

Dr **SARA MARINELLI**, PhD

Senior Researcher

Consiglio Nazionale delle Ricerche

Institute of Biochemistry and Cell Biology

Via E. Ramarini, 32 - 00010 Monterotondo Scalo (Rome) - Italy

email : 

Group Leader Neurodegeneration, Neuroinflammation and Pain Lab

<http://www.ibbc.cnr.it/researchers/sara-marinelli/>

Nationality:  **Date of Birth:** 

Maternal leave: 

Personal statement

Sara Marinelli conducts research into the underlying mechanisms of both central and peripheral neurodegeneration. Her work encompasses an exploration of the impact of neuroinflammation on neuropathies, the intricate processes of pain transmission, and the modulation of inflammatory and chronic pain. In her investigations, Marinelli seeks to achieve two main objectives: a) the identification of novel molecular targets, and b) the discovery of drugs with innovative therapeutic applications.

Of recent focus within Marinelli's scientific inquiries is the exploration of neural mechanisms linked to degeneration and regeneration. This research topic notably examines the influence of autophagy and immune responses within the domain of neuropathies and pain. Furthermore, she actively investigates how sex-related disparities and metabolic influences intersect with neuropathological conditions and pain perception.

Furthermore, Marinelli's research has extended into emerging domains of investigation, such as the exploration of spinal cord injuries and the mechanisms governing degeneration and regeneration processes. Additionally, she is delving into the realm of innate immunity within the context of amyotrophic lateral sclerosis, particularly as it pertains to peripheral degeneration.

Education and Training

2001 Master, Sapienza University of Rome (Italy), Experimental Psychology

2002-2005 PhD, Sapienza University of Rome (Italy), Psychobiology and Psychopharmacology

2003 Advanced course EUROPEAN PAIN SCHOOL. FENS, IBRO, EFIC University of Siena.

2006 Advanced course PHYSIOLOGICAL IMAGING CNR. Neuroscience Institute, Scuola Normale Superiore, Pisa, Italy.

2010 Advanced course. STATISTICS IN ANIMALS EXPERIMENTS. CNR, Fondazione S. Lucia, AISAL, EBRI

2010 Advanced course. PATENTS AS TOOL OF STRATEGIC MANAGEMENT IN INTELLECTUAL PROPERTY. RIDITT – Ministero dello Sviluppo Economico – IPI (Istituto Promozione Industriale).

2014 Advanced Course. SCIENCE OF ANIMALS LAB. FELASA. CNR, IRCCS S. Lucia Foundation, Tor Vergata University of Rome, EBRI, Rome – Italy

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2018 Advanced Course. USE OF "R" SOFTWARE FOR STATISTICS IN BIOMEDICINE RESEARCH. S.

Lucia Foundation, CNR – Rome

2018 CNR Training Course. ERC GRANTS IN HORIZON 2020: rules of participation and assessment criteria. (2223660.2223667)

2019 CNR, APRE Training Course. WRITING WORKSHOP ON SUCCESSFUL PROPOSAL IN HORIZON 2020 PROGRAM. (3242262.3242269)

2023 Statistics for Data Analysis IBM SPSS Statistics e Add-On (Basic Course)– 18-20 dec, CNR IBBC Monterotondo (RM)

Research Experience

- From 01/2023 to today: Institute of Biochemistry and Cell Biology, CNR, Rome, Italy. Senior Researcher (Primo ricercatore)

- From 11/2019 to 12/2022: Institute of Biochemistry and Cell Biology, CNR, Rome, Italy. Researcher

- From 02/2008 to 11/2019: Cell Biology and Neurobiology Institute, CNR, Rome, Italy. Researcher

- From 03/2016 to 09/2016: parental leave

- From 07/2008 to 02/2009: parental leave

- From 08/2007 to 01/2008: Neuroscience Institute, CNR, Rome Italy. Post-doc position, Supervisor: Dr. Flaminia Pavone. Neuropathic and inflammatory pain. FILAS-Regione Lazio 5/06/2006 N. 0000569. Collaboration Agreement among CNR, IRCCS Santa Lucia Foundation, European Brain Research Institute, Regione Lazio, Filas S.p.A. "Development of brain research".

- From 06/2007 to 08/2007: Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland. **Short term Fellowship**. Supervisor: Prof. Barbara Przewlocka. Therapeutic use of Botulinum neurotoxin in pain. CNR/PAN (Poland) "Animal model for the physiopathological studies of CNS: molecular, neuroclinical and psychopharmacological investigation" Scientific cooperation agreement between CNR and Polish Academy of Science 2007-2009 .

- From 01/2007 to 06/2007: Neuroscience Institute, CNR, Rome Italy. Post-doc position, Supervisor: Dr. Flaminia Pavone. Therapeutic use of toxins in pain. FISR 20/10/2004 N. 020812 - N. 020802 CNR/MIUR "Physiopathology of nervous tissue: biomedicine and biotechnology aspects". Fellowship

- From 01/2006 to 12/2006: Neuroscience Institute, CNR Rome, Italy. Fellowship granted LayLineGenomics S.p.A.(Biotech). Post-doc position, supervisors Dr. Flaminia Pavone and Prof. Antonino Cattaneo, anti-NGF and anti-TrkA antibodies against pain.

Other Experience

Honors or Awards:

01/09/2007 Travel grant SINS Verona.

01/02/2008 Young Ideas Change Italy - Presidency of the Council of Ministers – Ministry of Youth (POGAS);

01/03/2015 SIMPAR Award "Young Against Pain" 30 best projects in pain therapy;

01/09/2015 Art or Science – IMMAGINARIO SCIENTIFICO – Winner best scientific image – Exposition Trieste Next.

03/10/2023 "Le Ragunanze", First award, best artwork for the confocal microscopy picture "the Roscharch Butterly", Exposition Rome - Italy

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Scientific Dissemination:

01/11/2011 Event: Festival della cultura di Viterbo Caffèina. Presentation: "The women in science: the C-side".

01/12/2011 Event: "Liberamente, assaggi di Neuroscienze" Presentation: "Art and/or Science? Photo-reportage of a trip across the nervous system". Coffee Science -libreria Assaggi Rome;

04/11/2019: popular science article on Charles River Blog Eureka

<https://eureka.criver.com/neuroinflammation-in-spinal-cord-injury-a-necessary-evil/>;

From 2023: Creator and editor of the Science and Digital Art website www.thelifesart.com: collection of pictures from nervous systems

05/10/2023 – 16/11/2023 Organizer and speaker in the event to commemorate the centenary of the CNR birth: 100x100 CNR <https://centenario.cnr.it/evento/100x100cnr-incontri-mattutini-con-100-studenti-liceali/>

Invited speaker:

CNR Neuroscience Conference 2007 "Botulinum Neurotoxins: an innovative approach for pain therapy" June 2007, Cagliari, Italy.

CNR Science of life Dept. 2010 "Botulinum neurotoxin type A counteracts neuropathic pain and facilitates functional recovery after peripheral nerve injury in animal models" Apr 2010 Rome, Italy.

SINS Congress 2013. "Autophagy in the peripheral nervous system: a modulatory role in the onset and chronicization of neuropathic pain". Oct. 2013, Rome, Italy.

Innovagorà 2019 "New therapeutic use of Botulinum neurotoxin in spinal cord injury". May 2019 Milan – Italy.

International Association for the Study of Pain - IASP Congress 2021 Workshop "Autophagy: a new puzzle piece in chronic pain mechanisms" June 2021 (virtual);

European Glial Meeting 2021 Symposium "Schwann cells autophagy: fast and immediate clearance of aggregates for counteracting peripheral neurodegeneration" July 2021 (virtual);

Member of the scientific board "Neurospine" 2021 (VI International Workshop)

NeuroSpine 2022- VII International Workshop, Regeneration & Rehabilitation in Brain and Spinal Cord Injuries December 2022 Bologna, Italy.

Participation in Panel discussion "TeleMediCare" 1-2-3 October 2021 special session on assistive, rehabilitative and regenerative technologies.

Euro-Mediterranean Medical Informatics and Telemedicine (EMMIT) 2023 (15th meeting) Med Inclusion Week, invited to "Olive" round table on assistive, rehabilitative and regenerative technologies, (15.09.2023)

ANMIL 2023 – Technology and Disabilities – 01 Dec – Brescia, Italy. Workshop "Early Rehabilitation in the prevention of muscle atrophy: evidence from a murine model of severe spinal lesion"

TOXINS 2024 - 7th International Conference – Plenary Lecture "BoNT Action Beyond Neurons" 17-19 Jan – Berlin, Germany

NUTRAGE 2024 - NUTRITION, FOOD, AND ACTIVE AGING Opportunities & Innovation – National CNR Meeting - Palermo 16-17 may, **Presentation** WP7 Nutrage project "Verification of the best dietary patterns with high health value and specific biomarkers in (pre)clinical studies" -

Workshop on "Proactive sex-specific and age-dependent participation of adipose tissue in the response to neuropathy in preclinical models: new therapeutic and nutraceutical targets"

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Biomedical Department CNR 2024 – “Strategies and tools for enhancing the value of research outcomes in the biomedical and pharmacological fields” Milan, 30 Oct, Presentation: “A case study”

Disability Care, 2024 - NeuroInformatics (13th): Artificial Intelligence - NeuroSpine (9th): Rehabilitation and Regeneration – Meeting, Pisa 3 Dec, **Presentation:** “Neuromotor Rehabilitation and Regeneration in a Murine Model”

Teaching Activity:

- From 3/12/2007 to 5/12/2007 - CNR – Neuroscience Institute. Advanced course: Behavioural Neuroscience.
- From 2006 to 2023 invited lesson - Sapienza Università di Roma – Facoltà Scienze Matematiche Fisiche e Naturali (FF.MM.NN) – Roma - CLM Neurobiology –to Behavioural Methods - Lesson: Methods and techniques in pain studies.
- Invited lesson: IZSLER Istituto Zooprofilattico Sperimentale della Lombardia ed Emilia-Romagna, AISAL “ The animal pain: evaluation and severity of procedures” - “The most utilized murine models of pain” July, 2016 Brescia, Italy;
- From 3/2023 to 2/2024 Contract Professor, University of Tor Vergata, Psychology Faculty, BIO-09 Physiology. Rome – Italy.
- 2008 – today Supervision of PhD students
- 2008 – today Supervision of master thesis students
- SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

2008 - today

n.5 Post-docs

n.4 PhD students,

n.4 Young Fellows,

n.6 Internships,

n.11 master's degree students,

Editor

2024 – Today Springer Nature Associate editor for **Molecular Neurobiology**

2022 – today Associate Editor for Multiple Sclerosis and Neuroimmunology: **Frontiers in Immunology** and **Frontiers in Neurology**

2023 - 2024 Research Topic Editor **Frontiers in Neurology, Multiple Sclerosis and Neuroimmunology**. Women in Multiple Sclerosis and Neuroimmunology

2020 – 2021 Research Topic Editor **Frontiers in Immunology**. Neuroinflammation and Neuroautoimmunity in Peripheral Neuropathies: Old players, New Roles

2020 – today Guest Editor **International Journal of Molecular Sciences**. Metabolic Determinants and Sex-Associated Differences in the Generation of Neuropathic Pain

Reviewer

More than 50 papers reviewed for different journal such as Autophagy, Cell Death and Diseases, Cell Reports, Journal of Clinical Investigation, Militar Medical Research, British journal of Pharmacology, Toxins, Pain, Frontiers

Membership

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Italian Society of Neuroscience (SINS), International Study of Pain (IASP), Federation of European Neuroscience Society (FENS), European Foundation for the Study of Diabetes (EFSD), International Neurotoxins Association (INA)

Institutional roles

President or Member of examining boards for various positions: n. 7 senior research grant, n.1 junior fellowship, n. 2 collaboration positions.

Member of examining board of Biology and Physiology, Università di Tor Vergata, Psychology Faculty, Rome - during the academic period 2022-2023

Member of the Institute Council Board (CNR - IBBC) from 2019

Total published peer review articles: 51 <https://orcid.org/0000-0001-5393-4796>

Patents: 5 https://patentscope.wipo.int/search/en/result.jsf?_vid=P20-LMQCNJ-50216

H-index: 25 <https://www.scopus.com/authid/detail.uri?authorId=6603859954>

Loop profile: 896471

On-going Research Support

2024 DSB.AD004.416 FOE 2022 Development of initiatives with the EBRI Foundation - New strategies for neuroinflammatory and neurodevelopmental diseases. Subproject leader: Neuroinflammation - Study of the anti-inflammatory effects of botulinum toxin A (BoNT/A) on neuroglial cells.

2022 – 2025 CNR - DBA.AD005.225 / NutrAge FOE 2021 DM MUR n. 844/2021 IBBC 6 - Active and sex-specific role of adipose tissue in the development of inflammation and neurodegeneration during aging: metabolic and nutraceutical targets. **Principal Investigator**

WP7 Leader NutrAge project “Verification of the best dietary patterns with high health value and specific biomarkers in (pre)clinical studies

Research financial Support (Completed Research)

2021-2022 SCI-BTXA From science to the compound, last steps toward the clinical phase of the Botulinum Neurotoxin in the spinal cord lesion therapy. POC MISE - Proof of Concept - Ministero dello Sviluppo Economico CUP C86I20000160004 SAC.AD002.202.007 **Principal Investigator**

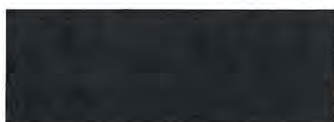
2019-2021 Novel pharmacological approaches study on motor function recovery in animals' models of spinal cord injury. (CNR - DSB.AD001.122) **Principal Investigator**

2014 - 2019 YOUNG RESEARCHER 2011– Italian Ministry of Health – GR2011-02346912.

Principal Investigator “Cell autophagy modulation via energy balance regulation: age-dependent outcomes on inflammation, axon regeneration and neuropathic pain in murine models of peripheral nerve lesion”.

2014 – 2015 IASP – Early Career Research Grant Program 2014– **Principal Investigator –** “Botulinum Neurotoxin type A as pharmacological tool for controlling pain and inflammation in murine model of spinal contusion: effects on spinal cord regeneration”.

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2011 YOUNG RESEARCHER 2008– Italian Ministry of Health - GR-2008-1137604. **Participant.** PI Dr. Silvia Marinelli. Project title: "Role of cannabinoid and vanilloid receptors in the central mechanism of neuropathic pain"

2008 – PRIN 20088NJR3B_002 - Ministry of Education and Research. **Participant.** PI Dr. Caterina Aurilio. Unit's coordinator: Dr. Flaminia Pavone. Project title: "Dolore neuropatico e differenze sessuali: indagini sul ruolo degli ormoni gonadici in modelli animali".

FULL PUBLICATIONS LIST

Invited book chapter.

Diet and Nutrition in Neurological Disorders - 1st Edition - May 1, 2023 – Elsevier ISBN: 9780323898348 Part XI - Peripheral neuropathy - CH41. Caloric restriction as a nutrition strategy in counteracting peripheral neuropathies - Sara Marinelli

Peer reviewed publications:

1. Essential role of p21Waf1/Cip1 in the modulation of post-traumatic hippocampal Neural Stem Cells response. Chiani F, Mastroianni V, Marchetti N, Macioce A, Nappi C, Strimpakos G, Pasquini M, Gambadoro A, Battistini JI, Cutuli D, Petrosini L, Marinelli S, Scardigli R, Farioli Vecchioli S. Stem Cell Res Ther. 2024 Jul 6;15(1):197. doi: 10.1186/s13287-024-03787-0
2. Sex-Specific Adipose Tissue's Dynamic Role in Metabolic and Inflammatory Response following Peripheral Nerve Injury. Vacca V, Rossi C, Pieroni L, De Angelis F, Giacobuzzo G, Cicalini I, Ciavardelli D, Pavone F, Coccurello R, Marinelli S. iScience 2023 <https://doi.org/10.1016/j.isci.2023.107914>
3. Wheel Running Adversely Affects Disease Onset and Neuromuscular Interplay in Amyotrophic Lateral Sclerosis Slow Progression Mouse Model. Golini E, Marinelli S, Pisu S, De Angelis F, Vacca V, Rava A, Casola I, Laurenzi G, Rizzuto E, Giuliani A, Musarò A, Dobrowolny G, Mandillo S. Curr Neurovasc Res. 2023 Aug 23
4. The Multiple Mechanisms Underlying Neuropathic Pain Marinelli S, Coccurello R. A Step Forward: About the Progresses Made in the Second Edition of the Special Issue". Int J Mol Sci. 2023 May 11;24(10):8590.
5. From the Gender Gap to Neuroactive Steroids: Exploring Multiple Cases to Further Understand Neuropathic Pain: Marinelli S, Coccurello R. Int J Mol Sci. 2023 May 11;24(10):8577.
6. Xeomin®, a Commercial Formulation of Botulinum Neurotoxin Type A, Promotes Regeneration in a Preclinical Model of Spinal Cord Injury. Mastroianni V, De Angelis F, Vacca V, Pavone F, Luvisetto S, Marinelli S. Toxins (Basel). 2023 Mar 28;15(4):248.



7. Role of Running-Activated Neural Stem Cells in the Anatomical and Functional Recovery after Traumatic Brain Injury in p21 Knock-Out Mice. Battistini J, Mastrorilli V, Nicolis di Robilant V, Saraulli D, Marinelli S, Farioli Vecchioli S. *Int J Mol Sci.* 2023;24(3):2911.
8. Endocannabinoid signaling in microglia. Marinelli, S., Marrone, M.C., Di Domenico, M., Marinelli, S. *GLIA*, 2023, 71(1), pp. 71–90
9. Sex Differences in Neuropathy: The Paradigmatic Case of MetFormin De Angelis, F., Vacca, V., Tofanicchio, J., Coccurello, R., Marinelli, S. *International Journal of Molecular Sciences*, 2022, 23(23), 14503
10. CXCR2 increases in ALS cortical neurons and its inhibition prevents motor neuron degeneration in vitro and improves neuromuscular function in SOD1G93A mice La Cognata, V., Golini, E., Iemmolo, R., ...Mandillo, S., Cavallaro, S. *Neurobiology of Disease*, 2021, 160, 105538
11. Editorial: Neuroinflammation and Neuroautoimmunity in Peripheral Neuropathies: Old Players, New Roles Marinelli, S., Maiarù, M., Colciago, A. *Frontiers in Immunology*, 2021, 12, 801760
12. Targeting cancer stem cells in medulloblastoma by inhibiting AMBRA1 dual function in autophagy and STAT3 signalling. Nazio F, Po A, Abballe L, Ballabio C, Diomedi Camassei F, Bordi M, Camera A, Caruso S, Caruana I, Pezzullo M, Ferraina C, Milletti G, Giancesello M, Reddel S, De Luca CD, Ceglie D, Marinelli S, Campello S, Papaleo E, Miele E, Cacchione A, Carai A, Vinci M, Velardi E, De Angelis B, Tiberi L, Quintarelli C, Mastronuzzi A, Ferretti E, Locatelli F, Cecconi F. *Acta Neuropathol.* 2021 Jul 24. doi: 10.1007/s00401-021-02347-7.
13. Vacca, V.; Marinelli, S.(Co-First); De Angelis, F.; Angelini, D.F.; Piras, E.; Battistini, L.; Pavone, F.; Coccurello, R. Sexually Dimorphic Immune and Neuroimmune Changes Following Peripheral Nerve Injury in Mice: Novel Insights for Gender Medicine. *Int. J. Mol. Sci.* 2021, 22, 4397.
14. Proietti D, Giordani L, De Bardi M, D'Ercole C, Lozanoska-Ochser B, Amadio S, Volontè C, Marinelli S, Muchir A, Bouchè M, Borsellino G, Sacco A, Puri PL, Madaro L. Activation of skeletal muscle-resident glial cells upon nerve injury. *JCI Insight.* 2021 Mar 4:143469.
15. Klionsky DJ, et al. Guidelines for the use and interpretation of assays for monitoring autophagy (4th edition). *Autophagy.* 2021 Jan;17(1):1-382.
16. Angelini DF, De Angelis F, Vacca V, Piras E, Parisi C, Nutini M, Spalloni A, Pagano F, Longone P, Battistini L, Pavone F, Marinelli S. Very Early Involvement of Innate Immunity in Peripheral Nerve Degeneration in SOD1-G93A Mice. *Front Immunol.* 2020 Nov 20;11:575792.



17. Vacca V, Madaro L, De Angelis F, Proietti D, Cobianchi S, Orsini T, Puri PL, Luvisetto S, Pavone F, Marinelli S. Revealing the Therapeutic Potential of Botulinum Neurotoxin Type A in Counteracting Paralysis and Neuropathic Pain in Spinally Injured Mice. *Toxins (Basel)*. 2020 Jul 31;12(8):491.
18. De Angelis, F., Vacca, V., Pavone, F., Marinelli, S. Impact of caloric restriction on peripheral nerve injury-induced neuropathic pain during ageing in mice(2020) *European Journal of Pain (United Kingdom)*, 24 (2), pp. 374-382.
19. Marinelli, S., Vacca, V., Angelis, F.D., Pieroni, L., Orsini, T., Parisi, C., Soligo, M., Protto, V., Manni, L., Guerrieri, R., Pavone, F. Innovative mouse model mimicking human-like features of spinal cord injury: efficacy of Docosahexaenoic acid on acute and chronic phases (2019) *Scientific Reports*, 9 (1), art. no. 8883,
20. Coccurello, R., Nazio, F., Rossi, C., De Angelis, F., Vacca, V., Giacobazzo, G., Procacci, P., Magnaghi, V., Ciavardelli, D., Marinelli, S. Effects of caloric restriction on neuropathic pain, peripheral nerve degeneration and inflammation in normometabolic and autophagy defective prediabetic Ambra1 mice (2018) *PLoS ONE*, 13 (12), art. no. e0208596.
21. Madaro, L., Passafaro, M., Sala, D., Etxaniz, U., Lugarini, F., Proietti, D., Alfonsi, M.V., Nicoletti, C., Gatto, S., De Bardi, M., Rojas-García, R., Giordani, L., Marinelli, S., Pagliarini, V., Sette, C., Sacco, A., Puri, P.L. Denervation-activated STAT3–IL-6 signalling in fibro-adipogenic progenitors promotes myofibres atrophy and fibrosis (2018) *Nature Cell Biology*, 20 (8), pp. 917-927.
22. Finocchiaro, A., Marinelli, S., De Angelis, F., Vacca, V., Luvisetto, S., Pavone, F. Botulinum toxin b affects neuropathic pain but not functional recovery after peripheral nerve injury in a mouse model (2018) *Toxins*, 10 (3), art. no. 128.
23. Marrone, M.C., Morabito, A., Giustizieri, M., Chiurchiù, V., Leuti, A., Mattioli, M., Marinelli, S., Riganti, L., Lombardi, M., Murana, E., Totaro, A., Piomelli, D., Ragozzino, D., Oddi, S., Maccarrone, M., Verderio, C., Marinelli, S. TRPV1 channels are critical brain inflammation detectors and neuropathic pain biomarkers in mice (2017) *Nature Communications*, 8, art. no. 15292.
24. Zychowska, M., Rojewska, E., Makuch, W., Luvisetto, S., Pavone, F., Marinelli, S., Przewlocka, B., Mika, J. Dataset of botulinum toxin A influence on interleukins under neuropathy (2016) *Data in Brief*, 9, pp. 1020-1023.
25. Klionsky, D.J., et al. Guidelines for the use and interpretation of assays for monitoring autophagy (3rd edition) (2016) *Autophagy*, 12 (1), pp. 1-222.



26. Vacca, V., Marinelli, S., Pieroni, L., Urbani, A., Luvisetto, S., Pavone, F. 17Beta-estradiol counteracts neuropathic pain: A behavioural, immunohistochemical, and proteomic investigation on sex-related differences in mice (2016) *Scientific Reports*, 6, art. no. 18980.
27. Zychowska, M., Rojewska, E., Makuch, W., Luvisetto, S., Pavone, F., Marinelli, S., Przewlocka, B., Mika, J. Participation of pro- and anti-nociceptive interleukins in botulinum toxin A-induced analgesia in a rat model of neuropathic pain (2016) *European Journal of Pharmacology*, 791, pp. 377-388.
28. Boccella, S., Vacca, V., Errico, F., Marinelli, S., Squillace, M., Guida, F., Di Maio, A., Vitucci, D., Palazzo, E., De Novellis, V., Maione, S., Pavone, F., Usiello, A. D-aspartate modulates nociceptive-specific neuron activity and pain threshold in inflammatory and neuropathic pain condition in mice (2015) *BioMed Research International*, 2015, art. no. 905906.
29. Marinelli, S., Eleuteri, C., Vacca, V., Strimpakos, G., Mattei, E., Severini, C., Pavone, F., Luvisetto, S. Effects of age-related loss of P/Q-type calcium channels in a mice model of peripheral nerve injury (2015) *Neurobiology of Aging*, 36 (1), pp. 352-364.
30. Vacca, V., Marinelli, S., Pieroni, L., Urbani, A., Luvisetto, S., Pavone, F. Higher pain perception and lack of recovery from neuropathic pain in females: A behavioural, immunohistochemical, and proteomic investigation on sex-related differences in mice (2014) *Pain*, 155 (2), pp. 388-402.
31. De Angelis, F., Marinelli, S., Fioretti, B., Catacuzzeno, L., Franciolini, F., Pavone, F., Tata, A.M. M2 receptors exert analgesic action on DRG sensory neurons by negatively modulating VR1 activity (2014) *Journal of Cellular Physiology*, 229 (6), pp. 783-790.
32. Marinelli, S., Nazio, F., Tinari, A., Ciarlo, L., D'Amelio, M., Pieroni, L., Vacca, V., Urbani, A., Cecconi, F., Malorni, W., Pavone, F. Schwann cell autophagy counteracts the onset and chronification of neuropathic pain (2014) *Pain*, 155 (1), pp. 93-107.
33. Tiveron, C., Fasulo, L., Capsoni, S., Malerba, F., Marinelli, S., Paoletti, F., Piccinin, S., Scardigli, R., Amato, G., Brandi, R., Capelli, P., D'Aguanno, S., Florenzano, F., La Regina, F., Lecci, A., Manca, A., Meli, G., Pistillo, L., Berretta, N., Nisticò, R., Pavone, F., Cattaneo, A. ProNGF\NGF imbalance triggers learning and memory deficits, neurodegeneration and spontaneous epileptic-like discharges in transgenic mice (2013) *Cell Death and Differentiation*, 20 (8), pp. 1017-1030.
34. Vacca, V., Marinelli, S., Luvisetto, S., Pavone, F. Botulinum toxin A increases analgesic effects of morphine, counters development of morphine tolerance and modulates glia activation and μ opioid receptor expression in neuropathic mice (2013) *Brain, Behavior, and Immunity*, 32, pp. 40-50.



35. Marinelli, S., Vacca, V., Ricordy, R., Ugenti, C., Tata, A.M., Luvisetto, S., Pavone, F. The Analgesic Effect on Neuropathic Pain of Retrogradely Transported botulinum Neurotoxin A Involves Schwann Cells and Astrocytes (2012) PLoS ONE, 7 (10), art. no. e47977, .
36. Cinque, C., Pondiki, S., Oddi, D., Di Certo, M.G., Marinelli, S., Troisi, A., Moles, A., D'Amato, F.R. Modeling socially anhedonic syndromes: Genetic and pharmacological manipulation of opioid neurotransmission in mice (2012) Translational Psychiatry, 2, art. no. e155, .
37. Capsoni, S., Marinelli, S., Ceci, M., Vignone, D., Amato, G., Malerba, F., Paoletti, F., Meli, G., Viegi, A., Pavone, F., Cattaneo, A. Intranasal "painless" human nerve growth factors slows amyloid neurodegeneration and prevents memory deficits in app x PS1 mice (2012) PLoS ONE, 7 (5), art. no. e37555.
38. Covaceuszach, S., Marinelli, S., Krastanova, I., Ugolini, G., Pavone, F., Lamba, D., Cattaneo, A. Single cycle structure-based humanization of an anti-nerve growth factor therapeutic antibody (2012) PLoS ONE, 7 (3), art. no. e32212.
39. Vacca, V., Marinelli, S., Eleuteri, C., Luvisetto, S., Pavone, F. Botulinum neurotoxin A enhances the analgesic effects on inflammatory pain and antagonizes tolerance induced by morphine in mice (2012) Brain, Behavior, and Immunity, 26 (3), pp. 489-499.
40. Capsoni, S., Covaceuszach, S., Marinelli, S., Ceci, M., Bernardo, A., Minghetti, L., Ugolini, G., Pavone, F., Cattaneo, A. Taking pain out of ngf: A "painless" ngf mutant, linked to hereditary sensory autonomic neuropathy type v, with full neurotrophic activity (2011) PLoS ONE, 6 (2), art. no. e17321,
41. Mika, J., Rojewska, E., Makuch, W., Korostynski, M., Luvisetto, S., Marinelli, S., Pavone, F., Przewlocka, B. The effect of botulinum neurotoxin A on sciatic nerve injury-induced neuroimmunological changes in rat dorsal root ganglia and spinal cord (2011) Neuroscience, 175, pp. 358-366.
42. Marinelli, S., Luvisetto, S., Cobianchi, S., Makuch, W., Obara, I., Mezzaroma, E., Caruso, M., Straface, E., Przewlocka, B., Pavone, F. Botulinum neurotoxin type A counteracts neuropathic pain and facilitates functional recovery after peripheral nerve injury in animal models (2010) Neuroscience, 171 (1), pp. 316-328.
43. Cobianchi, S., Marinelli, S., Florenzano, F., Pavone, F., Luvisetto, S. Short- but not long-lasting treadmill running reduces allodynia and improves functional recovery after peripheral nerve injury (2010) Neuroscience, 168 (1), pp. 273-287.
44. Covaceuszach, S., Capsoni, S., Marinelli, S., Pavone, F., Ceci, M., Ugolini, G., Vignone, D., Amato, G., Paoletti, F., Lamba, D., Cattaneo, A. In vitro receptor binding properties of a "painless" NGF mutein, linked to hereditary sensory autonomic neuropathy type V (2010) Biochemical and Biophysical Research Communications, 391 (1), pp. 824-829.

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Patents

A NEW THERAPEUTIC USE OF THE BOTULINUM NEUROTOXIN SEROTYPE A

Publication number: 20180140685

Abstract: A new therapeutic use of botulinum neurotoxin serotype A (Bont/A) is described, therapeutic treatment of paralysis caused by spinal cord injury.

Type: Application

Filed: April 21, 2016

Publication date: May 24, 2018

Applicant: Consiglio Nazionale Delle Ricerche

Inventors: Sara Marinelli, Flaminia Pavone, Siro Luvisetto, Valentina Vacca

Method for the potentiation of opioid analgesics effects on pain

Patent number: 8715666

Abstract: According to the invention there is provided use of an anti-TrkA antibody capable of inhibiting the binding between NGF and TrkA combined with at least one opioid analgesic for the preparation of a medicament for treating and/or preventing pain.

Type: Grant

Filed: June 23, 2011

Roma, 10 GENNAIO 2025



Date of Patent: May 6, 2014

Assignee: Lay Line Genomics S.p.A.

Inventors: Flaminia Pavone, Sara Marinelli, Antonio Cattaneo, Gabriele Ugolini

Analgesic treatment with prolonged effect

Patent number: 8691221

Abstract: Use of an anti-TrkA antibody capable of inhibiting the binding between NGF and TrkA, in particular capable of blocking the biological activity of TrkA, for the preparation of a medicament for treating and/or preventing chronic pain.

Type: Grant

Filed: June 7, 2006

Date of Patent: April 8, 2014

Assignee: Lay Line Genomics S.p.A.

Inventors: Flaminia Pavone, Sara Marinelli, Antonio Cattaneo, Gabriele Ugolini

Novel Analgesic Treatment with Prolonged Effect

Publication number: 20100291083

Abstract: Use of an anti-TrkA antibody capable of inhibiting the binding between NGF and TrkA, in particular capable of blocking the biological activity of TrkA, for the preparation of a medicament for treating and/or preventing chronic pain.

Type: Application

Filed: June 7, 2006

Publication date: November 18, 2010

Applicant: NOVARTIS VACCINES AND DIAGNOSTICS

Inventors: Flaminia Pavone, Sara Marinelli, Antonio Cattaneo, Gabriele Ugolini

Abstract: CNF1 bacterial toxin protein from E. COLI as analgesic

Type: Application (2008) MALORNI, Walter, FIORENTINI, Carla, FABBRI, Alessia, FALZANO, Loredana, STRAFACE, Elisabetta, PAVONE, Flaminia, LUVISETTO, Siro, MARINELLI, Sara. EP1909816

Roma, 10 GENNAIO 2025

