

CURRICULUM VITAE

Date Prepared: 25-Nov-18
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Place of Birth: Wales, Great Britain

Education:

2011-Present- Research fellow
Dr. Binshtok lab,
Department of Medical Neurobiology,
Medical School
Hebrew University, Jerusalem

2004-2010- Ph.D. in Physiology
Department of Medical Neurobiology,
Medical School Hebrew University,
Jerusalem
Thesis: "Investigating inherent properties of TRP channels and their role in physiologically relevant processes", *supervised by Prof. Minke*

2000-2001- M.Sc. in Brain and Behavioral Sciences,
Department of Neurobiology,
Life sciences faculty,
Hebrew University, Jerusalem
Thesis: "Investigating inherent properties of TRP channels and their role in physiologically relevant processes", *supervised by Prof. Spira*

1997-1999- B.Sc. in Biology,
Life Sciences faculty,

Research Interests:

2011-present: As a Lab manager & Research Fellow in the laboratory of Prof' Alex Binshtok, Hebrew University, Jerusalem

The research programs I am leading and participating in:

- Identification and characterization of voltage gated sodium channels in nociceptive fibers
- Characterizing functional expression of TRP channels in cancer cell line
- Exploration into pain pathways from periphery to central nervous system
- Researching molecular determinants of neuropathic pain at the nociceptive terminals
- Researching molecular determinants of immune related pain responses at the peripheral nervous system

2004-2010: Ph.D. student in the laboratory of Prof Baruch Minke, Hebrew University, Jerusalem

The research programs I participated in:

- Exploration into the gating mechanism of TRP channels
- Identification and characterization of PLC activity in conjunction with TRP channel activation
- Phospholipid modulation and its effect on TRP channel gating
- Biophysical characterization of TRPML2 and its effect on other TRPML channels

1998-2001: Researcher in the laboratory of Prof Micha Spira, Hebrew University, Jerusalem

The research programs I participated in:

- Characterizing enzymatic activity in regeneration of nerve cells with the use of color probes
- The discovery of pharmacological tools for the inhibition of nerve cell regeneration
- Characterization of growth cone emergence from nerve cells after protease injection

Mastered Techniques:

- Confocal imaging
- Two photon imaging
- Calcium imaging (including ratiometric imaging)
- Patch clamp recordings in both single channel and whole cell configurations
- Variety of molecular biological techniques
- Western blotting
- Fly genetics
- Tissue culture (including primary culture)

Teaching and Academic Work Experience:

- 2017-present** Teaching coordinator for system physiology studies in the "healthy human blocks". Developer of active and online physiology education at the medicine faculty, Hebrew University, Jerusalem
Includes: Administrative organization, teacher to student coordination, student lab preparation and tutoring and course structuring.
- 2013-2017** Teaching coordinator for "Physiology of systems" course, Hebrew University, Jerusalem
Includes: Administrative organization, teacher to student coordination, student lab preparation and tutoring and course structuring.
- 2006-2010:** Teaching assistant "Physiology of systems" course, Hebrew University, Jerusalem
Included: frontal teaching, student labs and the preparation and marking of reports.
- 2009-2010:** Teaching assistant "Basic Physiology" course, Hebrew University, Jerusalem
Included: frontal teaching, student labs and the preparation and marking of reports.
- 2006-2010:** Teaching assistant "systems physiology" course, Hebrew University, Jerusalem
Included: frontal teaching, student labs and the preparation and marking of reports.

Publications:

- Gershkovitz M, Caspi Y, Fainsod-Levi T, Katz B, Michaeli J, Khawaled S, **Lev S**, Polyansky L, Shaul ME, Sionov RV, Cohen-Daniel L, Aqeilan RI, Shaul YD, Mori Y, Karni R, Fridlender ZG, Binshtok AM, Granot Z. TRPM2 Mediates Neutrophil Killing of Disseminated Tumor Cells. *Cancer Res.* 2018 May 15;78(10):2680-2690. doi: 10.1158/0008-5472.CAN-17-3614. Epub 2018 Feb 28.
- Stueber T, Eberhardt MJ, Caspi Y, **Lev S**, Binshtok A, Leffler A. Differential cytotoxicity and intracellular calcium-signalling following activation of the calcium-permeable ion channels TRPV1 and TRPA1. *Cell Calcium.* 2017 Dec;68:34-44. doi: 10.1016/j.ceca.2017.10.003. Epub 2017 Oct 18
- Goldstein RH, Katz B, **Lev S**, Binshtok AM. Ultrafast optical recording reveals distinct capsaicin-induced ion dynamics along single nociceptive neurite terminals in vitro. *J Biomed Opt.* 2017 Jul 1;22(7):76010. doi: 10.1117/1.JBO.22.7.076010
- Omer Barkai 1, 2, Robert H. Goldstein1, 2, Yaki Caspi 1, 2, Ben Katz 1, 2, **Shaya Lev** 1, 2 and Alexander M. Binshtok 1, 2 * **(2017)** The Role of Kv7/M Potassium Channels in Controlling Ectopic Firing in Nociceptors

- Doron Cohn Yakubovich, Uzi Eliav, Eran Yalon, Yeshai Schary, Dmitriy Sheyn, Galen Cook-Wiens, Shuting Sun, Charles E. McKanne, **Shaya Lev**, Alexander M. Binshtok, Gadi Pelled, Gil Navon, Dan Gazit, Zulma Gazit (2017). Teriparatide attenuates scarring around murine cranial bone allograft via modulation of angiogenesis *Bone*. 2017 Jan 21;97:192-200.
- Iulia I. Nita, Yaki Caspi, Sagi Gudes, Dimitri Fishman, **Shaya Lev**, Michal Hersfinkel, Israel Sekler, Alexander M. Binshtok (2016). Privileged crosstalk between TRPV1 channels and mitochondrial calcium shuttling machinery controls nociception. *Biochim Biophys Acta*. 2016 Dec;1863(12):2868-2880.
- Tzour Arik, Leibovich Hodaya, Barkai Omer, Biala Yoav, **Lev Shaya**, Yaari Yoel, Alexander M. Binshtok (2016). K_v7/M channels as targets for lipopolysaccharide-induced inflammatory neuronal hyperexcitability. *J Physiol*. 2017 Feb 1;595(3):713-738.
- Sagi Gudes, Omer Barkai, Yaki Caspi, Ben Katz, **Shaya Lev**, and Alexander M. Binshtok (2015). The role of slow and persistent TTX-resistant sodium currents in acute tumor necrosis factor- α -mediated increase in nociceptors excitability. *J Neurophysiol*. (2015) Jan 15; 113(2): 601–619.
- Avigail Lithwick, **Shaya Lev** and Alexander M. Binshtok (2013). Chronic pain-related remodeling of cerebral cortex - “pain memory”: a possible target for treatment of chronic pain *Pain manage* (2013) 3 (1), 1-11, (review).
- Zakir HM, Mostafaezur RM, Suzuki A, Hitomi S, Suzuki I, Maeda T, Seo K, Yamada Y, Yamamura K, **Lev S**, Binshtok AM, Iwata K, Kitagawa J (2012). Expression of TRPV1 channels after nerve injury provides an essential delivery tool for neuropathic pain attenuation. *PLoS One*. 2012;7(9):e44023. doi: 10.1371/journal.pone.0044023. Epub 2012 Sep 4.
- **Lev S**, Katz B, Minke B. (2012) The activity of the TRP-like channel depends on its expression system. *Channels (Austin)*. 2012 Mar-Apr;6(2):86-93. doi: 10.4161/chan.19946.
- **Lev S**, Katz B, Tzarfaty V, Minke B (2011) Signal-dependent hydrolysis of phosphatidylinositol 4,5-bisphosphate without activation of phospholipase C: implications on gating of Drosophila TRPL (transient receptor potential-like) channel. *J Biol Chem*. 2011 Jan 6; 287(2):1436-47.
- Zeevi, D. §, **Lev, S.** §, Frumkin, A. Minke B. and Bach, G. (2010) Hetero-Multimeric TRPML Channel Assemblies Play a Crucial Role in the Regulation of Cell Viability Models and Starvation-Induced Autophagy. *J Cell Science*. 2010 Sep 15;123(Pt 18):3112-24 (§ - equal contribution)
- **Lev, S** and Minke, B (2010) Constitutive activity of TRP channels: methods for measuring the activity and its outcome. *Methods in Enzymology*. 2010;484:591-612 (review)
- **Lev, S** and Minke, B (2010) TRP Channels in Health and Disease: Implications for Diagnosis and Therapy, Concluding Remarks and Future Directions (book chapter)
- **Lev, S.**, Zeevi, D. A., Frumkin, A., Offen-Glasner, V., Bach, G. and Minke, B. (2010). Constitutive activity of the human TRPML2 channel induces cell degeneration. *J. Biol. Chem*. 285, 2771-2782

- Parnas, M., Katz, B., **Lev, S.**, Tzarfaty, V., Dadon, D., Gordon-Shaag, A., Metzner, H., Yaka, R. and Minke, B. (2009). Membrane lipid modulations remove divalent open channel block from TRP-like and NMDA channels. *J. Neurosci.* 29, 2371-2383
- Parnas, M., Peters, M., Dadon, D., **Lev, S.**, Vertkin, I., Slutsky, I. and Minke, B. (2009). Carvacrol is a novel inhibitor of Drosophila TRPL and mammalian TRPM7 channels. *Cell Calcium* 45, 300-309
- Spira, M. E., Oren, R., Dormann, A., Ilouz, N. and **Lev, S.** (2001). Calcium, protease activation, and cytoskeleton remodeling underlie growth cone formation and neuronal regeneration. *Cell Mol. Neurobiol.* 21, 591-604