

Curriculum Vitae November 2009

Name: **Idan Segev**

Address: 9B Hachim Street
Katamon, Jerusalem, Israel

Head, Department of Neurobiology, Institute Life Sciences, and
Director, Interdisciplinary Center for Neural Computation
The David & Inez Myers Chair
in Computational Neuroscience
Edmond J. Safra Campus, Givat Ram
Hebrew University, Jerusalem, 91904, Israel.
Tel: (972)- 2- 6585984 (lab.)
Fax: (972)- 2- 6586296 (lab.)
Tel: (972)- 2- 5662965 (home)
email: idan@lobster.ls.huji.ac.il
<http://lobster.ls.huji.ac.il/idan/>
<http://icnc.huji.ac.il> (Center for Neural Computation))

Birth Date: November 11, 1949

Birth Place: London, England

Status: Married - 2 children

Education

1955 - 1963 Primary School, Nof-Yam, Herzeliya

1963 - 1967 High School, Adjoining the Hebrew University, Jerusalem

1967 - 1970 Military Service

1970 - 1973 B.Sc. Hebrew University
Mathematics and Biology

1973 - 1976 M.Sc. Hebrew University (supervisors: Prof. I. Parnas and M. E. Spira)
Neurobiology (Summa cum Laude)

1976 - 1981 Ph.D. Hebrew University (supervisors: Prof. I. Parnas and A. Pazy)
Experimental and theoretical neurobiology (Summa Cum Laude)

Employment and related training

1982 - 1985 Post-doctoral training:
NIH: Mathematical Research Branch (Dr. W. Rall),
and Laboratory for Motor Control (Dr. R. E. Burke)

1982 - 1984 (3 months) - Collaboration with the
A.I. Computer - Vision Group at the M.I.T.

1985 - 1987 Research Fellow, Department of Neurobiology
Hebrew University, Jerusalem, Israel.

1987 - 1991 Lecturer, Department of Neurobiology
Hebrew University, Jerusalem, Israel.

1991 - 1994 Senior Lecturer, Department of Neurobiology
Hebrew University, Jerusalem, Israel.

1992 - 1993 Visiting Scientist, Mathematical Research Branch
NIDDK, NIH.

1994 - 1999 Associate Professor, Department of Neurobiology
Hebrew University, Jerusalem, Israel

1999 - Full Professor, Department of Neurobiology
Hebrew University, Jerusalem, Israel

Awards

1972 Dean's prize for excellent undergraduate student

1976 "Landau" prize for an excellent Ms. thesis

1987 "Mauritzio Richter" prize for an excellent young scientist

1987 Elected best teacher, Institute of Life Sciences, Jerusalem.

1988 - 1989 Elected best teacher at the international course: "Methods in Computational
Neuroscience" - Marine Biological Laboratories, Woods Hole, Mass.

1998 "Rafi Freund" prize for best popular scientific article in Hebrew (published in
"Galileo"). Article entitled: "Neurons that compute and learn"

2001 The David & Inez Myers Chair in Computational Neuroscience

Teaching experience

1973 - 1981 Teaching Assistant in "*Statistics for Biologists*" (30 students); "*General
Physiology*" (#72336 – 180 students).

1985 - Lecturer at the Life Sciences Institute. "*Introduction to Neurobiology*" (#72369 –
60 students); "*General Physiology*" (#72335 – 150 students); "*Methods in
Theoretical Neurobiology*"; (#76905 – 10 students); "*Biophysics of Excitable
Membranes*" (#78806 – 12 students); "*Approaches in Theoretical Biology*"
(#72602 – 8 students).

1984 Lecturer in "*Biophysics of Computation*" (20 students) - Georgetown University,
Washington, D.C.

1988 - 1992 Instructor in "*Methods in Computational Neuroscience*" - Marine Biological
Laboratories, Woods Hole, Mass.

2000 - "*Biophysics of computation and plasticity*" (advanced course for the Ph.D.
program in Neural Computation, Hebrew University)

1996 - 1998 Teacher at the "Crete Course in Computational Neuroscience" (Crete, Greece -
one month each summer)

1999 - Teacher at the – "EU Advanced Course in Computational Neuroscience" (Trieste,
Italy)

2002 - Teacher at the – "EU Advanced Course in Computational Neuroscience" (Obidos,
Portugal)

2005 - 2007 Teacher at the – "EU Advanced Course in Computational Neuroscience"
(Arcachon, France)

Administrative positions

- 1985 - Member of Physiology Teaching Division, Hebrew University.
- 1988 - Member of the Neurobiology Teaching Division, Hebrew University.
- 1989 - 1992 Advisor to senior B.Sc. students, Institute of Life Sciences.
- 1989 - 1991 Founder and head of the "*Center for Biological Computing*" Institute of Life Sciences, the Hebrew University.
- 1989-1991 Member of the "*Committee for basic equipment*", Institute of Life Sciences, the Hebrew University.
- 1991 - Member of the "*Center for Neural Computation*", Hebrew University.
- 1992 - Member of the Referee Board and representative for the Middle east for the international "*Computation and Neural Systems (CNS)*" meetings.
- 1993 - Member of the Referee Board for the "*Neuronal Information Processing Systems (NIPS)*" meetings, USA.
- 1993 Member of the NSF Review panel "*Computational Neuroscience and Behavioral Neuroscience*" (Washington DC).
- 1993 - 1997 Head of the Department of Neurobiology, Institute of Life Sciences.
- 1994 - 1995 Head of the "*Center for Biological Computing*", Institute of Life Sciences.
- 1996 - 1998 Organizer + Director – "*Crete Course in Computational Neuroscience*" – one month each summer.
- 1997 - 1999 Head, "*Interdisciplinary Ph.D. program for Neural Computation*", Hebrew University.
- 1998 - Member of the "*Candidates Search Committee*", Institute of Life Science, Hebrew University.
- 1999 - Organizer + Director – "*EU Advanced Course in Computational Neuroscience*" (Trieste, Italy) - one month each summer.
- 1999 - 2007 Director, "*Interdisciplinary Center for Neural Computation*", Hebrew University.
- 2004 - 2007 Head, *The departments of Neurobiology*, Hebrew University

Society membership

- 1986 - Member of the Israeli Society for Physiological and Pharmacology.
- 1991 - Member of the American Society for Neuroscience.
- 1991 - Member of the European Neuroscience Association (ENA).
- 1992 - Member of the Israeli Society for Neuroscience

Editorial Boards

Frontiers in Neuroscience (co-initiator and Chief Editor)
J. Computational Neuroscience. Elsevier (co-initiator and previous Chief Editor)
Neural Computation, MIT Press (Board member)
J. Neurophysiology. American Physiological Society (Board member)
Brain Res. Bulletin Elsevier (Board member)
Neurocomputing Elsevier (Board member)

Reviewer for the following Journals

Journal of Neurophysiology
Journal of Neuroscience
Journal of Physiology
Journal of Computational Neuroscience
Neural Computation
Nature
Nature Neuroscience
Neuron
Proceedings of the National Academy of Science (PNAS)
Proceeding of the Neural and Information Processing Systems (NIPS)
Science
Trends in Neuroscience (TINS)

Reviewer for the following grant foundations

The Israel Science Foundation
The US-Israel Binational Science Foundation (BSF)
The German Israel Foundation (GIF)
The Swiss National Science Foundation
The National Science Foundation (NSF)
The National Institute of Health (NIH)
The Wellcome Trust (UK)

Other academic activities

1995 “13 lectures on the brain”. The Israeli “Broadcast University”.

1992 - Public scientific lectures on the brain (high schools, Hi-tech industry, etc.) – about 5 lectures/year.

1999 - Lecturer for “Bash’aar” – A non-profit organization for increasing the interaction between universities and the general community.

2000 - Lecturer at international events for the Hebrew University (e.g., 2002 - Paris; the Scopus award for Ms. Lily Safra; 2003 – Paris, the Scopus award for Mr. Roman Polanski; 2004, Scopus award, Mr. Maurice Levi, 2005, Paris; Florida – ALEF meeting with Christopher Reeve, 2004).

Organizer of international scientific conferences & schools (last 5 years)

- 1999 - “EU Advanced Course in Computational Neuroscience” Trieste, Italy (**founder and co-director**, with E. De Schutter, K. Obermayer and A. Treves)
- 2004 “The art of the brain” an encounter between 10 plastic artists and 10 neuroscientists; Kibutz Cabri – Galilee Israel.
- 2005 “School of dendrites” At the “School of Advanced Study, Hebrew University (Co-director with Prof. Bert Sakmann). – 120 participants.

Plenary and invited speaker at international scientific conferences (last 5 years)

- 1999 IBRO. Session entitled “*Integrative Processes in Dendrites*”. Lecture title: “*Design principles of dendrites*” (organizer)
- 1999 Juan March Foundation meeting on “*Dendrites*”, Columbia University in New York from June 4-7, 2000 (invited speaker)
- 2000 German Neuroscience Society (Goettingen) – “*Information capacity of a synapse*”
- 2003 Berlin Society for neuroscience. Title “*Homeostatic synaptic plasticity with a barrage of synapses*” (plenary speaker)
- 2003 Gordon Research Conference on Neural Plasticity, Salve Regina University, Newport, Rhode Island (invited speaker) – “*The game synapses play*”
- 2004 European neuroscience meeting, Lisbon, Portugal. Organizer of an invited session on “*Neuronal Noise*”
- 2006 *The Cajal Nobel centennial meeting, Barcelona*
- 2007 *BCCN symposium Goettingen*
- 2007 *NeuroComp 2008, Paris*
- 2008 *PENS Hertie Winter School, Austria*
- 2009 *CNS (Computational Neuronal System) – International meeting (Berlin)*

Students, Post-docs and visitors

1. Sabbatical visitors /on-going collaborations

- 1997 - Dr. **Claude Meunier** (Prof. Of Physics, Polytechnique, CNRS, Paris) (1-month/year; “*Signal processing in non-uniform dendrites*”)
- 2000 (Jan. - May) Dr. **Parveen Bawa** (Applied Sciences School of Kinesiology, Simon Fraser University, Project: “*Modeling spinal motoneurons*”)
- 1997 - Prof. **Bert Sakmann** (Director, MPI - Heidelberg) (“*in Silico cortical modeling*”)
- 2000 - **Prof. Kevan Martin** (Director, INI, Zurich) – *Visual processing*

Modeling cortical inhibitory interneurons

Postdoctoral fellows and Research projects

- 1989 – 1991 Dr. **Sara Pantilat** (Israeli) *“Realistic simulations of spontaneous activity in cortical networks”*
- 1996 – 1997 Dr. **Bruce Hutcheon** (National Research Council, Ottawa, Canada), in collaboration with Prof. Y. Yarom). *“Oscillations in cortical neurons”*
- 1997 – 1998 Dr. **Walter Senn** (Univ. of Bern, Switzerland). *“Cortical dynamics with depressing synapses”*
- 1996 – 1997 Dr. **Ron Nitzan** (Ph.D, Hebrew Univ., in collaboration with Prof. Y. Yarom). *“Experiments and models of vagal motoneurons”*
- 2004-2005 Dr. **Hermann Cuntz** (Ph.D. MPI, Munich). *“Modeling complex receptive fields in the fly visual system”*

Ph.D. students and thesis subjects

1. 1990 – 1995 **Ron Nitzan** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“Physiology and cable models of vagal motoneurons”*
2. 1994 – 1998 **Moshe Rapp** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“Experimental and theoretical study of cerebellar Purkinje cells”*
3. 1992 – 1996 **Yair Manor** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“On the subthreshold membrane voltage oscillations in olivary neurons”*
4. 1992 – 1998 **Itzhak Aharon** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“Systematic characterization of dendritic morphology”*
5. 1992 – 1996 **Hagai Agmon-Snir** *“A new method for analyzing dendritic transients”*
(**Suma Cum Lauda**)
6. 1992 – 1998 **Moshe Bar-Chava** (co-supervised with with Dr. H. Bergman, medical school and Prof. Y. Yarom, Life Sciences). "Characterization of neurons in the globus palidus in vitro"
7. 1993 – 1999 **Dana Cohen** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“Exploring cerebellar circuitry using optical imaging”*
8. 1993 – 1999 **Yoram Gutfreund** (co-supervised with Prof. Y. Yarom and Dr. Benny Hochner, The Life Science Institute). *“Motor control of the octopus arm”*
9. 1993 – 2002 **Michael London** *“Defining synaptic efficacy using theoretic information tools”*
10. 1994 – 2001 **Elad Schniedman** (co-supervised with Prof. Tali Tishbi, The Institute for Computer Science). *“The effect of neuronal noise on information capacity of neurons”*
11. 1994 – 2001 **Puah Mann-Metzer** (co-supervised with Prof. Y. Yarom, The Life Science Institute). *“Characterization of the inhibitory system in the cerebellar cortex”*
12. 1999 – 2002 **Galit Fuhrman** (co-supervised with Prof. Misha. Tsodyks, Institute for Higher Brain Functions, The Weizmann Institute). *“The information content of*

13. 2001 – 2007 **Ithai Rabinowitch** “*Modeling homeostatic synaptic plasticity in neurons bombarded by many synaptic inputs*”
14. 2001 – 2007 **Ron Jortner** “*The role of the mushroom body and lateral protocerebrum in insect learning, memory and perception*” (co-directed with Prof. G. Laurent, Caltech).
15. 2002 – 2007 **Irit Nowik** “*The game neurons play*”
16. 2004 – **Yoav Banitt** “*Orientation selectivity in visual cortex – detailed models based on experiments*” (co-director Shmuel Zamir, Hebrew Univ.)
17. 2004 – **Anat Yaron** “*Characterization of ion channel in dendrites*” (co-director: Prof. Y. Yarom, Hebrew Univ.)
18. 2005 - 2009 **Shaul Druckmann** “*Modeling the electrical diversity of cortical interneurons*”
19. 2005 - **Leora Sarid-Manheim** “*Modeling network circuitry at the barrel cortex*” (co-director: Prof. B. Sakmann, MPI Heidelberg)
19. 2006 - **Albert Gideon** “*Spike-timing-dependent plasticity*”
20. 2006 - **Lital Bar-Ilan** “*Plasticity in dendrites with Ca spikes*”
21. 2005 - **Etay Hay** “*Modeling local cortical microcircuits*”

M.Sc. students

1. 1986 – 1989 **Ron Nitzan** (co-supervised with Prof. Y. Yarom, The Life Science Institute). “*Realistic models of vagal motoneurons*”
2. 1990 – 1993 **Moshe Rapp** (co-supervised with Y. Yarom, The Life Science Institute). “*Integration of synaptic potentials in cerebellar Purkinje cells*”
3. 1988 – 1991 **Yair Manor** (co-supervised with Prof. Y. Gonczarowski, The Institute for Computer Science). “*Propagation of action potential in axonal trees*”
4. 1988 – 1990 **Michael Nevo** “*Analytical model for the effect of dendritic spines on the integrative properties of neurons*”
5. 1990 – 1992 **Yoram Gutfreund** (co-supervised with Prof. Y. Yarom, The Life Science Institute). “*Subthreshold oscillations in cortical pyramidal neurons*”
6. 1997 – 2001 **Oz Cahana** “*Motion computation with dendrites*”
7. 1997 – 2000 **Gal Eliraz** “*Reduced models of neurons*”
8. 2001 – 2004 **Yoav Banitt** “*Realistic Model of spiny stellate cells in the visual cortex*”
9. 2001 – 2004 **Leora Manheim** “*Modeling L4-L2/3 synaptic connection*” (co-director: Prof. B. Sakmann, MPI Heidelberg)
10. 2004 – 2005 **Albert Gideon** “*Modeling spike-timing-dependent plasticity in complex dendritic trees*”
11. 2004 – 2005 **Lital Bar-Ilan** “*”The role of Ca spikes for plastic processes in distal dendritic trees*”

Publications**I. THESES**

1. **I. Segev.** The propagation of action potentials along bifurcating axons. M.Sc Thesis (Supervised by: Profs. I. Parnas and M. Spira). The Hebrew University of Jerusalem (1976).
2. **I. Segev.** The behavior of subthreshold potentials in a neuron with a nonlinear membrane .Ph.D thesis (Supervised by: Profs. I. Parnas and A. Pazy). The Hebrew University of Jerusalem (1982).

II. PEER REVIEWED PUBLICATIONS

1. Parnas, I. and **Segev, I.** (1979). A mathematical model of conduction of action potentials along bifurcating axons. *J. Physiol.* 295: 323-343.
2. **Segev, I.** and Parnas, I. (1983). Synaptic integration mechanisms: A theoretical and experimental investigation of temporal postsynaptic interaction between excitatory and inhibitory inputs. *Biophys. J.* 41: 41-50
3. **Segev, I.** Fleshman, J.W., Bunow, B. and Miller, J. P. (1985). Modeling the electrical behavior of anatomically complex neurons using a network analysis program: Passive membrane. *Biol. Cyber.* 53: 27-40.
4. Bunow, B., **Segev, I.** and Fleshman, J.W. (1985). Modeling the electrical behavior of anatomically complex neurons using a network analysis program: Excitable membrane. *Biol. Cyber.* 53: 40-56.
5. **Segev, I.** and Parnas, I. (1985). Nonlinear cable properties of the giant axon of the cockroach *Periplaneta americana*. *J. Gen. Physiol.* 85: 729-741.
6. Shepherd, G.M., Brayton, R.K., Miller, J.P., **Segev, I.**, Rinzel, J. and Rall, W. (1985). Signal enhancement in distal cortical dendrites by means of interactions between active dendritic spines. *Proc. Natl. Acad. Sci.* 82: 2192-2195.
7. Fleshman, J. W., **Segev, I.** and Burke, R. E. (1988). Electrotonic architecture of type-identified a-motoneurons in the cat spinal cord. *J. Neurophysiol.* 60: 60-85.
8. **Segev, I.** and Rall, W. (1988). Computational study of an excitable dendritic spine. *J. Neurophysiol.* 60: 499-523.
9. Burke, R. E., Fleshman, J. W. and **Segev, I.** (1988-1989). Factors that control the efficacy of group Ia synapses in -motoneurons. *J. Physiol. (Paris)*, 83: 133-140.
10. Nitzan, R., **Segev, I.** and Yarom, Y. (1990). Voltage behavior along the irregular dendritic structure of morphologically and physiologically characterized vagal motoneurons of the guinea pig. *J. Neurophysiol.* 63: 333-346.
11. **Segev, I.** (1990). Computer study of presynaptic inhibition controlling the spread of action potentials into axonal terminals. *J. Neurophysiol.* 63:987-998.
12. **Segev, I.**, Fleshman, J. W., and Burke, R. E. (1990) Computer simulation of group Ia EPSPs using morphologically realistic models of cat a-motoneurons. *J. Neurophysiol* 64: 648-660.
13. Manor, Y., Gonczarowski, Y., and **Segev, I.** (1991). Propagation of action potentials along complex axonal tree: Model and implementation. *Biophys. J.* 60: 1411-1423.
14. Manor, Y., Koch, C., and **Segev, I.** (1991). Effect of geometrical irregularities on propagation delay in axonal trees. *Biophys. J.* 60: 1424-1437.
15. Rapp, M., Yarom, Y., and **Segev, I.** (1992). The impact of parallel fiber background activity on the cable properties of cerebellar Purkinje cells. *Neural Computation*, 4: 518-529

16. Rall, W., Burke, R. E., Holmes, W. R., Jack, J. J. B., Redman, S. J., and **Segev, I.** (1992). Matching dendritic neuron models to experimental data. *Physiological Reviews*. S159-S186.
17. Holmes, W. R., **Segev, I.**, and Rall, W. (1992). Interpretation of time constant and electrotonic length estimate of multi-cylinder or branched neuronal structures. *J. Neurophysiol* 68:1401-1420.
18. **Segev, I.** (1992). Single neurone models: oversimple, complex and reduced. *TINS* 15: 414-421.
19. Agmon-Snir, H., and **Segev, I.** (1993). Signal delay and propagation velocity in passive dendritic trees. *J. Neurophys.* 70 (5): 2066-2085.
20. Rapp, M., **Segev, I.**, and Yarom, Y. (1994). Physiology, morphology and detailed passive models of cerebellar Purkinje cells *J. Physiol.* 474: 101-118.
21. **Segev, I.**, Friedman, A., White, E. and Gutnick, M. (1995). Electrical consequences of spine dimensions in a model of a cortical spiny stellate cell completely reconstructed from serial thin sections. *J. Comput. Neurosci.* 2(2):117-130.
22. Gutfreund, Y., Yarom, Y. and **Segev, I.** (1995). Subthreshold oscillations and resonant frequency in guinea pig cortical neurons: physiology and modeling. *J. Physiol.* 483:621-639.
23. Zador, A., Agmon-Snir, H. and **Segev, I.** (1995). The Morphoelectrotonic Transform: A Graphical Approach to Dendritic Function. *J. Neurosci.* 15:1669-1682.
24. Koch, C., Rapp, M. and **Segev, I.** (1996). A Brief History of Time (Constants). *Cerebral Cortex* 6:93-101.
25. Rapp, M., Yarom, Y., and **Segev, I.** (1996). Modeling back propagating action potential in weakly excitable dendrites of neocortical pyramidal cells. *Proc. Natl. Acad. of Sciences* 93:11985-11990.
26. Gutfreund, Y., Yarom, Y., **Segev, I.**, Flash, T., and Hochner, B. (1996). Organization of octopus arm movement: A model system for studying the control of flexible arm. *J. Neurosci.* 16:7297-7307.
27. Manor, Y., Rinzel, J., **Segev, I.**, and Yarom, Y. (1997). Low amplitude oscillations in the inferior olive: A model based on electrical coupling of neurons with heterogeneous channel density. *J. Neurophys.*: 77: 2736-2752.
28. Senn, W., **Segev, I.**, and Tsodyks, M. (1998). Reading neural synchrony with depressing synapses. *Neural Computation* 10: 815-819.
29. Schneidman E., Freedman B., and **Segev, I.** (1998). Ion channel stochasticity may be critical in determining the reliability and precision of spike timing. *Neural Computation* 10: 1679-1694.
30. **Segev, I.** (1998). Sound grounds for computing dendrites, *Nature* 393: 207-208 (News & Views invited article; elected leading article).
31. **Segev, I.**, and Rall, W. (1998). Dendrites and excitable dendritic spines: Earlier theoretical insights elucidate recent direct observations. *Trends in Neuroscience* 21 (11): 453-460.
32. **Segev, I.** and Schneidman E. (1999). Axons as computing devices: Basic insights gained from models. *J. Physiol.* (Paris) (in press).
33. Anderson, J.C., Binzegger, T., Kahana, O., Martin, K.A.C., and **Segev, I.** (1999). The role of dendritic asymmetry in generating directionality in neurons of cat visual cortex. *Nature Neuroscience*, 2: 820 - 824.
34. London, M., Meunier, C., and Segev, I. (1999). Signal transfer in passive dendrites with non-uniform membrane conductance. *J. Neurosci.* 19: 8219-8233.

35. **Segev, I.** (1999). Taming time in the olfactory bulb, *Nature Neuroscience*, 2: 1041-1043 (News &Views article).
36. Steinmetz, P., Manwani, A., London, M., **Segev, I.**, and Koch, C. (2000). Sub-threshold voltage noise due to channel fluctuations in active neuronal membranes. *J. Comput. Neurosci.* 9(2):133-48.
37. Schneidmann, E., Segev, I., and Tishby N. (2000). Information capacity and robustness of stochastic neuron models. Pp. 178-184, (Sola, S.A, Leon, T.K., Muller, K.-R eds), MIT Press.
38. **Segev, I** and London, M. (2000). Models mold our perception of dendrites. *Science*, 290: 744-750.
39. Koch, C. and Segev, I. (2000). Information processing in single neurons. *Nature Neurosci.* Nov;3 Suppl:1171-1177.
40. London M., and Segev I. Synaptic scaling in vitro and in vivo (2001). *Nature Neuroscience*, 4(9):853-855.
41. Fuhrmann, G., Segev, I., Markram, H., and Tsodyks, M. (2002). Coding of temporal information by activity-dependent synapses. *J. Neurophys.* 87(1):140-148
42. London M, Shribman A, Hausser M, Larkum M and Segev I. (2002). The information efficacy of a synapse. *Nat. Neurosci.* 5(4):332-40.
43. Meunier C. and Segev I. (2002). Playing the devil's advocate: is the Hodgkin-Huxley model useful? *Trends in Neuroscience* 25(11):558-63.
44. Litvak V, Sompolinsky H, Segev I and Abeles M. (2003). On the transmission of rate code in long feedforward networks with excitatory-inhibitory balance. *J. Neurosci.* 23(7):3006-15.
45. Segev I. (2003). Synchrony is stubborn in feedforward cortical networks. *Nat. Neurosci.* 6(6):543-4.
46. Fuhrmann G, Cowan A, Segev I, Tsodyks M and Stricker C. (2004). Multiple mechanisms govern the dynamics of depression at neocortical synapses in young rats. *J. Physiol.* 2004 Jun 1;557(Pt 2):415-38.
47. London M, Segev I. Links Conducting synaptic music in dendrites. *Nat Neurosci.* 2004 Sep;7(9):904-5
48. Jacobson GA, Diba K, Yaron-Jakoubovitch A, Oz Y, Koch C, Segev I, Yarom Y. Subthreshold voltage noise of rat neocortical pyramidal neurones. *J Physiol.* 2005 Apr 1;564(Pt 1):145-60.
49. Banitt Y, Martin KA, Segev I. Depressed Responses of Facilitatory Synapses. *J Neurophysiol.* 2005 Jul;94(1):865-70.
50. Rav-Acha M, Sagiv N, Segev I, Bergman H, Yarom Y. Dynamic and spatial features of the inhibitory pallidal GABAergic synapses. *Neuroscience.* 2005;135(3):791-802
51. Segev I (2006) What do dendrites and their synapses tell the neuron? *J Neurophysiol.* 2006 Mar;95(3):1295-7.
52. Rabinowitch I and Segev, I. (2006) The interplay between homeostatic synaptic plasticity and functional dendritic compartments. *J Neurophysiol.*96(1):276-83.
53. Diba K, Koch C, Segev I. Spike propagation in dendrites with stochastic ion channels *J Comput Neurosci.* 2006 Feb;20(1):77-84.
54. Rabinowitch I and Segev, I (2006). The endurance and selectivity of spatial patterns of LTP/LTD in dendrites under homeostatic synaptic plasticity. *J. Neurosci.* Dec 27;26(52):13474-84.
55. H. Cuntz, J. Haag, F. Foerstner, I. Segev and A. Borst (2007). Robust coding of flow-field parameters by axo-axonal gap junctions between fly visual interneurons, *Proc Natl Acad Sci USA.* Jun 12;104(24):10229-33

56. H. Cuntz, A. Borst and I. Segev (2007) Optimization principles of dendritic structure. *Theor Biol Med Model.* Jun 8;4:21.
57. Sarid, L., Bruno, R., Sakmann, B., Segev, I and Feldmeyer, D. (2007) Modeling a L4-to-L2/3 module of a single column in rat neocortex - interweaving in vitro and in vivo experimental observations. *Proc. Natl. Acad. Sci. USA*, 104: 16353-16358
58. Banitt Y, Martin KA, Segev I. (2007). A biologically realistic model of contrast invariant orientation tuning by thalamocortical synaptic depression. *J Neurosci.* Sep 19;27(38):10230-9.
59. Druckmann, S., Banitt, Y., Gideon, A., Schurmann, F., Markram, H. and Segev, I (2007). A Novel Multiple Objective Optimization Framework for Automated Constraining of Conductance-Based Neuron Models by Noisy Experimental Data. *Frontiers in Neuroscience*, Vol. 1, iss. 1, 7-18.
60. Rabinowitch I and Segev I, (2008). Two opposing plasticity mechanisms pulling a single synapse. *Trends in Neurosciences* Vol.31 377-83.
61. Yaron-Jakoubovitch, A. Jacobson, G., Koch, C., Segev I., and Yarom Y, (2008). A paradoxical isopotentiality: a spatially uniform noise spectrum in neocortical pyramidal cells, August 2008 | Volume 2 | Article 3
62. Druckmann S, Berger TK, Hill S, Schurmann F, Markram H, Segev I. (2008). Evaluating automated parameter constraining procedures of neuron models by experimental and surrogate data. *Biol Cybern.* 2008 Nov;99(4-5):371-9.
63. Gidon A, Segev I. (2009). Spike-timing-dependent synaptic plasticity and synaptic democracy in dendrites. *J Neurophysiol.* 2009 Jun;101(6):3226-34
64. Druckman S. and Segev, I. (2009). Effective stimuli for unraveling the dynamics of neurons (Submitted).
65. Sarid, L., Feldmeyer, D, Sakmann, B., and Segev, I. The contribution of intracolumnar layer 2/3-to-layer 2/3 connection in shaping the response of L2/3 pyramidal cells to whisker deflection in rat neocortex (in preparation).
66. Gideon A. and Segev, I. Inhibitory coverage over dendritic surface by axons making multiple contacts (in preparation).
67. Bar-Ilan L., Gideon A. and Segev I. Spike timing dependent plasticity with multiple local supervisors (in preparation).
68. Hay I. and Segev I. Multiple objective optimization for modeling layer V pyramidal cells with BAC firing (in preparation).

III. BOOK CHAPTERS

1. Rall, W., and Segev, I. (1985). Space clamp problems when voltage clamping branched neuron with intracellular microelectrodes. In: *Voltage and Patch Clamping with Microelectrodes.* (T.G. Smith, H. Lecar, S.J. Redman, and P.W. Gage, eds.), pp. 191-215.
2. Rall, W., and Segev, I. (1987). Functional possibilities for synapses on dendrites and dendritic spines. In: *Synaptic Function* (Edelman, G.M., Gall, W.F., and Cowan, W.M., eds.). *Neurosci. Res. Foundation*, pp. 605-636, Wiley, New York.
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