

Curriculum Vitae: BENEDETTO SACCHETTI

Personal Information

Nationality: Italian
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Education and Research Training

1995 **Degree in Biological Sciences**, University of Florence (110/110 cum laude)
1996-1997 Academy of Science of Czech Republic, Prague (J. Bures lab) (June-October 1996, 1997)
1999 Department of Physiology, University of Pisa (Prof. M. Brunelli)
2000 **PhD degree in Physiological Sciences**, University of Florence (Prof. C. Bucherelli)
2001-2002 **Postdoctoral research scientist** Dept. Neuroscience, University of Turin (Prof. P. Strata)
2003-2012 **Assistant Professor in Physiology**, Dept. Neuroscience, Medical School, University of Turin
2013-2015 **Associate Professor in Physiology**, Dept. Neuroscience, Medical School, University of Turin
2016-today **Full Professor in Physiology**, Dept. Neuroscience, Medical School, University of Turin

Fellowship and Awards

1998 Young **Fellowship** European Science Foundation (ESF)
2001 Annual **Fellowship** “Consortium Biostrutture e Biosistemi”, Rome, Italy
2003 **Travel Grant** International Brain Research Organisation (IBRO)
2004 Annual **Prize** of the Italian Physiological Society (SIF)
2011 Starting Independent Researcher Grant (**ERC Consolidator**)

Grants

2004-today Local Turin University funds (ex 60%), **Principal Investigator**
2004, 2006 and 2017 Italian Ministry of University (MIUR) projects “PRIN”: **Research Unit Coordinator**
2009 “Cavalieri Ottolenghi Foundation” Grant: **Principal Investigator and Research Units Coordinator**
2011-2015 Starting Independent Researcher Grant ERC StG2010_281072_RSSCEMSR: **Principal Investigator**
2012-2014 S. Paolo Foundation Research Grant: **Principal Investigator and Research Units Coordinator**

2016. Banca D'Italia: **Principal Investigator**

2017-2019 S. Paolo Foundation Research Grant: **Principal Investigator and Research Units Coordinator**

2017-2019 Translational Research Grant (Dept. Neuroscience): **Principal Investigator and Research Units Coordinator**

2020-2022 Translational Research Grant (Dept. Neuroscience): **Co- Principal Investigator**

2020-2022 San Paolo Foundation: **Co- Principal Investigator**

2021-2023 CRT Foundation: **Principal Investigator**

Research Activity

His work is recognized as highly influential by the community, as attested by the number/quality of citations per publication. To give a few examples, the papers:

Grosso et al., Nature Communications (2018) was highlighted as “Recommended” by A. Milton in the “Faculty of 1000 Biology” (2019)

Sacco T and Sacchetti B, Science 2010 was highlighted as “Exceptional” by S. Laroche in the “Faculty of 1000 Biology” (2010) and by M. Yassa in the “Faculty of 1000 Biology” (2010)

Sacchetti et al., Neuron 2004 was highlighted as “Recommended” by J. LeDoux in the “Faculty of 1000 Biology” (2004)

Sacchetti et al., PNAS 2002 was signalled by PNAS as a “Feature Article” and it was discussed in the following two Commentaries: A. Vazdarjanova PNAS 2002: 99, 7814-7815; R. Leaton Mol. Psychiatry 2003: 8, 461-462.

Sacchetti et al., European Journal of Neuroscience, 2001 was signalled in a “Letter to Science” by M. Bear (Web ID: 85331)

Areas of Interest

Main research interests

Neural circuitry of emotional memories: role of the hippocampus (dorsal and ventral pole), the amygdala (lateral, basal and central nuclei), cerebellum and neocortex (parietal, frontal and temporal area); Synaptic processes and associative learning: long-term potentiation (LTP) and long-term depression (LTD); Neural analysis of spontaneous and learned behaviour: light/dark box paradigm, elevated plus maze task, passive avoidance response, fear conditioning, Morris water maze, place avoidance response, taste aversion learning.

Main collaborations

J. Bures, Czech Academy of Science, Prague, Czech Republic; **E. Bielavska**, Czech Academy of Science, Prague, Czech Republic; **A.A. Fenton**, Dept. of Physiology, SUNY Medical Center, New York, USA; **M. Brunelli**, Dept. of Physiology and Biochemistry, University of Pisa, Italy; **N. Hartell**, Department of Cell Physiology and Pharmacology, University of Leicester UK; **P. Strata**, Department of Neuroscience, University of Turin, Italy; **F. Tempia**, Department of Neuroscience, University of Turin, Italy; **H. Reul**, Henry Wellcome Laboratories for Integrative Neuroscience and Endocrinology, University of Bristol, UK; **N. Berardi**, CNR, Pisa, Italy; **F. Grohovaz**, San Raffaele University, Milan, Italy; **F. DiCunto**, Department of Genetics, Biology and Biochemistry, University of Turin, Italy; **G. Merlo**, Department of Genetics, Biology and Biochemistry, University of Turin, Italy; **P. Caroni**, Friedrich Miescher Institut, Basel, Switzerland; **F. Laezza**, University of Texas Medical Branch, USA; **E. Likhthik** and **J.A. Gordon**, Columbia University, Dept. Integrative

Neurosciences, NY, USA; **L. Chelazzi**, Dept. Neuroscience, Verona, Italy; **S. Ramirez**, Center for Systems Neuroscience at Boston University (USA).

Editorial Activity

Guest Referee: Archives of General Psychiatry; Behavioural Brain Research; Biological Psychiatry; BMC Biology; Brain; Brain and Cognition; Brain Research; Brazilian Journal of Medical and Biological Research; Cerebellum; Cerebral Cortex; eLife; European Journal of Neuroscience; Experimental Brain Research; F1000Research; Frontiers Cellular Neuroscience; Hippocampus; Journal of Applied Physiology; Journal of Neuroscience; Journal of Neurophysiology; Learning and Memory; Molecular Psychiatry; Nature of Human Behavior; Neurobiology of Learning and Memory; Neuropsychopharmacology; Neuroscience; Neuroscience Letters; Neuroscience and Biobehavioral Reviews; Physiology and Behavior; PlosOne; Psychophysiology; Science, Scientific Reports; Stress.

Guest Editor of the Special Issue on “Mind-brain plasticity and rehabilitation of cognitive functions: What techniques have been proven effective?” on Frontiers in Neurosciences (2015)

Scientific supervisor: "The hidden face of fear" (2008) by E. Cerasuolo and F. Fergnolino (Zenit Arti Audiovisive)

Scientific supervisor: “Neuroscience” Textbook by Bear M. et al. (4th ed., 2016, Masson ed., Italian version)

Reviewer for international grant projects: PRIN (MIUR) 2008-today, FIRB Giovani (2010-2014), Biotechnology and Biological Sciences Research Council (BBSRC) UK (2013-2015), Agence Nationale de la Recherche (ANR), France (2015, 2017); Netherlands Organization for Scientific Research (NWO) (2016), ERC Grant (2020-today), Italian Science Fund (FIS), MIUR Italy (2023-today).

Affiliations

Italian Physiological Society (SIF); Italian Society for Neuroscience (SINS); European Brain and Behavioural Society (EBBS); Society of Neuroscience (SfN) (USA); ERC in Italy (Italy)

Teaching

2001-2003	“Human Physiology”, Teaching Assistant, Faculty of Medicine, University of Turin, Italy
2003-2005	Teaching: “Neurophysiology”, Post Graduate School in Neurology, School of Medicine, University of Turin, Italy
2005-2007	Teaching: “Neuroscience”, Post Graduate School in Psychoanalysis, Turin
2008-2010	Teaching: “Advances in Neuroscience”, Faculty of Psychology, University of Turin; Italy
2009-2010	Teaching: “Neurophysiology”, Post Graduate School in Health Psychology, University of Turin, Italy
2003-today	Teaching: “Neuroscience”, Faculty of Psychology, University of Turin; Italy
2010-today	Teaching: “Neuroscience of Human Behavior”, Faculty of Psychology, University of Turin; Italy
2014-today	Teaching: “Human Physiology”, Post Graduate School in Neurosurgery, School of Medicine, University of Turin

2015-today Teaching: “Cognitive Neuroscience”, Department of Biological Sciences, University of Turin, Italy
2018-today Teaching: “Human Physiology”, Post Graduate School in Psychiatry and Child Psychiatry, School of Medicine, University of Turin

2003-today **Thesis Supervisor:** Faculty of Medicine (7), Psychology (90), Biological Sciences (30), Biotechnology (20).

2010-today **Tutor in the PhD Program** in Neuroscience, University of Turin, Italy. Students: Lan Zhu (co-tutor with Prof. P. Strata); Anna Grosso; Giulia Concina; Francesca Stabile.

2008-today **Invited Speaker: PhD Course** at the University of Milan, Verona, Pisa (Italy); Seville (Spain), Amsterdam(Holland), Rotterdam (Holland)

Other Institutional Activities

2004-2009 Supervisor Erasmus Students, Faculty of Psychology, University of Turin; Italy

2004-2009 Curricular Stage Commission, Faculty of Psychology, University of Turin; Italy

2013-2020 Teaching Commission, PhD Program in Neuroscience, University of Turin, Italy

2011-2012 and 2015-today Research Commission, Dept. Neuroscience, University of Turin, Italy

2013-today PhD Program in Neuroscience Board, University of Turin, Italy

2022-today PhD Program in Learning Science and Digital Technologies Board, Italy

2011-today Animals Health Responsible for the Department of Neuroscience

Publications in International Peer Reviewed Journals

1. Ambrogi Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
“Role of dorsal hippocampus in acquisition, consolidation and retrieval of rat’s passive avoidance response: a tetrodotoxin functional inactivation study”.

Brain Research, 1996: 730, 32-39.

2. Ambrogi Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
“Analysis of mnemonic processing by means of totally reversible neural inactivations”.

Brain Research Protocols, 1997: 1, 391-398

3. Ambrogi Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
“Role of ventral hippocampus in acquisition, consolidation and retrieval of rat’s passive avoidance response memory trace”.

Brain Research, 1997: 768, 242-248

4. Ambrogi Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
“2-Deoxy-D-Galactose effects on passive avoidance memorization in the rat”.

Neurobiology of Learning and Memory, 1997: 68, 317-324.

5. Bures, J., A.A. Fenton, Y. Kaminsky, J. Rossier, **B. Sacchetti**, and L. Zinyuk
“Dissociation of exteroceptive and idiothetic orientation cues: effect on hippocampal place cells and place navigation”

Philosophical Transaction of the Royal Society of London B, 1997: 352, 1515-1524

6. Ambrogi Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
“Temporal characterization of subcortical nuclei in mnemonic processes: results of tetrodotoxin reversible inactivation studies in the rat”.

Archives Italiennes de Biologie, 1998: 136, 279-296

7. Baldi, E., C. Ambrogio Lorenzini, **B. Sacchetti**, G. Tassoni, C. Bucherelli
"Entorhinal cortex and fimbria-fornix role in rat's passive avoidance response memorization"
Brain Research, 1998: 799, 270-277
8. **Sacchetti, B.** and E. Bielavska
"Chelerythrine, a specific PKC inhibitor, blocks acquisition but not consolidation and retrieval of conditioned taste aversion in rat".
Brain Research, 1998: 799, 84-90
9. Baldi, E., C. Ambrogio Lorenzini, **B. Sacchetti**, G. Tassoni, C. Bucherelli
"Effects of combined medial septal area, fimbria-fornix and entorhinal cortex tetrodotoxin inactivations on passive avoidance response consolidation in the rat".
Brain Research, 1999: 821, 503-510
10. Ambrogio Lorenzini, C., E. Baldi, C. Bucherelli, **B. Sacchetti**, G. Tassoni
"Neural topography and chronology of memory consolidation: a review of functional inactivation findings"
Neurobiology of Learning and Memory, 1999: 71, 1-18 IF:
11. **Sacchetti, B.**, C. Ambrogio Lorenzini, E. Baldi, G. Tassoni, C. Bucherelli
"Memorization of contextual and CS conditioned fear response (freezing) in a one-trial acquisition paradigm"
Archives Italiennes de Biologie, 1999: 137, 235-248.
12. Tassoni, G., C. Ambrogio Lorenzini, E. Baldi, **B. Sacchetti**, C. Bucherelli
"A peculiar pattern of temporal involvement of rats perirhinal cortex in memory processing"
Behavioral Neuroscience, 1999: 113, 1161-9.
13. **Sacchetti, B.**, C. Ambrogio Lorenzini, E. Baldi, G. Tassoni, C. Bucherelli
"Auditory thalamus, dorsal hippocampus, basolateral amygdala and perirhinal cortex role in the consolidation of conditioned freezing to context and to acoustic CS in the rat"
Journal of Neuroscience, 1999: 19, 9570-9578.
14. Baldi, E., C. Ambrogio Lorenzini, **B. Sacchetti**, G. Tassoni, C. Bucherelli
"Effects of coupled perirhinal cortex and medial septal area, fimbria-fornix, entorhinal cortex tetrodotoxin inactivations on passive avoidance consolidation in the rat"
Neuroscience Letters, 2000: 280, 91-94.
15. Tassoni, G., C. Ambrogio Lorenzini, E. Baldi, **B. Sacchetti**, C. Bucherelli
"Role of the perirhinal cortex in rats' conditioned taste aversion response memorization"
Behavioral Neuroscience, 2000: 114, 875-881.
16. **Sacchetti, B.**, E. Baldi, G. Tassoni, E. Bielavska
"CAMKII inhibition in the parabrachial nuclei elicits conditioned taste aversion in rats"
Neurobiology of Learning and Memory, 2001: 75, 253-261.
17. **Sacchetti, B.**, C. Ambrogio Lorenzini, E. Baldi, C. Bucherelli, M. Roberto, G. Tassoni, M. Brunelli
"Pituitary adenylate cyclase-activating polypeptide hormone (PACAP) at very low dosages improves memory in the rat"
Neurobiology of Learning and Memory, 2001: 76, 1-6.

18. **Sacchetti, B.**, C. Ambrogio Lorenzini, E. Baldi, C. Bucherelli, M. Roberto, G. Tassoni, M. Brunelli
“Long-lasting hippocampal potentiation and contextual memory consolidation”
European Journal of Neuroscience, 2001: 13, 2291-2298.
This study was signalled in a “Letter to Science” by M. Bear (Web ID: 85331).
19. **Sacchetti, B.**, C. Ambrogio Lorenzini, E. Baldi, C. Bucherelli, M. Roberto, G. Tassoni, M. Brunelli
“Time-dependent inhibition of hippocampal LTP in vitro following contextual fear conditioning in the rat”
European Journal of Neuroscience, 2002: 15, 143-150.
20. **Sacchetti, B.**, E. Baldi, C. Ambrogio Lorenzini, C. Bucherelli
“Cerebellar role in fear conditioning memorization”
Proceedings of the National Academy of Sciences (USA) 2002: 12, 8406-8411.
This study was signalled by PNAS as a “Feature Article” and it was discussed in the following two Commentaries:
A. Vazdarjanova
“Chasing “fear memories” to the cerebellum” *PNAS* 2002: 99, 7814-7815.
R. Leaton
“Fear and cerebellum” *Mol. Psychiatry* 2003: 8, 461-462.
21. **Sacchetti, B.**, E. Baldi, C. Ambrogio Lorenzini, C. Bucherelli
“Differential contribution of some cortical regions to the formation memory traces supporting fear conditioning”
Experimental Brain Research, 2002: 146, 223-232.
22. **Sacchetti, B.**, E. Baldi, C. Ambrogio Lorenzini, C. Bucherelli
“Role of the neocortex in consolidation of fear conditioning memories in rats”
Experimental Brain Research 2003: 152, 323-328.
23. **Sacchetti B**, Scelfo B, Tempia F, Strata P.
“Long-term synaptic changes induced in the cerebellar cortex by fear conditioning”
Neuron 2004: 42, 973-982.
This study was highlighted as “Recommended” by J. LeDoux in the “Faculty of 1000 Biology” (2004)
24. **Sacchetti B**, Scelfo B, Strata P.
“The cerebellum: synaptic changes and fear conditioning”
Neuroscientist 2005: 11, 217-227.
25. Zhu L, Scelfo B, Tempia F, **Sacchetti B**, Strata P.
“Membrane excitability and fear conditioning in cerebellar Purkinje cell”
Neuroscience 2006: 140, 801-810.
26. **Sacchetti B**, Sacco T, Strata P.
“Reversible inactivation of amygdala, cerebellum, but not perirhinal cortex, impairs reactivated fear memories”
European Journal of Neuroscience 2007: 25, 2875-2884.
27. Zhu L, Scelfo B, Hartell N, Strata P, **Sacchetti B**.
“The effects of fear conditioning on cerebellar LTP and LTD”

European Journal of Neuroscience 2007: 26, 219-227.

28. Scelfo B, **Sacchetti B**, Strata P.

“Learning-related long-term potentiation of inhibitory synapses in the cerebellar cortex”
Proceedings of the National Academy of Sciences (USA) 2008: 105,769-774.

29. **Sacchetti B**, Scelfo B, Strata P.

“Cerebellum and emotional behaviour”

Neuroscience 2009: 162, 756-762.

30. Sacco T, **Sacchetti B**

“Role of secondary sensory cortices in emotional memory storage and retrieval in rats”

Science 2010: 329, 649-656.

This study was highlighted as “Exceptional” by S. Laroche in the “Faculty of 1000 Biology” (2010) and by M. Yassa in the “Faculty of 1000 Biology” (2010)

31. Zhu L, Sacco T, Strata P, **Sacchetti B**.

"Basolateral amygdala inactivation impairs learning-induced long-term potentiation in the cerebellar cortex."

PLoS One. 2011: 6, e16673.

32. Strata P, Scelfo B, **Sacchetti B**.

"Involvement of cerebellum in emotional behavior."

Physiol Res. 2011: 60, S39-48

33. Ruediger S, Vittori C, Strata P, **Sacchetti B**, Caroni P.

"Learning-related growth of feedforward inhibitory connectivity required for memory precision."

Nature 2011: 473, 514-518.

34. Cambiaghi M, **Sacchetti B**.

“Ivan Petrovich Pavlov (1849-1936)”

Journal of Neurology 2015: 262, 1599-600.

35. Grosso A, Cambiaghi M, Concina G, Sacco T, **Sacchetti B**.

“Auditory cortex involvement in emotional learning and memory.”

Neuroscience 2015: 23, 45-55.

36. Cambiaghi M., Grosso A., Renna A. and **Sacchetti B**.

“Acute administration of nicotine into the higher order auditory Te2 cortex specifically decreases the fear-related charge of remote emotional memories.”

Neuropharmacology 2015: 28, 577-588.

37. Grosso A, Cambiaghi M, Renna A, Milano L, Merlo GR, Sacco T, **Sacchetti B**.

“The assignment of the affective/motivational value to sensory stimuli is mediated by higher-order sensory cortices. “

Nature Communications 2015: 6, 8886 doi: 10.1038/ncomms 9886.

38. Alshammari T, Alshammari M, Nenov M, Hoxha E, Cambiaghi M, Marcinno A, James T, Singh P, Labate D, Li J, Meltzer H.Y., **Sacchetti B**, Tempia F, Laezza F.

“Genetic deletion of fibroblast growth factor 14 recapitulates phenotypic alterations underlying cognitive impairment associated with schizophrenia.”

Translational Psychiatry 2016: 6, e806.

39. Cambiaghi M, Grosso A, Likhtik E, Concina G, Sacco T, J.A. Gordon, **Sacchetti B**.
“Higher order sensory cortex selectively drives basolateral amygdala activity during the recall of remote, but not recent, frightening memories.”
Journal of Neuroscience 2016: 36, 1647-1659.
40. Adamaszek M, D'Agata F, Ferrucci R, Habas C, Keulen S, Kirkby KC, Leggio M, Mariën P, Molinari M, Moulton E, Orsi L, Van Overwalle F, Papadelis C, Priori A, **Sacchetti B**, Schutter DJ, Styliadis C, Verhoeven J.
“Consensus Paper: Cerebellum and Emotion.”
Cerebellum 2016 Epub ahead of print PMID: 27485952.
41. Grosso A, Cambiaghi M, Renna A, **Sacchetti B**.
“Differential recruitment of auditory cortices in the consolidation of recent auditory fearful memories.”
Journal of Neuroscience 2016: 36:8586-8597.
42. Sacco K, **Sacchetti B**.
“Mind-Brain Plasticity and Rehabilitation of Cognitive Functions: What Techniques Have Been Proven Effective?”
Frontiers Behavioral Neuroscience 2016 10: 232.
43. Grosso A, Cambiaghi M, Milano L, Renna A, Sacco T, **Sacchetti B**.
“Region- and layer-specific activation of the higher order auditory cortex Te2 after remote retrieval of fear or appetitive memories.”
Cerebral Cortex 2017: 27 (6): 3140.
44. Cambiaghi M, Renna A., Milano L., and **Sacchetti B**.
“Reversible Inactivation of the Higher Order Auditory Cortex during Fear Memory Consolidation Prevents Memory-Related Activity in the Basolateral Amygdala during Remote Memory Retrieval.”
Frontiers Behavioral Neuroscience 2017 11: 138.
45. Manassero E, Renna A, Milano L, **Sacchetti B**
Lateral and Basal Amygdala Account for Opposite Behavioral Responses during the Long-Term Expression of Fearful Memories
Scientific Reports 2018 8:518.
46. Grosso A, Santoni G, Manassero E, Renna A, **Sacchetti B**
A neuronal basis of fear discrimination in the lateral amygdala
Nature Communications 2018 9:1214.
This study was Recommended by A. Milton in the “Faculty of 1000 Biology” (2019)
- 47 Concina G, Renna A, **Sacchetti B**
Coherent activity between prelimbic and auditory cortex in the slow gamma band underlies fear discrimination
Journal of Neuroscience 2018: 38, 8313-8328.
48. Manassero E, Mana L, Concina G, Renna A, **Sacchetti B**
Implicit and explicit systems differently predict possible dangers.
Scientific Reports 2019 9(1):13367.
49. Concina G, Renna A, Grosso A, **Sacchetti B**

The auditory cortex and the emotional valence of sounds.
Neuroscience Biobehavioral Review 2019 **98:256-264.**

50. Concina G, Renna A, Milano L, Manassero E, Stabile F, **Sacchetti B**
Expression of IGF-2 receptor in the auditory cortex improves the precision of recent fear memories and maintains detailed remote fear memories over time.
Cerebral Cortex. 2021 bhab165. doi: 10.1093/cercor/bhab165

51. Manassero E, Giordano A, Raimondo E, Cicolin A, **Sacchetti B**
Sleep Deprivation During Memory Consolidation, but Not Before Memory Retrieval, Widens Threat Generalization to New Stimuli
Frontiers in Neuroscience 2022 <https://doi.org/10.3389/fnins.2022.902925>

52. Concina G, Renna A, Milano L, **Sacchetti B**
Prior fear-learning enables the immediate encoding of new fear memories in cortical networks
Plos Biology (2022) 20(9): e3001789.

Book Chapters

Bures, J., A.A. Fenton, Y. Kaminsky, J. Rossier, **B. Sacchetti**, and L. Zinyuk “Dissociation of exteroceptive and idiothetic orientation cues: effect on hippocampal place cells and place navigation” In: “**The hippocampal and parietal foundations of spatial cognition**”. N. Burgess, K. J. Jeffery and J. O'Keefe (Eds.), Oxford University Press, New York, 1999, pp. 167-185.

B. Sacchetti “**Neurobiologia della Memoria**” in “**Neuroscienze**” di A. Maravita et al. (ed Poletto) 2016 (in press)

B. Sacchetti “**Circuiti Cerebrali delle Emozioni**” in “**Neuroscienze**” di A. Maravita et al. (ed Poletto) 2016 (in press)

Mind-Brain Plasticity and Rehabilitation of Cognitive Functions: What Techniques Have Been Proven Effective? Edited by: K. Sacco and **B. Sacchetti** Published in: **Frontiers in Behavioral Neuroscience** 2017 (eBook)

