

Biography

Dr. Vincenzo Di Marzo is Canada Excellence Research Chair on the Microbiome-Endocannabinoidome Axis in Metabolic Health (CERC-MEND) at Laval University, Quebec, Canada (<https://cerc-mend.chaire.ulaval.ca/en/home/>), and Research Director at the Institute of Biomolecular Chemistry of the National Research Council (ICB-CNR) in Pozzuoli, Italy (<https://www.icb.cnr.it/personale/dipendenti/pozzuoli/>).



He is also the coordinator of the Endocannabinoid Research Group (www.icb.cnr.it/erg) in the Naples region, and the director of the Joint International Research Unit between the Italian National Research Council and Université Laval, for Chemical and Biomolecular Research on the Microbiome and its impact on Metabolic Health and Nutrition (MicroMeNu, www.umilaval.cnr.it). He holds a ChemD from the University of Naples in 1983, and a PhD in Biochemistry from Imperial College in London in 1988. He is co-author of over 770 articles published in peer-reviewed journals (H index 133 according to Scopus). In 2014-2020 he has been listed for 7 consecutive years among the Highly Cited Researchers (top 1% in the world) in all scientific disciplines (www.highlycited.com; <https://hcr.clarivate.com/>). He has been the recipient of numerous research grants and awards, including: a Human Frontier Science Program research grant to

study the biosynthesis, metabolism, and structure-activity relationships of anandamide; a Merkator Fellowship for Foreign Scientists by the Deutsche Forschungsgemeinschaft; the Mechoulam Award for "his outstanding contributions to cannabinoid research"; the Luigi Tartufari award for Chemistry from the Italian Academy of Sciences (Accademia dei Lincei); the "Ester Frède Award for Basic Science" from the International Association for Cannabinoid Medicines. In October 2014 he was awarded the International Award "Guido Dorso" for Research, and in May 2016 the Medal of the Italian Accademia delle Scienze, or of the XL, for Physical and Natural Sciences. In November 2018 he was elected member of the Italian "Accademia dei Lincei", the oldest academy of the sciences in the world. Ranked 492 in a new citation index covering nearly 7 million researchers worldwide and 100,000 highly cited authors (Ioannidis JPA, Baas J, Klavans R, Boyack KW (2019) A standardized citation metrics author database annotated for scientific field. PLoS Biol 17(8): e3000384. <https://doi.org/10.1371/journal.pbio.3000384>). Ranked 528 in the latest Mendeley "Updated science-wide author databases of standardized citation indicators" special classification including 159683 highly cited authors (<https://data.mendeley.com/datasets/btchxktzyw/2>).

Among his achievements in research:

- a) Discovery of the biosynthetic and metabolic pathways of the endocannabinoids and of some endocannabinoid-like molecules
- b) Development of selective inhibitors of endocannabinoid in 528activation and biosynthesis
- c) Studies of the regulation of endocannabinoid levels in tissues under physiological and pathological conditions and development of profiling techniques for endocannabinoid and endocannabinoid-like molecules
- d) First studies on the role of the endocannabinoid system in the regulation of food intake and metabolism
- e) First studies on the effects of dietary polyunsaturated fatty acids on endocannabinoid signaling
- f) Discovery of the anti-tumor actions of endocannabinoids
- g) Discovery of the first endovanilloids
- h) Discovery of the relationships between endocannabinoids and endovanilloids
- i) Discovery of the role of TRPV1 channels in the brain in the control of pain, anxiety and synaptic plasticity

- l) Invention of the names "endocannabinoids" and "endovanilloids"
- m) Development of dual target drugs with high efficacy and safety in experimental models of chronic pain and anxiety
- n) Co-discovery of the role of the endocannabinoid system in skeletal muscle differentiation
- o) Discovery of the direct link between the endocannabinoidome and the gut microbiome

Some relevant publications:

1. Intestinal epithelial N-acylphosphatidylethanolamine phospholipase D links dietary fat to metabolic adaptations in obesity and steatosis. Eve rard A, Plovier H, Rastelli M, Van Hul M, de Wouters d'Oplinter A, Geurts L, Druart C, Robine S, Delzenne NM, Muccioli GG, de Vos WM, Luquet S, Flamand N, Di Marzo V, Cani PD. *Nat Commun.* 2019;10(1):457
2. Iannotti FA, Pagano E, Guardiola O, Adinolfi S, Saccone V, Consalvi S, Piscitelli F, Gaggero E, Busetto G, Carrella D, Capasso R, Puri PL, Minchiotti G, Di Marzo V. Genetic and pharmacological regulation of the endocannabinoid CB1 receptor in Duchenne muscular dystrophy. *Nat Commun.* 2018;9(1):3950
3. Di Marzo V, Stella N, Zimmer A. Endocannabinoid signalling and the deteriorating brain. *Nat Rev Neurosci.* 2015;16(1):30-42
4. Cristino L, Busetto G, Imperatore R, Ferrandino I, Palomba L, Silvestri C, Petrosino S, Orlando P, Bentivoglio M, Mackie K, Di Marzo V. Obesity-driven synaptic remodeling affects endocannabinoid control of orexinergic neurons. *Proc Natl Acad Sci U S A.* 2013;110(24):E2229-38
5. The endocannabinoid system in energy homeostasis and the etiopathology of metabolic disorders. Silvestri C, Di Marzo V. *Cell Metab.* 2013;17(4):475-90.
6. Neural precursor cells induce cell death of high-grade astrocytomas through stimulation of TRPV1. Stock K1, Kumar J, Synowitz M, Petrosino S, Imperatore R, Smith ES, Wend P, Purfürst B, Nuber UA, Gurok U, Matyash V, Wälzlein JH, Chirasani SR, Dittmar G, Cravatt BF, Momma S, Lewin GR, Ligresti A, De Petrocellis L, Cristino L, Di Marzo V, Kettenmann H, Glass R. *Nat Med.* 2012;18(8):1232-8. .
7. Altered endocannabinoid signalling after a high-fat diet in Apoe(-/-) mice: relevance to adipose tissue inflammation, hepatic steatosis and insulin resistance. Bartelt A, Orlando P, Mele C, Ligresti A, Toedter K, Scheja L, Heeren J, Di Marzo V. *Diabetologia.* 2011;54(11):2900-10.
8. Endocannabinoids may mediate the ability of (n-3) fatty acids to reduce ectopic fat and inflammatory mediators in obese Zucker rats. Batetta B, Griinari M, Carta G, Murru E, Ligresti A, Cordeddu L, Giordano E, Sanna F, Bisogno T, Uda S, Collu M, Bruheim I, Di Marzo V, Banni S. *J Nutr.* 2009;139(8):1495-501.
9. Attenuation of allergic contact dermatitis through the endocannabinoid system. Karsak M, Gaffal E, Date R, Wang-Eckhardt L, Rehnelt J, Petrosino S, Starowicz K, Steuder R, Schlicker E, Cravatt B, Mechoulam R, Buettner R, Werner S, Di Marzo V, Tüting T, Zimmer A. *Science.* 2007;316(5830):1494-7.
10. Endocannabinoid overactivity and intestinal inflammation. Di Marzo V, Izzo AA. *Gut.* 2006;55(10):1373-6.
11. Up-regulation of anandamide levels as an endogenous mechanism and a pharmacological strategy to limit colon inflammation. D'Argenio G, Valenti M, Scaglione G, Cosenza V, Sorrentini I, Di Marzo V. *FASEB J.* 2006;20(3):568-70
12. An endogenous cannabinoid tone attenuates cholera toxin-induced fluid accumulation in mice. Izzo AA, Capasso F, Costagliola A, Bisogno T, Marsicano G, Ligresti A, Matias I, Capasso R, Pinto L, Borrelli F, Cecio A, Lutz B, Mascolo N, Di Marzo V. *Gastroenterology.* 2003;125(3):765-74.
13. Possible endocannabinoid control of colorectal cancer growth. Ligresti A, Bisogno T, Matias I, De Petrocellis L, Cascio MG, Cosenza V, D'argenio G, Scaglione G, Bifulco M, Sorrentini I, Di Marzo V. *Gastroenterology.* 2003;125(3):677-87.
14. An endogenous capsaicin-like substance with high potency at recombinant and native vanilloid VR1 receptors. Huang SM, Bisogno T, Trevisani M, Al-Hayani A, De Petrocellis L, Fezza F, Tognetto M, Petros TJ, Krey JF, Chu CJ, Miller JD, Davies SN, Geppetti P, Walker JM, Di Marzo V. *Proc Natl Acad Sci U S A.* 2002;99(12):8400-5.

15. Leptin-regulated endocannabinoids are involved in maintaining food intake. Di Marzo V, Goparaju SK, Wang L, Liu J, Bátkai S, Járαι Z, Fezza F, Miura GI, Palmiter RD, Sugiura T, Kunos G. *Nature*. 2001 Apr 12;410(6830):822-5.
16. Vanilloid receptors on sensory nerves mediate the vasodilator action of anandamide. Zygmunt PM, Petersson J, Andersson DA, Chuang H, Søråard M, Di Marzo V, Julius D, Högestätt ED. *Nature*. 1999 Jul 29;400(6743):452-7.
17. Di Marzo V, Fontana A, Cadas H, Schinelli S, Cimino G, Schwartz JC, Piomelli D. Formation and inactivation of endogenous cannabinoid anandamide in central neurons. *Nature*. 1994;372(6507):686-91.