

## CURRICULUM VITAE

Gianfranco Bosco, nato a Militello V.C. (CT), 16 Gennaio 1966, cittadino italiano.

Studi: 1990 Laurea in Medicina e Chirurgia summa cum laude, Università di Catania,  
1997 Dottorato di ricerca in Fisiopatologia del Sistema Nervoso Periferico, Università di Catania.

Carriera: 1990-92 Borsista, Dipartimento di Scienze Fisiologiche, Università Studi di Catania  
1992 -96 Postdoctoral Fellow, Department of Physiology, University of Minnesota, Minneapolis;  
1997-98 Research Associate / Assistant Professor, Department of Physiology, University of Minnesota, Minneapolis;  
1998-2000 Research Associate / Assistant Professor, Department of Neuroscience, University of Minnesota, Minneapolis;  
2001-2004 Visiting Professor, Department of Neuroscience, University of Minnesota, Minneapolis;  
2000-2005 Ricercatore, Dipartimento di Neuroscienze, Università di Roma "Tor Vergata";  
2005-2013 Professore associato, Dipartimento di Neuroscienze e Dipartimento di Medicina dei Sistemi, Università di Roma "Tor Vergata";  
2013-2016 Professore Straordinario, Dipartimento di Medicina dei Sistemi, Università di Roma "Tor Vergata";  
2016- Professore Ordinario, Dipartimento di Medicina dei Sistemi, Università di Roma "Tor Vergata";

Riconoscimenti: Premio SIF 1998

### **Esperienza Didattica**

Neuroanatomia Funzionale College of Biology University of Minnesota Minneapolis, MN USA

Fisiologia Umana Corso di Laurea in Ingegneria Medica Università di Roma "Tor Vergata"

Fisiologia Umana Corso di Laurea in Medicina e Chirurgia Università "Nostra Signora del Buon Consiglio" Tirana, Albania

Fisiologia Umana Corso di Laurea in Medicina e Chirurgia Università di Roma "Tor Vergata"

Fisiologia Umana Corso di Laurea in Scienza e Tecnica dello Sport Università di Roma "Tor Vergata"

Medicina Pratica II Corso di Laurea in Medicina e Chirurgia Università di Roma "Tor Vergata"

Physiology of Exercise Corso di Laurea in Physical Exercise and Health Promotion Università di Roma "Tor Vergata"

Fisiologia I e II Corso di Laurea in Ingegneria Medica Università di Roma "Tor Vergata"

Human Physiology Corso di Laurea di Medicina e Chirurgia in Lingua Inglese Università di Roma "Tor Vergata"

### **Finanziamenti:**

**Ministero dell'Università e della Ricerca: PRIN 2004.** Responsabile scientifico dell'unità di ricerca per il progetto: "Substrati neurali e processi adattativi dei modelli interni per il riconoscimento di moti fisici e biologici".

**Ministero dell'Università e della Ricerca: PRIN 2006.** Responsabile scientifico dell'unità di ricerca per il progetto: "Basi neurali del modello interno della gravità: rilevanza per l'intercettazione di oggetti in caduta".

**Ministero dell'Università e della Ricerca: PRIN 2008.** Responsabile scientifico dell'unità di ricerca per il progetto: "Processi predittivi alla base dell'intercettazione manuale e del riconoscimento del moto biologico".

**Agenzia Spaziale Italiana: Programma Disturbi del Controllo Motorio e Cardiorespiratorio.** Responsabile scientifico dei Workpackages: PR-DCMC-GO- 1B11\_2 - Posture and Movement, PR-DCMC-GO-1B11\_3 - Vestibular Mechanisms, PR-DCMC-GO-1B139 – Spinal Maps, PR-DCMC-GO-1B134 – Virtual Reality Protocols.

**Programma di ricerca d'ateneo: Consolidate the Foundations 2015.** Responsabile scientifico del progetto: "Cerebellar and hippocampal involvement in motor adaptation and recovery. A study in healthy humans and transgenic mice models of neurodegeneration."

### **Cariche accademiche**

Membro della Giunta del Dipartimento di Neuroscienze dell'Università di Roma "Tor Vergata" 2005-2010

Membro del Comitato tecnico scientifico del Centro di Biomedicina spaziale dell'Università di Roma "Tor Vergata"

Membro delegato per la Facoltà di Medicina e Chirurgia del Curriculum Design Committee, 2014-15

Membro della commissione didattica del corso di Studio in Medicina e Chirurgia, 2015-18

Membro della commissione didattica del corso di Studio in Medicine and Surgery, 2015-

Segretario verbalizzante del consiglio del Dipartimento di Medicina dei Sistemi, 2013-18

Coordinatore del corso di Studio in Medicina e Chirurgia, 2018-

### **Attività di revisore ed editoriali**

Svolge attività di revisore per le seguenti riviste scientifiche indicizzate:

- 1) Journal of Neuroscience
- 2) Journal of Neurophysiology
- 3) Experimental Brain Research
- 4) Frontiers in Neuroscience
- 5) PLOSone

Associate Editor per Neuroscience Journal and Frontiers in Integrative Neuroscience.

## PUBBLICAZIONI

### Pubblicazioni su riviste internazionali indicizzate

- 1) Berretta S., Bosco G., Smecca G., e Perciavalle V. The cerebellopontine system: an electrophysiological study in the rat. *Brain Res* 568:178-84, Elsevier B. V., UK 1991
- 2) Raffaele R., Cosentino E., Anicito MB., Sciacca A., Rampello L., Pennisi G., Genazzani AA., Bosco G., Casabona A., e Drago F. Effects of TRH-T on spinal motoneurons in man. *Neuroreport* 3: 1017-8, Lippincott, Williams & Wilkins, UK 1992
- 3) Berretta S., Bosco G., Giaquinta G., Smecca G., e Perciavalle V. Cerebellar influences on accessory oculomotor nuclei of the rat: a neuroanatomical, immunohistochemical, and electrophysiological study. *J Comp Neurol* 338:50-66, Wiley-Liss Inc., USA 1993
- 4) Bosco G. e Poppele R.E. Broad directional tuning in spinal projections to the cerebellum. *J. Neurophysiol.* 70: 863-6, The American Physiological Society, USA 1993
- 5) Bosco G., Casabona A. e Perciavalle V. Non-N-methyl-D-aspartate receptors mediate neocerebellar excitation at accessory oculomotor nuclei synapses of the rat. *Arch Ital Biol* 132: 215-27, The University of Pisa, Italia 1994
- 6) Bosco G., Giaquinta G., Raffaele R., Smecca G. e Perciavalle V. Projections from the cerebral cortex to the accessory oculomotor nuclei of the rat: a neuroanatomical and immunohistochemical study. *J Hirnforsch.* 35: 521-29, Germany 1994
- 7) Perciavalle V, Bosco G e Poppele R Correlated activity in the spinocerebellum is related to spinal timing generators. *Brain Res* 695:293-7, Elsevier B. V., UK 1995
- 8) Bosco G., Casabona A., Giaquinta G., Giuffrida R. e Perciavalle V. c-fos expression in the accessory oculomotor nuclei following neocerebellar stimulation. *Neuroreport* 7:2135-8, Lippincott, Williams & Wilkins, UK 1996
- 9) Bosco G., Casabona A., Giaquinta G., e Perciavalle V. Influences exerted by the frontal eye field on accessory oculomotor nuclei neurons of the rat. *Arch Ital Biol* 134: 305-16, The University of Pisa, Italia 1996
- 10) Bosco, G. e Poppele R.E. Temporal features of directional tuning by spinocerebellar neurons. Relation to limb geometry. *J. Neurophysiol.* 75: 1647-1658, The American Physiological Society, USA 1996
- 11) Bosco, G., Rankin A. e Poppele R.E. Representation of passive hindlimb postures in cat spinocerebellar activity. *J. Neurophysiol.* 76: 715-726, The American Physiological Society, USA 1996
- 12) Bosco G. e Poppele R.E. Representation of multiple kinematic parameters of the cat hindlimb in spinocerebellar activity. *J. Neurophysiol.* Sep;78:1421-32, The American Physiological Society, USA 1997

- 13) Poppele R.E. e Bosco G. Distribution of activity in the cerebellar cortex resulting from passive limb movement. *Behav. Brain Sci.* 20 (2): 262-3, Cambridge University Press, USA 1997
- 14) Giaquinta, G., Casabona, A., Valle, MS, Bosco, G. e Perciavalle, V. Spinocerebellar Purkinje cells and rat forelimb postures: a direction-dependent activity. *Neurosci Lett* 3;245(2):81-4, Elsevier B. V., UK 1998]
- 15) Perciavalle V., Bosco G. e Poppele, RE. Spatial organization of proprioception in the cat spinocerebellum. Purkinje cell responses to passive foot rotation. *Eur. J. Neurosci.* 10:1975-85, Blackwell Publishing, UK 1998
- 16) Bosco G. e Poppele R.E. Low sensitivity of dorsal spinocerebellar neurons to limb movement speed. *Exp. Brain Res.* 125:313-22, Springer-Verlag, Germany 1999
- 17) Giaquinta G, Casabona A, Smecca G, Bosco G, Perciavalle V. Cortical control of cerebellar dentato-rubral and dentato-olivary neurons. *Neuroreport.* 10(14):3009-13, Lippincott, Williams & Wilkins, UK 1999
- 18) Giaquinta G, Casabona A, Valle MS, Bosco G, Perciavalle V. On the relation of rat's external cuneate activity to global parameters of forelimb posture. *Neuroreport.* 10(14):3075-80, Lippincott, Williams & Wilkins, UK 1999
- 19) Giaquinta G, Valle MS, Caserta C, Casabona A, Bosco G, Perciavalle V. Sensory representation of passive movement kinematics by rat's spinocerebellar purkinje cells. *Neurosci Lett.* 285(1):41-4, Elsevier B. V., UK 2000
- 20) Bosco G., Poppele R.E., Eian E. Reference frames for spinal proprioception: limb endpoint based or joint-level based? *J Neurophysiol.* 83(5):2931-45, The American Physiological Society, USA 2000
- 21) Bosco G. e Poppele R.E. Reference frames for spinal proprioception: kinematics based or kinetics based? *J Neurophysiol.* 83(5):2946-55, The American Physiological Society, USA 2000
- 22) Bosco G., Giaquinta G, Valle MS, Caserta C, Casabona A, Perciavalle V. Distribution of spinocerebellar Purkinje cell responses to passive forelimb movements in the rat. *Eur. J. Neurosci.* 12: 4063-73, Blackwell Publishing, UK 2000
- 23) Valle M.S., Bosco G. e Poppele R.E. Information processing in the spinocerebellar system. *Neuroreport.* 11: 4075-9, Lippincott, Williams & Wilkins, UK 2000
- 24) Bosco G. e Poppele R.E. Spinal proprioception from a spinocerebellar perspective. *Physiol. Rev.* 81: 539-68, The American Physiological Society, USA 2001
- 25) Bosco G. e Poppele R.E. Encoding of hindlimb kinematics by spinocerebellar circuitry. *Arch Ital Biol,* 140: 185-192, The University of Pisa, Italia 2002
- 26) Garifoli A., Caserta C., Bosco G., Lombardo S.A., Casabona A. e Perciavalle V.

Kinematic features of passive forelimb movements and rat cuneate neuron discharges. *Neuroreport* 13:267-271, Lippincott, Williams & Wilkins, UK

27) Poppele R.E., Bosco G. e Rankin, A. Independent representations of limb axis length and orientation in spinocerebellar response components. *J Neurophysiol* 87: 409–422, The American Physiological Society, USA 2002

28) Casabona A. , Valle M.S. , Bosco G. , Garifoli A., Lombardo S. A., Perciavalle V. Anisotropic representation of forelimb position in the cerebellar cortex and nucleus interpositus of the rat. *Brain Res* 972: 127-136, Elsevier B. V., UK 2003

29) Poppele R.E. e Bosco G. Sophisticated spinal contributions to motor control. *Trends Neurosci.* 26 (5): 269-276, Elsevier B. V., UK 2003

30) Bosco G, Poppele R. Cerebellar afferent systems: can they help us understand cerebellar function? *Cerebellum.* 2(3):162-4, UK 2003

31) Bosco G., Rankin A. e Poppele R.E. Modulation of Dorsal Spinocerebellar Responses to Limb Movement I. Effect of Serotonin. *J Neurophysiol* 90 (5): 3361-71, The American Physiological Society, USA 2003

32) Bosco G. e Poppele R.E. Modulation of Dorsal Spinocerebellar Responses to Limb Movement II. Effect of Sensory Input. *J Neurophysiol.* 90 (5): 3372-83, The American Physiological Society, USA 2003

33) Zago M, Bosco G, Maffei V, Iosa M, Ivanenko YP, Lacquaniti F. Internal models of target motion: expected dynamics overrides measured kinematics in timing manual interceptions. *J Neurophysiol.* , 91: 1620-34, The American Physiological Society, USA 2004

34) Casabona A., Valle MS, Bosco G, Perciavalle V. Cerebellar encoding of limb position. *Cerebellum.* 3(3):172-7, UK 2004

35) Zago M, Bosco G, Maffei V, Iosa M, Ivanenko YP, Lacquaniti F. Fast adaptation of the internal model of gravity for manual interceptions: evidence for event-dependent learning. *J Neurophysiol.*, 93(2):1055-68, The American Physiological Society, USA 2005

36) Indovina I, Maffei V, Bosco G, Zago M, Macaluso E, Lacquaniti F. Representation of visual gravitational motion in the human vestibular cortex. *Science.* Apr 15;308(5720):416-9. AAAS, USA 2005

37) Bosco G, Eian J, Poppele RE. Kinematic and non-kinematic signals transmitted to the cat cerebellum during passive treadmill stepping. *Exp Brain Res.* Dec 167(3):394-403. Springer-Verlag, Germany 2005

38) Bosco G, Eian J, Poppele RE. Phase-specific sensory representations in spinocerebellar activity during stepping: evidence for a hybrid kinematic/kinetic framework. *Exp Brain Res.* 175(1):83-96 Springer-Verlag, Germany 2006

39) Valle MS, Casabona A., Bosco G, Perciavalle V. Spatial anisotropy in the encoding of 3D

- passive limb position by the spinocerebellum. *Neuroscience* 144(3):783-7 Elsevier, UK 2007
- 40) Miller WL, Maffei V, Bosco G, Iosa M, Zago M, Macaluso E, Lacquaniti F. Vestibular nuclei and cerebellum put visual gravitational motion in context. *J Neurophysiol.* 99(4):1969-82 The American Physiological Society, USA 2008
- 41) Valle MS, Eian J, Bosco G, Poppele RE Cerebellar cortical activity in the cat anterior lobe during hindlimb stepping. *Exp Brain Res.* 187(3):359-72 Springer-Verlag, Germany 2008
- 42) Valle MS, Casabona A., Bosco G, Perciavalle V. Comparison of neuronal activities of external cuneate nucleus, spinocerebellar cortex and interpositus nucleus during passive movements of the rat's forelimb, *Neuroscience* 157: 271- 79 Elsevier, UK 2008
- 43) Bosco G, Carrozzo M, Lacquaniti F. Contributions of the human temporo- parietal junction and MT/V5+ to the timing of interception revealed by TMS. *J Neurosci.* 28: 12071-12084 USA 2008
- 44) Casabona A, Bosco G, Perciavalle V, Valle MS. Processing of Limb Kinematics in the Interpositus Nucleus. *Cerebellum.* 2010 (1): 103-10.
- 45) Valle MS, Bosco G, Casabona A, Garifoli A, Perciavalle V, Coco M, Perciavalle V. Representation of Movement Velocity in the Rat's Interpositus Nucleus During Passive Forelimb Movements. *Cerebellum.* 2010 9(2): 249-58.
- 46) Bosco G. Principal Component Analysis of Electromyographic Signals: An Overview. *The Open Rehabilitation Journal.* 2010, 3: 127- 131
- 47) Valle MS, Eian J, Bosco G, Poppele RE. The organization of cortical activity in the anterior lobe of the cat cerebellum during hindlimb stepping. *Exp Brain Res.* 2012 216: 349-365
- 48) Bosco G, Delle Monache S, Lacquaniti F. Catching what we can't see: manual interception of occluded fly-ball trajectories. *PloS One.* 2012 Nov. 14
- 49) Lacquaniti F, Bosco G, Indovina I, La Scaleia B, Maffei V, Moscatelli A, Zago M. Visual gravitational motion and the vestibular system in humans. *Front Integr Neurosci.* 2013 Dec 26;7:101
- 50) Lacquaniti F, Bosco G, Gravano S, Indovina I, La Scaleia B, Maffei V, Zago M. Multisensory integration and internal models for sensing gravity effects in primates. *Biomed Res Int.* 2014: 615854
- 51) Delle Monache S, Lacquaniti F, Bosco G. Eye movements and manual interception of ballistic trajectories: effects of law of motion perturbations and occlusions. *Exp Brain Res.* 2015; 233(2):359-74.
- 52) Bosco G, Monache SD, Gravano S, Indovina I, La Scaleia B, Maffei V, Zago M, Lacquaniti F. Filling gaps in visual motion for target capture. *Front Integr Neurosci.* 2015 Feb 23;9:13

53) Lacquaniti F, Bosco G, Gravano S, Indovina I, La Scaleia B, Maffei V, Zago M. Gravity in the Brain as a Reference for Space and Time Perception. *Multisens Res.* 2015;28(5-6):397-426

54) Delle Monache S, Lacquaniti F, Bosco G. Differential contributions to the interception of occluded ballistic trajectories by the temporoparietal junction, area hMT/V5+, and the intraparietal cortex. *J Neurophysiol* 118: 1809–1823, 2017.

55) Valle MS, Bosco G, Poppele RE. Cerebellar compartments for the processing of kinematic and kinetic information related to hindlimb stepping. *Exp Brain Res* 235: 3437–3448, 2017.

56) Delle Monache S, Lacquaniti F, Bosco G. Ocular tracking of occluded ballistic trajectories: effects of visual context and of target law of motion. *J Vis* In press, 2019

### **Publicazioni su volumi editi**

Bosco G, Lacquaniti F. Locomozione. Capitolo XXVI in *Fisiologia Medica* a cura di F. Conti ed. Edi-Ermes, Milano ISBN: 8870512827