

- Born in Venice, Italy, August 10, 1964
- 1989 Medical Doctor degree with highest distinction, University of Padova – Italy
- 1989-1991 Physician at the Institute of Orthopedics and Traumatology, University of Padova, Italy
- 1990-1991 Physician of the Italian air Force, Military Airport of Istrana, Italy
- 1992-1995 PhD student in Neuroscience at the Dept. of Neurological and Visual Science, University of Verona, Italy (neuromuscular junction development and trophism. Supervisor Alberto Cangiano)
- 1996 Degree PhD in Neuroscience
- 2002 Assistant Professor at the Dept. of Neurological and Visual Science, University of Verona, Italy
- 2002/2005 Research Scholar in the lab of Bernardo Sabatini, Dept. of Neurobiology, Harvard Medical School, Boston MA (AMPA/NMDA receptor development at the single spine level in cortical pyramidal neurons, synaptic plasticity in the striatal medium spiny neurons.)
- 2006/to-day: Assistant Professor at the Dept. of Neurological and Movement Sciences, University of Verona
- 2013: 3 months visit at the Dept of Psychology, University of Otago, Dunedin NZ, lab of Prof Wickliffe Abraham

Research Interests

- Homeostatic control of synaptic plasticity
- Modulation of hippocampal synaptic plasticity during Alzheimer disease
- Role of motoneuron firing pattern in the process of synapse competition and elimination during the development of the neuromuscular junction
- Nerve-muscle trophic interactions
- Endocannabinoid-mediated plasticity of synaptic function in the Lateral Hypothalamus involved in the control of total body fat mass
- Endocannabinoid-mediated modulation of skeletal muscle function
- Plasticity of neural control of ejaculation.

Scientific Collaborations

- Prof Wickliffe Abraham, Dept of Psychology, University of Otago, Dunedin NZ.
- Dr. Enzo Di Marzo and Dr.ssa Luigia Cristino, Endocannabinoid Research Group, Institute of Biomolecular Chemistry, CNR Pozzuoli Italy

-Prof Bruno Bonetti, Neurology Division, Borgo Trento Hospital, Verona

-Prof. Lorenzo Cangiano, Department of Translational Researches, University of Pisa

-Prof.ssa Raffaella Mariotti, Dipartimento di Neuroscienze Biomedicina e Movimento, Università di Verona

Grants and Fellowships

-1996: Glaxo-Wellcome fellowship: Neurotrophic control and neuromuscular synaptogenesis

-2006: Italian Ministry of the Research, fellowship “PRIN2006”: Role of action potentials in controlling the plastic phenomena of the nervous system.

-2008: Bank of San Paolo – Program in Neuroscience: Interaction between endocannabinoid and hypocretin system as a novel hypothalamic regulatory mechanism

-2017: Verona Brain Research Foundation (VBRF) - Fondi di ricerca per le Neuroscienze: Fire to wire: Action Potentials for the Priming of Memory Mechanisms

Publications

Articles in scientific journals

1. Dolci S., Mannino L., Campanelli A., Rossi E., Bottani E., Ciarpella F., Karkossa I., Setten E., Savino B., Pruonto G., Piazza N., Gianoli S., Amenta A., **Busetto G.**, Pezzotta A., Di Chio M., Castagna A., Martinelli N., Barone I., Boschi F., Doherty A., Scupoli M.T., Cavallini C., Malpeli G., Malik Z., Sagripanti L., Silani V., Cristofori P., Scanziani E., Sandri M., Pistocchi P., Bossolasco P., Endrizzi M., Schubert K., Fumagalli G.F., Locati M., Bifari F., Decimo I.
Tumor-associated macrophages enhance tumor innervation and spinal cord repair.
bioRxiv **2024**.12.19.629374; doi: <https://doi.org/10.1101/2024.12.19.629374>
2. **Busetto G.**, Cangiano A.
Pre- and post-synaptic roles of action potential activity in synapse elimination revealed by using ectopic neuromuscular junction formation by a foreign nerve.
Neuroscience Letters **2020**, doi: 10.1016/j.neulet.2020.134835
3. Iannotti FA., Pagano E., Guardiola O., Adinolfi S., Saccone V., Consalvi S., Piscitelli F., Gazzerro E., **Busetto G.**, Carrella D., Capasso R., Puri PL., Minchiotti G., Di Marzo V.
Genetic and pharmacological regulation of the endocannabinoid CB1 receptor in Duchenne muscular dystrophy.
Nature Communications **2018**, vol. 9, 1-13, doi: 10.1038/s41467-018-06267-1

4. Buffelli M, Tognana E, Cangiano A, **Busetto G**.
Activity-dependent vs neurotrophic modulation of acetylcholine receptor expression: evidence from rat soleus and extensor digitorum longus muscles confirms the exclusive role of activity.
European Journal of Neuroscience **2018**, vol. 47, 1474-1481, doi: 10.1111/ejn.14020
5. Becker TM, Favero M, Di Marzo V, Cristino L, **Busetto G**.
Endocannabinoid dependent disinhibition of orexinergic neurons: electrophysiological evidence in leptin-knockout obese mice
Molecular Metabolism **2017**, doi: 10.1016/j.molmet.2017.04.005
6. Cristino L, Luongo L, Imperatore R, Boccella S, Becker T, Morello G, Piscitelli F, **Busetto G**,
Maione S, Di Marzo V.
Orexin-A and endocannabinoid activation of the descending antinociceptive pathway underlies altered pain perception in leptin signalling deficiency
Neuropsychopharmacology **2016**; vol. 41, 508–520; doi:10.1038/npp.2015.173; published online 15 July 2015
7. Favero M, Cangiano A, **Busetto G**. Lesson from the neuromuscular junction: role of pattern of nerve activity in development.
Editorial in *Neural Regeneration Research* **2015**; vol. 10, Issue 5, 686-688. *Invited*
8. Favero M, Cangiano A, **Busetto G**
Adult Rat Motor Neurons Do Not Re-Establish Electrical Coupling during Axonal Regeneration and Muscle Reinnervation
PLOS one **2015**; DOI: 10.1371/journal.pone.0123576, Published: April 13, 2015
9. Turano E, **Busetto G**, Marconi S, Guzzo F, Farinazzo A, Commisso M, Bistaffa E, Musumeci S, Sotgiu S, Bonetti B
Neurotoxicity and synaptic plasticity impairment of N-acetylglucosamine polymers: implications for Alzheimer's disease
Neurobiology of Aging **2015**; vol. 36 , Issue 5 , 1780 - 1791
DOI:10.1016/j.neurobiolaging.2014.12.033
10. Favero M, Cangiano A, **Busetto G**
The timing of activity is a regulatory signal during development of neural connections.
Journal of Molecular Neuroscience **2014**; vol. 53: 324-329; DOI: 10.1007/s12031-013-0128-z. E-published in 2013
11. Favero M, Cangiano A, **Busetto G**
Hebb-based rules of neural plasticity: are they ubiquitously important for the refinement of synaptic connections in development?
The Neuroscientist **2014**; vol. 20: 8-14; DOI: 10.1177/1073858413491148
E-published in 2013. *Cover picture*.
12. Cristino L, **Busetto G**, Imperatore R, Ferrandino I, Palomba L, Silvestri C, Petrosino S, Orlando P, Bentivoglio M, Mackie K, Di Marzo V
Obesity-driven synaptic remodeling affects endocannabinoid control of orexinergic neurons.
Proceedings of the National Academy of Sciences (PNAS) **2013**; vol. 110, no. 24: E2229-E2238; DOI: 10.1073/pnas.1219485110. Received a *Commentary* in the same issue.
13. Favero M, **Busetto G**, Cangiano A
Spike timing plays a key role in synapse elimination at the neuromuscular junction.
Proceedings of the National Academy of Sciences (PNAS) **2012**; vol. 109, no 25: E1667-E1675; DOI: 10.1073/pnas.1201147109.
14. Buffelli M, **Busetto G**, Favero M, Cangiano L, Cangiano A
Synaptic plasticity at developing neuromuscular junctions: role of the timing of spike activity in the competing inputs.
Archives Italiennes de Biologie **2011**; 149 (Suppl.): 167-174

15. Favero M, Buffelli M, Cangiano A, **Busetto G**
The timing of impulse activity shapes the process of synaptic competition at the neuromuscular junction.
Neuroscience **2010**; 167: 343-353.
16. **Busetto G**, Higley MJ, Sabatini BL
Developmental presence and disappearance of postynaptically silent synapses on dendritic spines of rat layer 2/3 pyramidal neurons.
Journal of Physiology **2008**; 586.6: 1519-1527.
17. Favero M, Lorenzetto E, Bidoia C, Buffelli M, **Busetto G**, Cangiano A.
Synapse formation and elimination: role of activity studied in different models of adult muscle reinnervation.
Journal of Neuroscience Research **2007**; 85:2610-9.
18. Buffelli M, **Busetto G**, Bidoia C, Favero M, Cangiano A.
Activity-dependent synaptic competition at mammalian neuromuscular junctions.
News in Physiological Sciences **2004**; 19:85-91. *Cover picture*.
19. **Busetto G**, Buffelli M, Cangiano L, Cangiano A.
Effects of evoked and spontaneous motoneuronal firing on synapse competition and elimination in skeletal muscle.
Journal of Neurocytology **2003**; 32:795-802. Became *Brain Cell Biology* in Dec. 2005
20. Buffelli M, **Busetto G**, Cangiano L, Cangiano A.
Perinatal switch from synchronous to asynchronous activity of motoneurons: link with synapse elimination.
Proceedings of the National Academy of Sciences (PNAS) **2002**; 99(20):13200-5.
21. Buffelli M, **Busetto G**, Cangiano A.
The use of in vivo direct drug application to assess neural regulation of muscle properties.
Journal of Neuroscience Methods **2001**; 106:113-20.
22. **Busetto G**, Buffelli M, Tognana E, Bellico F, Cangiano A.
Hebbian mechanisms revealed by electrical stimulation at developing rat neuromuscular junctions.
Journal of Neuroscience **2000**; 20:685-95. *Cover picture*.
23. Pasino E, Buffelli M, **Busetto G**, Cangiano A.
Use of dexamethasone with TTX block of nerve conduction shows that muscle membrane properties are fully controlled by evoked activity.
Brain Research **1997**; 770:242-7.
24. Cangiano A, Buffelli M, **Busetto G**, Tognana E, Pasino E.
Studies on anterograde trophic interactions based on general muscle properties.
Archives Italiennes de Biologie **1997**; 135:331-41.
25. Pasino E, Buffelli M, Arancio O, **Busetto G**, Salviati A, Cangiano A.
Effects of long-term conduction block on membrane properties of reinnervated and normally innervated rat skeletal muscle.
Journal of Physiology **1996**; 497: 457-72.
26. Cangiano A, Buffelli M, **Busetto G**, Pasino E.
Fisiologia della trasmissione neuromuscolare.
Rivista Italiana di Neuroscienze **1993**; 1: 12-22.

Chapters in books

Busetto G., Tognana E., Buffelli M., Pasino E., Cangiano A.
Role of activity in ectopic synapse formation in skeletal muscle.
Livre Jubilaire Professor Gian Carlo Guazzi 1997; Rossi A., Annunziata P. Editors; Tipografia Senese.

Curatela

Guyton e Hall
Fisiologia Medica Test di autovalutazione **2017**, terza edizione, Casa editrice Edra.

Relevant citations: the following articles have been cited in

1

Busetto G, Buffelli M, Tognana E, Bellico F, Cangiano A. Hebbian mechanisms revealed by electrical stimulation at developing rat neuromuscular junctions.
Journal of Neuroscience **2000**; 20:685-95.

Cited in:

1 Fundamental Neuroscience, Academic Press 4th edition, chapter 19: Synapse elimination, by Tapia JC and Lichtman JW; 2013

2 Development of the nervous system. 3th edition, Elsevier 2012. Authors: Sanes DH, Reh TA, Harris WA, Chapter 9: Refinement of synaptic connections.

3 Patterning and Cell Type Specification in the Developing Cns and Pns, Academic Press, Elsevier 2013, Edited by: John Rubenstein and Pasko Rakic, Chapter 5: The formation and maturation of neuromuscular junctions; ISBN: 978-0-12-397265-1

2

Buffelli M, **Busetto G**, Cangiano L, Cangiano A. Perinatal switch from synchronous to asynchronous activity of motoneurons: link with synapse elimination.
Proceedings of the National Academy of Sciences (PNAS) **2002**; 99(20):13200-5.

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1 Fundamental Neuroscience, 4th edition, Academic Press 2013. Chapter 19: Synapse elimination, by Tapia JC and Lichtman JW.

2 Patterning and Cell Type Specification in the Developing Cns and Pns, Academic Press, Elsevier 2013, Edited by: John Rubenstein and Pasko Rakic, Chapter 5: The formation and maturation of neuromuscular junctions; ISBN: 978-0-12-397265-1

3

Buffelli M, **Busetto G**, Bidoia C, Favero M, Cangiano A. Activity-dependent synaptic competition at mammalian neuromuscular junctions.
News in Physiological Sciences **2004**; 19:85-91.

Cited in:

1 Principles of Neural Science, Mc Grow Hill 5th edition, 2013. Chapter 55: Formation and elimination of synapses, by Sanes JR and Jessel TM.

4

Busetto G, Higley MJ, Sabatini BL. Developmental presence and disappearance of postynaptically silent synapses on dendritic spines of rat layer 2/3 pyramidal neurons.
Journal of Physiology **2008**; 586.6: 1519-1527.

Cited in:

1 Silent synapses and the emergence of a postsynaptic mechanism for LTP. Kerchner GA and Nicoll RA, *Nat. Rev. Neurosci.* 2008, 9:813, Fig 4.