

Prof. Eugenio Scarnati

Curriculum

(September 2019)

- Date and place of birth: November 15th, 1948, Spezzano della Sila (CS), Italy.
- Education: MSc in Biological Sciences (1972) and medical studies University of Rome La Sapienza (Italy).
- Languages: Italian, English, French.
- Present position: Professor of Human Physiology, Department of Applied Medical and Biotechnological Sciences, University of L'Aquila, Italy (since 1994).
- Coordinator of the PhD course in Neurobiology of Neurodegenerative Disorders, University of L'Aquila (2007-2016).
- Coordinator of the PhD course in Endocrinology, Universities of L'Aquila, Chieti and Rome La Sapienza (1997-1999).
- Head of the Department of Sciences and Biomedical Technologies and Member of the Department Directors Board, University of L'Aquila (2004-2011).
- Member of the MIUR National Board for the PhD courses in Physiology (1989-1980).
- Member of the Academic Senate, University of L'Aquila (2007-2009).
- Member of the Academic Board in the PhD course in Experimental Medicine , University of L'Aquila (since 2013).
- Associate Professor of Human Physiology, School of Medicine University of L'Aquila - Italy (1984-1994).
- Assistant Professor of Human Physiology School of Medicine, University of L'Aquila, Italy (1973-1984).
- Adjunct Professor by the Ministry of Foreign Affairs at the National University of Somalia (Mogadishu), winter quarters 1979 and 1980.
- Fellowship of Schweizerischer Nationalfonds zur Förderung (Switzerland) (Contract nr. 893.295.85 03.06.1985) Institut de Physiologie de l'Université de Fribourg (Switzerland), Prof. Wolfram Schultz (1985-1986).
- Visiting Professor 1989 Schweizerischer Nationalfonds zur Förderung (Switzerland) Institut de Physiologie de l'Université de Fribourg (Switzerland), Prof. Wolfram Schultz, contract FNS 893.295.85.
- Chercheur Contractuel INSERM-France. Laboratoire de Physiologie de la Faculté de Medecine Pitié-Salpêtrière, Paris, Prof. J. Féger, 1982-1984 (Contracts: 81/887/BPC/FDD/NA 5.10.1981, 82/278/BPC/DK/GM 19.4.1982 e 83/504/ BPC/HR/NA 26/5/1983).

- Fellowship CNR-CNRS, INSERM and ESF (contract 132.03.02 21.01.1981) e European Science Foundation (contract 06.11.1981. Laboratoire de Physiologie des Centres Nerveux, Université Paris VI, Prof.J.Féger, Prof. D.Albe-Fessard,1980-1981.
- Main field of interest: Functional and Behavioral Neurophysiology of the Basal Ganglia.
- Memberships in Scientific Societies: International Basal Ganglia Society, Italian Neuroscience Society, Federation of European Neuroscience Associations.
- Papers published in peer-reviewed international journals: 104 (Scopus) , international books chapters: 9; International congresses oral and poster presentations:45, invited participations to international symposia:14.
- His papers have collected more than 6600 citations in Google Scholar (H-index:34, i10 index:63, and more than 3800 in Scopus (H-Index 29); July 9th 2019).
- Peer Reviewer for main Neuroscience journals including: The Journal of Neurophysiology, Neuroscience, European Journal of Neuroscience, Behavioural Brain Research, Brain Research, Journal of Neural Transmission, Neuroimage, Experimental Brain Research, Clinical Neurology and Neurosurgery, etc.
- Awarded in 1977 with the Merck Sharp Dohme - LIMPE International Prize.
- Referee for the National Board for Science and Technology (Ireland) for evaluating research proposals (1984-1985).
- Guest Editor in The Journal of Neural Transmission, Springer-Verlag (Berlin) (2001 and 2016) and in Journal of Chemical Neuroanatomy (Elsevier-Amsterdam) (1999).
- Member of the Italian University Ministry REPRISE board for scientific evaluation of research proposals.
- Recipient of grants from Italian CNR and Ministry of University from 1984 to 1998, MIUR COFIN 2008, MIUR Integrated Action between Italy and Spain 1996, EU Biomed 2 (in collaboration with 4 European laboratories), EU Human Capital and Mobility CM (in collaboration with 7 European Institutions), Telethon Foundation, Ministry of Health-Regione Lazio, private donations.
- Qualified to be appointed in the Board for Abilitazione Scientifica Nazionale and University Professor positions in Physiology (SC 05-D1, SSD BIO-09) (Citations last 15 years: 2497, publications last 10 years: 30; H-index last 10 years: 14; july 2019).

Main scientific results:

- First electrophysiological identification of the monosynaptic pathway projecting from the pedunculopontine tegmental nucleus to the dopaminergic neurons of the substantia nigra and nature of neurotransmitters involved
- First electrophysiological characterization of cortical projections to the subthalamic nucleus and nature of neurotransmitters involved

- Characterization of functional relationships involving the striatum, the subthalamic nucleus and the inner and external segments of the globus pallidus
- Identification of neuronal encoding of reward and motor-related mechanisms in the basal ganglia
- Identification of specific subregions of the striatum and the pedunclopontine nucleus involved in the preparation and execution of goal-directed movements
- First demonstration of the effectiveness of deep brain stimulation of the pedunclopontine nucleus in animal models of degeneration of the dopaminergic nigrostriatal pathway.
- Development and introduction in functional neurosurgery of the deep brain stimulation of the pedunclopontine tegmental nucleus in movement disorders in collaboration with Prof. Paolo Mazzone at Alesini Hospital in Rome, and new approach for functional evaluations of motor performance, postural control and waking in implanted patients.

Main Publications

- G.De Caro, L.G.Micossi, F.Venturi, A.Brancati, **E.Scarnati** : Behavioural and electrocortical modifications induced in the rat by intraventricular injection of physalemin and eledoisin. *Psychopharmacol.* 38,211-218,1974
- E.Scarnati**,C.Forchetti,S.Ruggieri,A.Agnoli: Evidence for an intrastriatal GABA control on motor activity arising from dopaminergic hyperfunction in the striatum. *Acta Neurol.* 33,304-313,1978
- E.Scarnati**,C.Forchetti,C.De Angelis,G.Leonardis: Modifications of penicillin-induced paroxysmic hippocampal activity caused by ethrane and fluothane. *Acta Neurol.*34,278-287,1979.
- E.Scarnati**,C.Forchetti,C.Pacitti,A.Agnoli: Electrophysiological and behavioural correlations during manipulations of GABA functions in the substantia nigra by n-dipropylacetate and picrotoxin. *Pharmacol.Res.Comm.* 11,817- 824,1979.
- G.P.Mereu,**E.Scarnati**,E.Paglietti,G.Di Chiara,G.L.Gessa: Sleep induced by low doses of apomorphine in rats. *Electroenc.Clin.Neurophysiol.* 46,214-219,1979.
- E.Scarnati**,C.Forchetti,S.Ruggieri,A.Agnoli: Dopamine and dementia. An animal model with destruction of the mesocortical dopaminergic pathway. *Aging* 13,139-145,1980.
- E.Scarnati**,C.Forchetti,G.Ciancarelli,C.Pacitti,A.Agnoli: Responsiveness of nigral neurons to the stimulation of striatal dopaminergic receptors in the rat. *Life Sci.* 26,1203-1209,1980.
- E.Scarnati**,C.Forchetti,G.Ciancarelli,C.Pacitti,A.Agnoli: Dopaminergic and non-dopaminergic neurons in the substantia nigra: differential response to bromocriptine. *J.Neural Transm.* 48,297-303,1980.

- C.Forchetti,**E.Scarnati**,C.Pacitti,A.Agnoli: Striatal cholinergic receptors and dyskinetic motor activity in the rat. *Neurosci.Lett.*20,363-367,1980.
- E.Scarnati**,C.Pacitti: Neuronal responses to iontophoretically applied dopamine,glutamate and GABA of identified dopaminergic cells in the rat substantia nigra after kainic acid-induced destruction of the striatum. *Exp.Brain Res.* 46,377-382,1982.
- C.Pacitti,G.Fiadone,D.Civitelli,A.Gasbarri,**E.Scarnati**: Electrophysiological evidence for an inhibitory accumbens-entopeduncular pathway in the rat. *Neurosci.Lett.* 33,35-40,1982.
- E.Scarnati**,E.Campana,C.Pacitti: The functional role of the nucleus accumbens in the control of the substantia nigra: electrophysiological investigations in intact and striatum-globus pallidus lesioned rats. *Brain Res.* 265,249- 257,1982.
- B.Rouzaire-Dubois,**E.Scarnati**,C.Hammond,A.Crossman,T.Shibazaki: Microiontophoretic studies on the nature of the transmitter in the subthalamo-entopeduncular pathway in the rat. *Brain Res.* 271,11-20,1983.
- E.Scarnati**,E.Campana,C.Pacitti: Pedunculo-pontine-evoked excitations of substantia nigra neurons in the rat. *Brain Res.* 304,351-361,1984.
- B.Rouzaire-Dubois,**E.Scarnati**: Bilateral cortico-subthalamic nucleus projections: an electrophysiological study in the rat. *Neuroscience* 15,69-79,198
- E.Scarnati**,A.Proia,E.Campana,C.Pacitti: A microiontophoretic study on the nature of the putative synaptic neurotransmitter involved in the pedunculo-pontine-substantia nigra pars compacta excitatory pathway. *Exp.Brain Res.* 62,470-478,1986.
- W.Schultz,**E.Scarnati**,E.Sundstrom,G.Jonsson: The catecholamine uptake inhibitor nomifensine protects against MPTP-induced parkinsonism in monkeys. *Exp.Brain Res.* 63,216-220,1986.
- B.Rouzaire-Dubois,**E.Scarnati**: Bilateral cortico-subthalamic nucleus projections: electrophysiological and micropharmacological studies in the rat. *Biog.Amin.* 4,85-91,1987
- B.Rouzaire-Dubois,**E.Scarnati**: Increase in glutamate sensitivity of subthalamic neuron following bilateral decortication: a microiontophoretic study. *Brain Res.* 403,366-370,1987
- B.Rouzaire-Dubois,**E.Scarnati**: A pharmacological study of the cortical-induced excitation of subthalamic nucleus neurons in the rat: evidence for amino acids as putative neurotransmitters. *Neuroscience* 21,429-440,1987
- E.Scarnati**,A.Gasbarri,E.Campana,C.Pacitti: The organization of nucleus tegmenti pedunculo-pontinus projections to basal ganglia and thalamus: a retrograde transport study. *Neurosci. Lett.* 79,11-16,1987
- E.Scarnati**,A.Proia,S.DiLoreto,C.Pacitti: The reciprocal influence between the nucleus tegmenti pedunculo-pontinus and the substantia nigra in normal and decorticated rats. *Brain Res.*

423,116-124,1987

- E.Scarnati**,F.Haydu,C.Pacitti,T.Tömböl: An EM and Golgi study of the connection between the nucleus tegmenti pedunculopontinus and the pars compacta of the substantia nigra in the rat. *J.Hirnforschung* 29,95-105,1988
- E.Scarnati**,S.DiLoreto,A.Proia,G.Galliè: The functional role of the pedunculopontine nucleus in the regulation of the electrical activity of entopeduncular neurons in the rat. *Arch.Ital.Biol.* 126,145-163,1988
- W.Schultz,R.Romo,**E.Scarnati**,E.Sundstrom,G.Jonsson,A.Studer: Saccadic reaction times, eye-arm coordination and spontaneous eye movements in normal and MPTP-treated monkeys. *Exp.Brain Res.* 78,253-267,1989
- W.Schultz,A.Studer,R.Romo,E.Sundstrom,G.Jonsson,**E.Scarnati**: Deficits in reaction times and movement times as correlates of hypokinesia in monkeys with MPTP-induced striatal dopamine depletion. *J.Neurophysiol.* 61,651- 668
- W.Schultz,**E.Scarnati**,E.Sundstrom,R.Romo: Protection against MPTP-induced Parkinsonism by the catecholamine uptake inhibitor nomifensine: behavioral analysis in monkeys with partial striatal dopamine depletions. *Neuroscience* 31,219-230,1989
- E.Scarnati**,S.Di Loreto,T.Florio: The pontine tegmentum as a functional interface between the basal and the spinal cord. *Curr.Probl.Neurol.* 9,97-102,1989.
- W.Schultz,R.Romo,**E.Scarnati**,A.Studer,G.Jonsson,E.Sundstrom: Neural mechanisms in the basal ganglia related to the initiation of movements. *Curr.Probl.Neurol.* 9,145-156,1989.
- P.Apicella,**E.Scarnati**,W.Schultz: Tonicly discharging neurons of monkey striatum respond to preparatory and rewarding stimuli. *Exp.Brain Res.* 84,672-675,1991
- P.Apicella,T.Ljungberg,**E.Scarnati**,W.Schultz: Responses to reward in monkey dorsal and ventral striatum. *Exp.Brain Res.* 85,491-500,1991
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- R.Romo,**E.Scarnati**,W.Schultz: Role of primate basal ganglia and frontal cortex in the internal generation of movements II. Movement-related activity in the anterior striatum. *Expl.Brain Res.* 91,385-395,1992
- W.Schultz,P.Apicella,**E.Scarnati**,T.Ljungberg: Neuronal activity in monkey ventral striatum related to expectation of reward. *J.Neurosci.* 12,4595-4610,1992

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- T.Florio,S.Di Loreto,F.Cerrito,**E.Scarnati**: Influence of prelimbic and sensorimotor cortices on striatal neurons in the rat: electrophysiological evidence for converging inputs and the effects of 6-OHDA-induced degeneration of the substantia nigra. Brain Res. 619,180-188,1993
- F.Baldissera,S.DiLoreto,T.Florio,**E.Scarnati**: Short-latency excitation of hindlimb motoneurons induced by electrical stimulation of the pontine tegmentum in the rat. Neuroscience Letters 169,13-16,1994
- E.Scarnati**,T.Florio,S.Di Loreto,F.Cerrito: Regulatory action of the dopaminergic nigrostriatal pathway on the corticostriatal transmission. Adv. Behav.Biol. 41,277-284,1994.
- W.Schultz,P.Apicella,R.Romo,**E.Scarnati**: Context-dependent activity in primate striatum reflecting past and future events. In: Models of Information Processing in the Basal Ganglia (Ed. J.Houk,J.L.Davis and D.G.Beiser). MIT Press, Cambridge 1995, pp 11-27.
- S.Di Loreto,T.Florio,A.Capozzo,A.Napolitano,A.Adorno, **E.Scarnati**: Transplantation of mesencephalic cell suspensions in dopamine-denervated striatum of the rat. I) Effects on spontaneous activity of striatal neurons. Exp. Neurol. 138,318-326,1996.
- E.Scarnati**,T.Florio: The pedunculo-pontine nucleus and related structures: functional organization. Adv.Neurol.74,97- 110,1997.
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- Gimenez-Amaya, **E.Scarnati**, HWM Steinbush (Guest Editors) Special Section: Thalamic interaction of the Basal Ganglia. J.Chem.Neuroanatomy. 16,3,149-200, 1999:
- M.Gimenez-Amaya, **E.Scarnati**: The thalamus as a place for interaction between the input and the output systems of the basal ganglia. J.Chem Neuroanatomy.16,149-153.1999
- T.Florio, A.Capozzo, A.Nisini, A.Lupi,**E.Scarnati**: Dopamine denervation of specific striatal subregions differentially affects preparation and execution of a delayed response task in the rat. Behav.Brain Res. 104,51-62,1999
- T.Florio, A.Capozzo,E.Puglielli, R.Pupillo, G.Pizzuti, **E.Scarnati**: The function of the pedunculo-pontine nucleus in the preparation and execution of an externally-cued bar pressing task in the rat. Behav.Brain Res. 104,95- 104,1999
- A.Pisani,P.Bonsi,B.Picconi,M.Tolu,P.Giacomini,**E.Scarnati**: Role of Tonicly-Active Neurons in the control of striatal function: cellular mechanisms and behavioral correlates.

Progr. Neuropsychopharmacol. Biol. Psych. 25,211-230,2001

- T.Florio,A.Capozzo,R.Cellini,G.Pizzuti,**E.Scarnati**: Unilateral lesions of the pedunculopontine nucleus do not alleviate subthalamic nucleus-mediated anticipatory responding in a delayed sensorimotor task in the rat. Behav.Brain Res. 125, 1-13, 2001.
- P.Bonsi,T.Florio,A.Capozzo,A.Pisani,P.Calabresi, A.Siracusano,**E.Scarnati**: Behavioural learning induced increase in spontaneous GABA-dependent synaptic activity in rat striatal cholinergic interneurons. Eur. J. Neurosci. 17, 174-178,2003
- A.Capozzo,T.Florio,R.Cellini,U.Moriconi,**E.Scarnati**: The pedunculopontine nucleus projection to the parafascicular nucleus of the thalamus: an electrophysiological investigation. J.Neur.Transm. 110,733- 747.2003
- P.Mazzone,A.M.Lozano,P.Stanzione,S.Galati,**E.Scarnati**, A.Peppe, A.Stefani: Implantation of human pedunculopontine nucleus: a safe and clinically relevant target in Parkinson's disease.Neuroreport. 2005 16:1877-81.
- A.Stefani,A.M.Lozano,A.Peppe,P.Stanzione,S.Galati,D.Tropepi,M.Pierantozzi,L.Brusa, **E.Scarnati**,P.Mazzone: Bilateral deep brain stimulation of the pedunculopontine and subthalamic nuclei in severe Parkinson's disease. Brain 2007 130,15-96-1607
- T.Florio,**E.Scarnati**,G.Confalone,D.Minchella,S.Galati, P.Stanzione,A.Stefani,P.Mazzone: High-frequency stimulation of the subthalamic nucleus modulates the activity of pedunculopontine neurons through direct activation of excitatory fibers as well as through indirect activation of inhibitory pallidal fibres in the rat. Eur.J.Neuroscience 2007, 25:1174-1187.
- P.Mazzone,P.Stanzione,A.Lozano,**E.Scarnati**,A.Peppe,S.Galati, A.Stefani: The peripeduncular and pedunculopontine nuclei: a putative dispute not discouraging the effort to define a clinically relevant target. Brain 2007 130,74-75.
- P.Mazzone,A.Insola,A.Lozano,S.Galati,**E.Scarnati**,A.Peppe,P.Stanzione,A.Stefani: Peripeduncular and pedunculopontine nuclei: a dispute on a clinically relevant target. Neuroreport 2007,18, 1407-1408
- S.Galati,**E.Scarnati**,P.Mazzone,P.Stanzione,A.Stefani: Low-frequency stimulation of the pedunculopontine nucleus modulates the firing activity of human parkinsonian subthalamus. Neuroreport 2008, 19,661-666.
- S.Galati,V.D'Angelo,**E.Scarnati**,P.Stanzione, A.Martorana, T,Procopio, G.Sancesario,A.Stefani: In vivo electrophysiology of dopamine-denervated striatum: focus on the nitric oxide/cGMP signalling pathway. Synapse 2008 62,409-420.
- P.Mazzone,G.Della Marca,S.Sposato,V.Di Lazzaro,**E.Scarnati**: Stereotaxic surgery of nucleus tegmenti pedunculopontinus (PPTg). Brit.J.Neurosurg. 22,S1,33-40, 2008
- P.Mazzone,G.Della Marca,S.Sposato,V.Di Lazzaro,**E.Scarnati**: Modelo tridimensional de estructuras mesencefálicas y protuberanciales: se propone un abordaje para la

identificación estereotáctica del núcleo tegmental pedunculopontino. *Neurotarget* 3,1-7,2008.

- A. Capozzo, T. Florio, G. Confalone, D. Minchella, P. Mazzone, **E. Scarnati**: Low-frequency stimulation of the pedunculopontine nucleus modulates electrical activity of subthalamic neurons in the rat. *J. Neur. Transm.* 116,51-56,2009.
- P. Mazzone, **E. Scarnati**: Deep brain stimulation of the medial thalamus for movement disorders: the role of the centromedianum-parafascicular complex. In *Neuromodulation* Cap. 48. pp. 599-615. (E. Krames, P. Hunter Peckam, A. Rezai eds) Elsevier-Academic Press, 2009.
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- P. Mazzone, E. Garcia-Rill, **E. Scarnati**. (Guest Editors). Special issue: The pedunculopontine nucleus: from basic Neuroscience to translation applications for Parkinson's Disease. *J. Neural Transm.* 118,nr.10,1389-1610, 20011, Springer Wien.
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- P. Mazzone, **E. Scarnati**, E. Garcia-Rill. Commentary: the pedunculopontine nucleus: clinical experience, basic questions and future directions. *J. Neural Transm.* 118, 1391-1396, 2011
- P. Mazzone, S. Sposato, A. Insola, **E. Scarnati**. The deep brain stimulation of the pedunculopontine tegmental nucleus: towards a new neurofunctional neurosurgery. *J. Neural Transm.* 118, 1431-1451, 2011
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- P. Caliandro, A. Insola, **E. Scarnati**, L. Padua, L. Russo, E. Granieri, P. Mazzone. Effects of unilateral pedunculopontine stimulation on electromyographic activation patterns during gait in individual patients with Parkinson's disease. *J. Neur. Transm.* 118, 1477-1486, 2011.
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- P.Mazzone, E.Garcia-Rill, **E.Scarnati** (Guest Editors):Progress in deep brain stimulation of the pedunclopontine nucleus and other structures: implications for motor and non-motor disorders. *J Neural Transm.* 123,653-806,2016.
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Teaching activity

Physiology of the Stomatognathic System and Human Physiology. Single cycle degree in Dentistry, University of L'Aquila (since 1984).

Human Physiology. Single cycle degree in Medicine and Surgery, University of L'Aquila (since 1991).

Human Physiology. Bachelor of Science Program in Sport and Physical Activity Science, University of L'Aquila (2000-2002).

Physiology. Bachelor of Science Program in Physiotherapy, University of L'Aquila (2017-2019).

Neurophysiology. Bachelor of Science Program in Physiotherapy, University of L'Aquila (1994-1996).

Applied Physiology. Single cycle degree in Medicine and Surgery, University of L'Aquila (1990).

Neurophysiology. School of Specialization in Neurology, University of L'Aquila (since 1980).

Neurophysiology of Movement. Interuniversity School of Specialization for secondary teaching (SSIS). Universities of Chieti and L'Aquila (2000-2002).

Physiology. Bachelor of Science Program in Dental Hygiene, University of L'Aquila (1989-2019).

Kinesiology. Bachelor of Science Program in Physiotherapy, University of L'Aquila. (1990-1992).

Cardiovascular Physiology. School of Specialization in Cardiology, University of L'Aquila (1976-1985).

Human Physiology. School of Medicine, National University of Somalia, Mogadiscio, winter quarters 1979 and 1980.

Physiology. Bachelor of Science Program in Biomedical Laboratory. University of L'Aquila (1977-1979).

Physiology. School of Specialization in Radiology and Imaging. University of L'Aquila (1999-2000).

Doctoral Thesis

The pedunclopontine tegmental nucleus: neurophysiology and role in the regulation of the activity of dopaminergic neurons in the substantia nigra. PhD student: Tiziana Florio. PhD Course in Experimental Medicine. University of L'Aquila. 1994 (Tutor).

Functions of the dorsal striatum and the corticostriatal pathway: possible functional recovery by intrastriatal graft of mesencephalic neurons in an experimental animal model of Parkinson's Disease. PhD student: Annamaria Capozzo. PhD Course in Experimental Medicine. University of L'Aquila, 1996 (Tutor).

Implication des ganglions de la base dans le controle de l'attention: utilisation de l'information prealable au mouvement dans la maladie de Parkinson. These de Doctorat en Neurosciences par Lamine Guèye. Université d'Aix-Marseille II, 1997 (Rapporteur).

The role of deep brain stimulation of the pedunclopontine tegmental nucleus in the control of movement and in the sensorimotor integration in the 6-hydroxydopamine murine model of parkinsonism. PhD student: Flora Vitale. PhD course in Neurobiology of Neurodegenerative Disorders. University of L'Aquila. 2015 (Tutor).

Functions of the subthalamic nucleus in the timing of movement. PhD student: Claudia Mattei. PhD course in Neurobiology of Neurodegenerative Disorders. University of L'Aquila, 2015 (Tutor).

Didactic Book

D. Manzoni, E. Scarnati: Fisiologia Orale e dell'Apparato Stomatognatico. Edi-Ermes Milano 2011

Fisiologia Medica (edited by F. Conti) prima (2005), seconda (2010) e terza edizione (2019). Edi-Ermes Milano.

Fisiologia dell'Uomo (edited by P.E. Di Prampero and A. Veicsteinas) Edi-Ermes Milano 2002

Curatorship of didactic book

Italian edition of Samson Wright's Applied Physiology by C.A. Keele, E. Neil e N. Joels (on the 3rd American edition), 1986, SEU, Roma.

Italian edition of The Principles of Physiology by J. Jensen (on the 2nd American edition), 1988, Piccin, Padova.

Italian edition of Physiology by L. Costanzo (on the 1st American edition), 2001, Edises, Napoli

Italian edition of Textbook of Medical Physiology by A.C. Guyton and J.E. Hall (on the 10th American

edition) 2002, Edises, Napoli.

Italian edition of Pocket Companion to Textbook of Medical Physiology by A.C.Guyton and J.E.Hall
(on the 2nd American edition), 2002, Edises, Napoli.

Italian edition of Physiologie by R. Klinke et al. (on the 6th German edition), 2012, Edises Napoli.