

PUBLICATIONS

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ARTICLES

1. Oster, G. F., Perelson, A. S. and Katchalsky, A. (1971). Network thermodynamics. *Nature* **294**:393-397.
2. Oster, G. F., Perelson, A. S. and Katchalsky, A. (1972). Network thermodynamics: Further comments. *Nature* **237**:332-333.
3. Perelson, A. S. (1972). A Network Thermodynamic Treatment of Coupled Chemical and Diffusional Processes. Doctoral Dissertation, (Thesis Advisor: Aharon Katchalsky, Chairman, Polymer Department, Weizmann Institute of Science, and Professor, Division of Medical Physics, University of California, Berkeley).
4. Perelson, A. S. and Katchalsky, A. (1972). The relationship between the thermodynamic and kinetic reaction diffusion parameters. *Chem. Eng. Sci.* **27**:1190-1192.
5. Auslander, D., Oster, G. F., Perelson, A. S. and Clifford, G. (1972). On systems with coupled chemical reactions and diffusion. *Trans. ASME, J. Dynamic Systems, Measurement and Control* **94**:239-248.
6. Oster, G. F., Perelson, A. S. and Katchalsky, A. (1973). Network thermodynamics: Dynamic modeling of biophysical systems. *Quart. Rev. Biophys.* **6**:1-134.
7. Oster, G. F. and Perelson, A. S. (1973). Systems, circuits and thermodynamics. *Israel J. Chem.* **11**:445-478.
8. Oster, G. F. and Perelson, A. S. (1974). Chemical reaction dynamics, I: Geometric structure. *Arch. Rational Mech. Anal.* **55**:230-274.
9. Perelson, A. S. and Oster, G. F., (1974). Chemical reaction dynamics, II. Network structure. *Arch. Rational Mech. Anal.* **57**:31-98.
10. Oster, G. F. and Perelson, A. S. (1974). Chemical reactions networks. *IEEE Trans. Circuits and Systems* **CAS-21**:709-721.
11. Perelson, A. S. (1975). Bond graph sign conventions. *Trans. ASME, J. Dynamic Systems, Measurement and Control* **97**:184-188.
12. Perelson, A. S. (1975). Bond graph junction structures. *Trans. ASME, J. Dynamic Systems, Measurement and Control* **97**:189-195.
13. Perelson, A. S. (1975). Network thermodynamics: an overview. *Biophysical J.* **15**:667-685.
14. Perelson, A. S. and DeLisi, C. (1975). A systematic and graphical method for generating the kinetic equations governing the growth of aggregates. *J. Chem. Phys.* **62**:4053-4061.
15. Perelson, A. S. (1976). A note on the qualitative theory of lumped parameter systems. *Chem. Eng. Sci.* **31**:170-173.
16. Perelson, A. S. (1976). The properties of bond graph junction structure matrices. *Trans. ASME, J. Dynamic Systems, Measurement and Control* **98**:209.

17. Perelson, A. S. (1976). Description of electrical networks using bond graphs. *Int. J. Circuit Theory and Applications* **4**:107-123.
18. Perelson, A. S. and Oster, G. F. (1976). On the application of network theory to nonisothermal systems. *Int. J. Circuit Theory and Applications* **4**:299-305.
19. Perelson, A. S. and DeLisi, C. (1976). An infinite system of nonlinear differential equations. *SIAM Review* **18**:296-298.
20. DeLisi, C. and Perelson, A. S. (1976). The kinetics of aggregation phenomena: I. Minimal models for patch formation on Lymphocytes. *J. Theoret. Biol.* **62**:159-210.
21. Perelson, A. S. (1976). Biophysics. *1976 McGraw-Hill Yearbook of Science and Technology*. McGraw-Hill, NY.
22. Perelson, A. S. (1976). Remarks on conservation of mass in open chemical reaction systems. *J. Theoret. Biol.* **63**:233-237.
23. Perelson, A. S. and Oster, G. F. (1976). Bond graphs and linear graphs. *J. Franklin Inst.* **302**:159-185.
24. Wallwork, D. and Perelson, A. S. (1976). Restrictions on chemical kinetic models. *J. Chem. Phys.* **65**:284-292.
25. Goldstein, B. and Perelson, A. S. (1976). The electrophoretic hemolytic plaque assay-theory. *Biophysical Chem.* **4**:349-362.
26. Perelson, A. S., Mirmirani, M. and Oster, G. F. (1976). Optimal strategies in immunology, I: B-cell differentiation and proliferation. *J. Math. Biol.* **3**:325-367.
27. Perelson, A. S. and Bell, G. I. (1977). Mathematical models for the evolution of multigene families by unequal crossing-over. *Nature* **265**:304-310.
28. Perelson, A. S. and Goldstein, B. (1977). Antigen modulation of antibody forming cells: The relationship between direct plaque size, antibody affinity and antibody secretion rate. *J. Immunol.* **118**:1649-1654.
29. Goldstein, B. and Perelson, A. S. (1977). The hemolytic plaque assay: Theory for finite layers. *Biophysical Chem.* **7**:15-32.
30. Perelson, A. S. and Wallwork, D. (1977). The arbitrary dynamic behavior of open chemical reaction systems. *J. Chem. Phys.* **66**:4390-4394.
31. Perelson, A. S. (1978). Models of the events responsible for antibody production by B lymphocytes. In: *Theoretical Immunology*, Bell, G. I., Perelson, A. S., and Pimbley, G. H., Jr., eds., Marcel Dekker, New York, pp. 171-213.
32. Bell, G. I. and Perelson, A. S. (1978). An historical introduction to theoretical immunology. In: *Theoretical Immunology*, Bell, G. I., Perelson, A. S., and Pimbley, G. H., Jr., eds., Marcel Dekker, New York, pp. 3-41.
33. Perelson, A. S., Mirmirani, M. and Oster, G. F. (1978). Optimal strategies in immunology, II. B memory cell production. *J. Math. Biol.* **5**:213-256.
34. Perelson, A. S. (1978). Spatial distribution of immunoglobulin receptors on B lymphocytes: Local ordering. *Expt. Cell Res.* **112**:309-321.

35. Perelson, A. S. and Segel, L. A. (1978). A singular perturbation approach to diffusion reaction equations containing a point source, with application to the hemolytic plaque assay. *J. Math. Biol.* **6**:75-85.
36. Perelson, A. S. (1978). The IgM-IgG switch looked at from a control theoretic viewpoint. In: *Lecture Notes in Control and Information Sciences, Vol. 6: Optimization Techniques, Proc. 8th IFIP Conference on Optimization Techniques, Würzburg, Sept. 1977, Part 1*, J. Stoer, ed. Springer-Verlag, Berlin, pp. 431-440.
37. Perelson, A. S. (1978). Applications of optimal control theory to immunology. In: *Recent Developments in Variable Structure Systems, Economics and Biology*, R. R. Mohler and Ruberti, A., eds. Springer-Verlag, New York, pp. 272-287.
38. Perelson, A. S. (1979). Stochastic models for the evolution of multigene families. *Rocky Mountain J. Math.* **9**:115-130.
39. Goldstein, B. and Perelson, A. S. (1979). The effect of indicator layer thickness on the interpretation of hemolytic plaque results. *Molec. Immunol.* **16**:395-400.
40. Perelson, A. S. (1979). Optimal strategies for an immune response. In: *Some Mathematical Questions in Biology, Vol. X*, S. Levin, ed. Amer. Math. Soc., Providence, RI, pp. 109-163.
41. Perelson, A. S. and Wiegel, F. (1979). A calculation of the number of IgG molecules required to fix complement. *J. Theoret. Biol.* **79**:317-332.
42. Perelson, A. S. and Oster, G. F. (1979). Theoretical studies of clonal selection: Minimal antibody repertoire size and reliability of self-non-self discrimination. *J. Theoret. Biol.* **81**:645-670.
43. Perelson, A. S. (1979). A model for the reversible binding of bivalent antigen to cells. In: *Physical Chemical Aspects of Cell Surface Events in Cellular Regulation*, C. DeLisi and R. Blumenthal, eds. Elsevier/North Holland, Amsterdam, pp. 147-161.
44. Perelson, A. S. (1980). Chaos. In: *Mathematical Models in Molecular and Cellular Biology*, L. A. Segel, ed. Cambridge University Press, Cambridge, pp. 349-364.
45. Perelson, A. S. (1980). Mathematical immunology. In: *Mathematical Models in Molecular and Cellular Biology*, L. A. Segel, ed. Cambridge University Press, Cambridge, pp. 365-439.
46. Albert, A., Freedman, M. and Perelson, A. S. (1980). Tumors and the immune system: The effects of a tumor growth modulator. *Math. Biosciences* **50**,25-58.
47. Perelson, A. S., Goldstein, B. and Rocklin, S. (1980). Optimal strategies in immunology. III. The IgM-IgG switch. *J. Math. Biol.* **10**,209-256.
48. Perelson, A. S. and DeLisi, C. (1980). Receptor clustering on a cell surface. I. Theory of receptor cross-linking by ligands bearing two chemically identical functional groups. *Math. Biosciences* **48**,71-110.
49. Perelson, A. S. (1980). Receptor clustering on a cell surface. II. Theory of receptor cross-linking by ligands bearing two chemically distinct functional groups. *Math. Biosciences* **49**,87-110.
50. Perelson, A. S. (1981). Receptor clustering on a cell surface. III. Theory of receptor cross-linking by multivalent ligands: Description by ligand states. *Math. Biosciences* **53**,1-39.
51. Wiegel, F. W. and Perelson, A. S. (1981). Configurations of a polymeric antigen adsorbed to a B cell membrane. *J. Theoret. Biol.* **88**, 533-568.

52. Perelson, A. S. and Wiegel, F. W. (1981). Theoretical considerations of the role of antigen structure in B cell activation. *Fed. Proc.* **40**, 1479-1483.
53. Perelson, A. S., DeLisi, C. and Siraganian, R. (1982). A method for determining whether the descending limb of a biphasic histamine release curve reflects insufficient cross-linking. *Molec. Immunol.* **19**:13-20.
54. Samsel, R. W. and Perelson, A. S. (1982). Kinetics of rouleau formation I. A mass action approach with geometric features. *Biophysical J.* **37**:493-514.
55. Perelson, A. S. and Wiegel, F. W. (1982). The equilibrium size distribution of rouleaux. *Biophysical J.* **37**:515-522.
56. Macken, C. A. and Perelson, A. S. (1982). Aggregation of cell surface receptors by multivalent ligands. *J. Math. Biol.* **14**:365-370.
57. Perelson, A. S. and Bell, G. I. (1982). Delivery of lethal hits by cytotoxic T lymphocytes in multicellular conjugates occurs sequentially but at random. *J. Immunol.* **129**:2796-2801.
58. Wiegel, F. W. and Perelson, A. S. (1982). Statistical mechanics of red blood cell aggregation: The distribution of rouleaux in thermal equilibrium. *J. Statistical Phys.* **29**:813-848.
59. Oster, G. F., Perelson, A. S. and Tilney, L. G. (1982). A mechanical model for elongation of the acrosomal process in Thyone sperm. *J. Math. Biol.* **15**:259-265.
60. Perelson, A. S. (1984). Some mathematical models of receptor clustering by multivalent ligands. In: *Cell Surface Dynamics: Concepts and Models*, A. S. Perelson, C. DeLisi and F. W. Wiegel, eds. Marcel Dekker, New York, pp. 223-276.
61. Macken, C. A. and Perelson, A. S. (1984). A multistage model for the action of cytotoxic T lymphocytes in multicellular conjugates. *J. Immunol.* **132**:1614-1624.
62. Samsel, R. W. and Perelson, A. S. (1984). Kinetics of rouleau formation. II. Reversible reactions. *Biophysical J.* **45**:805-824.
63. Goldstein, B. and Perelson, A. S. (1984). Equilibrium theory for the clustering of bivalent cell surface receptors by trivalent ligands: With application to histamine release from basophils. *Biophysical J.* **45**:1109-1123.
64. Perelson, A. S., Macken, C. A., Grimm, E. A., Roos, L. S., and Bonavida, B. (1984). Mechanisms of cell mediated cytotoxicity at the single cell level. VIII. Kinetics of lysis of target cells bound by more than one cytotoxic T lymphocyte. *J. Immunol.* **132**:2190-2198.
65. Perelson, A. S. and Macken, C. A. (1984). Kinetics of cell mediated cytotoxicity: Stochastic and deterministic multistage models. *Math. Biosciences* **70**:161-194.
66. Perelson, A. S. and Samsel, R. W. (1984). Kinetics of red blood cell aggregation: An example of geometric polymerization. In: *Kinetics of Aggregation and Gelation*, F. Family and D. P. Landau, eds. North Holland, Amsterdam, pp. 137-144.
67. Macken, C. A. and Perelson, A. S. (1985). Some stochastic models in immunology. *Acta Applicandae Mathematicae* **4**:157-200. Reprinted in: *Mathematics of Biology*, G. Koch and M. Hazewinkel, eds. Reidel, Dordrecht, Holland and Boston, pp. 157-200.
68. Oster, G. F. and Perelson, A. S. (1985). Cell spreading and motility: A model lamellipod. *J. Math. Biol.* **21**:383-388.

69. Perelson, A. S. and Macken, C. A. (1985). Quantitative models for the kinetics of cell-mediated cytotoxicity at the single cell level. In: *Mechanisms of Cell-Mediated Cytotoxicity, II*, P. Henkart and E. Martz, eds., Plenum Press, New York, pp. 551-561.
70. Perelson, A. S. (1985). A model for antibody mediated cell aggregation: Rosette formation. In: *Mathematics and Computers in Biomedical Applications*, J. Eisenfeld and C. DeLisi, eds. Elsevier, North Holland, Amsterdam, pp. 31-37.
71. Perelson, A. S. and Goldstein, B. (1985). A new look at the equilibrium aggregate size distribution of self-associating trivalent molecules. *Macromolecules* **18**:1588-1597.
72. Perelson, A. S. and Segel, L. A. (1985). On a model for the structure of circular mitochondrial genomes in higher plants. *IMA J. Math. Appl. Biol.* **2**:41-56.
73. Macken, C. A. and Perelson, A. S. (1985). Stochastic models for the kinetics of cell-mediated cytotoxicity. In: *Pacific Statistical Congress-1985*, I. S. Francis, B. F. J. Manly, and F. C. Lam, eds. Elsevier Science (North-Holland), Amsterdam, pp. 453-459.
74. Perelson, A. S. (1986). Paradoxes in B cell stimulation by polymeric antigen and the immunon concept. In: *Paradoxes in Immunology*, G. W. Hoffmann, J. G. Levy, and G. T. Nepom, eds. CRC Press, Boca Raton, Florida, pp. 199-214.
75. Perelson, A. S. and Coutsias, E. A. (1986). A moving boundary model of acrosomal elongation. *J. Math. Biol.* **23**:361-379.
76. Farmer, J. D., Packard, N. H. and Perelson, A. S. (1986). The immune system, adaptation, and machine learning. *Physica D* **22**: 187-204. Reprinted in: *Evolution, Games and Learning*, D. Farmer, A. Lapedes, N. Packard and B. Wendroff, eds. North-Holland, Amsterdam, pp. 187-204.
77. Lebow, L. T., Stewart, C. C., Perelson, A. S. and Bonavida, B. (1986). Analysis of lymphocyte-target conjugates by flow cytometry: I. Discrimination between killer and non-killer lymphocytes bound to targets and sorting of conjugates containing one or multiple lymphocytes. *Nat. Immun. Cell Growth Regul.* **5**:221-237.
78. Macken, C. A. and Perelson, A. S. (1986). Renewal theory, Geiger counters, and the maximum number of receptors bound to a randomly haptenated polymer chain. *IMA J. Math. Appl. Med. Biol.* **3**:71-97.
79. Macken, C. A. and Perelson, A. S. and Stewart, C. C. (1986). A stochastic model of macrophage colony growth. In: *IMACS Trans. Scientific Computation '85*, Vol. 5, *Modelling of Biomedical Systems*, J. Eisenfeld and M. Witten, eds. Elsevier Science (North-Holland), Amsterdam, pp. 173-179.
80. Perelson, A. S., Hyman, J. M., Maini, P. K., Murray, J. D., and Oster, G. F. (1986). Nonlinear pattern selection in a mechanical model for morphogenesis. *J. Math. Biol.* **24**:525-541.
81. Farmer, J. D., Kauffman, S. A., Packard, N. H., and Perelson, A. S. (1987). Adaptive dynamic networks as models for the immune system and autocatalytic sets, (in *Perspectives in Biological Dynamics and Theoretical Medicine*, eds. S. H. Koslow, A. J. Mandell, and M. F. Shlesinger). *Annals New York Acad. Sci.*, **504**:118-130.
82. Brendel, V. and Perelson, A. S. (1987). A note on stochastic models for bacterial adhesion. *J. Theoret. Biol.* **126**:247-249.
83. Brendel, V. and Perelson, A. S. (1987). Kinetics of adsorption processes. *SIAM J. Appl. Math.* **47**:1306-1319.

84. Oster, G. F. and Perelson, A. S. (1987). The physics of cell motility. *J. Cell Sci. Suppl.* **8**:35–54. Also reprinted in *Cell Behavior: Shape, Adhesion and Motility* J. Heaysman, C. Middleton and F. Watt, eds., Company of Biologists, Ltd., Cambridge, England, pp. 35-54.
85. Kevrekidis, I. G., Zecha, A. D., and Perelson, A. S. (1988). Modeling dynamical aspects of the immune response. I. T cell proliferation and the effect of IL-2. In *Theoretical Immunology, Part One, SFI Studies in the Sciences of Complexity*, A. S. Perelson, ed. Addison-Wesley, Reading, MA, pp. 167-197.
86. Segel, L. A. and Perelson, A. S. (1988). Computations in shape space: A new approach to immune network theory. In *Theoretical Immunology, Part Two, SFI Studies in the Sciences of Complexity*, A. S. Perelson, ed. Addison-Wesley, Reading, MA, pp. 321-343.
87. Kauffman, S. A., Weinberger, E. D. and Perelson, A. S. (1988). Maturation of the immune response via adaptive walks on affinity landscapes. In *Theoretical Immunology, Part One, SFI Studies in the Sciences of Complexity*, A. S. Perelson, ed. Addison-Wesley, Reading, MA, pp. 349-382.
88. Perelson, A. S. (1988). Toward a realistic model of the immune system. In *Theoretical Immunology, Part Two, SFI Studies in the Sciences of Complexity*, A. S. Perelson, ed. Addison-Wesley, Reading, MA, pp. 377-401.
89. Brendel, V. B. and Perelson, A. S. (1989). Kinetics of complementary RNA–RNA interactions involved in plasmid ColE1 copy number control. *J. Mol. Biol.* **208**, 245–255.
90. Segel, L. A. and Perelson, A. S. (1989). Shape space analysis of immune networks. In *Cell to Cell Signalling: From Experiments to Theoretical Models*, A. Goldbeter, ed., Academic Press, New York, pp. 273–283.
91. Perelson, A. S. (1989). Immune networks: A topological view. In *Cell to Cell Signalling: From Experiments to Theoretical Models*, A. Goldbeter, ed., Academic Press, New York, pp. 261–272.
92. Macken, C. A. and Perelson, A. S. (1989). Protein evolution on rugged landscapes. *Proc. Natl. Acad. Sci. USA* **86**, 6191–6195.
93. Oster, G. F., Cheng, L. Y., Moore, H.-P., and Perelson, A. S. (1989). Vesicle formation in the Golgi apparatus. *J. Theoret. Biol.*, **141**, 465–504.
94. Perelson, A. S. (1989). Modeling the interaction of HIV with the immune system. In *Mathematical and Statistical Approaches to AIDS Epidemiology*, C. Castillo-Chavez, ed., Lect. Notes in Biomath., Vol. 83, Springer-Verlag, New York, pp. 350–370.
95. Perelson, A. S. (1989). Immune network theory. *Immunol. Rev.* **110**, 5–36.
96. Segel, L. A. and Perelson, A. S. (1989). Shape space: An approach to the evaluation of cross-reactivity effects, stability and controlability in the immune system. *Immunol. Lett.* **22**, 91-99.
97. Segel, L. A. and Perelson, A. S. (1989). Some reflections on memory in shape space. In *Theories of Immune Networks*, H. Atlan and I. R. Cohen, eds., Springer-Verlag, Berlin, pp. 63–70.
98. Bagley, R. J., Farmer, J. D., Packard, N. H., Perelson, A. S. and Stadnyk, I. M. (1989). Modeling adaptive biological systems. *Biosystems* **23**, 113–138.
99. Segel, L. A. and Perelson, A. S. (1990). A paradoxical instability caused by relatively short range inhibition. *Siam J. Appl. Math.* **50**, 91–107.
100. Perelson, A. S. (1990). Theoretical immunology. *Bulletin of the Santa Fe Institute* **5(2)**, 3–5.

101. Weisbuch, G., De Boer, R., and Perelson, A. S. (1990). Localized memories in idiotypic networks. *J. Theoret. Biol.* **146**, 483–499.
102. De Boer, R., Kevrekidis, I. G., and Perelson, A. S. (1990). A simple idiotypic network model with complex dynamics. *Chem. Eng. Sci.* **45**, 2375–2382.
103. Perelson, A. S. (1990). Theoretical immunology. In *1989 Lectures in Complex Systems*, SFI Studies in the Sciences of Complexity, Lect. Vol. II, E. Jen, ed., Addison-Wesley, Reading, MA, pp. 465–499.
104. Macken, C. A. and Perelson, A. S. (1991). Affinity maturation on rugged landscapes. In *Molecular Evolution on Rugged Landscapes: Proteins, RNA and the Immune System*, A. S. Perelson and S. A. Kauffman, eds., SFI Studies in the Sciences of Complexity, Vol. 9, Addison-Wesley, Reading, MA, pp. 93–118.
105. Weisbuch, G. and Perelson, A. S. (1991). Affinity maturation and learning in immune networks. In *Molecular Evolution on Rugged Landscapes: Proteins, RNA and the Immune System*, A. S. Perelson and S. A. Kauffman, eds., SFI Studies in the Sciences of Complexity, Vol. 9, Addison-Wesley, Reading, MA, pp. 189–205.
106. Macken, C. A., Hagan, P., and Perelson, A. S. (1991). Evolutionary walks on rugged landscapes. *SIAM J. Appl. Math.* **51**, 799–827.
107. De Boer, R. J. and Perelson, A. S. (1991). Size and connectivity as emergent properties of a developing immune network. *J. Theoret. Biol.* **149**, 381–424.
108. Segel, L. A. and Perelson, A. S. (1991). Exploiting the diversity of time scales in the immune system: A B-cell antibody model. *J. Stat. Phys.* **63**, 1113–1131.
109. Forrest, S. and Perelson, A. S. (1991). Genetic algorithms and the immune system. In *Parallel Problem Solving from Nature*, H.-P. Schwefel and R. Maenner, eds., Lect. Notes in Computer Science, Vol. 496, Springer-Verlag, Berlin, pp. 320–325.
110. Perelson, A. S. (1991). Chaos. In: *Biological Kinetics*, L. A. Segel, ed., Cambridge University Press, Cambridge, pp. 197–213.
111. Nelson, G. W. and Perelson, A. S. (1992). A mechanism of immune evasion by slow replicating HIV strains. *J. AIDS* **5**, 82–93.
112. Perelson, A. S. and Weisbuch, G. (1992). Modeling immune reactivity in secondary lymphoid organs. *Bull. Math. Biol.* **54**, 649–672.
113. De Boer, R. J., Segel, L. A. and Perelson, A. S. (1992). Pattern formation in one and two dimensional shape space models of the immune system. *J. Theoret. Biol.* **155**, 295–333.
114. Perelson, A. S. and Macken, C. A. (1992). Mathematical models of evolution on rugged landscapes. In *Spin Glasses in Biology*, D. Stein, ed., World Scientific Press, Singapore, pp. 159–177.
115. Goldstein, B., Jones, D., Kevrekidis, I. G. and Perelson, A. S. (1992). Evidence for p55–p75 heterodimers in the absence of interleukin-2 from Scatchard plot analysis. *Int. Immunol.* **4**, 23–32.
116. Forrest, S., and Perelson, A. S. (1992). Computation and the immune system. *Assoc. Comp. Mach. SIGBIO Newsletter on Biologically Motivated Computing* **12** (No. 2), 52–57.
117. Perelson, A. S. (1992). Mathematical approaches to immunology. In *Theory and Control of Dynamical Systems: Applications to Systems in Biology*, S. I. Andersson, Å. E. Andersson, and U. Ottoson, eds., World Scientific, Singapore, pp. 200–230.

118. De Boer, R. J., Hogeweg, P. and Perelson, A. S. (1992). Growth and recruitment in the immune network. In *Theoretical and Experimental Insights into Immunology*, A. S. Perelson and G. Weisbuch, eds., Springer-Verlag, Berlin, pp. 223–247.
119. Perelson, A. S. and Goldstein, B. (1992). Interaction of interleukin-2 with its cell surface receptors: Interpretation of equilibrium binding experiments via Scatchard plots. In *Theoretical and Experimental Insights into Immunology*, A. S. Perelson and G. Weisbuch, eds., Springer-Verlag, Berlin, pp. 117–148.
120. Segel, L. A., Perelson, A. S., Hyman, J. M., and Klaus, S. N. (1992). Rash theory. In *Theoretical and Experimental Insights into Immunology*, A. S. Perelson and G. Weisbuch, eds., Springer-Verlag, Berlin, pp. 333–352.
121. Percus, J. K., Percus, O. E., and Perelson, A. S. (1992). Probability of self–nonself discrimination. In *Theoretical and Experimental Insights into Immunology*, A. S. Perelson, and G. Weisbuch, eds., Springer-Verlag, Berlin, pp. 63–70.
122. Segel, L. A. and Perelson, A. S. (1992). Plasmid copy number control: A case study of the quasi-steady state assumption. *J. Theoret. Biol.* **158**, 481–494.
123. Perelson, A. S., Kirschner, D. E., and De Boer, R. J. (1993). Dynamics of HIV infection of CD4⁺ T cells. *Math. Biosciences* **114**, 81–125.
124. Smith, R. E., Forrest, S. and Perelson, A. S. (1993). Population diversity in an immune system model: implications for genetic search. In *Foundations of Genetic Algorithms*, 2, L. D. Whitley, ed., Morgan Kaufmann, San Mateo, CA, pp. 153–165.
125. Fishman, M. and Perelson, A. S. (1993). Modeling T cell-antigen presenting cell interactions. *J. Theoret. Biol.* **160**, 311–342.
126. Percus, J. K., Percus, O. E., and Perelson, A. S. (1993). Predicting the size of the T cell receptor and antibody combining region from consideration of efficient self–nonself discrimination. *Proc. Natl. Acad. Sci. USA* **90**, 1691–1695.
127. Brendel, V. and Perelson, A. S. (1993). A quantitative model of ColE1 plasmid copy number control. *J. Mol. Biol.* **229**, 860–872.
128. De Boer, R. J., Perelson, A. S., and Kevrekidis, I. G. (1993). Immune network behavior I: From stationary states to limit cycle oscillations. *Bull. Math. Biol.* **55**, 745–780.
129. De Boer, R. J., Perelson, A. S., and Kevrekidis, I. G. (1993). Immune network behavior II: From oscillations to chaos and stationary states. *Bull. Math. Biol.* **55**, 781–816.
130. De Boer, R. J. and Perelson, A. S. (1993). How diverse should the immune system be? *Proc. Roy. Soc. London B* **252**, 171–175.
131. Kepler, T. B. and Perelson, A. S. (1993). Cyclic reentry of germinal center B cells and the efficiency of affinity maturation. *Immunol. Today* **14**, 412–415.
132. Smith, R. E., Forrest, S., and Perelson, A. S. (1993). Searching for diverse cooperative populations with genetic algorithms. *Evolutionary Computation* **1**, 127–149.
133. De Boer, R., Neumann, A. U., Perelson, A. S., Segel, L. A. and Weisbuch, G. (1993). Recent approaches to immune networks. In *Mathematics Applied to Biology and Medicine*, J. Demongeot and V. Capasso eds., Wuerz, Winnipeg, Canada, pp. 243–261.
134. Kepler, T. B. and Perelson, A. S. (1993). Somatic hypermutation in B cells: An optimal control treatment. *J. Theoret. Biol.* **164**, 37–64.

135. Anderson, R. W., Neumann, A., and Perelson, A. S. (1993). A Cayley tree immune network model with antibody dynamics. *Bull. Math. Biol.* **55**, 1091–1131.
136. Forrest, S., Javornik, B., Smith, R. E. and Perelson, A. S. (1993). Using genetic algorithms to explore pattern recognition in the immune system. *Evolutionary Computation* **1**, 191–211.
137. Rose, R. and Perelson, A. S. (1994). Immune networks and immune responses. In *Frontiers in Mathematical Biology*, S. Levin, ed., *Lect. Notes Biomath.* **100**, 159–172.
138. Oster, G. and Perelson, A. S. (1994). Cell protrusions. In *Frontiers in Mathematical Biology*, S. Levin, ed., *Lect. Notes Biomath.* **100**, 53–78.
139. Kuznetsov, V. A., Makalkin, I. A., Taylor, M. A. and Perelson, A. S. (1994). Nonlinear dynamics of immunogenic tumors: parameter estimation and global bifurcation analysis. *Bull. Math. Biol.* **56**, 295–321.
140. Merrill, S. J., De Boer, R. J., and Perelson, A. S. (1994). Development of the T-cell repertoire: clone size distribution. *Rocky Mountain J. Math.* **24**, 213–231.
141. Forrest, S., Perelson, A. S., Allen, L. & Cherukuri, R. (1994). Self-nonself discrimination in a computer. In *Proc. 1994 IEEE Symp. on Research in Security and Privacy*. IEEE Computer Society Press, Los Alamitos, CA, pp. 202–212.
142. Perelson, A. S. (1994). Two theoretical problems in immunology: AIDS and epitopes. In *Complexity: Metaphors, Models and Reality*, G. Cowan, D. Pines and D. Meltzer, eds., Addison-Wesley, Reading, MA, pp. 185–197.
143. Fishman, M. A. and Perelson, A. S. (1994). Th1/Th2 cross-regulation. *J. Theoret. Biol.* **170**, 25–56.
144. Essunger, P. and Perelson, A. S. (1994). Modeling HIV infection of CD4⁺ T-cell subpopulations. *J. Theoret. Biol.* **170**, 367–391.
145. De Boer, R. J. and Perelson, A. S. (1994). T cell repertoires and competitive exclusion. *J. Theoret. Biol.* **169**, 375–390.
146. De Boer, R. J., Perelson, A. S. and Kevrekidis, I. G. (1994). Immune network behavior: Oscillations, chaos and stationary states. *Proc. IFAC Symp. on Modeling and Control in Biomedical Systems, Galveston, TX, March 27-30, 1994*, B. W. Patterson, ed., pp. 161–163.
147. Stadler, P. F., Schuster, P. and Perelson, A. S. (1994). Immune networks modeled by replicator equations. *J. Math. Biol.* **33**, 111–137.
148. Ho, D. D., Neumann, A. U., Perelson, A. S., Chen, W., Leonard, J. M. and Markowitz, M. (1995). Rapid turnover of plasma virions and CD4 lymphocytes in HIV-1 infection. *Nature* **373**, 123–126.
149. Nelson, G. W. and Perelson, A. S. (1995). Modeling defective interfering virus therapy for AIDS: Conditions for DIV survival. *Math. Biosciences* **125**, 127–153.
150. Kirschner, D. E. and Perelson, A. S. (1995). A model for the immune system response to HIV: AZT treatment studies. In *Mathematical Population Dynamics: Analysis of Heterogeneity and the Theory of Epidemics*. Arino, O., Axelrod, D. E., Kimmel, M., and Langlais, M., eds., Wuerz Publishing, Winnipeg, Canada, pp. 295–310.
151. Fishman, M. A. and Perelson, A. S. (1995). Lymphocyte memory and affinity selection. *J. Theoret. Biol.* **173**, 241–262.

152. Pennypacker, C., Perelson, A. S., Nys, N., Nelson, G. and Sessler, D. I. (1995). Localized or systemic *in vivo* heat-inactivation of human immunodeficiency virus (HIV): A mathematical analysis. *J. AIDS* **8**, 321–329.
153. Ho, D. D., Perelson, A. S. and Shaw, G. M. (1995). Scientific correspondence. *Nature* **375**, 198.
154. Hightower, R., Forrest, S. and Perelson, A. S. (1995). The evolution of emergent organization in immune system gene libraries. In *Proc. Sixth Intl. Conf. Genetic Algorithms*, L. J. Eshelman (ed.), Morgan Kaufman, San Francisco, CA, pp. 344–350.
155. De Boer, R. J. and Perelson, A. S. (1995). Towards a general function describing T cell proliferation. *J. Theoret. Biol.* **175**, 567–576.
156. Kepler, T. B. and Perelson, A. S. (1995). Modeling and optimization of populations subject to time-dependent mutation. *Proc. Natl. Acad. Sci. USA* **92**, 8219–8223.
157. Mehr, R., Globerson, A. and Perelson, A. S. (1995). Modeling positive and negative selection and differentiation processes in the thymus. *J. Theoret. Biol.* **175**, 103–126.
158. Macken, C. A. and Perelson, A. S. (1995). Protein evolution on partially correlated landscapes. *Proc. Natl. Acad. Sci. USA* **92**, 9657–9661.
159. Perelson, A. S. and Kepler, T. B. (1995). The immune system as a complex system: Adaptation by somatic mutation. In *Chaos & Complexity*, J. Trần Tranh Vân, P. Bergé, R. Conte and M. Dubois, eds., Editiones Frontières, Gif-sur-Yvette, France, pp. 97–106.
160. De Boer, R. J., Boerlijst, M. C., Sulzer, B. and Perelson, A. S. (1996). A new bell-shaped function for idiotypic interactions based upon crosslinking. *Bull. Math. Biol.* **58**, 285–312.
161. Sulzer, B., De Boer, R. J. and Perelson, A. S. (1996). Crosslinking reconsidered: Binding and crosslinking fields and the cellular response. *Biophysical J.* **70**, 1154–1168.
162. Sulzer, B. and Perelson, A. S. (1996). Equilibrium binding of multivalent ligands to cells: Effects of cell and receptor density. *Math. Biosciences* **135**, 147–185.
163. Mehr, R., Globerson, A. & Perelson, A. S. (1996). Models for selection processes in the thymus. *Int. J. Appl. Sci. Comp.* **3**, 1–19.
164. Hightower, R., Forrest, S. and Perelson, A. S. (1996). The Baldwin effect in the immune system: Learning by somatic hypermutation. In *Adaptive Individuals in Evolving Populations: Models and Algorithms*, R. K. Belew and M. Mitchell, eds., Santa Fe Institute Studies in the Sciences of Complexity, Addison-Wesley, Reading, MA, pp. 159–167.
165. Perelson, A. S., Neumann, A. U., Markowitz, M., Leonard, J. M. and Ho, D. D. (1996). HIV-1 dynamics in vivo: Virion clearance rate, infected cell lifespan, and viral generation time. *Science* **271**, 1582–1586.
166. Huynen, M. A., Perelson, A. S., Vieira, W. A. and Stadler, P. F. (1996). Base pairing probabilities in a complete HIV-1 RNA. *J. Comp. Biol.* **3**, 253–274.
167. Goudsmit, J., de Ronde, A., Ho, D. D. and Perelson, A. S. (1996). Human immunodeficiency virus fitness in vivo: Calculations based on a single zidovudine resistance mutation at codon 215 of reverse transcriptase. *J. Virol.* **70**, 5662–5664.
168. Oprea, M. and Perelson, A. S. (1996). Exploring the mechanisms of primary antibody responses to T cell-dependent antigens. *J. Theoret. Biol.* **181**, 215–236.
169. Mehr, R., Perelson, A. S., Fridkis-Hareli, M. and Globerson, A. (1996). Feedback regulation of T cell development in the thymus. *J. Theoret. Biol.* **181**, 157–167.

170. Perelson, A. S., Hightower, R. and Forrest, S. (1996). Evolution and somatic learning in V-region genes. *Res. Immunol.* **147**, 202–208.
171. Detours, V., Sulzer, B. and Perelson, A. S. (1996). Size and connectivity of the idiotypic network are independent of the discreteness of the affinity distribution. *J. Theoret. Biol.* **183**, 409–416.
172. Haase, A. T., Henry, K., Zupancic, M., Sedgewick, G., Faust, R. A., Melroe, H., Cavert, W., Gebhard, K., Staskus, K., Zhang, Z.-Q., Dailey, P. J., Balfour, H. H., Jr., Erice, A. and Perelson, A. S. (1996). Quantitative image analysis of HIV-1 infection in lymphoid tissue. *Science* **274**, 985–989.
173. Mehr, R., Perelson, A. S., Fridkis-Hareli, M. and Globerson, A. (1996). Feedback regulation of T cell development: Manifestations in aging. *Mech. Aging Develop.* **91**, 195–210.
174. Perelson, A. S. (1996). Second phase of viral decline after antiretroviral therapy. *Antiviral Therapy* **1** (Suppl. 2), 3–4.
175. Levin, S., Grenfell, B., Hastings, A. and Perelson, A. S. (1997). Mathematical and computational challenges in population biology and ecosystem science. *Science* **275**, 334–343.
176. Perelson, A. S., Essunger, P., Cao, Y., Vesananen, M., Hurley, A., Saksela, K., Markowitz, M. and Ho, D. D. (1997). Decay characteristics of HIV-1-infected compartments during combination therapy. *Nature* **387**, 188–191.
177. Lam, N. P., Neumann, A. U., Gretch, D. R., Wiley, T. E., Perelson, A. S. and Layden, T. J. (1997). Dose-dependent acute clearance of hepatitis C genotype 1 virus with interferon-alpha. *Hepatology* **26**, 226–231.
178. Mehr, R. and Perelson, A. S. (1997). Blind T cell homeostasis and the CD4/CD8 ratio in the thymus and in the peripheral blood. *J. AIDS Human Retrovirol.* **14**, 387–398.
179. Sulzer, B. and Perelson, A. S. (1997). Immunons revisited: Binding of multivalent antigens to B cells. *Mol. Immunol.* **34**, 63–74.
180. Pierre, D. M., Goldman, D., Bar-Yam, Y. and Perelson, A. S. (1997). Somatic evolution in the immune system: The need for germinal centers for efficient affinity maturation. *J. Theoret. Biol.* **186**, 159–171.
181. Perelson, A. S., Essunger, P. and Ho, D. D. (1997). Dynamics of HIV-1 and CD4⁺ lymphocytes in vivo. *AIDS* **11** (suppl. A), S17-S24.
182. De Boer, R. J. and Perelson, A. S. (1997). Competitive control of the self-renewing T cell repertoire. *Intl. Immunol.* **9**, 779–790.
183. Coutsias, E. A., Wester, M. J. and Perelson, A. S. (1997). A nucleation theory of cell surface capping. *J. Stat. Phys.* **87**, 1179–1203.
184. Oprea, M. and Perelson, A. S. (1997). Somatic mutation leads to efficient affinity maturation when centrocytes recycle back to centroblasts. *J. Immunol.* **158**, 5155–5162.
185. Perelson, A. S. and Weisbuch, G. (1997). Immunology for physicists. *Rev. Modern Phys.* **69**, 1219–1267.
186. Mehr, R., Perelson, A. S., Fridkis-Hareli, M. and Globerson, A. (1997). Regulatory feedback pathways in the thymus. *Immunol. Today* **18**, 581–585.
187. Lam, N. P., Neumann, A. U., Perelson, A. S. and Layden, T. J. (1997). Hepatitis C: viral kinetics. *Hepatology* **26**, 1692–1693.

188. Smith, D. J., Forrest, S., Hightower, R. R. and Perelson, A. S. (1997). Deriving shape space parameters from immunological data. *J. Theoret. Biol.* **189**, 141–150.
189. Smith, D. J., Forrest, S., Ackley, D. H. and Perelson, A. S. (1997). Modeling the effects of prior infection on vaccine efficacy. In *Proc. 1997 IEEE Intl. Conf. on Systems, Man, and Cybernetics*, October, 1997, Orlando, FL, pp. 363-368. Also, in *Artificial Immune Systems and their Applications*, D. Dasgupta, ed., Springer-Verlag, Berlin, pp. 144–153, 1999.
190. Mohri, H., Bonhoeffer, S., Monard, S., Perelson, A. S. and Ho, D. D. (1998). Rapid turnover of T lymphocytes in SIV-infected rhesus macaques. *Science* **279**, 1223–1227.
191. Stilianakis, N. I., Perelson, A. S. and Hayden, F. G. (1998). Emergence of drug resistance during an influenza epidemic: Insights from a mathematical model. *J. Infect. Dis.* **177**, 863-873.
192. De Boer, R. J. and Perelson, A. S. (1998). Target cell limited and immune control models of HIV infection: a comparison. *J. Theoret. Biol.* **190**, 201-214.
193. Sachsenberg, N., Perelson, A. S., Yerly, S., Schockmel, G. A., Leduc, D., Hirschel, B. and Perrin, L. (1998). Turnover of CD4⁺ and CD8⁺ T lymphocytes in HIV-1 infection as measured by Ki-67 antigen. *J. Exp. Med.* **187**, 1295-1303.
194. Wein, L. M., D'Amato, R. M. and Perelson, A. S. (1998). Mathematical analysis of antiretroviral therapy aimed at HIV-1 eradication or maintenance of low viral loads. *J. Theoret. Biol.* **192**, 81-98.
195. Kirschner, D. E., Mehr, R. and Perelson, A. S. (1998). Role of the thymus in pediatric HIV-1 infection. *J. AIDS & Human Retrovirol.* **18**, 95–109.
196. Smith, D. J., Forrest, S., Ackley, D. H. and Perelson, A. S. (1998). Using lazy evaluation to simulate realistic-size repertoires in models of the immune system. *Bull. Math. Biol.* **60**, 647–658.
197. Mehr, R., Perelson, A. S., Sharp, A., Segel, L. and Globerson, A. (1998). MHC-linked syngeneic developmental preference in thymic lobes colonized with bone marrow cells: A mathematical model. *Devel. Immunol.* **5**, 303-318.
198. Notermans, D., Goudsmit, J., Danner, S. A., de Wolf, F., Perelson, A. S. and Mittler, J. (1998). Rate of HIV-1 decline following antiretroviral therapy is related to the viral load at baseline and drug regime. *AIDS* **12**, 1483–1490.
199. De Boer, R. J., Boucher, C. A. B. and Perelson, A. S. (1998). Target cell availability and the successful suppression of HIV by hydroxyurea and didanosine. *AIDS* **12**, 1567–1570.
200. Mittler, J. E., Sulzer, B., Neumann, A. U. and Perelson, A. S. (1998). Influence of delayed virus production on viral dynamics in HIV-1 infected patients. *Math. Biosciences* **152**, 143–163.
201. Kepler, T. B. and Perelson, A. S. (1998). Drug concentration heterogeneity facilitates the evolution of drug resistance. *Proc. Natl. Acad. Sci. USA* **95**, 11514-11519.
203. Posner, R. G., Bold, J., Bernstein, Y., Rasor, J., Braslow, J. Hlavacek, W. S. and Perelson, A. S. (1998). Measurement of receptor cross-linking at the cell surface via multiparameter flow cytometry. *Proc. Soc. Photo-Optical Instrument. Engr. (SPIE)* **3256**, 132-143.
204. Neumann, A. U., Lam, N. P., Dahari, H., Gretch, D. R., Wiley, T. E., Layden, T. J. and Perelson, A. S. (1998). Hepatitis C viral dynamics in-vivo and anti-viral efficacy of interferon- α therapy. *Science* **282**, 103-107.

205. Perelson, A. S. and Nelson, P. (1999). Mathematical analysis of HIV-1 dynamics in vivo. *SIAM Rev.* **41**, 3-44.
206. Zhang, L., Dailey, P. J., Gettie, A., He, T., Bonhoeffer, S., Perelson, A. S. and Ho, D. D. (1999). Rapid clearance of simian immunodeficiency virus particles from plasma of rhesus macaques. *J. Virol.* **73**, 855-860.
207. Jin, X., Bauer, D. E., Tuttleton, S. E., Lewin, S., Gettie, A., Blanchard, J., Irwin, C. E., Safrit, J. T., Mittler, J., Weinberger, L., Kostrikis, L., Zhang, L., Perelson, A. S. and Ho, D. D. (1999). Dramatic rise in plasma viremia after CD8+ T-cell depletion in simian immunodeficiency virus-infected macaques. *J. Exp. Med.* **189**, 991-998.
208. Perelson, A. S., Bonhoeffer, S., Mohri, H. and Ho, D. D. (1999). T cell turnover in SIV infection. *Science* **284**, 555b-555c (Technical comment).
209. Hlavacek, W. S., Perelson, A. S., Sulzer, B., Bold, J., Paar, J., Gorman, W. and Posner, R. G. (1999). Quantifying aggregation of IgE-Fc ϵ RI by multivalent antigen. *Biophys. J.* **76**, 2421-2431.
210. Hlavacek, W. S., Posner, R. G. and Perelson, A. S. (1999). Steric effects on multivalent ligand-receptor binding: Exclusion of ligand sites by bound cell surface receptors. *Biophys. J.* **76**, 3031-3043.
211. Detours, V. and Perelson, A. S. (1999). Explaining high alloreactivity as a quantitative consequence of affinity-driven thymocyte selection. *Proc. Natl. Acad. Sci. USA* **96**, 5153-5158.
212. Zhang, L., Ramratnam, B., Tenner-Racz, K., He, Y., Vesanen, M., Lewin, S., Talal, A., Racz, P., Perelson, A. S., Korber, B. T., Markowitz, M. and Ho, D. D. (1999). Quantifying residual HIV-1 replication in patients on receiving combination antiretroviral therapy. *New Engl. J. Med.* **340**, 1605-1613.
213. Furtado, M. R., Callaway, D. S., Phair, J. P., Macken, C. A., Perelson, A. S. and Wolinsky, S. M. (1999). Persistence of HIV-1 transcription in peripheral-blood mononuclear cells in patients receiving potent antiretroviral therapy. *New Engl. J. Med.* **340**, 1614-1622.
214. Smith, D., Forrest, S. and Perelson, A. S. (1999). Immunological memory is associative. In *Artificial Immune Systems and Their Applications*, D. Dasgupta, ed., Springer-Verlag, Berlin, pp. 105-114.
215. Mittler, J. E., Markowitz, M., Ho, D. D. and Perelson, A. S. (1999). Improved estimates for HIV-1 clearance rate and intracellular delay. *AIDS* **13**, 1415-1417.
216. Fishman, M. A. and Perelson, A. S. (1999). Th1/Th2 differentiation and cross-regulation. *Bull. Math. Biol.* **61**, 403-436.
217. Perelson, A. S. and Wiegel, F. W. (1999). Some design principles for immune system recognition. *Complexity* **4**, 29-37.
218. Perelson, A. S. (1999). Viral kinetics and mathematical models. *Amer. J. Med.* **107(6B)**, 49S-52S.
219. Ramratnam, B., Bonhoeffer, S., Binley, J., Hurley, A., Zhang, L., Mittler, J. E., Markowitz, M., Moore, J. M., Perelson, A. S. and Ho, D. D. (1999). Rapid production and clearance of HIV-1 and hepatitis C virus assessed by large volume plasma apheresis. *The Lancet* **354**, 1782-1785.
220. Gunthard, H., Frost, S. D. W., Leigh-Brown, A. J., Ignacio, C. C., Kee, K., Perelson, A. S., Spina, C. A., Havlir, D. V., Hezareh, M., Looney, D. J., Richman, D. D. and Wong, J. K.

- (1999). Evolution of envelope sequence of HIV-1 in cellular reservoirs in the setting of potent antiviral therapy. *J. Virology* **73**, 9404–9412.
221. Detours, V., Mehr, R. and Perelson, A. S. (1999). A quantitative theory of affinity-driven T cell repertoire selection. *J. Theoret. Biol.* **200**, 389–403.
222. Hlavacek, W. S., Wofsy, C. and Perelson, A. S. (1999). Dissociation of HIV-1 from follicular dendritic cells during HAART: Mathematical analysis. *Proc. Natl. Acad. Sci. USA* **96**, 14681–14686.
223. Smith, D. J., Forrest, S. Ackley, D. H. and Perelson, A. S. (1999). Variable efficacy of repeated annual influenza vaccination. *Proc. Natl. Acad. Sci. USA* **96**, 14001–14006.
224. Ramratnam, B., Mittler, J. E., Zhang, L. Boden, D., Hurley, A., Fang, F., Macken, C., Perelson, A. S., Markowitz, M. and Ho, D. D. (2000). The decay of the latent reservoir of replication-competent HIV-1 is inversely correlated with the extent of residual viral replication during prolonged antiretroviral therapy. *Nature Med.* **6**, 82–85.
225. Oprea, M., van Nimwegen, E. and Perelson, A. S. (2000). Dynamics of one-pass germinal center models: Implications for affinity maturation. *Bull. Math. Biol.* **62**, 121–153.
226. Detours, V., Mehr, R. and Perelson, A. S. (2000). Deriving quantitative constraints on T cell selection from data on the mature T cell repertoire. *J. Immunol.* **164**, 121–128.
227. Percus, J. K., Percus, O. E. and Perelson, A. S. (2000). Random binding of dimers to chains. *J. Math. Biol.* **40**, 278–294.
228. Nelson, P. W., Murray, J. D. and Perelson, A. S. (2000). A model of HIV-1 pathogenesis that includes an intracellular delay. *Math. Biosciences* **163**, 201–215.
229. Stafford, M. A., Corey, L., Cao, Y., Daar, E., Ho, D. D. and Perelson, A. S. (2000). Modeling plasma virus concentration during primary HIV infection. *J. Theoret. Biol.* **203**, 285–301.
230. Bonhoeffer, S., Mohri, H., Ho, D. D. and Perelson, A. S. (2000). Quantification of cell turnover using BrdU. *J. Immunol.* **164**, 5049–5054.
231. Metzner, K. J., Jin, X., Lee, F. V., Gettie, A., Bauer, D. E., Di Mascio, M., Perelson, A. S., Marz, P. A., Ho, D. D., Kostrikis, L. G. and Connor, R. I. (2000). Effects of in vivo CD8+ T cell depletion on virus replication in rhesus macaques immunized with a live, attenuated simian immunodeficiency virus vaccine. *J. Exp. Med.* **191**, 1921–1931.
232. Shiratori, Y., Perelson, A. S., Weinberger, L., Imazeki, F., Yokosuka, O., Nakata, R., Ihori, M., Hirota, K., Ono, N., Kuroda, H., Motojima, T., Nishigaki, M. and Omata, M. (2000). Different turnover rate of hepatitis C virus clearance by different treatment regime using interferon-beta. *J. Hepatology* **33**, 313–322.
233. Neumann, A. U., Lam, N. P., Dahari, H., Davidian, M., Wiley, T. E., Mika, B. P., Perelson, A. S. and Layden, T. J. (2000). Differences in viral dynamics between genotypes 1 and 2 of hepatitis C virus. *J. Infect. Dis.* **182**, 28–35.
234. Detours, V. and Perelson, A. S. (2000). The paradox of alloreactivity and self MHC restriction: quantitative analysis and statistics. *Proc. Natl. Acad. Sci. USA* **97**, 8479–8483.
235. Hlavacek, W. S., Stilianakis, N. I. and Perelson, A. S. (2000). Influence of follicular dendritic cells on HIV dynamics. *Phil. Trans. Roy. Soc. Lond. B* **355**, 1051–1058.

236. Hlavacek, W. S., Stilianakis, N. I., Notermans, D. W., Danner, S. A. and Perelson, A. S. (2000). Influence of follicular dendritic cells on decay of HIV type 1 during antiretroviral therapy. *Proc. Natl. Acad. Sci. USA* **97**, 10966-10971.
237. Smith, B. A., Gartner, S., Liu, Y., Perelson, A. S., Stilianakis, N. I., Szakal, A. K., Tew, J. G. and Burton, G. (2001). Persistence of infectious HIV on follicular dendritic cells. *J. Immunol.* **166**, 690-696.
238. Bekkering, F. C., Stalgis, C., McHutchison, J. G., Brouwer, J. T. and Perelson, A. S. (2001). Estimation of early hepatitis C viral clearance in patients receiving daily interferon and ribavirin therapy using a mathematical model. *Hepatology* **33**, 419-423.
239. Mittler, J., Essunger, P., Yuen, G. J., Clendeninn, N., Markowitz, M. and Perelson, A. S. (2001). Short-term measures of relative efficacy predict longer-term reductions in human immunodeficiency virus type 1 RNA levels following nelfinavir monotherapy. *Antimicrob. Agents Chemother.* **45**, 1438-1443.
240. Whalley, S. A., Murray, J. M., Brown, D., Webster, G. J. M., Emery, V. C., Dusheiko, G. M. and Perelson, A. S. (2001). Kinetics of acute hepatitis B virus infection in humans. *J. Exp. Med.* **193**, 847-853.
241. Nelson, P. W., Mittler, J. E. and Perelson, A. S. (2001). Effect of drug efficacy and the eclipse phase of the viral life cycle on estimates of HIV viral dynamic parameters. *JAIDS* **26**, 405-412.
242. De Boer, R. J., Oprea, M., Antia, R., Murali-Krishna, K., Ahmed, R. and Perelson, A. S. (2001). Recruitment times, proliferation, and apoptosis rates during the CD8+ T cell response to LCMV. *J. Virol.* **75**, 10663-10669.
243. Smith, D. J., Lapedes, A. S., Forrest, S., de Jong, J. C., Osterhaus, A. D. M. E., Fouchier, R. A. M., Cox, N. J. and Perelson, A. S. (2001). Modeling the effects of updating the influenza vaccine on the efficacy of repeated vaccination. In *Options for the Control of Influenza IV: Proc. of the World Congress on the Options for the Control of Influenza, IV, Held in Crete, Greece, 23rd-28th September 2000*, Osterhaus, A., Cox, N. and Hampson, eds., Excerpta Medica, Amsterdam, pp. 655-660.
244. Mohri, H., Perelson, A. S., Tung, K., Ribeiro, R., Ramratnam, B., Markowitz, M., Kost, R., Hurley, A., Weinberger, L., Cesar, D., Hellerstein, M. K. and Ho, D. D. (2001). Increased turnover of T lymphocytes in HIV-1 infection and its reduction by antiretroviral therapy. *J. Exp. Med.* **194**, 1277-1287.
245. De Boer, R. J., Freitas, A. A. and Perelson, A. S. (2001). Resource competition determines selection of B cell repertoires. *J. Theoret. Biol.* **212**, 333-343.
246. Lewin, S. R., Ribeiro, R. M., Walters, T., Lau, G. K., Bowden, S., Locarnini, S. and Perelson, A. S. (2001). Analysis of hepatitis B viral load decline under potent therapy: complex decay profiles observed. *Hepatology* **34**, 1012-1020.
247. Perelson, A. S. and Nelson, P. (2002). Modeling viral infections. In *An Introduction to Mathematical Modeling in Physiology, Cell Biology and Immunology*, J. Sneyd, ed., American Mathematical Society, Providence, RI, pp. 139-172.
248. Callaway, D. S. and Perelson, A. S. (2002). HIV-1 infection and low steady-state viral loads. *Bull. Math. Biol.* **64**, 29-64.
249. Perelson, A. S. (2002). Modelling viral and immune system dynamics. *Nature Rev. Immunol.* **2**, 28-36.

250. Ribeiro, R., Mohri, H., Ho, D. D. and Perelson, A. S. (2002). Modeling deuterated glucose labeling of T lymphocytes. *Bull. Math. Biol.* **64**, 385–405.
251. Schwartz, E. J., Neumann, A. U., Teixeira, A. V., Bruggeman, L. A., Rappaport, J., Perelson, A. S. and Klotman, P. E. (2002). Effect of target cell availability on HIV-1 production in vitro. *AIDS* **16**, 341–345.
252. Hlavacek, W. S., Percus, J. K., Percus, O. E., Perelson, A. S. and Wofsy, C. (2002). Retention of antigen on follicular dendritic cells and B lymphocytes through complement-mediated multivalent ligand-receptor interactions: Theory and application to HIV treatment. *Math. Biosciences* **176**, 185–202.
253. Stilianakis, N. I., Perelson, A. S. and Hayden, F. G. (2002). Drug resistance and influenza pandemics. *The Lancet* **359**, 1862–1863.
254. Nelson, P. W. and Perelson, A. S. (2002). Mathematical analysis of delay differential equation models of HIV-1 infection. *Math. Biosciences* **179**, 73–94.
255. Ribeiro, R., Lo, A. and Perelson, A. S. (2002). Dynamics of hepatitis B virus infection. *Microbes and Infection* **4**, 829–835.
256. Rosen, H. R., Ribeiro, R. R., Weinberger, L., Wolf, S., Chung, M., Gretch, D. R. and Perelson, A. S. (2002). Early hepatitis C viral kinetics correlate with long-term outcome in patients receiving high dose induction followed by combination interferon and ribavirin therapy. *J. Hepatol.* **37**, 124–130.
257. Markowitz, M., Jin, X., Simon, V., Ramratnam, B., Louie, M., Hurley, A., Ramanathan, M., Deschenes, G., Barsoum, S., He, T., Chen, D., Chung, C., Murray, J., Perelson, A. S., Zhang, L. and Ho, D. D. (2002). Discontinuation of antiretroviral therapy commenced early in the course of human immunodeficiency virus (HIV)-1 infection with or without adjunctive vaccination. *J. Infect. Dis.* **186**, 634–643.
258. Ribeiro, R. M. and Perelson, A. S. (2002). HBV viral dynamics: effects of drug dose and baseline alanine aminotransferase *J. Hepatol.* **37**, 277–279.
259. Lewin, S. R., Ribeiro, R., Kaufmann, G. R., Smith, D., Zaunders, J., Law, M., Solomon, A., Caeron, P. U., Cooper, D. and Perelson, A. S. (2002). Dynamics of T cells and TCR excision circles differ after treatment of acute and chronic HIV infection. *J. Immunol.* **169**, 4657–4666.
260. Lyra, A. C., Fan, X., Lang, D., Yusim, K., Ramrakhiani, S., Brunt, E. M., Korber, B., Perelson, A. S. and Di Bisceglie, A. M. (2002). Evolution of hepatitis C viral quasispecies after liver transplantation. *Gastroenterology* **123**, 1485–1493.
261. Ribeiro, R. M., Mohri, H., Ho, D. D. and Perelson, A. S. (2002). In vivo dynamics of T-cell activation, proliferation and death in HIV-1 infection: Why are CD4+ but not CD8+ T-cells depleted? *Proc. Natl. Acad. Sci. USA* **99**, 15572–15577.
262. Jones, L. E. and Perelson, A. S. (2002). Modeling the effects of tetanus vaccination on chronically infected HIV-positive patients. *JAIDS* **31**, 369–377.
263. Han, C., Chaloner, K. and Perelson, A. S. (2002). Bayesian analysis of a population HIV dynamic model. Case Studies in Bayesian Statistics, Vol. 6, C. Gatsonis, R. E. Kass, A. Carriquiry, A. Gelman, D. Higdon, D. K. Pauler and I. Verdinelli (eds.), Lect. Notes in Statistics, vol. 167, Springer, New York, pp. 223–237.

264. Berk, R. A., Bickel, P., Campbell, K., Fovell, R., Keller-McNulty, S., Kelly, E., Linn, R., Park, B., Perelson, A., Roushail, N., Sacks, J. and Schoenberg, F. (2002). Workshop on statistical approaches for the evaluation of complex computer models. *Statistical Sci.* **17**, 173–192.
265. Di Mascio, M., Dornadula, G., Zhang, H., Sullivan, J., Xu, Y., Kulkosky, J., Pomerantz, R. and Perelson, A. S. (2003). In a subset of patients on highly active antiretroviral therapy plasma HIV-1 RNA can decay from 50 copies/ml to < 5 copies/ml with a half-life of six months. *J. Virol.* **77**, 2271–2275.
267. De Boer, R. J., Mohri, H., Ho, D. D. and Perelson, A. S. (2003). Turnover rates of B cells, T cells, and NK cells in SIV-infected and uninfected rhesus macaques. *J. Immunol.* **170**, 2479–2487.
268. Louie, M., Hogan, C., Di Mascio, M., Hurley, A., Simon, V., Rooney, J., Ruiz, N., Brun, S., Sun, E., Perelson, A. S., Ho, D. D. and Markowitz, M. (2003). Determining the relative efficacy of highly active antiretroviral therapy. *J. Infect. Dis.* **187**, 896–900.
269. Percus, J., Percus, O., Markowitz, M., Ho, D. D., Di Mascio, M., and Perelson, A. S. (2003). The distribution of viral blips observed in HIV-1 infected patients treated with combination antiretroviral therapy. *Bull. Math. Biol.* **65**, 263–277.
270. Markowitz, M., Louie, M., Hurley, A., Sun, E., Di Mascio, M., Perelson, A. S. and Ho, D. D. (2003). A novel antiviral intervention results in a more accurate assessment of HIV-1 replication dynamics and T cell decay in vivo. *J. Virol.* **77**, 5037–5038.
271. De Boer, R. J., Mohri, H., Ho, D. D. and Perelson, A. S. (2003). Estimating average cellular turnover from 5-bromo-2'-deoxyuridine (BrdU) measurements. *Proc. Roy. Soc. London B* **270**, 849–858.
272. Layden, T. J., Layden, J. E., Ribeiro, R. M. and Perelson, A. S. (2003). Mathematical modeling of viral kinetics: A tool to understand and optimize therapy. *Clinics in Liver Disease* **7**, 163–178.
273. Louie, M., Hogan, C., Hurley, A., Simon, V., Chung, C., Padte, N., Lamy, P., Flaherty, J., Coakley, D., Di Mascio, M., Perelson, A. S. and Markowitz, M. (2003). Determining the antiviral activity of tenofovir disoproxil fumarate in treatment-naïve chronically HIV-1-infected individuals. *AIDS* **17**, 1151–1156.
274. Layden-Almer, J. E., Ribeiro, R. M., Wiley, T., Perelson, A. S. and Layden, T. J. (2003). Viral dynamics and response differences in HCV-infected African American and white patients treated with IFN and ribavirin. *Hepatology* **37**, 1343–1350.
275. Fan, X., Lang, D. M., Xu, Y., Lyra, A. C., Yusim, K., Everhart, E., Korber, B. T. M., Perelson, A. S. and Di Bisceglie, A. M. (2003). Liver transplantation with hepatitis C virus-infected graft: Interaction between donor and recipient viral strains. *Hepatology* **38**, 25–33.
276. Ribeiro, R. M., Layden-Almer, J., Powers, K. A., Layden, T. J. and Perelson, A. S. (2003). Dynamics of alanine aminotransferase during hepatitis C virus treatment. *Hepatology* **38**, 509–517.
277. Powers, K. A., Dixit, N. M., Ribeiro, R. M., Golia, P., Talal, A. H. and Perelson, A. S. (2003). Modeling viral and drug kinetics: Hepatitis C virus treatment with pegylated interferon alpha-2b. *Sem. Liver Disease* **23S1** 13–18.
278. Coombs, D., Gilchrist, M. A., Percus, J. and Perelson, A. S. (2003). Optimal viral production. *Bull. Math. Biol.* **65**, 1003–1023.

279. Torriani, F. J., Ribeiro, R. M., Gilbert, T. L., Schrenk, U. M., Clauson, M., Pacheco, D. M. and Perelson, A. S. (2003). HCV and HIV viral dynamics during HCV treatment in HCV/HIV coinfection. *J. Infect. Dis.* **188**, 1498-1507.
280. Chao, D. L., Davenport, M. P., Forrest, S. and Perelson, A. S. (2003). Stochastic stage-structured modeling of the adaptive immune system. *Proc. IEEE Computational Systems Bioinformatics 2003 (CSB'03) Conf.*, Stanford, August 11-14, 2003.
281. De Boer, R. J., Homann, D. and Perelson, A. S. (2003). Different dynamics of CD4⁺ and CD8⁺ T cell responses during and after acute lymphocytic choriomeningitis virus infection. *J. Immunol.* **171**, 3928-3935.
282. Dimascio, M., Markowitz, M., Louie, M., Hogan, C., Hurley, A., Ho, D. D. and Perelson, A. S. (2003). Viral blip dynamics during highly active antiretroviral therapy. *J. Virol.* **77**, 12165-12172.
283. Dixit, N. and Perelson, A. S. (2003). Complex patterns of viral load decay under antiretroviral therapy: Influence of pharmacokinetics and intracellular delay. *J. Theoret. Biol.* **226**, 95-109.
284. Hlavacek, W. S., Faeder, J. R., Blinov, M. L., Perelson, A. S. and Goldstein, B. (2003). The complexity of complexes in signal transduction. *Biotechnol. Bioengineering* **84**, 783-794.
285. Perelson, A. S., Ribeiro, R. M., Layden-Almer, J. E. and Layden, T. J. (2003). Viral kinetics and hepatitis C. *Hepatology* **38**, 1588-1589.
286. Ramratnam, B., Ribeiro, R., He, T., Chung, C., Simon, V., Vanderhoeven, J., Hurley, A., Zhang, L., Perelson, A. S., Ho, D. D. and Markowitz, M. (2004). Intensification of antiretroviral therapy accelerates the decay of the latent reservoir of HIV-1 and decreases but does not eliminate ongoing virus replication. *JAIDS* **35**, 33-37.
287. Di Mascio M., Markowitz, M., Ho, D. D. and Perelson, A. S. (2004). Modeling the long-term control of viremia in HIV-1 infected patients treated with antiretroviral therapy. *Math. Biosciences* **188**, 47-62.
288. Talal, A. H., Shata, M. T., Dorante, G., Chadburn, A., Kock, R., Neumann, A. U., Ribeiro, R. M. and Perelson, A. S. (2004). Virus dynamics and immune responses during treatment in patients co-infected with hepatitis C and HIV. *JAIDS* **35**, 103-113.
289. Chao, D. L., Davenport, M. P., Forrest, S. and Perelson, A. S. (2004). Modelling the impact of antigen kinetics on T cell activation and response. *Immunol. Cell Biol.* **82**, 55-61.
290. Ribeiro, R. and Perelson, A. S. (2004). The analysis of HIV dynamics using mathematical models. In *AIDS and other Manifestations of HIV Infection*, 4th ed., G. P. Wormser, ed., Academic Press, NY, pp. 905-912.
291. Chao, D. L., Davenport, M. P., Forrest, S. and Perelson, A. S. (2004). A stochastic model of cytotoxic T cell responses. *J. Theoret. Biol.* **228**, 227-240.
292. Elson, K., Ribeiro, R. M., Perelson, A. S., Simmons, A. and Speck, P. (2004). The lifespan of satellite cells in murine sensory ganglia estimated by the uptake of bromodeoxyuridine. *Exp. Neurology* **186**, 99-103.
293. Wiegel, F. W. and Perelson, A. S. (2004). Some scaling principles for the immune system. *Immunol. Cell Biol.* **82**, 127-131.
294. Dixit, N. M., Markowitz, M., Ho, D. D. and Perelson, A. S. (2004). Estimates of intracellular delay and average drug efficacy from viral load data of HIV infected individuals under antiretroviral therapy. *Antiviral Therapy* **9**, 237-246.

295. Zhang, L., Ribeiro, R. M., Mascola, J. R., Lewis, M. G., Stiegler, G., Katinger, H., Perelson, A. S., and Davenport, M. P. (2004). Effects of antibody on viral kinetics in SHIV infection: Implications for vaccination. *J. Virol.* **78**, 5520-5522.
296. Perelson, A. S. and Ribeiro, R. M. (2004). Hepatitis B virus kinetics and mathematical modeling. *Sem. in Liver Disease* **24(S1)**, 11-16.
297. Gilchrist, M. A., Coombs, D. and Perelson, A. S. (2004). Optimizing within-host viral fitness: Infected cell lifespan and virion production rate. *J. Theoret. Biol.* **229**, 281-288..
298. Nelson, P. W., Gilchrist, M. A., Coombs, D., Hyman, J. M. and Perelson, A. S. (2004). An age-structured model of HIV infection that allows for variations in the production rate of viral particles and the death rate of productively infected cells. *Math. Biosci. Eng.* **1**, 267-288.
299. Dixit, N. R. and Perelson, A. S. (2004). Multiplicity of human immunodeficiency virus infections in lymphoid tissue. *J. Virol.* **78**, 8942-8945.
300. Ribeiro, R. M., Dixit, N. M. and Perelson, A. S. (2004). Modeling the in vivo growth rate of HIV: implications for vaccination. In *Multidisciplinary Approaches to Theory in Medicine*, R. Paton and D. Leishman, eds., Elsevier (in press).
301. Perelson, A. S. Bragg, J. G. and Wiegel, F. W. (2004). The complexity of the immune system: Scaling laws. In *Complex Systems Science in Biomedicine*, eds. T. S. Deisbock and J. Y. Kresh, Kluwer, New York (in press).
302. Wu, J. T., Wein, L. M. and Perelson, A. S. (2004). Optimization of influenza vaccine selection. *Operations Research* (in press).
303. Dixit, N. M. and Perelson, A. S. (2004). Influence of drug pharmacokinetics on HIV pathogenesis and therapy. In *Deterministic and Stochastic Models of AIDS and HIV with Intervention*, edited by W-Y. Tan and H. Wu, World Scientific Press, Singapore. (in press).
304. Davenport, M. P., Ribeiro, R. M. and Perelson, A. S. (2004). Kinetics of virus specific CD8+ T cells and the control of HIV infection. *J. Virol.* (in press).
305. Di Mascio, M., Markowitz, M., Louie, M., Hurley, A., Hogan, C., Simon, V., Follman, D., Ho, D. D. and Perelson, A. S. (2004). Dynamics of intermittent viremia during HAART in patients who initiate therapy during chronic versus acute and early HIV-1 infection. *J. Virol.* (in press).
306. Davenport, M. P., Chao, D. I., Ribeiro, R. M. and Perelson, A. S. (2004). Predicting the impact of a non-sterilizing vaccine for HIV. *J. Virol.* (in press).
307. Murray, J. D. and Perelson, A. S. (2004). Human immunodeficiency virus: Quasispecies and drug resistance. *Multiscale Modeling and Simulation* (in press).
308. Powers, K. A., Ribeiro, R. M., Patel, K., Pianko, S., Nyberg, L., Pockros, P., Conrad, A., McHutchison, J. and Perelson, A. S. (2004). Hepatitis C virus reinfection kinetics following liver transplantation. (submitted).
309. Dahari, H., Major, M., Zhang, X., Mihalik, K., Rice, C. M., Perelson, A. S., Feinstone, S. M. and Neumann, A. U. (2004). Modeling immune effects on viral dynamics of primary hepatitis C infection in chimpanzees. (submitted).
310. Arron, S. T., Ribeiro, R. M., Gettie, A., Blanchard, J., Yu, J., Perelson, A. S., Ho, D. D. and Zhang, L. (2004). Impact of thymectomy on the peripheral T-cell pool in rhesus macaques before and after infection with simian immunodeficiency virus. (submitted).

311. Di Mascio, M., Percus, P. K., Percus, O. E., Markowitz, M., Ho, D. D. and Perelson, A. S. (2004). Duration of an intermittent episode of viremia. (submitted).
312. De Boer, R. J. and Perelson, A. S. (2004). Estimating division and death rates from CSFE data. (submitted).
313. Dixit, N. M., Layden-Almer, J. E., Layden, T. J. and Perelson, A. S. (2004). Unraveling a mystery: How ribavirin improves interferon response rates in hepatitis C virus infection. (submitted).
314. Wu, H., Huang, Y., Acosta, E. P., Rosenkranz, S. L., Kuritzkes, D. R., Eron, J. J., Perelson, A. S. and Gerber, J. G. (2004). Modeling long-term HIV dynamics and antiretroviral response: Effects of drug potency, pharmacokinetics, adherence, and drug resistance. (submitted).
315. Spiers, C., van Nimwegen, E., Bolton, D. L., Zavolan, M., Duvall, M., Angleman, S., Siegel, R., Perelson, A. and Lenardo, M. J. (2004). Analysis of HIV cytopathicity using a new method for quantitating viral dynamics in cell culture. (submitted).
316. Gavrilov, E., Perelson, A. S., Lapedes, A. and Longini, I. M., Jr. (2004). Estimation of influenza epidemic model parameters from reported mortality data. (submitted).

BOOKS

1. Bell, G. I., Perelson, A. S., and Pimbley, G. H., Jr., eds. (1978). *Theoretical Immunology*. Marcel Dekker, New York.
2. Perelson, A. S., DeLisi, C., and Wiegel, F. W. eds. (1984). *Cell Surface Dynamics: Concepts and Models*. Marcel Dekker, New York.
3. Macken, C. A. and Perelson, A. S. (1985). *Branching Processes Applied to Cell Surface Aggregation Phenomena*. Lecture Notes in Biomathematics, Vol. 58. Springer Verlag, New York.
4. Perelson, A. S., ed. (1988). *Theoretical Immunology, Part One*. Addison-Wesley, Reading, MA.
5. Perelson, A. S., ed. (1988). *Theoretical Immunology, Part Two*. Addison-Wesley, Reading, MA.
6. Perelson, A. S., Goldstein, B., Dembo, M., and Jacquez, J., eds. (1988). *Nonlinearity in Biology and Medicine*. Elsevier Science, New York.
7. Macken, C. A. and Perelson, A. S. (1988). *Stem Cell Proliferation and Differentiation: A Multitype Branching Process Model*. Lecture Notes in Biomathematics, vol. 76. Springer-Verlag, New York.
8. Perelson, A. S. and Kauffman, S. A., eds. (1991). *Molecular Evolution on Rugged Landscapes: Proteins, RNA and the Immune System*, Addison-Wesley, Reading, MA.
9. Perelson, A. S. and Weisbuch, G., eds. (1992). *Theoretical and Experimental Insights into Immunology*, Springer-Verlag, Berlin.
10. Frauenfelder, H., Bishop, A. R., Garcia, A., Perelson, A., Schuster, P., Sherrington, D. and Swart, P. J., eds. (1997). *Landscape Paradigms in Physics and Biology. Concepts, Structures and Dynamics*. North-Holland, Amsterdam.

BOOK REVIEWS

1. Perelson, A. S. (1976). Review of *System Dynamics: A Unified Approach* by D. Karnoff and R. Rosenberg. In: *IEEE Trans. Systems, Man and Cybernetics*, SMC-6, p. 724.
2. Perelson, A. S. (1976). Review of *Introduction to Bond Graphs* by J. U. Thoma In: *IEEE Trans. Systems, Man and Cybernetics*, SMC-6, pp. 797-798.
3. Perelson, A. S. (1978). Review of *Self-Organization in Nonequilibrium Systems* by G. Nicolis and I. Prigogine. In: *Quart. Rev. Biol.* **53**:362-363.
4. Perelson, A. S. (1979). Review of *Physical Structure in Systems Theory* edited by J. J. van Dixhoorn and F. J. Evans. In: *J. Franklin Institute* **305**:308.
5. Perelson, A. S. (1982). Review of *Some Mathematical Questions in Biology: Lectures on Mathematics in the Life Sciences*, Vol. 14, edited by S. Childress. In: *American Scientist* **70**:540-541.
6. Perelson, A. S. (1983). Review of *Applicable Mathematics of Non-Physical Phenomena* edited by F. Olivera-Pinto and B. W. Conolly. In: *Math. Biosci.* **65**:153-154.
7. Perelson, A. S. (1985). Review of *Applied Combinatorics* by A. Tucker. In: *Math. Biosci.* **74**:137.
8. Perelson, A. S. (2001). Review of *Virus Dynamics: Mathematical Principles of Immunology and Virology* by M. A. Nowak and R. M. May. In *Virus Research*, **80**, 85-86..
9. Perelson, A. S. (2002). Review of *Design Principles for the Immune System and Other Distributed Autonomous Systems*, edited by L. A. Segel and I. R. Cohen, Oxford, NY 2001. In *SIAM Review* **44**, 740.

OBITUARIES

Perelson, A. S. and Goldstein, B. G. (2001). Obituary for George Irving Bell, *Physics Today* April, 2001, pp 85-86.

ABSTRACTS

1. Perelson, A. S., Rocklin, S., and Goldstein, B. (1977). An Optimal Control Study of the IgM-IgG Switch. *Biophysical J.* **17**:274a.
2. Perelson, A. S. (1977). The Distribution of Immunoglobulin Receptors on B Lymphocytes. *J. Supramolecular Struct.* **6** (Supplement 1):225.
3. Perelson, A. S. (1977). The IgM-IgG Switch Looked at From a Control Theoretic Viewpoint. *Abstracts: 8th IFIP Conference on Optimization Techniques*, Wurzburg, Germany, September 1977.
4. Perelson, A. S., Samsel, R. W. and Wiegel, F. W. (1981). Rouleau Formation: Kinetic and Equilibrium Size Distributions for Linear and Branched Red Cell Aggregates. *Abstracts: VII International Biophysics Congress*, Mexico City.
5. Perelson, A. S., Oster, G. F., and Tilney, L. G. (1983). The Acrosomal Reaction in Sperm: A Possible Example of Osmotically Driven Biomotility. *Abstracts: SIAM 1983 National Meeting*, Denver, CO.
6. Perelson, A. S., Bell, G. I., and Macken, C. A. (1983). The Kinetics of Cellular Cytotoxicity at the Single Cell Level. *Abstracts: 5th International Congress of Immunology*, Kyoto, Japan.

7. Perelson, A. S., Farmer, J. D., and Packard, N. H. (1985). Pattern Recognition in Idiotypic Networks: A Computer Simulation. *Abstracts: Second Southwest Foundation for Biomedical Research Symposium: Idiotype Networks and Immune Regulation: Potential Uses in Vaccines and in Understanding Human Diseases*, San Antonio, TX.
8. Perelson, A. S., Farmer, J. D., and Packard, N. H. (1986). Pattern Recognition in Idiotypic Networks. *Abstracts: 6th International Congress of Immunology*, Toronto.
9. Kevrekidis, I. G. and Perelson, A. S. (1987). Modeling Dynamical Aspects of the Immune Response. *Abstracts: 1987 Annual Amer. Inst. Chem. Eng. Meeting*, New York.
10. Perelson, A. S. (1989). Immune Networks: Theoretical Models and Concepts. *International Workshop on Immune Networks: Theory, Research, Applications*, Perugia, Italy, May, 1989.
11. Perelson, A. S. and Macken, C. A. (1989). Somatic Mutation and the Maturation of the Immune Response. *Abstracts: 7th International Congress of Immunology*, W. Berlin.
12. Jones, D. A., Kevrekidis, I. G., Perelson, A. S. and Goldstein, B. G. (1989). A Model of IL-2 Binding and Receptor-Mediated Internalization. Paper No. 17e. *Am. Inst. Chem. Eng. 1989 Annual Meeting*, San Francisco, CA, November.
13. Perelson, A. S. (1990). Modeling the Interaction of the Immune System with HIV. *UCLA Symp., HIV and AIDS*, Keystone, CO, April.
14. Perelson, A. S. (1990). Modeling the Effects of HIV on the Human Immune System. *Abstracts Amer. Math. Soc.* **11**, 280; Abstract No. 858-92-72,
15. Perelson, A. S. (1990). Modeling the Kinetics of T cell Infection by HIV. *University of California Universitywide AIDS Research Program 1990 Annual Investigators Meeting*, San Diego, CA, March.
16. Macken, C. A. and Perelson, A. S. (1990). Protein Evolution on Rugged Landscapes. *1990 Society for Mathematical Biology Annual Meeting*, Chicago, IL, July.
17. Perelson, A. S. and De Boer, R. (1991). Autoimmunity and T cell vaccination in a model idiotypic network. *J. Cell. Biochem. Suppl.* **15A**, 266.
18. Goldstein, B., Perelson, A. S., Jones, D. and Kevrekidis, I. G. (1991). Interaction of IL-2 with its cell surface receptors: Interpretation of equilibrium binding data. *FASEB*, Atlanta, GA, April.
19. Macken, C. A. and Perelson, A. S. (1991). Affinity maturation on fitness landscapes. *Second International Conf. on Industrial and Applied Math.* (ICIAM 91), Washington, D.C., July.
20. Perelson, A. S. and De Boer, R. J. (1991). Mathematical and simulation models of immune networks. *Second International Conf. on Industrial and Applied Math.* (ICIAM 91), Washington, D.C., July.
21. Perelson, A. S. and Fishman, M. A. (1992). Modeling T cell–antigen presenting cell interactions. *8th Int. Congress Immunol.*, Budapest, August.
22. Perelson, A. S., Segel, L. A., and Fishman, M. A. (1992). Th1/Th2 cross-regulation. *1992 SMB Annual Meeting*, Berkeley, CA, July.
23. Anderson, R. W. and Perelson, A. S. (1992). Analysis of a Cayley tree immune network model with antibody dynamics. *1992 Soc. Math. Biology Annual Meeting*, Berkeley, CA, July.
24. Fishman, M. A. and Perelson, A. S. (1993). T cell memory and epitope selection. *1993 Soc. Math. Biology Annual Meeting*, Ithaca, NY, July.

25. Perelson, A. S. (1995). A model for T-B interaction in PALS associated foci. *Keystone Symposium, Control and Manipulation of the Immune Response*, Taos, March.
26. Perelson, A. S., Essunger, P., Markowitz, M. and Ho, D. D. (1996). The second phase of viral decline after antiretroviral therapy. *Can HIV be eradicated from an infected individual?*, Washington, D.C., June.
27. Perelson, A. S., Essunger, P., Markowitz, M. and Ho, D. D. (1996). How long should treatment be given if we had an antiretroviral regimen that completely blocked HIV replication? *XIth Int'l Conf. on AIDS*, Vancouver, July.
28. Perelson, A. S., Essunger, P., Markowitz, M. and Ho, D. D. (1996). Rates of viral and infected cell decay in blood and tissue compartments. *Comprehensive Management of HIV Disease: VII Annual HIV Speaker' Update Meeting*, Tucson, October.
29. Razor, J., Sulzer, B., Bold, J., Paar, J., Gorman, W., Farris, J. A., Perelson, A. and Posner, R. (1996). Aggregation of IgE-receptor complexes by multivalent antigens: Quantifying crosslinking at the cell surface. *FASEB J.* **10(3)**, 1492.
30. Lam, N. P., Neumann, A. U., Gretch, D. R., Wiley, T. E., Perelson, A. S. and Layden, T. J. (1997). Rapid HCV clearance with high induction interferon (IFN) doses is important for sustained response. *Annual Meeting, Amer. Assoc. Study Liver Diseases*, May.
31. Lam, N. P., Neumann, A. U., Gretch, D. R., Wiley, T. E., Falkenholm, J., Perelson, A. S. and Layden, T. J. (1997). Genotype 1A and 1B infected patients require high initial daily interferon (IFN) doses. *Annual Meeting, Amer. Assoc. Study Liver Diseases*, May.
32. Essunger, P., Markowitz, M., Ho, D. D. and Perelson, A. S. (1997). Efficacy of drug combination and dosing regimen in antiviral therapy. *Intl. Workshop on HIV Drug Resistance, Treatment Strategies and Eradication*, St. Petersburg, FL, June, 1997, Antiviral Therapy, Abstr. 73.
33. Zhang, L., Dailey, P. J., He, T., Gettie, A., Bonhoeffer, S., Perelson, A. S. and Ho, D. D. (1998). Rate of SIV particle clearance in rhesus macaques. *5th Conf. Retroviruses and Opportunistic Infections*, Chicago, February, 1998.
34. Sachsenberg, N., Perelson, A. and Perrin, L. (1998). Increased turnover of CD4 and CD8 T cells in untreated HIV infected individuals. *5th Conf. Retroviruses and Opportunistic Infections*, Chicago, February, 1998.
35. Mohri, H., Bonhoeffer, S., Monard, S., Perelson, A. S. and Ho, D. D. (1998). Rapid turnover of T lymphocytes in SIV-infected rhesus macaques. *5th Conf. Retroviruses and Opportunistic Infections*, Chicago, February, 1998.
36. Lam, N. P., Neumann, A. U., Perelson, A. S., Gretch, D. R., Wiley, T. E. and Layden, T. J. (1998). Biphase viral clearance of HCV genotype 1 (GENO 1) during high dose IFN induction treatment., Abstr, A1282. *Gastroenterology* **114(4/pt2/SS)**, L0346.
37. Lam, N. P., Neumann, A. U., Perelson, A. S., Gretch, D. R., Wiley, T. E., Layden, T. J. (1998). Difference in viral kinetics between HCV genotype 1 versus 2 or 3 may explain differences in treatment response. *Gastroenterology* **114(4/pt2/SS)**, L0347.
38. Lam, N. P., Neumann, A. U., Dahari, H., Gretch, D. R., Wiley, T. E., Perelson, A. S. and Layden, T. J. (1998). Early viral decline slopes during daily high dose interferon (IFN) are predictive markers of subsequent virologic response. *Hepatology* **28 (4/pt2/SS)**, 940.

39. Rosen, H. R., Wolf, S. L., Perelson, A. S., Blake, M., Mittler, J., Chung, M and Gretch, D. R. (1998). HCV viral kinetics analysis of daily vs BID induction interferon in genotype 1 infection. *Hepatology* **28** (4/pt2/SS), 1253.
40. Stalgis, C., McHutchison, J., Bekkering, F. and Perelson, A. S. (1998), Prediction of early viral clearance with daily IFN + RIB using a mathematical model. *Hepatology* **28** (4/pt2/SS), 941.
41. Essunger, P., Mittler, J., Markowitz, M., Yuen, G. J., Clendeninn, N., Ho, D. D. and Perelson, A. S. (1999). Short term measures of relative efficacy predict longer-term reductions in HIV-1 RNA following antiretroviral treatment. *Eighth USC Biomedical Simulations Resource Workshop*, Marina del Rey, CA, June, 1999.
42. Markowitz, M., Jin, X., Ramratnam, R., Hurley, A., Chen, D., Bauer, D., Fang, F., Schiller, D., Barsoum, S., Murray, J., Zhang, L., Perelson, A. and Ho, D. D. (1999). Virologic and immunologic profiles of newly infected individuals electing discontinuation of HAART after approximately three years of apparently suppressive therapy. *39th Interscience Conf. Antimicrobial Agents and Chemotherapy (ICAAC)*, San Francisco, September, 1999.
43. Neumann, A. U., Lam, N. P., Davidian, M., Dahari, H., Wiley, T. E., Perelson, A. S. and Layden, T. J. (1999). Differences in hepatitis C (HCV) dynamics between HCV of genotype 1 and genotype 2. *Hepatology* **30**(#4/pt2/SS), 121.
44. Perelson, A. S., Neumann, A. U., Lam, N. P., Dahari, H., Davidian, M., Wiley, T. E., Mika, B. P. and Layden, T. J. (1999). Hepatitis C viral dynamics in vivo and the antiviral efficacy of interferon-alpha therapy. *Third Intl. Conf. on Therapies for Viral Hepatitis*, Maui, HI, December, 1999.
45. Jin, X., Ramratnam, R., Hurley, A., Chen, D., Bauer, D., Fang, F., Schiller, D., Barsoum, S., Murray, J., Zhang, L., Perelson, A., Ho, D. D. and Markowitz, M. (2000). Discontinuation of HAART after a course of therapeutic vaccination with ALVAC1452 and rgp160 may be associated with delayed viral rebound kinetics. *7th Conf. on Retroviruses and Opportunistic Infections*, San Francisco, January, 2000.
46. Mohri, H., Ting, K., Ramratnam, B., Furlan, S., Monard, S., Markowitz, M., Hurley, A., Kost, R., Cesari, D., Abe, K., Rinehart, A., Weinberger, L., Perelson, A., Hellerstein, M. and Ho, D. D. (2000). Rapid turnover of T lymphocytes in HIV-1 infection and its reduction by HAART: A kinetic study using deuterated glucose. *7th Conf. on Retroviruses and Opportunistic Infections*, San Francisco, January, 2000.
47. Whalley, S. A., Murray, J. M., Brown, D., Webster, G. J. M., Emory, V. C., Dusheiko, G. H. and Perelson, A. S. (2000). The kinetics of acute hepatitis B infection in humans. *Hepatology* **32**(#4/pt2), 446A.
48. Talal, A. H., Flynn, S. M., Dorante, G., Soto, G., Jin, J., Ribeiro, R. and Perelson, A. S. (2001). Hepatitis C virus dynamics in HIV/HCV coinfection in response to high daily-dose interferon. *AASLD*, Nov. 2001, Dallas, TX.