

Stephen Sammut
Assistant Professor of Psychology
Franciscan University of Steubenville
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Steubenville, OH 43952
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Education

<i>University of Malta, Msida, Malta</i> Ph.D. in Neuroscience	<i>1995-1999</i>
<i>Pharmacy College, Monash University Parkville, VIC, Australia</i> B.Pharm.	<i>1990-1993</i>

Academic Positions

A. Teaching positions

<i>Assistant Professor of Psychology Franciscan University of Steubenville, OH</i> Responsible for teaching <ul style="list-style-type: none">• Motivation & Emotion,• Psychological Statistics,• Experimental Psychology (including lab),• Biological Psychology	<i>August 2010 – present</i>
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<i>Adjunct Assistant Professor, Department of Neuroscience, Carthage College, Kenosha, WI</i> Responsibilities: Teaching of 4 credits per class <ul style="list-style-type: none">• Neuroscience II: Electrical & Chemical properties (09/2009-12/2009)• Introduction to Psychology (02/2010 – 05/2010)• (invited to teach both classes in both Fall 2010 & Spring 2011 semesters offer turned out to accept position at FUS)	<i>2009-2010</i>
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B. Research positions

*Post Doctoral Research Associate & Lab Manager
Department of Neuroscience (Lab PI: Dr. AR. West)
Rosalind Franklin University of Medicine and Science
North Chicago, IL 60064*

June 2004 – August 2010

Responsibilities:

- i) *in vivo* experiments – Nitric oxide electrochemistry; electrophysiology (local field potentials, single unit) or combined; reverse microdialysis (combined with electrophysiology/electrochemistry)
- ii) Evaluation and analysis of acquired data and its relevance to the direction of the project.
- iii) Publishing of findings
- iv) Reviewing of scientific paper
- v) Guiding, training and mentoring students, post-docs and other trainees in research methods, including the electrophysiological, electrochemical, histological techniques utilized in our laboratory, in the statistical analysis and interpretation of the acquired data.
- vi) Daily running of the laboratory in the capacity of lab manager including the overseeing of the budget and laboratory spending.

*Postdoctoral Fellow
Albany Medical College,
Center for Neuropharmacology and Neuroscience (MC136),
47 New Scotland Ave, Albany NY 12208*

01/2002-05/2004

*Research scientist
Senior Research Scientist (as of 01/1996)
University of Malta, Msida, Malta, Europe*

09/1995-12/2001

Contributions to neuroscience research at the University of Malta:

- i) **Establishing of a voltammetry & confocal microscopy laboratory.**
- ii) **Establishing of two Behavioral laboratories (locomotor activity and drinkometers).**

Duties & Accomplishments:

- i) Full management of the laboratories including ordering, laboratory and equipment maintenance and other associated paper work and equipment set-up.
- ii) Management of animal facility

- iii) Laboratory modification (including woodwork, plumbing and some basic electrical modifications)
- iv) Mentoring and guiding undergraduate students.

Research Interests

Animal models of disease remain crucial as a tool in science, helping us understand the mechanisms behind various human diseases by attempting to imitate to the best of our ability the pathologies of interest. In psychology (and related sciences), such models of disease are utilized to investigate the physiological mechanisms involved in psychiatric disorders. It is my goal to utilize such behavioral modeling of psychiatric disorders such as depression, schizophrenia, Parkinson's disease and drug abuse to investigate the neurobiological mechanisms that contribute to dysfunctional behavior.

Technique Experience

Voltammetry/Amperometry:

Fast Cyclic voltammetry using Millar Voltammeter and EI400; simultaneous extracellular and voltammetric at the same carbon fiber electrode or using adjacent electrodes. Amperometry using Apollo 4000 (WPI)

Electrophysiology:

Field potential, Multi-unit and single unit recordings using glass, carbon or tungsten microelectrodes – alone or in combination with voltammetry

Behavioral experiments:

Locomotor activity monitors, Drinkometers.

Behavioral models:

Parkinson's disease – 6-OHDA, partial & full lesion
Schizophrenia – Neonatal model of neuronal Nitric Oxide Synthase inhibition
Depression – utilizing Interferon-alpha or mild stress and monitoring sucrose consumption
Drug Abuse – using behavioral sensitization – escalating behavioral responses to repeated exposure to psychostimulant drugs/drugs of abuse associated

Confocal Laser Scanning Microscopy:

Attended course on "3D Microscopy of Living Cells" at the University of British Columbia, Vancouver, BC, Canada; Calcium and cell membrane staining in brain slices using Biorad MRC1024 equipped with a Kr-Ar Laser (visible light)

Grants

- October, 2011: \$62,000 behavioral lab equipment - Donation acquired from TSE Systems, Inc. in Chesterfield, MO for Franciscan University of Steubenville's Department of Psychology, Sociology, and Social Work

Ad Hoc Review of Scientific Manuscripts

Anatomical Record; Brain, Behavior and Immunity; CNS Neuroscience & Therapeutics; European Journal of Neuroscience; Journal of Neuroscience Research; Journal of Neurochemistry; Mitochondrion; Molecular and Cellular Biochemistry; Neuropharmacology; Neuropsychopharmacology; Neuroscience Letters; Psychoneuroendocrinology; Synapse.

Professional Society Memberships

Society for Neuroscience (SFN)
Fellowship of Catholic Scholars
Society of Catholic Social Scientists

Peer Reviewed Publications

1. Tseng KY, Caballero A, Dec A, Cass DK, Simak N, Sunu E, Park MJ, Blume SR, **Sammut S**, Park DJ, West AR. (2011) Inhibition of Striatal Soluble Guanylyl Cyclase-cGMP Signaling Reverses Basal Ganglia Dysfunction and Akinesia in Experimental Parkinsonism PLoS ONE 6(11): e27187. doi:10.1371/journal.pone.0027187
2. Hoque, K.E., Indorkar, R.P., **Sammut, S.** and West, A.R. (2009). Dopaminergic modulation of nitric oxide synthase activity in subregions of the rat nucleus accumbens. In preparation.
3. **Sammut, S.**, Threlfell, S., and West, A.R. (2010) Nitric oxide-soluble guanylyl cyclase signaling regulates corticostriatal transmission and short-term synaptic plasticity of striatal projection neurons recorded in vivo. Neuropharmacology; 58(3):624-631 (Published Online December 4, 2009, doi:10.1016/j.neuropharm.2009.11.011)
4. Hoque, K.E., Indorkar, R.P., **Sammut, S.** and West, A.R. (2010). Impact of dopamine-glutamate interactions on striatal neuronal nitric oxide synthase activity. Psychopharmacology 207:571-581 (Published online October 9, 2009; doi: 10.1007/s00213-009-1687-0)
5. Threlfell S., **Sammut S.**, Menniti, F.S., Schmidt, C.J., West, AR. (2009) Inhibition of phosphodiesterase 10A increases the responsiveness of striatal projection neurons to stimulation of frontal cortical afferents. J Pharmacol Exp Ther.; 328:785-795 (Published online December 4, 2008; doi: 10.1124/jpet.108.14633)
6. **Sammut S.** & West AR. (2008). Acute cocaine administration increases NO efflux in the rat prefrontal cortex via a neuronal NOS-dependent mechanism. Synapse Sep; 62(9):710-3

7. Ondracek JM., Dec A., Hoque KE., Lim SA., Rasouli G., Indorkar RP., Linardakis J., Klika B., Mukherji S., Burnazi M., Threlfell S., **Sammur S.**, & West AR. (2008). Feed-forward excitation of striatal neuron activity by frontal cortical activation of nitric oxide signaling in vivo. *Eur. J. Neurosci.*, 27(7):1739–1754 (published online, 26 March 2008, doi:10.1111/j.1460-9568.2008.06157.x)
8. **Sammur S.**, Park DJ, and West AR. Frontal cortical afferents facilitate striatal nitric oxide transmission in vivo via a NMDA receptor and neuronal nitric oxide synthase-dependent mechanism. *Journal of Neurochemistry*, 2007; 103: 1145-1156 (published online, July 2007; doi: 10.1111/j. 1471-4159.2007.04811.x)
9. **Sammur S.**, Bray KE., West AR. Dopamine D2 receptor-dependent modulation of striatal NO synthase activity. *Psychopharmacology (Berl)*. 2007 Apr; 191(3):793-803 (published online, 7 January 2007; doi: 10.1007/s00213-006-0681-z)
10. **Sammur S.**, Dec A., Mitchell D., Linardakis J., Ortiguela M., West AR. Phasic Dopaminergic transmission increases NO efflux in the rat dorsal striatum via a neuronal NOS and a dopamine D1/5 receptor-dependent mechanism. *Neuropsychopharmacology* 31: 493-505, 2006. (published online, July 2005; doi: 10.1038/sj.npp.1300826) – Histology figure was featured on front cover of journal.
11. **Sammur S.**, Goodall G., Muscat R. Antidepressant reversal of Interferon-alpha-induced anhedonia. *Physiol Behav* 75:765-772, 2002
12. **Sammur S.**, Goodall G., Muscat R. Acute Interferon-alpha administration modulates sucrose consumption in the rat. *Psychoneuroendocrinology* 26:261-272, 2001

Book Chapters

1. West AR., **Sammur S.**, Ariano MA. Striatal Nitric Oxide–cGMP Signaling in an Animal Model of Parkinson’s Disease. In: *Cortico-Subcortical Dynamics in Parkinson’s Disease* (Editor Tseng, KY) Humana Press, New York. Chapter 11. pp 171-184, 2009.
2. Liu D., **Sammur S.**, West AR. Nitric oxide signaling modulates the responsiveness of striatal medium spiny neurons to electrical stimulation of the substantia nigra: Striatal nitric oxide signaling. In: *The Basal Ganglia VIII* (Editors: Bolam, JP.; Ingham, CA. and Magill, PJ.) Springer Science and Business Media, New York. pp 503-512, 2005.
3. Muscat R., Goodall G., **Sammur S.** Attenuation of Interferon-alpha induced reduction of dopamine release in the nucleus accumbens core following behavioural sensitisation to amphetamine: an ex-vivo voltammetric study. In *Monitoring Molecules in Neuroscience: Proceedings of the 9th International Conference on In Vivo Methods*. (Editors: O’Connor, W.T.; Lowry J.P.; O’Connor, J.J.; O’Neill, R.D.) University College Dublin. pp 412-413, 2001.

4. **Sammut S.**, Goodall G., Muscat R. Recombinant Human Interferon-alpha modulates evoked dopamine release in the nucleus accumbens. In *Monitoring Molecules in Neuroscience: Proceedings of the 9th International Conference on In Vivo Methods*. (Editors: O'Connor, W.T.; Lowry J.P.; O'Connor, J.J.; O'Neill, R.D.) University College Dublin. pp 414-415, 2001.

Published Abstracts and Posters

1. **Sammut S.**, Schmidt C J, West AR. Facilitation of corticostriatal transmission following pharmacological inhibition of striatal phosphodiesterase 10A: Role of soluble guanylyl cyclase-cGMP signaling pathways. Program No. 591.3. 2010 Neuroscience Meeting Planner. San Diego, CA: *Society for Neuroscience, 2010. Online.*
2. West AR, Park DJ, **Sammut S.**, Sunu EK, Park MJ, Blume-Rice S, Tseng KY. Pharmacological disruption of striatal soluble guanylyl cyclase-cyclic GMP signaling reverses electrophysiological, metabolic, and behavioral abnormalities associated with experimental parkinsonism. Program No. 857.1. 2010 Neuroscience Meeting Planner. San Diego, CA: *Society for Neuroscience, 2010. Online.*
3. Park D, **Sammut S.**, Sunu E, Park, M, Sobhani R, Blume S, Tseng K, West AR. Inhibition of soluble guanylyl cyclase reverses electrophysiological and behavioral abnormalities associated with experimental parkinsonism. Program No. 532.26. 2009 Neuroscience Meeting Planner. Chicago, IL: *Society for Neuroscience, 2009. Online.*
4. Hoque KE, **Sammut S.**, West AR. Dopamine D2 receptor-dependent modulation of nitric oxide synthase activity in the rat striatal complex. Program No. 566.1. 2009 Neuroscience Meeting Planner. Chicago, IL: *Society for Neuroscience, 2009. Online.*
5. Hoque KE, Indorkar RP, **Sammut S.**, West AR. Dopaminergic modulation of nitric oxide synthase activity in the nucleus accumbens: Histochemical analysis of regional subdivisions. Program No: 273.2. *Society for Neurosci Abstr; Online*, 2008, Washington DC.
6. Park DJ, **Sammut S.**, Hoque KE, West AR. Impact of striatal NMDA and dopamine D1 receptor interactions on neuronal NOS activity: Studies combining in vivo amperometry and reverse microdialysis. Program No: 273.6. *Society for Neurosci Abstr; Online*, 2008, Washington DC.
7. Perez MF, Gabach L, Cancela LM, **Sammut S.**, West AR, HU X-T, Nasif FJ. Inhibition of nitric oxide synthase prevents behavioral sensitization and associated alterations in neuronal excitability in the rat mPFC after repeated cocaine administration Program No: 359.6. *Society for Neurosci Abstr; Online*, 2008, Washington DC.
8. West AR, Threlfell S, **Sammut S.**, Lim SAO, Menniti FS, Schmidt CJ. Differential regulation of cortically-evoked activity in striatal projection neuron subpopulations following pharmacological inhibition of phosphodiesterase 10A. Program No: 578.4. *Society for Neurosci Abstr; Online*, 2008, Washington DC.

9. **Sammut S** and West AR. Acute cocaine administration increases NO efflux in the rat prefrontal cortex and dorsal striatum in vivo. Program No: 561.15. *Society for Neurosci Abstr; Online*, 2008, Washington DC.
10. Park DJ, **Sammut S**, Ariano MA and West AR. Inhibition of Phosphodiesterase 10A activity increases the membrane excitability and up state duration of striatal medium spiny neurons recorded in vivo. Program No: 516.5. *Society for Neurosci Abstr; Online*, 2007, San Diego, CA.
11. **Sammut S**, Park DJ and West AR. Frontal cortical facilitation of nitric oxide transmission modulates local field potential activity in the striatum. No: 514.10. *Society for Neurosci Abstr; Online*, 2007, San Diego, CA
12. Anthony R. West, Alexander Dec, Diana Park, Janie Ondracek, Kristina Hoque, Migena Burnazi, Sarah Threlfell, and **Stephen Sammut**. Activation of striatal nitric oxide signaling by dopaminergic and glutamatergic transmission: Differential modulation of striatal neuron activity in vivo. *IBAGS IX 2007, Egmond aan Zee, the Netherlands*.
13. **Sammut S**, West AR. Dopamine D₂ receptor-dependent modulation of striatal nitric oxide synthesis in vivo. Program No: 56.16. *Society for Neurosci Abstr; Online*, 2006, Atlanta, GA.
14. Ondracek JM, **Sammut S**, Dec A, Park D, Mukherji SJ, Klika B, Chakroborty S, Linardakis J, Burnazi M, West AR. Role of nitric oxide signaling in corticostriatal feed-forward modulation of neuron activity in vivo. Program No: 352.17. *Society for Neurosci Abstr; Online*, 2006, Atlanta, GA.
15. Dec AM, Park D, Burnazi M, Chakroborty S, **Sammut S**, West AR. Facilitation of striatal nitric oxide signaling by dopamine D_{1/5} activation inhibits subsequent corticostriatal activation of single-unit activity in vivo. Program No: 556.20. *Society for Neurosci Abstr; Online*, 2006, Atlanta, GA.
16. **Sammut S**, Dec A, Linardakis J, West AR. Stimulation of the substantia nigra increases striatal nitric oxide efflux via a D_{1/5}-mediated mechanism. *Program No: 988.6. Soc Neurosci Abstr; Online*, 2005, Washington DC.
17. Grissell AE, **Sammut S**, West AR, Ariano MA. Striatal cGMP signaling in a model of early Parkinson's Disease. *Soc Neurosci Abstr* 2005, Washington DC
18. **Sammut S**, Liu D, Dec A, Mitchell D, Linardakis J, Ortiguera M, West AR. Nitric oxide signaling modulates the responsiveness of striatal medium spiny neurons to nigrostriatal inputs. *Soc Neurosci Abstr* 2004, San Diego. Poster No: 45.1
19. **Sammut S**, O'Donnell P. Simultaneous *in vivo* local field potential and electrochemical recordings in the nucleus accumbens. *Soc Neurosci Abstr* 2003, New Orleans. Poster No: 461.6
20. Muscat R., **Sammut S**. Naltrexone attenuation of amphetamine-induced sensitised locomotor behaviour. Abstracts of a Workshop on New Advances in the Understanding and Treatment of Addiction, September 19-21, 2002, University of Sussex, Brighton, UK. *Behavioural Pharmacology* 13(5):495-496.

21. **Sammut S.**, Goodall G., Muscat R. Attenuation of Interferon-alpha-induced reduction of dopamine release in the nucleus accumbens core following behavioural sensitisation to Amphetamine. Abstracts of the First Joint Meeting of the EBBS-EBPS – September 8-12 2001, Marseille, France. *Behavioural Pharmacology* 12 Suppl 1:S88.
22. **Sammut S.**, Bethus I., Muscat R., Goodall G. A central-peripheral interaction in the neurochemical and behavioural effects of IFN-alpha. Abstracts of the First Joint Meeting of the EBBS-EBPS – September 8-12 2001, Marseille, France. *Behavioural Pharmacology* 12 Suppl 1:S88.
23. Bethus I., **Sammut S.**, Muscat R., Goodall G. Antidepressants block IFN-alpha-induced anhedonia in the rat. Abstracts of the First Joint Meeting of the EBBS-EBPS – September 8-12 2001, Marseille, France. *Behavioural Pharmacology* 12 Suppl 1:S7.
24. **Sammut S.**, Muscat R. Baclofen and muscimol induce dopamine antagonist-like effects on the sucrose concentration-intake curve. DOPAMINE '98, Strasbourg, France July 22-25 1998.
25. **Sammut S.**, Gooijer S., Muscat R. MK-801 and raclopride induce similar effects on the sucrose concentration-intake curve. Joint Meeting between the British Association for Psychopharmacology and the Canadian College for Neuropsychopharmacology. Cambridge 13 – 17 July 1997.

Invited Lectures

1. The traumatized synapse: How Neurons react to what the body feels. 38th Annual Fall Institute; October 8 2004; Albany, NY.
2. Neurophysiology of Psychiatric disorders. Sidney Albert Training and Research Institute (SATRI); April 23 2004; Albany, NY.
3. The role of interferon-alpha in the mesolimbic DA system. July 2001; Center for Neuropharmacology & Neuroscience, Albany Medical College, Albany, NY, USA
4. The role of interferon-alpha in the mesolimbic DA system. July 2001; Dept of Neuroscience, University of Pittsburgh, Pittsburgh, PA, USA
5. The role of interferon-alpha in the mesolimbic DA system. Institut François Magendie; 1999 October 18; Bordeaux, France
6. Recombinant human IFN-alpha-A modulates dopamine release in the nucleus accumbens. The Fourth Maltese Medical School Conference. 1999 March 10; Malta.
7. Naltrexone Attenuates amphetamine-induced sensitised locomotor behaviour. ICAA – 42nd International Institute on the Prevention and Treatment of Dependencies; 1998 August 30 – September 4; Malta.

Internal/External Service

Media Interview: Interview with Relevant Radio – Morning Air (Sean Harriott, second hour) regarding Creation, Evolution and Darwinism

7/30/2010

Presented a talk to the FUS Men’s Ministry – Eat, Drink and Discuss Series: “Tried by fire: The mind’s battle for the body.”

12/2/2011