

Team Synaptic Plasticity and Neural Networks

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Vivien Chevalleyre

Born January 14th 1973

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married, 1 child

Rebecca Ann Piskorowski

Born August 12th 1976

rebecca.piskorowski@parisdescartes.fr

married, 1 child

EDUCATION / SCIENTIFIC TRAINING:

2017-present: Co-team leader, CNRS DR2, Inserm U894, "Synaptic Plasticity and Neuronal Networks" Paris Descartes University

2011-2016: Co-team leader, CNRS CR1, CNRS UMR8118, "Synaptic Plasticity and Neuronal Networks" Paris Descartes University

2008-2010: Research Specialist, Howard Hughes Medical Institute, Columbia University, New York.

2001-2007: Research Associate, Albert Einstein College of Medicine, Bronx, New York.

1998-2001: PhD in Neurophysiology, CNRS UMR 5101, Montpellier.

1997-1998: Post-graduate predoctoral diploma, CNRS UMR 5101, Montpellier.

1997: Master in Cellular Physiology. CNRS UMR 5101, Montpellier.

2017-present: Co-team leader, INSERM CR1, Inserm U894, "Synaptic Plasticity and Neuronal Networks" Paris Descartes University

2012-2016: Co-team leader, INSERM CR1, CNRS UMR8118, "Synaptic Plasticity and Neuronal Networks" Paris Descartes University

2011-2012: Researcher, CNRS UMR8118

"Synaptic Plasticity and Neuronal Networks"

2006-2011: Postdoctoral Fellow, Columbia University Medical Center

2005-2006: Postdoctoral Fellow, University of California at San Francisco

1998-2005: PhD in Biophysics, Stanford University

1994-1998: Bachelors of Science in Honors Biochemistry and Honors Biology, Purdue University.

AWARDS:

2016: CNRS National Competition for Tenured Director of Research Position, DR2.

2011: CNRS National Competition for Tenured Research Position, CR1: ranked 1st.

2004: Outstanding Postdoctoral Research Prize (Albert Einstein College of Medicine, New York City).

2004: Society for Neuroscience Postdoctoral Award.

2004: Postdoctoral fellowship from the Epilepsy Foundation.

2001-03: Postdoctoral fellowship: Einstein Scholar Award (Albert Einstein College of Medicine, New York City).

1998-2001: Doctoral fellowship from Research Ministry.

2012: INSERM National Competition for Tenured Research Position, CR1; Ranked 5th.

2009-2011: Postdoctoral Fellowship: National Institute of Health Ruth L. Kirschstein National Research Service Award (NIH F32).

2002-2004: Pre-Doctoral Fellowship: American Heart Association Pre-Doctoral Fellowship

1998: Undergraduate Scholarships and Awards: Phi Beta Kappa, Purdue University

1998: Outstanding Biological Sciences Senior Student Award, Purdue University School of Science

1995-1996: Purdue University School of Science Summer Undergraduate Research Fellowship

1994-1998: Purdue University School of Science Scholarship Recipient

1994: National Merit Finalist

AWARDS AND GRANTS OBTAINED BY THE TEAM:

2017-2019: NARSAD Independent Investigator Grant (100K€, R.P.)

2017-2018: Federation Recherche Medicale, 4th year PhD funding (29K€, V. Robert, student of R.P.)

2014: ATIP plus laureate (60K€, V.C.)

2013-2017: Laureate Ville de Paris Program *Emergence(s) Recherche medical et santé* (300K€, R.P.)

2013-2018: ANR Program JCJC SVSE 4. Project HYPO-HIPPO (200K€, R.P.)
2012-2016: ANR Blanc "CA2 Gate" (300K€, V.C.)
2010-2013: ATIP laureate (300K€, V.C.)

PUBLICATIONS:

Journal Articles:

- Palacio S, **Chevalyere V**, Brann DH, Murray KD, **Piskorowski RA** and Trimmer JS. (2017) "Heterogeneity in Kv2 Channel Expression Shapes Action Potential Characteristics and Firing Patterns in CA1 versus CA2 Hippocampal Pyramidal Neurons." *eNeuro*, 18 August, 4 (4) (4) ENEURO.0267-17.2017; DOI: <https://doi.org/10.1523/ENEURO.0267-17.2017>.
- Boehringer R, Polygalov D, Huang AJY, Middleton SJ, Robert V, Wintzer ME, **Piskorowski RA**, **Chevalyere V**, and McHugh TJ. (2017) "Chronic loss of CA2 transmission leads to hippocampal hyperexcitability." *Neuron*, May 3;94(3):642-655.e9. doi: 10.1016/j.neuron.2017.04.014.
- Nasrallah K, **Piskorowski RA**, **Chevalyere V**. "Bi-directional interplay between proximal and distal inputs to CA2 pyramidal neurons." *Neurobiol Learn Mem*. 2017. Feb; 138:173-181. doi: 10.1016/j.nlm.2016.06.024.
- RA Piskorowski**, Nasrallah K., Diamantopoulou A., Mukai J, Hassan S.I., Siegelbaum SA, Gogos JA, **Chevalyere V**. "Age-dependent specific changes in area CA2 of the hippocampus and social memory deficit in a mouse model of the 22q11.2 deletion syndrome." *Neuron*. 2016. Jan 6;89(1)163-176.
- K Nasrallah, **Piskorowski RA**, **Chevalyere V**. "Inhibitory plasticity permits the recruitment of CA2 pyramidal neurons by CA3." *eNeuro*. Jul 2015. DOI: 10.1523/ENEURO.0049-15.2015
- Y Maury, Côme J, **Piskorowski RA**, Salah-Mohellibi N, Chevalyere V, Peschanski M, Martinat C and Nedelec S. "Combinatorial analysis of developmental cues efficiently converts human pluripotent stem cells into multiple neuronal subtypes." *Nature Biotechnology*. 2016. Jan; 33(1):89-96. doi: 10.1038/nbt.3049.
- RA Piskorowski** and V Chevalyere. "Delta-opioid receptors mediate unique plasticity onto parvalbumin-expressing interneurons in area CA2 of the hippocampus." *J. Neuroscience*. 2013. Sept 4;33(36):14567-78.
- Younts T.J. **Chevalyere V.**, Castillo P.E. "CA1 pyramidal cell theta-burst firing triggers endocannabinoid-mediated long-term depression at both somatic and dendritic inhibitory synapses." *J. Neuroscience*. 2013. 33(34) :13743-57.
- Pavlopoulos E; Trifilieff P; **Chevalyere V**; Zairis S; Fioriti L; Malleret G; Kandel E.R. "Non-Proteolytic Ubiquitination by Neuralized1 Leads to Activation of CPEB3: A Novel Function of the Ubiquitin System in Synaptic Plasticity and Memory Storage." *Cell*. 2011. 147(6): 1369-83.
- P Trifilieff, Rives ML, Urizar E, **Piskorowski RA**, Vishwasrao H, Castrillon J, Schmauss C, Slättman M, Gullberg M and Javitch JA. "Detection of antigen interactions *ex vivo* by proximity ligation assay: endogenous dopamine D2-adenosine A2A receptor complexes in the striatum." *Biotechniques*. 2011. Aug; 51(2):111-8.
- R Piskorowski**, Santoro B, Siegelbaum SA "TRIP8b splice forms act in concert to regulate the localization and expression of HCN1 channels in CA1 pyramidal neurons." *Neuron*. 2011. May 12; 70(3):495-509.
- B Santoro, Hu L, Liu H, Saponaro A, Pian P, **Piskorowski RA**, Moroni A, Siegelbaum SA. "TRIP8b regulates HCN1 channel trafficking and gating through two distinct C-terminal interaction sites." *Journal of Neuroscience*. 2011. March 16; 31(11):4074-86.
- Chevalyere V.** and Siegelbaum S.A. "Strong CA2 pyramidal neuron synapses define a powerful disinaptic cortico-hippocampal loop." *Neuron*. 2010. 66(4):560-72.
- B Santoro, Lee JY, Englot DJ, Gildersleeve S, **Piskorowski RA**, Siegelbaum SA, Winawer MR, Blumenfeld H. "Increased seizure severity and seizure-related death in mice lacking HCN1 channels." *Epilepsia*. 2010. Aug; 51(8):1624-7.
- B Santoro, **Piskorowski RA**, Pian P, Hu L, Liu H and Siegelbaum SA. "TRIP8b splice variants form a family of auxiliary subunits that regulate gating and trafficking of HCN channels in the brain." *Neuron*. 2009. Jun 25; 62(6):747-50.
- Lebesgue D, **Chevalyere V**, Zukin RS, Etgen AM. "Estradiol rescues neurons from global ischemia-induced cell death: multiple cellular pathways of neuroprotection." *Steroids*. 2009. 74(7): 555-61.
- Kaesler P.S., Kwon H., Blundell J., **Chevalyere V.**, Morishita W., Malenka R.C., Powell C.M, Castillo P.E., Südhof T.C. "RIM1 alpha Phosphorylation at Serine 413 by Protein Kinase A is Not Required for Presynaptic Long-Term Potentiation and Learning." *PNAS* 2008. 105(38): 14680-5.

- Heifets B.D., **Chevalyere V.**, Castillo P.E. "Interneuron activity controls endocannabinoid-mediated presynaptic plasticity through calcineurin." *PNAS*. 2008. 105(29):10250-5.
- Lee A., Kyrozis A., **Chevalyere V.**, Kow L.M., Devidze N., Zhang Q., Etgen A., and Pfaff D. "Estradiol modulation of phenylephrine-induced excitatory responses in ventromedial hypothalamic neurons of female rats." *PNAS*. 2008. 105(20):7333-8.
- Lee A., Kyrozis A., **Chevalyere V.**, Kow L.M., Zhou J., Devidze N., Zhang Q., Etgen A., and Pfaff D. "Voltage-Dependent Calcium Channels in Ventromedial Hypothalamic Neurons of Postnatal Rats: Modulation by Estradiol and Phenylephrine." *J. Neuroendocrinology*. 2008. 20(2):188-98.
- R Piskorowski**, Haerberle H, Panditrao MV and Lumpkin EA. "Voltage-activated ion channels and Ca(2+)-induced Ca (2+) release shape Ca (2+) signaling in Merkel cells." *Pflugers Archiv-European Journal of Physiology*. 2008. Oct; 457(1):197-209.
- Chevalyere V.**, Heifets B.D., Kaeser P., Sudhof T.C., Castillo P.E. "Endocannabinoid-mediated long-term plasticity requires cAMP/PKA signalling and RIM1 \checkmark ." *Neuron*. 2007. 54 (5): 801-12.
- J Siemens, Zhou S, **Piskorowski R**, Nikai T, Lumpkin EA, Basbaum AI, King D and Julius D. "Spider toxins activate the capsaicin receptor to produce inflammatory pain." *Nature*. 2006. 444(7116): 208-12.
- Schoch S., Mittelstaedt T., Kaeser P.S., Padgett D., Feldmann N., **Chevalyere V.**, Castillo P.E., Hammer R.E., Han W., Schmitz F., Lin W., Sudhof T.C. "Redundant functions of RIM1 \checkmark and RIM2 \checkmark in Ca²⁺-Triggered Neurotransmitter Release." *EMBO* 2006. 25(24):5852-5863.
- Skeberdis V.A*, **Chevalyere V***, Lau G.C*, Goldberg J.H., Pettit D, Suadicani S.O., Bennett M.V.L., Yuste R., Castillo P.E. and Zukin R.S. "Protein kinase A regulates calcium permeability of NMDA receptors." **equal contribution. Nature Neuroscience*. 2006. 9(4):501-10.
- RA Piskorowski** and Aldrich RW. "Relationship between pore occupancy and gating in BK potassium channels." *Journal of General Physiology*. 2006. 127:557-576.
- Chevalyere V.**, Castillo P.E. "Endocannabinoid-mediated metaplasticity in the hippocampus." *Neuron* 2004. 43 (6):871-81.
- Mato S*, **Chevalyere V***, Robbe D., Pazos A., Castillo P.E., and Manzoni O.J. "A single in-vivo exposure to 9THC blocks endocannabinoid-mediated synaptic plasticity." **equal contribution. Nature Neuroscience*. 2004. 7(6): 585 – 586.
- Chevalyere V.**, Castillo P.E. "Heterosynaptic LTD of hippocampal GABAergic synapses: a novel role of endocannabinoids in regulating excitability." *Neuron*. 2003. 38 (3):461-472.
- Chevalyere V.**, Castillo P.E. "Assessing the role of Ih in synaptic transmission and mossy fiber LTP." *PNAS*. 2002. 99(14): 9538-43.
- R Piskorowski** and Aldrich RW. "Calcium Activation of BK(Ca) Potassium Channels Lacking the Calcium Bowl and RCK Domains." *Nature*. 2002. 420:499-502.
- Chevalyere V.**, Moos F.C. and Desarménien M.G. Interplay between pre- and post-synaptic activities is required for dendritic plasticity and synaptogenesis in the supraoptic nucleus. *J. Neuroscience*. 2002. 22(1):265-273.
- Chevalyere V.**, Moos F.C., Desarménien M.G. "Correlation between electrophysiological and morphological characteristics during maturation of Rat supraoptic neurons." *Eur. J. Neuroscience*. 2001. 13: 1136-1146.
- Joux N., **Chevalyere V.**, Alonso G., Boissin-Agasse L., Moos F.C., Desarménien M.G. and Hussy N. "High voltage activated Ca²⁺ currents in rat supraoptic neurons: biophysical properties and expression of the various channel α 1 subunits." *J. Neuroendocrinology*. 2001. 13: 638-649.
- Chevalyere V.**, Dayanithi G., Moos F.C. and Desarménien M.G. "Developmental regulation of a local positive autocontrol of supraoptic neurons." *J. Neuroscience*. 2000. 20(15): 5813-5819.
- GM Soriano, Ponamarev MV, **Piskorowski RA** and Cramer WA. "Identification of the Basic Residues of Cytochrome *f* Responsible for Electrostatic Docking Interactions with Plastocyanin in Vitro: Relevance to the Electron Transfer Reaction in Vivo." *Biochemistry*. 1998. 37:15120- 1512.

Reviews and Book Chapters:

- Robert V, Cassim S, Chevalyere V and R Piskorowski.** "Hippocampal Area CA2: Properties and Contribution to Hippocampal Function." *Cell and Tissue Research*. (2018). In press.
- Piskorowski RA and Chevalyere V.** "Interneurons in Synaptic Plasticity and Information Storage." *Learning and Memory: A Comprehensive Reference*. (2017). Chapter 7; Volume 4. Mechanisms of Memory. Elsevier Press. Oxford. Pages 179-198. ISBN: 9780128051597
- Chevalyere V, Piskorowski RA.** "Hippocampal Area CA2: An Overlooked but Promising Therapeutic Target." *Trends Mol Med*. 2016 Aug;22(8):645-55. doi: 10.1016/j.molmed.2016.06.007.

Vivien Chevalyre and **Rebecca Piskorowski**, « Schizophrénie: une nouvelle piste dans la compréhension des déficits de mémoire sociale. » *Biofutur*, No 375 (April 2016) pp48-51.

Chevalyre V, **Piskorowski R**. "Modulating excitation through plasticity at inhibitory synapses." *Front Cell Neurosci*. 2014. Mar 28;8:93.

RA Piskorowski and V Chevalyre. "Synaptic integration by different dendritic compartments of hippocampal CA1 and CA2 pyramidal neurons." *Cellular and Molecular Life Sciences*. 2012. Jan; 69 (1):75-88.

Chevalyre V., Takahashi K.A., Castillo P.E. "Endocannabinoid-mediated synaptic plasticity in the CNS." *Annual Review of Neuroscience*. 2006. 29: 37-75.

Castillo P.E., **Chevalyre V**. "Transsynaptic dialogue between excitatory and inhibitory hippocampal synapses via endocannabinoids." Book Chapter: *Synaptic plasticity and transsynaptic signalling*. 2005. Springer Science.

INVITED CONFERENCES AND SEMINARS:

Conferences:

2017: Annual Meeting of the Society for Neuroscience, Symposium speaker, Washington D.C., November 11-15th, 2017. (R.P.)

2017: Neurofrance 2017, Biannual meeting of the French Society of Neuroscience. Symposium speaker, May 17-19th 2017. Bordeaux, France. (R.P.)

2016: Journée du Club Développement des Réseaux Neuronaux, June 17th, Paris France. (V.C.)

2016: 5^{ème} Colloque du GDR Neuromem. Lacanau, France. "CA2 : Bridging the hypothalamus and the hippocampus." May 17-20th, 2016. (R.P. & V.C.)

2015: Annual Meeting of the Japanese Society for Neurochemistry. (R.P. & V.C.)

2015: Spring Hippocampal Research Conference. (R.P. & V.C.)

2014: INC Day: Neurodevelopmental Disorders. (R.P.)

2014: Federation of European Neuroscience Societies (FENS). (R.P. invited speaker, V.C. chair)

2005: Gordon Research Conference on Cannabinoid function in the CNS. Lewiston, USA. (V.C.)

2001: Meeting of the French Neuroscience Society. Toulouse, France (V.C.)

2000: Meeting of the Neuroendocrinology Society. Poitiers, France (V.C.)

1999: Ion Channel Congress. La Londe les Maures, France (V.C.)

Seminars:

2017: Magdeburg University, Germany (V.C.)

2015: RIKEN Brain Science Institute, Wako, Japan. (R.P. & V.C.)

2015: Collège de France, Paris, France (R.P. & V.C.)

2015: Institut du Fer à Moulin, Paris, France (R.P.)

2014: Université Aix Marseille, campus nord, Marseille, France (V.C.)

2014: Centre de Psychiatrie et Neurosciences, Paris, France (V.C.)

2013: Institut de Neurobiologie de la Méditerranée, Montpellier, France (V.C.)

2012: Institut du cerveau et de la moelle épinière, Paris, France (V.C.)

2012: Institut de Génétique et de Biologie Moléculaire et Cellulaire. Strasbourg, France (R.P.)

2011: Institut du Fer à Moulin. Paris, France (V.C.)

2011: Institut de Génétique Fonctionnelle. Montpellier, France (V.C.)

2010: University of North Carolina Wilmington, Wilmington, USA (R.P.)

2010: Albert Einstein College of Medicine. New York, USA (V.C.)

2009: Cornell University. New York, USA (V.C.)

2007: Hunter College. New York, USA (V.C.)

TEACHING EXPERIENCE AND SUPERVISION:

Rebecca Piskorowski:

2015 – present: Supervising a Postdoctoral Fellow

2014 – present: Supervising a PhD student.

2012 – 2015: Experimental Instructor of Electrophysiology, Ecole Neurosciences à Paris spring course, “Optical Imaging and Electrophysiological Recording in Neuroscience” 17-27 April 2012, 18-28 June 2013 and 9-19 June 2015.
2015: Lecturer / Instructor. *L'école de l'Inserm Liliane Bettencourt*, L'école de février, 30 janvier 2015.
2015: Lecturer / Instructor. Université Jussieu UENB Module M2 Hippocampe, Physiology of Cells and Synapses.
2006 – 2011: Supervised 4 PhD rotation students and two undergraduate students.
2003: Teaching Assistant Stanford University. Molecular and Cellular Physiology: Molecular and Membrane Physiology.
2002: Teaching Assistant Stanford University. Principles of Cell Physiology Biochemistry/ Biological Macromolecules.
2000: Teaching Assistant Stanford University. Molecular and Cellular Physiology.

Vivien Chevalerey:

2012 – present: Supervision of one PhD student.
2013 – present: Supervision of one Postdoctoral Fellow.
2016 – Lecture for Neurodevelopment Course at University Jussieu
2014 – 2015: Lecture on plasticity at inhibitory synapses for the Master Degree program at University Jussieu
2011-2015: Lecture on excitatory transmission for the Master Degree program at University Paris Descartes.
2013: Woods Hole Lecture on synaptic plasticity
2011– 2015: Teaching for the experimental part for International Course on imaging and electrophysiological recording in neuroscience organized by the Neuroscience School of Paris.
2002–2009: Supervision of 9 graduate students during their rotation year.
2005–2007: Supervision of one PhD student.