Joël Tabak

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Education

1993-1996 Ph.D. degree in Signal Processing, Université de Rennes I

1989-1990 Graduate degree in Optics and Digital Image Processing (DEA, Marseille)

1987-1990 Engineering degree, Ecole Nationale Supérieure de Physique de Marseille

1987-1988 Associate degree in physics, Université d'Aix-Marseille III

1984-1987 Advanced classes in Maths and Physics

1984 High school degree (Science option)

Professional Experience

since Nov **96** Postdoc (Fogarty visiting fellow until Nov. 2001, now research fellow) Laboratory of Neural Control, NINDS. Modeling and electrophysiological studies of spontaneous activity in the developing spinal cord. Mentor: Dr. M.J. O'Donovan

1993-1996 Ph. D. fellowship from the Ministère de l'Enseignement Supérieur et de la Recherche (state department for education and research). Equipe de Neurobiologie, Université de Rennes I and Department of Physiology and Biophysics, University of Texas Medical Branch in Galveston. Mentor: Dr. L.E. Moore

1992 Photographer and teacher during military service

1991 Computer programming (multidimensional spreadsheet, ID Partners, Paris)

1990 Image analysis of cultured cancer cells and modeling of cell cycle and cell-cell interactions with cellular automata. Laboratoire de Cancérologie Expérimentale and Laboratoire des Interactions Photon-Matière, Marseilles. Supported by Centre National de la Recherche Scientifique

1989 Theoretical and experimental study on multiplexed holographic gratings, Fujitsu Laboratories in Atsugi, Japan

Teaching Experience

2001-03 Lectures in the Neuroscience graduate program at the University of Maryland (topics: Hodgkin-Huxley model and vestibular system)

1999 Two invited lectures to graduate students for the "Benefri Blockcourse on Motor Control: Physiology, Molecular Biology and Clinics" in the Physiological Institute, Bern, Switzerland

1997, 99
2000, 01 Supervised summer students in Laboratory of Neural Control, on experimental and modeling work

1995 Teaching assistant in Computer Science for Biology students, Université de Rennes 1

1992 Teacher in Maths and Physics for non-commissioned officer preparing to enter the Air Force School

1988 Organization and animation of a scientific exhibition “La Semaine de l’Image” (Images’ Week), dedicated to presenting a broad public with experiments related to image acquisition, processing and synthesis

Attendance in Scientific Courses and Workshops

2000 Short course on Principles and Practice of Modern Light Microscopy (Society for Neuroscience, New Orleans)

1998 Symposium on Using NEURON Simulation Environment (Satellite Symposium at the Society for Neuroscience Meeting, Los Angeles)

1997 Workshop on parallel computing for neuronal modeling (Pittsburgh Super Computing Center, Carnegie Mellon University)

1993 Spring school on Neural Networks (NSI 93, St-Jean du Gard)

1992 Special one-week course on Molecular Modeling (Université Paris VI)

Publications

J. Tabak, M. J. O'Donovan and J. Rinzel. Distinguishing between different burst termination mechanisms in excitatory networks generating periodic activity. In preparation.

J. Tabak and P. E. Latham. Analysis of spontaneous bursting activity in random neural networks. *Neuroreport*, 14:1445-1449, 2003.

J. Tabak, J. Rinzel and M. J. O'Donovan. The role of activity-dependent depression in the expression and self-regulation of spontaneous activity in the developing spinal cord. *The Journal of Neuroscience*, 21:8966-8978, 2001

J. Tabak, W. Senn, M. J. O'Donovan and J. Rinzel. Modeling of spontaneous activity in the developing spinal cord using activity-dependent depression in an excitatory network. *The Journal of Neuroscience*, 20:3041-3056, 2000.

J. Tabak, C. R. Murphey and L. E. Moore. Parameter estimation methods for single neuron models. *Journal of Computational Neuroscience*, 9:215-236, 2000.

B. Fedirchuk, P. Wenner, P. J. Whelan, S. Ho, **J. Tabak** and M. J. O'Donovan. Spontaneous network activity transiently depresses synaptic transmission in the embryonic chick spinal neurons. *The Journal of Neuroscience*, 19:2102-2112, 1999.

L. E. Moore, N. Chub, **J. Tabak** and M. J. O'Donovan. Dendritic oscillations during soma voltage clamp of chick spinal neurons. *The Journal of Neuroscience*, 19:8271-8280, 1999.

J. Tabak and L. E. Moore. Simulation and parameter estimation study of a simple neuronal model for rhythm generation; role of NMDA and non-NMDA receptors. *Journal of Computational Neuroscience*, 5:209-235, 1998.

Chapters / Reviews

J. Tabak and J. Rinzel. Modeling neural networks; spontaneous episodic activity in the developing spinal cord. In *Complex Systems Science in Biomedicine*, T. S. Deisboeck, J. Y. Kresh and T. B. Kepler (Editors), Kluwer Academic, in press.

J. Tabak, W. Senn, M. J. O'Donovan and J. Rinzel. Comparison of two models for pattern generation based on synaptic depression. *Neurocomputing*, 26-27:551-556, 1999.

M. J. O'Donovan, P. Wenner, N. Chub, **J. Tabak** and J. Rinzel. Mechanisms of spontaneous activity in the developing spinal cord and their relevance to locomotion. *Annals of the New-York Academy of Sciences*, 860:130-141, 1999.

J. Tabak and M. J. O'Donovan. Statistical analysis and intersegmental delays reveal possible roles of network depression in the chick embryo spinal cord. *Annals of the New-York Academy of Sciences*, 860:428-431, 1999.

L. Prime, **J. Tabak**, F. Tiaho, B. St-Mleux, Y. Pichon, C. R. Murphey and L. E. Moore. Non-linear parameter estimation of membrane properties of Xenopus embryonic neurons. In J. Bower, editor, *Computational Neuroscience*. Plenum Press, 1998.

C. R. Murphey, **J. Tabak**, L. E. Moore and J. T. Buchanan. Estimation of membrane properties from step current measurement of Xenopus neurons. In J. Bower, editor, *Computational Neuroscience*, pages 107-112. Academic Press, 1996.

Abstracts, not yet published as papers

C. Marchetti, **J. Tabak**, M. J. O'Donovan and J. Rinzel. Model of spontaneous activity in the developing spinal cord using activity-dependent variations of intracellular chloride. *Society for Neuroscience*, 2003.

B. Vladimirski, **J. Tabak**, M. J. O'Donovan and J. Rinzel. An excitatory neural network model of spontaneous activity in developing spinal cord using synaptic depression. *Computational Neuroscience Meeting*, 2003.

J. Tabak, B. Vladimirski and J. Rinzel. Reciprocal role of network connectivity and cellular excitability in excitatory networks. *Computational Neuroscience Meeting*, 2002.

Awards

2003- Three-year grant (ACI integrative and computational neuroscience) awarded to B. Yvert, P. Branchereau (Laboratoire de Neurobiologie des Réseaux, Bordeaux, France) and myself

2001- Research fellowship (NINDS/NIH)

1996-2001 Visiting fellowship from International Fogarty Center (NINDS/NIH)

1993-95 PhD fellowship from the French state department for education and research (allocation MESR)

1990 Four-month research project fellowship supported by the French science committee (CNRS)