Prof. Dr. Jonathan Kipnis



1. General Information

Address: Department of
Neuroscience , University of Virginia
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Position:
Director, Center for Brain Immunology and Glia (BIG), University of Virginia and Professor of Neuroscience and Ophthalmology, University of Virginia;
Gutenberg Research College (GRC) fellowship, Johannes Gutenberg University of Mainz

2. Education

1995-1998	BSc Biology, Tel Aviv University, Ramat Aviv, Israel
1998-1999	MSc Neurobiology, Weizmann Institute of Science, Rehovot, Israel
1999-2004	PhD Neuroimmunology Weizmann Institute of Science, Rehovot, Israel

3. Professional experience

2004-2005	Postdoctoral Research Associate, the Weizmann Institute of Science, Rehovot Israel
2005-2007	Assistant Professor of Pharmacology and Ophthalmology, University of Nebraska Medical Center (UNMC), Omaha, NE
2007-2011	Assistant Professor of Neuroscience, Department of Neuroscience, University of Virginia Health System, Charlottesville , VA
2007-present	Faculty, Neuroscience Graduate Program, University of Virginia
2007-present	Member, Carter Immunology Center, University of Virginia
2008-present	Faculty, Medical Scientist Training Program, University of Virginia
2009-present	Member, Center for Cell Clearance, University of Virginia
2011-2012	Associate Professor of Neuroscience, University of Virginia
2011-2012	Associate Professor of Ophthalmology, University of Virginia
2012-present	Director, Center for Brain Immunology and Glia (BIG), University of Virginia
2012-present	Professor of Neuroscience and Ophthalmology, University of Virginia

4. Honors and Awards

1999	Dean travel award for excellence and scientific achievements for doctoral students, Weizmann Institute
2002	Sir Charles Clore scholarship and award of excellence in doctoral studies
2002	Representative of Israeli Student Delegation for the International Summit of the American Academy of Achievement (Dublin, Ireland)
2003	Representative of Israeli Student Delegation, International Summit for Nobel Prize Laureates in Medicine (Lindau)
2004	Distinguished Prize for excellence in doctoral studies awarded by the Israeli Parliament (Knesset)
2004	Prize of excellence for doctoral studies awarded by the Feinberg Graduate School, Weizmann Institute of Science
2006	Vada Kinman Oldfield Alzheimer's Research Award, University of Nebraska Medical Center
2011	Robert Ader New Investigator Award for 2011, PsychoNeuroImmunology Research Society (PNIRS)
2012	Jordi Folch-Pi award, American Society for Neurochemistry
2014	Distinguished Research Career Development Awards, University of Virginia
2015	Gutenberg Research College (GRC) fellowship, Johannes Gutenberg University of Mainz

5. Publications

1. Blander G., Kipnis J., Leal J.F., Yu C.E., Schellenberg G.D., Oren M.(1999) Physical and functional interaction between p53 and the Werner's syndrome protein. J. Biol. Chem. 274(41), 29463-9.
2. Kipnis J., Yoles E., Porat Z., Sela M., Cohen I.R., Schwartz M. (2000) Vaccination with copolymer-1 confers neuroprotection on the damaged optic nerve: possible therapy for optic neuropathies. Proc. Natl. Acad. Sci. USA 97, 7446-7451.
3. Schwartz M. and Kipnis J. (2001) Protective autoimmunity: Genetic aspects and prospects for vaccination after brain and spinal cord injuries. Trends in Mol. Med. 7(6), 252-258.
4. Kipnis J., Yoles E., Hauben E., Shaked I., Schwartz M. (2001) Neuronal survival after CNS insult is determined by a genetically encoded autoimmune response. J Neuroscience 21, 4564-4571.
5. Schori H.,* Kipnis J.,* Yoles E. and Schwartz M. (2001) Vaccination for protection of neurons against glutamate cytotoxicity. Proc. Natl. Acad. Sci. USA 98, 3398-3403. *Equal contribution.
6. Kipnis J. and Schwartz M. (2002) Dual action of glatiramer acetate (Cop-1) in the treatment of CNS autoimmune and neurodegenerative disorders. Trends Mol Med. Jul;8 (7):319-23.

7. Bakalash S., Kipnis J., Yoles E. and Schwartz M. (2002) Neuronal survival in a rat model of chronically raised intraocular pressure is immune regulated. IOVS, 43(8):2648-53.
8. Schwartz M and Kipnis J. (2002) Multiple sclerosis as a by-product of the failure to sustain protective autoimmunity: A paradigm shift. The Neuroscientist, 8, 405-413.
9. Kipnis J., Mizrahi T., Yoles E. and Schwartz M. (2002) Myelin specific Th1 cells are necessary for post-traumatic protective autoimmunity. J. Neuroimmunol, 130(1-2):78.
10. Schwartz M. and Kipnis J., (2002) Autoimmunity on Alert: Naturally Occurring Regulatory CD4+CD25+ T cells as Part of the Evolutionary Compromise Between a “Need” and a “Risk”. Trends Immunol., 23(11):530-4.
11. Kipnis J., Hauben E., Mizrahi T., Shaked I., Shevach EM and Schwartz M. (2002) Neuroprotective autoimmunity: Naturally occurring CD4(+)CD25(+) regulatory T cells suppress the ability to withstand injury to the central nervous system. Proc. Natl. Acad. Sci. USA, 26;99(24):15620-5.
12. Nevo U, Kipnis J, Golding I, Shaked I, Neumann A, Akselrod S, Schwartz M. (2003) Autoimmunity as a special case of immunity: Removing threats from within. Trends Mol Med. 9(3):88-93.
13. Angelov DN, Waibel S, Guntinas-Lichius O, Lenzen M, Neiss WF, Tomov TL, Yoles E, Kipnis J, Schori H, Reuter A, Ludolph A, Schwartz M. (2003) Therapeutic vaccine for acute and chronic motor neuron diseases: implications for amyotrophic lateral sclerosis. Proc Natl Acad Sci U S A. 15; 100(8):4790-5.
14. Kipnis J., Nevo U., Panikashvili D., Yoles E., Akselrod S., Shohami E. and Schwartz M. (2003) Therapeutic Vaccination for Closed Head Injury. J Neurotrauma, 20(6); 559-69.
15. Monsonego A, Beserman ZP, Kipnis J, Yoles E, Weiner HL, Schwartz M. (2003) Beneficial effect of orally administered myelin basic protein in EAE-susceptible Lewis rats in a model of acute CNS degeneration. J Autoimmun. 21(2):131-8.
16. Shaked I, Porat Z, Gersner R, Kipnis J*, Schwartz M*. (2004) Early activation of microglia as antigen-presenting cells correlates with T cell-mediated protection and repair of the injured central nervous system. J Neuroimmunol. 146(1-2):84-93. * equal contribution
17. Kipnis J., Avidan H., Markovich Y., Mizrahi T., Prigozhina T., Slavin S. and Schwartz M. (2004) Homeostasis-Driven Activation of Adaptive Immunity Induced by Low- Dose Irradiation: A Therapeutic Approach to Neurodegenerative Disorders. Eur. J. Neuroscience, 19: 1-8.
18. Kipnis J*., Cohen H., Cardon M., Ziv Y. and Schwartz M (2004) T cell deficiency leads to cognitive impairment: Implications for therapeutic vaccination for schizophrenia and other psychiatric conditions. Proc. Natl. Acad. Sci. USA, 101:8180-8185 (*corresponding author)
19. Kipnis J., Avidan H., Mordechay S., Lewitus G.M., Cardon M. and Schwartz M (2004) Dopamine, through the extracellular-regulated kinase pathway, downregulates CD4+CD25+ regulatory T cell activity: Implications for neurodegeneration. J Neurosci, 24(27):6133-43.
20. Kipnis J., Avidan H. and Schwartz M. (2004) Dual effect of CD4+CD25+ regulatory T cells in neurodegeneration: A dialogue with microglia. Proc. Natl. Acad. Sci. USA, 101: Aug 26 [epub ahead of print].

21. Schwartz M. and Kipnis J. (2004) Threatened tissues summon autoimmune aid controlled by naturally occurring regulatory T cells: a Darwinian interpretation of autoimmunity. Cell Mol Life Sci. 61(18):2285-9.
22. Kipnis J. and Schwartz M. (2004) A common vaccine for fighting neurodegenerative disorders: recharging immunity for homeostasis. Trends Pharmacol Sci, 25(8):407- 12.
23. Avidan H, Kipnis J, Butovsky O, Caspi RR, Schwartz M. (2004) Vaccination with autoantigen protects against aggregated beta-amyloid and glutamate toxicity by controlling microglia: effect of CD4+CD25+ T cells. Eur J Immunol Dec;34(12):3434-45.
24. Schwartz M. and Kipnis J. (2005) Protective autoimmunity and neuroprotection in inflammatory and noninflammatory neurodegenerative diseases. J Neurol Sci. Jun 15;233(1-2):163-6.
25. Schwartz M. and Kipnis J. (2005) Therapeutic T Cell-Based Vaccination for Neurodegenerative Disorders: The Role of CD4+CD25+ Regulatory T Cells. Ann N Y Acad Sci. Jun;1051:701-8.
26. Kipnis, J. and Schwartz, M, (2005) Controlled autoimmunity in CNS maintenance and repair: naturally occurring CD4+CD25+ regulatory T-Cells at the crossroads of health and disease. Neuromolecular Med. 2005;7(3):197-206.
27. Ziv, Y., Ron, N., Butovsky, O., Landa, G., Sudai, E., Greenberg, N., Cohen, H., Kipnis, J*., Schwarz, M*., (2006) Immune cells contribute to the maintenance of neurogenesis and spatial learning abilities in adults. Nat. Neurosci. Feb;9(2):268-75 (*corresponding authors).
28. Kadiu I, Glanzer JG, Kipnis J, Gendelman HE*, Thomas MP. (2005) Mononuclear phagocytes in the pathogenesis of neurodegenerative diseases. Neurotox Res. Oct;8(1-2):25-50.
29. Kipnis, J*., Cardon, M., Strauss, R. and Schwartz, M. (2006) Loss of autoimmune T cells correlates with brain diseases: what are the implications for schizophrenia. Trends in Mol Med, Feb 7; [Epub ahead of print] (*corresponding author).
30. Cohen H., Ziv Y., Cardon M., Kaplan Z., Gidron Y., Schwartz M. and Kipnis J. (2006) Adaptation to mental stress is autoimmune T-cell dependent and is suppressed by regulatory T cells. J Neurobiol, 66(6):552-63.
31. Schwartz M., Butovsky O. and J. Kipnis. (2006) Does inflammation in an autoimmune disease differ from inflammation in neurodegenerative diseases? Possible implications for therapy. Journal of Neuroimmune Pharmacology, March;1(1):4-10.
32. Crutcher KA, Gendelman HE, Kipnis J, Perez-Polo JR, Perry VH, Popovich PG, Weaver LC. (2006) Debate: "is increasing neuroinflammation beneficial for neural repair?" J Neuroimmune Pharmacol. Sep;1(3):195-211. Epub 2006 May 23.
33. Lewitus GM, Kipnis J, Avidan H, Ben-Nun A, Schwartz M. (2006) Neuroprotection induced by mucosal tolerance is epitope-dependent: conflicting effects in different strains. J Neuroimmunol. 2006 Jun;175(1-2):31-8. Epub 2006 Apr 19.
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35. Johnson T.V., Camras C.B. and Kipnis J. (2007) Bacterial DNA Confers Neuroprotection Following Optic Nerve Injury By Suppressing CD4+CD25+ Regulatory T-cell Activity. IOVS. Aug;48(8):3441-9.

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43. Garg S., Banerjee R. and Kipnis J. (2008) Neuroprotective Immunity: T cell-derived Glutamate Endows Astrocytes with a Neuroprotective Phenotype. J Immunol. Mar 15;180(6):3866-73.
44. Hanisch U-K., Johnson, T.V., and Kipnis J. (2008) Toll-like Receptors: Roles in neuroprotection? Trends in Neurosci. Apr;31(4):176-182.
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46. Kipnis J, Derecki NC, Yang C, Scrable H. (2008) Immunity and cognition: what do age-related dementia, HIV-dementia and 'chemo-brain' have in common? Trends Immunol. Oct;29(10):455-63.
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48. Yan Z., Garg SK., Kipnis J., Banerjee R. (2009) Modulation of Extracellular Redox Remodeling by Regulatory T Cells. Nature Chem Biol Oct;5(10):721-3.
49. Lu Z. and Kipnis J. (2010) Thrombospondin 1--a key astrocyte-derived neurogenic factor. FASEB J. Jun;24(6):1925-34.
50. Derecki N.C., Privman E. and Kipnis J. (2010) Rett syndrome and other autism spectrum disorders— brain diseases of immune malfunction? Mol Psych Apr;15(4):355-63.
51. Derecki N.C., Cardani A.N., Yang C.H., Quinnies K.M., Crihfield A., Lynch K.R., and Kipnis J (2010) Regulation of learning and memory by meningeal immunity: A key role for IL-4. J Exp Med. May 10;207(5):1067-80. Epub 2010 May 3.
52. Derecki N.C., Quinnies K.M. and Kipnis J. (2011) Alternatively activated myeloid (M2) cells enhance cognitive function in immune compromised mice. Brain Behav Immun. Mar;25(3):379-85.
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56. Derecki N.C., Cronk J.C., Lu Z., Xu E., Abbott S.B.G., Guyenet P.G. and Kipnis J. (2012) Wild type microglia arrest pathology in a mouse model of Rett syndrome. Nature. Mar 18;484(7392):105-9. doi: 10.1038/nature10907.
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61. Marin I. and Kipnis J. (2013) Learning and memory... and the immune system. Learn. Mem. 2013 20: 601-606.
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63. Derecki NC, Kipnis J. From neurons to microglia, with complements. (2013) Nat Neurosci. Nov 22;16(12):1712-3.
64. Cronk JC, Kipnis J. Microglia - the brain's busy bees. F1000Prime Rep. 2013 Dec 3;5:53.
65. Radjavi A, Smirnov I, Derecki N, Kipnis J. (2014) Dynamics of the meningeal CD4+ T-cell repertoire are defined by the cervical lymph nodes and facilitate cognitive task performance in mice. Mol Psychiatry. May;19(5):531-3. doi: 10.1038/mp.2013.79. Epub 2013 Jun 11.
66. Radjavi A, Smirnov I, Kipnis J. (2014) Brain antigen-reactive CD4+ T cells are sufficient to support learning behavior in mice with limited T cell repertoire. Brain Behav Immun. Jan;35:58-63.
67. Walsh JT, Watson N, Kipnis J. (2014) T cells in the central nervous system: messengers of destruction or purveyors of protection? Immunology. Mar;141(3):340- 4. doi: 10.1111/imm.12187. Review.
68. Derecki NC, Katzmarski N, Kipnis J, Meyer-Luehmann M. (2014) Microglia as a critical player in both developmental and late-life CNS pathologies. Acta Neuropathol. Jul 24. [Epub ahead of print]
69. Filiano AJ, Gadani SP, Kipnis J. (2014) Interactions of innate and adaptive immunity in brain development and function. Brain Res. pii: S0006-8993(14)01023-3
70. Walsh JT, Zheng J, Smirnov I, Lorenz U, Tung K, Kipnis J. (2014) Regulatory T Cells in Central Nervous System Injury: A Double-Edged Sword. J Immunol. Nov 15;193(10):5013-22. doi: 10.4049/jimmunol.1302401. Epub 2014 Oct 15.
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Radjavi A, Fernandez-Castaneda A, Gaultier A, Gold R, Kanneganti TD, Nitsch R, Zipp Z, and Kipnis J. (2015) MHCII-independent CD4+ T cells protect injured CNS neurons via IL-4. J Clin Invest Feb;125(2):699-714. doi: 10.1172/JCI76210.

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