Policy for Announcements in the FJ Calendar

We will consider for advertising in the FJ Calendar any open meeting of a biological topic occurring in any location worldwide. Please send your announcement to the Executive Editor, The FASEB Journal, FASEB, 9650 Rockville Pike, Bethesda, MD 20814, USA. Your announcement should be restricted to: date (include year), title and location of meeting, contact address (with name if appropriate). We will advertise only meetings taking place more than 5 months after the date of receipt of the announcement. Meetings, symposia, and workshops will be included up to 2 years in advance; international congresses will be included up to 3 years in advance.

FJ Indicates new entry.

JUNE 1988

5-11 American Chemical Society, Toronto, Ontario, Canada. ACS Meetings Dept., 1155 16th St. NW, Washington, DC 20036, USA.

6-7 Perspectives on Nutrition Support, Baltimore, Maryland, USA. American Society for Parenteral and Enteral Nutrition, 8605 Cameron St., Suite 500, Silver Spring, MD 20910, USA.

6-8 Thirteenth National Nutrient Data Bank Conference, Framingham State College, Framingham, Massachusetts, USA. Dr. Charlene Hamilton, Chairperson, Dept. of Home Economics, Framingham State Coll., 100 State St., Framingham, MA 01701, USA.

6-10 1988 Annual Scientific Meeting of Undersea and Hyperbaric Medical Society, Fairmont Hotel, New Orleans, Louisiana, USA. Ms. Jane Dunne, Undersea and Hyperbaric Medical Society, 9650 Rockville Pike, Bethesda, MD 20814, USA.

6-10 In Vitro Toxicology: Principles and Methods, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.


8-10 70th Annual Meeting of The Endocrine Society, New Orleans, Louisiana, USA. The Endocrine Society, 9650 Rockville Pike, Bethesda, MD 20814, USA.

9-11 International Symposium on Immunotoxins, Sheraton University Center, Durham, North Carolina, USA. Ms. Rosemary Bornes, c/o Dr. Arthur Frankel, Duke Univ. Medical Center, Box 3898, Durham, NC 27710, USA.

12-15 International Symposium on Alzheimer's Disease, Kuopio, Finland. Prof. Paavo Riekkinen, Dept. of Neurology, Univ. of Kuopio, SF-70211 Kuopio, Finland.

12-16 Immunology and Immunopathology of the Alimentary Canal, 11th International Convocation on Immunology, Hyatt Regency Hotel, Buffalo, New York, USA. Dr. James F. Mohn, Director, The Ernest Witebsky Center for Immunology, 233 Sherman Hall, State Univ. of New York at Buffalo, Buffalo, NY 14214, USA.


12-16 Hormones, Thermogenesis and Obesity, University of Wisconsin, Madison, Wisconsin, USA. Steinbock Symposium, Inst. for Enzyme Research, Univ. of Wisconsin, Madison, WI 53706, USA.

12-17 Yeast RNA: Transcription, Splicing, Translation, Replication and Transposition, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

13-16 Biological Membranes in Cancer Cells, Le Tre Vasele Hotel, Torgiano, Perugia, Italy. New York Academy of Science Conference, Dr. A. Scarpas, Case Western Reserve Univ., Dept. of Physiology and Biophysics, Cleveland, OH 44106, USA.

13-17 DNA Sequencing and Hybridization Techniques for Characterization of Gene Structure and Expression, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.

15-18 Canadian Federation of Biological Societies (and Pharmacological Society of Canada, Canadian Society for Nutritional Sciences, and Society of Toxicology of Canada), Laval, Quebec, Canada. Robin Vander Klue, 575 King Edward Ave., Ottawa, Ontario, Canada KIN 7N5.

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<td>15-19 8th Annual Symposium of the American Society for the Immunology of Reproduction, Portland, Maine, USA. Dr. Neal Rote, Foundation for Blood Research, Box 190, Route 1, Scarborough, ME 04074, USA.</td>
<td>20-22 Midwest Regional Section Meeting of the Association of Official Analytical Chemists, Holiday Inn West, Columbia, Missouri, USA. George Rottinghaus, Univ. of Missouri, Columbia, Veterinary Medicine Diagnostic Laboratory, Columbia, MO 65211, USA.</td>
<td>27 Jun. Monoclonal Antibodies, London, UK. Histochemistry Unit, Dept. of Histopathology, Royal Postgraduate Medical Sch., Hammersmith Hospital, Du Cane Rd., London W12 0HS, UK.</td>
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<td>19-23 Molecular and Cellular Mechanisms of Antiarrhythmic Agents, Nashville, Tennessee, USA. Dr. Luc Hondeghem, Vanderbilt Univ., Cardiovascular Research Program, Rm. CC-2209 Medical Center N., Nashville, TN 37232, USA.</td>
<td>28-30 50th Annual Scientific Meeting of the Committee on Problems of Drug Dependence, Sea Crest Resort and Conference Center, North Falmouth, Massachusetts, USA. Dr. Martin W. Adler, Executive Secretary, CPDD, Dept. of Pharmacology, Temple Univ. Sch. of Medicine, 3420 N. Broad St., Philadelphia, PA 19140, USA.</td>
<td>29 Jun. Joint Italian-US Symposium on</td>
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<td>19-24 Retinoids, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.</td>
<td>Magnetic Resonance Imaging, Bethesda, Maryland, USA. In collaboration with the National Heart, Lung and Blood Institute, NIH. Organizing Secretariat, Fondazione Giovanni Lorenzini, Via Monte Napoleone, 23 – 20121 Milan, Italy.</td>
<td>3-7 Blood Coagulation and Platelet Biology, The Tufts University European Center, Talloires, France. Ms. Colleen J. Matan, Coordinator, Center for Hemostasis and Thrombosis Research, Box 832, New England Medical Center, 750 Washington St., Boston, MA 02111, USA.</td>
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3-8 Ultradian and Infradian Modulation of the Circadian System, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

3-8 Autoimmunity, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.


3-8 Sixth International Conference on Biochemistry and Biophysics of Cytochrome P-450, Vienna, Austria. Cosponsored by IUB. Dr. Ing Schuster, Sandoz Research Inst., Brunnerstrasse 59, A-1235 Vienna, Austria.

4-8 18th Lindenstrom-Lang Conference: Aspartic Proteinases: Biochemical, Physiological and Clinical Aspects of Pepsin, Chymosin, Renin and Related Proteinases, Elsinore, Denmark. Prof. Bent Foltmann, Inst. of Biochemical Genetics, Univ. of Copenhagen, Oster Farimagsgade 2A, 4., 1335 Copenhagen K., Denmark.

4-9 Conference on Bioractive Chromatography and Biotechnology, Mogilany, Poland. Satellite to IUB Congress in Prague. Dr. Grazyna Muszynska, Inst. of Biochemistry and Biophysics, Polish Academy of Sciences, 36 Rakowiea St., Warsaw, 02-532 Poland.


5-7 Immune Recognition of Protein Antigens, London, UK. The Scientific Meetings Secretary, The U.K. Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, UK.

6-8 Biotechnological Aspects of Protein Production by Cultured Cells, Prague, Czechoslovakia. Satellite symposium of 14th IUB Congress. Dr. F. Franek, Inst. of Molecular Genetics, Videsnka 1083 CS-142 20 Praha 4, Czechoslovakia.

6-9 Local Changes in DNA Structure and Their Biological Implications, Brno, Czechoslovakia. Satellite Meeting of the IUB. Dr. E. Palecek, Inst. of Biophysics, Czechoslovak Academy of Sciences, Kralovopolska 133 612 65 Brno, Czechoslovakia.

10-10 14th International Congress of Biochemistry, Prague, Czechoslovakia. Sponsored by IUB. 14th International Congress of Biochemistry, 166 50 Prague 6, Czechoslovakia.

6-11 15th Phospholipases, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

6-12 Regulation of Gene Expression in Higher Animals in Response to Hormones and Nutritional Substrates, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.


11-15 CRYO 88—25th Annual Meeting of the Society for Cryobiology, Aachen, FRG. Dr. Christoph Körber, Helmholtz-Institut für Biomedizinische Technik, Pauwelsstr., D-5000 Aachen, FRG.

11-15 Separation Techniques, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.

11-15 Yeast Molecular Genetics: Recombinant DNA and Other Experimental Approaches, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.

11-16 Design and Analysis of Scientific Experiments, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. Director of the Summer Session, Room E19-356, Massachusetts Institute of Technology, Cambridge, MA 02139, USA.

12-17 The International Congress on Natural Products Research, Prospector Hotel, Park City, Utah, USA. Cosponsored by the American and Japanese Societies of Pharmacognosy. Prof. Chris M. Ireland, Dept. of Medicinal Chemistry, 308 Skaggs Hall, Univ. of Utah, Salt Lake City, UT 84112, USA, or Dr. Yohei Hashimoto, President, Japan Society of Pharmacognosy, Kobe Women's Coll. of Pharmacy 4-19-1, Motoya-makita-Machi, Higashinada-Ku, Kobe 658, Japan.

12-17 Immunopharmacology, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

12-17 Molecular Biology and Infectious Diseases, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

12-17 8th International Biotechnology Symposium, Paris, France. International Convention Representatives, 35 W. 65th St., New York, NY 10023, USA.

12-17 8th International Congress of Endocrinology, Kyoto, Japan. The Secretary, 8th International Congress of Endocrinology, Travel Planners-Kyoto Congress, Suite 150, GPM Bldg., San Antonio, TX 78216, USA.
18–20 Biotechnological Aspects of Protein Production by Cultured Cells, Prague, Czechoslovakia, Satellite Meeting of the IUB. 14th International Congress of Biochemistry, 166 50 Prague 6, Czechoslovakia.

18–20 21st Century Prospects of Biotechnology in Agriculture and Environment, Slusovice, Czechoslovakia, Satellite Meeting of the IUB. 14th International Congress of Biochemistry, 166 50 Prague 6, Czechoslovakia.

18–20 10th Symposium on Biology, Biochemistry and Clinical Biochemistry of Lectins, Prague, Czechoslovakia, Satellite Meeting of the IUB. 14th International Congress of Biochemistry, 166 50 Prague 6, Czechoslovakia.

18–20 Cellular Pathology and Pharmacology, Budapest, Hungary. Dr. Jozsef Gaal, CHINOIN Pharmaceutical and Chemical Works Ltd., Research Centre, P.O. Box 110, 1325 Budapest, Hungary.

18–20 Fourth International Symposium on Selenium in Biology and Medicine, University of Tubingen, Tubingen, FRG. Dr. Albrecht Wendel, Physiologisch-Chemisches Inst. der Univ., Hoppe-Seyler-Str. 4, D-7400 Tubingen, FRG.


18–22 Protein and Nucleic Acid Separation Techniques for the Chemist, Catholic University of America, Washington, DC, USA. American Chemical Society, Continuing Education Dept., Short Course Session Code 599, 1155 16th St., NW, Washington, DC 20036, USA.

18–22 Immunocytochemistry, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.

18–29 The Jackson Laboratory and Johns Hopkins University Short Course in Medical and Experimental Mammalian Genetics, The Jackson Laboratory, Bar Harbor, Maine, USA. Genetics Course, Training and Education Office, The Jackson Lab., 600 Main St., Bar Harbor, Maine 04609, USA.

20–22 Annual General Meeting, Nottingham, UK. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.

20–23 International Symposium on Tachykinins, University of Graz, Graz, Austria. Dr. F. Lembcek, Tachykinin Symposium, Dept. of Pharmacology, University of Graz, Universitätsplatz 4, A-8010 Graz, Austria.

24–27 The Mammalian Myocardium — Biochemical and Physiological Mechanisms Underlying the Heartbeat, Leeds, UK. Dr. C. Orchard, Dept. of Physiology, The Worsley Medical and Dental Bldg., The University, Leeds LS2 9NQ, UK.

24–28 Sixth International Symposium on Calcium-Binding Proteins In Health and Disease, Hotel Nagoya Castle, Nagoya, Japan. Satellite symposium of 8th International Congress of Endocrinology. Secretariat, Sixth International Symposium on Calcium-Binding Proteins in Health and Disease, Dept. of Pharmacology, Nagoya Univ. Sch. of Medicine, Showaku, Nagoya 466, Japan.

24–29 Structure and Function of Cell Membranes, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

24–29 Trichothece, Blue-green Algal, and Marine Toxins: Mechanisms, Detection, and Therapy, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

24–29 Universities Associated for Research and Education in Pathology Teaching and Research Conference on Molecular Biology and Pathology, Copper Mountain, Colorado, USA. UAREP Teaching and Research Conference Coordinator, 9650 Rockville Pike, Bethesda, MD 20814, USA.


25–29 Immunochemistry, The Catholic University of America, Washington, DC, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.


25–29 1st World Congress of World Association of Veterinary Microbiologists, Immunologists and Specialists of Infectious Disease, Lyon, France. Prof. Y. Richard, WAVMI, École National Veterinaire de Lyon, Route de Sain Bel, Marcy-l’Étoile, 69260 Charbonnieres-les-Bains, France.

25–30 International Symposium on Mucus and Related Topics, Society for Experimental Biology, University of Manchester, UK. Dr. E. Chantler, Dept. of Obstetrics and Gynaecology, Univ. Hospital of South Manchester, Nell Ln., West Didsbury, Manchester M20 8LR, UK.

27–31 International Symposium on Inflammatory Heart Disease: A Multidisciplinary Approach to Myocarditis and Heart Allograft Rejection, Snowmass, Colorado, USA. Ms. Marge Ady, Center for Continuing Education, Univ. of Nebraska Medical Center, 42nd and Dewey Ave., Omaha, NE 68105, USA.
JULY 1988


31 Jul. Cellular and Molecular Genetics, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

31 Jul. Folate, Vitamin B-12 and One-Carbon Metabolism, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

31 Jul. 8th International Congress of Histochemistry and Cytochemistry, Omni Shoreham Hotel, Washington, DC, USA. Congress Secretariat, Dr. Constance Oliver, NIH-NIDR Bldg. 10, Rm. 1A23, Bethesda, MD 20892, USA.

31 Jul. Animal, Plant and Microbial Toxins, 9th World Congress of International Society on Toxinology, Oklahoma State University, Stillwater, Oklahoma, USA. Dr. C. L. Ownby, Dept. of Physiological Sciences, Oklahoma State Univ., Stillwater, OK 74078, USA.

AUGUST 1988

6-12 1988 World Congress on Medical Physics and Biomedical Engineering, San Antonio, Texas, USA. Dr. David T. Kopp, Secretary General, Dept. of Radiology, UTHSCSA, 7703 Floyd Curl Dr., San Antonio, TX 78284, USA.

7-12 Receptors, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

7-12 Endothelium and Cardiovascular Function, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

7-13 14th International Congress on Yeast Genetics and Molecular Biology, Espoo, Finland. Tarja Koistinen, Research Labs. Alko Ltd., POB 350, SF 00101, Helsinki, Finland.

8-11 XIIith Meeting of the International Society of Oxygen Transport to Tissue, Ottawa, Canada. K. Rakusan, Dept. of Physiology, Sch. of Medicine, Univ. of Ottawa, 451 Smyth Rd., Ottawa, Ontario, Canada K1H 8M5.

8-12 Fifth International Magnesium Symposium, Kyoto International Conference Hall, Kyoto, Japan. Professor Yoshinori Itokawa, Dept. of Hygiene, Faculty of Medicine, Kyoto Univ., Kyoto 606, Japan.


11-13 NATO Advanced Research Workshop on Cell and Molecular Biology of Artemia Development, Ramada Renaissance du Parc, Montréal, Quebec, Canada. Dr. A. H. Warner, Dept. of Biological Sciences, Univ. of Windsor, Windsor, Ontario, Canada N9B 3P4.

13-17 Second Symposium of The Protein Society, Sheraton East Hotel, San Diego, California, USA. Protein Symposium Secretariat, Ms. Shirley E. Schlessinger, 400 E. Randolph, Suite 1015, Chicago, IL 60601, USA.

14-18 39th American Institute of Biological Sciences Annual Meeting, University of California, Davis, California, USA. Ms. Louise Salmon, AIBS Meetings Dept., 730 11th St., NW, Washington, DC 20001, USA.

14-19 International Conference on Human Lactation, Melbourne University, Melbourne, Australia. Nursing Mothers’ Association of Australia, P.O. Box 231, Nunawading, Victoria 3131, Australia.

14-19 Electrophysiological Mechanisms of Propagation and Activation of Cardiac Muscle and Smooth Muscle, FASEB Summer Research Conferences, Saxtons River, Vermont, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.

14-19 Neoplastic Transformation of Liver Cells, FASEB Summer Research Conferences, Copper Mountain, Colorado, USA. Dr. Robert W. Krauss, Executive Director, FASEB Summer Conferences, 9650 Rockville Pike, Bethesda, MD 20814, USA.


15-19 General Principles in Toxicology and Toxicologic Pathology, Parker House Hotel, Boston, Massachusetts, USA. Dept. of Continuing Medical Education, Boston Univ. Sch. of Medicine, 80 E. Concord St., Boston, MA 02118, USA.

16-19 Groupe Polyphenols International Conference, Ontario, Canada. Dr. T. Fuleki, Horticul- tural Research Inst. of Ontario, Vineland Station, Ontario, Canada L0R 2E0.


17-20 29th Annual Drosophila Conference, University of Toronto, Toronto, Ontario, Canada. Dr. Ellen Larsen, Dept. of Zoology, Univ. of Toronto, 25 Harbord St., Toronto, Ontario, Canada M5S 1A1.


21-24 Bioavailability 88 — Chemical and Biological Aspects of Nutrient Availability, University of East Anglia, Norwich, UK. G. R. Fenwick, AFRC Inst. of Food Research, Norwich Lab., Colney Ln., Norwich, Norfolk NR4 7UA, UK.

21-25 Key Issues in Mental Retardation Research, 8th International Congress of the International Association for the Scientific Study of Mental Deficiency, Dublin, Ireland. Mr. John O’Gorman, Congress Chairperson, 8th World Congress, IASSMD, 12, Pembroke Park, Dublin 4, Ireland; or Dr. Michael Mulcahy, Stewarts Hospital, Palmerstown, Dublin 20, Ireland.

22-24 The Molecular Biology of Receptors, Pumps, and Channels: Pharmacological Targets, The Westin Hotel, Cincinnati, Ohio, USA. Satellite Symposium to ASPET meetings. Ms. Kathy Smidebusch, ASPET Satellite Symposium, Dept. of Pharmacology and Cell Biophysics, Univ. of Cincinnati Coll. of Medicine, 231 Bethesda Ave., Cincinnati, OH 45267, USA.

22-26 The Pharmacology of Thermoregulation, 7th International Symposium, The University of Odense, Odense, Denmark. Dr. Peter Lomax, Dept. of Pharmacology, UCLA Sch. of Medicine, Los Angeles, CA 90024, USA.


23-26 7th International Symposium on Mass Spectrometry in Life Sciences, State University of Ghent, Ghent, Belgium. Dr. A. De Leeheer, Lab. voor Medische Biochemie en voor Klinische Analyse, Harelbekestraat 72, B-9000 Gent, Belgium.

24-28 Cold Spring Harbor Laboratory Meeting on Mouse Molecular Genetics, Cold Spring Harbor, New York, USA. Meetings Coordinator, Cold Spring Harbor Lab., Cold Spring Harbor, NY 11724, USA.

25-28 Annual North American Association for the Study of Obesity Meeting, Banff, Alberta Canada. [FJ] Henry Koopmans, Univ. of Calgary, Health Sciences Center, 3330 Hospital Dr., N.W., Alberta, Canada T2N 4N1.


29 Aug. 102nd Annual International Meeting and Exposition of Association of Official Analytical Chemists, The Breakers, Palm Beach, Florida, USA. Ms. Margaret Ridgell, AOAC, 1111 N. 19th St., Suite 210, Arlington, VA 22209, USA.


31 Aug. Symposium on Cholecystokinin, CCK ’88, Robinson College, Cambridge, UK. Prof. G. J. Dockray, Physiological Laboratory, Univ. of Liverpool, Brownlow Hill, PO. Box 147, Liverpool L69 3BX, UK.


SEPTEMBER 1988

3-7 Advances in Liquid Chromatography: 8th Annual American Eastern European Colloquium and Symposium on Liquid Chromatography, Szeged, Hungary. Dr. Huba Kalász, Dept. of Pharmacology, Semmelweis Univ. of Medicine, Budapest VIII. Nagyváradi tér 4, Hungary 1089.

4-7 The International Congress on Forensic Sciences, Beijing, China. Office of International Congress on Forensic Sciences, China Express Congress Limited, 1201-2 Energy Plaza, 92 Granville Rd., Tsimshatsui East Kowloon, Hong Kong.

4-8 8th International Congress of Eye Research, Hyatt Regency Hotel, San Francisco, California, USA. 8th ICER Secretariat, Stanford Univ. Medical Center, Rm. S-030, Stanford, CA 94305, USA.

4-9 XVIII World's Poultry Congress and Exhibition, Nagoya, Japan. XVIII World's Poultry Congress and Exhibition, c/o International Congress Service, Kaso Bldg., 2-14-9 Nihombashi Chuo-Ku, Tokyo, Japan 103.

5-7 Eleventh International Conference on Oral Biology: Chemical Control of Plaque, Hotel Furama Intercontinental, Hong Kong. International Association for Dental Research, 1111 14th St., NW, Suite 1000, Washington, DC 20005, USA.

5-10 Workshop on the Molecular Biology and Molecular Genetics of Lepidoptera, Kolymbarti, Crete, Greece. Dr. Marian R. Goldsmith, Dept. of Zoology, Univ. of Rhode Island, Kingston, RI 02881, USA.

6-9 Protein Targeting, 8th John Innes Symposium, John Innes Institute and University of East Anglia, Norwich, Norfolk, UK. J. Fox, Symposium Secretary, John Innes Inst., Colney Ln., Norwich NR4 7UH, UK.
7-9 Prenatal Abuse of Licit and Illicit Drugs, Hyatt Regency Hotel, Bethesda, Maryland, USA. Conference Dept., The New York Academy of Sciences, 2 E. 63rd St., New York, NY 10021, USA.


8-9 British Nutrition Society Meeting on the Interaction between Nutrition and Inflammation, University of Southampton, UK. Dr. R. Grimble, Univ. of Southampton, Sch. of Biochemical Sciences, Medical and Biological Sciences Bldg., Bas- sett Crescent E., Southampton SO9 3TU, UK.


11-17 Thermodynamics Applied to Biological Systems, Santa Margherita Ligure, Italy. Co-sponsored by IUB. Prof. Giovanni Rialdi, Centro Studi Chimico Fisici Macromolecole CNR, Corso Europa 30, 16132 Genova, Italy.

12-13 2nd International Symposium on Lipid Metabolism in the Normoxic and Ischemic Heart, Maastricht, The Netherlands. Dr. G. J. van der Vusse, Dept. of Physiology, Univ. of Limburg, PO. Box 616, 6200 MD Maastricht, The Netherlands.


13-16 Fourth International Conference of the International Organization of Psychophysiology, Prague, Czechoslovakia. Prof. Tomas Radil, Czechoslovak Academy of Sciences, Inst. of Physiology, 142 20 Praha 4-KRC Videnka 1083, Czechoslovakia.

13-17 Ninth European Immunology Meeting, Rome, Italy. Organizing Secretariat, MGA Via P. Cossa, 41 00193, Rome, Italy.

14-15 Seventh Annual Symposium on Geriatrics and Gerontology: Endocrine, Function and Aging, Clarion Hotel, St. Louis, Missouri, USA. Symposium Secretary, VA Med. Center, GRECC(HIIG-JB), St. Louis, MO 63125, USA.

14-16 Meeting of the British Electrophoresis Society, Glasgow, Scotland. Dr. J. A. Beeley, Oral Biology Group, Glasgow Dental Hospital and Sch., 378 Sauchiehall St., Glasgow, UK.


15-17 IX European Meeting of the International Society for Heart Research, Oxford, UK. Prof. David J. Hearse, Cardiovascular Research, Rayne Inst., St. Thomas' Hospital, London SE1 7EH, UK.

17-18 Nutrition in the Pathogenesis and Treatment of Organ Failure, Clarion Hotel, New Orleans, Louisiana, USA. ASCN Postgraduate Course, 9500 Rockville Pike, Bethesda, MD 20814, USA.

19-22 29th International Conference on the Biochemistry of Lipids, Tokyo, Japan. Prof. Y. Seyama, Dept. of Physiological Chemistry and Nutrition, Faculty of Medicine, Univ. of Tokyo, Bunkyo-ku, Tokyo 113, Japan.


21-23 Galway Meeting, University College, Galway, Ireland. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.


25-30 196th Annual Meeting of the American Chemical Society, Los Angeles, California, USA. ACS Meetings Dept., 1155 16th St. NW, Washington, DC 20036, USA.

26-29 XIIIth European Symposium on Hormones and Cell Regulation, Sainte-Odile, France. Prof. R. M. Denton, Dept. of Biochemistry, Univ. of Bristol Sch. of Medicine, University Walk, Bristol BS8 1TD, UK.

26-29 11th International CODATA Conference, Karlsruhe Congress and Exhibition Centre, Karlsruhe, FRG. DEHEMA, Attn. CODATA Conference, PO. Box 97 01 46, D-6000 Frankfurt/M.97, FRG.


28-30 The Boundaries Between Promotion and Progression During Carcinogenesis, Sheraton Beachwood, Cleveland, Ohio, USA. Ms. Christine Scullic, Cancer Research Center, Case Western Reserve Univ., 2040 Adelbert Rd., Cleveland, OH 44106, USA.


2518 FJ CALENDAR
OCTOBER 1988

2-5 Symposium on Advances in Recombinant DNA Methodology: Genetic Engineering and the Immune System, Lake Tahoe, Nevada, USA. Dr. Roland M. Nardone, The Catholic Univ. of America, The Center for Advanced Training in Cell and Molecular Biology, Washington, DC 20064, USA.

2-5 Fifth International Symposium on Immunobiology of Proteins and Peptides: Vaccines, Chateau Lake Louise, Alberta, Canada. Dr. M. Z. Atassi, 219E Anderson Hall, Texas Med. Center, Houston, TX 77030, USA.

2-5 Fifth American Motility Society Symposium and Symposium on Cell Membrane Receptors, Asilomar, California, USA. Dr. William J. Snape, Jr., Harbor-UCLA Medical Center, 1124 W. Carson St., A-4 Annex, Torrance, CA 90502, USA.

2-7 1988 World Congress and Expo on Vegetable Protein for Human and Animal Use, Westin Stamford/Plaza Hotel, Raffles City, Singapore. Meetings Manager, American Oil Chemists' Society, P.O. Box 3489, Champaign, IL 61821, USA.

2-7 2nd International Conference on Biochemical Separations, Keszthely, Hungary. MTESZ, Hungarian Biochemical Society, P.O. Box 240, H-1368, Budapest, Hungary.

3-5 Molecular Biology of Hormone Action in Endocrinology and Pharmacology, Milan, Italy. Organizing Secretariat, Fondazione Giovanni Lorenzini, Via Monte Napoleone 23, 20121 Milan, Italy.

3-5 Conference on Listeria Monocytogenes, Rohnert Park, California, USA. Ms. Ann Kulback, Society for Industrial Microbiology, P.O. Box 12534, Arlington, VA 22209, USA.

9-12 Joint Meeting of the 11th Rochester Trophoblast Conference and The European Placenta Group, Rochester Plaza Hotel, Rochester, New York, USA. Dr. Richard K. Miller, 11th RTC/EPG, The Univ. of Rochester, Box 668, 601 Elmwood Ave., Rochester, NY 14642, USA.

9-12 22nd Annual Meeting of the Society of Research Administrators, Boston Park Plaza Hotel, Boston, Massachusetts, USA. SRA, 1505 4th St., Suite 203, Santa Monica, CA 90401, USA.

9-13 8th International Symposium on Atherosclerosis, Rome, Italy. Dr. G. Crepaldi, Symposium Chairperson, c/o Organizing Secretariat, Centro Italiano Congressi C.I.C., Via L. Spallanzani, 11, 00161, Rome, Italy.

9-14 Annual Fall Meeting of The American Physiological Society/ American Society for Pharmacology and Experimental Therapeutics, Montreal, Quebec, Canada. FASEB Office of Scientific Meetings, 9650 Rockville Pike, Bethesda, MD 20814, USA.


10-14 Sixth International Neurotoxicology Conference: Drug Abuse and Brain Development, Little Rock, Arkansas, USA. Dr. Joan M. Cranmer, Dept. of Pediatrics 512, Univ. of Arkansas for Medical Sciences, Little Rock, AR 72205, USA.

11-15 39th Annual Meeting of The American Society of Human Genetics, New Orleans, Louisiana, USA. Ms. Peggy Gardiner, Meetings Manager, ASHG Administrative Office, 9650 Rockville Pike, Bethesda, MD 20814, USA.

12-14 International Symposium on Biological and Synthetic Membranes, Lexington, Kentucky, USA. Prof. D. Allan Butterfield, Center of Membrane Sciences, 12 Bradley Hall, Univ. of Kentucky, Lexington, KY 40506, USA.


16-21 XIII International Congress of Allergology and Clinical Immunology, Montreux, Switzerland. Congress Secretariat, XIII ICACI, 611 E. Wells St., Milwaukee, WI 53202, USA.

18-20 L. W. Frohlich Award Conference — Under the Volcano: Biomedical Science and the Third World, The Rockefeller University, New York City, USA. Conference Director, The New York Academy of Sciences, 2 E. 63rd St., New York, NY, USA.

23-26 First National Symposium on New Crops: Research, Development, Economics, Adam's Mark Hotel, Indianapolis, Indiana, USA. Continuing Education Business Office, Room 110, Stewart Center, Purdue Univ., West Lafayette, IN 47907, USA.


25-28 International Conference on Gastroenteric Biology, Oxnard, California, USA. Ms. Joyce Fried, Brain Research Inst., Univ. of California, Center for the Health Sciences, Los Angeles, CA 90024, USA.

30 Oct. Cellular and Molecular Mode of Action of Selected Microbial Toxins in Foods and Feeds, Washington, DC, USA. Dr. A. E. Pohland, HFF-452, Food and Drug Administration, 200 C St., SW, Washington, DC 20204, USA.

NOVEMBER 1988

3-5 Annual Meeting of the Society for Complex Carbohydrates, San Antonio, Texas, USA. A. D. Elbein, Dept. of Biochemistry, Univ. of Texas Health Science Center, 7703 Floyd Curl Dr., San Antonio, TX 78282, USA.

6-9 International Symposium on Clinical, Biochemical and Molecular Aspects of Fatty Acid Oxidation, Penn Tower Hotel, Philadelphia, Pennsylvania, USA. Dr. Paul M. Coates, Div. of Genetics, The Children's Hospital of Philadelphia, 34th St. and Civic Center Blvd., Philadelphia, PA 19104, USA.

8-10 The 9th International Conference on the Cardiovascular System Dynamics Society, Chaum Hotel Halifax, Halifax, Canada. Dr. Gerald A. Klaassen, Rm. 5005 A.C.C., Victoria General Hospital, 1278 Tower Rd., Halifax, Nova Scotia, Canada B3H 2Y9.

11-12 Role of the Ventrolateral Medulla in Autonomic Regulation, London, Ontario, Canada. Dr. J. Ciriello, Dept. of Physiology, Health Sciences Centre, The Univ. of Western Ontario, London, Ontario, Canada N6A 5C1; or Dr. C. Polosa, Dept. of Physiology, McGill Univ., McIntyre Medical Sciences Bldg., Montreal, Quebec, Canada H3G 1Y6.


16-18 α-Keto Acid Dehydrogenase Complexes: Organization, Regulation, and Biomedical Aspects, Radisson Plaza Hotel, Austin, Texas, USA. Conference Dept., The New York Academy of Sciences, 2 E. 63rd St., New York, NY 10021, USA.

28-29 SRA/NIH Grants Administration Seminar, San Francisco, California, USA. Society of Research Administrators, 1505 4th St., Suite 203, Santa Monica, CA 90401, USA.

DECEMBER 1988

4-9 2nd International Conference on Mechanisms of Antimitogenesis and Anticarcinogenesis, Ohito Hotel, Ohito, Japan. Dr. Yukiaki Kuroda, National Inst. of Genetics, 1,111, Yata, Mishima, Shizuoka 411, Japan.

12-14 Regulation of the Acute Phase and Immune Responses: A New Cytokine, The Sheraton Centre, New York City, USA. Conference Dept., The New York Academy of Sciences, 2 E. 63rd St., New York, NY 10021, USA.

15-18 Mechanisms and Regulation of Anion and Proton Transport, Sheraton Centre, New York City, USA. Conference Director, The New York Academy of Sciences, 2 E. 63rd St., New York, NY, USA.

19-21 London Meeting of The Biochemical Society, Royal Free Hospital of Medicine, London, UK. Meetings Office, The Biochemical Society, 7 Warwick Court, London, WC1R 5DP, UK.

JANUARY 1989

5-6 Society for General Microbiology Irish Branch Meeting, Maynooth College, Dublin, Ireland. Dr. C. S. Dow, Dept. of Biological Sciences, Univ. of Warwick, Coventry, CV4 7AL, UK.

12-19 Frontiers of NMR in Molecular Biology, Park City, Utah, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

14-20 Role of Glycosylation in Cellular Interactions, Frisco, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

17-22 Protein and Pharmaceutical Engineering, Park City, Utah, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

19-26 New Directions in Biological Control, Park City, Utah, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

21-27 Growth Regulation of Cancer-II, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

21-27 Genetic Mechanisms in Carcinogenesis and Tumor Progression, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

21-28 Immunogenecity, Steamboat Springs, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

23-24 Insulin, IGFs and their Receptors: Molecular, Cellular and Functional Aspects, University of Florida, Gainesville, Florida, USA. Dr. Derek LeRoith, Diabetes Branch, NIDDK, Bldg. 10, Rm. 8S-243, NIH, 9000 Rockville Pike, Bethesda, MD 20892, USA.

28 Jan. Embryo Manipulation and Gene Transfer in Experimental and Domestic Animals, Taos, New Mexico, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

28 Jan. Early Embryo Development and Paracrine Relationships, Taos, New Mexico, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.
FEBRUARY 1989

3–10 Cellular and Molecular Biology of Normal and Abnormal Erythroid Membranes, Taos, New Mexico, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

4–11 Human Retroviruses, Tamarron, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

5–9 Royal Australian Chemical Institute Symposium on Advances in Biomedical Polymers, Observation City, Perth, Western Australia. The Secretary, W. A. Polymer Group, Royal Australian Chemical Inst., 125 Hay St., Perth WA 6000, Australia.


13–17 International Conference on Fats, University of Auckland, Auckland, New Zealand. Dr. L. Eyres, International Conference on Fats, c/o Chemistry Dept., Univ. of Auckland, Private Bag, Auckland, New Zealand.

20–26 Hematopoiesis, Tamarron, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

21–26 Defense Molecules, Lake Tahoe, California, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

MARCH 1989

11–18 Papillomaviruses, Taos, New Mexico, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

12–19 Developmental Biology, Tamarron, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

19–24 73rd Annual Meeting of the Federation of American Societies for Experimental Biology, New Orleans, Louisiana, USA. FASEB Office of Scientific Meetings, 9650 Rockville Pike, Bethesda, MD 20814, USA.

27 Mar. Biotechnology and Human Genetic Predisposition to Disease, Steamboat Springs, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

27 Mar. Molecular Mechanisms in DNA Replication and Recombination, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

29 Mar. International Symposium on serotonin from Cell Biology to Pharmacology and Therapeutics, Florence, Italy. Secretariat, Dr. N. Brunello, Inst. of Pharmacological Sciences, Univ. of Milan, Via Balzaretti, 9, 20133 Milan, Italy.

31 Mar. Nucleic Acid Methylation, Frisco, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

APRIL 1989

1–7 Plant Gene Transfer, Park City, Utah, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

2–7 VI World Congress on In Vitro Fertilization and Embryo Transfer, Jerusalem, Israel. Congress Secretariat, VI World Congress, In Vitro Fertilization and Embryo Transfer, P.O. Box 50006, Tel Aviv 61500, Israel.

3–9 Molecular and Cellular Biology of Yeasts and Filamentous Fungi, Steamboat Springs, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

3–10 Parasites: Molecular Biology, Drug and Vaccine Design, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

4–7 Society for General Microbiology Easter Meeting, University of Cambridge, UK. Dr. C. S. Dow, Dept. of Biological Sciences, Univ. of Warwick, Coventry CV4 7AL, UK.

9–14 American Chemical Society, Dallas, Texas, USA. ACS Meetings Dept., 1155 16th St. NW, Washington, DC 20036, USA.

10–17 Molecular Biology of the Cardiovascular System, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

12–14 Aberystwyth Meeting of the Biochemical Society, Aberystwyth, Wales. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.

17–23 Obesity: Towards a Molecular Approach, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

17–24 Structural and Organization Aspects of Metabolic Regulation, Keystone, Colorado, USA. UCLA Symposium, 103 Molecular Biology Inst., Univ. of California, Los Angeles, CA 90024, USA.

20–22 International Atherosclerosis Congress, Hofburg, Vienna, Austria. Dr. G. M. Kostner, Medical Biochemistry, Univ. of Graz, Harrachgasse 21, A-8010 Graz, Austria.
MAY 1989

14-18 XIII Congress of the International Society for Heart Research, in conjunction with the ISHR-American Section Meeting: Pharmacologic Mechanisms and Heart Disease, The University of Michigan, Ann Arbor, Michigan, USA. Miss Glenda Radine, Univ. of Michigan Extension Service, Dept. of Conferences and Institutes, 200 Hill St., Ann Arbor, MI 48104, USA.

24-27 Eightieth Annual Meeting of the American Association for Cancer Research, San Francisco, California, USA. Margaret Foti, Executive Director, AACR, Temple Univ. School of Medicine, West Bldg., Rm. 301, Broad and Tioga Sts., Philadelphia, PA 19140, USA.


JUNE 1989

4-9 V International Conference on AIDS, Convention Center, Montréal, Canada. Secretariat, Kenness Canada Inc., P.O. Box 120, Station B, Montréal, Québec, Canada H3B 3J5.

JULY 1989

23-27 International Symposium on Developmental Neurosciences, Beijing, China. Dr. Ramon Lim, Division of Neurochemistry and Neurobiology, Dept. of Neurology, Univ. of Iowa, Iowa City, IA 52242, USA.

23-28 4th World Conference on Clinical Pharmacology and Therapeutics, Mannheim-Heidelberg, FRG. Contact CPT 89, c/o GKV, Congress and Conventions, P.O. Box 100619, D-6050 Offenbach 1, FRG.

29 Jul. Third Symposium of The Protein Society, University of Washington, Seattle, Washington, USA. Protein Symposium Secretariat, Ms. Shirley E. Schlesinger, 400 E. Randolph, Suite 1015, Chicago, IL 60601, USA.

30 Jul. 7th International Congress of Immunology, Berlin, FRG. DER Congress Organization, Augsburger Str. 27, D-1000 Berlin 30, FRG.

AUGUST 1989


7-11 Conference on the Biochemistry and Genetics of Ribosomes, East Glacier, Montana, USA. Professor Walter E. Hill, Dept. of Chemistry, Univ. of Montana, Missoula, MT 59812, USA.


SEPTEMBER 1989

7-9 10th European Section Meeting, International Society for Heart Research, Rotterdam, The Netherlands. Dr. J. W. de Jong, Cardiochemical Lab./Thoraxcenter, Erasmus Univ. Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands.

10-15 American Chemical Society, Miami Beach, Florida, USA. ACS Meetings Dept., 1155 16th St. NW, Washington, DC 20036, USA.

19-22 Cork Meeting of The Biochemical Society, University College, Cork, Ireland. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.

24-29 10th International Conference on Enzyme Engineering, Kashikojima, Japan. Engineering Foundation, 345 E. 47th St., New York, NY 10017, USA.

25-28 103rd Annual International Meeting and Exposition of Association of Official Analytical Chemists, The Clarion Hotel, St. Louis, Missouri, USA. Ms. Margaret Ridgell, AOAC, 1111 N. 19th St., Suite 210, Arlington, VA 22209, USA.

OCTOBER 1989

1-6 13th World Congress on Fertility and Sterility, Casablanca, Morocco. Congress Secretariat, Société Marocaine de Fertilité-Contraception, P.O. Box 12537, AINDIAB, Casablanca, Morocco.

4-6 4th International Conference on Immunobiology and Prophylaxis of Human Herpesvirus Infections, Fukuoka, Japan. Dr. Ryoichi Mori, Dept. of Virology, Sch. of Medicine, Kyushu Univ., Fukuoka 812, Japan, or Dr. Bernard Roizman, Dept. of Virology, The Univ. of Chicago, 910 E. 58th St., Chicago, IL 60637, USA.

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<thead>
<tr>
<th>MONTH 1989</th>
<th>MAY 1990</th>
<th>APRIL 1991</th>
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<tr>
<td>8-11 Tenth International Symposium on Drugs Affecting Lipid Metabolism, Westin Galleria Hotel, Houston, Texas, USA. Dr. Louis C. Smith, International Meeting Managers, Inc., 4550 Post Oak Pl., Suite 248, Houston, TX 77027, USA.</td>
<td>29 May 7th International Conference on Prostaglandins and Related Compounds, Florence, Italy. Organizing Secretariat, Fondazione Giovanni Lorenzini, Via Monte Napoleone, 23 — 20121 Milan, Italy.</td>
<td>14-19 75th Annual Meeting of the Federation of American Societies for Experimental Biology, Atlanta, Georgia, USA. FASEB Office of Scientific Meetings, 9650 Rockville Pike, Bethesda, MD 20814, USA.</td>
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<td>11-15 40th Annual Meeting of The American Society of Human Genetics, Baltimore, Maryland, USA. Ms. Peggy Gardiner, Meetings Manager, ASHG Administrative Office, 9650 Rockville Pike, Bethesda, MD 20814, USA.</td>
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<td>MAY 1991</td>
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<td>DECEMBER 1989</td>
<td>18-20 London Meeting of The Biochemical Society, St. Bartholomew's Hospital Medical School, London, UK. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.</td>
<td>15-18 Eighty-Second Annual Meeting of The American Association for Cancer Research, Houston, Texas, USA. Margaret Foti, Executive Director, AACR, Temple Univ. School of Medicine, West Bldg., Rm. 301, Broad and Tioga Sts., Philadelphia, PA 19140, USA.</td>
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<td>APRIL 1990</td>
<td>3-6 Bath Meeting of The Biochemical Society, Bath, UK. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.</td>
<td>4-6 Edinburgh Meeting of The Biochemical Society, Heriot Watt, Edinburgh, Scotland. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.</td>
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<td>MAY 1990</td>
<td>23-26 Eighty-First Annual Meeting of the American Association for Cancer Research, Washington, DC, USA. Margaret Foti, Executive Director, AACR, Temple Univ. School of Medicine, West Bldg., Rm. 301, Broad and Tioga Sts., Philadelphia, PA 19140, USA.</td>
<td>MAY 1991</td>
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<td>1990</td>
<td>10-12 Reading Meeting of The Biochemical Society, Reading, UK. Meetings Officer, The Biochemical Society, 7 Warwick Court, London WC1R 5DP, UK.</td>
<td>AUGUST 1993</td>
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<tr>
<td>APRIL 1991</td>
<td>1990</td>
<td>22-27 XVth International Congress of Nutrition, Adelaide, Australia. Dr. R. M. Smith, General Secretary, CSIRO Division of Human Nutrition, Kintore Ave., Adelaide, South Australia 5000.</td>
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Reviewed by Stephen J. Proustka, Departments of Neurology and Pharmacology, Stanford University School of Medicine, Stanford, California 94305, USA

The field of neurotoxicology represents one of the most active areas of current neuroscience research. One of the major reasons for the recent interest in this subject is that the term neurotoxicology encompasses an extremely broad range of research. This monograph attempts to provide an overview of this area and is based on the Biological Council Symposium on Neurotoxins and Their Pharmacological Implications held in London in April, 1986. The underlying premise of this book, as described by its editor, Peter Jenner, is to "show neurotoxins to be a key means of tackling many disorders of the nervous system."

The book succeeds in this task by addressing neurotoxicology from four main viewpoints.

The first section of the book deals with sight-directed neurotoxicity and is focused largely on excitatory neurotransmission. The reviews by Collins, Schwarz et al., and Meldrum are excellent. Each of the three chapters discusses the potentially neurotoxic effects of excitatory neurotransmitters in the pathophysiology of various human disorders. For example, drugs that modulate excitatory neurotransmission may be useful in the prevention and/or treatment of anoxia, hypoglycemia, epilepsy, and neurodegenerative disorders such as Huntington's chorea. There is minimal overlap between these three chapters because each of the authors approaches the material from a different perspective. At the same time it should be noted that because of the rapid and recent scientific developments in the analysis of excitatory amino acid neurotransmission, these chapters have become outdated. Nonetheless, this section of the book provides an excellent and well-referenced historical introduction to this exciting field.

The second section of the book deals with neurotoxins as probes for ion channels. The chapters contain a large amount of biophysical data. No attempt is made to discuss the possible clinical applications of this type of research. The chapters are generally well written but are less likely to be of interest to the general reader.

The third section of the book deals with MPTP-induced parkinsonism. The chapters in this section may be considered the highlight of the book. The section begins with an historical overview of MPTP by J. William Langston. Langston's discovery of "MPTP-induced Parkinsonism" led to a literal explosion of scientific interest in this neurotoxic compound. Langston's description of the chronological set of events that led to the discovery of this unique human disorder is quite interesting and unavailable in most previous scientific articles. The scientific data derived from animal studies using MPTP are clearly discussed in the chapters by Kopin, Jenner et al., and Sandler et al. Overall, this section of the book provides a clear overview of the scientific information concerning this unique compound. Moreover, the story of MPTP is the most dramatic current example of a neurotoxin that has had a significant impact on both the scientific and clinical evaluation of a human disease state. Also of note is the fact that research interest in MPTP has apparently peaked in the past 2 years so that this section of the book contains a well-referenced and reasonably up-to-date discussion of MPTP-induced parkinsonism.

Finally, the book concludes with a section on clinical and pharmacological implications for neurotoxins. The chapters are unrelated and include discussions of neurotoxins for nicotinic receptors, botulinum toxin, capsacin, and polychlorinated phenols. The chapters vary in their relevance to human disease states but are mostly relevant to the overall theme of the book.

In summary, Neurotoxins and Their Pharmacological Implications is an ambitious attempt to provide an overview of neurotoxicology in mid-1986. The weaknesses of the text involve its failure to provide a unifying theme throughout its many chapters. At the same time, the book does succeed in providing the reader with an excellent overview of the large and evolving field of neurotoxicology. Because of the rapidity at which this field is moving, the book should be most valuable for researchers and graduate students who would like a well-referenced and clearly written overview of these topics. As such, this book would be an excellent addition to the library of interested neuroscientists.


Reviewed by Sidney W. Fox, Institute for Molecular and Cellular Evolution and Department of Biology, Miami, Florida 33177, USA

The book Molecular Evolution of Life edited by Herrick Baltscheffsky, Hans Jornvall, and Rudolf Rigler is derived from a conference held near Stockholm in September, 1985. The book is divided into four sections: Prebiotic Systems and Evolutionary Pathways, Nucleic Acids and Informational Systems, Proteins and Enzymatic Functions, and Complex Systems and Organization. The majority of the almost 50 papers are soundly based and are rich in information. Evolutionary overviews, however, are most effective when they are unfragmented. Can the reader infer an integration from the total contents of this book?

The answer to this question is illustrated by the statement (p. 82) of John Shepherd, "The attempt to delve back to the origins of life and draw conclusions about the subsequent development is handicapped by the enormous number of unknown factors." This assessment is a reflection of what may be called the Eigen paradigm: random matrix (until recently), the application of back-extrapolation (delving back) from modern biochemistry, Darwinian evolution of an unlimited number of variants, nucleic acids-first, proteins-later, and cells-last. Experiments in a prebiotic and protobiotic mode indicate that these assumptions about ancient chronology are all in the direction opposite to evolution itself, which is forward. The alternatives are relatively abundant in the literature almost as if they had been selected against so the survivor could comport with the paradigm presented. Understanding the course of macroevolution, however, requires a retraction rather than an inversion, and this is a fundamental criticism that applies to the discontinuity that splits the contents of this book. Also, the problems identified on p. 13 (in Eigen's article on the physics of molecular evolution) have largely been answered, but they have been answered outside of the context presented in the first several articles.

A subtle form of back-extrapolation stems from experiments done with today's enzymes and other modern materials. When theoretical-type authors such as Oparin and Eigen have moved from speculation to experiments, they have failed to identify principles of evolution because they base their inferences on what has been learned by analysis only. Unfortunately, only modern systems at hand can be analyzed for evolutionary purposes. The mechanism of breakdown used in these analyses, and which these students must then rely on, is very different from the mechanism of synthesis. Experimental evolutionary retraction, however, has pioneered in revealing principles of origins—e.g., stepwiseness from the outset, self-ordering of monomers, self-organization of polymers, conceptual bene
fit from nonrandomness, etc. These are factors of both biochemistry and a disciplined molecular evolution; they are missing from the book, but they are not unknown as Shepherd, understandably, infers.

In his paper, Eigen (p. 25) states that "we have learned from our theories (that the) value landscape is not random." This is at long last a reversal of an emphasis of about 15 years; it does not reflect the fact that the experiments done in the context of the proteins-first paradigm have made this point for 30 years.

The latter part of the anthology (from about p. 70 on) deals with descent by modification at the molecular level. This entails much valuable information obtained from sequence assignment methods, mostly for amino acid but also for nucleotide residues. Such reports do not arouse difficulties of the choice of approach.

The alternative paradigm not included here (1) demonstrates necessity between prebiotic evolution and biotic evolution via proteins, and also explains some of the ways in which origins set the stage for later molecular evolution of life. Moreover, comprehensive evidence has been reported that an ancient self-ordering of amino acids to inform proteins has been inherited through 3 to 4 billion years (2). This newer information promises also to broaden the understanding of contemporary protein synthesis. It will be of interest to see how much new knitting of overlapping topics will occur when this other paradigm is tested on the contents of the papers included.

The papers in the latter part of this book provide additional knowledge on topics such as DNA decoding, structure of genes, RNA splicing, ionic channels, hormones, enzymes, proteolysis, photosynthesis, energy coupling, immunology, morphology, and other topics of biochemistry and molecular evolution.

As examples of the numerous papers in this anthology, Lake et al. (UCLA) explain how evolution can be mapped with the aid of ribosomal structures. Dickerson et al. (also of UCLA) discuss readout of DNA and how the machinery for that process may have evolved through control proteins and major and minor information grooves. Mutt of the Karolinska Institute reviews comprehensively questions answered by sequence studies of gastrointestinal and cerebrogastrointestinal nucleotides; he also discusses new questions. Mutt makes a strong case for the value of the advances in knowledge of sequence and conformations of peptide hormone receptors to yield new insight into evolutionary relationships of peptides. The Balscheffskys and associates explain the evolutionary position of the polyphosphate (PP) synthase system. The fact that the ATPase system is more complex than the PPase system is being used to help explain molecular evolutionary developments. Wedell et al. (Umeå) find that the "common complex genome organization of adenoviruses of different host species are taken as evidence for a common origin of adenoviruses."

Even when not properly supplemented, this book will provide a rich source of readings for the student interested in becoming aware of the many facets of current knowledge of biochemistry and molecular biology of living things in a context of microevolution.

The book would have been more useful if an index had been constructed.

REFERENCES


Reviewed by Jack F. Kirsch, Department of Biochemistry, University of California, Berkeley, California 94720, USA

This volume contains a well-chosen collection of structurally based mechanistic reviews of enzymes for which excellent X-ray structures are available. The senior authors are generally the crystallographers responsible for the structures who bring many years of experience to their topic. All of the articles are good, and a couple may be considered definitive. The editors discuss the emerging opportunities that genetic engineering now provides for future ventures into new industrial processes and pharmacology, which they reason must be launched from a foundation of solid structural information integrated with mechanistic data. Most of the authors have followed these dicta and the reviews, although to some degree about unrelated enzymes, do coalesce about this theme. The volume is titled "Active Sites of Enzymes" but the extent of adherence to this localized geography varies considerably. Three of the four principal classes of proteolytic enzymes are covered: the thioproteases (Baker and Drenth), trypsin (Kossiakoff), and aspartate proteases (James and Sielecki).

Papain and actinidin, which have very closely related structures, also have highly refined X-ray data available (1.65-1.7 Å resolution). Almost all mechanistic work has been done with papain. The authors comprehensively discuss the evidence for the role of the histidine-cysteine ion pair in catalysis and make excellent use of nature's site-directed experiment (i.e., papain vs. actinidin) in interpreting minor differences in such aspects as pH profiles. Comparison of these two enzymes with other members of this class relegates Asp58, proposed originally as the Brønsted catalyst, to a substrate specificity role. Kossiakoff concentrates heavily on the active site and catalytic mechanism of trypsin, dealing exceptionally well with the role of the catalytic triad — Asp102, His57, and Ser195. He addresses the difficulty of assigning pKₐ's and catalytic functions to the first two residues. His neutron diffraction experiments appear to resolve the argument conclusively in favor of histidine as the catalytic base. Kossiakoff discusses recent results of Stroud on the differences in the geometry of the catalytic triad in trypsinogen vs. trypsin, which may serve finally to explain why the zymogen is inactive. Some of the very recent probes of catalytic mechanism of the serine protease enzymes by genetic engineering are covered. Although structural explorations of members of the aspartate protease family are far advanced, these enzymes have proved more recalcitrant to mechanistic investigations than those discussed above. They have been demonstrated to catalyze both amino and acyl transfer reactions, but even the most basic question of the existence of a covalent enzyme-substrate intermediate along the reaction pathway, has not been resolved. The interpretation offered favors a noncovalent model.

The influence of the Groningen school is further manifest in chapters on phospholipase A2 by Drenth, Djikstra, and Renetseder; on rhodanese by Ho; and on aspartate aminotransferase by Jansonius, a distinguished alumnus, together with Vincent. Phospholipase A2 exhibits greater catalytic activity toward phospholipid substrates above the critical micelle concentration (cmc) than below it. The micelle is therefore the true substrate. The catalytic mechanism favored by Drenth et al. is a simple general base-catalyzed hydrolysis of the ester with His48 as the Brønsted base. Rhodanese is a fascinating enzyme of uncertain biological function. It catalyzes transfer of divalent sulfur. The most favored acceptor is cyanide ion, which accepts enzyme-bound sulfur in a diffusion-controlled reaction. Hol highlights the fact that rhodanese has two domains of nearly identical structure, yet the amino acid sequences of the two bear virtually no resemblance to each other. This raises some very sticky questions, i.e., How did this situation arise evolutionarily? How are the subunits held together? How do two such disparate sequences come to the same folding pattern? Pyridoxal phosphate (PLP)-dependent en-

Reviewed by J. F. Kuo, Department of Pharmacology, Emory University School of Medicine, Atlanta, Georgia 30322, USA

There are a number of recent reviews, monographs, and proceedings dealing with the broad subjects of transmembranal signaling elicited by hormones, neurotransmitters, and growth factors and subsequent molecular events leading to cellular responses. This book, a collection of papers presented at the second symposium on cellular endocrinology (organized by the W. Alton Jones Cell Science Center, Inc., and held in Lake Placid, New York), perhaps is somewhat unique. The symposium honored Theodore W. Rall, the codiscoverer of cyclic AMP. Participating were many leading investigators in the field, including Lowell E. Hokin, whose discovery with Mabel Hokin-Neaverson of the acetylcholine-stimulated phosphorylinsitol metabolism 35 years ago unwittingly transformed the phenomenon of the seemingly ordinary membrane phospholipid degradation into major pathways for signal transduction.

The topics covered by the book are diverse, representing selective areas of current research endeavor. Section 1 deals with some aspects of hormones, growth factors, and the cell surface. The papers on G proteins as a common algorithm for transduction, amplification and cellular response to photons, hor- mones, and neurotransmitters (Bitensky et al.), photoreceptor G proteins (transducins) (Hurley et al.), structure-function correlates of G proteins in hormonal regulation of adenylate cyclase (Birnbaumer et al.), and mechanism of signaling by insulin receptor tyrosine kinase (Yu and Czech) are particularly informative and insightful. Recent re- vitalization of cyclic GMP and cyclic GMP-dependent protein kinase research perhaps can be best appreciated by their roles in smooth muscle relaxation regulated by various classes of vasoactive agents (Murad et al.). Section 2, concerning cyclic nucleotide and inositol phosphate metabolism, is highlighted by papers on guanosine nucleotide-dependent activation of phosphoinositide-specific phospholipase C by ligands (Fain), phosphoinositide signaling system involving inositol cyclical phosphates and arachidonate (Hokin et al.), and rabbit iris sphincter smooth muscle contraction related to inositol triphosphate formation and myosin light chain phosphorylation (Abdel-Latif et al.). Fain also presented evidence that a number of hormones (such as vasopressin, serotonin, and the α-1 amines) increase phospholipase C activity via Np (or Gp) activation, analogous to activation of Gα and Gβ in adenylate cyclase and T (transducin) in photoreceptors. The findings by Minke et al. that in invertebrate species light activates phospholipase C in eye membranes, and inositol triphosphate and 2,3′-diphosphoglycerate mediate photoreceptor cell excitation, are of interest because G proteins may also be involved in light-dependent phospholipase C activation and, unlike cyclic GMP in vertebrates, inositol triphosphate is probably a putative internal messenger in phototransduction.

Section 3 covers the topics of protein kinases, phosphorylation, and second messengers. The following papers contain valuable new data and concepts: growth-associated S6 protein kinase and phosphorylation of the ribosomal S6 protein (Erikson et al.); protein kinase C isozymes (Jaken); metabolic fate of diacylglycerol analogs (Welsh and Cabot); regulation of protein kinase C (Woodgett and Hunter); and histone H1 phosphorylation in cell cycle progression and chromatin structure (Langan and Chambers). The paper by Ehrlich and Kornecki on extracellular (as opposed to the conventional intracellular) protein phosphorylation systems is refreshing and thought-provoking. Characterization of eotaxin kinases and identification of their substrate proteins on cell surfaces related to ATP secretion and cell-cell interactions would represent a potentially fertile area of research. Section 4 concerns cell shape and the cytoskeleton in hormone responses. Little is known about these topics, but some new evidence is available. The paper by Bissell and Angeler described a fundamental role of extracellular matrix in the maintenance of tissue-specific functions (e.g., the level of mRNA and the synthesis and secretion of milk proteins) of mouse mammary epithelial cells. Frey and Penman reported a procedure for isolating and purifying a structural scaffold in cells and tissues, which could aid in research testing the hypothesis that signals are transmitted by physical force generated through structural elements of the cells and are related to cell shape. Ingber and Folkman described an interesting concept that the extracellular matrix serves as a local solid state regulator for the action of soluble growth factor through its ability to alter nuclear and cell structure. Future studies will verify or modify these theories. Overall, despite rather superficial coverage in some papers, the book is a good source of current information. It is valuable to students and investigators interested in signal transduction and related areas of research.

Reviewed by M. D. Hollenber, Department of Pharmacology and Therapeutics, Faculty of Medicine, University of Calgary, Calgary, Alberta, Canada T2N 4N1

It is salutary that, at a time when the amino acid sequences of many receptors are appearing at a rate somewhat faster than the information can be digested, a volume has appeared that can place in some perspective the questions that the newly obtained receptor sequences may answer. Kenakin's commendably literate and eminently readable treatise puts into clear focus many of the concepts of descriptive pharmacology that have evolved over the first half of this century and that have served as important signposts for the recent biochemical triumphs in understanding the molecular mechanisms of transmembrane signaling. Particularly well discussed are the concepts of drug intrinsic activity, efficacy, and intrinsic efficacy; these concepts are often misinterpreted both by students and teachers alike, who can be encouraged to consult Kenakin's lucid chapters on these topics. Well dealt with also are the areas of drug antagonists, receptor classification, the kinetics of drug action, and the analysis of dose-response data both from a statistical point of view (an excellent chapter is devoted to this topic) and from a practical point of view (e.g., concerns about tissue drug levels and drug diffusion).

Making no bones about it, Kenakin, on the very first page, points out that this is a practical text for the practical pharmacologist who is "concerned primarily with the discovery and quantification of the properties of drugs." Those who in Kenakin's words wish to "consider drug receptors strictly operationally ... like black boxes, yielding quantal (but uniform) units of stimuli to biological apparatus in response to drugs that can be quantified," will be well satisfied with the ensuing chapters. Those, however, with an interest in the molecular pharmacodynamics and the physiological systems that drugs regulate are encouraged to look elsewhere; and well they should. For the weakness of the volume as a whole lies in the short-shrift given to the area of receptor-triggered molecular mechanisms. Passing genuflexions are made toward two-state receptor ion channels and to the adenylyl cyclase system (almost, but not quite correctly portrayed in terms of G\textsubscript{max} subunit function). However, the uninitiated reader might come away with the impression that receptor tyrosine kinase activity, G protein-regulated phospholipase activity, and receptor internalization need not concern the dedicated drug discovery-oriented pharmacologist; and the nonpharmacologist might also presume that all of pharmacology is focused on heart rates, muscle twitches, and measurements of blood pressure or smooth muscle tension. This impression would be undeserving of Kenakin, who is an accomplished investigator well versed in many areas of pharmacological research. But the text as written would have done better to exclude the 50 or so pages of mathematical derivations aimed at convincing the reader that tissue response cannot of itself be used as a measure of receptor events, so as to include more up-to-date information concerning the molecular details of the black receptor box itself. Also, one could have wished for examples of drug activities that can be measured beyond the organ bath and that can also be dealt with according to the concepts Kenakin has aptly summarized. Taken as a whole, the volume is a commendable effort that enshrines much of the progress that has been made in descriptive pharmacological research over the past 80 years and that will serve as a good practical guide for the discovery of new receptors. As such, I can recommend the text highly both to colleagues and to pharmacology graduate students alike. However, for the molecular pharmacologist or molecular biologist interested in receptor mechanisms, this book can be seen as only a preliminary (albeit essential) appetizer for the main course that is yet to come.

Fj
CONGRESS TACKLES NIH REAUTHORIZATION;
FETAL RESEARCH RESTRICTIONS, DEAFNESS INSTITUTE PROPOSED

By Carter Blakey

With a handful of its programs due to expire this fall, the National Institutes of Health once again faces what could prove to be a lengthy reauthorization process.

The current NIH authorization legislation was signed into law three years ago by President Reagan, but only after three years of stormy debate in Congress and a second presidential veto was overridden by the House and Senate.

That bill, which is perhaps best remembered for its establishment of a new arthritis institute, spelled out in statute for the first time many of NIH's programs — both newly created and previously existing.

The NIH programs expiring on September 30, the end of fiscal 1988, include programs of the National Cancer Institute, National Heart, Lung and Blood Institute, National Library of Medicine, National Institute of Diabetes and Digestive and Kidney Diseases, and the National Research Service Awards (training).

Legislation renewing the NIH programs, which was originally expected to move quickly through the House and Senate, appears to have hit some familiar roadblocks which threaten to jeopardize its chances for passage before Congress adjourns for the November elections.

As in previous years, the issue which appears to present the biggest hurdle to enactment of a new law is fetal research. The Senate Labor and Human Resources Committee has approved an NIH bill (S 2222) that would extend for two years the current moratorium on the use of fetuses in biomedical research.

In addition, the bill, introduced by Sen. Edward Kennedy (D-MA), would require the Secretary of the Department of Health and Human Services to appoint an Ethics Advisory Board to advise the department and biomedical researchers regarding research on fetal therapy and experiments involving human fetuses.

The bill also calls for a National Academy of Sciences study on the scientific, ethical and funding issues surrounding the conduct of fetal therapy and involving human fetuses.

While a bill has yet to be introduced in the House, it is likely that any attempt to extend the fetal research ban would be frowned upon by Rep. Henry Waxman (D-CA), chairman of the House Energy and Commerce health subcommittee which has jurisdiction over NIH.

FASEB BOARD ADOPTS FETAL RESEARCH RESOLUTION

Decrying the ban on fetal research, the FASEB Board recently approved a policy statement emphasizing the importance of fetal research. The board-passed resolution states:

"Resolved, that FASEB believes the purpose of biomedical research is to expand knowledge relevant to the promotion of
health and the diagnosis and treatment of diseases. Research centered on the human fetus will enable us to better understand the immensely complicated process of human development and to find ways to improve the health and survival of the fetus.

"FASEB recommends that Federal agencies should fund research with fetuses under appropriate guidelines when the research will provide essential biomedical knowledge not obtainable through other means.

"Resolved further: that FASEB recommends that the Director of NIH be empowered to appoint a Fetal Research Advisory Committee, modeled after the Recombinant DNA Advisory Committee, with members representing the scientific and biomedical ethics communities. This committee should review the current guidelines and develop and administer further guidelines as necessary to permit appropriate fetal research."

In introducing his bill, Kennedy categorized fetal research as a type of "advanced biomedical knowledge" that "sometimes trespasses on the rights of society and the individual; there is also the risk that such concerns can lead to unnecessary obstacles in the path of new life-saving treatments."

For example, Kennedy said, "10 years ago, concern over abuses caused a virtual elimination of federal support for fetal research. Despite this prohibition, a good deal of research on fetal therapies has been conducted using other sources of funding.

"Important advances have been made that have allowed thousands of fetuses to survive," he said. "This work has gone forward without the rigorous scientific and ethical review that federal regulations would have provided."

Kennedy asserted: "It is time to reexamine this issue to determine whether there is a new consensus that will fully protect moral precepts without interfering with the potential of federally funded research to save babies."

DEAFNESS INSTITUTE PROPOSED

NIH would gain a thirteenth institute under the Senate committee—passed bill. Under an amendment offered by Sen. Tom Harkin (D-IA), deafness and communicative disorders research now conducted by the National Institute on Neurological and Communicative Disorders and Stroke would be transferred to a proposed National Institute on Deafness.

The proposed new institute cleared the panel with considerable ease considering the fiery battle proponents of the arthritis institute fought before that disease won institute stature.

Senate and House hearings on the deafness institute drew such celebrities as the Academy Award winning actress Marlee Matlin, who is deaf, and film star Nanette Fabray, who suffers from a hearing impairment.

During the House subcommittee hearing, Waxman pointed out that nearly 10 percent of the US population is afflicted with hearing disorders. He asserted: "Clearly this is an area in which research could vastly improve the quality of life of many of our citizens."

But, in testimony before the Senate committee NIH Director James Wyngaarden said he was "concerned about the proliferation of institute-level components within the NIH" especially in times of fiscal constraint when "it is more productive to focus our attention on expanding the broad base of existing research."

He objected to the drain of research funds that would result from start-up and administrative costs of a new institute and urged that "creation of additional NIH institutes and centers should be viewed with caution."
Wyngaarden cited the 1984 Institute of Medicine report which concluded that "NIH has reached a point at which there should be a presumption — to be overridden only in exceptional circumstances — against additions at the institute level."

Alternatively, IOM recommended, NIH "should avail itself of a range of activities, short of establishing new institutes, to respond to health needs and opportunities."

The Kennedy bill would also set up a National Center for Medical Rehabilitation Research.

In a letter to Kennedy, FASEB Executive Director Robert Krauss noted that the Federation "has consistently opposed the creation of new entities at NIH" and echoed Wyngaarden’s concerns over bureaucratic burdens.

Krauss asserted that "scarce funds are far better spent directly on research than on administrative structures."

According to NIH, Krauss said, the agency will spend $50 million this year on deafness and $107 million on medical rehabilitation research. "Establishing a new institute or a new center in these areas will lead to additional layers of administration at a time when resources are already scarce," he said.

"Given that reality," Krauss said, "FASEB believes that creating new agencies is unnecessary and unwise when there is an alternative course of action, namely, to enhance the funding of established institutes already engaged in such research."

**FACILITIES PROGRAM, NIH SCIENTIST CORPS APPROVED**

A facilities program envisioned in the Kennedy bill would authorize $150 million for fiscal year 1989 and "such sums as necessary" for fiscal 1990 and 1991 for grants to expand or renovate existing biomedical and behavioral research facilities.

Over the past year, there has been a growing momentum within the research community, Congress and even the administration to revitalize what has been portrayed as the nation’s deteriorating research infrastructure.

In his letter to Kennedy, Krauss acknowledged the need to update the nation’s biomedical research facilities and noted the Federation supported provisions for matching funds and the awarding of facilities grants based on merit review.

He suggested the National Science Foundation facilities program proposed in a bill (HR 1950) by Rep. Robert Roe (D-NJ) "could provide an appropriate starting point for an NIH facilities program."

Through the creation of a Senior Biomedical Scientist Service, the Kennedy bill addresses the concern that the government is unable to compete with private industry and academia in recruiting and retaining high caliber biomedical researchers.

In his testimony, Wyngaarden told the Senate committee that this handicap has resulted in "critical vacancies and deferred recruitment."

He said that in the academic sector the average compensation of senior physicians is 62 percent higher than that received by senior NIH physicians, while the base pay of senior PhD staff is 23 percent higher than that received by NIH senior PhD staff.

Kennedy’s bill would permit senior scientists at NIH, the Centers for Disease Control and the Food and Drug Administration to earn up to $110,000 annually compared with the current cap of $85,000.

In addition, Kennedy proposes that the Institute of Medicine investigate the
In addition, Kennedy proposes that the Institute of Medicine investigate the impact of establishing a publicly chartered National Institutes of Health foundation that might be a source of additional funds to augment the NIH budget.

Other provisions of the Senate committee-passed bill would:

- establish at least five centers for the study of biomedical and behavioral research ethics. According to the bill, such centers would analyze, report and make recommendations on research, health care delivery services and experimental procedures, therapies and technologies.

- create centers in geriatric research and training with primary emphasis on physician training to provide instruction in geriatrics to other physicians and to students of health professions — a provision which Kennedy said "will greatly facilitate the incorporation of research findings in geriatrics into improved patient care."

- authorize the National Center for Nursing Research to conduct demonstration projects aimed at improving the nursing role in light of the national nursing shortage.

- set the FY 1989 authorization for NCI at $1.85 billion and NHLBI at $1.27 billion. NCI's FY 1988 appropriation is $1.5 billion; NHLBI's is $965.5 million.

- set the FY 1989 authorization for NLM's libraries assistance program at $14 million, compared with the FY 1988 appropriation of $9 million.

- set the FY 1989 authorization for training (NRSA) at $350 million, compared with the FY 1988 appropriation of $263 million.

In his letter, Krauss pointed out that FASEB favors funds sufficient to increase the number of trainees to approximately 11,300, the level recommended recently by the Institute of Medicine. He urged a boost in pre- and post-doctoral stipends to compensate for the inflation of recent years.

"Becoming a fully qualified investigator can require 10 years beyond the completion of baccalaureate training," Krauss said. "NRSA awards must keep pace with the cost of living and continue to attract sufficient numbers of young people into the biosciences to assure a future supply of researchers."

In other areas, Krauss recommended that in reauthorizing the Digestive Diseases Advisory Board that Congress "direct the Board to clearly recognize the importance of nutrition and nutrition research in regard to the health of the US population and to include that concern in its agenda."

Although provisions concerning the use of animals in research have not surfaced, Krauss advised Kennedy that FASEB "strongly opposes" any amendments to the NIH bill that would make researchers who use unclaimed pound animals in research ineligible to receive NIH funding.

"Denying researchers access to unclaimed pound animals will be disruptive to research and will mean the cost of acquiring purpose-bred animals will be taken from limited funds available for research," Krauss cautioned. "Research findings using animal models are an essential part of the process of understanding health and disease in living creatures and of ultimately establishing the safety and effectiveness of new treatments for the diseases that afflict humanity. FASEB opposes in the strongest possible terms legislation that would place restrictions on research activities that involve animals."

Carter Blakey is the Associate Editor in the FASEB Office of Public Affairs.

Prepared by the FASEB Office of Public Affairs

June 1988
The FASEB Journal Information for Authors*

Purpose and Scope
The FASEB Journal (FJ) is the official publication of the Federation of American Societies for Experimental Biology (FASEB). FJ publishes two types of articles: (1) brief, definitive, and essentially final research communications of broad interest that are considered to warrant prompt publication; and (2) state-of-the-art summaries of developments in disciplines such as biochemistry, biophysics, cell biology, developmental biology, genetics, immunology, neurobiology, nutrition, pathology, pharmacology, and physiology.

The aim of FJ is to illustrate the unity of biology and the interdependence of its constituent disciplines. Therefore, in keeping with this policy, and to qualify for acceptance, every original communication must not be of outstanding scientific quality but must also be of broad interest.

The subject coverage of FJ is illustrated by the following disciplinary areas: biochemistry, biophysics, cell biology, developmental biology, genetics, immunology, neurobiology, nutrition, pathology, pharmacology, and physiology.

Manuscripts containing original communications, or proposals for reviews, should be sent to the Editor-in-Chief, Dr. W. J. Whelan, The FASEB Journal, P.O. Box 016129, Miami, FL 33101-6129, USA, or, if a private courier is used, to the University of Miami School of Medicine, Room 6052, 1600 NW 10th Ave., Miami, FL 33136-1015, USA.

Original Research Communications
FJ devotes a major portion of its pages (outside the meeting abstracts) to the publication of brief, definitive, original, and essentially final research communications that are considered to warrant prompt publication.

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nomenclature and related documents, a compendium of IUPAC-International Union of Biochemistry (IUB) documents, available from The Biochemical Society, P.O. Box 32, Commerce Way, Colchester, CO2 8HP, Essex, UK. Isotope specifications should conform to the IUPAC system, with the mass number placed as a superscript preceding the chemical symbol as \(^{13}C\). Genotypes are italicized; phenotypes are not. Enzymes should be identified with their EC number and recommended name, in accordance with the recommendations of the IUB; see Enzyme nomenclature: recommendations (1984) of the Nomenclature Committee of the International Union of Biochemistry (Orlando, FL: Academic; 1984). For specialized fields, see: "Glossary on respiration and gas exchange" (J. Appl. Physiol. 34: 549–558; 1973); "Glossary of terms for thermal physiology" (J. Appl. Physiol. 35: 941–961; 1973); The ACS study guide: a manual for authors and editors, edited by J. S. Dodd and M. C. Brogan (Washington, DC: American Chemical Society, 1986); A manual for authors of mathematical papers (Providence, RI: American Mathematical Society; 1980); Style manual for guidance in the preparation of papers for journals published by the American Institute of Physics and its member societies, 3rd ed. (New York: American Institute of Physics; 1978).

The following abbreviations or acronyms may be used without explanation; others should be defined at first use in the text.

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<th>Abbreviation</th>
<th>Definition</th>
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<td>A</td>
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<td>D</td>
<td>diffusion, coefficient</td>
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<td>millimeter; milli-</td>
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<tr>
<td>m&lt;sup&gt;2&lt;/sup&gt;, m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>square and cubic meters</td>
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<tr>
<td>mA</td>
<td>milliampercere</td>
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<tr>
<td>max</td>
<td>maximum</td>
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<td>meq</td>
<td>milliequivalent</td>
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<td>mg</td>
<td>milligram</td>
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<td>ml</td>
<td>minute</td>
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<td>mi/h</td>
<td>miles per hour</td>
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<tr>
<td>ml</td>
<td>milliliter</td>
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<tr>
<td>ml/min</td>
<td>milliliters per minute</td>
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<tr>
<td>mm&lt;sup&gt;2&lt;/sup&gt;, mm&lt;sup&gt;3&lt;/sup&gt;</td>
<td>millimeters</td>
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<tr>
<td>mm Hg</td>
<td>millimeters of mercury</td>
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<td>mol</td>
<td>mole</td>
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<td>mol wt</td>
<td>molecular weight</td>
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<td>mosmol</td>
<td>milliosmole</td>
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<td>mp</td>
<td>melting point</td>
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<tr>
<td>m/s</td>
<td>meters per second</td>
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<tr>
<td>mRNA</td>
<td>messenger RNA</td>
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<td>ms</td>
<td>millisecond</td>
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<tr>
<td>mtDNA</td>
<td>mitochondrial DNA</td>
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<td>mtrNA</td>
<td>mitochondrial RNA</td>
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<td>µ</td>
<td>micro-</td>
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<td>µeq</td>
<td>microequivalent</td>
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<td>µg</td>
<td>microgram</td>
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<td>µl</td>
<td>microliter</td>
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<td>µm</td>
<td>micrometer</td>
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<td>µmol</td>
<td>micromole</td>
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<td>MW·h</td>
<td>megawatt-hour</td>
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<td>×500</td>
<td>magnification</td>
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<tr>
<td>N</td>
<td>newton</td>
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<tr>
<td>N&lt;sub&gt;c&lt;/sub&gt;</td>
<td>normal (concentration); number (statistics)</td>
</tr>
<tr>
<td>n</td>
<td>nano-; neutron</td>
</tr>
<tr>
<td>n&lt;sub&gt;a&lt;/sub&gt;</td>
<td>number (statistics); normal (chemical name)</td>
</tr>
<tr>
<td>NAD, NAD&lt;sup&gt;+&lt;/sup&gt;, NADH, NADP, NADP&lt;sup&gt;+&lt;/sup&gt;, NADPH</td>
<td>nicotinamide adenine dinucleotides and</td>
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<tr>
<td>mDNA</td>
<td>nuclear DNA</td>
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<tr>
<td>nRNA</td>
<td>nuclear RNA</td>
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<tr>
<td>nm</td>
<td>nanometer</td>
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<tr>
<td>NMN</td>
<td>nicotinamide mononucleotide</td>
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<tr>
<td>NMR</td>
<td>nuclear magnetic resonance</td>
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<tr>
<td>no.</td>
<td>number</td>
</tr>
<tr>
<td>N/m&lt;sup&gt;2&lt;/sup&gt;</td>
<td>newton per square meter</td>
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<tr>
<td>Ω</td>
<td>ohm</td>
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<tr>
<td>o.d.</td>
<td>ortho-, in chemical name</td>
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<tr>
<td>osmol</td>
<td>osmole</td>
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<tr>
<td>oz</td>
<td>ounce</td>
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<tr>
<td>P</td>
<td>peta-; poise; pressure</td>
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<tr>
<td>P&lt;sub&gt;p&lt;/sub&gt;</td>
<td>phosphate other than inorganic; probability</td>
</tr>
<tr>
<td>P&lt;sub&gt;p&lt;/sub&gt;</td>
<td>inorganic phosphate</td>
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<tr>
<td>Pa</td>
<td>para-, in chemical name</td>
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<tr>
<td>%</td>
<td>percent</td>
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<tr>
<td>%</td>
<td>per mille</td>
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<tr>
<td>pH</td>
<td>negative log of hydrogen ion concentration</td>
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<tr>
<td>pK</td>
<td>negative log of dissociation constant</td>
</tr>
<tr>
<td>pm</td>
<td>after noon</td>
</tr>
<tr>
<td>pico-</td>
<td>picometer</td>
</tr>
<tr>
<td>P&lt;sub&gt;p&lt;/sub&gt;</td>
<td>inorganic pyrophosphate</td>
</tr>
<tr>
<td>ppb</td>
<td>parts per billion</td>
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<tr>
<td>ppm</td>
<td>parts per million</td>
</tr>
<tr>
<td>Q&lt;sub&gt;10&lt;/sub&gt;</td>
<td>increase in rate of chemical reaction for each 10&lt;sup&gt;°&lt;/sup&gt;C increase in temperature</td>
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</tbody>
</table>

Note: standard three-letter or single-letter abbreviations for amino acids may be used in sequences and in tables and figures.

References
References should be cited in the text in numerical order, with the numeral placed in parentheses. References should be typed separately with inclusive pages and titles, double-spaced, with only one reference per number. Authors are completely responsible for the accuracy and completeness of their references; they will not be checked in the Editorial Office.

Citations to unpublished work should not be entered in the list of references unless the paper has been accepted for publication. Include them in the text as "(unpublished observations)," "(personal communications)," or "(manuscript in preparation)," with authors’ initials and surnames.

For titles of journals, follow the abbreviations listed in Serial sources for the BIOSIS data base. The form of references to periodicals should be in accordance with the following example. (Titles and inclusive pages must be used.)

Book references should include information in the following order: author(s), title, city of publication, publisher, year, and pages. The title of the book should be underlined in italic type. When one chapter is cited its title and page numbers should be included, and the book's authors or editors should be named.


Illustrations

Illustrations should be identified lightly with pencil on the reverse side with the figure number and author name(s); when necessary, the top should be clearly marked. They should be referred to as figures in the text, and should be numbered with Arabic numerals; each should have a legend.

Inasmuch as good illustrations are possible only from good copy, authors should pay particular attention to the following:

1) Illustrations should be sharp, contrasty, unmounted photographs on glossy paper. Photographs should be the width of one column (3⅛ inches) or two columns (7⅛ inches). All drawings for reduction to a given size should be drawn and lettered to the same scale.

2) Lettering should be done in black ink and must be legible after reduction (i.e., at least 1.5 mm high). The smallest elements (subscripts or superscripts) should be readable when reduced. Typewritten or computer-generated lettering is not preferred.

3) Graphs such as electrocardiograms, kymograms, and oscillograms should be prepared by a skillful photographer so that the dark cross-hatched background is eliminated, the faint portions of the graphs are intensified, and sharp, contrasty prints are obtained. To avoid this processing, use blue-ruled instead of black-ruled recording paper for the original records.

4) When possible, all lettering should be within the framework of the illustration; likewise the key to symbols should be on the face of the chart. When the figure is so filled that it is necessary to explain symbols in the legend, only these standard characters should be used: □ □ □ O O O + + ×× ×× ×× ×× ×× ×× ×× ×× ×

5) Actual magnification of all photomicrographs should be given. The Editorial Office will make corrections for reduction. An appropriate scale on the photomicrograph itself is, however, preferable and more accurate.

6) Arrangements must be made well in advance with the Editorial Office for the reproduction of any illustrations in color. Authors must have funds available to meet the full cost of color plates and their printing.

7) The approximate position of each figure in the text should be indicated in the margin of the manuscript.

8) Inasmuch as it is the policy of *FJ* to reproduce figures and charts in the smallest size consistent with readability and purpose of the illustration, it is understood that an author will accept the decision of the Editors on the printed size; however, recommendations may be submitted for reduction or enlargement.

9) If illustrations that have been published elsewhere are included, permission must be obtained from the publisher and the author for their use in *FJ*. A copy of the letters granting such permission must be submitted with the manuscript to the Editorial Office.

10) Figure legends should be typed double-spaced, consecutively on one or more sheets of paper. They should contain sufficient information to provide adequate description without reference to text.

Tables

Each should be typed double-spaced, on a separate sheet of paper. Each should have a brief title and should be numbered with Arabic numerals. Explanatory matter should be in footnotes. Table footnotes should be listed in order of their appearance with consecutive superior letters.

Tables should not duplicate material in text or illustrations. They should be prepared for printing either 3⅛ or 7⅛ inches wide. Nonsignificant figures in tabular data should be omitted. Short or abbreviated column heads should be used. Statistical measures of variation, *P*, SD, SE, etc., should be identified as such.

The approximate position of each table should be indicated in the margin of the text.

Formulas and Equations

Structural chemical formulas, process flow diagrams, and complicated mathematical expressions should be precisely and carefully arranged, but they should be kept to a minimum because in typesetting they are composed by hand and are expensive. Glossy prints of complicated formulas and expressions suitable as line drawings are preferred. All subscripts, superscripts, Greek letters, and unusual characters must be clearly identified.

Acknowledgments

It is customary to acknowledge only persons who have made substantive contributions to the studies reported in the manuscript. Authors will please obtain written permission for everyone acknowledged by name (including references to unpublished work) because readers may infer their endorsement of the paper and its conclusions.

If appropriate, a statement of grant support may be included. Names of grant sources should not be abbreviated.

Experimental Procedures

This journal endorses the principles embodied in the Declaration of Helsinki and expects that all investigations involving humans will have been conducted in conformity with these principles. It is expected that the "Guiding Principles in the Care and Use of Animals" will have been observed in all animal experimentation reported in *FJ*.

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Additional detailed tables, appendixes, descriptions of materials and methods, mathematical derivations, extra figures, and other supplementary matter too costly to be included in the journal article may be submitted for deposition without charge to the author with the American Society for Information Science (ASIS), National Auxiliary Publications Service. Material is deposited by the Editorial Office with the consent of the author, and a footnote is carried in the published article to the effect that photoprints or microfiche copies are available at moderate cost.

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Some registered candidates do not prepare Positions Desired advertisements; some advertisements are published at times not coinciding with employer recruitment activities. Primary employers not finding advertisements that appear to match current or projected needs are invited to request a search of all active candidate files. Telephone a description of the desired qualifications; results of search will be discussed telephonically with requesting official, and applications from candidates declared suitable will be forwarded. Employers not currently registered with Placement Service are charged a minimum fee of $30.00 for up to 10 applications, plus $3.00 for each above 10.

In publishing these advertisements FASEB assumes no obligations as to qualifications of prospective employees or responsibility of employers, nor shall FASEB obtain further information concerning positions advertised or those seeking employment. Accuracy and completeness of all listings are the responsibility of the submitting party.

Various U.S. state and national laws against discrimination, including the Federal Civil Rights Act of 1964, prohibit discrimination in employment in the United States because of race, color, religion, national origin, age, sex, or any reason not based on a bona fide occupational qualification. The Federation of American Societies for Experimental Biology endorses these principles and reserves the right to edit all copy and to refuse advertisements not in consonance therewith.

Employment in countries other than the United States may be restricted by government visa and other policies. Moreover, it is suggested that the generally accepted employment practices, the cultural conditions, and the exact provisions of the specific positions being considered be investigated thoroughly. The U.S. Embassies in countries of interest to potential employees should be able to provide up-to-date data concerning internal conditions.

For a description of operation at annual meetings, please refer to the January or February issue or contact the Placement Service.

Address all correspondence to FASEB Placement Service, 9650 Rockville Pike, Bethesda, MD 20814. (301) 530-7020

** ** ** **

POSITIONS AVAILABLE

DIRECTOR, DIVISION OF TOXICOLOGY. The Department of Pharmacology and Toxicology of the University of Arkansas for Medical Sciences is conducting a search to identify candidates for the position of Director of the Division of Toxicology. A successful candidate will have an earned doctoral degree in a research area of pharmacology, toxicology or occupational medicine. The Director of the Division of Toxicology will be responsible for administering graduate programs in toxicology and industrial hygiene. Other educational responsibilities include continuing education in toxicology for health professionals. The director is expected to have and maintain an active research program and should have demonstrated ability to compete successfully for research support. Submit CV, summary of research and administrative experience, and the names of at least three references to Dr. Donald R. Mattison, Department of Obstetrics & Gynecology, University of Arkansas for Medical Sciences, 4301 W Markham, Slot 518, Little Rock, AR 72206. The University of Arkansas is an equal opportunity employer. Women and minority candidates are encouraged to apply.


FACULTY POSITION IN PHYSIOLOGY. The Department of Physiology of the Temple University School of Medicine seeks a Ph.D. to fill a non-tenure track position. Individual should demonstrate ability to do protein and glucoprotein purification with special emphasis on snake venom proteins. Extensive experience required in oligosaccharide purification and structural analysis. Knowledge of recombinant DNA techniques to include composition of a DNA library from snake venom glands and gene cloning. In addition, experience in reverse phase high pressure liquid chromatographic (HPLC) and radioimmunoassay techniques are also required. Send CV and names of three references to Dr. Peter R. Lynch, Temple University School of Medicine, Department of Physiology, 3420 N Broad Street, Philadelphia, PA 19140. An equal opportunity/affirmative action employer.

PHARMACOLOGY/TOXICOLOGY TRAINING PROGRAM. Funds are available to support qualified individuals for training at the predoctoral level in pharmacology and toxicology and postdoctoral level in toxicology. Faculty participating in the program are in the Departments of Pharmacology and Toxicology, Anatomy, Biochemistry, Pathology and Chemistry. Research interests of the faculty include the areas of molecular carcinogenesis, xenobiotic metabolism, nutritional toxicology, renal toxicology, neuropharmacology, toxicology of cyanocompounds, heavy metal teratology and immunopeptide chemistry. For more information and a research directory, contact Chairman, Pharmacology and Toxicology Training Program, Department of Pharmacology and Toxicology, Dartmouth Medical School, Hanover, NH 03756. Dartmouth is an equal opportunity/affirmative action institution.
RESEARCH ASSISTANT PROFESSOR OF PHARMACOLOGY IN UROLOGY. Position available in the Division of Urology at the University of Pennsylvania. Candidate must have a Ph.D. in pharmacology or a related field, completed his or her postdoctoral training, and an established record of publication. Candidate must have a thorough knowledge of lower urinary tract physiology and pharmacology and be able to successfully compete for research funds. Candidate must be able to design, develop, and integrate independent research projects with ongoing projects in the fields of neuourology and urodynamics. Please send resume and letters of recommendation to Dr. Robert Levin, Director of Basic Research, Division of Urology, Hospital of the University of Pennsylvania, 3400 Spruce Street, Philadelphia, PA 19149. An affirmative action/equal opportunity employer.

OPEN POSITIONS. Virologist/immunologist with postdoctoral experience in virological and immunological techniques. Molecular biologist with interests in immunology and virology at postdoctoral or junior staff level for 2–3 years. Positions available immediately or by arrangement. Apply with CV, bibliography and 2 references to Dr. R. M. Zinkernagel, Institute of Pathology, University Hospital, 8091 Zürich, Switzerland.

IMMUNOGENETICIST/IMMUNOCHEMIST OR CELLULAR/DEVELOPMENTAL IMMUNOLOGIST. The Department of Microbiology and Immunology at the University of Arizona invites applications for a full-time, tenure-track faculty position in immunology. Applicants must have a Ph.D. or equivalent degree and have demonstrated extensive research expertise in molecular immunology as evidenced by publications and competitive grant support. The candidate will be expected to develop a strong research program, supervise graduate students and teach immunology to graduate, medical and undergraduate students. Rank and salary commensurate with qualifications. Submit CV and three letters of recommendation to Dr. George Olson, Department of Microbiology and Immunology, Building #90, University of Arizona, Tucson, AZ 85721. Applications will be reviewed beginning June 1, 1988 but the position will be open until filled. The University of Arizona is an equal employment opportunity/affirmative action employer.

POSTDOCTORAL POSITIONS IN BIOTECHNOLOGY. An interdisciplinary program for development of the biotechnology of bacterial redox enzymes has been established at UCLA. The participating departments are Chemical Engineering, Biological Chemistry and Pharmacology. Individuals with doctoral degrees in the areas of bioorganic and bioinorganic chemistry, biochemistry, electrochemistry, cell biology and biochemical engineering are being sought. Interested persons should send resume including research directions, along with the names of three professional references to Professor Vincent L. Vilker, UCLA Chemical Engineering Department, 405 Hilgard, Los Angeles, CA 90024-1592. UCLA is an equal opportunity/affirmative action employer.

PHARMACOLOGIST. Assistant professor level position responsible for conducting research and teaching medical and graduate students in cardiovascular pharmacology and physiology. Three years of postdoctoral training and experience required in the area of platelets and vascular endothelial function. Experience required in performing in vitro studies using isolated arteries and veins, electrical field stimulation, measurements of neurotransmitter release and the bioassay of endothelial-derived relaxing factors and other endogenous vasoactive substances. Also desired is experience in mechanisms of platelet activation, shape-change, aggregation and cellular mechanisms by which platelet function can be inhibited. Reply to Garrett J. Gross, Ph.D., Acting Chairman, Department of Pharmacology & Toxicology, Medical College of Wisconsin, 8701 Watertown Plank Road, Milwaukee, WI 53226.

RESEARCH ASSISTANT PROFESSOR OF PEDIATRICS. Division of Pediatric Hematology, University of Pennsylvania School of Medicine, is seeking a Ph.D. with 3–5 years postdoctoral experience in biophysical studies on membrane transport of ions and water for research in sickle cell disease. Experience using image analysis and HPLC preferred. Contact Elias Schwartz, M.D., Director, Division of Hematology, The Children's Hospital of Philadelphia, 34th Street and Civic Center Boulevard, Philadelphia, PA 19104. Equal opportunity/affirmative action employer.
RESEARCH ASSOCIATE. Position available August 1, 1988 at The John P. Robarts Research Institute for Ph.D. in physiology with at least 3 years postdoctoral training and expertise in CNS control of circulation. Must have expertise in electrophysiology, neurochemistry and neuroanatomy of the sympathetic nervous system, a record of publication in CNS control of circulation and will work independently on research projects, supervise students and take partial responsibility for all research in laboratory. Salary $24,000-$26,000 depending on qualifications. Send CV and names and addresses of three references to Dr. L. C. Weaver, The John P. Robarts Research Institute, P.O. Box 5015, 100 Perth Drive, London, Ontario, Canada, N6A 5K8. In accordance with Canadian immigration requirements this advertisement is directed to Canadian citizens and permanent residents of Canada.

RESEARCH POSITION. A research faculty position is immediately available at the Division of Transplantation at the University of Miami School of Medicine. At least 3 years seniority after a Ph.D. degree is a prerequisite with the opportunity to become codirector of a multifaceted transplantation immunobiology research program. Experience in monoclonal antibody and T cell cloning technology, molecular genetics as related to histocompatibility antigens and immunohistochemistry are also needed. Salary is commensurate with faculty seniority. Send CV or call Dr. Joshua Miller, University of Miami, School of Medicine, Department of Surgery, P.O. Box 016310, Miami, FL 33101, (305) 547-6171. An affirmative action employer.

BIOCHEMISTRY/MOLECULAR BIOLOGY FACULTY POSITIONS. Two positions for Assistant Professor. Candidates must have Ph.D., postdoctoral experience and a plan for an independent research program. Positions involve teaching at undergraduate, graduate and medical school levels. Send CV and references to Chairman, Search Committee, Department of Biochemistry, Science Research Building, North Texas State University, Denton, TX 76203. NTSU/TCOM is an equal opportunity/affirmative action employer.

POSTDOCTORAL FELLOWSHIPS at MIT/Harvard Medical Area. Projects on design of enzyme reactors for extracorporeal treatment of disease and peptide synthesis of lipoprotein analogs and structure-function studies in vitro and in vivo. Doctorate in chemistry or biochemistry required. Send resume to Dr. Robert S. Lee, Professor of Cardiovascular Disease, MIT, 77 Massachusetts Avenue, Building 26-191, Cambridge, MA 02139. MIT is a non-smoking environment. MIT is an affirmative action/equal opportunity employer.

ASSISTANT/ASSOCIATE PROFESSOR POSITION. A tenure-track faculty position is available in the Department of Periodontics, the University of Texas Health Science Center at San Antonio, at the assistant or associate professor level for an individual whose research interests are in studies of mammalian cell function, including molecular and cellular immunology, inflammation and/or bone biology. Ph.D., D.M.D., D.D.S. or M.D. degree required. Appointment will join an active department whose primary research interests are in microbiological-immunological studies of periodontal disease, the effects of aging on the periodontal disease process and animal models of periodontal disease. The department has close research affiliations with basic science and medical departments which offer the potential for joint appointment. This position has also the opportunity for clinical associations. Interested applicants should send a CV and the names, addresses and telephone numbers of three referees by August 1, 1988, to the Chair of the Search Committee, Dr. Linda McManus, Associate Professor, Department of Pathology, 7703 Floyd Curl Drive, San Antonio, TX 78284. The University of Texas Health Science Center at San Antonio is an equal opportunity/affirmative action employer.

RESEARCH ASSOCIATE for studies of synthesis, packaging and membrane expression of complement receptor/adherence proteins in human neutrophils and myeloid cell lines. Experience with immunossays, monoclonal antibodies and/or cell fractionation and membrane protein biochemistry techniques desirable. Salary/benefits dependent on qualifications. Send CV and references to Melvin Berger, M.D., Ph.D., Division of Immunology, Department of Pediatrics, Case Western Reserve University, 2109 Adelbert Road, Cleveland, OH 44106. Case Western Reserve University is an EO/AA employer.

WESLEY FOUNDATION SCHOLARSHIPS. The Immunology faculty at the University of Kansas in Lawrence and Kansas City and Kansas State University in Manhattan announce Wesley Foundation Scholarships to support graduate and postdoctoral study. Ten faculty at 3 campuses with active, well-funded research programs in many areas of immunology offer excellent training with competitive stipends and intercampus collaboration. Contact Dr. David Morrison, Department of Microbiology, University of Kansas Medical Center, College of Health Sciences, 39th and Rainbow Boulevard, Kansas City, KS 66103.

FACULTY POSITIONS. Applications are invited for tenure-track faculty positions. Ranks are commensurate with qualifications. Candidates specializing in pharmacologically relevant systems are invited to apply, and we especially encourage applicants with experience in research on receptors for growth factors, oncogene products, protein kinases, biochemistry of membrane channels or arachidonic acid metabolism. Faculty participates in the education of M.D., Ph.D., M.D.-Ph.D. candidates and postdoctoral fellows who are supported by federal training grants, research grants and institutional funds. Applicants should send CV, bibliography, representative publications, a statement of research plans and the names and addresses of three references to Search Committee, Department of Pharmacology, Box 1215, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, NY 10029-6574. An equal opportunity employer.

POSITIONS DESIRED

Ph.D., 1988 (expected); Biochemistry, molecular biology, protein chemistry; Microtubuli proteins and their binding of GTP, gel chromatography, protein purification and isolation, Western blotting, HPLC, FPLC, IEF, SDS-PAGE, radioactive labeling, four yr. professional experience; Avail. Aug. 1988; Academic or industry; Salary negot. 2-2581

Ph.D., 1988 (expected); Immunology, immunogenetics; Cell and tissue culture, MAb techniques, in vivo/vitro immunosassays, MHC typing serology, virus isolation and purification, electrophoresis, exposure to molecular genetics techniques; Avail. summer 1988; Molecular biology postdoc. position in academia or industry; Salary negot. 6-2633

Ph.D., 1988; Cardiovascular/immunopharmacology; Endothelium-smooth muscle interactions, eicosanoids, microvascular/organ bath systems, in vivo pulmonary vascular pharmacology, oxygen radicals, RIA, bioassay, spectrophotometry, scanning EM/histology, computer experience; Avail. spring 1989; Postdoc. or staff position. 3-2675

Ph.D., 1979; Biochemistry, enzymology, molecular biology; Gene isolation, Southern, Northern, Western analyses, restriction enzyme mapping, protein, nucleic acid sequencing, expression cloned genes, purification soluble and membrane-bound proteins, enzyme kinetics; Avail. June 1988; Research position in industry; Salary open. 2-2745

Ph.D., 1983; Immunology and microbiology; Experience in lymphocyte cloning, flow cytometry, MAb techniques, assays of macrophage function, production and assay of cytokines, and clinical trials; Avail. Sept. 1988; Staff position industry or academia. 6-2811

Ph.D., 1985; Biochemistry, organic chemistry, endocrinology; Lipid chemistry and all applicable techniques, adrenal, hepatic and intestinal cell isolation, liposome technology, ELISA, RIA, electrophoresis, Western blotting and all types chromatography; Avail. Aug. 1988; Staff position academia or industry; Salary negot. 2-2813

Ph.D., 1986; Biochemistry, protein chemistry, molecular biology; Characterization of post-translational modification sites by peptide analysis and oligonucleotide-directed mutagenesis, immunoscreen of cDNA library, DNA sequencing, HPLC, Western blot; Avail. July 1988; Research position industry; Salary negot.; San Diego area. 2-2815

Ph.D., 1985; Biochemistry, pharmacology, immunology, medicinal chemistry; Purification of human mast cells/basophils, biochemistry of secretion, cyclic nucleotides, phosphodiesterases, kinases, protein phosphorylation, assays for mediators; Avail. summer 1988; Position academia or industry; Salary negot. 2-2816
Ph.D., 1985; Biochemistry, pharmacology, microbiology; Cellular pharmacology anticancer agents, biochemical mechanisms drug action, resistance, transport, binding, metabolism in tumor cells, tissue culture, HPLC, GC, radioisotopes; Avail. immediately; Staff position industry; Salary negot.; Northeast. 2-2817

Ph.D., 1989 (expected); Biochemistry, molecular biology, enzymology; Experience in cDNA cloning and sequencing, analysis and enzymatic amplification of DNA and RNA, enzyme purification and characterization, electrophoresis, hybridoma techniques; Avail. summer 1989; Postdoc. position academia or industry; Salary negot. 2-2818

Ph.D., 1985; Pharmacology, physiology, pharmacogenetics, neuroscience; Drug metabolism, enzymology, analytical methods development, HPLC catecholamine and indoleamine pharmacology, small animal surgery, human and veterinary medical applications; Avail. Oct. 1988; Industrial staff research position; Salary negot. 3-2819

Ph.D., 1985; Cell biology, immunology, cytogenetics, cancer; Cell culture, in vitro assays, chromosome analysis, MAB, flow cytometry, cellular transport, retrovirus regulation, neurotransmitters, teaching; Avail. fall 1989; Postdoc. position; Salary negot. 7-2821

Ph.D., 1980; Biochemistry, immunoochemistry, bacteriology, cell biology; Connective tissue metabolism in cultured arterial smooth muscle cells, poly/mononodal antibodies against extracellular matrix proteins, characterization of bacterial antigens; Industry or academia; Salary negot. 7-2822

Ph.D., 1959; Biochemistry, molecular biology, neurobiology, pharmacology; Department chairman, research development, industrial applications, government regulations, budget and plans, S&F correlation, proteins, nucleic acids; Academia, industry, non-governmenit institutional position; Salary negot. 2-2823

Ph.D., 1988 (expected); Biochemistry, enzymology/protein chemistry; Experience with isolation, purification and characterization, UV, fluorescence, circular dichroism spectroscopies, electrophoresis, computers; Avail. Sept. 1988; Research position industry; Salary negot. 2-2824

Ph.D., 1985; Microbiology/immunology; Molecular and cellular immunology, recombinant DNA techniques, cloning, sequencing, transfection tissue culture, protein biochemistry, immunocytochemistry and microtechniques; Date negot.; Staff position academia or industry; Salary open. 6-2825

Ph.D., 1979; Microbiology, immunology, immunoparasitology, macrophage biology; Experience in tissue culture, lymphokines, growth factors, host cell-parasite interactions, inflammatory mediators; Avail. June 1988; Staff position academia or industry; Salary negot. 6-2826

M.S., 1988; Immunology, microbiology, cell biology; Transmission and scanning electron microscopy, tissue culture, cell proliferation studies, broad background including teaching; Avail. Oct. 1988; Technician, teaching, sales; Salary negot. 6-2827

Ph.D., 1979; In vitro/in vivo immunopharmacology of immunomodulators and anti-infectives, infectious disease modeling, MAB development, ELISA, macrophage/leukocyte function, antibiotic evaluation, pathogenic microbiology, PAGE, chromatography, 4 yr. supervisory R&D industry; Position preclinical/clinical R&D; Salary negot. 6-2828

Ph.D., 1989 (expected); Immunology and molecular biology; Molecular immunology, lymphocyte-mediated cytotoxicity, cancer biology, gene cloning, DNA sequencing, immunoochemistry, electrophoresis, cell culture; Avail. July 1989; Postdoc. position academia or industry; Salary negot. 6-2829

Ph.D., 1989 (expected); Medicine (M.D.); Physiology, cell physiology; Chemotaxis neutrophils and monocytes to endothelial cell derived factors, phorbol ester effects on cells, respiratory burst of macrophages, effects glutathione on macrophage function; Avail. May 1989; Postdoc. academia or industry; Salary negot.; NY, NJ, MD, MA preferred. 1-2831

Ph.D., 1984; Physiology, cell physiology; Cellular transport studies in epithelia using electrophysiologic and isotopic techniques, expertise in construction and use of double-barrel ion-sensitive microelectrodes (Na, K, Cl, H); Avail. July 1988; Staff or permanent research position academia or industry; Salary negot. 1-2832

Ph.D., 1966; Physiology, neurophysiology, electrophysiology; Electrophysiological analysis neural systems somatic motor system, single neuron recording, dorsal root ganglion cells, physiology axon branch points, teaching; Avail. summer 1988; Teaching/research preferred; Salary negot. 1-2833

Ph.D., 1986; Molecular genetics; Growth and isolation of DNA from recombinant plagues and plasmids, restriction mapping with 4bp and 6bp restriction enzymes, SI nuclease assay for inverted repeats, Southern analysis, cloning into M13/pUC plasmids, dideoxy sequencing; Avail. July 1988; Postdoc. position; Salary open. 2-2834

Ph.D., 1987; Biochemistry/protein chemistry, immunology; In vitro/in vivo cell-mediated immune responses in mouse and rat, lymphocyte metabolism and purine/pyridamine enzymology, tissue culture, SDS-PAGE, Western blotting, HPLC-reverse phase; Date negot.; Staff/postdoc. industry; Salary negot. 2-2835

Ph.D., 1985; Molecular biology, biochemistry, immunology, somatic cell genetics; MAB production and characterization, tissue culture techniques, cell fusions, DNA and mRNA isolation, Southern/Northern blots, gene mapping, screening libraries, DNA sequencing, lipoprotein biochemistry; Avail. Sept. 1988; Research position; Salary open. 2-2837

Ph.D., 1988 (expected); Biochemistry, molecular biology; Experience in gene isolation and mutagenesis, gene expression, DNA sequencing, protein purification, enzymology, photoaffinity labeling, ligand binding studies; Staff or postdoc. position academia or industry; Salary negot. 2-2838

Ph.D., 1984; Pharmacology; Tissue culture, hybridomas, purification and characterization of MAB, analyses of tumor-associated antigens, RIA, immunological analyses, frozen sections, immunohistochemistry and radiolabeling of antibodies; Staff position academia or industry; Salary negot. 3-2840

M.S., 1988; Nutrition and biochemistry; Experience in tissue culture, agonist response in endothelial cells, column and thin-layer chromatography, autoradiography, spectrophotometry and use of radioactive tracers; Avail. Aug. 1988; R&D position industry; Salary negot. 5-2841

Ph.D., 1988 (expected); Nutrition and gossypol; Experience in gossypol analysis with HPLC, protein quality determination, animal research; Avail. May 1988; Postdoc. position academia or research and/or teaching position; Salary negot. 5-2842

Ph.D., 1981; Biochemistry, enzymology/protein purification; Regulation lipid metabolism, protein kinases and phosphatases, membrane transport and its regulation, neurochemistry, preparation primary cultures pure neurons, morphological and biochemical characterization cultured cells; Date negot.; Research/teaching preferred; Salary negot. 2-2843

Ph.D., 1986; Pharmacology/toxicology; Adrenergic and cholinergic neuroeffector systems, muscle contractile studies in blood vessels, biochemical/enzymology/protein assays, N.E. release and uptake, cell culture, Ca uptake in mitochondria and microsomes; Salary open. 3-2844

Ph.D., 1988 (expected); Pharmacology; Neoplasms, prostaglandins, hypoxic cell radiosensitizers, tissue culture, in vitro/in vivo drug survival and pharmacokinetics, cellular metabolism arachidonic acid and PHG, HPLC, TLC and spectroscopic methods, classical ANS pharmacology training; Avail. summer 1988; Postdoc. academia/industry. 3-2845

Ph.D., 1962; Analytical/pharmaceutical/clinical chemistry, pharmacology, toxicology, nuclear medicine; Reactivity -SH, -SS- in proteins, enzymes, purification, characterization, activity Type IV PDE, plasma proteins, relationship diabetes and the heart, insulin, new drugs; Avail. July 1988; Salary open. 3-2846
Ph.D., 1971; Biochemistry, immunology, immunotoxicology, enzymology/protein chemistry; Experience in tissue culture, cell sorter analysis, mechanism of signal transduction of lymphocytes, GLP regulations; Salary open. 6-2847

Ph.D., 1988 (expected); Cardiovascular/exercise/saltitude physiology: Cardiac output determination, pulmonary function testing, exercise stress testing, cold pressor test, computer data collection/analysis, experienced with human subjects; Avail. Sept. 1988; Postdoc. position in academia, industry or government; Salary nego. 1-2849

Ph.D., 1980; Molecular biology/biochemistry; Gene expression in bacteria, vector development, fermentation, enzyme purification and characterization, DNA sequencing, cDNA cloning; Avail. immediately; Staff position in academia, industry; Salary nego. 2-2850

Ph.D., 1966; Organic chemistry, biochemistry; Experience in purification and enzymology of blood coagulation proteins, HPLC, electrophoresis, Western blot, fluorescence, computer modeling; Avail. Sept. 1988; Research position in industry; Salary nego. 2-2851

Ph.D., 1982; Biochemistry, pharmacology, cell physiology; Calcium transport studies in platelets, cardiac calcium antagonist receptor, solubilization and purification of proteins, polyacrylamide gel and free flow electrophoreses, enzyme kinetics; Avail. fall 1988; Research scientist position industry; Salary nego. 2-2852

Ph.D., 1987; Biochemistry, protein chemistry, enzymology/bioorganic chemistry; Protein purification, resolution of multienzyme complex, enzyme modification, mechanisms of enzyme action, chemical synthesis, radioactive labels; Avail. Jan. 1989; Research position; Salary nego. 2-2853

Ph.D., 1986; Toxicology and pharmacology; Drug metabolism by microsomes hepatocytes, keratinocytes and whole body, surgical techniques including bile duct and jugular vein cannulation, HPLC, cell culture techniques, mammalian mutagenesis; Avail. Sept. 1988; Industrial research; Salary nego. 3-2854

Ph.D., 1988 (expected); Toxicology, pharmacology; In vivo neuronal recording, analgesia and anti-inflammatory assays, sister chromatid exchange and micronuclei assays, protein and lipid isolation with ultracentrifugation and electrophoresis techniques; Avail. July 1988; Postdoc. position in academia or industry; Salary nego. 3-2855

Ph.D., 1988 (expected); Nutritional sciences, physiology; Experience in human and clinical nutrition, nutrition therapy, in vivo/in vitro measurement of absorption of substrates, plasma glucose and insulin, RIA, enzymatic analysis, radioisotope methods, GC; Avail. Jan. 1989; Postdoc. position in academia or industry; Salary nego. 5-2856

Ph.D., 1982; Biochemistry, virology; Functions viral proteins in eukaryotic cells, detection and characterization viral DNA in human lesions, cell culture, radiolabeling, immunoprecipitation, Southern blot, in situ hybridization, gene cloning, immunoassay using protein expressed in bacteria; Research position in academia/industry. 2-2857

Ph.D., 1985; Pharmacology/toxicology, physiology, biochemistry, molecular biology; Hepatic excretory function, drug metabolism, DNA damage/gene expression in drug-induced lung injury, animal surgery, tissue culture, subcellular fractionation, enzymology; Avail. fall 1988; Research position in academia or industry; Salary nego. 3-2858

Ph.D., 1988 (expected); Neuro/psychopharmacology, neuroanatomy; Neural tracts; techniques, E.M., histology, histochemistry, surgical procedures relating to neural and behavioral analysis of pain and opiate analgesia and neural regeneration; Avail. 1988; Neuroscience postdoc. position in academia or industry; Salary nego. 3-2859

Ph.D., 1988 (expected); Human nutrition; Emphasis in obesity and pregnancy; experience with clinical metabolic studies, energy expenditure methodology, body composition analysis, hormonal assays; Avail. summer 1988; Staff position in academia, industry or government; Salary open. 5-2860

Ph.D., 1983; Membrane biochemistry, pharmacology; Cytoskeletal protein studies in erythrocyte, characterization of receptor and second messenger system in brain, SDS-PAGE, IEF, peptide mapping, protein purification, fluorescence, HPLC, receptor assay, RIA; Avail. immediately; Postdoc. position in academia or industry; Salary open. 2-2878

Ph.D., 1985; Pharmacology; Immunology/endocrinology, MAb production/purification/derivitization, FACS, ELISA, RIA, lymphokine assays, tissue culture, radiolabeling, immunoprecipitation, PAGE, Western/Northern blots, HPLC, FPLC, ligand binding assay, protein chemistry; Avail. Oct. 1988; Staff position in academia. 6-2861

Ph.D., 1988 (expected); Molecular biology and immunology; RNA purification/dot blot hybridization, plasmid purification, transformation, in vitro bioassays, tissue culture; Avail. Jan. 1989; Postdoc. position in academia or industry; Salary nego. 6-2863

Ph.D., 1988 (expected); Immunology and cell biology; Tissue culture, T cell cloning, cytotoxicity and proliferation assays, thymus and thymus grafting, cell fractionation procedures; Avail. Nov. 1988; Postdoc. position in academia or industry; Salary nego. 6-2864

Ph.D., 1988 (expected); Microbiology; Immunology; Experience in protein isolation and purification, cell culture, SDS-PAGE, transmission electron microscopy, chromatography, fluorescence spectroscopy; Avail. mid-Aug. 1988; Molecular biology postdoc. position; Salary nego. 6-2866

Ph.D., 1988 (expected); Toxicology, immunology and cell biology; Tissue culture, in vitro assays, immunosuppression by polycyclic aromatic hydrocarbons; Avail. Jan. 1989; Research and/or teaching desired; Salary nego. 3-2867

Ph.D., 1988 (expected); Nutrition; Total dietary fiber and N determination, element analysis using atomic absorption spectrophotometer, collection and evaluation of dietary intakes using 24-hour recall and food weighing techniques; Avail. June 1988; Postdoc. in employment in academia. 5-2868

Ph.D., 1985; Nutrition, biochemistry, chemistry; Obesity research in animals, glucose/fat metabolism in adipocytes, enzyme studies in cultured lymphocytes, vitamin A and zinc in sickle cell disease; Avail. Aug. 1988; Nutrition-related position, academia/industry/public service; Salary open. 5-2869

Ph.D., 1988 (expected); Analytical chemistry/drug metabolism/biochemistry; Extensive hands on experience with HPLC, NMR, MS, computer programming and radioactivity handling, in vivo/in vitro drug metabolism studies; Avail. Jan. 1989; Postdoc. position in academia or academy; Salary nego. 2-2872

Ph.D., 1977; Biochemistry, molecular biology; cDNA cloning, sequencing and expression in mammalian cells of 110 kDa enzyme, additional experience cell biology, biochemical endocrinology, plant biochemistry; Avail. Aug. 1988; Academia/biotechnology industry; 42K current salary; Prefer S.F. Bay area, CA or Washington, DC. 2-2873

Ph.D., 1988 (expected); Biochemistry, protein chemistry, enzymology; Chemical modification techniques, membrane protein purification, S&F, drug metabolism; Avail. fall 1988; Protein biochemistry postdoc. position in academia; Salary nego.; Northeast. 2-2874

Ph.D., 1973; Molecular biology and applied biology; Gene expression during growth and differentiation, recombinant DNA, Northern and Southern blotting, DNA sequencing, transfection and in situ hybridization; Avail. July 1988; Staff position in academia or industry; Salary open. 2-2875

Ph.D., 1988 (expected); Biochemistry, molecular biology; Experience DNA sequencing, mutagenesis, cloning, making and screening cDNA libraries, expressing foreign genes in E. coli, protein chemistry, HPLC, FPLC, protein purification and kinetic analysis; Avail. June 1988; Research position in industry or academia; Salary nego.; NY, NJ. 2-2876

Ph.D., 1986; Biochemistry, lipoprotein analysis and biosynthesis, biophysics; Tissue culture, subcellular fractionation, protease protection, impermeable labeling, Westerns, fingerprinting, some electron microscopy, lipid-protein interactions; Avail. summer 1988; Postdoc. position in academia; Salary nego. 2-2877

Ph.D., 1983; Membrane biochemistry, pharmacology; Cytoskeletal protein studies in erythrocyte, characterization of receptor and second messenger system in brain, SDS-PAGE, IEF, peptide mapping, protein purification, fluorescence, HPLC, receptor assay, RIA; Avail. immediately; Postdoc. position in academia or industry; Salary open. 2-2878
Ph.D., 1986; Organic/organometallic synthesis and chemistry; Multistep synthesis, labeling, and purification characterization of natural products, organometallic chemistry and catalysis, model and natural membrane research, extensive FT-NMR background, characterization, reaction analysis, structure/conformational analysis. 2-2947

Ph.D., 1970; Neuroendocrinology, reproductive physiology; Experience in isolation and characterization, primary cell and cell lines cultures, RIA's, molecular biology, hybridoma; Date negot.; Staff position in academia or industry; Salary negot. 1-2951

Ph.D., 1986; Toxicology; M.S. and B.S., Nutrition; Industrial experience in consumer product safety evaluation and research, regulatory and legal affairs, industrial hygiene; Avail. immediately; Industrial position scientific and regulatory affairs preferred; Salary negot. 3-2952

Ph.D., 1986; Gastrointestinal and opioid pharmacology, cholinergic neurochemistry; Intestinal ion transport in vitro/in vivo, gastrointestinal and urinary bladder motility, analgesia, biosynthesis, storage and release of acetylcholine; Avail. June 1988; Pharmacology position industry; Salary negot. 3-2953

Ph.D., 1973; Immunology: Lymphokine production and assay, tumor immunology, protein purification, tissue culture, immunochemical techniques, antibody production; Avail. June 1988; Research & development in industry. 6-2954

Ph.D., 1982; Immunology, molecular and cellular biology, biochemistry; Experience in regulation of gene expression, mechanisms of lymphokine action, macrophage activation, recombinant DNA technology, assays of cellular immune function, flow cytometry and tissue culture; Avail. Oct. 1988; Staff position academia or industry; Salary negot. 6-2955

Ph.D., 1987; Cancer research, human diseases and immunology at molecular level; Experience in recombinant DNA technology and molecular biology; Date negot.; Postdoc. position academia or industry; Salary negot.; CA or Boston, MA preferred. 2-2957

Ph.D., 1987; Molecular and cell biology, neuroanatomy, clinical hematology; Experience in steroid regulation of protein transport in hepatoma cells, tissue culture, in vitro radiolabeling, animal care, medical technologist (ASCP, CA license); Avail. June 1988; Postdoc. or staff position industry; Salary negot.; North CA area. 2-2958

Ph.D., 1988 (expected); Biochemistry, protein chemistry/immunology; Epitope mapping, immunoassays, MAb techniques, protein modifications, isolation of peptides on HPLC, general analytical tools in protein biochemistry, Avail. fall 1988; Molecular biology postdoc. position academia or industry; Salary negot. 2-2959

Ph.D., 1981; Protein biochemistry, bioanalytical chemistry; Isolation and purification of proteins and peptides, HPLC separation, protein chemistry, enzymatic digestion, chemical modifications, N-group analysis, gas phase sequencing and mass spectrometry of peptides, spectroscopic studies by CD, UV-ir; Salary negot. 2-2960

Ph.D., 1989 (expected); Nutrition, cell and molecular biology; Folate metabolism in cultured cells, HPLC, GLC, TLC, DEAE, electrophoresis, DNA cloning and transfection, Southern blots; Avail. summer 1989; Postdoc. position academia/industry; Salary negot. 2-2961

Ph.D., 1988 (expected); Biochemistry, protein chemistry, Experience in purification, characterization and modification as well as 2D-NMR of proteins, some recombinant DNA techniques; Avail. Jan. 1989; Postdoc.; Salary negot. 2-2962

Ph.D., 1988 (expected); Biochemistry, protein chemistry; Experience in enzyme purification and characterization, kinase assays, development and characterization of polyclonal antibodies, mammalian cell culture, 1 and 2D PAGE, background in protein-tyrosine kinases; Avail. Sept. 1988; Postdoc. position academia or industry; Salary negot. 2-2963

Ph.D., 1988 (expected); Vascular physiology (whole animal and cellular); Cellular uptake and in situ transport, ultrastructural characterization, fluorescent and radiolabeled tracer studies, cell separation techniques; Avail. Sept. 1988; Permanent or postdoc. position industry, government or academia. 1-2964

Ph.D., 1986; Cardiovascular and renal physiology; Chronic hemodynamic measurements in dogs, rats, renal function and hypertension, characterization of microcirculation with hypertension; Avail. May 1988; Salary negot. 1-2965

Ph.D., 1969; Biochemistry, pharmacology, endocrinology, enzymology; Independent cardiovascular research involving renal hormone receptors and function, second messengers, cell culture, xanthine and purine drugs; Avail. June 1988; Industrial position sales, marketing, research or teaching position in academia. 3-2966

Ph.D., 1983; Microbiology, molecular biology, biochemistry, immunology; Experience in modern biotechnology, protein engineering, MAb technology; EM, vaccine development, tissue culture, pharmacology, cardiovascular research; Avail. immediately; Research position industry/academia. 6-2967

M.S., 1988 (expected); Immunology and microbiology; Tissue culture, small animal surgery, cytotoxicity assays, IL-2 and IFN immunoassays, gradient fractionation, routine microbiology techniques, lymphocyte proliferation, antigen and antibody purification, radioisotope use; Avail. Sept. 1988; Industry or government; Salary negot. 6-2968

Ph.D., 1983; Cell biology, biochemistry, pharmacology; Signal transduction, protein phosphorylation, cell growth and differentiation, neurobiology, tissue culture, monoclonal/polyclonal antibody technologies, immunochemistry, TEM, SEM, protein purification; Avail. summer 1988; Staff position academia or industry; Salary negot. 7-2969

Ph.D., 1985; Microbiology, immunology; Oxidative and non-oxidative cytotoxicity of neutrophils, isolation and function of leukocytes, oxygen radical generation and detection, tissue culture, isotope techniques, PAGE, teaching experience; Avail. Oct. 1988; Academic/industrial staff position; Salary negot.; Eastern or middle US. 6-2970

Ph.D., 1988 (expected); Biochemistry, molecular endocrinology, cell biology; Characterization of steroid receptors, experience in tissue culture, radioisotope labeling and purification of proteins, isoelectric focusing, gel electrophoresis, Western blotting, reversed-phase HPLC; Avail. fall 1988; Postdoc. position; Salary negot. 2-2971

Ph.D., 1968; Biochemistry, neurochemistry, pharmacology; Amino acid receptors, drug receptors, ligand-binding, neurotransmitter release, convulsive and analgesic mechanisms, Ca2+-antagonists, etiology/therapy of neurodegenerative disorders; Avail. June 1988; Staff position academia or industry; Salary negot. 2-2972

Ph.D., 1986; Renal/cardiovascular/liquid-elehydrolyte physiology; Atrial peptides and cGMP, surgery, chronic vessel catheters, chronic bladder catheter, RIA, renal function testing sodium balance, cell culture, computer and teaching experience; Avail. fall 1988; Industry or postdoc. position. 1-2973

FJ EMPLOYMENT OPPORTUNITIES

2543
Membership in the Federation of American Societies for Experimental Biology and in Its Constituent Societies

Membership in the Federation is limited to societies; there is no individual membership. Any society in the field of biological science may apply for membership, either corporate or affiliate, and may be admitted by a three-fourths majority vote of all members of the Federation Board. The societies listed below presently constitute the Federation.

Since requirements and procedures for election to membership in the member societies vary, the following information is provided:

**Corporate Members**

**The American Physiological Society.** Any resident of the Americas who conducts and has published meritorious original research in physiology shall be eligible for proposal for Regular membership. Residents of the Americas who are engaged in research in physiology or related fields and/or teaching physiology shall be eligible for proposal for Associate membership. Residents outside of the Americas who conduct and have published meritorious original research in physiology shall be eligible for proposal for Corresponding membership. Individuals must apply in written form provided by the Society. Two Regular members must sponsor a candidate for membership. Emeritus members also can be sponsors of new members. A Corresponding or Honorary member of the Society may substitute for a Regular member in sponsoring a candidate for Corresponding membership. Council nominates candidates who stand for election by the vote of Regular members at business meetings of the Society. Other classes of membership include Honorary, Emeritus, Student, and Sustaining Associate. Further information and nomination forms are printed in *The Physiologist* and are available from the APS Membership Services Department, 9650 Rockville Pike, Bethesda, Maryland 20814.

**American Society for Biochemistry and Molecular Biology.** Investigators residing in the Americas who have demonstrated the ability to conduct meritorious original research in biochemistry or molecular biology are eligible for Regular membership. Such individuals must be nominated by two Regular members of the Society and, if favorably recommended to the Council by the Membership Committee, will be elected at any regular meeting of the Society. Individuals not yet fulfilling the requirements for Regular membership may be nominated by two Regular members for Associate membership. Nominees for Associate membership become members immediately on nomination. Eminent biochemists residing in countries other than the Americas may be nominated for Honorary membership. Individuals not otherwise eligible for any type of membership, but who have made significant contributions through service to biochemistry or molecular biology, are eligible for designation as a Distinguished Service Associate. Nomination forms and specific nomination criteria may be obtained from Mr. Charles C. Hancock, Executive Officer, 9650 Rockville Pike, Bethesda, Maryland 20814.

**American Society for Pharmacology and Experimental Therapeutics.** Any qualified investigator who has conducted and published a meritorious original investigation in pharmacology and is a legal resident of the United States, its dependencies, Canada, or Mexico shall be eligible for Regular membership in the Society. Nominees for membership shall be proposed by two members of the Society who are not members of the Council or of the Membership Committee at the time of the initial nomination. Other classes of membership include Affiliate and Student/Fellow, which are for pharmacologists who are either residents of a country other than the USA, Canada, or Mexico, are not now active in research, or who are advanced students or are fewer than 5 years past their doctoral degree. Nomination forms are printed in *The Pharmacologist* and are available from Mrs. Kay A. Croker, Executive Officer, 9650 Rockville Pike, Bethesda, Maryland 20814.

**American Association of Pathologists.** Any American investigator who, through the use of experimental methods, has contributed meritorious work in pathology is eligible for membership. Candidates shall be nominated by two members and those nominations approved by the Council shall be presented to the Association members for election at the next annual business meeting. Additional information and nomination forms may be obtained from Dr. Harold Waters, Executive Officer, 9650 Rockville Pike, Bethesda, Maryland 20814.

**American Institute of Nutrition.** Any person who has conducted and published meritorious original investigations in some phase of nutrition and who is professionally active in the field of nutrition shall be eligible for membership in the Society. Nominations shall be made and seconded by members of the Society and shall be submitted to the Council for recommendation to the Society at any regular meeting. American Society for Clinical Nutrition, Clinical Division of the American Institute of Nutrition: All nominees for membership must be members of the American Institute of Nutrition or be considered simultaneously for election to both societies. Any person who has conducted and published meritorious original investigations in clinical nutrition shall be eligible for membership in the Society. Nominations must be proposed and seconded by members of the American Society for Clinical Nutrition and shall be submitted to the Council for recommendation to the Society at any regular meeting. For nomination blanks and additional information, address Dr. Richard G. Allison, Executive Officer, AIN, 9650 Rockville Pike, Bethesda, Maryland 20814.

**The American Association of Immunologists.** Investigators qualified by virtue of a doctorate degree or equivalent experience and training who have conducted and published meritorious original investigations in immunology or related disciplines are eligible for membership. Candidates must be nominated by two members of the Association. The recommendations of a membership committee are submitted for election by the membership at the annual spring meeting. For application forms write to Dr. Joseph F. Saunders, Executive Officer, 9650 Rockville Pike, Bethesda, Maryland 20814.

**Affiliate Member**

**The American Society for Cell Biology.** To be considered for Regular membership, an applicant must hold the Ph.D. or equivalent degree or have equivalent experience, and be sponsored by two Regular or Emeritus members. Other classes of membership are Emeritus and Student. Further information and forms may be obtained from Ms. Dorothea C. Wilson, Executive Officer, 9650 Rockville Pike, Bethesda, Maryland 20814.

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