



Abstracts of the Annual Meeting of the

American Society for Microbiology

1984

84th Annual Meeting

St. Louis, Missouri

4-9 March, 1984



Abstracts of the Annual Meeting of the

American Society for Microbiology

1984



EDITORIAL BOARD

Frederick C. Neidhardt, *Chairman*

Annual Meeting Program Committee: *Divisional Group Councillors and members of the Annual Meeting Program Committee:* A. G. Johnson (Group I), S. Holt (Group II), A. I. Laskin (Group III), P. W. Choppin (Group IV), J. A. Morello (Group V); assisted by R. A. Bray, Director, Meetings, and W. G. Peter III, Director, Publications, ASM.

© 1984, American Society for Microbiology
1913 I St., NW, Washington, DC 20006
ISBN 0-914826-62-X

All Rights Reserved
Printed in the United States of America

FUTURE MEETINGS

Annual Meeting of the Society:

1985: Las Vegas, Nev., 3-8 March

Abstract forms for the submission of papers will be mailed with the August and September 1984 issues of the *ASM News*.

Interscience Conference on Antimicrobial Agents and Chemotherapy:

1984: Washington, D.C., 8-10 October

Abstract forms and the preliminary program will be mailed with the March 1984 issue of the *ASM News*.

THE AMERICAN SOCIETY FOR MICROBIOLOGY LECTURESHIP

The American Society for Microbiology Lectureship was established by ASM in 1971 to honor a distinguished microbiologist selected to deliver the keynote address at the Opening Session of the society's Annual Meeting. The appointment of the lecturer is made by the president of ASM upon the recommendation of the Annual Meeting Program Committee. Participation in divisional symposia at the Annual Meeting by the person selected is encouraged. The lecture is funded by the Office of Naval Research.

1984 Lecturer

HARRY SMITH

Department of Microbiology, The University of Birmingham, England

The Determinants of Microbial Pathogenicity

Past Lecturers

1971: Norbert Pfennig, Institute for Microbiology, Göttingen, Germany

1972: J. W. M. la Rivière, Technological University, Delft, The Netherlands

1973: William Hayes, University of Edinburgh, Edinburgh, Scotland

1974: René Dubos, Rockefeller University, New York, N.Y.

1975: Naomi Datta, Royal Postgraduate Medical School, London, England

1976: Roger Stanier, Institut Pasteur, Paris, France

1977: Louis Siminovitch, University of Toronto, Toronto, Ontario, Canada

1978: Otto Westphal, Max Planck Institut für Immunobiologie, Freiburg, Germany

1979: Renato Dulbecco, The Salk Institute for Biological Studies, San Diego, Calif.

1980: Baruch S. Blumberg, Institute for Cancer Research, Philadelphia, Pa.

1981: Stanley N. Cohen, Stanford University Medical Center, Stanford, Calif.

1982: Jean Lindenman, University of Zurich, Zurich, Switzerland

1983: Margarita Salas, Universidad Autonoma de Madrid, Spain

THE NEW BRUNSWICK SCIENTIFIC COMPANY LECTURESHIP

In 1965, the New Brunswick Scientific Company instituted sponsorship of a lectureship series in conjunction with the ASM Annual Meeting. The lectureship provides an honorarium and travel expenses; selection of the lecturer is made by the ASM Honors Committee. By design, lectures in this series are likely to emphasize interdisciplinary, controversial, or philosophical aspects of subjects of general scientific interest.

New Brunswick Scientific Company Lecturer for 1984

FRANKLIN M. LOEW

Tufts University School of Veterinary Medicine, Boston, Mass.

The Science and Politics of Animals in Research

Past Lecturers

1965: J. G. Harrar, The Rockefeller Foundation, New York, N.Y.

1966: Lord Adrian, Trinity College, Cambridge, England

1967: Norman Cousins, *Saturday Review*, New York, N.Y.

1968: Lord Ritchie-Calder, University of Edinburgh, Edinburgh, Scotland

1969: George W. Beadle, Institute for Biomedical Research, Chicago, Ill.

1970: Norris Cotton, U.S. Senator, New Hampshire

1971: Mary I. Bunting, Radcliffe College, Cambridge, Mass.

1972: Emilio Q. Daddario, Gulf & Western Precision Engineering Company, Manchester, Conn.

1973: Philip Handler, National Academy of Sciences, Washington, D.C.

1974: Max Tishler, Wesleyan University, Middletown, Conn.

1975: No lecture given

1976: Dewitt Stetten, National Institutes of Health, Bethesda, Md.

1977: Philip H. Abelson, American Association for the Advancement of Science, Washington, D.C.

1978: Gerard Piel, *Scientific American*, New York, N.Y.

1979: Daniel S. Greenberg, *Science and Government Report*, Washington, D.C.

1980: Bruce Ames, Department of Biochemistry, University of California, Berkeley

1981: Charles McC. Mathias, U.S. Senator, Maryland

1982: G. A. Keyworth, Office of Science and Technology, Executive Office of the President of the United States, Washington, D.C.

1983: C. D. Cox, University of Massachusetts, Amherst

THE ELI LILLY AND COMPANY RESEARCH AWARD IN MICROBIOLOGY AND IMMUNOLOGY

The purpose of the Eli Lilly and Company Research Award in Microbiology and Immunology is stimulation of fundamental research in microbiology and immunology in the United States and Canada by recognition of outstanding accomplishment by individuals on the threshold of their careers. The original suggestion of such an award was made by Karl F. Meyer to Eli Lilly, president of the company, in 1933. In brief, microbiologists nominated must have done outstanding research that displays merit in microbiology or immunology (special consideration is given to independence of thought and originality shown in the research). The nominee must be less than 40 years old on 30 April of the year of award. Selections are made by an award committee representing ASM, the American Association of Immunologists, and the American Society for Experimental Pathology.

1984 Award Recipient

LINDA L. RANDALL

Washington State University, Pullman

Export of Protein in Escherichia coli

Past Recipients

1936: Harry Eagle	1960: Wallace Rowe
1937: Frank L. Horsfall, Jr.	1961: Harry Rubin
1938: Jerome T. Syverton	1962: Norton D. Zinder
1939: John G. Kidd	1963: John J. Holland
1940: D. Wayne Woolley	1964: Mathew S. Meselson
1941: Alwin M. Pappenheimer, Jr.	1965: Karl G. Lark
1942: Harland G. Wood	1966: Frederick C. Neidhardt
1943: No award	1967: Brian J. McCarthy
1944: No award	1968: John J. Cebra
1945: Esmond E. Snell	1969: David Schlessinger
1946: Maclyn McCarty	1970: Jonathan R. Beckwith
1947: Wayne W. Umbreit	1971: David Baltimore
1948: Alan W. Bernheimer	1972: R. John Collier
1949: Elvin A. Kabat	1973: Leland H. Hartwell
1950: Roger Y. Stanier	1974: Joseph R. Kates
1951: Seymour S. Cohen	1975: G. Wesley Hatfield
1952: J. Oliver Lampen	1976: Ronald W. Davis
1953: Joshua Lederberg	1977: Alice S. Huang
1954: James W. Moulder	1978: David Botstein
1955: Willis A. Wood	1979: Winston J. Brill
1956: Melvin Cohn	1980: Edward M. Scolnick
1957: Henry Koffler	1981: Tom Maniatis
1958: Wilbur W. Ackermann	1982: Thomas E. Shenk
1959: Charles Yanofsky	1983: Ira Herskowitz

THE CARSKI FOUNDATION DISTINGUISHED TEACHING AWARD

The Carski Foundation Distinguished Teaching Award was established in 1968 to provide recognition to a mature individual for distinguished teaching of microbiology to undergraduate students and for encouraging them to subsequent achievement. The award consists of \$1,000 and a plaque and is presented each year at the ASM Annual Meeting. The recipient must have taught for a minimum of 10 years, and a substantial portion of his time during the past 5 years must have been devoted to teaching undergraduate students in microbiology. The recipient must be actively teaching in a college or university in the United States or where there is a branch of ASM. Selections are made by an award committee of three ASM members.

1984 Award Recipient

NANCY HARVIE

The University of Michigan Medical School, Ann Arbor

Past Recipients

- 1968: Wayne W. Umbreit, Rutgers, The State University, New Brunswick, N.J.
- 1969: Sidney C. Rittenberg, University of California, Los Angeles
- 1970: Walter A. Konetzka, Indiana University, Bloomington
- 1971: Ralph S. Wolfe, University of Illinois, Urbana
- 1972: William B. Sarles, University of Wisconsin, Madison
- 1973: William G. Walter, Montana State University, Bozeman
- 1974: Frank E. Swatek, California State University, Long Beach
- 1975: Matthew C. Dodd, Ohio State University, Columbus
- 1976: Elizabeth R. Hall, Washington State University, Pullman
- 1977: Margaret Green, University of Alabama, Tuscaloosa
- 1978: Noel R. Krieg, Virginia Polytechnic Institute and State University, Blacksburg
- 1979: Elwood B. Shirling, Ohio Wesleyan University, Delaware
- 1980: Warren Litsky, University of Massachusetts, Amherst
- 1981: Robert J. Brady, Miami University, Oxford, Ohio
- 1982: John L. Fryer, Oregon State University, Corvallis
- 1983: M. John Pickett, University of California, Los Angeles

THE FISHER SCIENTIFIC COMPANY AWARD IN APPLIED AND ENVIRONMENTAL MICROBIOLOGY

The Fisher Scientific Company Award in Applied and Environmental Microbiology, established in 1977, is made for the purpose of stimulating research and development in applied microbiology (except clinical fields) and environmental microbiology. The award consists of \$1,000, a certificate, and traveling expenses incidental to conferring the award at the ASM Annual Meeting. There is no age limit for the award, the sole requirement for candidacy being outstanding accomplishment in research or development in the fields appropriate to the award. The recipient of the award is selected by an award committee consisting of three members of ASM. Candidates for the award are developed by the award committee, who take such steps as are desirable to secure nominations of individuals deemed worthy of consideration. Also, nominations may be submitted over the signatures of five or more members of ASM.

1984 Award Recipient

THOMAS D. BROCK

University of Wisconsin, Madison

Past Recipients

1977: David Gottlieb, University of Illinois, Urbana

1978: Moshe Shilo, Hebrew University, Jerusalem, Israel

1979: David Perlman, University of Wisconsin, Madison

1980: Martin Alexander, Cornell University, Ithaca, N.Y.

1981: William Sandine, Oregon State University, Corvallis

1982: Holger W. Jannasch, Woods Hole Oceanographic Institution, Woods Hole, Mass.

1983: John H. Brewer, Hardin Simmons University, Abilene, Tex.

THE BECTON-DICKINSON AWARD IN CLINICAL MICROBIOLOGY

The Becton-Dickinson Award in Clinical Microbiology is intended to honor distinguished microbiologists identified with clinical microbiology. The award, which consists of \$1,000, a plaque, and funds to defray the expenses of the award winner in attending the ASM Annual Meeting at which the award is given, was made for the first time in 1978. The award is based on outstanding research accomplishments, clinical or nonclinical, leading to or forming the foundation for important applications in clinical microbiology. A nomination for the award can be submitted by a local branch of ASM or by a group of five or more ASM members. Selections are made by an award committee of three members of ASM.

1984 Award Recipient

ALEXANDER SONNENWIRTH

The Jewish Hospital of St. Louis, St. Louis, Mo.

Past Recipients

1978: John C. Sherris, University of Washington, Seattle

1979: Henry Isenberg, Long Island Jewish-Hillside Medical Center, New Hyde Park, N.Y.

1980: Amedeo Bondi, Hahnemann Medical College, Philadelphia, Pa.

1981: Albert Balows, Centers for Disease Control, Atlanta, Ga.

1982: William B. Cherry, Centers for Disease Control, Atlanta, Ga.

1983: G. D. Hsiung, Yale University School of Medicine, New Haven, Conn.

U.S. FEDERATION OF CULTURE COLLECTIONS' J. ROGER PORTER AWARD

The J. Roger Porter Award of the U.S. Federation of Culture Collections (USFCC) has been established by USFCC and accepted by ASM. The award address will be presented at the meeting of USFCC at the time of the ASM Annual Meeting. The award is made to honor microbiologists contributing significantly to the USFCC objectives. The award shall consist of \$1,000 cash and an appropriate certificate. The recipient of the award shall be selected from the nominees by an award committee consisting of three members of ASM who are also members of USFCC.

1984 Award Recipient

HERMAN J. PHAFF

University of California, Davis

Population Biology and Evolutionary Relationships Among Yeasts Associated with Cactus

Past Recipients

1982: Joseph G. Tully, National Institute of Allergy and Infectious Diseases, Bethesda, Md.

1983: Ruth Gordon, American Type Culture Collection, Rockville, Md.

SPECIAL SESSIONS PRESENTED AT THE 84th ANNUAL MEETING

SYMPOSIA

Divisional Group I

Role of the Major Histocompatibility Complex in Immunity

Convener: JUDITH A. KAPP. The Jewish Hosp. of St. Louis and Washington Univ. Sch. of Med., St. Louis, Mo.
Chemistry and Genetics of the Major Histocompatibility Complex. JEFFREY A. FRELINGER. Univ. of North Carolina, Chapel Hill.

Regulatory T Cells. CARL W. PIERCE. The Jewish Hosp. of St. Louis and Washington Univ. Sch. of Med., St. Louis, Mo.

Virus-Specific Immunity. THOMAS BRACIALE. Washington Univ. Sch. of Med., St. Louis, Mo.

T-Cell Receptors. RALPH T. KUBO. Nat. Jewish Hosp. and Res. Ctr., Denver, Colo.

HLA and Disease. BENJAMIN D. SCHWARTZ. Washington Univ. Sch. of Med., St. Louis, Mo.

Divisional Group II

Other Microbes, Other Places

Convener: E. R. LEADBETTER. Univ. of Connecticut, Storrs.

Organizer's Comments. E. R. LEADBETTER. Univ. of Connecticut, Storrs.

Bizarre Bugs in Biotechnology: Metals, Microbes, and Money. CORALE BRIERLEY and JAMES BRIERLEY. Advanced Mineral Technologies, Inc., Socorro, N.Mex.

Heliothrix oregonensis and the Inverted Laminated Mats of an Unusual Thermal Environment. BEVERLY PIERSON. Univ. of Puget Sound, Takoma, Wash.

A Place for Heterotrophic Prosthecae Bacteria. JEANNE S. POINDEXTER. Publ. Health Inst., New York, N.Y.

Microbes of the Insect Gut. DIANA CRUDEN. Univ. of Iowa, Iowa City.

Chemolithotrophic Bacteria (?) in Cells of Eucaryotes from Sulfide-Rich Environments. COLLEEN CAVANAUGH. Harvard Univ. and Marine Biol. Labor., Cambridge, Mass.

Divisional Group III

Environmental Aspects of Microbial Interactions with Heavy Metals

Conveners: G. E. PIERCE. Battelle Mem. Inst., Columbus, Ohio, and J. J. COONEY, Univ. of Massachusetts, Boston.

Genetics of Microbial Metal Resistance. ANN O. SUMMERS. Univ. of Georgia, Athens.

Bioleaching of Minerals. CORALE BRIERLEY and JAMES BRIERLEY. Advanced Minerals Technology, Inc., and New Mexico Inst. of Mining and Technology, Socorro.

Microbial Interactions in Corrosion. OLLI TUOVINEN. Ohio State Univ., Columbus.

Speciation and Molecular Topology as Predictors of Microbial Uptake of Metals. FRED E. BRINCKMAN. Nat. Bureau of Standards, Washington, D.C.

Physical and Chemical Factors that Affect the Toxicity and Mutagenicity of Heavy Metals. GUNTHER STOTZKY. New York, N.Y.

Divisional Group IV

Viruses as Vectors

Convener: JOSEPH S. PAGANO. Univ. of North Carolina, Chapel Hill.

Papillomavirus Vectors. PETER M. HOWLEY. NIH, Bethesda, Md.

Vaccinia Virus: a Vector for the Production of Live Recombinant Vaccines. BERNARD MOSS. NIH, Bethesda, Md.

Genetic Engineering of Herpes Simplex Viruses. BERNARD ROIZMAN. The Univ. of Chicago, Chicago, Ill.
Gene Transfer Using Retroviral Vectors.INDER VERMA. The Salk Inst., San Diego, Calif.

Divisional Group V

AIDS

Convener: DONALD FRANCIS. CDC, Atlanta, Ga.

Clinical Aspects and Laboratory Diagnosis. DONALD ARMSTRONG. Mem. Sloan Kettering Med. Ctr., New York, N.Y.

Immunology of AIDS. ANTHONY FAUCI. NIH, Bethesda, Md.

Epidemiology and Groups at Risk. JAMES CURRAN. CDC, Atlanta, Ga.

AIDS in Blood Product Recipients. BRUCE EVATT. CDC, Atlanta, Ga.

Etiology: Overview and Nonretroviruses. DONALD FRANCIS. CDC, Atlanta, Ga.

Etiology: Retroviruses. MAX ESSEX. Harvard Sch. of Publ. Health, Cambridge, Mass.

SEMINARS

Bacterial Infections and Pathogenesis (B)

Recent Developments for Detecting Endotoxins in Body Fluids

Conveners: BERNHARD URBASCHEK. Univ. of Heidelberg. Mannheim, West Germany, and STEPHAN E. MERGENHAGEN. NIH, Bethesda, Md.

Studies on the Hemolymph Coagulation System in Limuli. SADA AKI IWANAGA. Univ. of Kyushu, Fukuoka, Japan.

Clinical Evaluation of an Improved Chromogenic Endotoxin Assay. AUGUST STURK. Univ. of Amsterdam, Amsterdam, The Netherlands.

Application of the Limulus Amebocyte Lysate Assay in Various Body Fluids. JAMES H. JORGENSEN. Univ. of Texas, San Antonio.

Use of Limulus Amebocyte Lysate to Assess the Endotoxin-Neutralizing Capacity of Human Sera. THOMAS J. NOVITSKY. Associates of Cape Cod, Woods Hole, Mass.

Usefulness of a Kinetic Assay to Quantitate Endotoxin. JOHN L. SLOYER, JR. Cooper Biomedical, Malvern, Pa.

Quantitation of Endotoxin and Sample-Related Interference by Using a Kinetic Limulus Amebocyte Lysate Microtiter Test. BERNHARD URBASCHEK. Univ. of Heidelberg, Mannheim, West Germany.

Pathogenesis of Enteric Protozoal Infections

Convener: GEORGE R. HEALY. CDC, Atlanta, Ga.

Advances and Limitations with Animal Models of Enteric Protozoal Infections. GOVINDA VISHVESVARA. CDC, Atlanta, Ga.

Adherence and Contact-Dependent Cytolysis with *E. histolytica*. JONATHAN I. RAVDIN. Univ. of Virginia Sch. of Med., Charlottesville.

Potentially Toxic Products of *E. histolytica*. KATHERINE MCGOWAN. Tufts Univ. Sch. of Med., Boston, Mass.

Humoral and Cellular Host Responses to *Giardia lamblia*. DAVID R. HILL. Univ. of Connecticut Sch. of Med., Newington.

Studies of the Interaction of *Cryptosporidium* with Mammalian Cells. CYNTHIA S. WEIKEL. Univ. of Virginia Sch. of Med., Charlottesville.

Route of Toxin or Virus Entry as Determinant of Virulence

Convener: CATHARINE B. SAELINGER. Univ. of Cincinnati, Cincinnati, Ohio

Cell Biology of Virus Entry. ARI HELENIUS. Yale Univ., New Haven, Conn.

Adenovirus-Mediated Enhancement of Immunotoxin Cytotoxicity After Receptor-Mediated Endocytosis. DAVID FITZGERALD. Nat. Cancer Inst., NIH, Bethesda, Md.

Use of Mutant Cells to Study Toxin Entry. TOM MOEHRING. Univ. of Vermont, Burlington.

Receptor-Mediated Endocytosis Is Required for Expression of Pseudomonas and Diphtheria Toxin Activity. RANDAL E. MORRIS. Univ. of Cincinnati, Cincinnati, Ohio.

Epidermal Growth Factor and Asialofetuin-Toxin Hybrid Proteins. DANIEL B. CAWLEY. Washington Univ., St. Louis, Mo.

Molecular Biology of *Bacillus thuringiensis* and *Bacillus anthracis*

Convener: PETER F. BONVENTRE. Univ. of Cincinnati, Cincinnati, Ohio

Regulatory and Structural Analysis of a Cloned *Bacillus thuringiensis* Toxin Gene. HELEN R. WHITELEY. Univ. of Washington, Seattle.

Plasmid Transfer and Insecticidal Toxin Production in *Bacillus thuringiensis* and Related Bacilli. BRUCE CARLTON. Univ. of Georgia, Athens.

Genetics of *Bacillus anthracis*. CURTIS B. THORNE. Univ. of Massachusetts, Amherst.

Plasmid Characterization and Cloning in *Bacillus anthracis*. PERRY MIKESELL and MICHAEL VODKIN. U.S. Army Med. Res. Inst. of Infectious Diseases, Fort Detrick, Md.

Mechanisms of Action of the Components of Anthrax Toxin. STEPHEN H. LEPPA. U.S. Army Med. Res. Inst. of Infectious Diseases, Fort Detrick, Md.

New Concepts in the Pathogenesis of *Escherichia coli* Diarrhea

Convener: RICHARD L. GUERRANT. Univ. of Virginia Sch. of Med., Charlottesville

Shiga-Like Toxin of *Escherichia coli*. ALISON O'BRIEN. Uniformed Services Univ. of the Health Sci., Bethesda, Md.

Enteroadherence of EPEC. JAMES NATARO. Univ. of Maryland, College Park.

Virulence Traits of Invasive *Escherichia coli*. PHILIPPE SANSONETTI. Inst. Pasteur, Paris, France.

Cholera-Like LT and other LTs. RANDALL K. HOLMES. Uniformed Services Univ. of the Health Sci., Bethesda, Md.

Chemistry and Mechanism of Action of STa. DONALD C. ROBERTSON. Univ. of Kansas, Lawrence.

STb: Yet Another Secretory Mechanism. RICHARD N. GREENBERG. St. Louis Univ. Sch. of Med., St. Louis, Mo.

General Medical Microbiology (D)

Molecular Biology of *Chlamydia trachomatis*

Convener: HARLAN D. CALDWELL. NIH, Rocky Mountain Labs., Hamilton, Mont.

Structural Organization of the Chlamydial Outer Membrane. W. J. NEWHALL. Univ. of Indiana Sch. of Med., Indianapolis.

Role of the Major Outer Membrane Protein in *Chlamydia*-Host Cell Interactions. TED HACKSTADT. NIH, Rocky Mountain Labs., Hamilton, Mont.

Antigenic Determinants of the Major Outer Membrane Protein of *Chlamydia trachomatis*. ROBERT B. JONES. Univ. of Indiana Sch. of Med., Indianapolis.

Antigenic Topography of Chlamydial Outer Membrane Antigens. HARLAN D. CALDWELL. NIH, Rocky Mountain Labs., Hamilton, Mont.

Characterization of *Chlamydia* DNA by Restriction Endonuclease Cleavage. LUIS M. DE LA MAZA. Univ. of California, Irvine.

Using Recombinant DNA Techniques to Study *Chlamydia trachomatis*. LINDY PALMER. Stanford Univ., Palo Alto, Calif.

VWA Plasmids of *Yersinia*

Convener: ROBERT R. BRUBAKER. Michigan State Univ., East Lansing

Discovery and Significance of Vwa Plasmids. PETER GEMSKI, JR. Walter Reed Army Inst. of Res., Washington, D.C.

Regulation and Expression of Surface Peptides in *Yersinia enterocolitica*. MICHAEL V. DOYLE and MING CHANG. Univ. of Wisconsin Food Res. Inst., Madison.

Genetics and Expression of the Plasmid-Encoded Outer Membrane Proteins of *Yersinia pseudotuberculosis*. HANS WOLF-WATZ and INGRID BOLIN. Nat. Defense Res. Inst., Umea, Sweden.

Genetic and Functional Analysis of Ca^{2+} Dependence in *Yersinia pestis*. SUSAN C. STRALEY. Univ. of Kentucky Med. Sch., Lexington.

Plasmid-Mediated Products Common to All Vwa⁺ *Yersinia*. ALLEN K. SAMPLE and R. R. BRUBAKER. Michigan State Univ., East Lansing.

Concepts of Accuracy

Convener: STEPHEN C. EDBERG. Yale Univ. Sch. of Med., New Haven, Conn.

Opening Remarks. JOHN L. PENNER. Univ. of Toronto, Toronto, Ontario, Canada.

Concept of Genus, Species, Subspecies, and Clone in *Enterobacteriaceae* and *Vibrionaceae*. J. J. FARMER III. CDC, Atlanta, Ga.

Statistical Measurements of Accuracy. STEPHEN C. EDBERG. Yale Univ. Sch. of Med., New Haven, Conn.

Interpretive Reporting from the Clinical Microbiology Laboratory. SYDNEY HARVEY. Irvine Diagnostic Services, Irvine, Calif.

Meaning of Bacterial Names for the Infectious Diseases Practitioner. ROBERT S. KLEIN. Albert Einstein Col. of Med., Bronx, N.Y.

Immunology (E)

Complement System and Host Defense Against Infection

Convener: JOHN P. ATKINSON. Washington Univ. Sch. of Med., St. Louis, Mo.

Complement System: An Overview and Update. JOHN P. ATKINSON. Washington Univ. Sch. of Med., St. Louis, Mo.

Lessons from Acquired and Inherited Deficiency States. JERRY WINKELSTEIN. Johns Hopkins Univ., Baltimore, Md.

Opsonization I: Covalent Attachment of C4b and C3b Via the Internal Thioester Bond to Microbes. PAUL LEVINE. Washington Univ. Sch. of Med., St. Louis, Mo.

Opsonization II: Function and Structure of C4b/C3b Receptor. TOM DYKMAN. Washington Univ. Sch. of Med., St. Louis, Mo.

Opsonization III: Function and Structure of Complement Receptors for C3bi and C3d. GORDON ROSS. Univ. of North Carolina, Chapel Hill.

Current Research on Bacterial Vaccines

Conveners: DAVID E. BRILES. Univ. of Alabama, Birmingham, and ERIC J. HANSEN. Univ. of Texas Health Sci. Ctr., Dallas

Capsular Polysaccharide-Protein Conjugate Vaccine. JOHN B. ROBBINS. Nat. Inst. of Allergy and Infectious Diseases, NIH, Bethesda, Md.

Protection of Immunologically Immature Mice Against Pneumococcal Infection by Immunization with Non-Type-Specific Antigens. LATHAM J. CLAFLIN. Univ. of Michigan, Ann Arbor.

Protective Effects of Antibodies to Pneumococcal Cell Wall Proteins. LARRY McDANIEL and DAVID E. BRILES. Univ. of Alabama, Birmingham.

Immunogenic Proteins on the Surface of *Haemophilus influenzae* Type b. ERIC J. HANSEN. Univ. of Texas Health Sci. Ctr., Dallas.

Chemistry and Immunology of Native and Synthetic Epitopes of Streptococcal M Proteins. EDWIN H. BEACHEY. Univ. of Tennessee Ctr. for Health Sci., Memphis.

An Outer Membrane Protein Antigen Common to Pathogenic Neisseriae. JANNE G. CANNON. Univ. of North Carolina, Chapel Hill.

Cholera-Related Enterotoxin Family. RICHARD A. FINKELSTEIN. Univ. of Missouri Sch. of Med., Columbia.

Current Concepts on Regulation of the Immune Response to Infectious Agents

Convener: JUNEANN W. MURPHY. Univ. of Oklahoma, Norman

Herpesvirus-Induced Suppressor Cells: Possible Roles in Disease Process. JOHN W. MOORHEAD. Univ. of Colorado Health Sci. Ctr., Denver.

Activation of Suppressor Cells with Type III Pneumococcus Polysaccharide Coupled to Syngeneic Spleen Cells. HELEN BRALEY-MULLEN. Univ. of Missouri Sch. of Med., Columbia.

Antigen-Specific Suppression in Cryptococcosis. JUNEANN W. MURPHY. University of Oklahoma, Norman.

T-Cell Circuitry Active in the Suppression of the Cell-Mediated Granulomatous Response in Schistosomiasis Mansonii. DOV L. BOROS. Wayne State Univ. Sch. of Med., Detroit, Mich.

Summation. JOHN MOORHEAD. Univ. of Colorado Health Sci. Ctr., Denver.

Immunoserological Diagnosis of Infectious Diseases

Conveners: MARIO R. ESCOBAR. Med. Col. of Virginia, Richmond, and HERMAN FRIEDMAN. Univ. of South Florida, Tampa

History, Background, and Overview. HERMAN FRIEDMAN. Univ. of South Florida Sch. of Med., Tampa.

Agglutination Tests in the Diagnosis of Bacterial Infections: Newer Methods and Recent Trends. ROY W. STEVENS. Ctr. for Labs. and Res., New York State Dept. of Health, New York.

Principles and Applications of Ligand Assays in Microbiology. RICHARD C. TILTON. Univ. of Connecticut Sch. of Med., Farmington.

Monoclonal Antibodies for Antigen Detection by FA and EIA: Legionellae as a Model for Other Diseases. ROGER M. MCKINNEY. CDC, Atlanta, Ga.

Serology in Diagnosis and Management of Systemic Mycoses. MORRIS A. GORDON. Ctr. for Labs. and Res., New York State Dept. of Health, New York.

Recent Advances in the Immunodiagnosis of Viral Infections. MARIO R. ESCOBAR. Med. Col. of Virginia, Richmond.

Immunity to *Pseudomonas aeruginosa*

Convener: RICHARD B. MARKHAM. The Jewish Hosp. of Washington Univ., St. Louis, Mo.

Immunity to Membrane Proteins of *P. aeruginosa*. ROBERT HANCOCK. Univ. of British Columbia, Vancouver, British Columbia, Canada.

Immunity to Exoproducts of *P. aeruginosa*. OLGERTS PAVLOVSKIS. Bethesda Naval Res. Inst., Bethesda, Md.

Immunity to Polysaccharide Antigens of *P. aeruginosa*. GERALD B. PIER. Harvard Med. Sch., Boston, Mass.

In Vivo and In Vitro T-Lymphocyte-Mediated Killing of *P. aeruginosa*. RICHARD B. MARKHAM. Washington Univ. Sch. of Med., St. Louis, Mo.

T-Cell-Stimulating Antigens of *P. aeruginosa* Defined by Cloned Human T Cells. MICHAEL J. PARMELY. Univ. of Kansas Med. Ctr., Lawrence.

Defective *P. aeruginosa* Oponins in Cystic Fibrosis Lung Secretions: Primary or Secondary? ROBERT FICK. Univ. of Iowa Med. Sch., Ames.

Mycoplasmas (G)

Cell Wall-Deficient Organisms—the Microbial Chameleons

Convener: RUTH B. KUNDSIN. Brigham and Women's Hosp. and Harvard Med. Sch., Boston, Mass.

Mycoplasmas as a Tool for Membrane Research. KONRAD E. BLOCH. Conant Labs., Harvard Univ., Cambridge, Mass.

Medium-Dependent Properties of Mycoplasmas. HAROLD W. CLARK. Arthritis Inst. of the Nat. Hosp., Arlington, Va.

Evidence for the Bacterial Origin of *Acholeplasma laidlawii* A. WILLIAM N. PACHAS and MARION SCHOR. Massachusetts Rehabilitation Hosp. and Harvard Med. Sch., Boston, Mass.

Serotype Reproducibility in Human Ureaplasmas. GERALD W. STEMKE and JANET A. ROBERTSON. Univ. of Alberta, Edmonton, Alberta, Canada.

Changing Pathogenicity of *Mycoplasma pneumoniae* with Passage In Vitro. ALBERT M. COLLIER. Univ. of North Carolina Sch. of Med., Chapel Hill.

Changing Antibiotic Susceptibilities of Ureaplasmas on Subculture. RUTH B. KUNDSIN. Brigham and Women's Hosp., Harvard Med. Sch., Boston, Mass.

Mycobacteriology (U)

Clinical Mycobacteriology Update

Convener: GEORGE P. KUBICA. CDC, Atlanta, Ga.

Mycobacterial Systematics: Theory and Practice. LAWRENCE G. WAYNE. VA Med. Ctr., Long Beach, Calif.

Reliability of Clinical Diagnoses, or How to Win a Numbers Game. GEORGE P. KUBICA. CDC, Atlanta, Ga.

Mycobacteria and the AIDS Patient. ROBERT C. GOOD. CDC, Atlanta, Ga.

The Radiometric Method. JEAN E. HAWKINS. VA Med. Ctr., West Haven, Conn.

Mycobacterial Diseases: Determinants of Host Response

Conveners: D. McMURRAY. Texas A&M Col. of Med., College Station, and D. SMITH. Univ. of Wisconsin, Madison

T-Lymphocyte Subsets in Skin Lesions in Patients with Leprosy. ROBERT MODLIN. LAC-USC Med. Ctr., Los Angeles, Calif.

Comparative Immunogenicity of BCG and *Mycobacterium leprae* in Normal and *M. leprae*-Tolerant Mice. CHARLES SHEPARD. CDC, Atlanta, Ga.

Response of Protein- and Zinc-Deficient Guinea Pigs to BCG Immunization. DAVID McMURRAY. Texas A&M, College Station.

Differences in Response of Inbred Mouse Strains to Infection with Mycobacteria. ADRIEN FORGET. Univ. of Montreal, Montreal, Quebec, Canada.

Immune Response to Infection with Atypical Mycobacteria. IAN ORME. Trudeau Inst., Saranac Lake, N.Y.

Does Infection with Environmental Mycobacteria Suppress the Protective Effect of BCG Vaccination? DONALD SMITH. Univ. of Wisconsin, Madison.

Immunological Aspects of the Diagnosis of Mycobacterial Infection

Convener: MAURICE J. LEFFORD. Wayne State Univ., Detroit, Mich.

Monoclonal Antibodies to *Mycobacterium tuberculosis* Antigen 5. T. M. DANIEL. Case Western Reserve Univ., Cleveland, Ohio.

Application of Monoclonal Antibody Technology to the Study of Leprosy. T. P. GILLIS. Marshall Univ., Huntington, W. Va.

T-Cell Responses to Mycobacterial Antigens. A. D. M. REES. Med. Res. Council Unit for Lab. Studies of Tuberculosis, London, U.K.

Species-Specific Antigens of the MAIS Complex. P. J. BRENNAN. Univ. of Colorado, Fort Collins.

Detection of *Mycobacterium tuberculosis* Antigens by Using Radioimmunoassay. E. STRAUS. SUNY, Downstate Med. Ctr., New York, N.Y.

Urinary Antigen Detection for the Diagnosis of Leprosy. M. HARBOE. Inst. of Experimental Med. Res., Ulleval Hosp., Oslo, Norway.

Genetics and Molecular Microbiology (H)

Oncogenes and Mitogens: Common Molecular Mechanisms

Convener: MICHAEL WEBER. Univ. of Illinois, Urbana

Genes Controlling Cell Proliferation. RENATO BASERGA. Temple Univ. Sch. of Med., Philadelphia, Pa.

Structure and Function of *v-sis*. STUART AARONSON. Nat. Cancer Inst., Bethesda, Md.

Platelet-Derived Growth Factor: Structure and Biological Activities in Normal and Transformed Cells. THOMAS DEUEL, JUNG HUANG, and SHUAN HUANG. Washington Univ. Sch. of Med., St. Louis, Mo.

Regulation of Gene Expression by Platelet-Derived Growth Factor. CHARLES STILES. Harvard Med. Sch., Boston, Mass.

Increased phosphorylation of Proteins on Tyrosine: a Common Effect of Some Retroviruses and Mitogens. JONATHAN COOPER. Salk Inst., San Diego, Calif.

Phosphotyrosine-Containing Proteins in Normal and Transformed Cells. MICHAEL WEBER. Univ. of Illinois, Urbana.

Translational Regulation

Convener: LAWRENCE M. GOLD. Univ. of Colorado, Boulder

Rules for Translational Repression. PETER H. VON HIPPEL. Univ. of Oregon, Eugene.

Regulation by RNA Phages. OLKE C. UHLENBECK. Univ. of Illinois, Urbana.

Regulation by DNA-Binding Proteins. PETER MODEL. The Rockefeller Univ., New York, N.Y.

Regulation of Bacteriophage T4 Replication Proteins. ERIC S. MILLER. Univ. of Colorado, Boulder.

Regulation of *Escherichia coli* Ribosomal Proteins. LASSE A. LINDAHL. Univ. of Rochester, Rochester, N.Y.

Repression of Host Translation After Bacteriophage T4 Infection. DAVID A. SHUB. SUNY, Albany, N.Y.

Transcriptional Regulatory Proteins

Convener: JACK GREENBLATT. Univ. of Toronto, Toronto, Ontario, Canada

Sigma Factors and Developmentally Regulated Genes in *Bacillus subtilis*. RICHARD LOSICK. Harvard Univ., Cambridge, Mass.

Activation of Transcription by the *cII* Protein of Bacteriophage λ . MARTIN ROSENBERG. Smith Kline and Beckman, King of Prussia, Pa.

Bacteriophage λ *cro* Repressor and Its Interactions with DNA. WAYNE ANDERSON. Univ. of Alberta, Edmonton, Alberta, Canada.