

**RAE SILVER**  
**Helene L. and Mark N. Kaplan Professor of Natural and Physical Sciences**

**CURRICULUM VITAE**

**Current Appointments**

Department of Psychology  
Columbia University  
1190 Amsterdam Avenue, MC 5501  
New York, NY 10027

Department of Pathology and Cell Biology  
College of Physicians and Surgeons  
Columbia University  
168<sup>th</sup> Street & Broadway  
NY 10032

Department of Psychology  
Barnard College  
3009 Broadway  
New York, NY 10027

Doctoral Program on Neurobiology and Behavior  
Graduate School of Arts and Sciences

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**Titles**

Helene L. and Mark N. Kaplan Professor of Natural & Physical Sciences Psychology  
Department, Barnard College  
Professor of Psychology, Psychology Department, Columbia University  
Professor Psychology in the Department of Anatomy and Cell Biology, Columbia  
College of Physicians and Surgeons  
Program Director, Neuroscience and Behavior Program, Barnard College  
Director: Graduate Program in Psychology at Columbia University

**Positions/Titles**

2006-2007: Senior Advisor, National Science Foundation  
1990: Kaplan Professor of Natural and Physical Sciences  
1982: Professor, Psychology Department, Barnard College and Columbia University  
1979-1982: Associate Professor and Chair, Psychology Department, Barnard College  
1976-1979: Assistant Professor, Barnard College of Columbia University  
1974-1976: Research Associate, The American Museum of Natural History

1974-1976: Assistant Professor, Hunter College of the City University of New York  
1972-1974: Assistant Professor, Rutgers - The State University

### **Educational Background**

<b>Degree</b>	<b>Institution</b>	<b>Year</b>	<b>Field</b>
B.Sc. Honours	McGill University	1966	Physiol. Psychol.
M.A.	City College of the City University of New York	1970	Biopsychology
Ph.D.	Institute of Animal Behavior Rutgers - The State University Advisor: Daniel S. Lehrman	1972	Biopsychology

### **Research Grants** (reverse chronological order)

2007-2012 NIMH MH075045SCN Networks and Efferent signals  
2006-2008 NSF IOS-05-54514 Cellular mediator of thermoregulatory responses  
\*1998-2011: NINDS grant NS37919 (\* 13 years of support to date, several competing renewals)  
Physiological dissection of the SCN  
2003-2004: NSF DBI 320988  
Acquisition of a Confocal Microscope for the Sciences  
2003-2006: NIMH R21  
The Immune Response in Mast Cell Deficient Mice  
2001-2006: NIH  
Molecular Physiology of Circadian Rhythms (PI Dr. D. McMahon)  
2000-2005: NIH NS41069  
The Function(s) of AVP & PKCbeta 1 in the SCN of mice  
Alaskan Basic Neuroscience Program (SNRP Grant: PI Dr. L. Duffy)  
1996-2005: NIMH Grant MH 54088  
Mast cells-Function in Normal Adult Brain (PI: Dr. A-J Silverman: Co-PI Silver)  
1998-2001: NSF-CNRS Grant  
Brain mast cells in sheep  
\*1976-2001: NIMH Grant MH 29380 (\*25 years of support, several competing renewals)  
Factors influencing parental behavior  
1996-1999: AFOSR Grant  
Efferent signals of the SCN  
1995-1998: NSF Grant  
Brain photoreceptors  
1994-1995: NSF SGER award  
Brain mast cells  
1992-1995: AFOSR Grant  
Efferent signals of the SCN  
1987-1995: NIH Grant NS24292  
Circadian rhythms: restoration by neural grafts  
1994: NATO Grant (with Dr. Serviere, INRA, France)  
1992: NATO Grant (with Dr. Serviere, INRA, France)  
1989: Inna and Jacob Michael Visiting Professor

Weizmann Institute, Israel  
1986-1987: Whitehall Foundation Grant  
Encephalic photoreceptors  
1982-1985: Whitehall Foundation Grant  
Neural mechanisms of parental behavior  
1981: NSF Grant TF1 8100678  
Acquisition of a centrifuge and accessories  
1978: NSF Grant BNS 7816287  
Wild doves in Africa: Field validation of laboratory studies

### **Educational and Training Awards:**

2006: Michael Weintraub APS undergraduate student research award  
2002-2004: NIH Grant  
Support for students and infrastructure for the meeting of the Society for Research in Biological Rhythms  
2002: NASA Grant  
Support for students and infrastructure for the meeting of the Society for Research in Biological Rhythms  
2002: NSF Grant  
Graduate student and post-doc support for attendance at the Society for Research in Biological Rhythms meeting in May 2002  
2002: American Physiological Society Award to sponsor of 2 undergraduate students (Taslina Bhuiyan, Lucila Martinez)  
1998: NSF Grant: Workshop on “The CSF as a communication pathway of the brain”  
Workshop held in association with the Society for Neurosciences meeting  
1996: NSF Grant  
Support for student travel to Behavioral Endocrinology Conference in Turin  
1990-1994: ONR Grant NOO14-91-5-1314  
Predictions of scientific career orientation among able college women  
1981-1984: NSF CAUSE Grant  
Comprehensive improvements in curriculum and instructional technology (Co-Director)  
1977-1982: NSF Grant SED 7712124 and 79-09032  
Development of the instructional films in ethology: Behavior of the ring dove

### **Service to Government**

2008 US representative to the Human Science Frontiers Program Strasbourg, France  
2006-2007 Senior Advisor, National Science Foundation, Office of the Director  
2002: Chair, Research Maximization and Prioritization Committee for International Space Station, NASA  
2001: Committee member, NASA: International Space Station Cost and Management Evaluation Task Force

### **Service to the Scientific and Research Community**

2006-2009 Member, Institute of Medicine Forum on Neuroscience  
2004-2006: Chair, BRS review panel National Institute of Health  
2005-2006: External Advisory Board member NSF Center for Behavioral Neuroscience Georgia State, Emory and other colleges

2004-2007: Society for Neuroscience Education Committee  
 2003-2005: FO2A Fellowships Study section, ad hoc member  
 2005: Chair NIH IFCN3 NIH review panel  
 2000-2005: Special emphasis panel member NIH IFCN3  
 1999-2005: Advisory Board, International Society for Chronobiology  
 2001-2004: Member, Society for Neuroscience Program committee  
 (Chair, Theme E - Autonomic and Limbic System)  
 2003: Panel member, Ford Foundation Minority Fellowship Review panel  
 2003: Panel member, ZRIG AARR-5 Center for Scientific Research  
 2000-2002: President, Society Research in Biological Rhythms  
 1991-2002: Chair, External Advisory Committee, NSF Center for the Study of Biological Rhythms,  
 University of Virginia  
 2001: Panel member, Ford Foundation Minority Fellowship Review panel  
 1999: Program Chair, International Congress of Chronobiology, Washington DC  
 1999: Program Chair, Society for Behavioral Neuroendocrinology  
 1999-present: Panel member, IFCN3 CSR National Institute of Health  
 1999: Chair, Search Committee for editor of Journal of Biological Rhythms  
 1997: Chair, Search Committee for editor of Journal Hormones and Behavior  
 1997: Neuroscience Working Group: Integrative, Regulatory and Behavioral Neurosciences -  
 charged  
 with writing first draft of charter for Neuroscience study sections (March)  
 1994-1997: Member-at-Large, American Psychological Association  
 1993-1997: Advisory Committee Member, International Ornithological Society  
 1996-present: Society for Behavioral Neuroendocrinology, Advisory Board Member  
 1996: Member at Large, Society for Chronobiology  
 1994-1996: Panel Member, NIMH Psychobiology, Behavior, and Neurosciences 1995: Panel  
 Member, NSF, Undergraduate Education and Instrumentation  
 1994-1996: Member-at-Large, Society for Research in Biological Rhythms  
 1995: Panel Member, Careers for Scientists, Bank Street School for Children  
 1995: Member, Committee of visitors for the Neuroscience Cluster NSF (June)  
 1995: Rapporteur, American Physiological Society, Conference on "Understanding the Biological  
 Clock - from Genetics to Physiology"  
 1994: Program Chair, American Psychological Association  
 1994: Elective Member, American Ornithological Union  
 1993-1994: Panel Member, NIMH Behavioral Neurosciences  
 1992-1994: Member, Advisory Committee, Society for Research in Biological Rhythms  
 1988-1989: Chair, Psychology Department, Barnard College  
 1989: Member, Search Committee: Director of the Institute of Animal Behavior-Rutgers University  
 1987-1989: Panel Member, Sensory & Integrative Systems, NSF  
 1987: Panel Member, Panel on Mathematics Education, Oberlin College  
 1986-1987: Panel Member, Psychobiology, NSF  
 1979-1983: Panel Member, Neuropsychology Panel, NIMH

**Service to Educational Community:**

2007: Participant: launch of PhD program at University of Jalapa, Jalapa Mexico  
 2007: External Review Committee, Psychology Department, Berkeley, CA  
 2005: Member, external reviewer for Training Grant in Neuroscience at Hunter College

2005: External Review Committee: Brooklyn College of City University  
2002: Review of Psychobiology Program at Hunter College  
2001: Review of Biology Departments of Stern College and Yeshiva University  
1998: Review of Psychology and Computer Science Departments at University of Toronto  
1990: Selection committee for Chair of Institute of Animal Behavior

### **Editorial Board**

2006-2009 Editorial Board, Endocrinology  
2004-present: Receiving editor, European Journal of Neuroscience  
1997-present: Biological Rhythm Research  
1996-present: Hormones and Behavior  
1995-present: Journal for Research in Biological Rhythms  
1985-1989: Journal of Comparative Psychology

### **Service to Barnard/Columbia**

2004-2006: Director, Graduate Program in Psychology  
2004 - 2006: Director, Neuroscience and Behavior Program, Barnard College  
2002-2004: Member, Grants Committee, Barnard College  
2001-2004 Member: Program Committee Society for Neuroscience  
2003 - : Director of Graduate Program in Psychology (CU)  
2002: Member, Grants Committee, Barnard College  
1998-2001: Member, Barnard Medalist committee  
1995: Chair, Provost Search Committee, Barnard College  
1992-1994: Member, Committee on Instruction, Barnard College  
1986-2001: Member, Animal Care Committee, Columbia University  
1989-1993: Chair, Psychology Department at Barnard  
1984-1987: Member, Faculty Planning Committee  
1983-1988: (First) Director of Quantitative Reasoning Program, Barnard College  
1985: Established first academic computer centers, Barnard College  
1983-1984: Member, Faculty Executive Committee  
1983-1986: Member, Executive Committee, Health and Society Program  
1982-present: University Ad Hoc Committees (approximately 1/year since 1982)

### **Professional Associations (Alphabetical order)**

Fellow of the American Academy of Arts and Sciences (2003)  
Fellow of the American Association for the Advancement of Science (~1995)  
American Ornithological Union (Fellow, 1994)  
American Physiological Society  
American Psychological Association (Fellow-Division 6, 1984)  
American Psychological Society (Charter Member and Fellow, 1989)  
Endocrine Society  
FASEB  
International Ornithological Society  
International Society for Chronobiology  
Society for Behavioral Neuroendocrinology  
Society for Neurosciences  
Society for Research in Biological Rhythms

### Scientific publications (reverse chronological order)

1. Ribeiro, AC, Sawa E, Carren-LeSauter I, LeSauter J, Silver R and Pfaff, DW Pfaff (in press). Two forces for arousal: Pitting hunger versus circadian influences and identifying neurons responsible for changes in behavioral arousal. Proceedings of the National Academy of Sciences, USA
2. Perez A, Kirkpatrick MG, Gunderson EW, Marrone G, Silver R, Foltin RW, Hart CL (in press) Residual effects of intranasal methamphetamine on sleep, mood, and performance. Drug and Alcohol Dependence
3. Rae Silver and Don Pfaff. Issues emerging from a consideration of the cellular and molecular bases of biological rhythms In: BASES CELULARES Y MOLECULARES DE LOS RITMOS BIOLÓGICOS Caba, M. (Ed.) Universidad Veracruzana, Xalapa; Ver. 2007 ISBN: 978-968-834-843-7
4. Pfaff and Rae Silver (2007) Gene-hormone-environment interactions in the regulation of aggressive responses: elegant analysis of complex behavior. Science STKE Oct 2 (406):pe55.
5. Silver R, Boehn K, Grillner S, Kopell, N, Olsen K (2007) Neurotech for neuroscience: Unifying concepts, organizing principles, and emerging tools, Journal of Neuroscience 27:11807-11819.
6. Lily Yan, Ilia Karatsoreos, Joseph LeSauter, David K. Welsh Steve Kay, Duncan Foley, Rae Silver ( 2008) Exploring Spatio-temporal Organization of SCN Circuits. Cold Spring Harbor Symposium on Quantitative Biology #72.
7. Karatsoreos I, and Silver R (2007) The Neuroendocrinology of the Suprachiasmatic Nucleus as a Conductor of Body Time in Mammals Endocrinology Sep 27; [Epub ahead of print]
8. Iwahana, E., Karatsoreos, I., Shibata, S., and Silver, R. (in press) Gonadectomy reveals sex differences in circadian rhythms and suprachiasmatic nucleus androgen receptors in mice. Hormones and Behavior
9. Kriegsfeld, L.J., Mei, DF., Yan, L., Witkovsky, P., LeSauter, J., Hamada, T., & Silver, R. (submitted) Targeted Mutation of the Calbindin D28K Gene Disrupts Circadian Rhythmicity and Entrainment
10. Caba, Mario; Tovar, Anibal; Silver, Rae; Morgado, Elvira; Meza, Enrique; Zavaleta, Yael; Juarez, Claudia; (in press) Nature's food anticipatory experiment: Entrainment of locomotor behavior, suprachiasmatic nucleus and dorsomedial hypothalamic nucleus by suckling in rabbit pups. European Journal of Neuroscience

11. Karatsoreos IN, Wang A, Sasanian J, Silver, R. (2007) A Role for Androgens in Regulating Circadian Behavior and the Suprachiasmatic Nucleus. *Endocrinology*. 148:5487-95.
12. Khalil M, Ronda J, Weintraub M, Jain K, Silver R, Silverman AJ. (2007) Brain mast cell relationship to neurovasculature during development. *Brain Res*. 1171:18-29.
13. Witkovsky P, Svenningsson P, Yan L, Bateup H, Silver R. (2007) Cellular localization and function rodent retina. *Eur J Neurosci*. 25:3233-3242.
14. Antle MC, Foley NC, Foley DK, Silver R. 2007 Gates and oscillators II: zeitgebers and the network model of the brain clock. *J Biol Rhythms*. 22:14-25.
15. Yan L, Bobula JM, Svenningsson P, Greengard P, Silver R. 2006 DARPP-32 involvement in the photic pathway of the circadian system. *J Neurosci*. 26:9434-9438.
16. Kriegsfeld LJ, Mei DF, Bentley GE, Ubuka T, Mason AO, Inoue K, Ukena K, Tsutsui K, Silver R. (2006) Identification and characterization of a gonadotropin-inhibitory system in the brains of mammals. *Proc Natl Acad Sci U S A*. 103:2410-2415.
17. Kriegsfeld LJ, Silver R. (2006) The regulation of neuroendocrine function: Timing is everything. *Horm Behav*. 49:557-574.
18. Karatsoreos, Ilia N., Russell D. Romeo, Bruce S. McEwen, Rae Silver. (2006) Diurnal regulation of the gastrin-releasing peptide receptor in the mouse circadian clock. *Eur J Neurosci*. 23:1047-1053.
19. Silver R. 2006 Paradigm shift in the evaluation and funding of research. Letter to the Editor. *Horm Behav*.
20. Antle MC, LeSauter J, Silver R. 2005 Neurogenesis and ontogeny of specific cell phenotypes within the hamster suprachiasmatic nucleus. *Brain Res Dev Brain Res*. 157:8-18.
21. Wilhelm, M. Silver R. and Silverman A.J. (2005). Central nervous system neurons acquire mast cell products via transgranulation. *Eur J Neurosci*. 22:2238-2248.
22. Yan L, Foley NC, Bobula JM, Kriegsfeld LJ, Silver R. (2005) Two antiphase oscillations occur in each suprachiasmatic nucleus of behaviorally split hamsters. *J Neurosci*. 25 :9017-9026.

23. Antle, M Silver, R. (2005). Signaling within the master clock of the brain: localized activation of mitogen-activated protein kinase by gastrin-releasing peptide. *J Neurosci.*25:2447-2454.
24. Antle, M Silver, R. (2005). Orchestrating Time: Arrangements of the Brain's Circadian Clock, *Trends in Neuroscience* 28; 141-151.
25. Silver R Schwartz WJ (2005) The Suprachiasmatic Nucleus is a Functionally Heterogeneous Timekeeping Organ. *Methods Enzymol.* 393:451-65.
26. Kriegsfeld, L.J., LeSauter, J., & Silver, R. (2004). Targeted microlesions reveal novel organization of the hamster suprachiasmatic nucleus. *J. Neurosci.* 24: 2449-2457.
27. Hamada, T., Antle, M.C., Silver, R. (2004). The Role of *Period1* in Non-Photic Resetting of the Hamster Circadian Pacemaker in the Suprachiasmatic Nucleus. *Neurosci. Letters.* 362: 87-90.
28. Yan L., Silver R. (2004). Resetting the brain clock: Time course and localization of mPER1 and mPER2 protein expression in suprachiasmatic nuclei during phase shifts. *Eur. J. Neurosci.* 19: 1105-1109.
29. Karatsoreos, I., Yan, L., LeSauter, J., and Silver, R. (2004). Phenotype matters: Identification of light-responsive cells in mouse SCN. *J. Neurosci.* 24: 68-75.
30. Karatsoreos, I.N. and Silver, R. (2004) "Chronobiology: biological timekeeping" *Physiology & Behavior*, 82: 15 Pages 927-929
31. Kriegsfeld, L., Silver, R. (2004). The skinny on body weight regulation: The role of retinoid signaling in photoperiod-mediated weight loss. *Endocrinology.* 145: 11-12.
32. Kriegsfeld L.J., Leak R.K., Yackulic C.B., LeSauter J. and Silver R. (2004). Topographical organization of suprachiasmatic nucleus projections in Syrian hamsters (*Mesocricetus auratus*): an anterograde and retrograde analysis. *J. Comp. Neurol.* 468: 361-379.
33. Hamada T, Antle MC, Silver R (2004). Temporal and Spatial expression patterns of canonical clock genes and clock-controlled genes in the suprachiasmatic nucleus. *Eur. J. Neurosci.* 19: 1-8.
34. Gábril R., Lesauter J., Bánvölgyi T., Petrovics G., Silver R., and Witkovsky P. (2004) AII amacrine neurons of the rat retina show diurnal and circadian rhythms of parvalbumin immunoreactivity. *Cell Tiss Res.* 315: 181-6.

35. Witkovsky, P., Veisenberger, E., LeSauter, J., Johnson, M., McMahon, D. and Silver, R. (2003). Cellular location and diurnal rhythm of expression of the biological clock gene *Period 1* in the mouse retina. *J Neurosci.* 23: 7670-7676.
36. Kriegsfeld LJ, Hotchkiss AK, Demas GE, Silverman A-J, Silver R, and Nelson RJ. (2003) Brain mast cells are influenced by chemosensory cues associated with estrus induction in prairie voles (*Micotus ochrogaster*). *Horm. Behav.* 44: 377-84.
37. Hamada, T., LeSauter, J. Lokshin, M. Romero, M-T. Yan, L. Venuti, J. Silver, R. (2003). Calbindin influences response to photic input in suprachiasmatic nucleus. *J. Neurosci.* 23: 8820-6.
38. Antle M.C., Foley D., Foley N., Silver R. (2003) Gates and Oscillators: components of a brain clock. *J. Biol Rhythms.* 18: 339-350.
39. Caba M., Rovirosa M.J., Silver R. (2003). Suckling and genital stroking induces Fos expression in hypothalamic oxytocinergic neurons of rabbit pups. *Dev. Brain Res.* 143: 119-28.
40. Yan, L., Hochstetler, K.L., Silver, R. and Bult-Ito, A. (2003). Phase shifts and *Per* gene expression in mouse suprachiasmatic nucleus. *NeuroReport.* 14: 1247-1251.
41. Pitts, S., Perone, E., Silver, R. (2003). Food-entrained circadian rhythms are sustained in arrhythmic Clock m/m Mutant Mice. *Am J Physiol Regul Integr Comp Physiol.* 285:R57-67.
42. Khalil, M., Silverman, A.-J., Silver, R. (2003). Mast Cells in the Rat Brain Synthesize Gonadotropin-Releasing Hormone. *J. Neurobiol.* 56:113-124.
43. Kuhlman, S. J., Silver R., LeSauter J., Bult-Ito A. and McMahon D.G. (2003). Phase resetting light pulses induce *Per1* and persistent spike activity in a subpopulation of biological clock neurons. *J Neurosci.* 23:1441-1450.
44. LeSauter, J., Yan, L., Vishnubhotla, B., Quintero, J.E., Kuhlman, S.J., McMahon, D.G., and Silver, R. (2003). A short half-life GFP mouse model for analysis of suprachiasmatic nucleus organization. *Brain Res.* 964: 279-287.
45. Lee, H.S., Nelms, J.L., Nguyen, M. and Silver, R., and Lehman, M.N. (2003). The eye is necessary for a circadian rhythm in the SCN. *Nat. Neurosci.* 6:1-2.
46. Kriegsfeld, L.J., Korets, R., & Silver, R. Expression of the circadian clock gene *Period1* in neuroendocrine cells: an investigation using mice with a *Per1::GFP* transgene. (2003) *Eur. J. Neurosci.* 17: 212-220.

47. Yan, L. and R. Silver (2002). Differential induction and localization of mPer1 and mPer2 during advancing and delaying phase shifts. *European Journal of Neuroscience*, 16:1531-40.
48. Silverman, A.-J., Asarian, L., Khalil, M. and Silver, R. (2002) GnRH, Brain Mast Cells and Behavior. In: I.S. Parhar (Ed). *Progress in Brain Research*. Vol. 121. Ch. 23 pp 317-327.
49. Kriegsfeld, L.J., Silver, R., Gore, A.C., & Crews, D. (2002) Vasoactive intestinal polypeptide contacts on gonadotropin-releasing hormone neurons increase in developing female rats. *Journal of Neuroendocrinology*, 4: 685-690.
50. Asarian, L., Yousefzadeh, E., Silverman, A-J., and Silver, R. (2002) Stimuli from conspecifics influence brain mast cell population in male rats. *Hormones and Behavior*, 42:1-12.
51. LeSauter, J., Kriegsfeld, L.J., Hon, J., and Silver, R. (2002) Calbindin-D(28K) cells selectively contact intra-SCN neurons. *Neuroscience*, 111: 575-585.
52. Nelms, J.L., LeSauter, J., Silver, R., and Lehman, M.N. (2002) Biotinylated dextran amine as a marker for fetal anterior hypothalamic grafts and their efferents. *Experimental Neurol.* 174:72-80.
53. Kriegsfeld, L., LeSauter, J., Hamada, T., Pitts, S., and Silver, R. Circadian Rhythms in the Endocrine System. In: *Hormones, Brain and Behavior*. Ed. D. Pfaff. Academic Press (2002) pp 33-91.
54. Hamada, T., LeSauter, J., Venuti, J., and Silver, R. (2001). Expression of *Period* genes: Rhythmic and non-rhythmic compartments of the Suprachiasmatic Nucleus. *J. Neurosci.* 21:7742-50.
55. Gabriel, R., LeSauter, J., Silver, R. and Witkovsky, P. (2001) Diurnal and circadian rhythms in the expression of protein kinase C immunoreactivity in the rat retina *J. Comp. Neurol.* 439:140-150.
56. Silver, R. and Kriegsfeld, L. (2001) Environmental Factors influencing hormone secretions in humans and animals. In: *Behavioral Endocrinology*. J. Becker, S. M. Breedlove, and D. Crews (Eds.) MIT Press, Cambridge, Mass.
57. Saldanha, C.J., Silverman, A-J., and Silver, R. (2001) Direct Innervation of GnRH Neurons by Encephalic Photoreceptors in Birds. *J Biol Rhythms*, 16: 39-49.
58. Silver, R and Kriegsfeld, L. (2001) Hormones and Behavior. In: *Encyclopedia of Life Sciences*. Nature Publishing Group, Hampshire, UK, pp.1-10.

59. Bryant, D. N., LeSauter, J., Silver, R. and Romero, M-T. (2000) Retinal innervation of calbindin cells in the hamster suprachiasmatic nucleus: Ultrastructural characterization. *J. Biol. Rhythms*. 15: 103-111.
60. Lehman, M.N. and Silver, R. (2000) CSF Signaling in Physiology and Behavior. In: (Eds. Fuxe, Nicholson) *Progress in Brain Research* Vol 125. Ch 27: pp409-427.
61. Caba, M., Pau, K.Y., Beyer, C., Gonzalez, A., Silver, R., and Spies, H.G. (2000) Coitus-induced activation of c-fos and gonadotropin-releasing hormone in hypothalamic neurons in female rabbits. *Brain Res. Mol. Brain Res.* 78(1-2): 69-79.
62. Silverman, A-J., Sutherland, A.K., and Silver, R. (2000). Mast cells migrate from blood to brain. *J. Neurosci.* 20: 401-408.
63. Wilhelm, M., King, B., Silverman, A-J., and Silver, R. (2000) Gonadal steroids regulate the number and activational state of mast cells in the medial habenula. *Endocrinology*, 141: 1178-1186.
64. Deviche, P., Saldanha, C.J., and Silver, R. (2000) Changes in brain gonadotropin-releasing hormone and vasoactive intestinal peptide-like immunoreactivity in male dark-eyed juncos (*Junco hyemalis*). *Gen. Comp. Endocrinol.* 117(1): 8-19.
65. Silver, R., Sookhoo, A.I., LeSauter, J., Stevens, P., Jansen, H.T., and Lehman, M.N. (1999) Multiple regulatory elements result in regional specificity in circadian rhythms of neuropeptide expression in mouse SCN. *NeuroReport*, 10: 3165-3174.
66. LeSauter, J., Stevens, P., Janssen H., Lehman, M.N., and Silver, R. (1999). Calbindin expression in the hamster SCN is influenced by genotype and by photic conditions. *NeuroReport*, 10: 3159-3163.
67. Silver, R. and Silverman, A-J. Sex and Brain secretions. In: *Reproduction in Context*. Eds. K Wallen and J. Schneider. MIT Press, Boston (1999).
68. LeSauter, J. and Silver, R. (1999) Localization of an SCN subnucleus regulating locomotor rhythmicity. *J. Neurosc.* 19: 5574-5585.
69. Zhuang, X., Silverman, A.-J., and Silver, R. (1999) Distribution and local differentiation of mast cells in the parenchyma of the forebrain. *J. Comp. Neurol.* 408: 477-488.
70. LeSauter, J. and Silver, R. Circadian rhythms. (1998) In: *Comparative Psychology: A handbook*. G. Greenberg & M. Haraway(Eds.) Garland Publishing, New York. Pp. 277-281.
71. Saldanha, C. and Silver, R. (1998) Hormones. In: *Comparative Psychology: A handbook*. G. Greenberg & M. Haraway(Eds.) Garland Publishing, New York. pp. 304-312.

72. Lehman, M., LeSauter, J., and Silver, R. (1998) Fiber outgrowth from anterior hypothalamic and cortical xenografts in the third ventricle. *J. Comp Neurol.* 391: pp. 133-145.
73. Shanas, U., Bhasin, R., Sutherland, A.K., and Silver, R. (1998) Brain mast cells lack the c-kit receptor. *J. Neuroimmunology*, 90: 207-211.
74. Silver, R. and Moore, R.Y. (Guest editors) (1998). The suprachiasmatic nucleus and circadian function: An introduction. Special Issue in SCN: Editorial foreword for *Chronobiology International*, 15: (vii-x).
75. Moore, R.Y. and Silver, R. (1998). Suprachiasmatic nucleus organization. *Chronobiology International*, 15: 475-487.
76. LeSauter, J. and Silver, R. (1998). Output signals of the SCN. *Chronobiology International*, 15: 535-550.
77. LeSauter, J., Romero, P., Cascio, M., and Silver, R. (1997) Attachment site of grafted SCN influences precision of restored circadian rhythm. *J. Biol. Rhythms* 12:327-338.
78. Zhuang, X., Silverman, A.-J., and Silver, R. (1997) Mast cell number and maturation in the central nervous system: Influence of tissue type, location, and exposure to steroid hormones. *Neuroscience*, 80: 1237-1245.
79. Caba, M., Silver, R., Gonzalez-Mariscal, G., Jimenez, A., and Beyer, C. (1996). Oxytocin and vasopressin immunoreactivity in rabbit hypothalamus during estrus, late pregnancy and postpartum. *Brain Research*, 720: 7-16.
80. Zhuang, X., Silverman, A.-J., and Silver, R. (1996) Brain mast cell degranulation regulates blood-brain barrier. *J. Neurobiol.* 31: 393-403.
81. Silver, R., LeSauter, J., and Lehman, M.N. Contributions of SCN transplant studies to understanding the biological clock. In: *Evolution of Circadian Clock* (Eds. T. Hiroshige & K. Honma). Hokkaido U. Press, Sapporo. 1996.
82. Silver, R., LeSauter, J., Tresco, P., and Lehman, M.N. (1996). A diffusible coupling signal from the transplanted suprachiasmatic nucleus controlling circadian locomotor rhythms. *Nature*, 382: 810-813.
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### **News and Press Items**

Welsh, David K. "Gate Cells See the Light." *Journal of Biological Rhythms* 22 (2007): 26-28.

"A Timely Reminder." *Nature Structural & Molecular Biology* 14 (2007): 569.

Sanders, Robert. "Brain hormone puts brakes on reproduction." UC Berkeley Press Release. Feb 2006

Faculty of 1000 Biology: evaluations for Kriegsfeld LJ et al *Proc Natl Acad Sci U S A* 2006 Feb 14 103 (7) :2410-5  
<http://www.f1000biology.com/article/id/1031785/evaluation>

Nicholson, C. "Signals that go with the flow." *TINS* 22 (1999): 143-145.

Lamberg, Lynne. "Researchers Dissect the Tick and Tock of the Human Body's Master Clock." *JAMA* 278 (1997): 1049-1051.

### **Movies and Television Appearances**

1999: Research on Circadian rhythms was filmed for a BBC production for the Discovery Series

- show on Circadian rhythms; air dates Jan 1999 (Britain), July 1999 (USA) (Film)
- 1999: Played myself in the Comedy Central Show on the bioethics of animating mannequins; with Vance DeGeneres (Television)
- 1997: Played myself in the Comedy Central Show on Circadian rhythms; with Whitney Brown (Television)
- 1988: Research on circadian rhythms in doves and in hamsters, a sequence filmed for: Rhythms and Moods, In: "The Mind" (Producer, Martin Freeth) BBC. (Produced by BBC) (Film)
- 1985: The Reproductive Behavior of the Ring Dove. A 20 minute classroom film. Funded by NSF 1981 (Film) (Won 2nd prize at the Animal Behavior Society)
- 1980: The Dove Story: One hour film produced for Mike Mansfield, Executive Producer at NOVA, funded by NSF and NOVA (Film)

**Invited Addresses and Symposia** (limited to recent years)

- 2008: Beijing, China  
Kumming, China  
New Orleans LSU HSCU Medical School
- 2007: -Rockefeller University Rockefeller University Student and Postdoc Sponsored seminar Series (SPSSS) **Exploring the brain's circadian clock**  
**A case study in spatio-temporal circuit organization**  
-Society for Neuroscience **SYMPOSIUM** co-chair with Dr Kathie Olsen (Neurotech for Neuroscience: Unifying Concepts, Organizing Principles, and Emerging Tools)  
-President's Science Advisory Council, Barnard College Nov 13  
-Latin American Physiology 50<sup>TH</sup> year celebration conference, Puebla, Mexico  
-Cold Spring Harbor, Clocks Symposium  
-Cold Spring Harbor, Arousal Course  
-Gatsby Institute Conference on Quantitative Biology, London  
-Gordon Conference on Chronobiology
- 2005: Lehigh University, University of Massachusetts, University of Veracruz at Jalapa, Mast Cells in Health and Disease Meeting, Eilat, Israel; Department of Neuroscience, University of Chicago; Rockefeller University; University of Halifax; Gordon Conference on Chronobiology, Rhode Island; University of Puerto Rico; University of Toronto, Society for Neuroscience meeting Beach Award presentation to Lance Kriegsfeld.
- 2004:  
Speaker (with Nawshin Hoque and Jennifer Nunez) at President's Advisory Council, Barnard College;  
Eastern Psychological Association, Invited keynote address for Presidential Symposium, Eastern Psychological Association, Washington DC;  
Co-Chair and Speaker, Japanese Anatomy Meeting Kyoto, Japan;  
Invited Address on Brain Mast Cells, Keystone conference, Taos, NM.,  
Winter Brain Research Conference, Invited Symposium Participant;  
Keynote Speaker at Presidential Lecture, Society for Research in Biological Rhythms, Whistler, Vancouver;  
Keynote speaker on Circadian Control of Hormone Secretion, Society for Behavioral Neuroendocrinology, Lisbon, Portugal;  
Biology Department, Smith College, Northampton, MA.

- 2003: Organizer and Chair of NIMH workshop NIH meeting on Circadian rhythms  
 Sapporo, Japan  
 University of Minnesota  
 Vanderbilt University, Nashville  
 Indiana University, Bloomington  
 University of Hawaii, Honolulu
- 2002: University of Virginia, Center for Biological Timing (January)  
 NIMH: "The Effects of Psychological Variables on the Progression of HIV  
 Disease" (January)  
 University of Michigan (February)  
 University of Texas at College Station (March)  
 Universite de Tours Ecole Doctorale, Tours, France (June)  
 New York University Biology Department (June)  
 University of Alaska, Neuroscience Program, Fairbanks (July)  
 University of North Carolina, Chapel Hill (September)  
 Andechs Germany Summer School Lecture (September)  
 Beijing University, Beijing, China, (October)  
 Japanese Society for Chronobiology, Nagoya Japan (November)  
 University of Sapporo, Sapporo Japan (November)
- 2001: Keystone symposium on Biological Clocks (March)  
 American Academy of Sleep Medicine, Chicago (June)  
 Society for Behavioral Neuroendocrinology (June)  
 University of Alaska, Fairbanks First Annual Neuroscience Program (July)  
 Japanese Neuroscience Meeting, Clock symposium and Molecular Clock symposium  
 (September)
- 2000: University of Fairbanks, Alaska  
 Oregon State Health Sciences University, Oregon, Health Sciences Center  
 Society for Research in Biological Rhythms, Jacksonville, FL.  
 Department of Neonatology, Columbia Health Sciences  
 Dartmouth University Medical School, Dartmouth Symposium for the Life Sciences
- 1999: Annual National Institute on the Teaching of Psychology (January)  
 Williams College (February)  
 Hamilton College (March)  
 Workshop on steroid hormones and brain function, Breckenridge, CO (April)  
 Institut National pour Recherche Agricole, Nouzilly, France (June)  
 University of Delaware; Department of Anatomy and Cell Biology, CPMC  
 Sleep and Vigilance at the American Physiological Society, Fort Lauderdale, Miami  
 Gordon Research Conference, Barga, Italy  
 Biology Department, Puerto Rico
- 1998: University of Pennsylvania (January)  
 University of Houston (February)  
 New York University (March)

- American Society for Neurochemistry, Denver Colorado (March)  
 NYU Post-graduate-Medical School and New York Neuropsychology Group (May)  
 Society for Research in Biological Rhythms (May)  
 Society for Behavioral Endocrinology Atlanta (June)  
 INRA, Nouzilly, France (June)  
 University of Vera Cruz, Vera Cruz, Mexico (July)  
 City College, Biology Department (November)  
 Workshop Organizer: "The CSF as a communication pathway of the brain". Society for Neuroscience Meeting (November)  
 New York State Psychiatric Institute, Department of Psychiatry (December)
- 1997: Department of Neurosciences at Concordia University (February)  
 NSF-NIH panel on immune-neuroendocrine interactions (March)  
 University of Maryland, Baltimore (April)  
 University of Massachusetts Neuroscience Seminar Series (April)  
 Brookhaven National Laboratory, Department of Medicine (April)  
 Georgia State University, Atlanta Georgia (May)  
 Gordon Conference on Chronobiology (August)  
 Distinguished Visiting Speaker Laboratory of Neuroendocrinology, Brain Research Institute, U.C.L.A. (June)  
 NSF-CNRS Conference: Biological Rhythms: Physiological and Molecular Mechanisms  
 International Society for Chronobiology Paris, France
- 1996: American Association for the Advancement of Science, Baltimore Speaker and Co-chair for symposium: The Mind's Clocks-Circadian and Interval Timing Mechanisms, Baltimore (February)  
 Human Frontiers Conference: Photic control of Seasonal Cyclicity - Lyons, France (May)  
 Society for Research on Biological Rhythms (June)  
 International Conference on the study of Hormones, Brain and Behavior, Turin, Italy, (August)  
 Department of Anatomy and Cell Biology, Columbia College of Physicians and Surgeons  
 University of Cincinnati, School of Medicine. Cincinnati, Ohio
- 1995: Sapporo Symposium on Biological Rhythms. Symposium on role of the SCN in Circadian Rhythmicity, Sapporo, Japan.  
 Toya Conference, Symposium on Biological Rhythms, Toya National Park, Japan  
 Discussant: Panel on GnRH neurons. Conference on reproductive behavior, Boston  
 American Physiological Society Symposium-Rapporteur on Cellular Basis of Biological Clocks, Hanover, NH  
 Keystone Symposium on encapsulation of biological tissue for transplantation. Frisco, Colorado.  
 American Psychological Association, invited address on brain-immune interactions, Hunter College
- 1994: Organizer and speaker, NIMH workshop on Mast Cells, Washington, D.C.  
 Plenary Speaker, International Ornithological Union, Vienna, Austria  
 Society for Research on Biological Rhythms, Participant in Workshop on photoreception and Session Chair of "Ontogeny of the SCN", FL.

- Invited symposium speaker, Conference on Reproductive Behavior  
 Society for Neurosciences, Chair of Social Event for Behavioral Neuroendocrinology  
 Biology Department, Brooklyn College  
 Biology Department, Columbia University  
 University of Tlaxcala, Mexico
- 1993: Gordon Conference on Biological Timing, Vermont  
 Conference on Hormones, Brain and Behavior, Tours, France  
 World Conference of Sleep Research, Hawaii  
 Neuroscience Program, Johns Hopkins University  
 Neuroscience Program & Biology Department, University of Washington, Seattle  
 Department of Anatomy and Cell Biology, Columbia University School of Medicine  
 Neurosciences Program, Princeton University
- 1992: Conference on Circadian Rhythms - Fondation pour L'Etude du Systeme Nerveux Central  
 et Peripherique  
 Neurosciences Department, University of Connecticut  
 Biology Department, Wellesley College  
 Biology Department, Cornell University  
 Albert Einstein School of Medicine; Neurosciences Program  
 Michigan State University  
 Vth International Avian Endocrinology Conference, Edinburgh  
 NSF Science and Technology Center for the Study of Biological Timing, University of  
 Virginia at Charlottesville
- 1991: Visiting lecturer, Guadalajara, Mexico  
 Gordon Research Conference, Irsee, Germany  
 20th International Conference on Chronobiology, Tel Aviv, Israel-Session chairman and  
 speaker  
 INRA, Laboratoire de Physiologie Sensorielle, Jouy-en-Josas, France  
 100th Anniversary celebration of the University of Goteborg, Session chairman and  
 organizer, Goteborg, Sweden  
 Visiting Professor, University of Tlaxcala, Tlaxcala, Mexico  
 European Winter Brain Conference on Endocrine and Peptidergic Control of Sexual  
 Behavior, Crans-Montana, Switzerland  
 Biobehavioral Research Center, Bloomington, Indiana  
 Mount Sinai School of Medicine, Department of Medicine  
 Columbia University, Biology Department  
 Rockefeller University Field Research Center
- 1990: Developmental Psychobiology Meeting, Session chair and speaker, Puerto Rico  
 Society Biological Rhythms, Florida  
 New York State Department of Psychiatry  
 Psychology Department, Binghamton, NY.  
 Society for Research in Biological Rhythms, Fla.  
 Biology Department, State University of New York at Albany  
 Neurosciences Program, University of Illinois at Champaign  
 Psychology Department, Concordia University

Biology Department, Neuroscience Colloquium, City University of New York  
Department of Biology, Rutgers University, New Brunswick.

**Occasional Reviewer (partial listing)**

Aggression; Animal Behaviour; Association of Women in Science Educational Foundation; Biol. Reproduction; City University Research Foundation; Condor; Developmental Psychobiology; Gen. Comp. Endocrinology; Harper and Row; Hormones and Behavior; Journal of Comparative and Physiological Psychology; Journal of Neuroscience; Journal for Research in Biological Rhythms; National Research Council of Canada, Canadian National Medical Research Council; National Science Foundation; Nature; NIH - Center for Scientific Review; NIH - RCDA Program; NIMH - Fellowship Program; Neurobiology; Neuroscience; Little, Brown and Co.; Ontario Mental Health Foundation; Pharmacology; Physiology and Behavior; Science

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