

## **List of publications/ Asya Rolls**

### **Theses**

1. Rolls Asya, "How does tryptophan receptor recognizes its DNA binding site?" Thesis for the degree of Master of Science, Technion, Israel Institute of Technology, Haifa, Israel. 2002, Supervised by Dr. Tali Haran.
2. Rolls Asya, " Extracellular matrix and immune interactions in central nervous system plasticity", Thesis for the degree of Doctor of Philosophy, Weizmann Institute of Science, Rehovot, Israel, 2007. Supervised by Prof. Ofer Lider and Prof. Michal Schwartz.

### **Refereed papers in professional journals:**

#### **Basic research**

3. Kipnis J, Cardon M, Avidan H, Lewitus GM, Mordechay S, Rolls A, Shani Y, Schwartz M. Dopamine, through the extracellular signal-regulated kinase pathway, downregulates CD4+CD25+ regulatory T-cell activity: implications for neurodegeneration. *J Neurosci.* 2004 Jul 7;24(27):6133-43. PubMed PMID: 15240805.
4. Bakalash S\*, Rolls A\*, Lider O, Schwartz M. Chondroitin sulfate-derived disaccharide protects retinal cells from elevated intraocular pressure in aged and immunocompromised rats. *Invest Ophthalmol Vis Sci.* 2007 Mar;48(3):1181-90. PubMed PMID: 17325162.
5. Rolls A, Avidan H, Cahalon L, Schori H, Bakalash S, Litvak V, Lev S, Lider O, Schwartz M. A disaccharide derived from chondroitin sulphate proteoglycan promotes central nervous system repair in rats and mice. *Eur J Neurosci.* 2004 Oct;20(8):1973-83. PubMed PMID: 15450076.
6. Rolls A, Cahalon L, Bakalash S, Avidan H, Lider O, Schwartz M. A sulfated disaccharide derived from chondroitin sulfate proteoglycan protects against inflammation-associated neurodegeneration. *FASEB J.* 2006 Mar;20(3):547-9. Epub 2006 Jan 5. PubMed PMID: 16396993.

7. Rolls A\*, Shechter R\*, London A, Ziv Y, Ronen A, Levy R, Schwartz M. Toll-like receptors modulate adult hippocampal neurogenesis. *Nat Cell Biol.* 2007 Sep;9(9):1081-8. Epub 2007 Aug 19. PubMed PMID: 17704767.

- Cover page.

8. Rolls A, Schori H, London A, Schwartz M. Decrease in hippocampal neurogenesis during pregnancy: a link to immunity. *Mol Psychiatry.* 2008 May;13(5):468-9. doi: 10.1038/sj.mp.4002126. PubMed PMID: 18421294.

9. Rolls A\*, Shechter R\*, London A, Segev Y, Jacob-Hirsch J, Amariglio N, Rechavi G, Schwartz M. Two faces of chondroitin sulfate proteoglycan in spinal cord repair: a role in microglia/macrophage activation. *PLoS Med.* 2008 Aug 19;5(8):e171. doi: 10.1371/journal.pmed.0050171. PubMed PMID: 18715114; PubMed Central PMCID: PMC2517615.

10. Shechter R, Ronen A, Rolls A, London A, Bakalash S, Young MJ, Schwartz M. Toll-like receptor 4 restricts retinal progenitor cell proliferation. *J Cell Biol.* 2008 Nov 3;183(3):393-400. doi: 10.1083/jcb.200804010. PubMed PMID: 18981228; PubMed Central PMCID: PMC2575781.

11. Shechter R, London A, Varol C, Raposo C, Cusimano M, Yovel G, Rolls A, Mack M, Pluchino S, Martino G, Jung S, Schwartz M. Infiltrating blood-derived macrophages are vital cells playing an anti-inflammatory role in recovery from spinal cord injury in mice. *PLoS Med.* 2009 Jul;6(7):e1000113. doi: 10.1371/journal.pmed.1000113. Epub 2009 Jul 28. PubMed PMID: 19636355; PubMed Central PMCID: PMC2707628.

12. Shechter R, Baruch K, Schwartz M\*, Rolls A\*. Touch gives new life: mechanosensation modulates spinal cord adult neurogenesis. *Mol Psychiatry.* 2011 Mar;16(3):342-52. doi: 10.1038/mp.2010.116. Epub 2010 Nov 16. Erratum in: *Mol Psychiatry.* 2012 Apr;17(4):469. Rolls A [added]. PubMed PMID: 21079604.

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13. Rolls A, Colas D, Adamantidis A, Carter M, Lanre-Amos T, Heller HC, de Lecea L. Optogenetic disruption of sleep continuity impairs memory consolidation. *Proc Natl Acad Sci U S A.* 2011 Aug 9;108(32):13305-10. doi: 10.1073/pnas.1015633108. Epub

2011 Jul 25. PubMed PMID: 21788501; PubMed Central PMCID: PMC3156195.

- Featured on F1000.
- Most Notable Publications in Sleep 2011 (Sleep Research Society).

**14.** Shechter R, London A, Kuperman Y, Ronen A, Rolls A, Chen A, Schwartz M. Hypothalamic neuronal toll-like receptor 2 protects against age-induced obesity. *Sci Rep.* 2013;3:1254. doi: 10.1038/srep01254. Epub 2013 Feb 13. PubMed PMID: 23409245; PubMed Central PMCID: PMC3570778.

**15.** Rolls A\*, Makam M\*, Kroeger D, Colas D, de Lecea L, Heller HC. Sleep to forget: interference of fear memories during sleep. *Mol Psychiatry.* 2013 Nov;18(11):1166-70. doi: 10.1038/mp.2013.121. Epub 2013 Oct 1. PubMed PMID: 24081009; PubMed Central PMCID: PMC5036945.

**16.** Rolls A\*, Pang WW\*, Ibarra I\*, Colas D, Bonnavion P, Korin B, Heller HC, Weissman IL, de Lecea L. Sleep disruption impairs haematopoietic stem cell transplantation in mice. *Nat Commun.* 2015 Oct 14;6:8516. doi: 10.1038/ncomms9516. PubMed PMID: 26465715; PubMed Central PMCID: PMC4621781.

**17.** Ben-Shaanan TL, Azulay-Debby H, Dubovik T, Starosvetsky E, Korin B, Schiller M, Green NL, Admon Y, Hakim F, Shen-Orr SS\*, Rolls A\*. Activation of the reward system boosts innate and adaptive immunity. *Nat Med.* 2016 Aug;22(8):940-4. doi: 10.1038/nm.4133. Epub 2016 Jul 4. PubMed PMID: 27376577.

- In the 99 percentile of the tracked articles of a similar age in all journals (Nature matrices info).

**18.** Korin B., Dubovik T., Rolls A. Mass cytometry analysis of immune cells in the brain. *Nat Protoc.* 2018 Feb;13(2):377-391. doi: 10.1038/nprot.2017.155. Epub 2018 Jan 25. PubMed PMID: 29370157.

**19.** Ben-Shaanan TL, Schiller M, Azulay-Debby H, Korin B, Boshnak N, Koren T, Krot M, Shakya J, Rahat MA, Hakim F, Rolls A. Modulation of anti-tumor immunity by the brain's reward system. *Nat Commun.* 2018 Jul 13;9(1):2723. doi: 10.1038/s41467-018-05283-5 PubMed PMID: 30006573

## Review papers

20. Rolls A, Schwartz M. Chondroitin sulfate proteoglycan and its degradation products in CNS repair. *Adv Pharmacol.* 2006;53:357-74. Review. PubMed PMID: 17239775
21. Rolls A, Shechter R, Schwartz M. The bright side of the glial scar in CNS repair. *Nat Rev Neurosci.* 2009 Mar;10(3):235-41. doi: 10.1038/nrn2591. Review. PubMed PMID: 19229242.
22. Rolls A, Schaich Borg J, de Lecea L. Sleep and metabolism: role of hypothalamic neuronal circuitry. *Best Pract Res Clin Endocrinol Metab.* 2010 Oct;24(5):817-28. doi: 10.1016/j.beem.2010.08.002. Review. PubMed PMID: 21112028.
23. Rolls A. Hypothalamic control of sleep in aging. *Neuromolecular Med.* 2012 Sep;14(3):139-53. doi: 10.1007/s12017-012-8175-0. Epub 2012 Mar 9. Review. PubMed PMID: 22402932.
24. Heller HC, Ruby NF, Rolls A, Makam M, Colas D. Adaptive and pathological inhibition of neuroplasticity associated with circadian rhythms and sleep. *Behav Neurosci.* 2014 Jun;128(3):273-82. doi: 10.1037/a0036689. Review. PubMed PMID: 24886189; PubMed Central PMCID: PMC4060045.
25. Belin D, Rolls A. Collaboration in neuroscience: the young PI perspective. *Eur J Neurosci* 2016. May 43(9): 1123–1127. doi: [10.1111/ejn.13226](https://doi.org/10.1111/ejn.13226). Review. PMID: [26945907](https://pubmed.ncbi.nlm.nih.gov/26945907/)
26. Ben-Shaan T, Schiller M, Rolls A. Studying brain-regulation of immunity with optogenetics and chemogenetics; A new experimental platform. *Brain Behav Immun.* 2017 Oct;65:1-8. doi: 10.1016/j.bbi.2016.11.024. Epub 2016 Nov 24. Review. PubMed PMID: 27890661.
27. Korin B, Rolls A. Application of Chemogenetics and Optogenetics to Dissect Brain-Immune Interactions. *Methods Mol Biol.* 2018;1781:195-208. doi:10.1007/978-1-4939-7828-1\_11. PubMed PMID: 29705849
28. Korin B, Ben-Shaan TL, Schiller M, Dubovik T, Azulay-Debby H, Boshnak NT, Koren T, Rolls. High-dimensional, single-cell characterization of the brain's immune compartment. *Nat Neurosci.* 2017 Sep;20(9):1300-1309. doi: 10.1038/nn.4610. Epub

2017 Jul 24. PubMed PMID: 28758994.

- In the 96 percentile of the tracked articles of a similar age in all journals (Nature matrices info)