



## Curriculum Vitae - Serge N. Schiffmann, MD, PhD

Born in Brussels, July 18<sup>th</sup>, 1961

Nationality: Belgian

### **Working address:**

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### **Education and Degrees:**

1979: Admission Concourse to the Faculty of Applied Sciences (Polytechnique), Université Libre de Bruxelles, Brussels, July 1979; success

1979-1982: Basic Medical Sciences, Université Libre de Bruxelles (ULB), Brussels, Belgium.

1982-1986: Doctor in Medicine and Surgery (M.D.), Université Libre de Bruxelles (ULB), Brussels, Belgium.

1986-1992: Ph.D. in Neuroscience (“Agrégation de l'Enseignement Supérieur”), Université Libre de Bruxelles (ULB), Brussels, Belgium.

### **Post-doctoral Training:**

1992-1994: Institut Alfred Fessard, CNRS, Gif-sur-Yvette, France; Prof. J.-D. Vincent.

### **Current Positions:**

1999-Pres. Director, Laboratory of Neurophysiology, ULB-Neuroscience Institute (UNI), Université Libre de Bruxelles (ULB), Brussels, Belgium.

2009-Pres. Full Professor at the Université Libre de Bruxelles

2021 - Director of the ULB-Neuroscience Institute ([UNI](#))

### **Previous Appointments and Career:**

2005-2009 Professor, Université Libre de Bruxelles.

1997-2005 Associate Professor, Université Libre de Bruxelles.

1992-1997 Research Associate (Tenure position, “Chercheur qualifié”) of the “National Fund for Scientific Research” (FNRS Belgium), Université Libre de Bruxelles

1992-1994 Research Associate at Institut Alfred Fessard, CNRS, Gif-sur-Yvette, France

1990-1992 Senior Research Assistant (Post-doc fellowship, “Chargé de Recherche”) of the “National Fund for Scientific Research” (Belgium).

1986-1990 Research Assistant (PhD fellowship, “Aspirant”) of the “National Fund for Scientific Research” (Belgium)

### **Research:**

The research group led by **Serge Schiffmann** is part the ULB-Neuroscience Institute and is focused on the **basal ganglia functions, which are involved in motor control and motivational processes, in both physiological and pathological conditions**. The group is interested in the regulation of neuronal excitability, synaptic transmission and synaptic plasticity and their alterations in animal models of basal ganglia diseases (Parkinson’s and Huntington’s diseases, drug addiction). The Lab. has **developed mouse models by conditional transgenesis** to study the cell-specific involvement of genes or the involvement of specific neuronal populations in reward, motivation, motor control and learning.

The group demonstrated that adenosine play important functions in basal ganglia by showing the selective expression of adenosine A<sub>2A</sub> receptor (A<sub>2A</sub>R) by striatopallidal neurons and the role of

this receptor in the regulation of striatal functions. These data led to the proposal that specific A<sub>2A</sub>R antagonists may be useful in the treatment of parkinsonism and this was further confirmed by others in primate model and patients. By using A<sub>2A</sub>R-deficient mice, the group demonstrated the complex involvement of this receptor at multiple sites in basal ganglia and identify therapeutic potential of adenosine receptor ligands in models of Huntington's disease. The group also characterized the effects of dopamine and adenosine on striatal neuron excitability and on synaptic transmission and plasticity at the cortico-striatal synapse. The group developed conditional transgenic mouse strains allowing to unravel in vivo the inhibitory function of striatopallidal neurons in both motor control and motivational processes, the important role of NMDA receptor in striatopallidal neuron, the differential functions of striatal subpopulations. This approach also allowed gene profiling of striatal neuron subpopulations leading to identification of new genes and their functions in the striatal network. Besides the main focus on the basal ganglia, the group had also reported some important data on the roles of calcium binding proteins in the cerebellar network functioning and on subcellular ciliary localization of signaling molecules and pathways.

In addition to its expertise in *ex vivo* electrophysiology (patch clamp), optogenetics and confocal microscopy, the group recently developed in vivo electrophysiology with optrodes combining recording and optogenetic stimulation, and in vivo calcium imaging using microendoscopy from Inscopix®, both in awake behaving animals. Resources include three Patch clamp setups (equipped for optical stimulation), Cryostats, Cell culture room, Fluorescence microscope, Behavioural analysis devices with video-tracking, Lasers for in vivo optical stimulations (optogenetics), four setups for stereotaxic injections. The lab. has access to faculty facilities: Animal facility, Multiphoton confocal and Light-sheet microscopes (Light Microscopy Facility), qPCR stations, Mass spectrometry.

### **Summary of the scientific achievement:**

**180 publications** whose **156 articles** in international peer-reviewed journals, including: Nature, New Engl. J. Med., Proc. Ntl. Acad. Sci. USA, Nature Neuroscience, Nature Genetics, Neuron, Developmental Cell, Biol Psychiat., J. Neurosci., Mol. Psychiat., Eur. J. Neurosci., EMBO Journal, EMBO Rep., FASEB Journal, J. Biol. Chem, Neuropsychopharmacology

### **Selected Representative Publications:**

Rial et al. **Biol Psychiat.**, 88:945-954, 2020  
Karadurmus et al. **J. Neurosci.** 39, 7513-7528, 2019.  
De Backer et al., **EMBO Rep.**, 19: e45089, 1-17, 2018  
Oichi et al. , **Nature Comm.** 8(1):734, 2017  
Chavez et al., **Dev. Cell**, 34, 338-350, 2015.  
Ena et al., **J. Neurosci.**, 33(20), 8794–8809, 2013.  
Petrinovic et al., **Proc. Ntl. Acad. Sci. USA**, 110(3), 1083-1088, 2013.  
Durieux et al., **EMBO J.**, 31(3):640-653, 2012  
Hourez et al., **J. Neurosci.** 31(33), 11795–11807, 2011.  
Durieux et al., **Nature Neurosci.**, 12: 393-395, 2009.  
Servais et al., **Proc. Ntl. Acad. Sci. USA**, 104: 9858–9863, 2007.  
Schiffmann et al., **Proc. Ntl. Acad. Sci. USA**, 96, 5257-5262, 1999

**Supervision** of 18 Ph.D. students, 6 post-doctoral fellows, Master theses

### **Institutional Duties, Advisory positions, Boards and Committees:**

Vice-Rector for Research and Valorization, Université Libre de Bruxelles ULB. 2016-2018  
Vice-Rector for Research and Regional Development, Université Libre de Bruxelles ULB. 2014-2016  
President of the ULB Research Council, 2014-2018  
Member of the ULB Research Council, 2006-2013.  
President of the Belgian Society for Neuroscience, 2010-2012  
Member of the FENS Governing Council, 2010-2012, (Federation of the European Neuroscience Societies)

President of the Board of the Doctoral School in Neuroscience (Belgian French-speaking Community), 2008-2012

Founding member and Member of the Board of the ULB Neuroscience Institute (UNI), 2013-Pres  
Member of the Standing Committee of Research of the Faculty of Medicine, 2000-2014, Vice-President of the committee, 2006-2013.

Member of the Evaluation Committee "Normal and Pathological Physiology" National Fund for Scientific Research (FNRS), 1998-2007 and Chairman in 2007.

Member of the Evaluation Committee SVS-3 "Neuroscience" of the Fund for Scientific Research FNRS, 2010, 2012-2013, 2018-2020.

Member of the Committee "Fysiologie, Fysiopathologie van Lichaamssystemen" Fonds voor Wetenschappelijk Onderzoek of - Vlaanderen (FWO), 1997-2006.

Member of the Evaluation Panel "Neuroscience" in the "European Commission's 6th Framework Program" (Call: FP6-2002-LIFESCIHEALTH) in 2003.

Member of the Evaluation Panel "Neuroscience" of the National Research Agency (ANR) (France) in 2010.

Member of the Evaluation Committee AERES ("Assessment of Research and Higher Education Agency", France) for the Institute of Developmental Biology of Marseille-Luminy (IBDML) (± 200 members) in 2011.

Chairman of the Evaluation Committee AERES ("Assessment Agency Research and Higher Education", France) for the "Paris-Saclay Neuroscience Institute" (Neuro-PSI) (± 220 members) in 2014.

Member of Scientific Advisory Boards:

- Center for Interdisciplinary Research in Biology (CIRB), Collège de France, Paris, 2017
- Paris-Saclay Neuroscience Institute" (Neuro-PSI), 2018
- Institut de Neurobiologie de la Méditerranée (INMED), Marseille-Luminy, 2016, 2022.

#### **Remote evaluation for grant agencies:**

- Human Frontier Science Program (HFSP); - Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NOW, NL); - Agence Nationale de la Recherche (ANR) (France); - Austrian Bundesministerium für Bildung, Wissenschaft und Kultur, Austria; - Conseil Régional d'Aquitaine, France; - Health Research Council of New Zealand; Fundação para a Ciência e a Tecnologia, Portugal

#### **Reviewing activities:**

Member of the Editorial Board of *The European Journal of Neuroscience*, from 2018.

Reviewer for - Neuron; - the Proceedings of the National Academy of Sciences USA; - Journal of Neuroscience; - Journal of Neurochemistry; - Progress in Neurobiology; - Cerebral Cortex; - Neuroscience; - Neuroscience Letters; - Neurochemistry International; - Biochemical Pharmacology; - Pfügers Archiv European Journal of Physiology; - European Journal of Neuroscience; - Journal of Histochemistry and Cytochemistry; - Neuropharmacology; - Experimental Neurology

#### **Teaching:** (Université Libre de Bruxelles, Brussels)

Neurophysiology and Physiopathology of the Nervous System, Bachelor M.D., Faculty of Medicine.

Neuroscience, Bachelor in Biomedical Sciences, Faculty of Medicine.

Neuroscience, Master in Biomedical Engineer, School of Engineering

Neurobiology, Master in Biochemistry and Molecular Biology, Faculty of Sciences.