

François Windels

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Neurobiology Branch

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Current Position: Postdoctoral fellow in the Cellular Neurobiology laboratory of Dr W.J. Freed. National Institute on Drug Abuse, Intramural Research Program, National Institutes of Health, Baltimore.

Research Topic: Effects of drugs and neurotransmitters on neuronal activity in awake, unrestrained rats.

Supervisor: E.A. Kiyatkin, MD, PhD.

Education and Research Experience

2001 PhD in Neuroscience Université Joseph Fourier, Grenoble.
Thesis Title: Neurochemical study of the impact of high frequency stimulation of the subthalamic nucleus.
PhD Supervisor : Dr Marc Savasta
Committee: Pr. Jean Feger
Pr. Pierre Pollak
Dr. Lydia Kerkerian
Dr. Guy Chouvet

1995 Master of Neuroscience Université Joseph Fourier, Grenoble.

1994 Bachelor of Science Université de Caen, Caen.

List of Publications

- **WINDELS F.** and **KIYATKIN E. A.:** GABA, not Glutamate, controls the activity of substantia nigra reticulata neurons in awake, unrestrained rats. *J. Neurosci.*, Vol 24 pp 6751-6754, 2004.
- **WINDELS F.** and **KIYATKIN E. A.:** Modulatory action of acetylcholine on striatal neurons: microiontophoretic study in awake, unrestrained rats. *Eur. J. Neurosci.*, Vol 17 pp 613-622, 2003.
- **WINDELS F.** **CARCENAC C.**, **POUPARD A.** and **SAVASTA M. :** Pallidal Origin of GABA Release within the Substantia Nigra Pars Reticulata During High Frequency Stimulation of the Subthalamic Nucleus. *J. Neurosci.*, Vol 25 pp 5079-5086, 2005.

- BRUET N., **WINDELS F.**, CARCENAC C., FEUERSTEIN C., BERTRAND A., POUPARD A. and SAVASTA M.: Neurochemical mechanisms induced by high frequency stimulation of the subthalamic nucleus: Increase of extracellular striatal glutamate and GABA in normal and hemiparkinsonian rats. *J. Neuropathol. Exp. Neurol.*, Vol 62 (12) , pp 1228-1240 2003.
- **WINDELS F.**, BRUET N., POUPARD A., FEUERSTEIN C., BERTRAND A. and SAVASTA M.: Influence of the frequency parameter on extracellular glutamate and GABA in substantia nigra and Globus Pallidus during electrical stimulation of subthalamic nucleus in rats. *J. Neurosci. Res.*, Vol: 72, pp 259-267, 2003.
- BRUET N., **WINDELS F.**, POUPARD A. and SAVASTA M.: High frequency stimulation of subthalamic nucleus increases extracellular contents of dopamine in the striatum of normal and partially dopaminergic denervated rats. *J. Neuropath. Exp. Vol 60 (1) , pp 15-24, 2001 .*
- **WINDELS F.**, BRUET N., POUPARD A., URBAIN N., CHOUVET G., FEUERSTEIN C. and SAVASTA M.: High frequency stimulation of subthalamic nucleus increases extracellular contents of glutamate in substantia nigra and external pallidum. *Eur. J. Neurosci.*, Vol 12, pp 4141-4146, 2000.
- URBAIN N., GERVASONI D., SOULIERE F., LOBO L., **WINDELS F.**, ASTIER B., SAVASTA M., RENAUD B., FORT P., LUPPI P.H. and CHOUVET G.: Unrelated course of subthalamic nucleus and globus pallidus neuronal activities across vigilance states in the rat. *Eur. J. Neurosci.*, Vol 12 pp 3361-3374, 2000.

Book Chapter

- MAURICE N., DENIAU J-M., DEGOS B., **WINDELS F.**, CARCENAC C, POUPARD A. AND SAVASTA M.: High frequency stimulation of the subthalamic nucleus. Electrophysiological and neurochemical *Basal ganglia VIII, In press , 2005.*
- SAVASTA M., **WINDELS F.**, BRUET N., BERTRAND A. and POUPARD A.: Neurochemical modifications induced by high frequency stimulation of the subthalamic nucleus in rats. *Basal ganglia VII, edited by Nicholson and Faull, Kluwer academic/Plenum Publishers, 2002.*

Invited Review

- **WINDELS F.** : Neuronal activity, from in vitro preparation to freely moving animals. *Molecular Neurobiol., In review.*

Selected Communications at International Meetings

- **WINDELS F.** and KIYATKIN E. A.: GABA not Glutamate controls the activity of substantia nigra pars reticulata neurons in awake, unrestrained rats. *Annual Meeting Society for Neuroscience, 21-27 October 2004, San Diego USA.*
- **WINDELS F.** and KIYATKIN E. A.: Dopamine modulation of GABA and Glutamate action on substantia nigra pars reticulata cells: Iontophoretic study in awake, unrestrained rats. *Annual Meeting Society for Neuroscience, 10-15 November 2003, New Orleans, USA.*

- **WINDELS F.**, BRUET B., POUPARD A., FEUERSTEIN C., BERTRAND A. and SAVASTA M.: Involvement of GABA in the mechanisms of high frequency stimulation of the subthalamic nucleus in parkinson's disease: a microdialysis study in hemiparkinsonian rats bearing or not GP lesion. *Annual Meeting Society for Neuroscience, 10-15 November 2002, Orlando, USA.*
- **WINDELS F. J.** and KIYATKIN E. A.: Modulatory action of acetylcholine on striatal neurons: iontophoretic study in awake, unrestrained rats. *Annual Meeting Society for Neuroscience, 10-15 November 2002, Orlando, USA.*
- **WINDELS F.**, BRUET N., POUPARD A., FEUERSTEIN C. and SAVASTA M.: Evidence for a possible role of GABA in the therapeutical efficacy of high frequency stimulation of the subthalamic nucleus in Parkinson's disease. *Annual Meeting Society for Neuroscience, 10-15 November 2001, San Diego, USA.*
- **WINDELS F.**, BRUET N., POUPARD A., FEUERSTEIN C., BERTRAND A. and SAVASTA M.: Increases of pallidal and nigral glutamate observed during electrical stimulation of the subthalamic nucleus are frequency dependant. *Annual Meeting Society for Neuroscience, 4-9 November 2000, New Orleans, USA.*
- **WINDELS F.**, BRUET N., POUPARD A. and SAVASTA M.: High frequency stimulation of subthalamic nucleus increases extracellular contents of glutamate in substantia nigra and external pallidum. *FENS 2000, 24-28 June 2000, Brighton, United Kingdom.*
- **WINDELS F.**, BRUET N., POUPARD A. and SAVASTA M.: High frequency stimulation of subthalamic nucleus increases extracellular contents of glutamate in substantia nigra and external pallidum. *6th International Congress of Parkinson's disease and Movement Disorders, 11-15 June 2000, Barcelona, Spain.*
- **WINDELS F.**, BRUET N., POUPARD A., FEUERSTEIN C., BENABID A.L. and SAVASTA M.: Modification of excitatory and inhibitory amino acid release in external globus pallidus and substantia nigra reticulata after electrical stimulation of the subthalamic nucleus: A microdialysis study. *1999 Annual Meeting Society for Neuroscience, 23 -28 October 1999, Miami, USA.*

Manuscripts in Review or in Preparation

- **WINDELS F.** and KIYATKIN E.A. : Dendritic dopamine release is involved in rapid modulation of GABA neurotransmission in substantia nigra, pars reticulata. *In review*
- **WINDELS F.** and KIYATKIN E.A. : Fading effect of GABA in substantia nigra, pars reticulata ; microiontophoretic study in awake unrestrained rats. *In preparation.*
- **WINDELS F.** and KIYATKIN E.A. : General anesthesia as a factor affecting impulse activity and responses to neurotransmitters. *In preparation.*

Technical Expertise

- **Electrophysiology:** extracellular unit recording and **iontophoresis** with **freely moving rats.**
- **Intracerebral microdialysis** and HPLC.

- Standard techniques for in vivo experimentations on rodents: immunohistochemistry on brain sections; stereotactic surgery.
- Electronic and biomedical instrumentation.
- Implantation of *Intra venous* catheter.
- Standard techniques in cell cultures and histology.

Teaching Experience

2001 Instructor Université Joseph Fourier, Grenoble.
Exercise resolution and discussion sessions.

2000 Teaching assistant Université Joseph Fourier, Grenoble.
Graduate program in life science, neurobiology program.
Introduction to neuroanatomy, observation and schematization of brain slices. Staining of neuro-muscular junctions by Gomori's technique.

Grant and Awards

- Fellowship from National Institutes of Health, United states
August 2001-2005.
- Grant from "Fondation pour la Recherche Médicale", France
to pursue the last year of PhD program,
October 2000-June 2001.
- Award from "Société des Neurosciences", France
to participate in the European Neuroscience meeting, Brighton, UK,
24-28 June 2000.
- PhD Grant from "Neuroscience Research Program"
of "Région Rhône-Alpes Counsel", France
October 1997- October 2000.

Professional Affiliations

- Société des Neurosciences Française
- Society for Neurosciences
- Federation of European Neuroscience Societies

References

- Marc Savasta, PhD. Institut National Scientifique d'Etude et de Recherche Médicale, Grenoble, France.
- Eugene A. Kiyatkin, MD, PhD. National Institute on Drug Abuse, Baltimore, USA.
- Roy A. WISE, PhD. National Institute on Drug Abuse, Baltimore, USA.