# Curriculum Vitae
# Claudio Coddou, PhD

## Personal Information


*Nationality:* Chilean
*Birth date:* September 22th, 1976
*Degree:* PhD
*Position:* Associate Professor
*Contact:* Department of Biomedical Sciences, Faculty of Medicine,
Universidad Católica del Norte, Larrondo 1281, Coquimbo, Chile
Phone: (56) (51) 2205970; e-mail: ccoddou@ucn.cl
Web pages: minuspain.cl;
RG: researchgate.net/profile/Claudio_Coddou


## Education

- 1995 - 1999 Bachelor in Biological Sciences, Faculty of Biological Sciences, P. Catholic University of Chile, Chile.
- 2003 - 2007 PhD in Biological Sciences, mention in Physiology, Faculty of Biological Sciences, P. Catholic University of Chile, Chile.
- 2007 - 2008 Postdoctoral Fellow, Faculty of Chemistry and Biology, Universidad de Santiago de Chile, Santiago, Chile.
- 2009 - 2013 Postdoctoral Fellow, NICHD, National Institutes of Health, Bethesda, MD, USA.

## Positions

- 2013 - Associate Professor, Department of Biomedical Sciences, Faculty of Medicine, Universidad Católica del Norte, Coquimbo, Chile.
- 2019 - General Secretary, Chilean Society of Pharmacology (SOFARCHI).
- 2019 - Vice-president Scientific Ethical Committee of the Faculty of Medicine (CECFAMED), Universidad Católica del Norte, Coquimbo, Chile.
- 2019 - President, Biosafety Committee (CBS), Campus Guayacán, Universidad Católica del Norte, Coquimbo, Chile.

## Research line

My research focusses on purinergic receptors and signaling, from structure-activity studies to their role in several physiological and pathological processes. This includes electrophysiological recordings from P2X receptor channels expressed in heterologous systems, such as HEK cells or Xenopus oocytes, that are used to study the gating properties of these receptors channels, allowing us to identify allosteric regulation sites for trace metals, reactive oxygen species and phosphorylation sites. These findings are key to unravel the role of purinergic signaling in diverse biological processes such as pain signaling and cancer. With this strategy we have identified and characterize a novel phosphorylation site by Cdk5 in the P2X2R, that could have a role in pain signaling and could be relevant in neuropathic pain. Other research line of our group is the study of purinergic signaling in gastric cancer, finding that the combination of changes in the expression of key receptors, such as P2Y2R and P2X4R and the paracrine-released ATP and related nucleotides by tumoral cells contributes to gastric cancer proliferation and thus, purinergic signaling could constitute a target for cancer treatment. My investigations have resulted in the publication of more than 30 papers in indexed journals, including journals such as *Pharmacological Reviews*, *Journal of Neuroscience* and *Journal of Biological Chemistry*, receiving more than 900 citations from all my publications. As a member of the Chilean Pharmacology and Physiology societies I have organized two symposia centered in Purinergic signaling and I have attended several international meetings during these years, including World *Congress of Pharmacology*, *SFN meetings* and *Purines*. I have earned relevant grants, including initiation and regular FONDECYT grants, FONDEQUIP and regional FIC grants. In my lab in Coquimbo, I have mentored 4 undergraduate students and 2 graduate students and I 2 postdocs have worked in my lab. We used diverse approach to study purinergic signaling, that includes electrophysiological techniques (patch-clamp, and TEVC), calcium imaging, proliferation and cell-metabolism assays, immunofluorescence and molecular biology techniques such as western-blot and pcr. From 2020 I become Associate Researcher of the Millennium Nucleus for the Study of Pain (MiNuSPain), that is supported by the Ministry of Science, Technology, Knowledge and Innovation of Chile.

**Publications** **H-index 01-2021: 17**

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- Benavides-Rivas, C. *et al.* (2020). Altered Glutaminase 1 Activity During Neurulation and Its Potential Implications in Neural Tube Defects. *Front Pharmacol*. 11:900. (Cited by 1). ($IF_{2019}$: 4.4)
- Hevia, M.J. *et al*. (2019) Differential effects of purinergic signaling in gastric cancer-derived cells through P2Y and P2X receptors. *Front Pharmacol*. 10:612. (Cited by 7). ($IF_{2019}$: 4.4)
- Coddou, C. *et al*. (2019). Characterization of the antagonist actions of 5-BDBD at the rat P2X4 receptor. *Neurosci Lett* 690:219-224. (Cited by 9). ($IF_{2019}$: 2.27)
- Rokic, M.B. *et al*. (2018). Opposing Roles of Calcium and Intracellular ATP on Gating of the Purinergic P2X2 Receptor Channel. *Int J Mol Sci* 19(4). pii: E1161. (Cited by 1). ($IF_{2019}$: 4.55)
- Paredes, C. *et al*. (2018) Divalent metal modulation of Japanese flounder (Paralichthys olivaceus) purinergic P2X7 receptor. *FEBS Open Bio*. 8(3):383-389. (Cited by 1). ($IF_{2019}$: 2.23)
- Coddou, C. *et al*. (2017) Cyclin-dependent kinase 5 modulates the P2X2a receptor channel gating through phosphorylation of C-terminal threonine 372. *Pain* 158(11):2155-2168. (Cited by 8). ($IF_{2019}$: 5.48)
- Jovanovic, S. *et al*. (2017) Tonotopic action potential tuning of maturing auditory neurons through endogenous ATP. *J Physiol*. 595(4):1315-1337. (Cited by 9). ($IF_{2019}$: 4.54)
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- Khadra, A. *et al*. (2012) Gating Properties of the P2X2a and P2X2b Receptor Channels: Experiments and Mathematical Modeling. *J Gen Physiol* 139(5): 333-348. (Cited by 28). ($IF_{2018}$: 3.46)
- Kaszas, K. . *et al*. (2012) Small molecule positive allosteric modulation of TRPV1 activation by vanilloids and acidic pH. *J Pharmacol Exp Ther* 340(1):152-160. (Cited by 48). ($IF_{2019}$: 3.39)
- Coddou, C. *et al*. (2011) Activation and Regulation of Purinergic P2X Receptor Channels. *Pharmacol Rev* 63(3):641-683. (Cited by 455). ($IF_{2019}$: 17.39)
- Coddou, C. *et al*. (2011) Allosteric Modulation of ATP-gated P2X Receptor Channels. *Rev Neurosci* 22(3):335-354. (Cited by 47). ($IF_{2019}$: 3.35)
- Leiva-Salcedo, E. *et al*. (2011) Lipopolysaccharide inhibits the channel activity of the P2X7 receptor. *Mediators Inflamm* 2011:152625. (Cited by 11). ($IF_{2019}$: 3.76)
- Escobar, J. *et al*. (2010) Oxidative damage in lymphocytes of copper smelter workers correlated to higher levels of excreted arsenic. *Mediators Inflamm* 2010:403830. (Cited by 16). ($IF_{2019}$: 3.76)
- Coddou, C. *et al*. (2009) Reactive oxygen species potentiate the P2X2 receptor activity through intracellular Cys430. *J Neurosci* 29(39): 12284-12291. (Cited by 34). ($IF_{2019}$: 5.67)
- Coddou C. *et al*. (2009) Alterations in cholinergic sensitivity of respiratory neurons induced by prenatal nicotine: a mechanism for respiratory dysfunction in neonatal mice. Philos Trans R Soc Lond B Biol Sci 364(1529):2527-2535. (Cited by 33). ($IF_{2019}$: 5.68)
- Eugenín, J. *et al*. (2008) Prenatal to early postnatal nicotine exposure impairs central chemoreception and modifies breathing pattern in mouse neonates: a probable link to sudden infant death syndrome. *J Neurosci* 28(51):13907-13917. (Cited by 79). ($IF_{2019}$: 5.67)
- Huidobro-Toro, J.P. *et al*. (2008) Trace metals as allosteric brain modulators of ligand-gated receptor channels: the case of ATP-gated P2X channels. *Eur Biophys J* 37(3):301-314. (Cited by 48). ($IF_{2019}$: 2.09)
- Donoso, V. *et al*. (2008) The release of sympathetic neurotransmitters is impaired in aged rats after an inflammatory stimulus. A possible link between cytokine production and sympathetic transmission. *Mech Ageing Dev* 129(12):728-734. (Cited by 9). ($IF_{2019}$: 5.67)
- Coddou C *et al*. (2007) Dissecting the facilitator and inhibitor allosteric metal sites of the P2X4 receptor channel: critical roles of Cys-132 for zinc-potentiation and Asp-138 for copper-inhibition. *J Biol Chem* 282(51):36879-36886. (Cited by 52). ($IF_{2019}$: 4.23)
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- Coddou C *et al*. (2005) Heavy metals modulate the activity of the purinergic P2X4 receptor. *Toxicol Appl Pharmacol* 202(2):121-31. (Cited by 34). ($IF_{2019}$: 3.34)
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- C. Coddou *et al*. (2002) Formation of Carnosine-Cu(II) complexes prevents and reverts the inhibitory action of copper in P2X4 and P2X7 receptors. *J. Neurochem* 80:626-633. (Cited by 19). ($IF_{2019}$: 4.06)

**Selected Grants**

Millennium Nucleus for the Study of Pain (MiNuSPain), 2020-2023. AR-PI.
FONDECYT #1161490, 2016-2019. *Role of purinergic signaling on the pathophysiology of gastric cancer.* PI.
FONDECYT Initiation #11121302, 2012-2015. *Regulation of purinergic P2X receptors by phosphorylation/dephosphorylation: mechanisms and physiological relevance*. PI.
FONDEQUIP #EQM140100. *Acquisition of Confocal Microscope for basic and applied research.* PI.
FONDECYT #1200908, The overexpression of P2X2 receptors alters the high $Ca^{2+}$ microdomains (HCMDS) leading to increased mitochondria-associated ER membranes (MAMS), abnormal app processing and vesicle recycling in Alzheimer's disease models. CI.