International Society of Blood Transfusion

PROCEEDINGS OF THE ELEVENTH CONGRESS OF THE

INTERNATIONAL SOCIETY

OF BLOOD TRANSFUSION

Sydney, August 24-29, 1966

Part 2
Autoimmunity. Immunoglobulins
Cellular Immunology

Edited by
L. Holländer, Basel, Switzerland

With 54 figures and 58 tables

BASEL (Switzerland) S. ARGER NEWYORK

Published as - Erscheint als - Parait comme

Bibliotheca Haematologica, No. 29, Part 2

Redactor: A. Hässig, Bern

At a reduced price for subscribers to 'Acta Haematologica' and 'Vox Sanguinis'

S. Karger AG, Arnold-Böcklin-Strasse 25, 4000 Basel 11 (Switzerland)

All rights, including that of translation into other languages, reserved
Photomechanic reproduction (photocopy, microcopy) of this book or parts thereof without special permission of the publishers is prohibited

Copyright 1968 by S. Karger AG, Basel
Printed in Switzerland by Buchdruckerei Aargauer Tagblatt AG, Aarau
Cliches: Aberegg-Steiner & Cie. AG, Bern

Editorial Note

As in the case of the Stockholm congress, the lectures held at the 11th
Congress of the International Society of Blood Transfusion which took place in Sydney (Australia) from August 24-29, 1966, were again so numerous that they could not be published in one volume. However, while the proceedings of the Stockholm congress comprise five volumes, those of the Sydney congress are contained in the following four volumes:

Part 1: Blood Genetics and Physiology.
Haemolytic Disease of the Newborn.


Blood and Bone Marrow Preservation.


Those who had the privilege to attend the 11th Congress of the International Society of Blood Transfusion were greatly impressed by the flawless organization of this gathering which was arranged by the President of the Australian Society of Blood Transfusion, Dr. E. F. Thomson, and the Society's Secretary, Dr. G. D. Archer. The editor of these proceedings is greatly indebted to both Dr. Thomson and Dr. Archer for their invaluable help in collecting and sorting the manuscripts as well as for their untiring assistance and additional advice at all stages of the publication work. The name of the Karger Publishing Company is a guaranty for a high standard of presentation and Mr. Thomas Karger and his collaborators have done their best to make these proceedings' volumes available to the readers within a useful period of time.

L. Holländer

Organizing Committee of the Eleventh Congress

International Society of Blood Transfusion
President J. J. VanLoghem
Vice-Presidents A. Hässig
A. Kisselev
Secretary-General J. P. Soulier
Treasurer A. Eyquem

Regional Councillors

Africa: Sy-Baba, Ivory Coast
North America: S. T. Gibson, USA
South America: R. C. Junqueira, Brazil
Europe: W. d'A Maygogk, United Kingdom
Asia: J. B. Chatterjea, India
Australia-Oceania: E. F. Thomson, Australia

Councillors

B. Broman, Sweden  P. Mollison, United Kingdom
J. Crookston, Canada  G. Novelo, Mexico
E. Freisleben, Denmark  F. Peyretti, Italy
M. Grove-Rasmussen, USA  I. Politis, Greece
W. Heim, Germany

Australian Society of Blood Transfusion

President E. F. Thomson
Vice-President B. S. Clifton
Secretary-Treasurer G. Archer
Councillors A. E. Shaw
M. Kelly
J. P. Morris

Index

Part 2
Autoimmunity. Immunoglobulins. Cellular Immunology

Autoimmunity

Burnet, F. M. (Melbourne): The Concept of Autoimmunity 423
Nossal, G. J. V. (Melbourne): Principles of Antibody Production 436
Metcalf, D. (Melbourne): The Role of the Thymus in Autoimmunity 446
Holmes, Margaret C. (Melbourne): Haemolytic Anaemia. The Use of an Animal Model 454
Mackay, I. R. (Victoria): Autoimmune Disease in Humans 463
Engelfriet, C. P.; Borne, A. E. G. Kr. von dem; Moes, Mieke and Loghem, J. J. van (Amsterdam): Serological Studies in Autoimmune Haemolytic Anaemia 473
Borne, A. E. G. Kr. von dem; Engelfriet, C. P.; Beckers, Do. and Loghem, J.J. van (Amsterdam): Some Aspects of Autoimmune Haemolytic Anaemia with Incomplete Warm Antibodies and Warm Haemolysins 479
Casey, T. P. (Dunedin, N.Z.): The Use of Immuno-Suppressant Drugs in the Autoimmune Disorders of and X NZW Hybrid Mice 485
Saison, Ruth and Karstad, L. (Guelph): Evidence of an Auto-Immune Reaction in Viral Plasmacytosis (Aleutian Disease) of Mink as Demonstrated by the Coombs

Structure and Function of Immunoglobulins

Hilschmann, N. (Göttingen): The Chemical Structure of Immunoglobulins..... 501
MArtensson, L. (Lund): Gm Genes and yG Molecules 510
Fudenberg, H.; Koshland, M. E.; Frangione, B. and Franklin, E. C. (San Francisco, Cal.): Structural Studies of Human IgG Myeloma Proteins of Different Antigenic Subgroups and Genetic Specificities 529
Stevenson, G. T. (Sydney): Recombination of the Peptide Chains of Immunoglobulin G 537
Birke, G. (Stockholm): Immuno-Globulin Metabolism 543
Hässig, A. (Berne): Prophylaxis and Therapy with Human Immunoglobulin Preparations 551

VIII Index

Histocompatibility and Tissue Transplantation

Simons, M. J. (Melbourne): Experimental Renal Homo-Transplantation 562
Putten, L. M. van; Balner, H.; Muller-Berat, C. N.; Vries, M.J. de and Berkum, D. W. van (Rijswijk): Progress in the Treatment and Prevention of Secondary Disease after Homologous Bone Marrow Transplantation in Monkeys 574
Maclaurin, B. P. (Dunedin, N.Z.): Early and Late Phase Interaction (Recognition and Rejection) in Prolonged Mixed Lymphocyte Cultures 602
Bain, Barbara; Lowenstein, L.; Kasakura, Shinpei and Vas, Magdalene (Montreal, Que.): The Mixed Leucocyte Reaction and its Potential Use in Tissue Matching . 617
Amos, D. B. (Durham, N. C.): The Application of Leucocyte Typing to Human Skin Homotransplantation 628

The Inflammatory Reaction in Hypersensitivity

Willoughby, D. A. (London): The Lymph Node Permeability Factor: A Possible

Mediator of Delayed Hypersensitivity Reactions 634
Jones, M. A. S. and Lafferty, K.J. (Canberra): The Dermal Reaction Induced in Sheep by Homologous Lymphocytes and a RNA Fraction Extracted from Homologous Lymphocytes 635
Turk, J. L. (London): Cellular Dynamics in Lymph Nodes and Skin Reactions . . . 645
Raffel, S. (Stanford, Cal.): Cellular Commitments in Delayed Hypersensitivity . . . 647
Reaction in Guinea Pigs with Delayed-Type Hypersensitivity 653

Cellular Immunology

Hughes, Norman R. (Sydney): In vitro Lymphocyte Changes in 24-Hour Cultures . . 663
Mitchell, Ruth E. (Brisbane, Queens.): The Evolution of Plasma Cells in Canine Renal Allografts 667
Walford, R. L.; Troup, G. . and Shanbrom, E. (Los Angeles, Cal.): Studies Toward the Definition of Human Lymphocyte Isoantigens 675
Roser, B. J. (Sydney): Radioactive Gold Colloids as Macrophage Labels 682

Ishibashi, Y. (Tokyo): The Effect of Bone Marrow Transplantation on the Survival of Patients with Advanced Cancer 712

Index IX

Part 1

Blood Genetics and Physiology. Haemolytic Disease of the Newborn

Recent Advances in Blood Genetics

Giblett, Eloise R. (Seattle, Wash.): Recent Advances in Haptoglobin and Transferrin Genetics 10
Berg, K. (New York, N.Y.): Serum Lipoproteins 21
Marks, P. A. (New York, N.Y.): Red Cell Enzymes Glucose-6-Phosphate Dehydrogenase Deficiency 33
Evans, J. V. (Armidale, N.S.W.): Red Cell Electrolytes and Haemoglobin 41
Kerr, C. B. (Sydney): X-Linked Haematological Traits 59

White Cell and Platelet Physiology

Archer, G. T. (Sydney): The Function of the Eosinophil 71
Volkman, A. (Saranac Lake, N.Y.): The Function of the Monocyte 86
Castaldi, P. A. (Sydney): The Function of the Platelet 98
Baldini, . (Providence, R. I.): Platelet Circulation and Survival 107
Gardner, F. H. and Cohen, P. (Boston, Mass.): Platelet Preservation and Transfusion 123

Red Cell Metabolism

Rapoport, S. (Berlin, DDR): Regulation of Metabolism in Red Cells 133
Beutler, E. (Duarte, Cal.): Abnormalities of Glycolysis (HMP Shunt) 146
Gier, J. de (Utrecht): Red Cell Lipids 158
Danon, D. (Rehovoth): Biophysical Aspects of Red Cell Ageing 178

Quantitation of Red Cell Antigen-Antibody Reactions

Salmon, Ch. and Salmon, D. (Paris): The Structural Groups of Isohaemagglutininins 189

Recent Advances in the Management of Haemolytic Diseases

Finn, R. and Clarke, C. A. (Liverpool): The Prevention of Rhesus Haemolytic Disease 225

Index

LiLEY, A. W. (Auckland): Amniotic Fluid Pigmentation and Haemolytic Disease. 237
Grundbacher, F. J. (Richmond, Va.): Laboratory Investigations in Cases of ABO Hemolytic Disease of the Newborn 247
Betke, K. (München): Transplacental Passage of Erythrocytes 257
Finn, R. and Clarke, C. A. (Liverpool): The Timing of Sensitisation and its Relevance to the Prevention of Rh-Haemolytic Disease 267
Robinson, J. Marcia; Jakobowicz, Rachel; Williams, L.; Moore, Fiona and Silbermann, (Melbourne): Passage of Foetal Cells Into the Maternal Circulation in Rh Negative Women 274
Schneider, J. (Freiburg): Rh Immunisation 284

Plasma Proteins and Serum Groups

Loghem, Erna van and Märtensson, L. (Lund): Gm Determinants on Heavy Chains of the y2c Subclass of the IgG Immunoglobulins 289
Natvig, J. B. (Bergen): Gm(g), a New Human y-Globulin Factor Determined by a Gene Behaving as Allele of Gm5 in Caucasians 294
Gallango, Maria L. and Arends, T. (Caracas): Lp and Ag Systems in Venezuelan Populations 299
Steinbuch, Marion; Audran, R. et Reuge, C. (Paris): Etude immunologique des globulines yG humaines modifiers par Paction du n-bromosuccinimide et du cyanobrome 303
Audran, R.; Guimbretiere, J.; Guimbretiere, L. et Steinbuch, Marion (Nantes): Utilisation de la reaction d'hémagglutination passive dans la recherche des groupes sériques de protéines 308
Natvig, J. B. (Bergen): Specificity of Human Anti-y-Globulin Factors for Heavy Chain Subgroup Determinants and Autologous y-Globulin Fragments 313
Fudenberg, H.; Epstein, W. L.; Shuster, J. and James, K. (San Francisco, Cal.): Diagnostic Paraprotein in Papular Mucinosis 318
Jensen, K. G.; Gürtler, . and Bruusgaard, A. (Copenhagen): Blood Transfusion Reaction Caused by Serum Group Incompatibility 327
Arends, T. and Gallango, Maria L. (Caracas): Immunoglobulin Levels in Blood Bank Donors of a Tropical Country 332
Rewald, E. and Suringar, F. (Mar del Plata): Tolerance of Intravenous Gamma Globulin 337

Development of Blood Groups Antigens

Greenwalt, T. J.; Sasaki, . T. and Steane, E. A. (Milwaukee, Wis.): The Development of the Lutheran Blood Groups After Birth 340
Solomon, J. M. (Washington, D. C.): The ABH Antigens of the Newborn 343
Index XI

YuNis, Edmond J.; Hallgren, Helen M.; Yunis, Eduardo J. and Svardal Janet M. (Minneapolis, Minn.): The Erythrocyte Blood Group Antigens of Human Malignant (Undifferentiated) Cells 345

Foetomaternal Incompatibility

Smith, B. D.; Haber, Jane and Queenan, J. T. (New York, N. Y.): The Problem of Irregular Antibodies in Obstetrics 352
Murphy, A. M. and Reid, R. R. (Sydney): A Comparison of Neutralising Antibodies to Rubella Virus in Gamma-Globulin and 'Convalescent' Sera 358
Hay, Judith (Adelaide): Rhesus Immunisation in Relation to Pregnancy and Parturition 359

Antigens and Antibodies

Layrisse, Z. and Layrisse, Z. (Caracas): IgG Anti-A Among Isolated Indians. 370
Vos, G. (Subiaco, W. A.): Anti-Tja-Like Haemolysins in Relation to Pregnancy 374
Matuhasi, T. (Tokyo): Evidence of Monospecificity of Anti-A and Anti-B in Group 0 Serum 378
Polesky, H. F.; Swanson, Jane and Olson, Carol (Minneapolis, Minn.): Guinea Pig Antibodies to Rh-Hr Precursor 384
Grobbelaar, B. G. (Durban): The Incidence of Isosensitization Following Blood Transfusion 393
Shields, C. E. and Camp, F. R. Jr. (Fort Knox, Ky.): Effect of Immunizations on Blood Group Antibody Production 394

Genetics

Metaxas, M. N.; Metaxas-Buhler, M.; Romanski, Y. and Butler, R. (Berne): The Frequency of Mk in Swiss Blood Donors and its Inheritance in Five Independent Families 399
Ilbery, P. L. T. and Williams, D. (Parramatta, N. S. W.): Evidence of the Freemartin Condition in Goats 405
Curtain, C. C. (Melbourne): Localization of the Immunoglobulin Factors Gm (a). Gm (b) and Gm () in Lymphoid Tissue Obtained from Melanesian Subjects of Gmab/ab and GmK|ab Phenotype 411
Sachs, V. and Ishiyama, I. (Kiel): Possible Genetic Aspects of Immuno-Adherence. 419

XII Index

Part 3
Problems in Blood Transfusion. Blood and Bone Marrow Preservation

Preservation of Blood and Bone Marrow

Ruffie, J.; Colombies, P. et Ducos, J. (Toulouse): L’aptitude à la transformation blastique en culture et l’analyse chromosomique utilisée comme moyen de contrôle de la survie de leucocytes congelés 727
Revol, L.; Termet, H.; Vittoz, P.; Thouverez, J. P.; Mikaeloff, Ph. et Counitchansky, Mme (Lyon): A propos de 566 operations cardiaques sous circulation extracorporelle reahVes avec du sang conserve 18 à 48 h sur solution A.CD. 739
Mazur, P. (Oak Ridge, Tenn.): Physical and Chemical Changes During Freezing and Thawing of Cells, with Special Reference to Blood Cells 764
Gardner, F. H. and Cohen, P. (Boston, Mass.): Present Progress with Platelet Preserversion 778
Rowe, A. W. and Cohen, E. (Buffalo, N. Y.): Low Temperature Preservation of Leukocytes: Freezing Technique and in vitro Viability Criteria 779
Kurnick, N. B. (Los Angeles, Cal.): The Present Status of Low-Temperature Preservation of Bone Marrow 788
Putten, L. M. van (Rijswijk): Monkey and Mouse Bone Marrow Preservation and the
Choice of Technique for Human Application 797
Tullis, J. L. and Tinch, R. J. (Boston, Mass.): A New System for Freezing Red Cells in Glycerol 802
Äkerblom, O.; Verdier, C.-H. de; Eriksson, Å.; Garby, L. and Högman, C. F. (Uppsala): Rapid Freezing of Erythrocytes Using Glycerol in Low Concentrations 814

Extracorporeal Circulation

Melrose, D. G. (London): Pulmonary Insuffiency after Extracorporeal Circulation: Role of Homologous Blood 823
Perkins, H. A. (San Francisco, Cal.): Isoantibodies Following Open Heart Surgery 831

Index XIII

Clifton, E. (New York, N. Y.): Hypercoagulability and the Hemorrhagic State with Extra-Corporeal Circulation 841
Gott, V. L.; Whiffen, J. D.; Leininger, R. I.; Falb, R. D. and Valiathan, S. M. (Columbus, Ohio): Thrombo-Resistant Surfaces 863
Wright, J. S. (Little Bay, N. S. W.): Retardation of Clotting by Anionic Surfaces 873

Plasma Volume Expanders

Grönwall, A.; Hint, H. and Ingelman, B. (Uppsala): Dextran Plasma Volume Expanders: Chemistry and Biological Activities 874
Pennell, R. B. (Boston, Mass.): Plasma Volume Expansion in the United States Current Practice and Attitudes 883
Eliasson, B. R. G. (Stockholm): Antithrombotic Action of Dextrans 888
Arturson, G. (Uppsala): Dextran - Plasma Volume Expanders. Clinical Experiences Especially with Low Molecular Weight Preparations 914
Lundsgaard-Hansen, P.; Nitschmann, Hs. and Hassig, A. (Berne): Comparative
Studies with Dextran and Gelatin Plasma Expanders 927

Automation in Blood Banks. Plastics in Blood Transfusion

Unger, P. and Ramgren, O. (Stockholm): Cell-Washing Systems 937
Ducros, M. J. F. (Ardsley, N. Y.): Large-Scale Evaluation of Rapid Automatic Qualitative Blood Typing 947
Vargues, R. (Tours): Principles and Technique of a Simple Method to Automate the Complement Fixation Reactions 958
Rosenfield, R. E.; Cherry, S. H.; Goodman, A.; Rubinstein, P. and Haber, Gladys V. (New York, N.Y.): Assay of Prenatal Rh Antibodies to Determine the Need for Amniotic Fluid Studies 968
Allen, F. H. Jr. and Alter, A. A. (Brooklin, N. Y.): The Auto-Analyzer in the Search for Rare Donors 973
Battaerd, H. A.J. (Ascot Vale, Vict.): The Surface Treatment of Plastics for Prosthetic and Extra Corporal Circulatory Applications 989
Mason, E. C. (Brisbane, Queens.): Spectrophotometric Examinations of Fluids Stored in Plastic Containers 995

XIV Index

Unger, P. and Ramgren, O. (Stockholm): An Automated Titrator Designed for Connecting to an ADP System 1004
Beal, R. W. (Adelaide, A. A.): A Prospective Study of South Australian Blood Donors 1010
Camp, F. R. Jr. and Shields, C. E. (Fort Knox, Ky.): The Universal Donor in the Military - A Reappraisal 1015
Camp, F. R. Jr. and Shields, C. E. (Fort Knox, Ky.): Screening Procedures Employing Semiautomated and Fully Automated Technics 1020
Lou, K.; Kiddy, S. and Shanbrom, E. (Los Angeles, Cal.): A Polyvalent Latex Slide Test for Rapid Screening of Syphilis in Blood Donors 1029
Unger, P. and Ramgren, O. (Stockholm): Automated Techniques in Blood Group Serology 1033
Panasewizc, J. (Warsaw): Application of Automatic Laboratory Analysers in the Field of Haematology and Blood Transfusion 1044

Part 4
The Structure of Haemoglobin

Baglioni, C. (Naples): Chromosomal and Cytoplasmic Regulation of Haemoglobin Synthesis 1056
Huehns, E. R. (London): Abnormal Haemoglobins and Disease 1064
Heller, P.; Coleman, R. D. and Yakulis, V. J. (Chicago, 111.): Structural Studies of Haemoglobin Mnyde Park 1073
Betke, K. (Tübingen): Cytological Differentiation of Haemoglobin 1085

Plasma Fractions with Haemostatic Activity

Deutsch, E. and Fischer, . (Vienna): Plasma Fractions Rich in Factor VIII 1094
Egli, H.; Kalinke, H. and Meyer-Lindenber, J. (Bonn): Some Remarks on the Preparation and Clinical Application of Fraction I (Cohn) 1110
Blombäck, Margareta and Blombäck, . (Stockholm): Fractions Rich in Factor VIII 1116
Biggs, Rosemary (Oxford): Fractions Rich in Factor VIII 1122
Soulier, J. P.; Josso, F.; Steinbuch, Marion and Cosson, A. (Paris): The Therapeutical Use of Fraction P.P.S.B 1127
Tullis, J. L. and Melin, M. (Boston, Mass.): Management of Christmas Disease and Stuart-Prower Deficiency with a Prothrombin-Complex Concentrate (Factors II, VII, IX, X) 1134

Index XV

Platelets and Coagulation

Eliasson, R. and Bygdeman, S. (Stockholm): Effects of Dextrans on Some Platelet Functions 1140
Dintenfass, L. (Sydney): Effect of Velocity Gradient on the Clotting Time of Blood and on the Consistency (Rheology) of Clots (Thrombi) Formed in vitro 1150
Burnard, D. and Dintenfass, L. (Sydney): Effect of Hydrogen Ion Concentration on Viscosity of Red Cells 1155
Peterson, C.; Borucki, D. T. and Austin, G. (Mountain View, Cal.): Pre-Assayed AHF Concentrate Therapy for Hemophilia 1160
Castaldi, P.; Somer, J. B.; Schiff, P. and Blackburn, C. R. B. (Melbourne): The Management of Haemophilia A with Concentrated Preparations of Factor VIII 1166

Circulation and Infection

Scheffler, W. J.; Peschel, G. and Tänzer, S. E. (Karl-Marx-Stadt): The Value of Transaminase-Tests 1172
Kurokawa, M. (Tokyo): Antibacterial Substance in Human Serum Against NonPathogenic Staphylococcus 1176
Foster, Keay M. (Melbourne): Post-Transfusion Mononucleosis: Experimental and Theoretical Aspects 1182
Schiavone, D. Joan (Melbourne): Heterophile Antibody Titres in National Service Trainees 1189
Block, M. (Denver, Col.): Effect of Immunosuppressive Therapy for Renal Transplantation in Man on Marrow and Blood 1195

Cumulative Subject Index 1196
Cumulative Authors' Index 1228