

CURRICULUM VITAE
(updated 02.1)

Paul Mark Knopf
Charles A. & Helen B. Stuart Emeritus Professor of Medical Science

Division of Biology & Medicine
Box G-B6
Brown University
Providence, RI 02912-9707
(401) 863-1607 (office) -1971 (fax)
Paul_Knopf@Brown.edu (e-mail)

Education

Massachusetts Institute of Technology, Cambridge, MA	
B.Sc. (Physics)	1958
Ph.D. (Biophysics)	1962

Appointments

Massachusetts Institute of Technology, Cambridge, MA	
Research Associate	1962
Medical Research Council,	
Laboratory of Molecular Biology, Cambridge, England	
Postdoctoral Fellow	1962-1964
The Salk Institute, La Jolla, CA	
Senior Research Associate	1964-1971
Armand Hammer Center for Cancer Biology	
The Salk Institute, La Jolla, CA	
Special Research Associate	1971-1972
Division of Biology and Medicine, Brown University, Providence, RI	
Associate Professor of Medical Science	1972-1978
Professor of Medical Science	1978-2002
Charles A. & Helen B. Stuart Professor of Medical Science	1992-2002
Charles A. & Helen B. Stuart Emeritus Professor of Medical Science	2003-Present
Scientific Staff, Dept. of Medicine, Rogers Williams Gen. Hosp.	1983-2000
Program Director, Amer. Cancer Soc. Inst. Research Grant	1976-1985
Chairman, Section of Microbiology & Molec. Biology	1979-1985
Co-chairman, Section of Molec., Cell. & Developmental Biology	1985-1986
Chairman, Program Committee for Immunology	1988-1994
Chairman, Section of Molecular, Cellular & Developmental Biology	1990-1994
Chairman, Dept. of Molecular Microbiology & Immunology	1994-1997
Acting Chairman, Dept. of Molecular Microbiology & Immunology	2002-2002.5

Honors

Pre-doctoral Fellowship (PHS)	1959-1962
Post-doctoral Fellowship (PHS)	1962-1964
Research Career Development Award (PHS)	1967-1972
Alexander von Humboldt Stiftung (Travel Award)	1969
Summer Appointment: Dr. Fritz Melchers, Immunol. Unit. Max-Planck-Institute fur Molekular Genetik, Berlin, Germany	
Senior Scholar Award (Fullbright-Hays)	1978-1979
Sabbatical Appointment: Dr. Graham F. Mitchell, Immunoparasit.Unit The Walter & Eliza Hall Institute, Melbourne, Australia	
Summer Faculty Award (ASEE/Navy Fellowship)	1984
Summer Appointment: Dr. David Dean, Schistosomiasis Branch Naval Medical Research Institute, Bethesda, MD	
Senior International Fellowship (Fogarty Foundation)	1986-1987
Sabbatical Appointment: Dr. Diane J. McLaren, Div. of Parasitology National Inst. for Medical Research, Mill Hill, London, England	
Visiting Scientist	1991
Schistosomiasis Research Laboratory: Dr. David Dean Naval Medical Research Unit #3, Cairo, Egypt	
Charles A. & Helen B. Stuart Professorship	1992
Teacher of the Year (Life Sciences, Brown University)	1998
Visiting Scientist	2001
Cancer Research Unit: Dr. Roret Hyman, The Salk Inst., La Jolla, CA	
Emory Vaccine Center: Dr. Rafi Ahmed, Emory Univ., Atlanta, GA	
Immunology Dept.: Dr. Jack Hay, Univ. Toronto, Toronto, Canada	

Society Memberships

American Association of Immunologists (1977-Present)
 American Society of Tropical Medicine and Hygiene (1980-Present)
 American Association for the Advancement of Science (1986-Present)
 Society for Neuroscience (1990-Present)
 Association of Medical School Microbiology & Immunology Chairs (1991-1997)
 American Society for Microbiology (1995-Present)
 Northeast Immune Privilege and Regulation Society (1994-Present)
 New England Association for Parasitology (affiliated with ASP)(1996-Present)

PUBLICATIONS

1. Bryan, R.F. and Knopf, P.M. (1961) The crystal structure of Cupric Dithizonate. Proceedings Chemical Society, p. 203.
2. Warner, J.R., Knopf, P.M. and Rich, A., (1963) A multiple ribosomal structure in protein synthesis. Proceedings National Academy Science, USA. 49: 122-129. ##
3. Dintzis, H.M. and Knopf, P.M. (1963) in *Symposium on Informational Macromolecules*, "Cell-Free Synthesis of Hemoglobin", H. J. Vogel, V. Bryson and J.O. Lampen, Eds., pp. 375-386, Academic Press, NY.
4. Lamfrom, H. and Knopf, P.M. (1964) Initiation of hemoglobin synthesis in cell-free systems. Journal of Molecular Biology. 9: 558-75. ###

##Selected by ISI Science Citation Index as one of the 500 most cited references 1961-1975.
 Published in "Citation Classics Series", CURRENT CONTENTS Vol. 20, p. 11, 1977.

###First description of development of reticulocyte in vitro translation system.

Publications - continued

5. Knopf, P.M. and Lamfrom, H. (1965) Changes in the ribosome distribution during incubation of rabbit reticulocytes in vitro. *Biochimica Biophysica Acta* 95: 398-407.
6. Lamfrom, H. and Knopf, P.M. (1965) Properties of reticulocyte 80S ribosomes. *Journal of Molecular Biology* 11: 589-599.
7. Knopf, P.M. and Dintzis, H. (1965) Hemoglobin synthesis in a cell-free system. *Biochemistry* 4: 1427-1434. (PhD thesis)
8. Notani, G.W. Munro, A.J. and Knopf, P.M., (1966) A charge difference between an intracellular and secreted mouse myeloma globulin. *Biochemical Biophysics Research Comm.* 25: 395-401.
9. Knopf, P.M., Parkhouse, R.M.E. and Lennox, E.S. (1967) Biosynthetic units of an immunoglobulin heavy chain. *Proceedings National Academy of Science, USA* 58: 2288-2295.
10. Lennox, E.S., Knopf, P.M., Munro, A.J. and Parkhouse, R.M.E. (1967) A search for biosynthetic subunits of light and heavy chains of immunoglobulins. *Cold Spring Harbor Symposium of Quantitative Biology* 32: 249-254.
11. Melchers, F. and Knopf, P.M. (1967) Biosynthesis of the carbohydrate portion of immunoglobulin chains: Possible relation to secretion. *Cold Spring Harbor Symp. of Quant. Biology* 32: 255-262.
12. Knopf, P.M., Choi, Y.S. and Lennox, E.S. (1969) The kinetics of secretion of a myeloma protein. *Behringwerk-Mitteilungen* 49: 155-168.
13. Choi, Y.S., Knopf, P.M. and Lennox, E.S. (1971) Subcellular fractionation of mouse myeloma cells. *Biochemistry* 10: 659-667.
14. Choi, Y.S., Knopf, P.M. and Lennox, E.S. (1971) Intracellular transport and secretion of immunoglobulin light chain. *Biochemistry* 10: 668-678.
15. Knopf, P.M., Destree, A. and Hyman, R. (1973) Antibody-induced changes in expression of an immunoglobulin surface antigen. *European Journal of Immunology* 3: 251-259.
16. Knopf, P.M. (1973) Pathways leading to expression of immunoglobulin. *Transplantation Reviews* 14: 145-162. (**Review Article)
17. Knopf, P.M., Munro, A.J. and Lennox, E.S. (1973) Synthesis of an immunoglobulin light chain: Pulse labeling studies. *Archives of Biochemistry & Biophysics* 57: 285-302.
18. Knopf, P.M., Sasso, E., Destree, A. and Melchers, F. (1975) Polysaccharide intermediates formed during intracellular transport of a carbohydrate-containing, secreted immunoglobulin light chain. *Biochemistry* 14: 4136-4143.
19. Guyer, R.L., Koshland, M.E. and Knopf, P.M. (1976) Immunoglobulin binding by mouse intestinal epithelial cell receptors. *Journal of Immunology* 117: 587-593.
20. Knopf, P.M., Nutman, T.B. and Reasoner, J.A. (1977) *Schistosoma mansoni*: Resistance to reinfection in the rat. *Experimental Parasitology* 41: 74-82.
21. Cioli, D., Knopf, P.M. and Senft, A.W. (1977) A study of *S. mansoni* transferred into permissive and nonpermissive hosts. *International Journal for Parasitology* 7: 293-297.

Publications - continued

22. Potash, M.J. and Knopf, P.M. (1978) Differential sensitivity of memory cell subpopulations to anti-Ig and complement. *European Journal of Immunology* 8: 711-715.
23. Mangold, B.L. and Knopf, P.M. (1978) The effect of assay conditions on the recovery of schistosomula from the lungs of normal and resistant rats infected with Schistosoma mansoni. *Journal of Parasitology* 64: 813-821.
24. Stall, A. M. and Knopf, P.M. (1978) The effect of inhibitors of protein synthesis on the reexpression of surface Ig following antigenic modulation. *Cell* 14: 33-42.
25. Senft, A.W., Gibler, W.B. and Knopf, P.M. (1978) Scanning electron microscope observations on tegument maturation in Schistosoma mansoni grown in permissive and nonpermissive hosts. *American Journal of Tropical Medicine and Hygiene* 27: 258-266.
26. Knopf, P.M. (1979) Schistosoma mansoni: Peripheral and tissue eosinophilia in infected rats. *Experimental Parasitology* 47: 232-245.
27. Potash, M.J. and Knopf, P.M. (1979) Cellular subpopulations in the expression of IgG1. *Cellular Immunology* 48: 329-338.
28. Chapman, C.B., Knopf, P.M., Hicks, J.D. and Mitchell, G.F. (1979) IgG1 hypergamma-globulinemia in chronic parasitic infections in mice: Magnitude of the response in mice infected with various parasites. *Australian Journal of Experimental Biology and Medical Science* 57: 369-387.
29. Chapman, C.B., Knopf, P.M., Anders, R.F. and Mitchell, G.F. (1979) IgG1 hypergamma-globulinaemia in chronic parasitic infections in mice: Evidence that the response reflects chronicity of antigen exposure. *Australian Journal of Experimental Biology and Medical Science* 57: 389-400.
30. Knopf, P.M., Brown, G.V., Howard, R.J., and Mitchell, G.F. (1979) Immunoprecipitation of biosynthetically-labelled products in the identification of antigens of murine red cells infected with the protozoan parasite, Plasmodium berghei. *Australian Journal of Experimental Biology and Medical Science* 57: 603-615.
31. Knopf, P.M., Chapman, C.B., Hicks, J.D., Mandel, T.E. and Mitchell, G.F. (1979) Localization of IgG1-producing cells within a hyperstimulated lymph node of mice infected with an intestinal nematode parasite. *Immunology Letters* 1: 137-140.
32. Knopf, P.M. and Cioli, D. (1980) Schistosoma mansoni: Resistance to an infection with cercariae induced by the transfer of live adult worms to the rat. *International J. for Parasitology* 10: 13-19.
33. Cioli, D. and Knopf, P.M. (1980) A study of the mode of action of hycanthon against Schistosoma mansoni. *American Journal of Tropical Medicine and Hygiene* 29: 220-226.
34. Knopf, P.M. and Soliman, M. (1980) Effects of host gland removal on the permissive status of laboratory rodents to infections by Schistosoma mansoni. *International Journal for Parasitology* 10: 197-204.
35. Kronborg, I.J. and Knopf, P.M. (1980) Intrahepatic synthesis of IgG1 in chronic liver disease. *Annals of the Academy of Medicine, Singapore* 9: 176-178.
36. Mangold, B.L. and Knopf, P.M. (1981) Host protective immune responses to Schistosoma mansoni infections in the rat. *Parasitology* 83: 559-574.

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37. Knopf, P.M. (1981) The role of host hormones in controlling survival and development of Schistosoma mansoni. *Pharmacology and Therapeutics* 15: 293-311. (**Review Article)
38. Kronborg, I.J., Knopf, P.M., Bhathal, P.S. and MacKay, I.R. (1982) Intrahepatic synthesis of immunoglobulin in liver disease. *Liver* 2: 385-392.
39. Knopf, P.M., (1982) Control of parasitic infections in nonpermissive hosts: Applications to improvement of vaccine efficacy. *Veterinary Parasitology* 10: 249-254.
40. Knopf, P.M., Srivastava, B.S. and Barker, R.H., Jr. (1982) Application of cloning techniques to development of a synthetic vaccine against schistosomiasis. *Veterinary Parasitology* 10: 255-259.
41. Knopf, P.M., Mangold, B.I. and Makari, G.J. (1983) Recovery of parasites at different stages of migration following infection of rats with S. mansoni. *Parasitology* 86: 37-49.
42. Knopf, P.M., Spitalny, K.C. and Dang, A. (1984) Induction of a protective immune response in rats by injection of live or killed S. mansoni worms. *Parasite Immunology* 6: 171-183.
43. Barker, R.H., Jr., Srivastava, B.S., Suri, P., Goldberg, M., and Knopf, P.M. (1985) Immunoprecipitation analysis of radiolabelled protein antigens biosynthesized in vitro by S. mansoni I: Identification of antigens uniquely recognized by protective antibodies. *Journal of Immunology* 134: 1192-1201
44. Knopf, P.M. and Linden, T.(1985) Completion of the S. mansoni life cycle in thyroidectomized rats and the effects of thyroid hormone replacement therapy. *Journal of Parasitology* 71: 422-426.
45. el Kouni, M.H., Knopf, P.M., and Cha, S. (1985) Combination therapy of Schistosoma japonicum by tubercidin and nitrobenzylthioinosine 5'-monophosphate. *Biochemical Pharmacol.* 34: 3921-23.
46. Oshman, R., Knopf, P.M., von Lichtenberg, F., and Byram, J.E. (1986) Effects of protective immune sera on the yields of parasites and pulmonary cell reactions in schistosome-infected rats. *American Journal of Tropical Medicine and Hygiene* 35: 523-530.
47. Knopf, P.M., Cioli, D., Mangold, B.L., and Dean, D.A. (1986) Migration of schistosomes in normal and passively immunized laboratory rats. *American Journal of Tropical Medicine and Hyg.* 35: 1173-84.
48. Cioli, D., Pica-Mattocchia, L., and Knopf, P.M. (1986) Limitations to schistosome growth and maturation in nonpermissive hosts. *Journal of Chemical Ecology* 12: 1805-1816
49. Phillips-Conroy, J.E. and Knopf, P.M. (1986) The effects of ingesting plant hormones on Schistosomiasis in mice: an experimental study. *Biochemical Systematics and Ecology* 14: 637-645
50. Knopf, P.M., Goldberg, M., Gossi, C., Cappello, M. and Coulter, S. (1988) Induction of resistance to Schistosoma mansoni by immunization with subfractions of worms. *American Journal of Tropical Medicine and Hygiene* 38: 515-528.
51. Knopf, P. M. and Coghlan, R.L. (1989) Maternal transfer of resistance to Schistosoma mansoni. *Journal of Parasitology* 75: 398-404.
52. Elsaghier, A.A.F., Knopf, P.M., Mitchell, G.F. and McLaren, D.J. (1989) Schistosoma mansoni: Evidence that nonsusceptibility in 129/Ola mice involves worm relocation and attrition in the lungs. *Parasitology* 99: 365-375.

Publications - continued

53. Harling-Berg, C., Knopf, P.M., Merriam, J. and Cserr, H.F. (1989) Role of cervical lymph nodes in the systemic humoral immune response to human serum albumin microinfused into rat CSF. *Journal of Neuroimmunology* 25: 185-193.
54. El-Sherbeini, M., Bostian, K.A. and Knopf, P.M. (1990) Expression of *Schistosoma mansoni* antigen genes in *Escherichia coli*. *Experimental Parasitology* 70: 72-84.
55. Cserr, H.F., Harling-Berg, C., Ichimura, T., Knopf, P.M., and Yamada, S. (1990) Drainage of cerebral extracellular fluids into cervical lymph: an afferent limb in brain/immune system interactions. *Pathophysiology of the Blood-Brain Barrier* (B.B. Johansson, Ch. Owman, & H. Widner, Eds) Elsevier Science Publishers (Biomedical Division) pp 413-420
56. Mark, H.F.L., El-Sherbeini, M., Goldberg, M., Suri, P., Sturley, S., Bostian, K.A. and Knopf, P.M. (1991) *Schistosoma mansoni*: Analysis of candidate vaccine antigens by two-dimensional gel electrophoresis. *Experimental Parasitology* 72: 294-305.
57. Harling-Berg, C., Knopf, P.M. and Cserr, H.F. (1991) Myelin basic protein Infused into cerebrospinal fluid suppresses experimental allergic encephalomyelitis in the Lewis rat. *Journal of Neuroimmunology* 35: 45-51.
58. El-Sherbeini, M., Ramadan, N., Bostian, K.A. and Knopf, P.M. (1991) Cloning and sequence analysis of the *Schistosoma mansoni* membrane glycoprotein antigen gene GP22. *Molec. & Biochem. Parasitology* 49: 83-98.
59. Cserr, H.F., Harling-Berg, C.J. and Knopf, P.M. (1992) Drainage of brain extracellular fluid into blood and deep cervical lymph and its immunological significance. *Brain Pathol.* 2: 269-276.***
60. Knopf, P.M. and Suri, P.K. (1992) Modern approaches to development of vaccines against schistosomes. *Rhode Island Medical Journal* 75: 200-207.***
61. Gordon, L.B., Knopf, P.M. and Cserr, H.F. (1992) Ovalbumin is more immunogenic when introduced into brain or CSF than into extracerebral sites. *Journal of Neuroimmunol.* 40: 81-88.
62. Cserr, H.F., DePasquale, M., Harling-Berg, C.J., Parks, J.T., and Knopf, P.M. (1992) Afferent and efferent arms of the humoral immune response to CSF-administered albumins in a rat model with normal blood-brain barrier permeability. *Journal of Neuroimmunology* 41:195-202.
63. Cserr, H.F. and Knopf, P.M. (1992) Cervical lymphatics, the blood-brain barrier and the immunoreactivity of the brain: a new view. *Immunology Today* 13: 507-512.***
64. Woo, A.H., Cserr, H.F. and Knopf, P.M. (1993) Analysis of IgA in CSF of patients with neuroinflammatory disease. *Journal of Neuroimmunology* 44: 129-136.
65. Knopf, P.M., Petzke, M.M., and McLaren, D.J. (1993) Immobilization of *Schistosoma mansoni* miracidia by activation of the alternate complement pathway at unusually high serum dilution. *Parasite Immunology* 15: 325-337.
66. Cserr, H.F., Harling-Berg, C.J. and Knopf, P.M. (1993) Drainage of Cerebral Intersitital Fluid into Blood and Lymph and its Immunological Significance. *In: CNS Barriers and Modern CSF Diagnostics* (Felgenhauer, K., Holzgraefe, M. and Prange, H.W., eds.) Verlagsgesellschaft mbH, Weinheim, 1993, pp. 9-15. ***

***Review Articles

Publications - continued

67. Knopf, P.M., Cserr, H.F., Nolan, S.C., Wu, T.Y. and Harling-Berg, C.J. (1995) Physiology and immunology of lymphatic drainage of interstitial and cerebrospinal fluid from the brain. *Neuropathology and Applied Neurobiology* 21: 175-180.
68. Cserr, H.F. and Knopf, P.M. (1997) "Cervical Lymphatics, The Blood-Brain Barrier, and Immunoreactivity of the Brain." in *Immunology of the Nervous System*, R.W. Keane & W.F. Hickey (eds.), Oxford University Press, New York, pp 134-152.***
69. Nguyen, K.B., Suri, P.K., Shah, A.M., Goldberg, M., De Groot, A.S., and Knopf, P.M. (1997) Differential immune responses against a *Schistosoma mansoni* candidate vaccine antigen in three murine strains. *Vaccines* 97, 213-217.
70. Gordon, L.B., Nolan, S.C., Cserr, H.F., Knopf, P.M., and Harling-Berg, C.J. (1997) Growth of P511 mastocytoma in Balb/c mouse brain elicits CTL response without tumor elimination. *Journal of Immunology* 159: 2399-2408.
71. Suri, P.K., Goldberg, M., Chakraborty, B., Nguyen, K.B., Bungiro, Jr., R., Madikizela, M., Petzke, M.M., Davies, S.J., McCray, Jr., J.W., and Knopf, P.M. (1997) Evaluation of recombinant protein r140, a polypeptide segment of tegumental protein Sm25, as a defined vaccine antigen against *Schistosoma mansoni*. *Parasite Immunology* 19: 515-529.
72. Knopf, P.M., Harling-Berg, C.J., Cserr, H.F., Basu, D., Sirulnick, E.J., Nolan, S.C., Park, J.T., Keir, G., Thompson, E.J., and Hickey, W.F. (1998) Antigen-dependent intrathecal antibody synthesis in the normal rat brain: Tissue entry and local retention of antigen-specific B cells. *Journal of Immunology* 161: 692-701.
73. Gordon, L.B., Nolan, S.C., Ksander, B., Knopf, P.M., and Harling-Berg, C.J. (1998) Normal cerebrospinal fluid impairs *in vitro* development of cytotoxic T cells: Role of the brain microenvironment in CNS immune regulation. *Journal of Neuroimmunol.* 88: 77-84.
74. Bungiro, Jr., R., Goldberg, M., Suri, P.K. and Knopf, P.M. (1999) Interleukin-12 as an adjuvant for an anti-schistosome vaccine consisting of adult worm antigens: Protection of rats from cercarial challenge. *Infection & Immunity* 67: 2340-2348.
75. Harling-Berg, C.J., Park, J.T. & Knopf, P.K. (1999) Role of Cervical Lymphatics in the Th2-Type Hierarchy of CNS Immune Regulation. *Journal of Neuroimmunology* 101: 111-127. (invited review article, refereed)***
76. Petzke, M.M., Suri, P.K., Bungiro, Jr., R., Goldberg, M. Taylor, S.F., Ranji, S., Taylor, H., McCray, Jr., J.W. and Knopf, P.M. (2000) *S. mansoni* gene GP22 encodes the tegumental antigen Sm25: (1) Antibodies to predicted B-cell epitope peptide sequence of Sm25 cross-react with other candidate vaccine worm antigens. (2) Characterization of a recombinant construct containing tandem-repeats of this peptide as a vaccine. *Parasite Immunology* 22: 381-395.
77. Knopf, P.M. (2000) Immunomodulation and Allergy. *Allergy and Asthma Proceedings* 21: 215-220.
78. Hallett, J.J., Harling-Berg, C.J., Knopf, P.M., Stopa, E.G., and Kiessling, L.S. (2000) Striatal autoimmunity in childhood Tourette syndrome. *Journal of Neuroimmunology* 111: 195-202.

***Review Articles

Publications - continued

79. Harling-Berg, C.J., J.J. Hallett, J.T. Park and P.M. Knopf. (2002) Hierarchy of Immune Responses to Antigen in the Normal Brain. In: Current Topics of Microbiology and Immunology: Protective and Pathological Immune Responses. Editors: B. Dietzschold and J. Richt. Springer-Verlag, Heidelberg, Vol. 265, pp.1-22.
80. Hallett, J.J., Poskanzer, K.E., Cardoso, F., Knopf, P.M., and Harling-Berg, C.J. Subthalamic dysfunction in rats induced by Sydenham's chorea serum. Annals of Neurology (under revision)
81. Park, J.T., Knopf, P.K. & Harling-Berg, C.J. Immune Response to T-dependent Antigens Microinfused into CSF of the Normal Mouse: Peripheral and CNS Antibody Production in the Absence of Peripheral DTH. (under revision).

manuscripts in preparation

Publications - continued

Experimental Results Published in Textbooks

- (1) Graphs from publications #2 and #3 have been reproduced for "Molecular Genetics" by G.S. Stent (W.H. Freeman & Co.); Scientific American; and others.
- (2) Graphs from publication #9 have been reproduced for "Biology of the Immune Response" by P. Abramoff & M.D. LaVia (McGraw Hill) and "Molecular Control of Cell Differentiation and Morphogenesis" by G.D. Wasserman (Marcel Dekker, Inc.).
- (3) Publication of a figure from publication #57 and nine citations of five other papers from Cserr & Knopf labs (#53, 61, 62, 63, 65) in The Physiology of the Cerebrospinal Fluid and Blood-Brain Barrier by H. Davson and M.B. Segal, CRC Press, Inc.
- (4) Permission to publish 2 figures from publication #63:
J.B. Posner, *Neurological Complications of Cancer* F.A. Davis Co.
P. Esterre, *Archives de l'Institut Pasteur de Madagascar*.
S. Kuevary, *Ocular Immunity & Disease* Butterworth & Heinemann publ.
- (5) Results of several CNS publications were extensively cited, with permission, in the publication *Clinical Neuroimmunology* (J. Antel, G. Birnbaum, H. Hartung, eds) Blackwell Science, Inc. 1998

PUBLISHED ABSTRACTS
(since 1990)

- Gordon, L.B., Kahn, M., Cserr, H.F. and Knopf, P.M. (1990) Comparison of serum antibody responses to CNS and systemically administered OVA. Soc. for Neurosci., Abstracts 16: 1209.
- Woo, A.H., Knopf, P.M. and Cserr, H.F. (1990) Lymphocytic choriomeningitis virus-infused rats exhibit elevated cerebral spinal fluid IgA. Society for Neuroscience, Abstracts 16: 1209.
- Harling-Berg, C.J., Knopf, P.M. and Cserr, H.F. (1990) Immune response to CSF-infused myelin basic protein in the Lewis Rat. Society for Neuroscience, Abstracts 16: 1209.
- El-Sherbeini, M., Bostian, K.A. and Knopf, P.M. (1990). Properties of the schistosome genomic DNA sequence encoding a candidate vaccine membrane glycoprotein antigen. Abstracts, 39th Annual Meeting of the American Society of Tropical Medicine and Hygiene, 44: 200.
- Knopf, P.M., El-Sherbeini, M., and Bostian, K.A. (1991) A schistosome genomic sequence encoding a membrane antigen family. Federation Proceedings 50: 7296.
- Knopf, P.M. and McLaren, D.J. (1991) Immobilization of *S. mansoni* miracidia by activation of the alternate pathway of complement at extremely high dilutions of normal sera. Abstracts, 40th Annual Meeting of the American Society of Tropical Medicine and Hygiene 45: 199.
- Knopf, P.M., Petzke, M.M. and McClaren, D.J. (1992) A sensitive assay for detecting activation of the alternate complement pathway. FASEB Journal 6: A1453.
- Knopf, P.M., Harling-Berg, C.J., Gordon, L.B. and Cserr, H. F. (1992) Immune responses to protein antigens infused into CSF. FASEB Journal 6: A1975.
- Harling-Berg, C.J., Sobel, R.A., Knopf, P.M. and Cserr, H.F. (1992) The role of immune cells in suppression of EAE induced by CSF-infused MBP. Society for Neurosci., Abstracts 18: 1011.
- McCray, J.W., Jr., De Silva, F., Petzke, M.M., Ranji, S., Kurtis, J., Goldberg, M. and Knopf, P.M. (1992) Cross-reactivity of a defined anti-peptide antibody with schistosome antigens. Abstracts 41th Annual Meeting of the American Society of Trop. Medicine and Hygiene, 46: 28.
- Suri, P., Madikizela, M., Lee, J., Goldberg, M., McCray, J.W., Jr. and Knopf, P.M. (1993) Expression and purification of *S. mansoni* candidate vaccine surface antigen GP22, Abstracts, 41st Annual Meeting of the American Society of Tropical Medicine and Hygiene, 46: 28.
- Petzke, M.M., McCray, J.W., Jr. and Knopf, P.M. (1993) Construction of a vaccine against *Schistosoma mansoni* utilizing a tandemly-repeated peptide demonstrating cross reactivity with three protective worm antigens. Abstracts, 42nd Annual Meeting of the American Society of Tropical Medicine and Hygiene, 49: 260.
- Petzke, M.M., Taylor, S., DeSilva, F., Kurtis, J., Ranji, S., Goldberg, M., McCray, Jr., J.W., and Knopf, P.M. (1994) Expression of a recombinant *S. mansoni* vaccine constructed of a tandemly-repeated peptide cross-reactive with three protective antigens. FASEB J. 8: A756.
- Suri, P.K., Madikizela, M., Chakraborty, B., Goldberg, M., Lee, J., McCray, Jr., J.W., and Knopf, P.M. (1994) Construction and expression of a candidate recombinant vaccine against *S. mansoni*. FASEB Journal 8: A197.

Abstracts -continued

Knopf, P.M., Basu, D., Sirulnick, E.J., Nolan, S., Cserr, H.F., Kier, G., Thompson, E.J., and Hickey, W.F. (1994) B-Cell traffic and intrathecal antibody synthesis in normal brain. *FASEB J.* 8: A248.

Suri, P.K., Goldberg, M., Bungiro, R.D., and Knopf, P.M. (1994) Choice of adjuvant may affect the vaccine potential of recombinant antigen r140 against *S. mansoni*. Abstracts, 43rd Annual Meeting of the American Society of Tropical Medicine and Hygiene, 51: 231.

Bungiro, R.D., Madikizela, M., and Knopf, P.M. (1994) Characterization of the 5' terminus of mRNA transcribed from GP22, a *S. mansoni* gene encoding a candidate vaccine antigen. Abstracts, 43rd Annual Meeting of the American Soc. of Trop. Med. and Hygiene, 51: 231-232.

Gordon, L.B., Cserr, H.F., and Knopf, P.M. (1994) Influence of TH2-dominated CNS immunity on tumor growth in the brain. *Society for Neuroscience, Abstracts* 20: 1050.

Gordon, L.B., Nolan, S.C., Cserr, H.F., and Knopf, P.M. (1995) Brain tumor-specific cellular immunity: afferent stimulation v. efferent inhibition. *FASEB J.* 8: A756.

Bungiro, R.D., Petzke, M.M., Goldberg, M., Suri, P.K., McCray Jr., J.W., and Knopf, P.M. (1995) Multiple epitope conformations of a schistosome antigen. Abstracts, 44rd Annual Meeting of the American Soc. of Trop. Med. and Hygiene, 53: 266.

Park, J.T., Harling-Berg, C.J., and Knopf, P.M. (1995) Characterization of the peripheral immune response to ovalbumin microinfused into the normal mouse brain. *Society for Neuroscience, Abstracts* 21: 1152.

Gordon, L.B., Nolan, S.C., Harling-Berg, C.J. and Knopf, P. M. (1996) Normal cerebrospinal fluid inhibits development of tumor-specific CTL activity from BALB/c mouse splenocytes following tumor infusion into brain. *FASEB J.*, 10: A1471.

Hallett, J.J., Harling-Berg, C.J., Agrawal, J.R., Knopf, P.M. and Kiessling, L.S. (1996) Tic-like phonation and dyskinesia in rats after intracaudate microinfusion of serum from children with Tourette syndrome. *FASEB J.*, 10: A1357.

Nolan, S.C., Harling-Berg, C.J. and Knopf, P.M. (1996) CSF-infused protein elicits a DTH response in Lewis but not Sprague-Dawley rats. *FASEB J.*, 10: A1075.

Park, J.T., Harling-Berg, C.J. and Knopf, P.M. (1996) CSF-administered albumins stimulate antibody but not DTH in Balb/c mice. *FASEB J.*, 10: A1075.

Szmydynger-Chodobska, J., Nolan, S.C., Harling-Berg, C.J. and Knopf, P.M. (1996) Trafficking of B and T lymphocytes to the brain following antigen infusion into caudate-putamen of passively immunized Lewis rats. *Society for Neuroscience, Abstracts* 22: 52.

Park, J.T., Harling-Berg, C.J. and Knopf, P.M. (1996) DTH kinetics to CSF-administered albumin in the Balb/c mouse. *Society for Neuroscience, Abstracts* 22: 1792.

Bungiro, R.D., Suri, P.K., Goldberg, M. and Knopf, P.M. (1996) "Immunization with schistosomal antigens plus IL-12 leads to increased Th1-associated antibody responses that persist upon subsequent infection." Abstracts, 45th Annual Meeting of the American Society of Tropical Medicine and Hygiene, 55: 161.

Abstracts -continued

Nguyen, K.B., Suri, P.K., Goldberg, M., De Groot, A.S. and Knopf, P.M. (1996) "Identification of T-cell epitopes on a *Schistosoma mansoni* candidate vaccine antigen using overlapping peptides and a novel prediction algorithm. Abstracts, 45th Annual Meeting of the American Society of Tropical Medicine and Hygiene, 55: 161.

Shah, A.M., Suri, P. and Knopf, P.M. (1997) "Naked DNA vaccination for *Schistosoma mansoni* using the gene GP22." Abstracts, 97th General Meeting of the American Society for Microbiology, p. 254.

Bungiro, R.D., Goldberg, M. and Knopf, P.M. (1997) "IL-12 as an adjuvant for an *S. mansoni* vaccine: effects on humoral immunity and protection of rats from challenge infection." Abstracts, 46th Annual Meeting of the Amer. Society of Tropical Medicine and Hygiene, 57: 164.

Hallett, J.J., Stopa, E.G., Harling-Berg, C.J., Kuo-Leblanc, V., Dateris, M., Knopf, P.M., Kiessling, L.S. (1997) Neuroanatomical correlates of TS IgG-induced dyskinesias in rats. Society for Neuroscience, Abstracts 23: 1962.

Park, J.T., Knopf, P.M., and Harling-Berg, C.J. (1998) Cytokine profiles of cervical lymph nodes and spleen in Balb/c mice microinfused into CSF with soluble recombinant HIV p24, FASEB Journal, 12: A880.

Khiem, D.F., Goldberg, M., Knopf, P.M., Cappello, M. (2001) Purification and characterization of an inhibitor of coagulation factor XII from *Schistoma mansoni*. Abstracts, 50th Annual Meeting of the Amer. Society of Tropical Medicine and Hygiene, 65: 270.

MEETING PRESENTATIONS and INVITED LECTURES
(since 1990)

A. Presentations

Society for Neuroscience, 20th Annual Meeting, St. Louis, MO, Oct. 28-Nov. 2, 1990
Presented 3 posters : (see abstracts)

The American Society of Tropical Medicine and Hygiene, 39th Annual Meeting, New Orleans, LA, Nov. 4-8, 1990

Presented paper : "Properties of the schistosome genomic DNA sequence encoding a candidate vaccine membrane glycoprotein antigen" (Co-authors: K.A. Bostian & M. El-Sherbeini)

Molecular Parasitology Meeting, Woods Hole, MA, Sept., 1992

Co-author of poster presented by M. Madikizela: "S. mansoni: Heterogeneity among transcripts of gene GP22, a candidate vaccine antigen." (Co-authors: B.L. Mangold, M.D. Richardson, R.D. Bungru, M.M. Petzke, P.K. Suri & P.M. Knopf)

The Amer. Society of Trop. Medicine and Hygiene, 41st Annual Meeting, Seattle, WA, Nov. 4-8, 1992

Presented paper: "Cross-reactivity of a defined anti-peptide antibody with schistosome antigens" (Co-authors: J.W. McCray, Jr., F. DeSilva, M.M. Petzke, S. Rani, J. Kurtis, M. Goldberg)

FASEB, 1992 Annual Meeting, Anaheim, CA, April 6-10, 1992

Minisymposium: Role of Tissue Microenvironment in Immune Responses

Presented paper : "Immune responses to protein antigens infused into CSF" (Co-authors: H.F. Cserr, C.J. Harling-Berg, L.B. Gordon)

Gordon Research Conference, New London, NH (June, 1993)

Biology of the Immune Response to antigen within the CNS

Presented poster: "B-cell Traffic and Intrathecal Antibody Synthesis in the Normal Brain", (Co-authors: E.J. Sirulnick, G. Kier, E.J. Thompson, & H.F. Cserr)

Third Workshop on Neuro-AIDS, Portland, ME (Aug. 1993)

Co-author of paper presented by H.F. Cserr: "Cervical Lymphatics, the Blood-Brain Barrier, and the TH2-dominant Immunity of the Normal Brain"

XIXth New England Immunology Conference, Woods Hole, MA (Nov. 1993)

Presented poster: "Intrathecal Antibody Synthesis in the Normal Brain" (Co-authors: D. Basu, E.J. Sirulnick, H.F. Cserr, G. Kier, E.J. Thompson, & W.F. Hickey)

The Amer. Society of Trop. Medicine and Hygiene, 42nd Annual Meeting, Atlanta, GA, Nov. 1-4, 1993

Co-author of paper presented by M.M. Petzke: "Construction of a vaccine against S. mansoni utilizing a tandemly-repeated peptide demonstrating cross-reactivity with three protective worm antigens." (Co-authors: J.W. McCray, Jr. & P.M. Knopf)

Co-author of paper presented by P.K. Suri: "Expression and purification of S. mansoni candidate vaccine surface antigen GP22." (Co-authors: M. Madikizela, J. Lee, M. Goldberg, J.W. McCray, Jr., & P.M. Knopf)

Presentations -continued

Experimental Biology, 1994 annual meeting, Anaheim, CA, April, 1994.

Presented paper: "Construction and expression of a candidate recombinant vaccine against S. mansoni." (Co-authors: P.K. Suri, P.K., M. Madikizela, B. Chakraborty, M. Goldberg, J. Lee & J.W. McCray, Jr.)

Presented two posters: (see publications)

Northeast Immune Privilege and Regulation Society (NIPARS), 1st Meeting, Barney House, U. Conn. Health Sci. Cntr., Farmington, CT, Aug., 1994.

Presented paper: "Afferent and efferent aspects of immune responses to antigens introduced into the normal brain." (Co-authors: H.F. Cserr, C. Harling-Berg, L. Gordon, S. Nolan, J.T. Park, & W.F. Hickey)

Molecular Parasitology Meeting, Woods Hole, MA, Sept., 1994

Co-author of poster presented by R. Bungiro: "Characterization of 5' terminus of mRNA transcribed from GP22, a S. mansoni gene encoding a candidate vaccine antigen." (Co-authors: M. Madikizela & P.M. Knopf)

XIIth International Congress of Neuropathology, Toronto, Canada, Sept., 1994

Presented paper: "Physiology and immunology of lymphatic drainage of interstitial fluid and CSF from the brain." (Co-authors: T. Wu, S.C. Nolan & H.F. Cserr)

Cold Spring Harbor Laboratory Conference on *Molecular Approaches to the Control of Infectious Diseases*, Cold Spring Harbor, NY, Oct., 1994.

Presented poster: "Antibody recognition of epitopes in a S. mansoni recombinant antigen." (Co-authors: P.K. Suri, M.M. Petzke, M. Goldberg, S. Taylor, H.E. Taylor, & J.W. McCray, Jr.)

The Amer. Society of Tropical Medicine and Hygiene, 43rd Annual Meeting, Cincinnati, OH, Nov., 1994

Co-author of paper presented by R. Bungiro: "Characterization of 5' terminus of mRNA transcribed from GP22, a S. mansoni gene encoding a candidate vaccine antigen." (Co-authors: M. Madikizela, P. Suri, P. Knopf)

Co-author of paper presented by P. Suri: "Choice of adjuvant may affect vaccine potential of recombinant antigen r140 against S. mansoni." (Co-authors: M. Goldberg, R.D. Bungiro, M.M. Petzke & P.M. Knopf)

XXth New England Immunology Conference, Woods Hole, MA, Nov., 1994

Presented poster: "Afferent stimulation versus efferent inhibition of cytotoxic T cell responses in the brain." (Co-authors: L.B. Gordon & H.F. Cserr)

Society for Neuroscience, 24th Annual Meeting, Miami, FL, Nov., 1994

Co-author of poster presented by L.B. Gordon: "Influence of TH2-dominated CNS immunity on tumor growth in the brain." (Co-authors: H.F. Cserr & P.M. Knopf)

Experimental Biology, 1995 annual meeting, Atlanta, GA, April, 1995.

Presented invited paper: "Initiation of immune responses in the CNS."

Presented poster: "Brain tumor-specific cellular immunity: afferent stimulation v. efferent inhibition." (Co-authors: L.B. Gordon, S.C. Nolan & H.F. Cserr)

Northeast Immune Privilege and Regulation Society (NIPARS), 2nd Meeting, Schepens Eye Institute, Harvard medical School, Boston, MA, Feb., 1995.

Co-author of talk presented by L.B. Gordon: "Suppression of cytolytic activity within the CNS is overridden by B7.1 on CNS-administered tumor cells." (Co-authors: S.C. Nolan, B.R. Ksander, H.F. Cserr, C.J. Harling-Berg & P.M. Knopf)

Co-author of talk presented by S.C. Nolan: "Differential role of spleen in intrathecal and systemic antibody response to CSF-infused antigen." (Co-authors: T-Y Wu, E. Sirulnick, J.T. Park, C.J. Harling-Berg, P.M. Knopf)

Co-author of talk presented by J.T. Park: "Characterization of the immune response to antigen administered into the normal mouse brain." (Co-authors: C.J. Harling-Berg & P.M. Knopf)

Presentations -continued

9th International Congress of Immunology, San Francisco, CA, July, 1995

Presented poster:: "Humoral immune responses in cervical nodes and spleen to antigens infused into normal rat brain." (Co-authors: S.C. Nolan, T-Y. Wu & C.J. Harling-Berg)

Presented poster:: "Epitope conformations of a schistosome antigen." (Co-authors: R.D. Bungiro, M.M. Petzke, M. Goldberg, P.K. Suri & J.W. McCray Jr.)

Northeast Immune Privilege and Regulation Society (NIPARS), 3rd Meeting, Brown University, Providence, RI, Aug., 1995.

Co-author of talk presented by J. Szmydynger-Chodobska: "Temporal profile of B and T lymphocyte accumulation in the brain in response to foreign antigen challenge." (Co-authors: S.C. Nolan, C.J. Harling-Berg & P.M. Knopf)

Co-author of talk presented by L.B. Gordon: "The brain microenvironment suppresses anti-P511 CTL development." (Co-authors: S.C. Nolan, C.J. Harling-Berg & P.M. Knopf)

XXIst New England Immunology Conference, Woods Hole, MA, Nov., 1995.

Co-author of poster presented by R.D. Bungiro: "IL-12 induces Th1-associated antibody isotypes in mice vaccinated with solubilized membrane antigens of the parasitic helminth S. mansoni." (Co-authors: P.K. Suri, M. Goldberg & P.M. Knopf)

Co-author of poster presented by K.B. Nguyen: "Characterizat'n of the murine immune response against S. mansoni candidate vaccine antigen." (Co-authors: P. Suri, M. Goldberg, A.S. DeGroot & P.M. Knopf)

Society for Neuroscience, 25th Annual Meeting, San Diego, CA, Nov., 1995

Co-author of poster presented by J.T. Park: "Characterization of the peripheral immune response to ovalbumin microinfused into the normal mouse brain." (Co-authors: C.J. Harling-Berg & P.M. Knopf)

Eighth Annual Meeting/New England Assoc. for Cancer Research, Providence, RI, March, 1996.

Presented poster: "Normal cerebrospinal fluid inhibits development of tumor-specific CTL activity from BALB/c mouse splenocytes following tumor infusion into brain." (Co-authors: L.B. Gordon, S.C. Nolan & C.J. Harling-Berg)

Northeast Immune Privilege and Regulation Society (NIPARS), 4th Meeting, Barney House, U. Conn. Health Sci. Cntr., Farmington, CT., March, 1996.

Paper presented by S.C. Nolan: "CSF-infused protein elicits a DTH response in Lewis but not Sprague-Dawley rats." (Co-authors: C.J. Harling-Berg & P.M. Knopf, P.M.)

Paper presented by J.T. Park: "CSF-administered albumins stimulate antibody but not DTH in Balb/c mice." (Co-authors: C.J. Harling-Berg & P.M. Knopf)

37th Annual National Student Research Forum, Galveston, Tx, April, 1996.

Oral presentation by J.T. Park: "Peripheral immune response to CSF-administered albumins in the mouse." (Co-authors: C.J. Harling-Berg & P.M. Knopf)

American Association of Immunology, annual meeting in New Orleans, LA, June, 1996

Co-author of poster presented by L.B. Gordon: "Normal cerebrospinal fluid inhibits development of tumor-specific CTL activity from BALB/c mouse splenocytes following tumor infusion into brain." (Co-authors: S.C. Nolan, C.J. Harling-Berg & P. M. Knopf)

Co-author of poster presented by J.J. Hallett: "Tic-like phonation and dyskinesia in rats after intracaudate microinfusion of serum from children with Tourette syndrome." (Co-authors: C.J. Harling-Berg, J.R. Agrawal, P. M. Knopf & L.S. Kiessling)

Co-author of poster presented by S.C. Nolan: "CSF-infused protein elicits a DTH response in Lewis but not Sprague-Dawley rats." (Co-authors: C.J. Harling-Berg & P. M. Knopf)

Co-author of poster presented by J.T. Park: "CSF-administered albumins stimulate antibody but not DTH in Balb/c mice." (Co-authors: C.J. Harling-Berg & P. M. Knopf)

Presentations -continued

Northeast Immune Privilege and Regulation Society (NIPARS), 5th Meeting, Dartmouth Med Schl, Lyme, NH., Nov., 1996.

Paper presented by J. Szmydnger-Chodobska: "Cell traffic into rat brain leading to intrathecal antibody synthesis: Immunohistological analysis following transfer of cells from immunized rats." (Co-authors: S.C. Nolan, C.J. Harling-Berg & P.M. Knopf)

Presented paper: "The neuro-ocular immune system: Comparison of immune responses to antigen injected into brain or eye." (Co-authors: L.B. Gordon, S.C. Nolan, J.T. Park & C.J. Harling-Berg)

XXIInd New England Immunology Conference, Woods Hole, MA, Nov., 1996.

Co-author of poster presented by R.D. Bungiro: "Interleukin-12 as an adjuvant for experimental schistosome vaccines: Effects on the humoral response." (Co-authors: P.K. Suri, M. Goldberg & P.M. Knopf)."

Co-author of poster presented by A. Shah: "Investigation of stage-specific expression of schistosome tegumental antigen encoded by gene GP22." (Co-authors: M. Goldberg, R.D. Bungiro & P.M. Knopf)

Society for Neuroscience, 26th Annual Meeting, Wash., D.C., Nov., 1996

Co-author of poster presented by J. Szmydnger-Chodobska: "Trafficking of B and T lymphocytes to the brain following antigen infusion into caudate-putamen of passively immunized Lewis rats." (Co-authors: S.C. Nolan, C.J. Harling-Berg & P.M. Knopf)

Co-author of poster presented by J.T. Park: "DTH kinetics to CSF-administered albumin in the Balb/c mouse." (Co-authors: C.J. Harling-Berg & P.M. Knopf)

The American Soc. of Tropical Medicine and Hygiene, 45th Annual Meeting, Baltimore, MD, Nov., 1996

Co-author of paper presented by R.D. Bungiro: "Immunization with schistosomal antigens plus IL-12 leads to increased Th1-associated antibody responses that persist upon subsequent infection." (Co-authors: P.K. Suri, M. Goldberg & P.M. Knopf)

Co-author of paper presented by K.B. Nguyen: "Identification of T-cell epitopes on a *S. mansoni* candidate vaccine antigen using overlapping peptides and a novel prediction algorithm." (Co-authors: P.K. Suri, M. Goldberg, A.S. DeGroot & P.M. Knopf)

Co-author of paper presented by R. Bungiro: "Immunization with schistosomal antigens plus IL-12 leads to increased Th1-associated antibody responses that persist upon subsequent infection." (Co-authors: P.K. Suri, M. Goldberg & P.M. Knopf)

1st Woods Hole Immunoparasitology (WHIP-1) meeting, Woods Hole, April, 1997.

Co-author of poster presented by R Bungiro: "IL-12 and alum as coadjuvants for an experimental anti-schistosomal vaccine: effects on the humoral immune response." (Co-authors: P.K. Suri, M. Goldberg & P.M. Knopf)

NEAP-2, New England Association of Parasitologists, Providence, RI, May 1997.

Co-author of poster presented by R Bungiro: "IL-12 and alum as coadjuvants for an experimental anti-schistosome vaccine." (Co-authors: M. Goldberg, P.K. Suri, & P.M. Knopf).

97th General Meeting, American Society for Microbiology, Miami Beach, FL, May 1997.

Co-author of poster presented by A.M. Shah: "Naked DNA vaccination for *Schistosoma mansoni* using the gene GP22." (Co-authors: P. Suri and P.M. Knopf)

NEAP-3, New England Association for Parasitology, Farmington, CT, Nov. 1997.

Presented paper: "The Fates of *S. mansoni* in Nonpermissive Hosts."

The American Soc. of Trop. Med. and Hygiene, 46th Annual Meeting, Lake Buena Vista, FL, Dec., 1997

Co-author of paper presented by R Bungiro: "IL-12 as an adjuvant for an *S. mansoni* vaccine: effects on humoral immunity and protection of rats from challenge infection." (Co-authors: M. Goldberg & P.M. Knopf) *Paper received honorable mention in the Young Investigator Competition*

Presentations-continued

37th Midwinter Conf. of Immunologists, Asilomar Conf. Cntr., Pacific Grove, CA, Jan., 1998.
Presented poster: "Intrathecal Antibody Synthesis is the Consequence of Antigen-Dependent Retention of Activated B Cells Trafficking into Normal Brain." (Co-authors: C.J. Harling-Berg, S.C. Nolan, J.T. Park, G. Keir, E.J. Thompson, and W.F. Hickey, W.F.)

WHIP-2, Woods Hole Immunoparasitology meeting, Woods Hole, MA, April, 1998.

Co-author of paper presented by R Bungiro: "IL-12 as an adjuvant for an *S. mansoni* vaccine: effects on humoral immunity and protection of rats from challenge infection." (Co-authors: M. Goldberg, P.K. Suri, & P.M. Knopf.)

NEAP-4, New England Association of Parasitologists, New Haven, CT, May 1998.

Co-author of paper presented by R Bungiro: . "Interleukin-12 as an adjuvant for a schistosome vaccine." (Co-authors: M. Goldberg, P.K. Suri, & P.M. Knopf)

Keystone Symposium: joint meeting, Taos, NM, March, 1999.

(1) Infections of the Nervous System: Host-Pathogen Interactions

(2) Effectors of Inflammation in the CNS

PMK presented talk to plenary session: "Imposing a Bias on Immune Responses in the Brain" (Co-author: C.J. Harling-Berg)

NIH workshop on autoimmunity, Bethesda, MD (May, 1999)

PMK - invited speaker on humoral immune responses in the CNS

Gordon Conference, "Barriers of the CNS", Tilton, NH (Aug, 1999)

PMK - invited speaker (JT Park substituted due to death in my family)

Eastern Allergy Conference/Western Allergy Forum, Cancun, Mexico, (Jan, 2000)

PMK - invited speaker: "Immunomodulation & Allergy"

The American Soc. of Trop. Med. and Hygiene, 50th Annual Meeting, Houston, TX, Nov., 2001

Co-author of paper presented by D. Khiem: "Purification and characterization of an inhibitor of coagulation factor XII from *Schistoma mansoni*." (Co-authors: M. Goldberg, P.M. Knopf, M. Cappello)

B. Invited Lectures (External; not meetings listed in A)

Microbiology & Immunology Department, Wright State University, Dayton, OH (Nov, 1990)
Immunology Department, Alton Ochsner Medical Center, New Orleans, LA ((Nov, 1990)

Naval Medical Research Unit, Cairo, Egypt (Feb, 1991)
Morehouse College, Atlanta, GA (Feb, 1991)
The Salk Institute, La Jolla, CA (Aug, 1991)

Medical Science Campus, University of Puerto Rico, San Juan, PR (Feb, 1992)
Sunnybrook Health Science Center, University of Toronto, No. York, Ontario (Aug. 1992)
Div. Pediatric Endocrinology & Metabolism, RI Hospital, Providence, RI (Dec. 1992)
Westerly Hospital, Westerly, RI (Dec. 1992)

Dartmouth Medical School, Lebanon, NH (Oct. 1993)

Dept. of Biology, Morehouse College, Atlanta, GA (Feb. 1994)
Dept. of Biology, Univ. of Georgia, Athens, GA (Feb. 1994)
Dept. of Microbiology, Univ. of Alabama, Birmingham, AL (Feb. 1994)
U. Conn. Health Science Center, Farmington, CT (March 1994)
State University of N.Y., Buffalo, NY (May 1994)

Marine Biological Labs, Woods Hole, MA (Aug. 1995, neuro-immunology course)

Microbiology & Immunology Department, University of Arizona, Tucson, AZ (Jan. 1996)
NIH/FDA, Bethesda, MD (May 1996)

Institute of Anatomy, Humboldt Univ. Hospital Charite, Berlin, Germany (Jan. 1997)
Marine Biological Labs, Woods Hole, MA (Aug. 1997, neuro-immunology course)
NEAP-3, Barney House, U Conn Hlth Cntr, Farmington, CT (Nov. 1997)

U. Conn. Hlth. Sci. Center, Farmington, CT (Mar, 1999)
Allergy & Immunology Grand Rounds, Providence, RI (June 1999)
Marine Biological Labs, Woods Hole, MA (Aug, 1999, neuro-immunology course)
Morehouse College, Biology Dept., Atlanta, GA (Oct, 1999)

Emory University, Emory Vaccine Center, Atlanta, GA (May 2001)
CDC Parasitology Unit, Chamblee, GA (May 2001)
University of Toronto, Immunology Dept., Toronto, Ontario, Canada (June 2001)

GRANT SUPPORT
(since 1990)

NIH-NIAID (1991-1997)
NIH-NS (1987-2000)

Multiple Sclerosis Society (1989-1990)
World Health Organization (1979-1993)
The Brain Tumor Society (1996-1998)

Currently Active Support
Currently Active Support

Salomon Award, Brown University, P.M. Knopf (PI), (no salary support); support period:
00/03/01-02/02/28

Pending:

none

Research Programs (revised, 2000)*Effects on behavior of antineuronal antibodies microinfused into normal rat brain*

In collaboration with Joe Hallett (MD, Pediatrics, Memorial Hosp. RI) and Christine Harling-Berg (PhD), we have been analyzing behavioral changes in rats which receive a micro-infusion of serum or IgG fraction via an indwelling cannula in the brain. The sera contain antibodies that react or cross-react with neuronal antigens and are from two human subject groups with movement disorders or from immunized rats. The movement disorders are Tourette Syndrome (TS) and Sydenham's chorea (SC). We have shown that IgG from TS patients with positive antineuronal antibody bind to and are taken up by specific neurons in the rat striatum, causing a variety of repetitive motion anomalies plus an unusual vocal activity. Normal IgG does not induce these behavioral changes. Serum from SC patients also causes a behavioral anomaly when infused into a region nearby the subthalamic nucleus (STN). In response to a subcutaneous injection of apomorphine, the SC rats engage in ipsilateral circling instead of an exploratory activity. This apomorphine-stimulated ipsilateral circling (ASIC) is characteristic of animals with mechanical or drug-induced injury to the STN, yet our rats show no neuronal damage in response to the antibodies. We are currently studying which neurons are binding IgG from SC patients. In addition, we are attempting to identify the epitopes, with the support of the Salomon award. Progress has been made inducing anti-dopamine receptor antibodies in rats with a peptide-carrier conjugate (TS model). Antibodies induced in rats to the M protein of Streptococci (SC model) have been infused into the region of the STN and these rats give a positive ASIC response.

Isolation, characterization, and cloning schistosome genes encoding proteins which interfere with host blood clotting

In collaboration with Michael Cappello (MD, Pediatrics, Yale Univ.) and Richard Bungiro (Postdoc, Brown PhD, 99), we are identifying proteins of *S. mansoni* which interfere with blood clotting. Such activities are essential for the survival and migration of these intravascular worms. Cappello has applied for a small internal grant at Yale (ca. \$10,000) to continue this research, with me as a collaborator. He plans to purify a schistosome protein which interferes with platelet activation. We are also exploring whether infected rats produce antibodies to these proteins and, if yes, to determine if they correlate with protection against worm infection in rats using our contrasting antibody method. This method involves two inbred rat strains (Fischer and Wistar-Furth). The Fischer rats develop strong resistance to reinfection and Wistar-Furth rats do not; the protective activity can be transferred with serum antibodies.

ACTIVITIES and SERVICE
(since 1990)

University Activities

American Cancer Society Institutional Research Grant (1974-1993)

P. M. Knopf, Chairman (1977-1985)

Advisory Committee to University Press (1989-1992)

Professor E. Sosa, Chairman

Early Identification Program Committee (1990-present)

Assoc. Provost J. Wyche, Chairman

Advisory Committee for Endowed Assoc. Professor Chairs (1994-1997)

Dean N. Stultz, Chairman

Divisional Committees

Program in Biology Executive Committee(1979-1986, 1988-1996, 2002-2002.5)

Dean of Biology, Chairman (until 1992)

Dean of Medicine & Biological Sciences, Chairman

Program in Biology Advisory Committee(1996-1997)

Dean of Medicine & Biological Sciences, Chairman

Medical Faculty Council (1983-1986, 1990-1997)

Dean of Medicine, Chairman (until 1992)

Dean of Medicine & Biological Sciences, Chairman

Program Committee for Immunology (1988-1994)

P. M. Knopf, Chairman

Undergraduate Curriculum Committee (1989-1994; 2002 ad hoc meeting)

Dean Marjorie Thompson, Chairman

A.B./Sc.B. Biology Advisor (1992-2000)

Dean Marjorie Thompson, Chairman

Division of Biology & Medicine Academic Awards Committee (1997)

Dean Marjorie Thompson, Chairman

MD2000 Subcommittee on Problem Solving Assessment/Ability IX (1997-present)

Dean S. Smith, Chairman; J. Hallett, Subcomm. Chairman

Committee on Medical Faculty Appointments (1999.5-2002.5)

Dean D. Marsh, Chairman

Section Committees

Graduate Program in Molecular & Cell Biology and Biochemistry

Admissions Committee (1989-1993)

Serve on 1st year graduate student advisory committees

MD/PhD Graduate Program

Interview candidates (1996-present)

Serve on 1st year graduate student advisory committees

Section of Molecular, Cellular, & Developmental Biology

Chairman (1990-1993)

Department of Molecular Microbiology and Immunology

Chairman (1994-1997, 2002-2002.5)

Activities & Service- continued

Search Committees

Molecular Geneticist (1991)
Dr. S.B. Gerbi, Chairman

Dermatology (1993-94)
Dr. C. McDonald, Chairman

Orthopedics (1993-94)
Dr. M. Ehrlich, Chairman

Virologist (1994-1995)
P. M. Knopf, Chairman

Immunologist (1997, 1998, 1999)
Dr. C.A. Biron, Chairman

Endocrinologist (1998-99)
Dr. I. Jackson, Chairman

Service to Profession1. *National/International*

Journal of Immunology

Associate Editor (Immunoparasitology) (1981-1986)
Designated reviewer (1996-present)

FASEB (1981-Present)

Visiting Professors for Minority Institutions Program

Invited to:

University of Puerto Rico, San Juan, PR, Dept. of Biology (1983)

Morris Brown College, Atlanta, GA, Div. of Science (1985)

Meharry Medical College, Nashville, TN, Div. of Biological Sciences (1986)

InterAmerican University of Puerto Rico, San Juan, PR, Biotechnology Forum (1989)

Morehouse College, Atlanta, GA (1991)

University of Puerto Rico, San Juan, PR, Medical Science campus (1992)

NIH-NIAID (1984-present)

Tropical Medicine & Parasitology Study Section and *ad hoc* reviewer

American Cancer Society (1985-1990)

Institutional Research Grant Study Section

NIH-NS (1996)

ad hoc reviewer

Grant Reviewer: Israel Science Foundation, M.S. Society of Canada

American Society for Tropical Medicine & Hygiene

Local Planning Committee, Dec., 1991 meeting, Boston, MA

External reviewer: Ranked short list of candidates for NIH Lab. of Parasitic Diseases (1996)

2. *Local*

Reviewer: Lifespan (1997-present)

Departmental research programs; internal grant applications
Center for AIDS Research (CFAR), NE Med Cntr, Tufts Med Schl

Brown Univ. Sciences Library

Advisor for immunology acquisitions (1979-Present)

Service to Profession- continued3. *Academic*Outside reviewer for PhD thesis:

L. Stein (Harvard Univ. Schl. of Med., PhD exam Apr., 1988)

S. Chikunguwo (Tufts Univ. Sch. of Med., PhD exam, Sept. 1992)

"Cloning of T cells involved in granuloma formation by S. mansoni in mice

Outside reviewer for tenure promotion or promotion to full professor

Dr. H. Shear (New York Univ. Schl. of Med.)

Dr. C.K. Phares (Univ. of Nebraska Med. Center)

Dr. C.E. Carter (Vanderbilt Univ.)

Dr. D. Harn (HSPH, Harvard Univ.)

Dr. E. Bearer (Dept. of Pathology, Brown Univ.)

Dr. M. el Kouni (Dept. of Pharmacology, UAB)

Book Previews:

1995: (1) Springer-Verlag, (2) Blackwell Scientific

Journal Reviews:

American Journal of Tropical Medicine & Hygiene

Experimental Parasitology

Infection & Immunity

Journal of Immunology

Journal of Neuro-immunology

Journal of Parasitology

Journal of Zoology

Lancet

Molecular & Biochemical Parasitology

Proceedings of the National Academy of Sciences, USA

Science

Trends in Neuroscience

TEACHING
(since 1990)

A. Major Courses

- Bio 53: Principles of Immunology (1990-Present/**course leader until 2001**)
(w/ L. Fast & other guests, usually grad students who were former TAs; since 2001 w/ G. Yap)
- Bio 160: Immune Responses to Infectious Disease (1993-Present, alternate years/**course leader**)
(with A. DeGroot and other guests)
co-recipient with DeGroot of a lectureship grant from Brown University (1999-2000)
"Vaccines: Applied Science for Public Health"
- Bio 158: Medical Microbiology (1997/**course leader**) also: [1971-86 & 1995/**course leader**]
(with C. Biron, A. Campbell, W. Atwood, J. Heelan, J. Leong)
(1998, responsible for several Thursday afternoons: vaccine-related or lab)
(2002, responsible for the 7 immunology lectures)
- Bio. 253/254: Advanced Immunology: Lymphocyte Differentiation; Antigen Processing
(1989-1998, alternate years/**course leader**)
(with N. Kouttab & S. Sharma or L. Fast & S. Mehta)
- Bio. 254: Immune Responses to Infectious Diseases (1988-1992; alternate years/**course leader**)
(with G.R. Olds & T. Kresina)
- Bio 54: Emerging Infectious Diseases (1998) guest lectures on vaccines
(A.G. Campbell)
- Bio 194: Medical Ecology(1999) two guest lectures on allergies
(M. Tatar)
- Bio 151: Molecular Genetics (1992)
(with E. Hendrickson, P. Shank)
- Bio. 160: Experimental Cellular Immunology (1989-1991, alternate years/**course leader**)
(with M.B. Rotman, L. Fast, J. Weltman) [Also in Bio 154 with Boris 1973 - mid-1980's]

B. Graduate students (degree awarded)

- M.J. Potash (PhD, 1978)
B.L. Mangold (PhD, 1980)
J.R. Reasoner (MMS,1980)
R.H. Barker, Jr. (PhD, 1984)
R.L. Coghlan (MS, 1985, R.I. Coll.)
C.J. Harling-Berg (PhD, 1989), co-advisor with H.F. Cserr
P.K. Suri (PhD,1989)
A. Woo (MD-PhD, 1991), co-advisor with H.F. Cserr
M.M. Petzke (PhD, 1996)
S.J. Nolan (MS, 1997), co-advisor with C.J. Harling-Berg
L.B. Gordon (MD-PhD, 1998), co-advisor with H.F. Cserr (deceased)
R.D. Bungiro (PhD, 1999)
J.T. Park, II (MD-PhD, in progress, exp. 2000), co-advisor with H.F. Cserr (deceased)

C. Graduate Programs (member of PhD thesis committee)

Graduate Program in Molecular & Cell Biology and Biochemistry:

- | | | |
|---------------------------|------------------------------|-----------------------|
| G. Radcliffe (PhD, 1986) | W. Jacob (PhD, 1986) | K. Madden (PhD, 1987) |
| B. DeStassio (PhD, 1988) | M. Stebbins-Boaz (PhD, 1990) | L. Vargas (PhD, 1990) |
| A. Wisnewski (PhD, 1993) | M. Firpo (PhD, 1994) | N. Yaseen (PhD, 1994) |
| M. Fitzgerald (PhD, 1994) | R. Rivera-Leon (PhD, 1994) | D. Laird (PhD, 1994) |
| I-S. Lee (PhD, 1995) | C. Brunelli (PhD, 1995) | M. Shuh (PhD, 1996) |
| L. Fowler (MS, 1996) | C. Lazaro (PhD, 1996) | J. Park (PhD, 1996) |
| M. Ezhoki (PhD, 1998) | | |

Teaching- continued

Graduate Program in Artificial Organs, Biomaterials and Cellular Technology:

Beth Zielinski (PhD, 1997)

Graduate Program in Pathobiology

J Kurtis (PhD, 1995), L. Arvanitakis (PhD, 1995)

R. Schweigart (PhD, in 2000), K. Nguyen (PhD, defends 2002)

D. Independent Studies Students (195/196): since 1987

(1990/91) I. Garraway, R. Kelsey (EIP)

(1991/92) S. Ranji#, D. Okello (EIP)

(1992/93) F. DeSilva (EIP), J. Goldberg, S. Taylor

(1993/94) B. Chakraborty (EIP), S. Taylor#, D. Basu#, K. Davidson

(1994/95) H. Taylor (EIP), K. Kuo, K. Nguyen, M. Queen*

(1995/96) K. Nguyen#, A. Shah, M. Cayer*, B. Thimmappa*

(1996/97) A. Shah#, D. Friedman*, J. Boguslavsky, T. Graham (Tougaloo)

(1997/98) S. Rakoff-Nahoum#*, D. Friedman#*, B. Thimmappa#* , J. Boguslavsky, J. Clarke (EIP)

(1998/99) J. Kohler (co-advisor w/ R. Bungiro), G. Vari (co-advisor w/ P. Suri)

(1999/00) G. Vari# (co-advisor w/ P. Suri), N. Silvestri# & J. Chang (co-adv. w/ J. Hallett)

(2000/02) D. Lee

#honors

*co-advisor with C.J. Harling-Berg

Second reader on 1-2 honors thesis/year of students supervised by other professors

E. Other Teaching Activities

"Immunology Update Course", a lecture series for Brown-affiliated hospital residency and fellowship programs (1980-present)

I have given one or more lectures or have participated with other faculty in a series of lectures on the current status of immunology. Residency programs include Dermatology (1994, 1996, 1998), Rheumatology, Orthopedics, and Pediatrics.

"The Biology of Parasitism", an advanced summer course at Woods Hole, MA (1985-1989)

I participate for one week each year, demonstrating the life cycle of schistosomes and lecturing on the migration & maturation of the parasites in their hosts.

"Pathogenesis of Neuroimmunologic Diseases", an advanced summer course at Woods Hole, MA (1995-present, alt. years)

I participate for one day each year, lecturing on my research.

Advanced Immunology course (Semester II, 91-92; Semester II, 98-99)

Pfizer Research Division, Groton, CT

A course (for credit at Brown) for research staff with lectures presented by Program in Immunology faculty, plus minisymposiums for Brown and Pfizer principal investigators.

Brown University Allergy/Immunology Grand Rounds (J. Weltman, course dir.),

1 guest lecture on allergies and Th1/Th2 development (June, 1999)

Research lectures to EIP summer students: (summers, 1990-present)

Research lectures to PhD graduate students:

Bio 201 (MCB program, 1990-1995) "Development of Recombinant Vaccines"

Bio 285 (Pathobiol. program, 1992-present) "Immune Responses to CNS Antigens"