BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
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NAME	POSITION TITLE
Raymond A. Sobel	Professor of Pathology

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
Stanford University	B.S.	1972	Chemistry and Biology
University of California, San Francisco	M.D.	1976	Medicine

Positions and Honors.

Positions and Employment

1976-77, Intern in Pathology, University of California, Davis, CA
1977-79, Resident in Anatomic Pathology, University of California, San Francisco, CA
1979-80, Fellow in Neuropathology, University of California, Davis, CA
1980-81, Fellow in Neuropathology, Stanford University and Palo Alto VA Medical Centers, Palo Alto, CA
1981-84, Research Fellow in Immunopathology, Massachusetts General Hospital, Harvard Medical School, Boston, MA
1983-84, Instructor in Pathology, Harvard Medical School
1984-89, Assistant Professor, Neuropathology, Pathology, Harvard Medical School, Massachusetts General Hospital
1990-92, Associate Professor, Neuropathology, Pathology, Harvard Medical School, Massachusetts General Hospital
1992-06, Associate Professor with tenure, Pathology, Stanford University School of Medicine
2006- Professor of Pathology, Stanford University School of Medicine

Other Experience and Honors

1987-95 Veterans' Administration Merit Review Board/Neurobiology (Ad hoc)
1990,95 NIH Neurological Disorders Program Project Special Review Committee
1987-91 Associate Editor, *Journal of Immunology*
1993-98 National Multiple Sclerosis Society Basic Sciences Study Section B
1994-97 NIH AIDS & Related Research Study Section
1993-95 Review Panel, *Human Pathology*
1996-97 Editorial Board, *Neurology*
1991-2004 Editorial Board, *Journal of Neuropathology and Experimental Neurology*
2000-present Editorial Board, *Brain Pathology*
2000-present Editorial Board, *Journal of Neuroimmunology*
2001-2002 Vice President, American Association of Neuropathologists
2002 NIH Project Site Visit Panel and ad hoc reviewer for NIH NSD-C1 Study Section
2005- Associate Editor, *Journal of Neuropathology and Experimental Neurology*

B. Selected peer-reviewed publications (in chronological order)

(Publications from past 5 years selected from 166 peer-reviewed publications)

1. Kuruganti PA, Hinojoza JR, Eaton MJ, Ehmann UK, **Sobel RA**. 2002. Interferon-β counteracts inflammatory mediator induced alterations of tight junction molecules in human brain endothelial cells—implications for multiple sclerosis *J Neuropathol Exp Neurol* 61:710-724
2. Youssef S, Stüve O, Patarroyo JC, Ruiz PJ, Radosevich J, Bravo M, Hur EM, Mitchell D, **Sobel RA**, Steinman L, Zamvil SS. 2002. The HMG-CoA reductase inhibitor, atorvastatin promotes a Th2 bias and reverses paralysis in CNS autoimmune disease. *Nature* 420:78-84
3. Bettelli E, Pagany M, Weiner HL, Linington C, **Sobel RA**, Kuchroo VK. Myelin oligodendrocyte glycoprotein specific TCR transgenic mice develop spontaneous optic neuritis. *J Exp Med 197:107301081,* 2003

4. Bettelli E, Sullivan B, Szabo SJ, **Sobel RA,** Glimcher LH, Kuchroo VK. Loss of T-bet but not STAT1 prevents the development of experimental autoimmune encephalomyelitis. *J Exp Med* 2004 200:79-87
5. Latchman YE, Liang S, Wu Y, Chernova T, **Sobel RA**, Klemm M, Kuchroo VK, Freeman GJ, Sharpe AJ. 2004. PD-L1 deficient mice show that PD-L1 on T cells, APC and host tissues negatively regulates T cells. *Proc Natl Acad Sci USA* 2004 101:10691-10696
6. Fontoura P, Ho PP, DeVoss J, Zheng B, Lee BJ, Kidd BA, Garren H, **Sobel RA**, Robinson WH, Tessier-Levigne M, Steinman L. Immunity to the extracellular domain of Nogo-A modulates experimental autoimmune encephalomyelitis. *J Immunol* 2004 173:6981-6992
7. **Sobel RA**. 2005. Ephrin A receptors and ligands in lesions and normal-appearing white matter in multiple sclerosis *Brain Pathol* 15:35-45
8. Zhang Y, Da R-R, Guo W, Hilgenberg LG, **Sobel RA**, Tourtellotte WW, Smith MA, Olek M, Gupta S, Robertson RT, Nagra R, van den Noort S, Qin Y. 2005. Axon reactive B cells clonally expanded in the cerebrospinal fluid of patients with multiple sclerosis. *J Clin Immunol* 25:254-64
9. Chakravarti S, Sabatos CA, Xiao S, Illes Z, Cha EK, **Sobel RA**, Zheng XX, Strom TB, Kuchroo VK. 2005. Tim-2 regulates Th2 responses and autoimmunity. *J Exp Med* 202:308-316
10. Dardalhon V, Schubart AS, Reddy J, Hartt-Meyers J, Monney L, Sabatos CA, Ahuja R, Nguyen K, Freeman GJ, Greenfield EA, **Sobel RA**, Kuchroo VK 2005. CD226 is specifically expressed on the surface of Th1 cells and regulates their expansion and effector functions *J Immunol* 175:1558-1565.
11. Zhang Y, Da R-R, Tourtellotte WW, **Sobel RA**, Ren H, Nagra R, Gupta S, van den Noort S, Qin Y. 2005. Clonal expansion of IgA-positive plasma cells and axon-reactive antibodies in multiple sclerosis lesions. *J Neuroimmunol* 167:120-30
12. Reddy J, Waldner H, Zhang X, Illés Z, Wücherpfennig K, **Sobel RA**, Kuchroo VK. 2005. Cutting Edge. CD4+CD25+ regulatory T cells contribute to gender differences in susceptibility to experimental autoimmune encephalomyelitis. *J Immunol* 175:5591-5595
13. Platten M, Ho PP, Youssef S, Fontoura P, Garren H, Hur EM, Gupta R, Lee LY, Kidd BA, Robinson WH, **Sobel RA**, Selley ML, Steinman L. 2005. Treatment of autoimmune neuroinflammation with a synthetic tryptophan metabolite. *Science* 310:850-854
14. Miyamoto K, Kingsley CL, Zhang X, Jabs C, Izikson L, **Sobel RA**, Weiner HL, Kuchroo VK, Sharpe AH. 2005. The inducible costimulatory (ICOS) molecule plays a crucial role in the induction of mucosal tolerance. *J Immunol* 175:7341-73477
15. Kanter JL, Narayana S, Ho PP, **Sobel RA**, Robinson WH, Steinman L. 2006. Lipid arrays identify key mediators of autoimmune brain inflammation. *Nature Medicine* 12::138-143
16. Greenfield EA, Reddy J, Lees A, Dyer CA, Koul O, Nguyen K, Bell S, Kassam N, Hinojoza J, Eaton MJ, Lees MB, Kuchroo VK, **Sobel RA**. 2006. Monoclonal antibodies to distinct regions of human myelin proteolipid protein simultaneously recognize central nervous system myelin and neurons of many vertebrate species. *J Neurosci Res* 83:415-31.
17. Zucker K, Kamberi P, **Sobel RA**, Melli DN, Cloud G, Clemons KV, Stevens DA, Williams PL, Leib SL. 2006. Temporal expression of inflammatory mediators in brain basilar artery vasculitis and cerebrospinal fluid of rabbits with Coccidioidal meningitis. *Clin Exp Immunol* 143: 458-466
18. Stüve O, Youssef S, Weber MS, Nessler S, von Büdingen H-C, Hemmer B, Prod'homme T, **Sobel RA**, Steinman L, Zamvil SS. 2006. Immunomodulatory synergy by combination of atorvastatin and glatiramer acetate in treatment of CNS autoimmunity. *J Clin Invest* 116: 1037-1044.
19. Waldner H, **Sobel RA**, Price N, Kuchroo VK. 2006. The autoimmune diabetes locus Idd9 regulates development of Type 1 diabetes by affecting the homing of islet-specific T cells. *J Immunol* 176::5455-5462.
20. Capilla J, Maffei CML, Clemons KV, **Sobel RA**, Stevens DA. 2006. Experimental systemic infection with Cryptococcus neoformans var. neoformans and var. gattii in normal and immunodeficient mice. Med Mycol (in press)
21. Bettelli E, Baeten D, **Sobel RA**, Kuchroo VK. 2006. Myelin oligodendrocyte glycoprotein-specific T and B cells cooperate to induce a Devic-like disease in mice. *J Clin Invest* (in revision)
22. **Sobel RA**, Moore GRW. Demyelinating Diseases, *In*, Greenfield's Neuropathology, Eighth edition. Love S, Ellison D, Louis D, eds. Oxford Press, London, 2007 (in preparation)

C. Research Support. List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and responsibilities of principal investigator identified above.

COMPLETED

1 RO1 NS 40516 M. Yenari (PI) 7/1/02 – 6/30/04
National Institutes of Health (NIH)
Inflammatory mechanisms in cerebral ischemia
Role: Co-investigator. 5% effort.
This project investigates inflammatory responses in focal cerebral ischemia. The PI has left Stanford.

2 RO1 NS 27292. G.K. Steinberg (PI) 10/1/00 – 9/30/05
National Institutes of Health (NIH)
Mild hypothermic neuroprotection for cerebral ischemia
Role: Collaborator. 5% effort.
This project investigates mechanisms of hypothermic neuroprotection

ONGOING

2 RO1 NS 36765. E. Benveniste (U. Alabama) (PI) 7/1/00– 7/31/06
National Institutes of Health (NIH)
Cytokine regulation of CIITA and class II MHC in glia
Role: Co-investigator (subcontract). 5% effort
This project investigates mechanisms of cytokine regulation of class II MHC molecules in glia by SOCS molecules

1 RO1 NS 046414. R.A. Sobel (PI) 10/1/03– 6/30/07
Failure of axon repair in MS lesions
This project investigates mechanisms of axonal regrowth inhibition by heparan sulfate proteoglycans in chronic MS lesions 20% effort.

2 R37 NS30843. V. Kuchroo (Harvard)(PI) 07/01/02 – 06/30/09
National Institutes of Health (NIH)
Analysis of T cell responses to myelin proteolipid protein.
Role: Co-investigator (subcontract) 10% effort.
This project investigates immune responses to myelin PLP in murine EAE. (Javitz Award).

2 RO1 NS 04142. L. Steinman (PI) 01/01/02 – 12/30106
National Institutes of Health (NIH)
Large scale images of gene transcription in MS and EAE
Role: Co-investigator. 5% effort.
This project investigates potential functional roles of molecules identified by large scale gene screening of CNS tissues in MS and in animal models of MS

PENDING

"Significance of B cell clonal expansion in the CNS". National MS Society Subcontract. PI : Y. Qin (UC Irvine). Project Period 10/01/06 – 9/30/09. Percent effort: 3%

"Protein Kinase C Isozymes in Stroke--a Therapeutic Target:. NIH. PI: D. Mochly-Rosen (Stanford). Project Period 02/01/07 – 01/31/011. Percent effort: 5%

"Mechanisms of tolerance and immunity to central nervous system antigens" NIH. Subcontract. PI: J. Goverman (U. Washington). Project Period 12/01/06–11/30/11. Percent effort: 3%. .

"Transcriptional control of macrophage activation in innate immunity" NIH.. PI: A. Chawla. Project Period 12/01/06 – 11/30/11. Co-investigator. Percent effort: 3%. .