

## **Fu-Dong Shi, M.D., Ph.D**

*Associate Professor of Neurology  
Director of Neuroimmunology Laboratory and FACS Core  
Barrow Neurological Institute  
Professor, ASU-BNI Neuroscience PhD Program  
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### **EDUCATION AND FACULTY APOINTMENT**

1984 – 1989	M.D. Harbin Medical College and Peking Union Hospital, China
1989 – 1995	Resident and Attending Neurologist Divisions of Internal Medicine and Neurology The Second Hospital, Harbin Medical University, China
1995 – 1999	Ph.D. in Neurology Division of Neurology, Karolinska Institute, Stockholm, Sweden
1999 – 2003	Post-doctoral Fellow/Senior Research Fellow The Scripps Research Institute, La Jolla, California
2004 – 2009	Director of Neuroimmunology Laboratory and FACS Core, Assistant Professor of Neurology Barrow Neurological Institute (BNI), St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85013, US
2010 – Present	Associate Professor of Neurology Barrow Neurological Institute, St. Joseph's Hospital and Medical Center, Phoenix, Arizona 85013, US
2010 – Present	Professor, BNI-ASU Neuroscience PhD Program.

### **PROFESSIONAL EXAMS**

- EDSS Certificate: 2004
- USMLE Step 1: 2007
- USMLE Step 2 CS: 2007
- USMLE Step 2 CK: 2008
- ECFMG Certificate: 2008

### **HONORS AND AWARDS**

- 2000 Postdoctoral Fellowship Award from Juvenile Diabetes Foundation International
- 2002 Career Development Award from the Muscular Dystrophy Association
- 2009 Changjiang Scholar Award Program, Ministry of Education, China

### **PROFESSIONAL MEMBERSHIPS**

- 2004 American Association of Immunology
- 2004 American Neurological Association

### **PROFESSIONAL SERVICE**

#### Grants

- 2007 The Juvenile Diabetes Research Foundation (JDRF)-Immunology.

- 2008 National Institute of Health (NIAID): Autoimmune Centers of Excellence U19
- 2009 National Institute of Health (NIAID): Ancillary Studies in Immunomodulation Clinical Trials
- 2010 National Institute of Health (HAI): Hypersensitivity, Allergy and Immune Mediated Disease ZRR1

#### Journals (Ad hoc)

Nature Medicine, Nature Immunology, Journal of Clinical Investigation, The Journal Immunology, Journal of Experimental Medicine, Lancet Neurology, New England Journal of Medicine

#### **ADVISORY BOARDS** (industry)

- 2004 TEVA Neuroscience, Inc.
- 2007 Daiichii Sankyo Pharma Development

#### **US PATENTS**

- Interleukin-21 (IL-21) and Interleukine-21 Receptor (IL-21R) Modulation of Regulatory T cells and Forkhead Box P<sub>3</sub> (FOXP<sub>3</sub>) (Pending US Serial No.61/025,568)
- Nicotine Attenuates the Central Nervous System inflammation and autoimmunity (Pending US Serial No. 61/096,170)

#### **PRE- AND POST- DOCTORAL TRAINEES**

- Ruolan Liu PhD, University of Southern California, Los Angeles, US  
June 2004 – Nov 2010; Currently, Research Assistant Professor  
Fellowship: MDA career development awardees
- Yan Gan PhD, Tongji Medical University, Wuhan, China  
2010 – Present
- Junwei Hao MD, PhD, Nankai University, Tianjin, China  
2008 – Present  
Fellowship: Barrow Hobb Family Neuroimmunology Fellowship
- Alain Simard PhD, Laval University, Quebec City, Canada  
2008 – Present  
Fellowship: MS Society of Canada
- Chen Wu PhD student, BNI-Arizona State University, Phoenix, US  
2010 – Present
- Wen-Huan Piao MD, PhD, Beijing University, China  
2005 – 2008  
Currently: Director of Clinical Laboratory, Ningxia People's Hospital, Yinchuan, Ningxia 750001, China
- Young-Huen Jee PhD, Tokyo Metropolitan Institute for Neuroscience, Japan  
2005 – 2007  
Currently: Assistant Professor, Jezhu National University, South Korea

#### **TEACHING**

- Teach at Neuroscience block for medical student  
University of Arizona College of Medicine in partnership with ASU downtown Phoenix  
Course direct: Ronald P. Hammer, Jr., PhD.  
Topics: Mechanisms of Path physiology of Neuroinflammatory disorders.
- Lecture for BNI-ASU Neuroscience Program  
Topics: Neuroimmunology.
- Regular lecture for Barrow Neurology/Child Neurology Residency Program

## PEER-REVIEWED PUBLICATIONS

### ➤ 1997-1999 Ph.D works

1. **Shi FD**, Zhang G, Bai X, van der Meide PH, and Link H. 1997. "Cellular mRNA expression of IFN- $\gamma$ , IL-4 and IL-10 relates to the resistance to experimental autoimmune myasthenia gravis in young Lewis rats". *Clin Exp Immunol*. 108:523-527.
2. Bai X, **Shi FD**, Li H, van der Meide PH, and Link H. 1997. "Nasal administration of myelin basic protein prevents relapsing experimental autoimmune encephalomyelitis in DA rats by activating regulatory cells expressing IL-4 and TGF- $\beta$  mRNA". *J Neuroimmunol*. 80:65-75.
3. Bai XF, **Shi FD**, Zhu J, Xiao BG, Hedlund G, and Link H. 1997. "Linomide-induced suppression of experimental autoimmune neuritis is associated with down-regulated macrophage functions". *J Neuroimmunol*. 76:177-84.
4. Zhang GX, Yu LY, **Shi FD**, Xiao BG, Björk J, Hedlund G, and Link H. 1997. "Linomide suppresses both Th1 and Th2 cytokines in experimental autoimmune myasthenia gravis". *J Neuroimmunol*. 73:175-82.
5. **Shi FD**, He B, Li H, Matuszewicz D, Link H, and Ljunggren HG. 1998. "Differential requirements for CD28 and CD40 ligand in the induction of experimental autoimmune myasthenia gravis". *Eur J Immunol*. 28:3587-3593.
6. **Shi FD**, Bai X, Li H, and Link H. 1998. "Macrophages apoptosis in muscle tissues in experimental autoimmune myasthenia gravis" *Muscle & Nerve* 21:1071-1074.
7. **Shi FD**, Bai X, Xiao B, van der Meide PH, and Link H. 1998. "Nasal tolerance of multiple antigens suppresses experimental autoimmune myasthenia gravis (EAMG), encephalomyelitis (EAE), and neuritis (EAN)". *J Neurol Sci*. 155:1-12.
8. **Shi FD**, van der Meide PH, and Link H. 1998. "Nasal tolerance in experimental autoimmune myasthenia gravis: induction of protective tolerance in primed animals". *Clin Exp Immunol*. 111:506-512.
9. Bai X, Li H, **Shi FD**, van der Meide PH, and Link H. 1998. "Complexities of a applying nasal tolerance induction as therapy for ongoing experimental autoimmune encephalomyelitis in DA rats". *Clin Exp Immunol*. 111:205-210.
10. Li H, **Shi FD**, He B, Backheit M, Wahren B, Berglöf A, Sandstedt K, and Link H. 1998. "Experimental autoimmune myasthenia gravis induction in B cell deficient mice" *Int Immunol*. 10:1359-1365.
11. Li H, **Shi FD**, Bai X, Huang Y, Diab A, He B, and Link H. 1998. "Cytokine and chemokine mRNA expressing cells in muscle tissues of experimental autoimmune myasthenia gravis". *J Neurol Sci*. 161:40-6.
12. Xiao BG, Zhang GX, Shi FD, Ma CG, and Link H. 1998. "Decrease of LFA-1 is associated with upregulation of TGF-beta in CD4(+) T cell clones derived from rats nasally tolerized against experimental autoimmune myasthenia gravis". *Clin Immunol Immunopathol*. 89:196-204.
13. Liu JQ, Bai XF, **Shi FD**, Xiao BG, Li HL, Levi M, Mustafa M, Wahren B, and Link H. 1998. "Inhibition of experimental autoimmune encephalomyelitis in Lewis rats by nasal administration of encephalitogenic MBP peptides: synergistic effects of MBP 68-86 and 87-99". *Int Immunol*. 10:1139-48.
14. Zhang GX, Yu LY, **Shi FD**, Xiao BG, Björk J, Hedlund G, and Link H. 1998. "Cytokine profiles of experimental autoimmune myasthenia gravis after treatment by the synthetic immunomodulator linomide". *Ann N Y Acad Sci*. 841:580-3.
15. Zhang GX, Shi FD, Zhu J, Xiao BG, Levi M, Wahren B, Yu LY, and Link H. 1998. "Synthetic peptides fail to induce nasal tolerance to experimental autoimmune myasthenia gravis". *J Neuroimmunol*. 85:96-101.
16. Li HL, **Shi FD**, Bai XF, Huang YM, van der Meide PH, Xiao BG, and Link H. 1998. "Nasal tolerance to experimental autoimmune myasthenia gravis: tolerance reversal by

- nasal administration of minute amounts of interferon-gamma". *Clin Immunol Immunopathol.* 87:15-22.
17. **Shi FD**, Li H, Wang H, Bai X, van Der Meide PH, Link H, and Ljunggren HG. 1999. "Mechanisms of nasal tolerance in experimental autoimmune myasthenia gravis: Identification of the regulatory cells". *J Immunol.* 162:5757-5763.
  18. Diab D, Abdalla H, Li H, **Shi FD**, Bakhiet M, and Link H. 1999. "Neutralization of MIP-2 and MIP-1 $\alpha$  attenuates neutrophil recruitment in the central nervous system during experimental bacterial meningitis". *Infect Immunology* 67:2590-2601.
  19. Wang HB, Li H, He B, Bakheit M, Levi M, Wahren B, Berglöf A, Sandstedt K, Link H, and **Shi FD**. 1999. "The role of B-cells in experimental myasthenia gravis in mice". *Biomed Pharmacother.* 53:227-33.

➤ **2000-2003 Post-doc works**

20. **Shi FD**, Wang H, Li H, Hong S, Tanihuchi M, Link H, Van Kaer L, and Ljunggren HG. 2000. "Natural killer cells determine the outcome of B cell-mediated autoimmunity". *Nat Immunol.* 1:245-251.
21. **Shi FD**, Takeda K, Akiro S, Sarvetnick N, and Ljunggren HG. 2000. "Interleukin-18 directs autoreactive T cells and promotes autodestruction in the central nervous system by induction of IFN- $\gamma$  by natural killer cells". *J Immunol.* 165:3099-3104.
22. Wang H, Li H, **Shi FD**, Chambers B, Link H, and Ljunggren HG. 2000. "Tumor necrosis factor receptor 1 (TNFR1) is critically involved in murine experimental autoimmune myasthenia gravis". *Int. Immunol.* 12:1381-1388.
23. Balasa B, **Shi FD**, and Sarvetnick N. 2000. "Reply to saoudi et al". *Immunol Today.* 21:307-8.
24. Balasa B, **Shi FD**, and Sarvetnick N. 2000. "Reply to infante, krolick and wall". *Immunol Today.* 21:306.
25. Wang HB, **Shi FD**, Li H, van der Meide PH, Ljunggren HG, and Link H. 2000. "Role for interferon-gamma in rat strains with different susceptibility to experimental autoimmune myasthenia gravis". *Clin Immunol.* 95:156-62.
26. **Shi FD**, Flodstrom M, Kim SH, Pakala S, Cleary M, Ljunggren HG, and Sarvetnick N. 2001. "Control of autoimmune response by type 2 nitric oxide synthase" *J Immunol.* 167:3000-3006.
27. **Shi FD**, Flodstrom M, Balasa B, Kim SH, Van Gunst K, Strominger J.L, Wilson SB, and Sarvetnick N. 2001. "Germ line deletion of the CD1 locus exacerbates diabetes in the NOD mouse". *Proc Natl Acad Sci USA.* 98:6777-6782.
28. **Shi FD**, Ljunggren HG, and Sarvetnick N. 2001. Autoimmunity mediated by innate immune effector cells. *Trends Immunol.* 22:301.
29. Wang H\*, **Shi FD**\*, Li H, Chambers BJ, Link H, and Ljunggren HG. 2001. CTLA4 blockade induces intramolecular determinant spreading and enhances murine myasthenia gravis. *J Immunol.* 166:6430-6436. (\*co-first author).
30. **Shi FD**, Ljunggren .G, and Sarvetnick N. 2001. Innate immunity and autoimmunity: from-self protection to self-aggression. *Trends Immunol.* 22:97-101.
31. Huang D, **Shi FD**, Giscombe R., Ljunggren HG, and Lefvert A. 2001. Interleukine-1 $\beta$  gene disruption diminishes acetylcholine receptor induced immune responses in experimental autoimmune myasthenia gravis in mice. *Eur J Immunol.* 31:225-232.
32. Flodstrom M, **Shi FD**, Sarvetnick N, Ljunggren HG 2002. Natural killer cells, friend or foe in autoimmune disease. *Scand J Immunol.* 55:432-441.
33. Tan EM and **Shi FD**. 2003. Relative paradigms between autoantibodies in lupus and autoantibodies in cancer. *Clin Exp Immunol.* 134:169-177.

34. Koziol JA, Zhang J, Casiano CA **Shi FD**, Feng A, Chan EK, and Tan EM. 2003. Recursive partitioning as an approach to selection of immune markers for tumor diagnosis. *Clin Cancer Res.* 9:5120-5126.
35. **Shi FD**, Zhang J, Casiano CA, Chan EK, and Tan EM. 2005. Preferential humoral immune response to p90 in prostate cancer. *Prostate* 63:352-358.
36. Megliorino R., **Shi FD**, Tan EM, Zhang JY. 2005. Autoimmune response to anti-apoptotic protein survivin and its association with antibodies to p53 and c-myc in cancer detection. *Cancer Detect Prev.* 29:241-248.

➤ **PI works**

**2005**

37. Vollmer TL, Liu R, Price M, Rhodes S, La Cava A, **Shi FD**. 2005. Differential effects of IL-21 in the initiation and progression of autoimmunity against neuroantigens. *J Immunol.* 174:2696-2701.
38. Liu R., La Cava A, Campagnolo D, Price M, Vollmer L, Van Kaer L, and **Shi FD**. 2005. Cooperation of iNKT cells and CD4<sup>+</sup>CD25<sup>+</sup> Treg cells in the prevention of autoimmune myasthenia. *J. Immunol.* 175:7898-7904.

**2006**

39. Jee Y, Liu R., Bai XF, Campagnolo D, **Shi FD**, Vollmer TL. 2006. Do Th2 cells mediate the effects of glatiramer acetate in experimental autoimmune encephalomyelitis? *Int Immunol.* 18:537-544.
40. Huang D\*, **Shi FD**\*, Jung S, Pien GC, Wang J, Salazar-Mather TT, He T, Weaver J, Ljunggren HJ, Biron CA, Littman DR., and Ransohoff RM. 2006. CX3CR1 mediates specific recruitment to the central nervous system of NK cells that modify disease expression in experimental autoimmune encephalomyelitis. *FASEB J.* 20:896-905. (\*co-first author).
41. Bakhiet M, Yu LY, Ozenci V and **Shi FD**. 2006. Modulation of immune responses and suppression of experimental autoimmune myasthenia gravis by surgical denervation of the spleen. *Clin Exp Immunol.* 144:290-298.
42. Liu R, Van Kaer L, La Cava A, Price M, Rhodes S, Campagnolo D, Vollmer T, and **Shi FD**. 2006. Autoreactive T cells mediate NK cell degeneration in autoimmune disease. *J Immunol.* 176:5247-5254.
43. La Cava A and **Shi FD**. 2006. Natural and adaptive immune cell-based therapies in autoimmunity. *Curr Med Chem.* 13: 1557-1566.
44. La Cava A, Van Kaer L, and **Shi FD**. 2006. CD4<sup>+</sup>CD25<sup>+</sup> regulatory T cells and NKT cells: regulators regulating regulators. *Trends Immunol.* 27: 322-327.
45. Joshi PS, Liu J, Wang Y, Chang X, Richards J, **Shi FD**, Ljunggren HG, and Bai XF. 2006. Non-CD1d-dependent NKT-like cells selectively lyse immature dendritic cells and augment autoimmune inflammation in the central nervous system. *J Leuk Biol.* 80:1345-1353.
46. **Shi FD** and Van Kaer L. 2006. Reciprocal regulation between NK cells and autoreactive T cells. *Nat Rev Immunol.* 6:751-760.

**2007**

47. Schwartz E I, Smilenov L B, Price M A, Osredkar T, Baker R A, Ghosh S, **Shi FD**, Vollmer T, Lencinas L A, Stearns D M, Gorospe M, and Kruman II. 2007. Cell cycle activation in postmitotic neurons is essential for DNA repair. *Cell Cycle* 6:318-329.
48. Liu JQ, Carl JW Jr, Joshi PS, Raychaudhury A, Pu XA, **Shi FD**, and Bai XF. 2007. CD24 on the resident cells of the central nervous system enhances experimental autoimmune encephalomyelitis. *J Immunol.* 178:6227-6235.

49. Ferrera F, Hahn BH, Rizzi M, Anderson M, FitzGerald J, Millo E, Indiveri F, **Shi FD**, and La Cava A. 2007. Somatic B cell gene vaccination with anti-DNA immunoglobulin consensus peptide protects (NZB x NZW)F1 Lupus-prone mice from renal disease. *Arth Rheum.* 56:1945-1953
50. Jee Y, Piao WH, Liu R, Bai XF, Rhodes S, Campagnolo DI, **Shi FD**, and Vollmer TL. 2007. CD4<sup>+</sup>CD25<sup>+</sup> regulatory T cells contribute to the therapeutic effects of glatiramer acetate in experimental autoimmune encephalomyelitis. *Clin Immunol.* 125:34-42.
51. Bar-Or A, Vollmer TL, Antel J, Bodner CA, Campagnolo DI, Gianettoni J, Jalili F, Kachuck N, Lapierre Y, Niino M, Oger J, Price M, Rhodes S, Robinson WH, **Shi FD**, Utz PJ, Valone F, Weiner L, Steinman L, and Garren H. 2007. Induction of antigen-specific tolerance in multiple sclerosis after immunization with DNA encoding myelin basic protein in a randomized, placebo-controlled phase I/II trial. *Arch Neurol.* 64:1407-1415.
52. Piao WH, Wong R, Bai XF, Campagnolo DI, Dorr RT, Vollmer TL, and **Shi FD**. 2007. Therapeutic effect of anthracene-based anti-cancer agent ethonafide in an animal model of multiple sclerosis. *J Immunol.* 179:7415-7423.

### 2008

53. Piao WH, Jee YH, Liu R, Coons SW, Kala M, Collins M, Young DA, Campagnolo DI, Vollmer TL, Bai XF, La Cava A, and **Shi FD**. 2008. IL-21 Modulates CD4<sup>+</sup>CD25<sup>+</sup> Regulatory T cell homeostasis in EAE. *Scand J Immunol.* 67:37-46.
54. Liu R, Bai Y, Vollmer TL, Bai XF, Jee YH, Tang Y, Campagnolo DI, Collins M, Young DA, La Cava A, and **Shi FD**. 2008. IL-21 Receptor Expression Determines the Temporal Phases of Experimental Autoimmune Encephalomyelitis. *Exp Neurol.* 211:14-24.
55. Bai Y, Liu R, Huang D, La Cava A., Tang YY, Iwakura Y, Campagnolo DI, Vollmer TL, Ransohoff RM, and **Shi FD**. 2008. CCL2 Recruitment of IL-6-producing CD11b<sup>+</sup> Monocytes to the Draining Lymph Nodes during the Initiation of Th17-dependent B cell-mediated Autoimmunity. *Eur J Immunol.* 38:1877-1888.

### 2009

56. **Shi FD**, Piao WH, Kuo YP, Campagnolo DI, Lukas R, and Vollmer TV. 2009. Nicotinic attenuation of central nervous system inflammation and autoimmunity. *J Immunol.* 182:1730-1739.
57. Lourenço EV, Procaccini C, Ferrera F, Iikuni N, Singh RP, Filaci G, Matarese G, **Shi FD**, Brahn E, Hahn BH, and La Cava A. 2009. Modulation of p38 MAPK activity in regulatory T cells after anti-DNA Ig peptide in (NZB x NZW)F<sub>1</sub> lupus mice. *J Immunol.* 182:7415-7421.
58. Piao WH, Campagnolo DI, Dayao C, Lukas RJ, and **Shi FD**. 2009. Nicotine and inflammatory neurological disorders. *Acta Pharmacol Sin.* 30:715-722.
59. Cai C, **Shi FD**, Matarese G, and La Cava A. 2009. Leptin as clinical target. *Recent Pat Inflamm Allergy Drug Discov.* 3:160-166.
60. Bar-Or A, Oger J, Gibbs E, Niino M, Aziz T, Renoux C, Alatab S, **Shi FD**, Campagnolo DI, Jalili F, Rhodes S, Yamashita T, Fan B, Freedman MS, Panitch H, Arnold DL, and Vollmer T. 2009. Serial combination therapy: is immune modulation in multiple sclerosis enhanced by initial immune suppression? *Mult Scler.* 15:959-964.
61. Liu R, Hao JW, Dayao C, Vollmer TL, **Shi FD**, and Campagnolo DI. 2009. T-bet deficiency decreases susceptibility to experimental myasthenia gravis. *Exp Neurol.* 220: 366-373.
62. Flodström-Tullberg M, Bryceson YT, **Shi FD**, Höglund P, and Ljunggren HG. 2009. NK cells in human autoimmunity. *Curr Opin Immunol.* 21:634-640.

### 2010

63. Kala M, Rhodes SN, Piao WH, **Shi FD**, Campagnolo DI, and Vollmer TL. 2010. B Cells from Glatiramer Acetate-Treated Mice Suppress Experimental Autoimmune Encephalomyelitis. *Exp Neurol*. 221:136-145.
64. Liu R, Zhou QH, La Cava A, Van Kaer L, Campagnolo DI, and **Shi FD**. 2010. Expansion of regulatory T cells via IL-2/anti-IL-2 mAb complex suppresses experimental myasthenia. *Eur J Immunol*. 40:1577-1589. Featured article.
65. Hao JW, Liu R, Piao WH, Vollmer TL, Xiang R, La Cava A, Campagnolo DI, Van Kaer L, and **Shi FD**. 2010. CNS-resident NK cells suppress Th17 responses and CNS autoimmune pathology. *J Exp Med*. 207:1907-1921. Issue cover and Nature highlight.
66. Yin JX, Tu JL, Lin HJ, **Shi FD**, Liu RL, Zhao CB, Coos SW, Kuniyoshi S, and Shi J. 2010. Centrally administered pertussis toxin inhibits microglia migration to the spinal cord and prevents dissemination of disease in an EAE mouse model. *PLoS One*. 5:e12400.
67. **Shi FD**, Zhou QH. 2010. NK cells as an indispensable disease players and therapeutic target in autoimmune disorders. *Autoimmunity*. (In press).
68. Hao JW, Simard AR, Turner GH, Wu J, Whiteaker P, Lukas RJ, and **Shi FD**. 2010. Attenuation of CNS inflammatory responses by nicotine involves  $\alpha 7$  and non- $\alpha 7$  nicotinid receptors. *Exp Neurol*. (In press).
69. Hao JW, Campagnolo DI, Liu R, Piao WH, Shi S, Hu B, Xiang R, Zhou QH, Vollmer TL, Van Kaer L, La Cava A, and **Shi FD**. 2010. IL-2/IL-2 mAb therapy induces target organ NK cells that inhibit inflammation. *Ann Neurol*. (In press).

### Manuscripts

1. Tybl E, **Shi FD**, Tierling S, Walter J, Bohle RM, Wieland S, Tan E.M, and Kiemer AK. "Liver-specific over expression of the IFG3 binding protein *p62* induces fatty liver disease". *Proc Natl Acad Sci USA*. (Under review).
2. Kim DY, Hao JW, Liu R, Turner G, Rho J, and **Shi FD**. "Memory dysfunction and the effects of ketogenic diet in murine model of multiple sclerosis". *J. Immunol*. (Under review).
3. Liu R, Yang L, Shi S, Campagnolo DI, Ljunggren HG, La Cava A, Van Kaer L, and **Shi FD**. 2010. "NK cells inhibit T-bet-deficient, autoreactive Th17 cells". *J. Innate Immunity*. (Under revision)
4. **Shi FD**, Ljunggren HG, La Cava A, Van Kaer. "Organ-specific features of NK cells in inflammatory pathways". Review (In preparation).
5. **Shi FD**, Jia JP. "Neurology and neurological practice in China". Review (In preparation)

### Book Chapters

1. **Shi FD**. 1998. "Immunopathogenesis and Nasal Tolerance in Experimental Autoimmune Myasthenia Gravis". F.D. Shi, and AB Repero-Print, eds. Stockholm. (ISBN 91-628-2995-5)
2. **Shi FD**. 2000. "T cell costimulation in myasthenia murine gravis". In *Myasthenia Gravis: Disease Mechanisms and Immuno-intervention*. P. Christadoss, eds. Narosa Publishing House, New Delhi, NEW, London. (ISBN 81-7319-294-4)
3. **Shi FD** and Sarvetnick N. 2001. "Regulation of autoreactive T cells in myasthenia gravis". In *Inflammatory events in neurodegeneration*. S.C. Bondy, and A. Campbell, eds. Prominent Press, Scottsdale, AZ. 292-307. (ISBN 0-9668997-7-6)
4. **Shi FD**, Campagnolo DI, and Vollmer TL. 2006. "Immune therapy in multiple sclerosis: altered peptide ligand and statins". In *Handbook of Multiple Sclerosis: 4<sup>th</sup> ed.* S.D. Cook, eds. (ISBN 1574448277)
5. **Shi FD** and Ransohoff RM. 2010. "Nature killer cells in the central nervous system". In *Nature Killer Cells*. M.T. Lotze and A.W. Thomson. Elsevier (ISBN 978-0-12-370454-2)
6. Liu R, Hao J, and **Shi FD**. 2010. "Regulatory T cells in myasthenia". In *Myasthenia gravis: Disease mechanisms and immune intervention*. P. Christadoss, eds. Linus Publications, Inc. (ISBN 978-1-60797-060-6)

## RESEARCH SUPPORT

### ➤ Ongoing Support

- 01/01/10-12/30/12 Muscular Dystrophy Association (MDA)  
Shi FD (PI), No.159281  
**Th17 cell in myasthenia**
- 10/01/09-09/30/12 Arizona Biomedical Research Commission (ABRC)  
Shi FD (PI), No.9-140  
**NK cells control microglia during CNS inflammation**
- 07/01/05-Present Barrow Neurological Institute (BNI)  
Shi FD (PI)  
**Hobb Neuroimmunology Fellowship**
- 05/14/10-04/30/15 NIH/NIAID R01  
Shi FD (PI), R01AI083294  
**NK Cells in CNS inflammation and autoimmunity**
- 07/01/10-06/30/11 Biogen Idec  
Shi FD (PI)  
**NK Cells and CNS immune surveillance: relevance to natalizumab therapy in MS patients**
- 10/01/10-09/30/13 Arizona Biomedical Research Commission (ABRC)  
Kim DY (PI), Shi FD (co-PI)  
**Multiple sclerosis induced impairment of learning and memory**

### ➤ Completed Support

- 01/01/07-12/31/09 Muscular Dystrophy Association (MDA)  
Shi FD (PI)  
**Regulatory T cells in the pathogenesis of experimental myasthenia**
- 01/01/06-12/31/08 Muscular Dystrophy Association (MDA)  
Liu R (PI), Shi FD (Mentor)  
**Corporation of iNKT cells and Treg cells in the prevention of autoimmunity**
- 01/01/07-12/31/07 National Multiple Sclerosis Society (NMSS)  
Shi FD (PI)  
**Cytokine-antibody immune complex expanded NK cells in animal models of multiple sclerosis**
- 01/01/05-12/31/06 Muscular Dystrophy Association (MDA)  
Shi FD (PI)  
**Immune therapy with atorvastatin in murine models for clinical application to myasthenia gravis**