Prof. MARIA CARMELA CERRA, PhD
Curriculum vitae

• Full Professor of Physiology at University of Calabria (Italy), Department of Biology, Ecology and Earth Sciences;
• Delegate of the Dean for the Doctorate of Research
• Scientific director of the Laboratory of Organ and System Physiology (Department of Department of Biology, Ecology and Earth Sciences, University of Calabria, Italy);
• Director of the Research Group in Physiology at the Department of Biology, Ecology and Earth Science, University of Calabria, Italy;
• Member of the "Giunta di Dipartimento" at the Department of Biology, Ecology and Earth Science, at University of Calabria.
• Coordinator of the Doctorate in Life Science and Technology at University of Calabria
• Past Coordinator of the Doctorate Fellowship in Life Sciences at University of Calabria
• Past member of the Scientific Board of the High School in Clinical Pathology, both at University of Calabria;
• Member of the Scientific Advisory Board of the Italian Society of Physiology
• Member of the Italian Society for Cardiovascular Research, Italian Physiological Society (as component of the Scientific Advisory Board), Society for Experimental Biology
• Member of the Research Group at University of Calabria of the Italian Institute for Cardiovascular Research;
• Professor of Molecular Physiology for Master students in Biotechnology for the Human Health and of Cell and System Physiology at the Faculty of Pharmacy, Nutritional and Health Sciences, University of Calabria;
• Past vice Director of the Department of Pharmaco-Biology (University of Calabria, Italy);
• Director of Master in “Applicative aspects in clinical nutrition”, Faculty of Pharmacy, Nutritional and Health Sciences, University of Calabri;
• Eligible Member of the Italian National Examinig board for Professor position.

Memberships
Italian Society of Physiology, Italian Society for Cardiovascular Research, Society for Experimental Biology

Referee, Editorial, Tutorship
Journal of Experimental Biology, General and Comparative Endocrinology, Cell and Tissue Research, Journal Pharmacology and Experimental Therapeutics, Circulation Research, Gene, American Journal Physiology, Acta Physiologica, Cardiovascular Diabetology, Cancer therapy, Peptides, Endocrine, PLOSOne, Molecules.
Guest Editor for BBA Bioenergetics of the Special Issue “Radical Species, Mitochondria and Cardiac Function” (2009).
Editor of the volume “Chromogranins: from Cell Biology to Physiology and Biomedicine”. Unipa Springer Series (Springer Verlag) 2017.

Co-Editor for Current Medicinal Chemistry for the Special Issue "Mechanisms, and pathophysiology of obesity: upgrading a complex scenario". 2019 In preparation.
CO-Guest Editor for Antioxidants of the Special Issue "NOS/NO system and the heart". In progress.
Revisor for projects (e.g.. 2013 - prot. INAJ135039, Università dell'Insubria), and for national and international PhD thesis (e.g. Univeristy of Bologna-Ravenna; University of Singapore, Dr. Ong Li Ying Jasmine).
Member of examining board for doctorate fellowship.
Responsible for research fellowships in Physiology at the University of Calabria.

Projects
1991-2007 National Program for Antarctic Research (PNRA) (O.U. University of Calabria, coordinator: Prof. B. Tota): "Adattamento di teleostei alle basse temperature: caratteristiche adattative e non adattative dei Nototenioidei Antartici e Sub-Antartici".
1992-1996 Research Program CEE n. AIR1-CT920186 "Improvement of the nutritional value, growth and resistance to stress of eels and sturgeon by controlled dietary lipids and conditions during intensive aquaculture" in cooperation with the Universities of Birmingham, Copenaghen, Milano, University of Calabria, Prof. B. Tota.
1994-1995 Research Program CEE n. CI1-CT93-0050 "Environmental influences on the ecology and physiology of sub-Antarctic fish" in cooperation with Università di St. Andrews, Scotland, Marine Research Centre, Ushuaia, Argentina.
1998-2000 Research Project CNR n. CNR 98.00.104.PF31 "Sviluppo di nuove specie e tecnologie per l'acquacoltura. Tematica 4. Biotecnologie industriali e metodologie innovative. Sottotematica 4F. Biotecnologie marine ed ambientali" in cooperation with University of Lecce and University of Palermo.
2003-2004 "Progetto di Rilevante Interesse Nazionale (PRIN)" "Le vasostatine nuovi peptidi regolatori della funzione cardiaca e della muscolatura liscia", coordinator Prof. Bruno Tota, in cooperation with University of Palermo.
2005-2007 Member of the Operative Unit of the "Istituto Italiano di Ricerche Cardiovascolari" at University of Calabria.
2008 Responsible of the OU at UNICAL of "Progetto di Rilevante Interesse Nazionale (PRIN)" "Peptidi oressigeni ed anoressigeni: elementi di un sistema integrato che regola la motilità gastrointestinale e l'attività cardiaca.", national director Prof. Flavia Mule', University of Palermo.
2008 Scientific coordinator of the Progetto Fondazione Cassa di Risparmio di Calabria e Lucania, entitled: "Cuore-cervello: nuovi orizzonti biomedici nello studio di neuropeptidi ad azionecardiovascolare" (Responsible B. Tota).
2011 Research project PON01_00293: "Spread Bio Oil: valutazione dell'impatto nella dieta e suscettibilità all'infarto del miocardio".
2015-present: project in in collaboration with University of Rouen (France), DC2N, Inserm U982 su "Regulation of the heart function: a role for selenoproteins?" including a Italy-France PhD co-tutorship program.
PI for the PRIN project: Coordinatore Nazionale di un progetto (20158JNY2H: Cardiovascular adaptation to hypoxia: a microfluidic approach on natural animal models), selected for founding from the University of Calabria for its elevated evaluation.
Present: POR_CUP J88CI7000370006 Healthy Whey.
Responsible for CONISMA of the Laboratory of Organ and System Physiology, DiBEST, UNICAL.
PON_03PE_00009_1 –NEUROMEASURES.
PON_DEMETRA_ ARS01_00401.

Collaborations

In addition to the numerous collaborations at UNICAL, Prof. Cerra collaborates with many national and international laboratories.

The structural, ultrastructural, molecular and hemodynamic aspects of the cardiac remodelling in fish in relation to both development and adaptation to environmental challenges are analysed in collaboration with Lab. of Human Anatomy and Experimental Biomedicine at Univ. Of Palermo (**Prof. G. Zummo, Prof. F. Cappello, Prof. F. Farina**), with the lab of Human Anatomy (Univ. Cantabria, Santander, Spain: **Prof. J. M. Icardo**), of the Department of Biological Sciences, National Univ. of Singapore (**Prof. Y.K. Ip**), of the Univ. of Aarhus and Odense (**Prof. Angela Fago and Prof. Frank B. Jensen**), and with the Ecotekne Research Center (Univ. Salento: **Prof. T. Verri**).

CgA and its derived peptides, and Selenoprotein T are studied in collaboration with San Raffaele Institute (DIBIT, Milan, **Prof. A. Corti**), with Dep. of Medicine and Molecular Genetic Center (Univ. California, San Diego: **Prof. S. Mahata**), the Cell Neurobiology Section at NIH (Bethesda, USA: **Dr. P. Loh**), the Institute for Nervous System Physiopathology INSERM (Strasburg, France: **Prof. M.-H. Metz-Boutigue**), the Unit DC2N, Inserm U982 (Univ. Rouen: **Dott. Y. Anouar**).

Researches on ischemic cardioprotection are carried out in collaboration with the Dept. Of Clinical and Biological Sciences (Univ. Turin, San Luigi Hospital Orbassano, Italy: **Prof. P. Pagliaro and Prof. C. Penna**) e with Dept. Of Life Sciences and System Biology (Univ. Turin: **Prof. G. Alloatti and Prof. M.P. Gallo**).

Main research interests

The vertebrate heart is a complex endocrine organ with a myriad of autocrine-paracrine circuits that provide an impressive functional plasticity in response to internal and external challenges. Fundamental for this plasticity is cardiac heterogeneity, exemplified by the selective ability of the different regions, tissues and cells of the heart to respond to a large variety of stimuli, either physical (i.e. stretch and shear stress), or chemicals (i.e. endogenous and exogenous modulators, including environmental substances).

Studies, documented by the numerous original papers, reviews and meeting communication, were carried out by using a comparative approach on different paradigms of cardiac organization of both non-mammalian and mammalian Vertebrates such as fish (polar, temperate, tropical), amphibians (frog) ad mammals (rat). Among non-mammalian Vertebrates, elasmobranch and teleost species were chosen as representative of the different morpho-functional architecture of the vertebrate heart (e.g. ventricular myocardium with spongy structure and lacunar perfusion: teleost and amphibians; mixed myocardium with coronary vessels: elasmobranch). This makes them precious precious natural models not only for curiosity-driven investigations, but also for applicative studies in the context of environmental and conservation research.

The research had the purpose of highlighting aspects of unity and diversity in the molecular and cellular system of signal transduction activated in the vertebrate heart under basal conditions and in response to challenges such as environmental stressors (e.g. water temperature and availability, hypoxia), autocrine-paracrine modulation of the heart (e.g. the NO system, NP, AngII, CgA-derived peptides, Selenoprotein T), and physiopathological stress (e.g. ischemic damage).

Schematically, research can be divided as follows:

1. **Adaptive and Environmental cardiac physiology: from polar to tropical and temperate fish**
    a. Morpho-functional plasticity of the fish heart: organ, cell and molecular remodelling in relation to environmental challenges and ontogenetic growth.

b. The Nitrergic control of the fish heart.

2. **Mechanisms of cardioprotection in Vertebrates: from fish to mammals**
   c. Autocrine-paracrine control of cardiac homeostasis in Vertebrates: Natriuretic Peptides, Angiotensin II, Chromogranin-A-derived peptides, Selenoprotein T, β3-adrenergic receptors.
   d. Ischemic cardioprotective modulation in mammals: Chromogranin-A-derived peptides, Selenoprotein T.
   e. The cardiovascular role of nutrition-related substances

Research on fish focused on temperate (i.e. *Schyiliorhynus canicula, Anguilla anguilla, Carassius auratus*), polar (i.e. Antarctic teleost with and without respiratory pigments), and tropical (the ancient Lungfish of the genus *Protopterus*) species.
Investigations were carried out also in the context of the activity of the National Program of Antarctic Research (PNRA; U.O. Unical coordinated by Prof. Tota) and of the Italian Institute of Cardiovascular Research (INRC; U.O. at Unical DiBEST), in collaboration with the University of Singapore (Prof. K.I. Ip), the University of Santander (prof. J.M. Icardo), and the University of Arhus (Prof. F. B. Jensen).

Studies were carried out on teleost and elasmobranch fish to analyse the morpho-functional circuits that contribute to organ plasticity in response to ontogenetic growth, as in the case of the morphometric and hemodynamic analysis of the heart of the growing eel, *Anguilla anguilla*. They also evaluated the cardiac response to endogenous endocrine mediators. This is exemplified by investigations performed on the heart of the dogfish, *Scyliorhinus canicula*, and of the temperate eel, *Anguilla anguilla* on the role of the AngII/AngII receptors system, and on the cardiomodulation induced in *Anguilla anguilla* and in *Carassius auratus* by neuroendocrine peptides such as the CgA-derived fragments, Selenoprotein T and Nesfatin-1.

A significant part of the research on non-mammalian Vertebrates was focused on the impressive plasticity of the heart in response to severe environmental challenges, such as the extremely low temperatures of the polar sea waters, the absence of respiratory pigments, the aestivation-dependent metabolic depression of tropical aquatic species, and the hypoxia-induced functional adaptation of fish models, such as the teleost Cyprinids.
On both polar and tropical species, considered natural models of adaptation to extreme environments, Prof. Cerra mainly focused on the role of the universal modulator NO, by analyzing the Nitric Oxide Synthase (NOS)/NO system, not only in the heart as a target organ of adaptation, but also in other tissues and organs, as in the case of the kidney and the skeletal muscle of the Lungfish. The possibility to use Antarctic teleost species with and without hemoglobin and myoglobin allowed Prof. Cerra to investigate the mechanisms of the nitrergic control of the heart in relation to the event of "disaptation" represented by the loss of respiratory pigments under conditions of low temperatures. Results contributed to reinforce the evidence on the ancient phylogenetic roots of NO-mediated cardiac control in Vertebrates.
Prof. Cerra's research included also the evaluation of the adrenergic control of the vertebrate heart, by focusing on β3-adrenergic receptors. Studies were carried out on fish and mammals by using a physio-pharmacological (isolated and *in vitro* perfused heart, both Langendorff and working) and biomolecular approach. In fish, the role of β3-adrenergic receptors was analysed not only under basal conditions, but also in response to environmental stress, particularly in the presence of hypoxia. For this purpose, part of the research was performed on the cyprinid *Carassius auratus*, a champion of hypoxia tolerance.

In the rat, the cardiac Langendorff perfusion technique and the molecular biology approach was used to show the pattern of myocardial and coronary modulation elicited by CgA and its derived peptides (mainly Vasostatins, Catestatin, and Serpinin), and by the selenium-containing protein Selenoprotein T. Results showed that both the full length CgA, its fragments and Slenoprotein T affect the basal cardiac performance of the rat with effects on contractility, relaxation and coronary pressure. These effects, in the case of the cardioinhibitor Vasostatin and Catestatin, counteract the adrenergic stimulation and recruit the NO pathway. In the case of the cardiostimulator Serpinin, it acts as an adrenergic-like peptide. In addition to these effects on the basal cardiac performance of the rat, CgA, its derived peptides and Selenoprotein T act as cardioprotective substances, mimicking the effects of ischemic pre- and post-conditioning. They activate the endogenous intracellular protective RISK and SAFE cascades, thus limiting the ischemia/reperfusion damage. Recently, CgA fragments were also analysed in terms of cardioprotection against chemiotherapy-dependent cardiotoxicity.
More recently, Prof. Cerra's interest has been dedicated to the identification of the mechanisms activated by alimentary substances and by humoral mediators of the alimentary behavior, which play a role in modulating the cardiac performance of mammals, also in the presence of alimentary disorders.

Publications

Adaptive and Environmental cardiac physiology: from polar to tropical and temperate fish

Morpho-functional plasticity of the fish heart: organ, cell and molecular remodelling in relation to environmental challenges and ontogenetic growth.

1. Filice M, Imbrogno S, Gattuso A, **Cerra MC**. Hypoxic and Thermal Stress: Many Ways Leading to the NOS/NO System in the Fish Heart. Antioxidants (Basel). 2021 Aug 31;10(9):1401. doi: 10.3390/antiox10091401.
2. Filice M, **Cerra MC**, Imbrogno S. The goldfish Carassius auratus: an emerging animal model for comparative cardiac research. J Comp Physiol B. 2021 Aug 28. doi: 10.1007/s00360-021-01402-9. Online ahead of print
3. Filice M, Barca A, Amelio D, Leo S, Mazzei A, Del Vecchio G, Verri T, **Cerra MC**, Imbrogno S. Morpho-functional remodelling of the adult zebrafish (*Danio rerio*) heart in response to waterborne angiotensin II exposure. Gen Comp Endocrinol. 2021 Jan 15;301:113663. doi: 10.1016/j.ygcen.2020.113663. Epub 2020 Nov 19. PMID: 33220301.
4. Filice M, Leo S, Mazza R, Amelio D, Garofalo F, Imbrogno S, **Cerra MC**, Gattuso A. The heart of the adult goldfish *Carassius auratus* as a target of Bisphenol A: a multifaceted analysis. Environ Pollut. 2021 Jan 15;269:116177. doi: 10.1016/j.envpol.2020.116177. Epub 2020 Nov 30. PMID: 33290955.
5. Filice M, Mazza R, Leo S, Gattuso A, **Cerra MC**, Imbrogno S. The Hypoxia Tolerance of the Goldfish (*Carassius auratus*) Heart: The NOS/NO System and Beyond. Antioxidants (Basel). 2020 Jun 26;9(6):555. doi: 10.3390/antiox906055.
6. Imbrogno S, Filice M, **Cerra MC**. Exploring cardiac plasticity in teleost: the role of humoral modulation. Gen Comp Endocrinol. 2019 Jul 29; 283:113236. doi: 10.1016/j.ygcen.2019.113236. [Epub ahead of print] Review. PMID: 31369729.
7. Imbrogno S, Aiello D, Filice M, Leo S, Mazza R, **Cerra MC**, Napoli A. MS-based proteomic analysis of cardiac response to hypoxia in the goldfish (*Carassius auratus*). Sci Rep. 2019 Dec 12;9(1):18953. doi: 10.1038/s41598-019-55497-w. PMID: 31831848

8. Imbrogno S, Filice M, **Cerra MC**. Exploring cardiac plasticity in teleost: the role of humoral modulation. Gen Comp Endocrinol. 2019 Jul 29; 283:113236. doi: 10.1016/j.ygcen.2019.113236. [Epub ahead of print] Review. PMID: 31369729
9. Leo S, Gattuso A, Mazza R, Filice M**, Cerra MC**, Imbrogno S. Cardiac influence of the β3-adrenoceptor in the goldfish (*Carassius auratus*): a protective role under hypoxia? J Exp Biol. 2019 Oct 10;222(Pt 19). pii: jeb211334. doi: 10.1242/jeb.211334
10. Gattuso A, Garofalo F, **Cerra MC.**, Imbrogno S (2018). Hypoxia tolerance in teleosts: Implications of cardiac nitrosative signals. FRONTIERS IN PHYSIOLOGY, vol. 9, ISSN: 1664-042X, doi: 10.3389/fphys.2018.00366
11. Pugliese C, Mazza R, Andrews PL, **Cerra MC**, Fiorito G, Gattuso A. Effect of Different Formulations of Magnesium Chloride Used As Anesthetic Agents on the Performance of the Isolated Heart of *Octopus vulgaris*. Front Physiol. 2016 Dec 26;7:610. doi: 10.3389/fphys.2016.00610. eCollection 2016.
12. Garofalo F, Amelio D, Gattuso A, **Cerra MC**, Pellegrino D. Cardiac contractility in Antarctic teleost is modulated by nitrite through xanthine oxidase and cytochrome p-450 nitrite reductase. Nitric Oxide. 2015 Sep 15;49:1-7. doi: 10.1016/j.niox.2015.05.002. Epub 2015 Jun 2. PMID: 26045289.
13. Tota, B., Angelone, T., Mancardi, D., **Cerra MC**, Hypoxia and anoxia tolerance of vertebrate hearts: An evolutionary perspective. (2011) Antioxidants and Redox Signaling, 14 (5), pp. 851-862.
14. **Cerra MC**, Angelone, T., Parisella, M.L., Pellegrino, D., Tota, B., Nitrite modulates contractility of teleost (*Anguilla anguilla* and *Chionodraco hamatus*, i.e. the Antarctic hemoglobinless icefish) and frog (*Rana esculenta*) hearts. (2009) Biochimica et Biophysica Acta - Bioenergetics, 1787 (7), pp. 849-855.
15. Garofalo, F., Amelio, D., **Cerra MC**, Tota, B., Sidell, B.D., Pellegrino, D., Morphological and physiological study of the cardiac NOS/NO system in the Antarctic (Hb-/Mb-) icefish *Chaenocephalus aceratus* and in the red-blooded *Trematomus bernacchii*. (2009) Nitric Oxide - Biology and Chemistry, 20 (2), pp. 69-78.
16. Amelio, D., Garofalo, F., Pellegrino, D., Giordano, F., Tota, B., **Cerra MC**, Cardiac expression and distribution of nitric oxide synthases in the ventricle of the cold-adapted Antarctic teleosts, the hemoglobinless *Chionodraco hamatus* and the red-blooded *Trematomus bernacchii*. (2006) Nitric Oxide - Biology and Chemistry, 15 (3), pp. 190-198.
17. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B., The structure of the conus arteriosus of the sturgeon (*Acipenser naccarii*) heart: II. The myocardium, the subepicardium, and the conus-aorta transition. (2002) Anatomical Record, 268 (4), pp. 388-398.
18. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B., Structure of the conus arteriosus of the sturgeon (*Acipenser naccarii)* heart. I: The conus valves and the subendocardium. (2002) Anatomical Record, 267 (1), pp. 17-27.
19. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B., The bulbus arteriosus of stenothermal and temperate teleosts: A morphological approach. (2000) Journal of Fish Biology, 57 (SUPPL. A), pp. 121-135.
20. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B., Light and electron microscopy of the bulbus arteriosus of the European eel (*Anguilla anguilla*). (2000) Cells Tissues Organs, 167 (2-3), pp. 184-198.
21. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B. Bulbus arteriosus of the Antarctic teleosts. II. The red-blooded *Trematomus bernacchii*. (1999) Anatomical Record, 256 (2), pp. 116-126.
22. Icardo, J.M., Colvee, E., **Cerra MC**, Tota, B., Bulbus arteriosus of the Antarctic teleosts. I. The white-blooded *Chionodraco hamatus.* (1999) Anatomical Record, 254 (3), pp. 396-407.
23. Tota, B., **Cerra MC**, Mazza, R., Pellegrino, D., Icardo, J., The heart of the Antarctic icefish as paradigm of cold adaptation. (1997) Journal of Thermal Biology, 22 (6), pp. 409-417.
24. Cerra MC, Canonaco, M., Acierno, R., Tota, B., Different binding activities of A- and B-type natriuretic hormones in the heart of two Antarctic teleosts, the red-blooded *Trematomus bernacchii* and the hemoglobinless *Chionodraco hamatus*. (1997) Comparative Biochemistry and Physiology - A Physiology, 118 (4), pp. 993-999.

The Nitrergic control of the fish heart.

25. Tota, B, Amelio, D, **Cerra MC**, Garofalo F (2018). The morphological and functional significance of the NOS/NO system in the respiratory, osmoregulatory, and contractile organs of the African lungfish. Acta Histochemica, ISSN: 0065-1281, doi: 10.1016/j.acthis.2018.08.011
26. Imbrogno S, Filice M, **Cerra MC**, Gattuso A. NO, CO, and H2 S: what about gasotransmitters in fish and amphibian hearts? Acta Physiol (Oxf). 2018 Jan 16. doi: 10.1111/apha.13035. [Epub ahead of print] Review.
27. Filice M, Amelio D, Garofalo F, David S, Fucarino A, Jensen FB, Imbrogno S, **Cerra MC**. Angiotensin II dependent cardiac remodeling in the eel *Anguilla anguilla* involves the NOS/NO system. Nitric Oxide. 2017 May 1;65:50-59. doi: 10.1016/j.niox.2017.02.007. Epub 2017 Feb 20. PMID: 28232085
28. Garofalo F, Amelio D, Icardo JM, Chew SF, Tota B, **Cerra MC**, Ip YK. Signal molecule changes in the gills and lungs of the African lungfish *Protopterus annectens*, during the maintenance and arousal phases of aestivation. Nitric Oxide. 2015 Jan 30;44:71-80. doi: 10.1016/j.niox.2014.11.017. Epub 2014 Dec 9. PMID: 25499100.
29. Mazza R, Pasqua T, **Cerra MC**, Angelone T, Gattuso A. Akt/eNOS signaling and PLN S-sulfhydration are involved in H_2S-dependent cardiac effects in frog and rat. Am J Physiol Regul Integr Comp Physiol. 2013 Aug 15;305(4):R443-51. doi: 10.1152/ajpregu.00088.2013. PMID: 23785074.
30. Amelio D, Garofalo F, Wong WP, Chew SF, Ip YK**, Cerra MC**, Tota B. Nitric oxide synthase-dependent "On/Off"switch and apoptosis in freshwater and aestivating lungfish, *Protopterus annectens*: Skeletal muscle versus cardiac muscle. Nitric Oxide. 2013 Mar 30;32C:1-12. doi: 10.1016/j.niox.2013.03.005. PMID: 23545405.
31. Icardo, J.M., Amelio, D., Garofalo, F., Colvee, E., **Cerra MC**, Wong, W.P., Tota, B., Ip, Y.K. The structural characteristics of the heart ventricle of the African lungfish *Protopterus dolloi*: Freshwater and aestivation. (2008) Journal of Anatomy, 213 (2), pp. 106-119.
32. Amelio, D., Garofalo, F., Brunelli, E., Loong, A.M., Wong, W.P., Ip, Y.K., Tota, B., **Cerra MC**, Differential NOS expression in freshwater and aestivating *Protopterus dolloi* (lungfish): Heart vs kidney readjustments. (2008) Nitric Oxide - Biology and Chemistry, 18 (1), pp. 1-10.
33. Imbrogno, S., Angelone, T., Adamo, C., Pulerà, E., Tota, B., **Cerra MC**, Beta3-Adrenoceptor in the eel (*Anguilla anguilla*) heart: Negative inotropy and NO-cGMP-dependent mechanism. (2006) Journal of Experimental Biology, 209 (24), pp. 4966-4973.
34. Tota, B., Amelio, D., Pellegrino, D., Ip, Y.K., **Cerra MC**, NO modulation of myocardial performance in fish hearts. (2005) Comparative Biochemistry and Physiology - A Molecular and Integrative Physiology, 142 (2), pp. 164-177.
35. **Cerra MC**, Imbrogno, S., Amelio, D., Garofalo, F., Colvee, E., Tota, B., Icardo, J.M., Cardiac morphodynamic remodelling in the growing eel (*Anguilla anguilla* L.). (2004) Journal of Experimental Biology, 207 (16), pp. 2867-2875.
36. **Cerra MC**, Canonaco, M., Takei, Y., Tota, B., Characterization of natriuretic peptide binding sites in the heart of the eel, *Anguilla anguilla.* (1996) Journal of Experimental Zoology, 275 (1), pp. 27-35.

Mechanisms of cardioprotection in Vertebrates: from fish to mammals

Autocrine-paracrine control of cardiac homeostasis in Vertebrates: Natriuretic Peptides, Angiotensin II, Chromogranin-A-derived peptides, Selenoprotein T, β3-adrenergic receptors.

37. Mazza R, Gattuso A, Imbrogno S, Boukhzar L, Leo S, Mallouki BY, Filice M, Rocca C, Angelone T, Anouar Y, **Cerra MC**. Selenoprotein T as a new positive inotrope in the goldfish, *Carassius auratus*. J Exp Biol. 2019 Jun 4;222(Pt 11). pii: jeb201202. doi: 10.1242/jeb.201202. PMID: 31085597
38. Imbrogno S, Mazza R, Pugliese C, Filice M, Angelone T, Loh YP, Tota B, **Cerra MC**. The Chromogranin A-derived sympathomimetic serpinin depresses myocardial performance in teleost and amphibian hearts. Gen Comp Endocrinol. 2017 Jan 1;240:1-9. doi: 10.1016/j.ygcen.2016.09.004.
39. Mazza R, Gattuso A, Filice M, Cantafio P, **Cerra MC**, Angelone T, Imbrogno S. Nesfatin-1 as a new positive inotrope in the goldfish (*Carassius auratus*) heart. Gen Comp Endocrinol. 2015 Aug 4. pii: S0016-6480(15)00208-7. doi: 10.1016/j.ygcen.2015.08.003. PMID: 26248227.

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41. Imbrogno S, Gattuso A, Mazza R, Angelone T, **Cerra MC.**; β3 -AR and the vertebrate heart: a comparative view. Acta Physiol (Oxf). 2015 Mar 23. doi: 10.1111/apha.12493. [Epub ahead of print] PMID: 25809182.
42. Imbrogno S, Garofalo F, Amelio D, Capria C, **Cerra MC.** Humoral control of cardiac remodeling in fish: role of Angiotensin II. Gen Comp Endocrinol. 2013 Dec 1;194:189-97. doi: 10.1016/j.ygcen.2013.09.009. Epub 2013 Sep 27. PMID: 24080085.
43. **Cerra MC**, Imbrogno S. Phospholamban and cardiac function: A comparative perspective in vertebrates. Acta Physiol (Oxf). 2012 May;205(1):9-25. doi: 10.1111/j.1748-1716.2012.02389.x. PMID: 22463608.
44. Imbrogno, S., Garofalo, F., **Cerra MC**, Mahata, S.K., Tota, B., The catecholamine release-inhibitory peptide catestatin (chromogranin A 344-364) modulates myocardial function in fish. (2010) Journal of Experimental Biology, 213 (21), pp. 3636-3643.
45. Imbrogno, S.; Adamo, C.; Garofalo, F.; **Cerra, MC**; Tota, B. CGMP-independent nitric oxide modulation of the Frank-Starling response in the eel *Anguilla anguilla*. 2008 pp.S127-S128. In Comparative Biochemistry And Physiology. Part A, Molecular & Integrative Physiology - ISSN:1095-6433 2008, vol. 150 (3)
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