H. POLIWODA	266
Permeability of Platelets to Adenosine by C.S.P. JENKINS, J. POKUTECKY, H. MICHEL and J.P. CAEN	231	Platelet Function and Myocardial Infarction by Th. PFLEIDERER, E. WEBER and E. WALTER	270
Interactions Between Neuraminidase and Isolated Human Platelet Gangliosides by A.J. MARCUS, L.B. SAFIER and H.E. ULLMANN	233	In Vitro Inhibition of Erythrocyte and Platelet Functions by o-(β -Hydroxyethyl)-Rutoside (HR) by J.W. ten CATE, J. GERRITSEN, J. van GEET, N.J. van HAERINGEN and E. GLASIUS	272
Metabolic Properties of Isolated Human Platelet Membranes by H.D. KAULEN and R. GROSS	236	The Effect of Pyrimido-Pyrimidines on Adenosine Metabolism and Inhibition of Aggregation of Blood Platelets by M.C. ROZENBERG and C.M. WALKER	275
Platelet Membranes During Various Functional States by E. MORGENSTERN, E. WEBER and E. WALTER	240	Investigations on the Inhibitory Effect of 2-Phenylethanol (2-PEA), 3-Phenylpropanol (3-PPA), 2-Phenylethylamine (2-PEAM), and 4-Phenylbutylamine (4-PBAM) on Human Platelet Aggregation by H. PATSCHEKE and R. BROSSMER	279
Action of Different Enzymes on HL-A Receptors of Platelets by D. HEINRICH, C. MUELLER-		Comparative Investigations on the Effect of Aggregation Inhibitors in Different Tests	