

### ELSC Member's Publications: January – June 2021

#### Adi Mizrahi

1. Clayton KK, Williamson RS, Hancock KE, Tasaka GI, Mizrahi A, Hackett TA, Polley DB. Auditory Corticothalamic Neurons Are Recruited by Motor Preparatory Inputs. *Curr Biol.* 2021 Jan 25;31(2):310-321.e5. doi: 10.1016/j.cub.2020.10.027. Epub 2020 Nov 5. PMID: 33157020; PMCID: PMC7855066.
2. Cohen-Kashi Malina K, Tsivourakis E, Kushinsky D, Apelblat D, Shtiglitz S, Zohar E, Sokoletsky M, Tasaka GI, Mizrahi A, Lampl I, Spiegel I. NDNF interneurons in layer 1 gain-modulate whole cortical columns according to an animal's behavioral state. *Neuron.* 2021 Jul 7;109(13):2150-2164.e5. doi: 10.1016/j.neuron.2021.05.001. Epub 2021 May 25. PMID: 34038743.
3. Kudryavitskaya E, Marom E, Shani-Narkiss H, Pash D, Mizrahi A. Flexible categorization in the mouse olfactory bulb. *Curr Biol.* 2021 Apr 26;31(8):1616-1631.e4. doi: 10.1016/j.cub.2021.01.063. Epub 2021 Feb 10. PMID: 33571434.

#### Alex Binshtok

4. Aleixandre-Carrera F, Engelmayer N, Ares-Suárez D, Acosta MDC, Belmonte C, Gallar J, Meseguer V, Binshtok AM. Optical Assessment of Nociceptive TRP Channel Function at the Peripheral Nerve Terminal. *Int J Mol Sci.* 2021 Jan 6;22(2):481. doi: 10.3390/ijms22020481. PMID: 33418928; PMCID: PMC7825137.

#### Ami Citri

5. Mukherjee D, Gonzales BJ, Ashwal-Fluss R, Turm H, Groysman M, Citri A. Egr2 induction in spiny projection neurons of the ventrolateral striatum contributes to cocaine place preference in mice. *eLife.* 2021 Mar 16;10:e65228. doi: 10.7554/eLife.65228. PMID: 33724178; PMCID: PMC8057818.

#### Aviv Mezer

6. A Erramuzpe, R Schurr, J D Yeatman, I H Gotlib, M D Sacchet, K E Travis, H M Feldman, A A Mezer, A Comparison of Quantitative R1 and Cortical Thickness in Identifying Age, Lifespan Dynamics, and Disease States of the Human Cortex, *Cerebral Cortex*, Volume 31, Issue 2, February 2021, Pages 1211–1226, <https://doi.org/10.1093/cercor/bhaa288>

#### Chaya Kalcheim

7. Ofek S, Wiszniak S, Kagan S, Tondl M, Schwarz Q, Kalcheim C. Notch signaling is a critical initiator of roof plate formation as revealed by the use of RNA profiling of the dorsal neural

tube. *BMC Biol.* 2021 Apr 23;19(1):84. doi: 10.1186/s12915-021-01014-3. PMID: 33892704; PMCID: PMC8063321.

8. Rekler D, Kalcheim C. From Neural Crest to Definitive Roof Plate: The Dynamic Behavior of the Dorsal Neural Tube. *Int J Mol Sci.* 2021 Apr 10;22(8):3911. doi: 10.3390/ijms22083911. PMID: 33920095; PMCID: PMC8070085.

#### Ehud (Udi) Zohary

9. Moreh E, Zohary E, Orlov T. The presence of semantic content in a visual recognition memory task reduces the severity of neglect. *Neuropsychologia.* 2021 Jul 16;157:107860. doi: 10.1016/j.neuropsychologia.2021.107860. Epub 2021 Apr 24. PMID: 33901565
10. Orlov T, Raveh M, McKyton A, Ben-Zion I, Zohary E. Learning to perceive shape from temporal integration following late emergence from blindness.. *Curr Biol.* 2021 Jul 26;31(14):3162-3167.e5. doi: 10.1016/j.cub.2021.04.059. Epub 2021 May 26. PMID: 34043950

#### Eran Meshorer

11. Bavli D, Sun X, Kozulin C, Ennis D, Motzik A, Biran A, Brielle S, Alajem A, Meshorer E, Buxboim A, Ram O. CloneSeq: A highly sensitive analysis platform for the characterization of 3D-cultured single-cell-derived clones. *Dev Cell.* 2021 Jun 21;56(12):1804-1817.e7. doi: 10.1016/j.devcel.2021.04.026. Epub 2021 May 18. PMID: 34010629.
12. Gómez-García PA, Portillo-Ledesma S, Neguembor MV, Pesaresi M, Oweis W, Rohrlisch T, Wieser S, Meshorer E, Schlick T, Cosma MP, Lakadamyali M. Mesoscale Modeling and Single-Nucleosome Tracking Reveal Remodeling of Clutch Folding and Dynamics in Stem Cell Differentiation. *Cell Rep.* 2021 Jan 12;34(2):108614. doi: 10.1016/j.celrep.2020.108614. PMID: 33440158; PMCID: PMC7842188.
13. Sorek M, Oweis W, Nissim-Rafinia M, Maman M, Simon S, Hession CC, Adiconis X, Simmons SK, Sanjana NE, Shi X, Lu C, Pan JQ, Xu X, Pouladi MA, Ellerby LM, Zhang F, Levin JZ, Meshorer E. Pluripotent stem cell-derived models of neurological diseases reveal early transcriptional heterogeneity. *Genome Biol.* 2021 Mar 4;22(1):73. doi: 10.1186/s13059-021-02301-6. PMID: 33663567; PMCID: PMC7934477.
14. Monderer-Rothkoff, G., Tal, N., Risman, M. *et al.* AUTS2 isoforms control neuronal differentiation. *Mol Psychiatry* **26**, 666–681 (2021). <https://doi.org/10.1038/s41380-019-0409-1>

#### Hagai Bergman

15. Sand D, Rappel P, Marmor O, Bick AS, Arkadir D, Lu BL, Bergman H, Israel Z, Eitan R. Machine learning-based personalized subthalamic biomarkers predict ON-OFF levodopa states in Parkinson patients. *J Neural Eng.* 2021 May 17;18(4). doi: 10.1088/1741-2552/abfc1d. PMID: 33906182.
16. Sui Y, Tian Y, Ko WKD, Wang Z, Jia F, Horn A, De Ridder D, Choi KS, Bari AA, Wang S, Hamani C, Baker KB, Machado AG, Aziz TZ, Fonoff ET, Kühn AA, Bergman H, Sanger T, Liu H, Haber SN, Li L. Deep Brain Stimulation Initiative: Toward Innovative Technology, New Disease Indications, and Approaches to Current and Future Clinical Challenges in Neuromodulation Therapy. *Front Neurol.* 2021 Jan 28;11:597451. doi: 10.3389/fneur.2020.597451. PMID: 33584498; PMCID: PMC7876228.

#### Haim Sompolinsky

17. Landau, Itamar D. and Sompolinsky, Haim. *PhysRevResearch*.3.023171, Macroscopic fluctuations emerge in balanced networks with incomplete recurrent alignment. *Phys. Rev. Research* 2021 Jun; 3(2):023171. Doi: 10.1103/PhysRevResearch.3.023171.
18. Steinberg J, Advani M, Sompolinsky H. New role for circuit expansion for learning in neural networks. *Phys Rev E.* 2021 Feb;103(2-1):022404. doi: 10.1103/PhysRevE.103.022404. PMID: 33736047.

#### Hanoch Gutfreund

19. Gutfreund H. (2021) Otto Stern—With Einstein in Prague and in Zürich. In: Friedrich B., Schmidt-Böcking H. (ed054s) *Molecular Beams in Physics and Chemistry*. Springer, Cham. [https://doi.org/10.1007/978-3-030-63963-1\\_6](https://doi.org/10.1007/978-3-030-63963-1_6)

#### Hermona Soreq

20. Winek K, Soreq H, Meisel A. Regulators of cholinergic signaling in disorders of the central nervous system. *J Neurochem.* 2021 Feb 26. doi: 10.1111/jnc.15332. Epub ahead of print. PMID: 33638173.

#### Idan Segev

21. Moldwin T, Kalmenson M, Segev I. The gradient clusteron: A model neuron that learns to solve classification tasks via dendritic nonlinearities, structural plasticity, and gradient descent. *PLoS Comput Biol.* 2021 May 24;17(5):e1009015. doi: 10.1371/journal.pcbi.1009015. PMID: 34029309; PMCID: PMC8177649.

22. Wang S, Segev I, Borst A, Palmer S. Maximally efficient prediction in the early fly visual system may support evasive flight maneuvers. *PLoS Comput Biol.* 2021 May 20;17(5):e1008965. doi: 10.1371/journal.pcbi.1008965. PMID: 34014926; PMCID: PMC8136689.

#### Inbal Goshen

23. Hirbec, H., Deglon, N., Foo, L. C., Goshen, I., Grutzendler, J., Hangen, E., & Escartin, C. (2021). Emerging technologies to study glial cells (vol 68, pg 1692, 2020). *GLIA*, 69(2), 507-507.
24. Kol A, Goshen I. The memory orchestra: the role of astrocytes and oligodendrocytes in parallel to neurons. *Curr Opin Neurobiol.* 2021 Apr;67:131-137. doi: 10.1016/j.conb.2020.10.022. Epub 2020 Nov 28. PMID: 33260057
25. Refaeli R, Doron A, Benmelech-Chovav A, Groysman M, Kreisel T, Loewenstein Y, Goshen I. Features of hippocampal astrocytic domains and their spatial relation to excitatory and inhibitory neurons. *Glia.* 2021 Jun 12. doi: 10.1002/glia.24044. Epub ahead of print. PMID: 34117643.

#### Leo Joskowicz

26. Adi Szeskin, Roei Yehuda, Or Shmueli, Jaime Levy, Leo Joskowicz; A column-based deep learning method for the detection and quantification of atrophy associated with AMD in OCT scans. *Medical Image Analysis.* 2021; 72; 102130. <https://doi.org/10.1016/j.media.2021.102130>.
27. Avisdris N, Yehuda B, Ben-Zvi O, Link-Sourani D, Ben-Sira L, Miller E, Zharkov E, Ben Bashat D, Joskowicz L. Automatic linear measurements of the fetal brain on MRI with deep neural networks. *Int J Comput Assist Radiol Surg.* 2021 Jun 29. doi: 10.1007/s11548-021-02436-8. Epub ahead of print. PMID: 34185253.
28. Gitik R, Bartal O, Joskowicz L. Euclidean minimum spanning trees with independent and dependent geometric uncertainties. *Computational Geometry.* 2021; 96. 101744. <https://doi.org/10.1016/j.comgeo.2020.101744>.
29. Shmueli O, Yehuda R, Szeskin A, Joskowicz L, Levy J. cRORA progression and its baseline predicting factors. *Invest. Ophthalmol. Vis. Sci.* 2021;62(8):1888.

#### Leon Deouell

30. Klein Selle N, Gueta C, Harpaz Y, Deouell LY, Ben-Shakhar G. Brain-based concealed memory detection is driven mainly by orientation to salient items. *Cortex*. 2021 Mar;136:41-55. doi: 10.1016/j.cortex.2020.12.010. Epub 2021 Jan 7. PMID: 33460912.

#### Lilach Avitan

31. Avitan L, Pujic Z, Mölter J, Zhu S, Sun B, Goodhill GJ. Spontaneous and evoked activity patterns diverge over development. *eLife*. 2021 Apr 19;10:e61942. doi: 10.7554/eLife.61942. PMID: 33871351; PMCID: PMC8075578.

#### Mati Joshua

32. Cain M, Botschko Y, Joshua M. Passive Motor Learning: Oculomotor Adaptation in the Absence of Behavioral Errors. *eNeuro*. 2021 Mar 22;8(2):ENEURO.0232-20.2020. doi: 10.1523/ENEURO.0232-20.2020. PMID: 33593731; PMCID: PMC8009667.

➤ Nashef A, Mitelman R, Harel R, Joshua M, Prut Y. Area-specific thalamocortical synchronization underlies the transition from motor planning to execution. *Proc Natl Acad Sci U S A*. 2021 Feb 9;118(6):e2012658118. doi: 10.1073/pnas.2012658118. PMID: 33526664; PMCID: PMC8017695. **(no. 41, Joint publication with Yifat Prut)**

#### Merav Ahissar

33. Malinovitch T, Jakoby H, Ahissar M. Training-induced improvement in working memory tasks results from switching to efficient strategies. *Psychon Bull Rev*. 2021 Apr;28(2):526-536. doi: 10.3758/s13423-020-01824-6. Epub 2020 Oct 15. PMID: 33063180; PMCID: PMC8062341.

➤ Loewenstein Y, Raviv O, Ahissar M. Dissecting the Roles of Supervised and Unsupervised Learning in Perceptual Discrimination Judgments. *J Neurosci*. 2021 Jan 27;41(4):757-765. doi: 10.1523/JNEUROSCI.0757-20.2020. Epub 2020 Dec 30. PMID: 33380471; PMCID: PMC7842757. **(no. 45, joint publication with Yonatan Loewenstein)**

#### Naomi Habib

34. Dani N, Herbst RH, McCabe C, Green GS, Kaiser K, Head JP, Cui J, Shipley FB, Jang A, Dionne D, Nguyen L, Rodman C, Riesenfeld SJ, Prochazka J, Prochazkova M, Sedlacek R, Zhang F, Bryja V, Rozenblatt-Rosen O, Habib N, Regev A, Lehtinen MK. A cellular and spatial map of the choroid plexus across brain ventricles and ages. *Cell*. 2021 May 27;184(11):3056-3074.e21. doi: 10.1016/j.cell.2021.04.003. Epub 2021 Apr 30. PMID: 33932339; PMCID: PMC8214809.

35. Piddini E\*, Shalek AK\*, Habib N\*, Tape C\*, Newman DK\*, Pittet M\*, Pringle A\*. Voices: How are methodological developments enabling insights into cell behavior in cellular communities? *Cell Systems*. 2021. March 17; 12 (3), 207-209

Shaul Hochstein

36. Khayat N, Fusi S, Hochstein S. Perceiving ensemble statistics of novel image sets. *Atten Percept Psychophys*. 2021 Apr;83(3):1312-1328. doi: 10.3758/s13414-020-02174-0. Epub 2021 Jan 8. PMID: 33420715; PMCID: PMC8049939.
37. Whitney D, Solomon JA, Hochstein S. Introduction to the special issue on ensemble perception. *Atten Percept Psychophys*. 2021 Apr;83(3):899-903. doi: 10.3758/s13414-021-02275-4. PMID: 33835395.

Yair Weiss

38. Amir, D., & Weiss, Y. (2021). Understanding and Simplifying Perceptual Distances. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (pp. 12226-12235).
39. Richardson E. Weiss Y., "The Surprising Effectiveness of Linear Unsupervised Image-to-Image Translation," 2020 25th International Conference on Pattern Recognition (ICPR), 2021, pp. 7855-7861, doi: 10.1109/ICPR48806.2021.9413199.
40. Spiegler, R; Eliaz, K; Weiss, Y; (2021) Cheating with models. *American Economic Review: Insights*

Yifat Prut

41. Nashef A, Mitelman R, Harel R, Joshua M, Prut Y. Area-specific thalamocortical synchronization underlies the transition from motor planning to execution. *Proc Natl Acad Sci U S A*. 2021 Feb 9;118(6):e2012658118. doi: 10.1073/pnas.2012658118. PMID: 33526664; PMCID: PMC8017695

Yoav Adam

42. Adam Y. All-optical electrophysiology in behaving animals. *J Neurosci Methods*. 2021 Apr 1;353:109101. doi: 10.1016/j.jneumeth.2021.109101. Epub 2021 Feb 15. PMID: 33600851.
43. Chien MP, Brinks D, Testa-Silva G, Tian H, Phil Brooks F 3rd, Adam Y, Bloxham W, Gmeiner B, Kheifets S, Cohen AE. Photoactivated voltage imaging in tissue with an archaerhodopsin-derived reporter. *Sci Adv*. 2021 May 5;7(19):eabe3216. doi: 10.1126/sciadv.abe3216. PMID: 33952514; PMCID: PMC8099184.

44. Xie ME, Adam Y, Fan LZ, Böhm UL, Kinsella I, Zhou D, Rozsa M, Singh A, Svoboda K, Paninski L, Cohen AE. High-fidelity estimates of spikes and subthreshold waveforms from 1-photon voltage imaging in vivo. *Cell Rep.* 2021 Apr 6;35(1):108954. doi: 10.1016/j.celrep.2021.108954. PMID: 33826882; PMCID: PMC8095336.

Yonatan Loewenstein

45. Loewenstein Y, Raviv O, Ahissar M. Dissecting the Roles of Supervised and Unsupervised Learning in Perceptual Discrimination Judgments. *J Neurosci.* 2021 Jan 27;41(4):757-765. doi: 10.1523/JNEUROSCI.0757-20.2020. Epub 2020 Dec 30. PMID: 33380471; PMCID: PMC7842757.
- Refaeli R, Doron A, Benmelech-Chovav A, Groysman M, Kreisel T, Loewenstein Y, Goshen I. Features of hippocampal astrocytic domains and their spatial relation to excitatory and inhibitory neurons. *Glia.* 2021 Jun 12. doi: 10.1002/glia.24044. Epub ahead of print. PMID: 34117643. **(no. 24, joint publication with Inbal Goshen)**

Yossi Grodzinsky

45. Grodzinsky Y, Behrent K, Agmon G, Bittner N, Jockwitz C, Caspers S, Amunts K, Heim S. A linguistic complexity pattern that defies aging: The processing of multiple negations. *Journal of Neurolinguistics.* 2021; 100982 <https://doi.org/10.1016/j.jneuroling.2020.100982>.
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