

# CURRICULUM VITAE ET STUDIORUM

**Prof. Claudia Penna**

## **DATI PERSONALI:**

**Professore di II fascia confermato SSD Bio/09**

Ricercatore Universitario a tempo indeterminato dal 1 ottobre 2006

Professore di II fascia dal 29 dicembre 2014

*Abilitata a Professore di I fascia nel settore scientifico concorsuale 05/D1 – FISILOGIA*

*(Abilitazione Scientifica Nazionale 2016-2018; scadenza 2024)*

Dipartimento di Scienze Cliniche e Biologiche, Università degli Studi di Torino, Orbassano (TO)

Data di nascita: 5/5/67

Luogo di nascita: Asti, Italia

Stato civile: coniugata. Figli: due

Iscritta all'Ordine dei Biologi dal 1993.

## **TITOLI DI STUDIO**

Laurea in Scienze Biologiche	Università di Torino	Anno 1991
Specialità Patologia Clinica	Università di Torino	Anno 1995
Dottorato di Ricerca in Fisiologia	Università di Torino	Anno 2000

## **RUOLI OCCUPATI**

<b>1991-1995</b>	Specializzando in Patologia Clinica Università di Torino
<b>1995-1999</b>	Dottoranda in Fisiologia Università di Torino
<b>2000-2001</b>	Borsa di studio “ <b>Effetto inotropo negativo esercitato dalla bradichinina sul cuore di ratto isolato e perfuso a flusso costante: ruolo del citocromo P-450 di origine endoteliale e dei metaboliti dell’acido arachidonico</b> ” Consorzio Ricerche Cardiovascolari (INRC), Laboratorio di Fisiologia Dip. Scienze Cliniche Biologiche – Facoltà di Medicina e Chirurgia, Università di Torino, Prof D. Gattullo.
<b>2001-2002</b>	Borsa di studio “ <b>Ruolo del substrato metabolico nella regolazione della contrattilità cardiaca</b> ” Consorzio Ricerche Cardiovascolari (INRC), Laboratorio di Fisiologia Dip. Scienze Cliniche Biologiche – Medicina e Chirurgia, Università di Torino, Prof D. Gattullo.
<b>2002-2003</b>	Borsa di studio “ <b>L’azione protettiva dei radicali nitrossilici sul cuore in diverse situazioni metaboliche</b> ” Consorzio Ricerche Cardiovascolari (INRC), Laboratorio di Fisiologia Dip. Scienze Cliniche Biologiche – Medicina e Chirurgia, Università di Torino, Prof D. Gattullo.
<b>2003- 2006</b>	Ricercatore a contratto Progetto FIRB “ <b>Studio delle modalità di differenziamento di cellule staminali verso il fenotipo di cardiomiocita adulto</b> ” Dip Neuroscienze – Laboratorio di Fisiologia Cardiovascolare - Medicina e Chirurgia, Università di Torino, Prof. G. Losano.

## **Compiti Istituzionali:**

In precedenza svolti

- Rappresentante dei Ricercatori presso la II° Facoltà di Medicina dell'Università di Torino.
- Componente della Commissione Tecnico Pedagogica, Medicina e Chirurgia – San Luigi.
- Componente Commissione Ricerca, Dipartimento Scienze Cliniche Biologiche, Univ Torino

## ***Ad oggi***

- Vice-Presidente del Corso di Studi Scienze Infermieristiche di Asti.

- Componente della Commissione Consultiva Paritetica e della Commissione Monitoraggio e Riesame per CdS Scienze Infermieristiche di Asti (CCLI del 30/10/2015)
- Componente della Commissione Riconoscimento Titoli Esteri, Valutazione Trasferimenti e Convalida Esami del CdS Medicina e Chirurgia – San Luigi.
- Componente Commissione Monitoraggio e Riesame, Scienze Infermieristiche, Asti, Dip. Scienze della Sanità Pubblica e Pediatriche (CCLI del 21/06/2017)

## AREA DI RICERCA

**Fisiologia cardiovascolare e dei sistemi integrati** con particolare rilievo alle funzioni dell'endotelio, in relazione con la regolazione del circolo coronarico, nonché del metabolismo, la contrattilità e la protezione del miocardio.

### **ELENCO DELLE PUBBLICAZIONI Dr. C. Penna**

#### **Riviste internazionali:**

#### **2019– 2013**

1. Cadeddu Dessalvi C, Pepe A, Penna C, Gimelli A, Madonna R, Mele D, Monte I, Novo G, Nugara C, Zito C, Moslehi JJ, de Boer RA, Lyon AR, Tocchetti CG, Mercurio G. Sex differences in anthracycline-induced cardiotoxicity: the benefits of estrogens. **Heart Fail Rev.** 2019 Jun 29. doi: 10.1007/s10741-019-09820.
2. Zacchigna S, Sartiani L, Penna C, Varricchi G, Tocchetti CG. Modulation of Redox Signaling in Chronic Diseases and Regenerative Medicine. **Oxid Med Cell Longev.** 2019 Apr 23;2019:6091587. doi: 10.1155/2019/6091587.
3. Femminò S, Pagliaro P, Penna C. Obesity and cardioprotection. **Curr Med Chem.** 2019 Mar 24. doi: 10.2174/0929867326666190325094453.
4. Pasqua T, Pagliaro P, Rocca C, Angelone T, Penna C. Role of NLRP-3 Inflammasome in Hypertension: A Potential Therapeutic Target. **Curr Pharm Biotechnol.** 2018;19(9):708-714. doi: 10.2174/1389201019666180808162011.
5. Davidson SM, Andreadou I, Barile L, Birnbaum Y, Cabrera-Fuentes HA, Cohen MV, Downey JM, Girao H, Pagliaro P, Penna C, Pernow J, Preissner KT, Ferdinandy p, on behalf of the EU-CARDIOPROTECTION COST Action (CA16225) Circulating blood cells and extracellular vesicles in acute cardioprotection. **Cardiovasc Res.** 2018 Dec 24. doi: 10.1093/cvr/cvy314
6. Russo I, Femminò S, Barale C, Tullio F, Geuna S, Cavalot F, Pagliaro P, Penna C. Cardioprotective Properties of Human Platelets Are Lost in Uncontrolled Diabetes Mellitus: A Study in Isolated Rat Hearts. **Front Physiol.** 2018 Jul 10; 9:875. doi: 10.3389/fphys.2018.00875
7. Pagliaro P, Penna C. Editorial: Alteration of Redox Equilibrium, Inflammation and Progression of Disease. **Curr Med Chem.** 2018;25(11):1272-1274. doi:10.2174/092986732511180417115122.
8. C Rocca, S Femminò, G Aquila, MC Granieri, EM De Francesco, T Pasqua, DC Rigracciolo, F Fortini, MC Cerra, M Maggiolini, P Pagliaro, P Rizzo, T Angelone, C Penna. “Notch1 Mediates Preconditioning Protection Induced by GPER in Normotensive and Hypertensive Female Rat Hearts” **Front. Physiol.** 2018 doi: 10.3389/fphys.2018.00521.
9. Pagliaro P, Femminò S, Popara J, Penna C Mitochondria in Cardiac Postconditioning. **Front. Physiol.** 2018 9:287. doi: 10.3389/fphys.2018.00287.

10. C Penna, M Sorge, S Femminò, P Pagliaro, M Brancaccio “Redox aspects of chaperones in cardiac function” **Frontiers in Physiology** 2018, doi.org/10.3389/fphys.2018.00216
11. S Femminò\*, C Penna\*, F Bessone, F Caldera, N Dhakar, P Pagliaro, R Cavalli, F Trotta “ $\alpha$ -Cyclodextrin and  $\alpha$ -cyclodextrin polymers as oxygen nanocarriers to limit hypoxia/reoxygenation injury: Implications from an in vitro model”. **Polymers** 2018, accepted. doi:10.3390/polym10020211, \*uguale contributo
12. I Gesmundo, M Miragoli, P Carullo, L Trovato, V Larcher, E Di Pasquale, M Brancaccio, M Mazzola, T Villanova, M Sorge, M Taliano, MP Gallo, G Alloatti, C Penna, JM Hare, E Ghigo, AV Schally, G Condorelli, R Granata. “Growth hormone-releasing hormone attenuates cardiac hypertrophy and improves heart function in pressure overload-induced heart failure” **Proc Natl Acad Sci U S A.** 2017 114(45):12033-12038.
13. C Penna, F Tullio, S Femminò, C Rocca, T Angelone, MC Cerra, MP Gallo, I Gesmundo, A Fanciulli, MF Brizzi, P Pagliaro, G Alloatti, R Granata. “Obestatin regulates cardiovascular function and promotes cardioprotection through the nitric oxide pathway” **J Cell Mol Med** 2017 Dec;21(12):3670-3678.
14. I Russo, C Penna, T Musso, J Popara, G Alloatti, F Cavalot, P Pagliaro “Platelets, Diabetes and Myocardial Ischemia/Reperfusion Injury” **Cardiovascular Diabetology** 2017;16:71.
15. B Pergolizzi, V Carriero, G Abbadessa, C Penna, P Berchiolla, S De Francia, E Bracco, S Racca “Sub-chronic nandrolone administration reduces cardiac oxidative markers during restraint stress by modulating protein expression pattern” **Mol Cell Biochem** 2017 Oct;434(1-2):51-60.
16. Tocchetti CG, Cadeddu C, Di Lisi D, Femminò S, Madonna R, Mele D, Monte I, Novo G, Penna C, Pepe G, Spallarossa P, Varricchi G, Zito C, Pagliaro P, Mercurio G. “Comprehensive Invited Review. From molecular mechanisms to clinical management of antineoplastic drug-induced cardiovascular toxicity: A translational overview”. **Antioxid Redox Signal** doi: 10.1089/ars.2016.6930 accettato, 2017
17. Tullio F\*, Penna C\*<sup>§</sup>, Cabiale K, Femminò S, Galloni M, P Pagliaro<sup>§</sup>. Cardioprotective effects of calcitonin gene-related peptide in isolated rat heart and in H9c2 cells via redox signaling. **Biomedicine & Pharmacotherapy** 2017; 90:194-202. (\*uguale contributo,<sup>§</sup> corrisponding authors)
18. R Mastrocola, M Aragno, G Alloatti, M Collino, C Penna, P Pagliaro "Pharmacological inhibition of NLRP3 inflammasome attenuates myocardial ischemia/reperfusion injury by activation of RISK and mitochondrial pathways." **Curr Med Chem.** Curr Med Chem. 2018;25(11):1294-1310.
19. Morano M, Angotti C, Tullio F, Gambarotta G, Penna C, Pagliaro P, Geuna S. Myocardial ischemia/reperfusion upregulates the transcription of the Neuregulin1 receptor ErbB3, but only postconditioning preserves protein translation: role in oxidative stress. **Int J Cardiology** 2017; 233: 73-79.
20. Angotti C, Venier-Julienne MC, Penna C, Femminò S, Sindji L, Paniagua C, Montero-Menei CN, Pagliaro P. Nanoprecipitated Catestatin released from pharmacologically active microcarriers (PAMs)

exerts pro-survival effects on MSC. **Int J Pharm.** 2017 May 25;523(2):506-514.

21. Mastrocola R, Penna C, Tullio F, Femminò S, Nigro D, Chiazza F, Serpe L, Alloatti G, Cocco M, Bertinaria M, Pagliaro P, Aragno M, Collino M. Pharmacological inhibition of NLRP3 inflammasome attenuates myocardial ischemia/reperfusion injury by activation of RISK and mitochondrial pathways" **Oxid Med Cell Longev.** 2016; 2016:5271251.

22. Tullio F, Perrelli M-G, Femminò S, Penna C, Pagliaro P. Mitochondrial Sources of ROS in Cardioprotection and Ischemia/Reperfusion Injury **Ann Cardiovasc Dis** 2016; 1(2): 1006.

23. P Pagliaro, C Penna "Hypertension, Hypertrophy and Reperfusion Injury" **Journal of Cardiovascular Medicine** 2017; 18(3):131-135.

24. Quintieri AM, Filice E, Amelio D, Pasqua T, Lupi FR, Scavello F, Cantafio P, Rocca C, Lauria A, Penna C, De Cindio B, Cerra MC, Angelone T. "The innovative "Spread Bio-Oil" prevents metabolic disorders and mediates preconditioning-like cardioprotection in rats". **Nutrition, Metabolism and Cardiovascular Diseases** 2016 Jul;26(7):603-613.

25. Gallina C, Capelôa T, Saviozzi S, Accomasso L, Catalano F, Tullio F, Martra G, Penna C, Pagliaro P, Turinetto V, Giachino C. "Human mesenchymal stem cells labelled with dye-loaded amorphous silica nanoparticles: long-term biosafety, stemness preservation and traceability in the beating heart" **J Nanobiotechnology.** 2015; 13:77.

26. Pasqua T, Tota B, Penna C, Corti A, Cerra MC, Loh YP, Angelone T "pGlu-serpinin protects the normotensive and hypertensive heart from ischemic injury" **J Endocrinol.** 2015; 227:167-78.

27. R Mastrocola, M Collino, C Penna, D Nigro, F Chiazza, V Fracasso, F Tullio, G Alloatti, P Pagliaro, M Aragno. "Maladaptive modulations of NLRP3 inflammasome and cardioprotective pathways are involved in diet-induced exacerbation of myocardial ischemia/reperfusion injury in mice" **Oxid Med Cell Longev.** 2016; 2016:3480637.

28. M Boero, P Pagliaro, F Tullio, RM Pellegrino, A Palmieri, L Ferbo, G Saglio, M De Gobbi, C Penna\*, A Roetto\* "A comparative study of myocardial molecular phenotypes of two Tfr2 $\beta$  null mice: role in ischemia/reperfusion" **Biofactors** 2015;41:360-71. (\*uguale contributo)

29. Lapi D, Vagnani S, Sapio D, Mastantuono T, Boscia F, Pignataro G, Penna C, Pagliaro P and Colantuoni A. Effects of bone marrow mesenchymal stem cells (BM-MSCs) on rat pial microvascular remodeling after transient middle cerebral artery occlusion. **Front. Cell. Neurosci** 2015; 9:329.

30. A Crisafulli, D Mancardi, E Marongiu, R Rastaldo, C Penna, P Pagliaro "Preconditioning cardioprotection and exercise performance: a radical point of view" **Sport Sciences for Health** 2015; 11:137-151.

31. P Pagliaro, C Penna "Protection, repair and regeneration of ahybreaky heart" **Curr Drug Targets** 2015;16:778-9

32. Penna C, Granata R, Tocchetti CG, Gallo MP, Alloatti G, Pagliaro P. Endogenous Cardioprotective Agents: Role in Pre and Postconditioning. **Curr Drug Targets.** 2015; 16:843-67

33. Tocchetti CG, Molinaro M, Angelone T, Lionetti V, Madonna R, Mangiacapra F, Moccia F, Penna C, Sartiani L, Quaini F, Pagliaro P. Nitroso-Redox Balance and Modulation of Basal Myocardial Function: an Update from the Italian Society of Cardiovascular Research (SIRC). **Curr Drug Targets**. 2015;16:895-903
34. Pagliaro P, Penna C. Redox signalling and cardioprotection: translatability and mechanism. **Br J Pharmacol**. 2015; 172:1974-95
35. Penna C, Pasqua T, Amelio D, Perrelli MG, Angotti C, Tullio F, Mahata SK, Tota B, Pagliaro P, Cerra MC, Angelone T. "Catestatin Increases the Expression of Anti-Apoptotic and Pro-angiogenic Factors in the Post-Ischemic Hypertrophied Heart of SHR". **PlosOne** 2014; 9: e102536.
36. Penna C\*, Brancaccio M\*, Tullio F, Rubinetto C, Perrelli M-G, Angotti C, Pagliaro P, Tarone G. "Overexpression of the Muscle Specific Protein, Melusin, Protects from Cardiac Ischemia/Reperfusion Injury" **Basic Res Cardiol** 2014;109:418. (\*uguale contributo)
37. Mognetti B, La Montagna G, Perrelli MG, Marino S, Pagliaro P, Cracco CM, Penna C "Zoledronic acid and leuprorelin acetate, alone or in combination, similarly reduce proliferation and migration of prostate cancer cells in vitro". **International J Medical Biology** 2014; 1: Article ID 235870, 7 pages. doi:10.4303/ijmb/235870
38. Penna C\*, Angotti C, Pagliaro P\* "Protein S-Nitrosylation in Preconditioning and Postconditioning" **Experimental Biology and Medicine** 2014; 239:647-662. (\*corresponding authors)
39. Tullio F, Perrelli M-G, Angotti C, Penna C, Pagliaro P. "Redox Balance and Cardioprotection" **Basic Res Cardiol** 2013;108:392.
40. Penna C\*, Perrelli MG\*, Tullio F, Angotti C, Camporeale A, Poli V, Pagliaro P. "Diazoxide Postconditioning Induces Mitochondrial Protein S-Nitrosylation and a Redox-Sensitive Mitochondrial Phosphorylation/Translocation of RISK Elements: no Role for SAFE". **Basic Res Cardiol** 2013; 108:371. (\*These authors contributed equally to this work)
41. Pagliaro P, Gattullo D, Penna C. Nitroglycerine and sodium trioxodinitrate: from the discovery to the preconditioning effect. **J Cardiovasc Med** (Hagerstown). 2013;14: 698-704.
42. Penna C, Settanni F, Tullio F, Trovato L, Pagliaro P, Alloatti G, Ghigo E, Granata R. GH-releasing hormone induces cardioprotection in isolated male rat heart via activation of RISK and SAFE pathways. **Endocrinology**. 2013;154: 1624-1635.
43. Penna C, Perrelli MG, Tullio F, Angotti C, Pagliaro P. Acidic infusion in early reperfusion affects the activity of antioxidant enzymes in postischemic isolated rat heart. **J Surg Res**. 2013; 183:111-8.
44. Perrelli MG, Tullio F, Angotti C, Cerra MC, Angelone T, Tota B, Alloatti G, Penna C\*, Pagliaro P\*. Catestatin reduces myocardial ischaemia/reperfusion injury: involvement of PI3K/Akt, PKCs, mitochondrial K(ATP) channels and ROS signalling. **Pflugers Arch**. 2013; 465:1031-1040. (\*corresponding authors)

45. Penna C, Perrelli MG, Karam JP, Angotti C, Muscari C, Montero-Menei CN, Pagliaro P. Pharmacologically active microcarriers influence VEGF-A effects on mesenchymal stem cell survival. **J Cell Mol Med**. 2013; 17:192-204.
46. Mognetti B, La Montagna G, Perrelli MG, Pagliaro P, Penna C. Bone marrow mesenchymal stem cells increase motility of prostate cancer cells via production of stromal cell-derived factor-1 $\alpha$ . **J Cell Mol Med**. 2013; 17:287-292.
47. Penna C, Perrelli MG, Pagliaro P. Comprehensive Invited Review “Mitochondrial Pathways, Permeability Transition Pore and Redox Signaling in Cardioprotection: Therapeutic Implications” **Antioxidants & Redox Signaling**. 2013; 18:556-599.

#### **2012-1994**

48. Penna C, Pasqua T, Perrelli MG, Pagliaro P, Cerra MC, Angelone T. “Postconditioning with Glucagon Like Peptide-2 reduces ischaemia/reperfusion injury in isolated rat hearts: role of survival kinases and mitochondrial K<sub>ATP</sub> channels”. **Basic Res Cardiol** 2012;107:272.
49. Penna C, Tullio F, Perrelli MG, Mancardi D, Pagliaro P. “Cardioprotection against ischemia/reperfusion injury and chromogranin A-derived peptides”. **Curr Med Chem** 2012;19:4074-4085.
50. MG Perrelli, P Pagliaro, Penna C “Ischemia/reperfusion injury and cardioprotective mechanisms: role of mitochondria and reactive oxygen species”. **World J Cardiol** 2011;3:186 -200
51. Penna C, Perrelli MG, Tullio F, Moro F, Parisella ML, Merlino A, Pagliaro P. “Post-ischemic early acidosis in cardiac postconditioning modifies the activity of antioxidant enzymes, reduces nitration and favors protein S-Nitrosylation” **Pflugers Archiv-European Journal of Physiology** 2011;462:219-233
52. Penna C, Bassino E, Alloatti G. “Platelet activating factor (PAF): the good and the bad in the ischemic/reperfused heart” **Experimental Biology and Medicine** 2011; 236:390-401.
53. Penna C, Tullio F, Perrelli MG, Moro F, Abbadessa G, Piccione F, Carriero V, Racca S, Pagliaro P. “Ischemia/reperfusion injury is increased and cardioprotection by postconditioning is lost as cardiac hypertrophy develops in nandrolone treated rats” **Basic Res Cardiol**, 2011;106:409-420.
54. P Pagliaro, Penna C FORUM EDITORIAL Cardiac Postconditioning. **Antioxid Redox Signal** 2011;14:777-779.
55. Pagliaro P, Moro F, Tullio F, Perrelli MG, Penna C. Cardioprotective pathways during reperfusion: focus on redox signaling and other modalities of cell signaling. **Antioxid Redox Signal**. 2011;14:833-50
56. Penna C, Alloatti G, Gallo MP, Cerra MC, Levi R, Tullio F, Bassino E, Dolgetta S, SK Mahata, Tota B, Pagliaro P. “Catestatin improves post-ischemic left ventricular function and decreases ischemia/reperfusion injury in heart” **Cell and Mol Neurobiology** 2010; 30: 1171-1179
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2010;105:181-192.

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60. Penna C#, MG Perrelli\*, S Raimondo, F Tullio, A Merlino, F Moro, S Geuna, D Mancardi, P Pagliaro. “Postconditioning induces an anti-Apoptotic effect and preserves mitochondrial integrity in isolated rat hearts” **Biochim Biophys Acta-Bioenergetics** 2009,1787:794-801. (\*Uguale contributo;#Corresponding author)

61. Penna C, Mancardi D, Rastaldo R, Pagliaro P. “Cardioprotection: a radical view - Free radicals in pre- and post-conditioning” **Biochim Biophys Acta-Bioenergetics** 2009,1787:781-793

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64. Mancardi D, Tullio F, Crisafulli A, Rastaldo R, Folino A, Penna C, Pagliaro P. “Omega 3 has a beneficial effect on ischemia/reperfusion injury, but cannot reverse the effect of stressful forced exercise” **Nutr Metab Cardiovasc Dis**. 2009;19:20-26.

65. Penna C, Abbadessa G, Mancardi D, Tullio F, Piccione F, Spaccamiglio A, Racca S, Pagliaro P. “Synergistic effects against post-ischemic cardiac dysfunction by sub-chronic nandrolone pretreatment and postconditioning: a role for  $\beta_2$ -adrenoreceptors” **J Physiol Pharmacol** 2008, 59: 645–659

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activating factor triggers preconditioning-like cardioprotective effect via mitochondrial  $K_{ATP}$  channels and redox-sensible signaling” **J Physiol Pharmacol.** 2008;59:47-54.

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73. Penna C, Mancardi D, Rastaldo R, Losano G, Pagliaro P. “Intermittent activation of bradykinin  $B_2$  receptors and mitochondrial  $K_{ATP}$  channels trigger cardiac postconditioning through a redox signaling”. **Cardiovasc Res** 2007; 75:168-177.

74. Penna C, Abbadessa G, Mancardi D, Spaccamiglio A, Racca S, Pagliaro P “Nandrolone pre-treatment enhances cardiac  $\beta_2$ -adrenoceptor expression and reverses heart contractile down-regulation in the post-stress period of acute-stressed rats” **J Steroid biochemistry & molecular biology** 2007;107:106-113

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