Ioan Opris, PhD

Research Scientist

Member ARA since: 2014
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Discipline: Neuroscience, Physics, Biophysics

INTERESTS

Neural Microcircuits, Brain Functions, Neural Nanotechnology

EXPERIENCE:

2004-Present Senior Research Scientist, Department of Physiology and Pharmacology, Wake Forest University School of Medicine
1999-2003 Postdoctoral Fellow, Department of Neurobiology, Yale University
1998-1999 Postdoctoral Fellow, Center for Neurobiology and Behavior, Columbia University
1995-1998 Postdoctoral Research Associate, Department of Anatomy and Neurobiology, University of Tennessee Memphis
1994-1995 Assistant Professor, Department of Physics, University of Bucharest, Romania

AWARDS (SELECTED)

2014 Elected ARA Member

2000 McDonnell Pew Award in Cognitive Neuroscience

1995 Best Poster Paper Award, World Congress on Neural Networks, Washington D.C.

1994 "Edmond Nicolau" Award from Romanian Society for Neural Networks, Romania

PUBLICATIONS (SELECTED):

1. **Opris I**, Gerhardt GA, Hampson RE, Deadwyler SA (2014) Prefrontal cortical recordings with biomorphic MEAs reveals complex columnar-laminar microcircuits for BMI implementation. *Journal of Neuroscience Methods* DOI: 10.1016/j.jneumeth.2014.05.029.
2. **Opris I,** Casanova MF (2014). Prefrontal cortical minicolumn: from executive control to disrupted cognitive processing. *Brain*, 137(7):1863-1875.
3. Deadwyler S,A Hampson RE, Song D, Chan RHM, **Opris I**, Gerhardt GA, Marmaarelis, V, Berger TW (2013) Donor/Recipient Enhancement of Memory in Rat Hippocampus. *Front Systems Neuroscience*, 7: 120.
4. **Opris I**, Santos LM, Song D, Berger TW, Gerhardt GA, Hampson RE and Deadwyler SA (2013) Prefrontal cortical microcircuits bind perception to executive control. *Scientific Reports* 3:2285.

5. **Opris I** (2013) Inter-Laminar Microcircuits across the Neocortex: Repair and Augmentation. *Front Systems Neuroscience, 7:80***.**
6. Hampson RE, Song D, **Opris I**, Santos LM, Shin D, Gerhardt GA, Marmaarelis, V, Berger TW, Deadwyler SA (2013) Facilitation of Memory Encoding in Primate Hippocampus by a Neuroprosthesis that Promotes Task Specific Neural Firing. *J Neural Eng***.** 10 (6), 066013**.**
7. **Opris I**, Fuqua JL. Huettl P, Gerhardt GA, Berger TW, Hampson RE, Deadwyler SA (2012) Closing the loop in primate prefrontal cortex: Inter-laminar processing. *Front. Neural Circuits*. 6:88.
8. **Opris I.** Hampson RE, Gerhardt GA, Berger TW, Deadwyler SA (2012) Columnar processing in primate prefrontal cortex: Evidence for executive control microcircuits. *J. Cogn. Neuro* 24(12):2334-47.
9. Hampson RE, Gerhardt GA, Marmarelis VZ Song D, **Opris I**, Santos LM, Berger TW, Deadwyler SA (2012) Facilitation and Restoration of Cognitive Function in Primate Prefrontal Cortex by a Neuroprosthesis that Utilizes Minicolumn-Specific Neural Firing. *J Neural Eng*. 9(5):056012.
10. **Opris I**, Lebedev M, Nelson RJ (2011) Motor planning under unpredictable reward: modulations of movement vigor and primate striatum activity. *Front. Neurosci.* 5:61.
11. **Opris I**., Hampson RE, Stanford TR, Gerhardt GA, Deadwyler SA (2011) Neural Activity of Frontal Cortical Layers: Evidence for Columnar Sensorimotor Processing *J. Cogn. Neurosci.* 23(6):1507-21.
12. **Opris I,** Hampson RE, Deadwyler SA (2009) The encoding of cocaine vs. natural rewards in the striatum of nonhuman primates: categories with different activations. *Neuroscience***.** 163(1):40-54;
13. **Opris I**, Barborica A, Ferrera VP (2005) Microstimulation of Dorsolateral Prefrontal Cortex Biases Saccade Target Selection. *J. Cogn. Neurosci.* 17:893-904;
14. **Opris I**, Barborica A, Ferrera VP (2005) Effects of Electrical Microstimulation in Monkey Frontal Eye Field on Saccades to Remembered Targets. *Vision Research* 45:3414-3429;
15. **Opris I**, Bruce CJ (2005) Neural circuitry of judgment and decision mechanisms. *Brain. Res Rev* 48:509-28.

BOOK CHAPTERS:

16. Nishimori H, Ozeki T, **Opris I** (1993) Simulating memory retrieval processes in an associative memory. In *Computer Aided Inovation of New Materials II*; (Doyama K Ed.) Elsevier, Amsterdam, pp.383-388.
17. Salinas E, **Opris I**, Zainos A, Hernandez A, and Romo R (2000) Motor and non-motor roles of the cortico-basal ganglia circuitry. pp, 237-255. In *Brain dynamics and the striatal complex*; Ed. Miller R & Wickens J, Amsterdam, Harwood Acad;
18. **Opris I**, Lebedev M, Nelson RJ (2011) Motor planning under unpredictable reward: modulations of movement vigor and primate striatum activity. *Neurobiology of Choice,* Editors: Daeyeol Lee, Paul Glimcher, Julia Trommershaeuser, Frontiers Media SA ebook.
19. **Opris I.** Popa IL Casanova MF (2014) Prefrontal Cortical Microcircuits of Executive Control. In "*Recent Advances on the Modular Organization of the Cerebral Cortex*", Editor(s): MF Casanova and I Opris, Springer (in press).
20. Gerhardt GA, **Opris I**, Burmeister JJ, Pomerleau F, Quintero JE, Huettl P, Hampson RE, Deadwyler SA (2014). The Function of Microcircuits: Insights from Biomorphic Ceramic-based Micro-electrode Arrays. In "*Recent Advances on the Modular Organization of the Cerebral Cortex*" Editor(s): MF Casanova and I Opris, Springer (in press).
21. Enachescu M, Vidu R, **Opris I.** (2014) Uncovering Cortical Modularity by Nanotechnology. In "Recent Advances on the Modular Organization of the Cerebral Cortex", Editor(s): MF Casanova and I Opris, Springer (in press)