

FEDERICA LIMANA

*name:* **FEDERICA LIMANA**

*date and place of birth:* **18\_02\_1970, Rome, Italy**

*present appointment:* **Senior Investigator,  
Laboratorio di Patologia Cellulare e Molecolare,  
San Raffaele Pisana,  
Istituto di Ricovero e Cura a Carattere Scientifico [IRCCS],  
Rome, Italy.**

*office address:* **Laboratorio di Patologia Cellulare e Molecolare,  
San Raffaele Pisana,  
Istituto di Ricovero e Cura a Carattere Scientifico [IRCCS],**

*e.mail:* **fe\_limana@hotmail.com**

*citizenship:* **Italian**

## EDUCATION

CV: 2025-11-10 14:07:07

- 2013** **DOTTORATO DI RICERCA IN CARDIOLOGIA CELLULARE E MOLECOLARE**  
**obtained at the Catholic University of the Sacred Heart, Department of Cardiovascular Sciences, Rome, Italy. [2011\_2013];**
- Title of thesis: "***New approaches in cardiac regeneration for heart failure treatment***".
- Supervisor: Prof. Filippo Crea, M.D.
- 2001** **SPECIALIZZAZIONE IN RICERCA FARMACOLOGICA**  
**obtained at the Cardiovascular Research Institute, Department of Medicine, "New York Medical College" in Valhalla, New York, USA [1999\_2001], and at the Department of Cardiovascular Research, Clinical Pharmacology "Mario Negri" Institute in Milan, Italy [1998\_1999];**
- Title of thesis: "***IL-2 Overexpression Promotes Myocytes Proliferation***".  
**Proc Natl Acad Sci USA 99(9): 6257-62**
- Supervisors: Prof. Piero Anversa, M.D.  
Prof. Roberto Latini, M.D.
- 1997** **LAUREA SPECIALISTICA IN "CHIMICA E TECNOLOGIA FARMACEUTICHE"**  
**obtained with top grades and honors [110/110 con lode] at the Faculty of Pharmacology, Corso di Laurea in Chimica e Tecnologia Farmaceutiche of the Sapienza, University of Rome; [1990\_1997].**
- Title of experimental thesis: "***Gas Phase Reactivity of Borazine towards Positive Ions***" ["***Reattività della borazina verso specie cationiche in fase gassosa***"].
- Supervisor: Prof. Fulvio Cacace.
- 1990** **DIPLOMA DI MATURITÀ SCIENTIFICA**  
**obtained at the Liceo Scientifico P. Levi in Rome, Italy, with the evaluation of 60/60; [1984\_1990].**
- 1984** **Secondary school, Rome, Italy; [1981\_1984]**
- 1981** **Primary school Rome, Italy; [1976\_1981]**

## RESEARCH INTERESTS

OF PRINCIPAL INVESTIGATOR FEDERICA GAZZANO

My projects focused on myocardial regeneration.

From 1998 to date I accumulated a significant amount of knowledge and technical expertise on animal models to study possible therapeutic strategies to promote myocardial repair.

I summarize studies I was interested in, as follows:

- 1] ROLE OF BONE MARROW CELLS IN MYOCARDIAL REPAIR;**
- 2] CARDIAC STEM CELLS AND MYOCARDIAL REGENERATION;**
- 3] IDENTIFICATION OF EPICARDIAL STEM CELLS.**

### **1] ROLE OF BONE MARROW CELLS IN MYOCARDIAL REPAIR**

In the laboratory of Dr. Anversa we demonstrated that mobilization of primitive BMC by cytokines might offer a noninvasive therapeutic strategy for the regeneration of the myocardium lost as a result of ischemic heart disease and, perhaps, other forms of cardiac pathology [19].

In particular, while in an earlier study we injected donor BMSC directly into the healthy myocardium adjacent to the injured area of the left ventricle, in this project, mice were treated with cytokines to mobilize their BMSC into the circulation on the theory that the stem cells would traffic to the myocardial infarct.

In both experimental protocols, the BMSC gave rise to new cardiac myocytes and coronary blood vessels. This BMSC-derived myocardial regeneration resulted in improved cardiac function and survival.

### **2] IDENTIFICATION AND ROLE OF STEM CELLS RESIDENT IN THE HEART.**

In the same laboratory, we further identified stem cells in adult mouse and human myocardium. We showed that these cells expressed c-kit antigen and were able to differentiate in the cardiovascular lineage following myocardial infarction (MI) [13].

Then, we investigated growth factor based approaches to enhance endogenous ckit cell activation and myocardial regeneration.

We found that c-kit cells expressed IGF1 and HGF receptors.

The administration of both factors after the induction of MI, resulted in ckit proliferation and differentiation into cardiomyocytes as well as in the functional improvement of the heart (assessed by echocardiography and hemodynamic) [12].

More recently, in the laboratory of Dr. Capogrossi, I focused on High Mobility group Box 1 (HMGB1) as regenerative molecule.

HMGB1 is a cytokine able to modulate endothelial and stem cell functions.

We found that, when delivered in the mouse heart following MI or in a failing mouse heart, HMGB1 activated ckit cells, promoted regeneration and improved myocardial function through Notch1 pathway.

[1,2,9,11].

## RESEARCH EXPERIENCE

1996-2011

**Present**

**2011 february**

### **SENIOR INVESTIGATOR.**

Laboratorio di Patologia Cellulare e Molecolare, San Raffaele Pisana, Istituto di Ricovero e Cura a Carattere Scientifico [IRCCS], Rome, Italy and Laboratorio di Patologia, Dipartimento di Medicina Sperimentale, Università "Sapienza" di Roma, Italy.

**2010 dicember**

**2004 march**

### **SENIOR INVESTIGATOR.**

Laboratorio di Biologia Vascolare e Terapia Genica, Centro Cardiologico Fondazione Mozzino, Istituto di Ricovero e Cura a Carattere Scientifico [IRCCS], Milan, Italy.

**2004 february**

**2002 february**

### **SENIOR INVESTIGATOR.**

Laboratorio di Patologia Vascolare, "Istituto Dermatologico dell'Immacolata", Istituto di Ricovero e Cura a Carattere Scientifico [IRCCS], Rome, Italy.

**2001 dicember**

**1999 may**

### **RESEARCH TRAINEE.**

Cardiovascular Research Institute, Department of Medicine, "New York Medical College", Valhalla, New York, USA.

*I conducted research in the laboratory of Dr. Piero Anversa. The specific aim of my project was to determine the influence of Bcl-2 on the developmental biology of myocytes. To achieve these studies, Echocardiography was performed in conscious mice. Then, hemodynamic measurements were taken to determine differences between transgenic and wild type animals. Perfusion and fixation of the heart were performed and followed by staining of paraffin embedded tissue sections. Other techniques involved included: isolation of myocytes from left ventricle of the heart, permanent occlusion of left coronary artery, Southern blotting and Western blotting.*

**1999 april**

**1998 september**

### **RESEARCH TRAINEE.**

Laboratory of Cardiovascular Clinical Pharmacology "Mario Negri" Institute in Milan, Italy.

*My training involved basic histologic staining of myocardium.*

**1998 august**

**1998 june**

### **RESEARCH EXPERIENCE.**

Laboratory of Cell Aging at the "Istituto Dermatologico dell'Immacolata", Rome, Italy.

*Research involving antioxidants was conducted.*

**1998 june**

**1998 january**

### **TRAINEE.**

Hospital "San Giacomo", Rome, Italy.

**1997 november**

**1996 may**

### **DEGREE.**

Faculty of Pharmacology, Sapienza, University of Rome, Rome, Italy

*Studies on the structure and reactivity of ionic species in gaseous media at atmospheric pressure, exploiting mainly the radiolytic technique, were taken. Experimental work in vacuum line techniques was achieved.*

**3] IDENTIFICATION OF EPICARDIAL STEM CELLS.**

In the last two years, I studied the role of the adult epicardium in the physiologic process of myocardial regeneration.

I identified stem cells expressing ckit antigen in the murine and human epicardium.

Some of these cells expresses the early marker of cardiomyocyte differentiation Nkx2.5 and the cardiac transcription factor GATA4.

Further, I demonstrated that these cells exhibited the ability to acquire an endothelial phenotype in vitro.

After myocardial infarction induced by coronary artery ligation in the mouse, epicardial c-kit<sup>+</sup> cells responded to myocardial infarction as c-kit<sup>+</sup> cells within the myocardium: they proliferated, migrated to the injury site and exhibited evidence of differentiation toward the myocardial and vascular phenotype **[6]**.

Recently, I performed in vitro and in vivo experiments demonstrating that myocardial infarction reactivates an embryonic program in epicardial c-kit<sup>+</sup> cells and soluble factors released in the pericardial fluids following myocardial necrosis may play a role in this process **[5,3]**.

**ANIMAL MODEL:** Acute myocardial infarction and heart failure induced in mice and rats by left descending coronary artery ligation.

**FUNCTIONAL ASSESSMENT OF HEART FUNCTION:** Echocardiography in conscious mice and anesthetized rats with a Sequoia 256c equipped with a 13-MHz linear transducer. Evaluation of Ejection Fraction, Shortening Fraction, Cardiac Output, Left Ventricular End-Systolic and End-Diastolic diameters and thickness. Hemodynamic studies by cannulating right carotid artery with a microtip pressure transducer [Millar 1.4F]. Evaluation of left ventricular [LV] pressures and LV+dP/dt and LV-dP/dt.

**MORPHOMETRIC ANALYSIS:** Performed after arresting the heart in diastole and perfusing it with formalin. It includes heart weights, LV longitudinal axis, LV chamber diameter and wall thickness. These data are used to calculate LV chamber volume, diastolic wall stress, wall thickness/chamber radius and LV mass/chamber volume.

**BONE MARROW TRANSPLANTATION:** By injection of stem cells in the tail vein of the mouse after bone marrow ablation by irradiation.

**CELL ISOLATION:** Cardiomyocytes: from the heart by collagenase digestion after perfusion through the coronary arteries.

**STEM CELL ISOLATION:** From the heart, from the bone marrow and from fat tissue.

**IMMUNOHISTOCHEMISTRY:** On paraffin embedded tissue sections, cryosections and isolated cells.

## PUBBLICAZIONI

ARTICOLI IN SCIENZE

- [1] A. GERMANI, E. FOGLIO, M.C. CAPOGROSSI, MA. RUSSO, **F. LIMANA** [2015],  
*Generation of cardiac progenitor cells through epicardial to mesenchymal transition.*  
**Of Molecular Medicine** 2015. Accepted.
- [2] MA. RUSSO, L. SANSONE, I. CARNEVALE, **F. LIMANA**, A. RUNCI, L. POLLETTA, GA. PERRONE,  
E. DE SANTIS, M. TAFANI [2015].  
*One special question to start with: Can HIF1 $\alpha$ /NFkB be a target in inflammation?*  
**Endocr Metab Immune Disord Drug Targets.**2015 Mar 16; Epub ahead of print
- [3] **F. LIMANA**, G. ESPOSITO, P. FALANARO, E. FOGLIO, D. ARCELLI, C. VOELLENKLE, A. DI  
CARLO, D. AVITABILE, F. MARCELLI, MA. RUSSO, G. POMPILIO, A. GERMANI, M. C.  
CAPOGROSSI, [2013],  
*Transcriptional profiling of HMGB1-induced myocardial repair identifies a key role for Notch  
signaling.*  
**Mol. Ther** 2013 June 13;Oct;21(10): 841-51  
**IF 8.5**
- [4] **F. LIMANA**\*, G. ESPOSITO\*, D. L'ARCANGELO, A. DI CARLO, S. ROMANI, G. MELILLO, A.  
MANGONI, C. BERTOLAMI, G. POMPILIO, A. GERMANI, M. C. CAPOGROSSI, [2011],  
*HMGB1 attenuates adverse cardiac remodeling and improves function in the failing heart via  
enhanced cardiac regeneration and miR-206-mediated inhibition of TIMP-3*  
**PLoS One** 2011; 6(6):e19845  
\* The two authors equally contributed to this work  
**IF 4.41**
- [5] **F. LIMANA**, M. C. CAPOGROSSI, A. GERMANI [2011]  
*The epicardium in cardiac repair: from the stem cell view*  
Epub 2011 January.  
**Pharmacol Ther** 2011 Jan; 129[1]:82-96.  
**IF 9.27**
- [6] Y. D'ALESSANDRA, P. DEVANNA, **F. LIMANA**, S. STRAINO, A. DI CARLO, P. G. BRAMBILLA, M.  
DE SIMONE, F. MORO, B. MICHELE, P. BIGLIOLI, F. ACHILLI, F. MARTELLI, S. MAGGIOLINI, G.  
POMPILIO, M. C. CAPOGROSSI.  
*Circulating microRNAs are new and sensitive biomarkers of myocardial infarction.*  
**EHJ**  
2010 Nov; 31[22]:2765-73.  
Epub 2010 June 9  
**IF 8.917**

## PUBLICATIONS

CELLULAR AND MOLECULAR REGENERATION

- [7] **F. LIMANA**, C. BERTOLAMI, L. MANGONI, A. DI CARLO, D. AVITABILE, D. MOCINI, P. IANNELLI, R. DE MORI, C. MARCHETTI, O. POZZOLI, C. GENTILI, A. ZACHEO, A. GERMANI, M.C. CAPOGROSSI [2010],  
*Myocardial infarction induces embryonic reprogramming of epicardial c-kit<sup>+</sup> cells: role of the pericardial fluid.*  
**J Mol Cell Cardiol.** 48(4):609-618  
Epub 2009 Dec 5  
**IF 5.054**
- [8] **F. LIMANA**, A. ZACHEO, D. MOCINI, A. MANGONI, G. BORSELLINO, A. DIAMANTINI, R. DE MORI, L. BATTISTINI, E. VIGNA, M. SANTINI, V. LOIACONI, G. POMPILIO, A. GERMANI and M.C. CAPOGROSSI M. C. [2007],  
*Identification of Myocardial and Vascular Precursors Cells in Human and Mouse Epicardium.*  
**Circulation Research** 101(12): 1255-65.  
Epub 2007 October 18  
**IF 9.408**
- [9] A. GERMANI, G. DI ROCCO, **F. LIMANA**, F. MARTELLI, M. C. CAPOGROSSI [2007],  
*Molecular Mechanism of Cardiomyocyte Regeneration and Therapeutic Outlook.*  
**Trends in Molecular Medicine** 13(3): 125-133.  
Epub 2007 January 24  
**IF 5.505**
- [10] A. GERMANI, **F. LIMANA**, M. C. CAPOGROSSI [2007],  
*Activation of the Local Regenerative System of the Heart,*  
in "Cardiovascular Regeneration and Stem Cell Therapy", Blackwell Futura Publishing, USA, 2007,  
part II, cap. 10, pp. 95-102.
- [11] A. GERMANI, **F. LIMANA**, M. C. CAPOGROSSI [2007],  
*Pivotal Advances: High-Mobility Group Box 1 Protein--A Cytokine with a Role in Cardiac Repair.*  
**Journal of Leukocyte Biology** 81( 9): 41-5.  
Epub 2006 August 29. Review  
**IF 4.627**
- [12] A. ABBATE\*, **F. LIMANA\***, M. C. CAPOGROSSI, D. SANTINI, GG. BIONDI-ZOCCAI, S. SCARPA, A. GERMANI, S. STRAINO, A. SEVERINO, F. VASATURO, M. CAMPIONI, G. LIUZZO, F. CREA, GW. VETROVEC, LM. BIASUCCI, A. BALI I [2006],  
*Cyclo-Oxygenase-2 (COX-2) Inhibition Reduces Apoptosis in Acute Myocardial Infarction.*  
**Apostosis** 11(6): 1061-3.  
**IF 4.497**  
\* The two authors equally contributed to this work



## PUBLICATIONS

PERIODICALS AND BOOKS

- [13] **F. LIMANA**, A. GERMANI, A. ZACHEO, J. KAJSTURA, A. DI CARLO, G. BORSELLINO, O. LEONI, R. PALUMBO, L. BATTISTINI, R. RASTALDO, S. MULLER, G. POMPILIO, P. ANVERSA, BIANCHI ME, CAPOGROSSI M. C., [2005],  
*Exogenous High-Mobility Group Box 1 Protein Induces Myocardial Regeneration After Infarction Via Enhanced Cardiac c-kit+ Cell Proliferation and Differentiation.*  
**Circulation Research** 97(8): e73-83  
**IF 9.408**
- [14] K. URBANEK, M. ROTA, S. CASCAPERA, C. BEARZI, A. NASCIMBENE, A. DE ANGELIS, T. HOSODA, S. CHIMENTI, M. BAKER, **F. LIMANA**, D. NURZYNSKA, D. TORELLA, F. ROTATORI, R. RASTALDO, E. MUSSO, F. QUAINI, A. LERI, J. KAJSTURA, P. ANVERSA, [2005],  
*Cardiac Stem Cells Posses Growth Factor-Receptor System that After Activation Regenerate the Infarcted Myocardium, Improving Ventricular Function and Long-Term Survival.*  
**Circulation Resarch** 97(7): 663-8  
**IF 9.408**
- [15] A.P. BELTRAMI, L. BARLUCCHI, D. TORELLA, M. BAKER, **F. LIMANA**, S. CHIMENTI, H. KASAHARA, M. ROTA, E. MUSSO, K. URBANEK, A. LERI, J. KAJSTURA, B. NADAL-GINARD, P. ANVERSA, [2003],  
*Adult Cardiac Stem Cells are Multipotent and Support Myocardial Regeneration.*  
**Cell** 114(6):763-76  
**IF 29.431**
- [16] A. LERI, S. FRANCO, A. ZACHEO, L. BARLUCCHI, S. CHIMENTI, **F. LIMANA**, B. NADAL-GINARD, J. KAJSTURA, P. ANVERSA, MA. BLASCO, [2003],  
*Ablation of Telomerase and Telomere Loss Leads to Cardiac Dilatation and Heart Failure Associated with p53 Upregulation.*  
**EMBO Journal** 22(1): 131-139  
**IF 10.053**
- [17] **F. LIMANA**, K. URBANEK, S. CHIMENTI, F. QUAINI, A. LERI, J. KAJSTURA, B. NADAL-GINARD, S. IZUMO, P. ANVERSA, [2002],  
*bcl-2 Overexpression Promotes Myocyte Proliferation.*  
**Proc Natl Acad Sci USA** 99(9): 6157-62  
**IF 10.231**

## PUBBLICATIONS

CORRESPONDING AUTHOR: FEDERICA LIMANA

3

- [18] S. WELCH, D. PLANK, S. WITT, B. GLASCOCK, E. SCHAEFER, S. CHIMENTI, AM. ANDREOLI, **F. LIMANA**, A. LERI, J. KAJSTURA, P. ANVERSA, MA. SUSSMAN. [2002],  
*Cardiac-Specific IGF-1 Expression Attenuates Dilated Cardiomyopathy in Tropomodulin-Overexpressing Transgenic Mice.*  
**Circulation Research** 90(6): 641-8  
**IF 9.408**
- [19] S. MASSON, S. CHIMENTI, M. SALO, M. TORRI, **F. LIMANA**, R. BERNASCONI, L. CAVILLO, D. SANTAMBROGIO, N. GAGLIANO, B. AROSIO, G. ANNONI, R. RAZZETTI, S. BONGRANI, R. LATINI, [2001],  
*CHF-1024, A DA2/a2 Agonist. Blunts Norepinephrine Excretion and Cardiac Fibrosis in Pressure Overload.*  
**Cardiovascular Drugs Ther.** 15(2) : 131-8  
**IF 1.624**
- [20] F. FIORDALISO, A. LERI, D. CESSIELI, **F. LIMANA**, B. SAFAI, B. NADAL-GINARD, P. ANVERSA, J. KAJSTURA, [2001],  
*Hyperglycemia activates p53 and p53-regulated genes leading to myocyte cell death.*  
**Diabetes** 50(10): 2363-75  
**IF 8.028**
- [21] D. ORLIC, J. KAJSTURA, S. CHIMENTI, **F. LIMANA**, I. JAKONIUK, F. QUAINI, B. NADAL-GINARD, D.M. BODINE, A. LERI, P. ANVERSA, [2001],  
*Mobilized Bone Marrow Cells Repair the Infarcted Heart, Improving Function and Survival.*  
**Proc Natl Acad Sci USA.** 28;98(18) 10344-9  
**IF 10.231**
- [22] A. LERI, L. BARLUCCHI, **F. LIMANA**, A. DEPTALA, Z. DARZYNKIEWICZ, T.H. HINTZE, J. KAJSTURA, B. NADAL-GINARD, P. ANVERSA, [2001],  
*Telomerase Expression and Activity are Coupled with Myocyte Proliferation and Preservation of Telomeric Length in the Failing Heart.*  
**Proc Natl Acad Sci USA.** 17;98(15): 626-31  
**IF 10.231**
- [23] J. KAJSTURA, F. FIORDALISO, AM. ANDREOLI, B. LI, S. CHIMENTI, M.S. MEDOW, **F. LIMANA**, B. NADAL-GINARD, A. LERI and P. ANVERSA, [2001],  
*IGF-1 Overexpression Inhibits the Development of Diabetic Cardiomyopathy and Angiotensin II-Mediated Oxidative Stress.*  
**Diabetes** 50(6): 1414-24  
**IF 8.028**

## PUBLICATIONS

CONTRIBUTOR: F. LIMANA (100%)

- [24] L. LERI, F. FIORDALISO, M. SETC GUCHI, **F. LIMANA**, N.H. BISHOPRIC, J. KAJSTURA, K. WEBSTER, P. ANVERSA, [2001],  
*Inhibition of p53 Function Prevents Renin-Angiotensin System Activation and Stretch-Mediated Myocyte Apoptosis.*  
**American Journal Pathology** 157[ 3]: 843-57  
**IF 5.796**

## PUBLICATIONS

CVT RICORDATI EDIZIONE 2011 P. 105-106-107-108

### BOOK CHAPTERS:

- A. GERMANI, F. LIMANA, M. C. C. POGRROSSI [2007],  
*Activation of the Local Regenerative System of the Heart*,  
in “**Cardiovascular Regeneration and Stem Cell Therapy**”. Blackwell Futura Publishing, USA,  
2007, part II, cap. 10, pp. 95-102.

### REVIEWING EXPERIENCE:

*Ad hoc* reviewer for the Journals:

- **PLoS ONE**
- **Giornale Italiano di Cardiologia**
- **Journal of Cellular and Molecular Medicine (JCMM)**
- **European Journal of Heart Failure (EURJHF)**

### EDITORIAL EXPERIENCE

Academic Editor for the Journal:

- **PLoS ONE**

### PATENT:

- Use of HMGB1 in the treatment of tissue damage and/or to promote tissue repair [WO2004004763].

## ORAL PRESENTATIONS [SELECTED ABSTRACT]:

- 2013** **F. Limana**, E. F.oglio, P. Fasanaro, D. D'Arcangelo, C. Campanella, G. Perrone, D. Mocini, L. Pieroni, V. Marzano, A. Logozzi, S. Fais, A. Germani, M. Capogrossi, M.A. Russo.  
**Hmgb1 Ameliorates Cardiac Function and Remodelling and Markedly Enhances miR-206 Expression in Chronically Failing Hearts.**  
AHA Dallas, 16-20 November 2013.  
*Circulation*, November 26, 2013; vol 128: Issue:22, Suppl. S
- 2010** **F. Limana**, G. Esposito, D. D'Arcangelo, A. Di Carlo, S. Romani, C. Bertolami, A. Mangoni, G. Pomilio, A. Germani, J. Kajstura, P. Anversa, M. C. Capogrossi,  
**Hmgb1 Ameliorates Cardiac Function and Remodelling and Markedly Enhances miR-206 Expression in Chronically Failing Hearts**  
AHA Chicago, 14-16 November 2010.  
*Circulation*, November 23, 2010; vol 122: Issue 21, Suppl. S
- 2009** **F. Limana** [invited speaker]  
**"Possiamo indurre il cuore ad autoripararsi?"**  
ANMCO 2009 - 40<sup>o</sup> Congresso Nazionale di Cardiologia  
4-7 Juin, Firenze, Fortezza da Basso.
- 2009** **F. Limana**, A. Mangoni, C. Bertolami, A. Di Carlo, D. Avitabile, D. Mocini, P. Iannelli, R. De Mori, C. Marchetti, O. Pozzoli, C. Gentili, A. Germani, M. C. Capogrossi,  
**Epicardial stem cells and cardiac regeneration: molecular and cellular mechanisms.**  
Annual Symposium of the American Heart Association, Council on Basic Cardiovascular Science, 15-20 March 2009;  
"Cardiac disease: Development, Regeneration and Repair".
- 2007** **F. Limana**, A. Zucchio, D. Mocini, A. Mangoni, G. Borsellino, A. Diamantini, R. De Mori, M. Santini, A. Costantino, G. Pompilio, A. Germani and M. C. Capogrossi.  
**Identification of myocardial and vascular precursors cells in human and mouse epicardium.**  
4<sup>th</sup> Annual Symposium of the American Heart Association, Council on Basic Cardiovascular Science, 31 July-3 August 2007.  
"Cardiovascular repair and regeneration: structural and molecular approaches in the cellular era"

**PARTECIPAZIONE A CONFERENZE**

CONFERENZE INTERNAZIONALI

- 2006** **F. Limana.** A. Zacheo, D. Mocini, G. Borsellino, R. De Mori, A. Mangoni, M. Santini, M. Stallino, A. Costantino, G. Pompilio. M. C. Capogrossi,  
**Epicardial Tissue is a Source of Cells Expressing Early Endothelial and Myocardial Markers.**  
AHA Chicago, 12-15 November 2006.  
*Circulation*, October 31, 2006; vol 114: II\_239. n. 18
- 2005** **F. Limana.** A. Zacheo, J. Kajstura, A. Di Carlo, G. Borsellino, O. Leoni, R. Palombo, L. Battistini, R. Rastaldo, S. Müller, G. Pompilio, P. Anversa, M.E. Bianchi and M.C. Capogrossi,  
**Exogenous High-Mobility Group Box 1 protein induces myocardial regeneration following infarction via enhanced cardiac c-kit<sup>+</sup> cell proliferation and differentiation.**  
AHA Dallas, 13-16 November 2005.  
*Circulation*, October 25, 2005, vol. 112, n. 17.
- 2003** **F. Limana.** A. Germani, R. Palombo, P. Anversa, M. Bianchi and M.C. Capogrossi,  
**HMGB-1 induces myocardial regeneration and functional recovery of the infarcted heart.**  
AHA Orlando, 9-12 November 2003.  
*Circulation*, October 28, 2003, vol. 108, n. 17.



## FUNDINGS

CELLULE STAMINALI E DIFFERENZIAMENTO CARDIOGENICO

**from 2010 to 2011**      **MS\_RC**      **PI**      **RIABILITAZIONE CARDIACA: MEDICINA RIPARATIVA NELLO SCOMPENSO CARDIACO**

**from 2004 to 2010**      **MS\_RC**      **PI**      **CELLULE STAMINALI E DIFFERENZIAMENTO CARDIOGENICO**

**from 2003 to 2010**      **MS\_RC**      **PI**      **RUOLO DELLA CITOCHINA HMGB1 E MALATTIE ISCHEMICHE CARDIACHE**

**MS\_RC:** *Ministero della Salute-Ricerca Corrente*

**PI:** *Coordinatore*

**UO:** *Unità Operativa*

Autorizzo il trattamento dei miei dati personali in conformità alle disposizioni della legge sulla privacy (L.675/96, D. Lgs. 196/03).

Roma, 16 Aprile 2015

Firma  
Dr. Federica Limana





