

INFORMAZIONI PERSONALI

Davide Lecca

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ESPERIENZA LAVORATIVA

Gennaio 2021 - Oggi

Ricercatore a tempo determinato (RTD-B)

Dipartimento di Scienze Farmaceutiche (DISFARM), Università degli Studi di Milano, Via Balzaretti 9, 20133, Milano, Italia

- Attività di ricerca nell'ambito delle neuroscienze e della farmacologia
 - Docente dell'insegnamento Biotecnologie 1 e Biotecnologie 2 (CdL in Scienze e Sicurezza Chimico-Tossicologiche dell'Ambiente)
 - Docente del Collegio di dottorato in Scienze Farmacologiche, biomolecolari, sperimentali e cliniche
- Settore: Ricerca accademica

Novembre 2016 – Ottobre 2019

Ricercatore a tempo determinato (RTD-A)

Dipartimento di Scienze Farmacologiche e Biomolecolari (DiSFEB), Università degli Studi di Milano, Via Balzaretti 9, 20133, Milano, Italia

- Coordinatore del progetto "Characterization of a novel microRNA involved in myelination: a new potential pathogenetic mechanism in multiple sclerosis" nel bando "Ricerca biomedical condotta da giovani ricercatori – 2014", finanziato dalla Fondazione Cariplo
 - Docente dell'insegnamento Tossicologia (CdL in Scienze e Tecnologie Erboristiche)
- Settore: Ricerca accademica

Novembre 2008 – Giugno 2016 e
Novembre 2019 – Dicembre 2020

Assegnista di ricerca

Dipartimento di Scienze Farmacologiche e Biomolecolari (DiSFEB), Università degli Studi di Milano, Via Balzaretti 9, 20133, Milano, Italia. PI: Prof. Maria P. Abbracchio

- Attività di ricerca nell'ambito della farmacologia e delle neuroscienze, partecipando attivamente a progetti tra i quali: Purinergic receptors and neuroprotection; Pathophysiological roles of the dual receptor GPR17 in mammalian brain; In vitro and in vivo validation of new modulators of GPR17, a key receptor in re-myelinating processes, finanziato dalla Fondazione Italiana Sclerosi Multipla (FISM), "Restoring myelin integrity in neurodegenerative diseases: a new reparative approach via GPR17, a key receptor involved in oligodendroglialogenesis", finanziato dalla Fondazione Umberto Veronesi
- Settore: Ricerca accademica

Aprile 2014 – Giugno 2014

Visiting scientist

Section of Nervous System Development and Plasticity of the National Institute of Child Health and Human Development, NIH, Bethesda, MD, USA. PI: Dr. R. Douglas Fields

- Attività di ricerca volta alla caratterizzazione degli effetti della stimolazione elettrica di neuroni dei gangli della radice dorsale di topo sull'espressione gliale del recettore GPR17 in co-culture
- Settore: Ricerca accademica

Settembre 2003 – Agosto 2004

Borsista di ricerca

Dipartimento di Scienze Farmacologiche, Università degli Studi di Milano, Via Balzaretti 9, 20133, Milano, Italia. PI: Prof. Maria P. Abbracchio

- "Peripheral adenosine A2A receptors as possible biomarkers in the Huntington disease"
- Settore: Ricerca accademica

FORMAZIONE

Novembre 2004 – Ottobre 2007

Dottorato in Scienze Farmacotossicologiche, farmacognostiche e biotecnologie farmacologiche (Livello 8)

Università degli Studi di Milano, Facoltà di Farmacia

Coordinatore: Prof. Guido Franceschini; PI: Prof. Maria P. Abbracchio

- Titolo della tesi: "Regulation of GPR17, a new nucleotide/cysteinyl-leukotriene receptor, during brain ischemia in rodent models".

1997-2003

Laurea magistrale in Scienze Biologiche (Livello 7)

Università degli Studi di Milano, Facoltà di Scienze Matematiche, Fisiche e Naturali

- Tesi sperimentale dal titolo: "Clonaggio e caratterizzazione farmacologica di un nuovo putativo recettore P2Y: focus sul recettore orfano a G-proteina GPR34". PI: Prof. Maria P. Abbracchio

ATTIVITA' LAVORATIVE

Presentazioni a convegni

Autore di più di 100 abstract presentati a convegni scientifici nazionali e internazionali. Ha presentato le sue ricerche in qualità di relatore in 13 congressi e sotto forma di poster in 16 congressi.

Seminari su invito

- "New mechanisms regulating oligodendroglial differentiation: focus on the GPR17 receptor and related microRNAs". Neuroscience Institute Cavalieri Ottolenghi (NICO), Università degli Studi di Torino, 20 Maggio, 2016.

Finanziamenti

- "Alterations of the GPR17 receptor, a key regulator of oligodendroglial differentiation, in a mouse model of multiple sclerosis, and in vitro studies on its gene regulation". National Institutes of Health, Bethesda, MD (USA), 20 Giugno, 2014.

- Progetto di ricerca "Characterization of a novel microRNA involved in myelination: a new potential pathogenetic mechanism in multiple sclerosis (n. 2014-1207)" nel bando "Ricerca biomedica condotta da giovani ricercatori - 2014", finanziato da Fondazione Cariplo. Budget: 236,921 € (2 anni). Dicembre 2014.

Attività editoriale

- Borsa di ricerca nel bando "Post-doctoral Fellowship 2014" nell'ambito delle Neuroscienze, finanziata da Fondazione Umberto Veronesi. Dicembre 2013.

Review Editor per le riviste *Frontiers in Cellular Neuroscience* e *Frontiers in Pharmacology*.

INFORMAZIONI AGGIUNTIVE

Pubblicazioni

Numero totale di pubblicazioni peer-review: 47

Impact factor totale (IF): 237,6 (IF medio: 5)

Numero totale di citazioni: 2473

H index: 24

1. Fumagalli M, Trincavelli L, **Lecca D**, Martini C, Ciana P, Abbracchio MP (2004) Cloning, pharmacological characterisation and distribution of the rat G-protein-coupled P2Y₁₃ receptor. *Biochemical Pharmacology*, 68:113-24
2. Ciana P, Fumagalli M, Trincavelli ML, Verderio C, Rosa P, **Lecca D**, Ferrario S, Parravicini C, Capra V, Gelosa P, Guerrini U, Belcredito S, Cimino M, Sironi L, Tremoli E, Rovati GE, Martini C, Abbracchio MP (2006) The orphan receptor GPR17 identified as a new dual uracil nucleotides/cysteinyl-leukotrienes receptor. *EMBO Journal*, 25:4615-27
3. **Lecca D**, Abbracchio MP (2008) Orphanisation of G protein-coupled receptors: a tool to provide new insights in nervous system pathophysiology and new targets for psycho-active drugs. *Neurochemistry International*, 2008, 52:339-51
4. Mazzola A, Amoroso E, Beltrami E, **Lecca D**, Ferrario S, Cosentino S, Tremoli E, Ceruti S, Abbracchio MP (2008) Opposite effects of uracil and adenine nucleotides on the survival of murine cardiomyocytes. *Journal of Cellular and Molecular Medicine*, 12:522-36
5. **Lecca D**, Ceruti S (2008) Uracil nucleotides: from metabolic intermediates to neuroprotection and neuroinflammation. *Biochemical Pharmacology*, 75:1869-81
6. **Lecca D**, Trincavelli L, Gelosa P, Sironi L, Ciana P, Fumagalli M, Villa G, Verderio C, Grumelli C, Guerrini U, Tremoli E, Rosa P, et al., (2008) The recently identified P2Y-like receptor GPR17 is a sensor of brain damage and a new target for brain repair. *PLoS ONE*, 3(10):e3579
7. Bianco F, Colombo A, Soglietti L, **Lecca D**, Abbracchio MP, Matteoli M, Verderio C (2009) Different properties of P2X₇ receptor in hippocampal and cortical astrocytes. *Purinergic Signalling*, 5:233-40
8. Pugliese AM, Trincavelli ML, **Lecca D**, Coppi E, Fumagalli M, Ferrario S, Daniele S, Martini C, Pedata F, Abbracchio MP. Characterization of the long isoform of the P2Y-like

- receptor GPR17: [³⁵S]GTPγS binding and electrophysiological studies. *American Journal of Physiology – Cell Physiology* (2009), 297:C1028-40
9. Daniele S, **Lecca D**, Trincavelli ML, Ciampi O, Abbracchio MP, Martini C. Regulation of PC12 cells survival and differentiation by the new P2Y-like receptor GPR17. *Cellular Signalling* (2010), 22:697-706
 10. Calleri E, Ceruti S, Cristalli G, Martini C, Temporini C, Parravicini C, Volpini R, Daniele S, Caccialanza G, **Lecca D**, et al. Frontal affinity chromatography-mass spectrometry useful for characterization of new ligands for GPR17 receptor. *Journal of Medicinal Chemistry* (2010), 53: 3489-501
 11. Fumagalli M, Daniele S, **Lecca D**, Lee PR, Parravicini C, Fields RD, et al. Phenotypic changes, signaling pathway and functional correlates of GPR17-expressing neural precursor cells during oligodendrocyte differentiation *Journal of Biological Chemistry* (2011), 286:10593-604
 12. Fumagalli M, **Lecca D**, Abbracchio MP. Role of purinergic signalling in neuro-immune cells and adult neural progenitors. *Frontiers in Bioscience* (2011), 16:2326-41
 13. Marucci G, Lammi C, Buccioni M, Dal Ben D, Lambertucci C, Amantini C, Santoni G, Kandhavelu M, Abbracchio MP, **Lecca D**, Volpini R, Cristalli G. Comparison and Optimization of Transient Transfection Methods at Human Astrocytoma Cell Line 1321N1. *Analytical Biochemistry* (2011), 414:300-2
 14. Daniele S, Trincavelli ML, Gabelloni P, **Lecca D**, Rosa P, Abbracchio MP, Martini C. Agonist-induced desensitisation/resensitisation of human GPR17: a functional cross-talk between purinergic and cysteinyl-leukotriene ligands. *Journal of Pharmacology and Experimental Therapeutics* (2011), 338:559-63
 15. **Lecca D**, Ceruti S, Fumagalli M, Abbracchio MP. Purinergic trophic signalling in glial cells: functional effects and modulation of cell proliferation, differentiation and death. *Purinergic Signalling* (2012), 8:539-57
 16. Fratangeli A, Parmigiani E, Fumagalli M, **Lecca D**, Benfante R, Passafaro M, Buffo A, Abbracchio MP, Rosa P. The regulated expression, intracellular trafficking and membrane recycling of the P2Y-like receptor GPR17 in Oli-neu oligodendroglial cells. *Journal of Biological Chemistry* (2013), 288:5241-56
 17. Franke H, Parravicini C, **Lecca D**, Zanier E, Heine C, Bremicker K, Fumagalli M, Rosa P, Longhi L, Stocchetti N, De Simoni MG, Weber M, Abbracchio MP. Changes of the GPR17 receptor, a new target for neurorepair, in neurons and glial cells in patients with traumatic brain injury. *Purinergic Signalling* (2013), 9:451-62
 18. Gelosa P, **Lecca D**, Fumagalli M, Wypych D, Pignieri A, Cimino M, Verderio C, Enerbäck M, Nikookhesal E, Tremoli E, Abbracchio MP, Sironi L. Microglia is a key player in the reduction of stroke damage promoted by the new anti-thrombotic agent ticagrelor. *Journal of Cerebral Blood Flow and Metabolism* (2014), 34:979-88
 19. Colombo L, Parravicini C, **Lecca D**, Dossi E, Heine C, Cimino M, Wanke E, Illes P, Franke H, Abbracchio MP. Ventral tegmental area/substantia nigra and prefrontal cortex rodent organotypic brain slices as an integrated model to study the cellular changes induced by oxygen/glucose deprivation and reperfusion: effect of neuroprotective agents. *Neurochemistry International* (2014), 66C:43-54.
 20. Daniele S, Trincavelli ML, Fumagalli M, Zappelli E, **Lecca D**, Bonfanti E, Campiglia P, Abbracchio MP, Martini C. Does GRK-β arrestin machinery work as a “switch on” for GPR17-mediated activation of intracellular signalling pathways? *Cellular Signalling* (2014), 26:1310-25
 21. Fumagalli M, Bonfanti E, Daniele S, **Lecca D**, Martini C, Trincavelli ML, Abbracchio MP. The ubiquitin ligase Mdm2 controls oligodendrocyte maturation by intertwining mTOR with G protein-coupled receptor kinase 2 in the regulation of GPR17 receptor desensitization. *Glia* (2015), 63:2327-39
 22. Fumagalli M, **Lecca D**, Abbracchio MP. CNS remyelination as a novel reparative approach to neurodegenerative diseases: the roles of purinergic signalling and the P2Y-like receptor GPR17. *Neuropharmacology* (2016), 104:82-93
 23. Meraviglia V, Ulivi AF, Valenza F, Boccazzi M, Fratangeli A, Passafaro M, **Lecca D**, Stagni F, Giacomini A, Bartesaghi R, Abbracchio MP, Ceruti S. SNX27, a protein associated with Down Syndrome, regulates GPR17 trafficking and oligodendrogenesis. *Glia* (2016), 64:1437-60
 24. **Lecca D**, Fumagalli M, Ceruti S, Abbracchio MP. Intertwining extracellular nucleotides and their receptors with Ca²⁺ in determining adult neural stem cell survival, proliferation and final fate. *Philosophical Transactions B* (2016), 371:20150433
 25. **Lecca D**, Marangon D, Coppolino GT, Menéndez Méndez A, Finardi A, Dalla Costa G, Martinelli V, Furlan R, Abbracchio MP. MiR-125a-3p timely inhibits oligodendroglial maturation and is pathologically up-regulated in human multiple sclerosis. *Scientific Reports* (2016), 6:34503
 26. Boccazzi M, **Lecca D**, Marangon D, Guagnini F, Abbracchio MP, Ceruti S. A new role for the P2Y-like GPR17 receptor in the modulation of multipotency of oligodendrocyte precursor cells in vitro. *Purinergic Signalling* (2016), 12:661-72
 27. Fumagalli M, **Lecca D**, Coppolino GT, Parravicini C, Abbracchio MP. Pharmacological properties and biological functions of the GPR17 receptor, a potential target for neuro-regenerative

- medicine. *Advances in Experimental Medicine and Biology*. (2017), 1051:169-92
28. Alexander SP, Kelly E, Marrion NV, Peters JA, Faccenda E, Harding SD, Pawson AJ, Sharman JL, Southan C, ..., **Lecca D** et al., The concise guide to pharmacology 2017/18: overview. *British Journal of Pharmacology* (2017), 174 Suppl 1:S1-S16
 29. Fumagalli M, **Lecca D**, Abbracchio MP, Ceruti S. Pathophysiological role of purinergic signaling in neurodevelopment: unveiling new pharmacological approaches to congenital brain diseases. *Frontiers in Pharmacology* (2017), 8:941
 30. Coppolino GT, Marangon D, Negri C, Menichetti G, Fumagalli M, Gelosa P, Dimou L, Furlan R, **Lecca D**, Abbracchio MP. Differential local tissue permissiveness influences the final fate of GPR17-expressing oligodendrocyte precursors in two distinct models of demyelination. *Glia* (2018), 66:1118-30
 31. Magni G, Marinelli A, Riccio D, **Lecca D**, Tonelli C, Abbracchio MP, Petroni K, Ceruti S. Purple corn extract as anti-allodynic treatment for trigeminal pain: role of microglia. *Frontiers in Cellular Neuroscience* (2018), 12:378
 32. Gelosa P, Bonfanti E, Castiglioni L, Delgado-Garcia JM, Gruart A, Fontana L, Gotti M, Tremoli E, **Lecca D**, et al. Improvement of fiber connectivity and functional recovery after stroke by an available and safe anti-asthmatic drug. *Pharmacological Research* (2019), 142:223-236
 33. Lammi C, Bollati C, **Lecca D**, Abbracchio MP, Arnoldi A. Lupin peptide T9 (GQEQSHQDEGVIVR) modulates the mutant PCSK9D374Y pathway: in vitro characterization of its dual hypocholesterolemic behavior. *Nutrients* (2019), 11:1665
 34. Marangon D, Raffaele S, Fumagalli M, **Lecca D**. MicroRNAs change the games in central nervous system pharmacology. *Biochemical Pharmacology* (2019), 168:162-72.
 35. Alexander SP, Christopoulos A, Davenport AP, Kelly E, Mathie A, Peters JA, Veale EL, Armstrong JF, ..., **Lecca D**, et al., The concise guide to pharmacology 2019/20: G protein-coupled receptors. *Br J Pharmacol* (2019) 176 Suppl 1:S21-S141
 36. Paladini MS, Marangon D, Rossetti AC, Guidi A, Coppolino GT, Negri C, Spero V, Abbracchio MP, **Lecca D**, Molteni R. Prenatal stress impairs spinal cord oligodendrocyte maturation via BDNF signaling in the experimental autoimmune encephalomyelitis model of multiple sclerosis. *Cellular and Molecular Neurobiology* (2020) DOI: 10.1007/s10571-020-01014-x
 37. Marangon D, Boccazzi M, **Lecca D**, Fumagalli M. Regulation of Oligodendrocyte Functions: Targeting Lipid Metabolism and Extracellular Matrix for Myelin Repair. *Journal of Clinical Medicine* (2020) 9:470
 38. Parravicini C, **Lecca D**, Marangon D, Coppolino GT, Daniele S, Bonfanti E, Fumagalli M, et al. Development of the first in vivo GPR17 ligand through an iterative drug discovery pipeline: a novel disease-modifying strategy for multiple sclerosis. *PLoS ONE* (2020) 15:e0231483
 39. Marangon D, Boda E, Parolisi R, Negri C, Giorgi C, Montarolo F, Perga S, Bertolotto A, Buffo A, Abbracchio MP, **Lecca D**. In vivo silencing of miR-125a-3p promotes myelin repair in models of white matter demyelination. *Glia* (2020), 68:2001-2014
 40. **Lecca D**, Raffaele S, Abbracchio MP, Fumagalli M. Regulation and signalling of the GPR17 receptor in oligodendroglial cells. *Glia* (2020), 68:1957-1967
 41. Marangon D, Abbracchio MP, **Lecca D**. Pathway-focused profiling of oligodendrocytes over-expressing miR-125a-3p reveals alteration of Wnt and cell-to-cell signaling. *Cellular and Molecular Neurobiology* (2021) 41:105-114
 42. **Lecca D**, Abbracchio MP, Fumagalli M. Purinergic receptors on oligodendrocyte progenitors: promising targets for myelin repair in multiple sclerosis? *Frontiers in Pharmacology* (2021), 11:629618.
 43. Rivera AD, Pieropan F, Chacon-De-La-Rocha I, **Lecca D**, Abbracchio MP, Azim K, Butt AM. Functional genomic analyses highlight a shift in Gpr17-regulated cellular processes in oligodendrocyte progenitor cells and underlying myelin dysregulation in the aged mouse cerebrum. *Aging Cell* (2021), 20(4):e13335
 44. Augustus M, Pineau D, Aimond F, Azar S, **Lecca D**, Scamps F, Muxel S, Darlix A, Ritchie W, et al., Identification of CRYAB+ KCNN3+ SOX9+ Astrocyte-Like and EGFR+ PDGFRA+ OLIG1+ Oligodendrocyte-Like Tumoral Cells in Diffuse IDH1-Mutant Gliomas and Implication of NOTCH1 Signalling in Their Genesis. *Cancers* (2021), 13:2107
 45. Angelini J, Marangon D, Raffaele S, **Lecca D**, Abbracchio MP. The distribution of GPR17-expressing cells correlates with white matter inflammation status in brain tissues of multiple sclerosis patients. *Int J Mol Sci* (2021), 22:4574
 46. Alexander SP, Christopoulos A, Davenport AP, Kelly E, Mathie A, Peters JA, Veale EL, Armstrong JF, Faccenda E, Harding SD, ..., **Lecca D**, et al., The concise guide to pharmacology 2021/22: G protein-coupled receptors. *Br J Pharmacol* (2021) 178 Suppl 1:S27-S156
 47. Marangon D, Caporale N, Boccazzi M, Abbracchio MP, Testa G, **Lecca D**. Novel in vitro experimental approaches to study myelination and remyelination in the central nervous system. *Frontiers in Cellular Neuroscience* (2021) 15:748849.