**Curriculum Vitae**

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| Date Prepared: | February, 2020 |
| Name: | Federica del Monte |
| Office Address: | 30 Courtenay Drive, MSC592, Room 302, Charleston (SC) 29401 |
| Work Phone:  | 843 792 8397 |
| Work Email:  | delmonte@musc.edu |
| Place of Birth: | Rome (Italy) |

[Education](http://cv.hms.harvard.edu/index.php?page=education)

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| --- | --- | --- | --- |
| 10/1986 | M.D. (summa cum laude)  | Medicine and Surgery | University of Rome "Sapienza", Italy |
| 07/1990 | Medical Specialties: (summa cum laude) | Cardiology | University of Rome "Sapienza", Italy |
| 03/1996 | PhD | Physiology and pharmacology | Imperial College of Science and Technology, London (UK) |

[Postdoctoral Training](http://cv.hms.harvard.edu/index.php?page=postdoc)

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| Year(s) | Title | Specialty/Discipline(Lab PI/supervisor) | Institution |

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| --- | --- | --- | --- |
| 07/1983-06/1986 | Pre-doctoral resident | Prof A Reale | Cardiovascular Surgery Institute, University of Rome “Sapienza”, Italy |
| 07/1986-06/1989 | Post-doctoral resident | Prof A Reale | Cardiovascular Surgery Institute, University of Rome “Sapienza”, Italy |
| 09/1989-08/1993 | Senior Registrar | Prof P Poole-Wilson | Royal Brompton Hospital, London, UK |
| 09/1993-01/1998 | Clinical & Research Fellow | Prof A Reale | Cardiovascular Surgery Institute, University of Rome " Sapienza", Italy |
| 02/1998-12/1999 | Senior scientist | Dr .J Gwathmey and RJ Hajjar | Gwathmey Inc |
| 02/1998-09/2000 | Research Fellow (Medicine)  | Dr. RJ Hajjar | Harvard Medical School |

[Faculty Academic Appointments](http://cv.hms.harvard.edu/index.php?page=academic_appt)

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| Year(s) |  Academic Title | Department | Academic Institution |

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| 02/2000-10/2003 | Instructor in Medicine | Cardiovascular Research | Harvard Medical School |
| 10/2003-2014 | Assistant Professor in Medicine | Cardiovascular Research | Harvard Medical School |
| 12/1/2014-date | Associate Professor in MedicineAssociate Professor in Biology | Cardiology | Harvard Medical School |
| 12/201307/2017-1/202007/2017-Date1/2/2019-Date7/18/2019-Date01/2020-Date | Associate Professor Associate Professor in MedicineDirector Heart and Brain Program for Degenerative Diseases and AgingFaculty MemberAssociate ProfessorProfessor of Medicine | National QualificationCardiologyCardiovascular and Neuroscience ResearchCollege of Graduate StudiesDipartimento di Medicina Specialistica, Diagnostica e SperimentaleCardiology | National Call for all Italian UniversitiesMedical University of South CarolinaMedical University of South CarolinaMUSC Universita’ di Bologna (IT)Medical University of South Carolina |

[Appointments at Hospitals/Affiliated Institutions](http://cv.hms.harvard.edu/index.php?page=hospital_appt)

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| Year(s) | Position Title | Department  | Institution |

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| --- | --- | --- | --- |
| 02/1990-07/1993 | Senior Registrar | Cardiology | Royal Brompton Hospital, London, UK |
| 07/1993-01/1999 | Clinical Cardiologist (Staff) | Cardiology | NIH Hospitals, Rome, Italy |
| 02/2000-10/2003 | Instructor in Medicine | Cardiac Unit | MGH |
| 10/2003-09/2008 | Assistant Professor in Biology | Cardiac Unit | MGH |
| 10/2008-30/06/2017 | Assistant Professor in Medicine | Cardiovascular Institute | BIDMC |
| 07/2010-30/06/2017 | Affiliated Faculty Member | Cardiology | Harvard Stem Cell Institute |
| 10/2011-30/06/2017 | Associate Member  |  | Broad Institute |
| 07/2011-06/2012 | Visiting Professor | Cardiology | University of Rome Sapienza - Italy |
| 08/2011-06/2012  | Visiting Professor  | Cardiology | University of Sassari – Italy |

Veteran Affairs Services

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| Year(s) | Institution | Position Title |

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| --- | --- | --- |
| 20177/29-30/2017 | WOC AppointedVA Field Based Planning Meeting for developing a Brain-Heart Consortium | Associate ProfessorSpeaker |
| 7/4/20177/29/20172/08/2019 | VA/MUSC Heart BiorepositoryVA Brain-Heart ConsortiumZile-del Monte NIH submittedAdministrative grant supplement application | DirectorMemberCo-PI |

[Other Professional Positions](http://cv.hms.harvard.edu/index.php?page=other)

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| Year(s) | Position Title | Institution |

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| 10/2007 | Urania Sciences | Boston Coordinator |
| 07/2009 | Italian Professionals in Boston | Consultant |

[Leadership/Director Positions](http://cv.hms.harvard.edu/index.php?page=admin)

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| Year(s) | Position Title | Institution (note if specific department) |

**Local**

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| --- | --- | --- |
| 07/2002-12/2006 | Co-Director Cardiovascular Laboratory for IntegratedPhysiology and Imaging (CLIPI) – large animal | MGH |
| 10/2008-30/06/2017 | Director Large Animal Research Laboratory | BIDMC |

9/2013-30/06/2017 Director Educational Seminar Series for T32 BIDMC

1/2016-30/06/2017 Member of the Department of Medicine’s Committee BIDMC

 on the Advancement of Women

7/4/2017 Director Cardiovascular Biobank MUSC

2/8/2018-date Director Heart and Brain Program at MUSC MUSC

National and International

2013 International Society for Heart Research Council Member at Large

4/2014 Experimental Biology 2014 meeting Organizer and Chair

2015 Young investigator section of ISHR Advisory member

2015-2016 Young Investigator ISHR organizing committee Advisory member

 XXII ISHR World Congress

[Committee Service](http://cv.hms.harvard.edu/index.php?page=service)

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| 2005-2007 | Subcommittee on Research Animal Care (SRAC)  | MGH (member) |

[Professional Societies](http://cv.hms.harvard.edu/index.php?page=societies)

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| Year(s) of Membership | Society Name  | Title of Role(s) |
| 1987 | Italian Society of Cardiology | Member |
| 1991 | International Society for Heart Research | Member |
| 1991 | British Society for Cardiovascular Research | Member |
| 1993 | Italian Society for Cardiovascular Research | Member |
| 2001 | American Heart Association  | Member of Scientific Council(s) – Basic Cardiovascular Science Council |
| 2003 | Biophysical Society | Member |
| 2009 | American Society of Human Genetics | Member |

 2013 American Heart Association, Member

 Council on functional and Translational Member

 Biology

[Grant Review Activities](http://cv.hms.harvard.edu/index.php?page=grant)

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| Year(s) | Name of Committee | Institution/Organization |
|  | Title of Role(s) |

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| --- | --- | --- |
| 2005-date | Committee for K08 Award  | NIH-NHLBI (reviewer) |
| 2011 | Committee on Innovative Research Grant (IRG) | AHA (Ad hoc Reviewer) |
| 2011 | Committee for R Award – Special emphasis panel | NIH (Ad hoc Reviewer) |
| 2012 | Committee for R Award (CICS) | NIH (Ad hoc Reviewer) |
| 2012 | Committee for R Award (CCHF) | NIH (Ad hoc Reviewer) |
| 2013 | Grant Expert Reviewer | AFM-Telethon Italia |
| 2013 | Pathway to Independence Award Committee for K99/R00 Special emphasis panel | NIH (Ad hoc Reviewer) |
| 2013 | Grant Expert Reviewer | Austrian Science Foundation |
| 2014 | Grant Expert Reviewer | Theleton Italia |
| 2014 | Grant Expert Reviewer | AHA, Cardiovascular Genome Phenome Study |
| 2014 | AHA Grant Expert Reviewer | Basic Cell, Cell Structure & Survival Committee 3 |
| 2014 | AHA Grant Expert Reviewer | Basic Cell, Cell Structure & Survival Committee 1 |
| 2014 | Committee for R Award (CCHF) | NIH (Ad hoc Reviewer) |
| 2015 (June) | Committee for R Award (SEP) | NIH (Ad hoc Reviewer) |
| 2015 (June) | AHA Grant Expert Reviewer  | Basic Cell, Cell Structure & Survival Committee 1 |
| 2015 (October) | Committee for R Award (SEP) | NIH (Ad hoc Reviewer) |
| 2015 (October)201520152016201720172/20183/20184/20184/20186/20189/201812/20182/2019 | AHA Grant Expert Reviewer Grant Expert ReviewerGrant Expert ReviewerAHA Grant Expert ReviewerAHA Grant Expert ReviewerAHA Grant Expert ReviewerTRDRP 2018A APP Committee for K AwardAHA Grant Expert ReviewerTRDRP 2018A APPCommittee for K AwardChair AHA Study SectionTRDRP 2018A APPNIH Ad Hoc Committee for R Award (MIM) | Basic Cell, Cell Structure & Survival Committee 1AFM-Telethon-FranceResearch Council U.K.Strategically Focused Research Networks – Heart FailureBasic Cell, Cell Structure & Survival Committee 2Collaborative Research Award Cardiovascular DiseasesNIH Expert reviewerCollaborative Research Award Cardiovascular DiseasesNIH Expert reviewerBasic Cell, Cell Structure & Survival Committee 3Cardiovascular DiseasesNIH |
| 4/201910/201910/2019 | CSA Grant Expert ReviewerChair AHA Study SectionNIH Ad Hoc Committee for R Award (MIM) | AHABasic Cell, Cell Structure & Survival Committee 3NIH |

[Editorial Activities](http://cv.hms.harvard.edu/index.php?page=editorial)

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| Acta Pharmacologica Sinica |
| Am J Physiology Basic Res Cardiol |
| Cardiovascular Research |
| Cardiovascular Translational Research |
| Circulation |
| Circulation Research |
| European Heart Journal |
| Experimental Physiology |
| Heart failure reviews |
| International Journal of Molecular Sciences |
| J Cardiac Failure |
| Journal of Controlled Release |
| Journal of Cellular Physiology |
| Journal of Heart Failure |
| Journal Molecular Cellular Cardiology |
| Pharmacology |
| PlosONE |
| International Journal of Cardiology |
| IJC Heart Vessels |
| Life Sciences |
| Cytokine |
| Journal of Controlled Release |
| IJC Metabolic & Endocrine |
| Journal of Clinical Investigation |
| AHA annual meeting abstract reviewerJACC |

Other Editorial Roles

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| Year(s) |  Role | Journal Name |

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| 01/2007-date | Editorial Board | Journal of Rehabilitative Tissue Engineering Research |
| 2016 | Editorial Board | Journal Molecular and Cellular Cardiology |
| 2017 | Advisory Board  | Methods X (Elsevier Journals) |

 2017 Associate Editor Life Sciences (Elsevier Journals)

[Honors and Prizes](http://cv.hms.harvard.edu/index.php?page=honors)

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| --- | --- | --- | --- |
| Year | Name of Honor/Prize | Awarding Organization | Achievement for which awarded (if unclear from award title) |

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| 02/1990-01/1992 | Fellowship for Cardiovascular Research | Bristol-Meyer Squibb | Fellowship for PhD Course |
| 09/1999 | Young Investigator Award 1st prize | Heart Failure Society of America |  |
| 07/2002 | Calderwood Award | Massachusetts General Hospital |  |

[Funding Information](http://cv.hms.harvard.edu/index.php?page=funded)

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| **Past funding**SERCA2a Abnormalities and Chaperones in Heart Failure | **K08-HL069842** (del Monte) NIHIn this proposal, the structure of SERCA2a will be characterized, the role of chaperone proteins will be examined through somatic gene transfer in non failing and failing human cardiomyocytes, and the role of chaperone proteins will be examined in vitro and in vivo in an animal model of heart failure. |
| Chaperone proteins in the development of cardiac hypertrophy and failure  | **RBIN042Z2Y** (USA Coordinator: del Monte) Harvard-Armenise FIRB International Chaperone proteins in the development of cardiac hypertrophy and failure This proposal will explore whether and how two chaperone proteins, melusin and GRP94, regulate protein folding in the hypertrophic cardiomyocytes and during progression to HF. |
| Investigating Sodium dynamics in Heart Failure | **Harvard Catalyst Pilot Grant** (Co-PI) 11/1/2009-10/31/2010This proposal will investigate the spatial and temporal characteristics of Na+ flux and local changes in intracellular Na+ concentration ([Nai+]) using novel fluorescent Na+-sensitive nanosensors in CMs isolated from human hearts unaffected by heart disease and subsequently in CMs isolated from explanted hearts from patients affected by cardiomyopathies. |
| Directed reprogramming of cardiomyocytes and progenitors for treatment of heart disease | **HSCI Junior Faculty Award** (del Monte) 04/2010- 03/2011The proposal will investigate a transcriptional and epigenetic program that defines the proliferative capacity of a subpopulation of differentiated cardiomyocytes to “reverse-engineer” the functionally important genetic and epigenetic signatures of facultative cardiac progenitors. |
| Mechanisms of misfolded protein toxicity in idiopathic Dilated Cardiomyopathy and Heart Failure | **R21 HL102716-01** (del Monte) NIH/NHLBI 04/1/2010 – 03/31/2012The proposal test the hypothesis that iDCM can originate from a defect of protein folding leading to the accumulation of pathogenic oligomeric fragments affecting Ca2+ homeostasis |
| Identifying transcriptional regulators of human cardiomyopathyRole of Presenilin in Idiopathic Dilated CardiomyopathyAdding a twist on actin: structural and molecular analysis of cofilin-2, a novel regulatory hub in disease and premature aging  | **R21 HL110042** (PI del Monte) NIH/NHLBI 7/1/2011 – 6/30/2013The major objective of the application is to generate a human Quantraxx platform that will allow the high throughput screening of transcription factors of human normal and diseased heart.**R01 HL095859** (del Monte) NIH/NHLBI 7/1/2010 – 6/30/2015 $225,750/yearThe proposal investigates the molecular mechanisms of protein misfolding and associated protein aggregation in causing dilated cardiomyopathy (DCM), specifically, to dissect the mechanism for presenilin effect on cardiac function.**AHA 14IRG18980028** (PI del Monte) NCRP Summer 2013 Innovative 1/1/2014-12/31/2016 NCE $ 68,182/Year Research Grant – **Priority Score 1, Percentile Rank 0.91%**The major objective of the application is to define the role of the actin depolymerizing protein Cofilin in the structural and functional abnormalitiesin idiopathic dilated cardiomyopathy. |

Tauopathy a heart disease **CAO Pilot grant** (PI del Monte, co-PI Lu) 7/1/16-6/30/17

 The major objective of the application is to determine the role of tau and the

 phosphorylated isoforms in the pathogenesis of cardiomyopathy

heart disease

**Current funding**

Mind the heart: Tauop

Myocardial Tauopathy: a new **AHA** 1**7CSA33620007** $250,000/year. 3.6 CM 7/2017-6/2020 NCE 2021 Collaborative Science Award

pathogenesis and treatment for (del Monte, Kayed). Submitted The objective of this application is to test the hypothesis heart disease. that oligomeric tauopathy is a key driver of AD cardiomyopathy and that immunotherapy

against tau PAO would successfully prevent or reverse tauopathy in the heart

Mechanisms of exposure- **NIH R01 AG057046** $250,000/year. 4.8 CM 7/2017-6/2022 (MPI del Monte, Wold, induced tissue functional and Combs).

pathological changes in a $780,611 The major objective of the application is to test the effect of concentrated

mouse model of Alzheimer's ambient air pollution (using the concentrator) on brain and heart structure and function

Disease in Alzheimer’s prone mouse model.

Reductive Stress Induces **NIH 3R01HL118067-07S1** $103,989 1.2 CM 09/01/2019 – 06/30/2020 Administrative Proteotoxic Cardiac Disease Supplement (MPI Soorappan R, del Monte F).

The objective of the administrative supplement is to determine whether systemic cRS the proteotoxic remodeling and dysfunction in heart and brain of caNrf2CAG mice and whether heart failure patients with a hyper-reductive state develop Alzheimer’s disease, and/or age-associated cognitive dysfunction.

Tauopathy of the brain and **AHA** **Collaborative Science Award** $250,000 7/1/2020-6/30/2022 (MPI del Monte,

heart,a developmental defect Kayed)

of cilia. This renewal proposal tests the hypothesis that, like heart valve disease, AD and AD

cardiomyopathy comorbidities can initiate from developmental defects in primary

cilia structure/function.

Red Blood Cells Extracellular **NIH** $300,000/yr 9/1/2020-8/31/2025 (MPI del Monte, Ghiran)

Vesicles shuttle beta amyloid This proposal defines the role of the complement, circulating red blood cells (RBCs),

between brain and heart: and red cell derived EVs in the pathogenesis of Alzheimer’s disease, and the crosstalk

implication for the patho- between the central nervous system and the heart.

Genesis and progression of

Alzheimer’s Cardiomyopathy

Christie Heart and Brain Private donation $1,000,000

Program

**Pending proposals**

Molecular basis of oxidation **NIH** $300,000/yr 7/1/2020-6/30/2025 (MPI Salloum, del Monte)

induced aggregation of This application aims at providing insights into the role of cofilin-2 post-translational

cofilin-2 in Alzheimer’s modification and its impact on aggregation in the brain of Alzheimer’s disease (AD)-

cardiomyopathy prone mice and in their heart post myocardial infarction.

Chronic Systemic Fallouts of  **VA Merit** (PI del Monte)$1,200,00010/1/2020-9/30/2024

Traumatic Injury Disorders:The purpose of this application is to investigate the occurrence of myocardialdefects

AD-to-HFpEF and HFpEF- in veterans exposed to brain and chest trauma, model the disease in mice and explore

to-AD. the mechanisms in vitro.

**Report of Teaching and Training**

[Teaching of Students in Courses](http://cv.hms.harvard.edu/index.php?page=students)

|  |  |  |
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| 02/1999-02/2007 | Treatment of Heart Failure: Basic Science and Clinical Aspects | Harvard Medical School. Lecturer. 10 fourth-year medical students, 1 month/year, 1 lecture. |
| 02/2007-Date | Cardiovascular Pathophysiology Course | Harvard MIT HST090 2 lectures, 4 hrsUndergrad, Grad and MD-PhD students |
| 07/2011 | Cardiovascular Pathophysiology Course | University of Rome “Sapienza” ItalyMD students |
| 03/20122014-20162020- | Cardiovascular Pathophysiology CourseCardiovascular Pathophysiology CourseFor BIDMC internal medicine residentsMolecular biology for fellowship in Cardiology, Virology and Microbiology, Pathology, Genetics, | University of Sassari ItalyMD studentsMount Desert Island Biological LaboratoriesUniversity of Bologna (Italy) |

[Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)](http://cv.hms.harvard.edu/index.php?page=residents)

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| 08/2009-date | Cardiac physiology | BIDMC Course for medicine residents at Mount Desert Island Biolabs |
| 07/2011 | Cardiovascular Pathophysiology Course | University of Rome “Sapienza” Italy for Cardiology fellows |
| 03/2012 | Cardiovascular Pathophysiology Course | University of Sassari Italy for Cardiology fellows |

 2015-2017 T32 Educational Seminar Series BIDMC Cardiology Division

 4/2019 Cardiovascular Pathophysiology Course University of Trieste “Sapienza” Italy for

 Cardiology fellows

[Clinical Supervisory and Training Responsibilities](http://cv.hms.harvard.edu/index.php?page=clinical)

|  |  |  |
| --- | --- | --- |
| 07/1989-07/1993 | Royal Brompton National Heart & Lung Hospitals, Imperial College, London, United Kingdom Practice: care delivery, general cardiology, in-hospital patient rounds | once/week, 6 hours out-patient clinic |
| 08/1993-01/1998 | NIH Hospitals, Rome, Italy Coronary Care Unit and Sub-Intensive Care Unit Resuscitation Unit of the Emergency Room General Cardiology Ward Internal Medical Department | 1-2/week 12 hours in-hospital on call, 1 weekend/month in-hospital on call, 8 hours daily in-patient/out-patient care for general cardiology |

[Laboratory and Other Research Supervisory and Training Responsibilities](http://cv.hms.harvard.edu/index.php?page=lab)

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| 01/1998-date |  Weekly laboratory meeting | 50 hrs/year |
| 01/1995 |  Thesis advisor MD Degree 1st University of Rome, Italy | 2 hrs/ week |
| 01/1995 |  Thesis supervisor of 1 student for  Perfusionist Specialty Degree,1st  University of Rome, Italy | 2 hrs/ week |
| 01/1996 | Thesis supervisor of 1 student for Internal Medicine Specialty Degree, II University of Rome, Italy | 2 hrs/ week |
| 06/2002-05/2004 | Supervision of 1 student from MIT | 250 hrs/year |
| 06/2002-05/2003 | Supervision of 1 student from HMS | 250 hrs/year |
| 03/2002-02/2003 | Supervision of 1 visiting fellow | 400 hrs/week |
| 06/2003-09/2003 | Supervision on 1 student | 6 hrs/day |
| 02/2003-06/2005 | Supervising 1 full time technician | 6 hrs/day |
| 05/2004-date | Supervising 1 full time post doc | 6 hrs/day |
| 06-9/2005/date | Supervision on 1 to 4 student each summer | 6 hrs/day |
| 02/2006-08/2008 | Supervising 2 part time post doc | 3 hrs/day |
| 06/2006-date | PhD student supervisor | 4 hrs/day |
| 10/2009-date | Supervising post-doctoral fellows, students, technicians | 2 hrs/ week |
| 7/2010 | Thesis supervisor of 1 student for PhD Degree, Imperial College of Science and Technology, London, UK | 40 hrs/week |
| 2/2011 | Thesis supervisor of 1 student for PhD Degree, University of Rome “Sapienza” Italy | 40 hrs/week |
| 07/201112/2018 | Thesis supervisor of 1 student for MD Degree, I University of Rome, ItalyJunior Faculty Mentor for NIH K01 Submission  | 40 hrs/week10 hrs/week |

[**Formally Supervised Trainees**](http://cv.hms.harvard.edu/index.php?page=trainees)

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| Past Mentees |
| **Dates** | **Name** | **Type** | **Degree** | **Project** | **Current Position** |
| 07-09/2000-2001 | Jang, Monica | HS Stud. |  | Viral gene transfer | MD |
| 01-07/1998 | Lamers, Frouke | Post Doc | MD | Adenoviral Vectors for gene transfer | Cardiology Fellow, Erasmus University of Rotterdam |
| 2002 | Villa-Petroff, Martin | Visiting Scientist | PhD | Gene Transfer of Na/Ca in Failing Hearts | Staff Biologist, Centro de Investigaciones CardiovascularesFacultad de Medicina, Argentina |
| 02-12/2002 | Balderas, Isabel | Pre-Doc | BS | Tissue specific promoter following gene transfer | MD |
| 07/2002-06/2003 | Dalal, Rishikesh | Pre-Doc |  | Transcript Profiling following SERCA2a gene transfer | Medical Student,  |
| 04/2001-06/2002 | Huq, Fawzia | Post-Doc | MD | Gene Transfer in Failing Human Hearts | Geriatric Fellow |
| 2002-2003 | Sato, Taku | Post-Doc | PhD | Effect of MCC 135 on Failing Cardiomyocytes Contractility | Senior Scientist.Mitzubishi Pharma, Tokio |
| 09/2001-08/2003 | Tsuji, Tsuyoshi | Post Doc | M.D. | Measurement of Metabolic Parameters in heart failure  | Clinical Fellow, Nara University. Japan |
| 06-09/2003 | Vaval Alan | Pre-Doc |  | SERCA2a and smooth muscle proliferation | Medical Student UPenn |
| 06/2003-03/2005 | Prabhu Padmanabhan | Pre-Doc | MS | ER stress and proteomics | Research Scientist |
| 06-09/2005 | Joachim Chan | Medical student | BS | Transcript profiling in amyloidotic cardiomyopathies | Medical Student |
| 06-09/2005 | Michela Slucca | Medical Student | MD | Imaging of unstable plaque | Medical Doctor |
| 2005-2006 | Katrin Lindenberg | Post-doc | PhD | Cardiac function analysis in Huntington Disease | Medical Student University of Ulm |
| 2004-2008 | Davide Gianni | PhD Student | Master | Protein misfolding in heart failure | PhD Student  |
| 2005-2006 | Maria Carles | Volunteer Fellow | PhD | SERCA2a mutations in human heart failure | Vice President of Scientific Operation. Gwathmey Inc |
| 2005-present | Bernhard Kuhn | Mentee | MD | Periostin in myocardial regeneration | Instructor in Medicine |
| 2005-2006 | Laura Borrelli | Res Assist | BS | Cardiac function in Alzheimer Disease | Research Assistant |
| 2005-2006 | Yhu-Shin Chan | Post-Doc | BS | Role of CHOP signaling in Heart Failure | Post Doctoral Fellow |
| 05/2007- 08 /2008 | Cristina Scapin | PhD student | BS | Role of GRP94 in heart failure | PhD |
| 07/2007-09/2007 | Shanmuganathan Mayooran  | Medical Student | BS | SERCA2a proteomics | Medical Student |
| 06/2008- 08/2008 | Tomás Filipe Pellegrini Lopes  | Medical Student |  | Isolated cardiomyocytes function in mice models of AD | Medical Student |
| 07/2009-09/2009 | Anna Kilianova | Medical Student | Medical | Isolated cardiomyocytes function in mice models of AD | MD, PhD Student |
| 06/2009-03/2010 | Marco Araco | Post Doctoral Fellow | MD | Genetic bases of dilated cardiomyopathy | Resident Internal Medicine |
| 08/2009-03/2010 | Viktor Moses | Medical Student | Medical Student | Isolated cardiomyocytes function in mice models of AD | MD |
| 01/2010-03/2010 | Dora Werner | Medical Student | Medical Student | Isolated cardiomyocytes function in mice models of AD | Medical Student |
| 06/2010-09/2010 | Vittoria Mastromarino | Med Student | Med Student | Isolated cardiomyocytes function in mice models of AD | Cardiology Fellow Italy |
| 07/2010-08/2010 | Shea Durgapal | Student | Undergrad | Cardiac progenitor cells in Presenilin models of Heart Failure | Graduate Student |
| 06/2010-09/2010 | Ilaria Santoro | Med Student | BS Student | Unfolding protein response in human heart failure | Graduate Student |
| 05/2010-8/2010 | Bo Wang | Research Assisitant | MD | Myocytes isolation and cardiac surgery | Research Assistant |
| 01/2010-12/2010 | Bernhard Hiring | Post Doctoral fellow | MD | Cardiac progenitor cells in Presenilin models of Heart Failure | Staff Internal Medicine Germany |
| 06/2010-06/2011 | Asma Mahmud | Post Doctoral fellow | MD | Genetic variants of iDCM | Cardiology fellow Sidney Australia |
| 10/2010-09/ 2012 | Eduward Goihberg | Post-Doctoral Fellow | PhD | Misfolded protein extraction and characterization | Staff Pharmacologist |
| 2010-2011 | Nicole Koulisis | Research Assistant | BS | Stem cells biology in aging | Medical Student |
| 08/2009-date | Cristina Balla | Post Doctoral Fellow | MD | Unfolding protein response in human heart failure | Staff Cardiologist, Milan (Italy) |
| 05/ 2010-4/2011 | Khagendra Dahal  | Post Doctoral fellow | MD | Isolated cardiomyocyte function in mice models of AD | Cardiology Fellow |
| 03/2010-date | Khaushik Subramanian | Research Assistant | MS Bioengineering | Design of subcellular compartment specific calcium nanosensors | Medical student |
| 10/2012-date | Viktor Moses | Research Fellow | MD | Isolated cardiomyocytes function in mice models of AD | Cardiology Specialties Germany |
| 3/2013-10/2013 | Ross Okazaki | Undergrad student | Physiology | Isolated cardiomyocytes function in mice models of AD | Pre-Med |
| 10/2013 | Anna Kilianova | Post Doctoral fellow  | MD | Transcriptional profiling and genetic basis of cardiomyopathies | PhD student Check Republic |
| 02/2013 | Fabrizio Bernini | PhD Student | MS | Analysis of oligomers structure and protein interaction by AFM | PhD |
| 8/2013 | Carlo Augusto Bortolotti | Research Fellow | PhD | Molecular Dynamics analysis of phosphorylated cofilin | Staff University of Modena |
| 8/2014 | Marcello Pignataro | PhD Student | PhD | Chemical analysis of cofilin structure/function by molecular dynamics, molecular biology and cell physiology | University of Modena |
| 8/2014-6/2017 | Luca Troncone | Post Doctoral fellow | PhD | Aβ pathology in AD patients heart |  |
| 12/2015-6/2017 | Marco Luciani | PhD Student | PhD | Tau pathology in AD patients heart | Catholic University of Rome  |
| 4/2016 | Carmine Gentile | Research Associate | Visiting  | University of Sydney | Associate Professor University of Sydney |
| 01/2016 | Onder Albayram | Post Doctoral Fellow | PhD | Myocardial tauopathy | Assistant Professor |
| 09/2019 | Onat Akyol | Post-Doctoral Fellow | MD  | Clinical studies on Alzheimer’s cardiomyopathy | Anesthesiologist |
| 9/2019-3/2020 | Justin Kiel | Research Assistant | MS | Cofilin in cardiomyopathy and PTSD | Called for active duty military |
| 9/2019-3/2020 | Eda Karakaia | Student | MS | Proteotoxicity and protein degradation  |  |
| 12/2018 | Onder Albayram | Assistant Professor | PhD | Myocardial tauopathy |  |
|  |  |  |  |  |  |
| Current Mentees |
| 09/2019 | Gianlorenzo Daniele | Post-Doctoral Fellow | MD  | Systemic consequences of traumatic brain injury |  |
| 4/2020 | Stephanie DiLucia | MD-PhD student |  | Heart-to-brain crosstalk in tauopathy |  |
| 4/2020 | Emily Amador | Resident | MD | Clinical study on AD/TBI/HF  |  |
| 9/2020 | Khaja Shameem Mohammed Abdul | Post-Doctoral Fellow | PhD | Alzheimer’s Cardiomyopathy |  |
| 06/2020 | Helen Butler | PhD Student |  | Lung microbiome in Alzheimer and heart failure |  |

[Local Invited Presentations](http://cv.hms.harvard.edu/index.php?page=presentations_local)

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| --- | --- |
| 09/2004 | Heart Failure Meeting – MGH |
| 04/2006 | Cardiovascular Cell and Gene Therapy Conference II |
| 11/2007 | Inter lab meeting, BIDMC |
| 04/2008 | Cardiology Grand Round - BIDMC |
| 06/2009 | Lecture Cardiology Fellows - BIDMC |
| 06/2009 | Heart Failure Meeting – MGH |
| 02/201005/201106/201105/201307/27/201710/26/201720/10/201716/11/201727/11/201702/14/201803/22/201806/14/201809/201807/09/201812/18/1902/12/201910/201904/26/2020 | Heart Transplant Repository Meeting – MGHMIT and Italy 150th workshop – MITCLS physiology course – BIDMCCenter for Vascular Biology Research Seminar Series- BIDMCMedical Grand Round MUSC (Charleston – SC)Neurology Grand Round MUSC (Charleston SC)Speaker Retreat Center on AgingRadiology Research Meeting MUSC (Charleston SC)MSTP Seminar MUSC (Charleston SC)Senior Companion Program Director for Charleston Area Senior CitizenHealthy Charleston Challenge Wellness Center MUSCAHA Kickoff MUSCInvited Speaker Apple Tree Society MUSCInvited Speaker Department of Endocrinology MUSC Charleston (SC)Guest Speaker AHA fundraising Charleston (SC)Guest Speaker AHA fundraising Charleston (SC)Invited Speaker Science Café Charleston (SC)MUSC Wellness Center HCC Finale Charleston (SC) |

**Report of Regional, National and International Invited Teaching and Presentations**

[Invited Presentations and Courses](http://cv.hms.harvard.edu/index.php?page=presentations)

National

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| 06/2003 | Invited Lecture Temple University – Philadelphia (PA) |
| 08/2005 | Invited Lecture University of Knoxville, Knoxville (Tn) |
| 08/2006 | Cardiac Grand Round UCSF, San Francisco (CA) |
| 10/2007 | Invited Lecture, Genzyme, Boston (MA) |
| 11/2007 | Invited speaker at AHA annual meeting. Orlando (FL).  |
| 09/13-16/2009 | Invited speaker/chair plenary sessions HFSA Boston (MA).  |
| 01/2007  | Invited Lecture Howard University, Washington DC |
| 11/2009 | Invited Lecture Howard University, Washington DC |
| 06/201003/201109/201109/201111/12-16/201112/201103/201203/201204/201207/201211/3-7/201209/22-25/201311/16-20/201312/201312/201326-30/04/201404/201407/14-17/201409/201411/15-19/201406/201507/201507/201511/23/2015 | Cardiology Grand Round University of Budapest. Budapest (Hungary)Invited Lecture UCLA, Los Angeles (CA) Cardiology Grand Round Johns Hopkins University, Baltimore (MD)Invited Speaker – Boston University Boston (MA)Invited Speaker and Session Chair at AHA annual meeting – Orlando (FL). Invited lecture faculty - Ist University of Rome (Italy)Invited lecture Department of Medicine - Ist University of Rome (Italy)Invited Speaker Rome Cardiology Forum 2012 (ESC meeting). Rome (Italy). Invited Speaker Tufts University Boston (MA)Invited Speaker at AHA BCVS annual meeting – New Orleans (LA). Invited Speaker at AHA annual meeting – Los Angeles (CA). Invited Speaker at HFSA annual meeting – Orlando (FL). Poster Professor AHA annual meeting – Dallas. Invited Speaker Columbia University New York Invited Speaker Mount Sinai Hospital New YorkOrganizer and Chair of a Symposium sponsored by the Cardiovascular Section for the Experimental Biology 2014 meeting -San Diego. Invited Speaker 2014 ISHR North American Section Meeting Miami (FL). Invited Chair 2014 BCVS Meeting Las Vegas (Nevada). Invited Speaker University of Kentucky College of Medicine, Lexington (KY)Invited Speaker and Chair 2014 AHA Meeting Chicago (IL). Invited Speaker 2015 ISHR North American Section Meeting Seattle (WA)Invited Speaker 2015 BCVS Meeting New Orleans Selected for AHA BCVS NewsInvited Speaker 2014 ISHR European Section Meeting Bordeaux (France). Invited Speaker Brown University Providence (RI) |
| 02/201604/18-21/2016 | Invited Speaker University of Melbourne (Australia)Invited Speaker 2016 ISHR World Congress Buenos Aires (Argentina).  |

07/2016 Invited Chair 2016 BCVS Meeting Phoenix (Arizona)

11/2016 Invited Speaker 2016 AHA (New Orleans)

5/30-6/2/2017 Invited Speaker 2017 ISHR (New Orleans)

5/25-27/2017 Invited Speaker International Symposium on Advances in heart failure, cardiomyopathies and pericardial diseases. Trieste (Italy)

7/29-30/2017 Invited Speaker VA Field Based Planning Meeting for developing a Brain-Heart Consortium

09/18-19/2017 AHA Research Leader Academy Meeting - Invited

 01/09/2018 Invited Speaker University of Napoli (Italy)

 03/18/2018 Invited Speaker USCAP Companion Meeting Vancouver, BC, Canada

 05/29/2018 37th Annual Meeting of the North American Section of ISHR, Halifax, Canada

 08/13/2018 AHA Research Leader Academy Meeting - Invited

 07/30-8/2/2018 Invited Speaker 2018 BCVS Meeting. San Antonio (Texas)

 10/6/2018 Invited Speaker 4th SIRC Forum. New Roads in Cardiovascular Research Rome Italy

 11/10-12/2018 Poster Professor AHA Chicago (IL)

04/7-10/2019 Symposium organizer and chair EB Meeting Orlando (FL)

02/6-7/2019 Invited Speaker 3rd annual New Frontiers in Cardiac Cell Death and Heart Failure Conference Honolulu, Hawaii

03/27-29/2019 Invited Speaker University of Alabama Birmingham, Birmingham (AL)

04/6-7/2019 Symposium organizer and Chair Experimental Biology 2019

05/19-22/2019 Invited Speaker German Centers for Degenerative Diseases and Cardiovascular Research

Meeting, Gottingen, Germany

06/03/2019 Invited Speaker, poster judge ISHR World Congress Beijin, China

7/29-8/1 Invited Chair BCVS Boston (MA)

9/19-21 Invited AHA Research Leader Academy Meeting

11/16-19 Invited Speaker & poster judge AHA Philadelphia (PA)

2/5-6/2020 Invited Speaker 4th annual New Frontiers in Cardiac Cell Death and Heart Failure Conference Honolulu, Hawaii

5/26-29/2020 Invited Speaker, ISHR North American Section, Denver (CO)

**Report of Clinical Activities and Innovations**

1986 Italian Medical License valid in every Country of the European Community

1990 Italian Cardiology License valid in every Country of the European Community

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| --- | --- | --- | --- |
| 1989-1993 | Ambulatory Cardiology Practice | Royal Brompton National Heart and Lung Hospital. London (UK). | One session/week |
| 1993-1998 | Ambulatory Cardiology Practice | NIH Hospitals Rome (Italy | One session/week |
| 1993-1998 | Floor Cardiology Practice | NIH Hospitals Rome (Italy | Four sessions/week |
| 1993-1998 | Internal Medicine, Emergency Medicine and Cardiology Practice | NIH Hospitals Rome (Italy | One-two sessions/week |

[**Report of Technological and Other Scientific Innovations**](http://cv.hms.harvard.edu/index.php?page=innovations_tech)

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| Case # | Application # | Title | Licensee | PI |
| 2394 | U.S. 60/499,705 | Methods of Treating Restenosis | Celladon | Hajjar |
| 2675 | U.S. 60/608,214; also foreign equivalents in:Australia, Canada, China, India, Japan, Europe | Modulation of Inhibitor 1 Protein as a Therapeutic Modality in Heart Failure | NanoCor | Kranias/Hajjar |
| 3146 | U.S. 60/794,375 | Methods for Diagnosis and Treatment of Dilated Cardiomyopathies | None  | del Monte |
| 3151 | US2009239940 (A1)also foreign equivalents  | Treating heart failure and ventricular arrhythmias | None (NanoCor under discussion) | del Monte |
| 63653US(51588) | US 11/662,439 | Modulating Phosphatase activity in cardiac cells | NanoCor | Kranias/Hajjar |

**Report of Education of Patients and Service to the Community**

[Activities](http://cv.hms.harvard.edu/index.php?page=activities)

|  |  |
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| 1993 | Associazione anni verdi. Cardiologist for handicap and social level of poverty cases. NIH Hospitals, Rome, Italy. |

[Educational Material for Patients and the Lay Community](http://cv.hms.harvard.edu/index.php?page=material)

**Books, monographs, articles and presentations in other media**

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| 1. Marino B, Piccoli G, Editors. Il Trapianto Cardiaco Ortotopico. Roma: Masson 1990 Chapter Author 2. Marino B, Piccoli G, Editors. Il Trapianto Cardiaco Ortotopico. Roma: Masson 1990 Illustrations |

[Peer reviewed publications in print or other media](http://cv.hms.harvard.edu/index.php?page=peer_review) \*\* formally supervised trainee

H-Index 51; i10 index 89 <https://scholar.google.com/citations?hl=en&user=1fDZV1MAAAAJ&scilu=&scisig=AMD79ooAAAAAXzvCMLJkKrX6ITPyQMYHbmtATZURUvCG&gmla=AJsN-F5qqdkdqb5EdHE1svb-Cr8qK5WtwOc25uQvD6bH0BrdbzgT7sjR6Jz0D0wtgHU2W3EniQdOm_Lt0NYZb-qbjgtPEhFfwmolBjif1hPkd0I24m_zBpvFhutwA8Oklyr1K452PKz-&sciund=3608268342281140558>

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| 1. Puddu PE, **del Monte F**, Reale A. Time risk and sudden death: a new perspective for research? Cardiologia. 1989 Mar;34(3):191-4. Italian. No abstract available. PMID: 2743361
2. Greco C, Di Piero V, Cavalletti C, Argentino C, D'Agostino R, **del Monte F**, Scopinaro F. Myocardial ischemia during stroke: scintigraphic demonstration. Cardiologia 1989; 34 (5): 455-457. PMID: 2758448
3. Jones SM, Hunt NA, **del Monte F**, Harding SE. Contraction of cardiac myocytes from noradrenaline-treated rats in response to isoprenaline, forskolin and dibutyryl cAMP. Eur J Pharmacol 1990; 191 (2): 129-140. PMID: 1964904
4. Harding SE, Jones SM, O'Gara P, **del Monte F**, Vescovo G, Poole-Wilson PA. Isolated ventricular myocytes from failing ad non-failing human heart; the relation of age and clinical status of patients to isoproterenol response. J Mol Cell Cardiol 1992; 24 (5): 549-564. PMID: 1321914
5. Harding SE, Jones SM, Vescovo G, **del Monte F**, Poole-Wilson PA. Reduced contractile response to forskolin and a cyclic AMP analogue in myocytes from failing human ventricle. Eur J Pharmacol 1992; 223 (1): 39-48. PMID: 1335876
6. Monti F, Dawodu AA, Giglio V, Lanti M, **del Monte F**, Sugimoto S, Terracciano C, Schiariti M, Puddu PE, Campa PP. Effetti inotropi e batmotropi della beta stimolazione: studio di confronto tra dobutamina e dopamina nel muscolo papillare di cavia in contrazione isometrica. Cardiologia 1992; 37 (19): 635-639. PMID: 1292869
7. **del Monte F**, Mynett JR, Sugden PH, Poole-Wilson PA, Harding SE. Subcellular mechanism of the species difference in the contractile response of ventricular myocytes to endothelin-1. Cardioscience 1993; 4 (3): 185-191. PMID: 8400027
8. **del Monte F**, Kaumann AJ, Poole-Wilson PA, Wynne DG, Harding SE. Coexistence of functioning β1- and β2-adrenoceptors in single myocytes from failing human ventricle. Circulation 1993; 88 (3): 854-863. PMID: 8102599 **Cited by 115 related articles**
9. Naqvi RU, **del Monte F**, O'Gara P, Harding SE, MacLeod KT. Characteristics of myocytes isolated from the heart of renovascular hypertensive guinea pigs. Am J Physiol 1994; 266 (5 Pt 2): H1886-H1895. PMID: 8203588
10. Ferrara N, O'Gara P, Wynne DG, Brown LA, **del Monte F**, Poole-Wilson PA, Harding SE. Decreased contractile responses to isoproterenol in isolated cardiac myocytes from aging guinea pigs. J Mol Cell Cardiol 1995; 27(5): 1141-1150. PMID: 7473772
11. Sanders L, Lynham JA, Bond B, **del Monte F**, Harding SE, Kaumann AJ. Sensitisation of human atrial 5-HT4 receptors by chronic β-blocker treatment. Circulation 1995; 92 (9): 2526-2539. PMID: 7586354
12. **del Monte F**, O'Gara P, Poole-Wilson PA, Yacoub M, Harding SE. Cell geometry and contractile abnormalities of myocytes from failing human ventricle. Cardiovasc Res 1995; 30 (2): 281-290. PMID: 7585816
13. Sugimoto S, Puddu PE, Monti F, Dawodu AA, **del Monte F**, Schiariti M, Campa PP, Marino B. Activation of ATP-dependent K+ channels enhances myocardial protection due to cold high potassium cardioplegia: a force-frequency relationship study. J Mol Cell Cardiol 1995; 27 (9): 1867-1881. PMID: 8523448
14. Lefroy DC, Crake T, **del Monte F**, Vescovo G, Dalla Libera LD, Harding SE, Poole-Wilson PA. Angiotensin II and contraction of isolated myocytes from human, guinea-pig and infarcted rat hearts. Am J Physiol 1996; 270 (Pt 2): H2060-H2069. PMID: 8764257
15. Harding SE, Brown LA, **del Monte F**, Davies CH, O'Gara P, Vescovo G, Wynne DG, Poole-Wilson PA. Acceleration of contraction by β-adrenoceptor stimulation is greater in ventricular myocytes from failing than non-failing human hearts. Basic Res Cardiol 1996; 91 Suppl 2: 53-56. PMID: 8957545
16. Wynne DG, **del Monte F**, Harding SE. Cyclic AMP levels in ventricular myocytes from noradrenaline-treated guinea pigs. Eur J Pharmacol 1996; 310: 235-242. PMID: 8884222
17. Harding S.E., Brown L.A., **del Monte F**, Davies C.H., O'Gara P., Vescovo G., Wynne D.G., Poole-Wilson P.A. Acceleration of contraction by β-adrenoceptor stimulation is greater in ventricular myocytes from failing than non-failing human hearts. Basic Res Cardiol 1996; 91 Suppl 2: 53-56.
18. **del Monte F**, Harding SE, Schmidt U, Matsui T, Kang ZB, Dec GW, Gwathmey JK, Rosenzweig A, Hajjar RJ. Restoration of contractile function in isolated cardiomyocytes from failing human hearts by gene transfer of SERCA2a. Circulation 1999; 100: 2308-2311. **Invited journal cover.** Cited by 369 related articles
19. Matsui T, **del Monte F**, Li L, Fukui Y, Franke TF, Hajjar RJ, Rosenzweig A. Adenoviral gene transfer of activated PI3-kinase and Akt inhibits apoptosis of hypoxic cardiocytes. Circulation 1999; 100: 2373-2379.
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22. Schmidt U, **del Monte F,** Miyamoto MI, Matsui T, Gwathmey JK, Rosenzweig A, Hajjar RJ. Restoration of diastolic function in senescent rat hearts by adenoviral gene transfer of sarcoplasmic reticulum Ca2+ ATPase. Circulation 2000; 101 (7): 790-796. PMID: 10683354
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24. Haq S, Choukroun G, Lim HW, Tymitz KM, **del Monte F**, Gwathmey JK, Grazette L, Michael A, Hajjar RJ, Force TL, Molkentin J. Differential activation of signal transduction pathways in human hearts during hypertrophy and failure. Circulation 2001; 103: 670 - 677. PMID: 11156878
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29. del Monte F, Harding S, Dec GW, Gwathmey JK, Hajjar RJ. Targeting phospholamban in human heart failure by gene transfer. Circulation 2002; 105: 904-907. PMID: 11864915 Cited by 238 related articles
30. **del Monte F**, Butler K, Boecker W, Gwathmey JK, Lewandowski D, Hajjar RJ. Novel technique of aortic banding followed by gene transfer during hypertrophy and heart failure. Physiol Genom 2002; 9: 49-56. PMID: 11948290
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37. **del Monte F**, Dalal R\*\*, Tabchy A\*\*, Couget J, Bloch KD, Peterson R, Hajjar RJ. Transcriptional changes following restoration of SERCA2a levels in failing rat hearts FASEB J. 2004 Sep;18(12):1474-6. PMID: 15247151
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| M.D. **del Monte F**. Valore predittivo del test con nitrati nella valutazione  preoperatoria in pazienti con aneurisma ventriculare sinistro postinfartuale.  Rome, Italy: University of Rome "La Sapienza"; 1986.Cardiology Degree **del Monte F**. Propieta' contrattili di miociti isolati da cuori umani scompensati. Rome, Italy: University of Rome "La Sapienza"; 1990.Ph.D. **del Monte F**. Cardiac failure and overload - Contractile changes in single myocytes. London, UK: Imperial College of Science and Technology, University of London; 1996. |

[**Narrative Report**](http://cv.hms.harvard.edu/index.php?page=narrative)

My major activity is in basic and translational research. My laboratory research focuses on understanding the pathogenesis of heart failure (HF) and has evolved towards innovative unexplored territories. Our latest discoveries are recognized as a major breakthrough that opened a new era for the understanding of the pathogenesis of HF. In addition to devoting 70% of my time to research, and 30% to administrative activities, mentoring and teaching the new generations of clinician scientists and serving in the scientific community at national and international meetings, scientific associations and federal agencies.

Our initial work demonstrated the key role of SERCA2a in sustaining contractility, metabolism and survival from single cells-to large animal models.I am a recognized leader in cardiomyocytes physiology and Ca2+ handling in animal and human hearts and I am invited to provide lectures on the topic. For this I was awarded a Harvard Catalyst and a Harvard Stem Cell Institute award.

As principal investigator I discovered, in dilated cardiomyopathy (iDCM), plaque and tangles-like protein aggregates similar to the pathological defects in Alzheimer Disease (AD). We characterized the cell response to misfolded proteins and identified, in iDCM, genetic variants in common with AD changing the paradigm of the pathogenesis of iDCM. I am recognized nationally and internationally as leader in this new field. For these studies I was awarded a K08 award, a Harvard-Armenise International Award, an NIH R21 and a R01 grants. A number of publications to the one describing this work are under submission:

1. Balla C\*\*, Subramanian K\*\*, Egidy-Assenza G, Rota M, Volpe M, **del Monte F**. Presenilin-2, a novel EC-coupling protein, regulates Ca2+ cycling and contractility. European Heart Journal under submission. *This work provides the first description of the mechanisms by with the loss of function of the cardiac isoform of presenilin (the gene associated with early onset Alzheimer Disease and now idiopathic dilated cardiomyopathy – see reference 64) affect myocardial function in vivo and cardiomyocytes in vitro.* Under submission
2. Luciani, M, Troncone M, Balla C, Subramanian K, Egidy-Assenza G, Volpe M, Macgillivray TE, **del Monte F**. SR Ca2+ depletion induced by Presenilin deficiency attenuates the Unfolded Protein Response signaling pathways. In preparation. *This will be the first report that describes the response of the failing human heart to protein misfolding (UPR) in the presence and absence of presenilin genetic variants.* Under submission
3. Luciani, M, Gianni D, Bouzou B, Chan J, Johnson K, Dec WG, Macgillivray T, **del Monte F**. Unique idiopathic Dilated Cardiomyopathy gene expression profiling: relationship to neurodegenerative diseases. In preparation. *This report will provide the first evidence that genetic changes associated with Down Syndrome play a role in the pathogenesis of idiopathic dilated cardiomyopathy. This study also let to the discovery of the role of stanniocalcin in the pathogenesis of AL amyloidosis published as ref 77.*

A milestone in the discovery of the molecular mechanisms of AD was the purification and chemical characterization of amyloid fibrils. We decoded the molecular composition of cardiac plaques. We identified an actin-polymerizing protein (Cofilin-2) to be comprised within the aggregates and we characterized its role on cardiac function. For these studies I have been awarded an AHA Innovative Research Grant. A manuscript has been published on JACC describing this work:

1. Subramanian, K\*\*, Gianni, D\*\*, Balla, C\*\*, Egidy Assenza, G., Joshi, M., Dec, W.G., Macgillivray, T.E., Van Eyk, J., Agnetti, G, Paolocci, N., Bamburg, J.R., Agrawal, P.B., **del Monte F.** Cofilin-2 Phosphorylation and Sequestration in Myocardial Aggregates: Novel Pathogenetic Mechanisms for Idiopathic Dilated Cardiomyopathy. JACC 2015; 65 (12): 1199-214.

A follow-up to this work is to understand the structural and dynamic changes imposed by post-translational modification to cofilin-1 and cofilin-2. For this work two manuscripts are under submission.

A new direction in the investigations of protein misfolding in cardiac disease also relate to the new concept of metastatic transmissibility of misfolded proteins. We therefore investigated the involvement of the heart in the overall pathology of Alzheimer’s disease. Also, clinical evidence links DCM and AD through analogous epidemiological and genetic profiles, biochemical characteristics and common triggers, including inflammation, oxidative stress and hypoxia. For this study a manuscript is under submission and one in preparation:

1. Mechanisms of toxicity of pre-amyloid oligomers using atomic force microscopy. Study participants: Bernini F\*\*, Malferrari D, Borsari M, Castellini E\*, **del Monte F\****. This work investigates the mechanism of spreading of pre-amyloid oligomers using atomic force microscopy and the results under submission.* Scientific Reports (a Nature group journal) 2016 Oct 24;6:35865. doi: 10.1038/srep35865.
2. Troncone L, Luciani M, Coggins M, Ho CY, Smith N, Crain B, Frosh MP, **del Monte F**. Amyloid Aβ pathology in Alzheimer’s Disease Hearts. A systemic disease or protein metastatsis? JACC 2016 Dec 6;68(22):2395-2407. doi: 10.1016/j.jacc.2016.08.073

We generated a high throughput platform for the study of the transcriptional factors in human hearts from normal and diseased tissue. For this work, we are also preparing the following manuscript: 1) Generation of a new high-throughput quantitative real-time PCR (Quantrrx) to study the human transcription factor expression in normal and diseases myocardium. This work was supported by the R21 award HL110042.

1. Kilianova A, Rowe G, Arany Z, **del Monte F**. Human transcriptome in idiopathic dilated cardiomyopathy - a novel high throughput screening. Under submission. *Candidate transcription factors will be tested in follow-up studies that will generate new manuscripts and R01 grant applications*

We recently begun investigating 1) the effect of air pollution in the oxidative stress induced protein aggregation in the heart and brain; 2) the mechanisms of exosome mediated peripheral proteotoxicity of Aβ. For this work, we were awarded an R01 and an AHA grant.

**Given the commonality of the structure/function of misfolded proteins, the unfolding protein response and the protein degradation pathways the results obtained can be translated to any cell, offering a common therapeutic target for many diseases affecting millions of people**.

**Supporting activities** for the cardiology division are mentoring students and fellows, from experience as reviewer for K08 and K99-R00 NIH grants.

 At BIDMC I organized the weekly seminar series and organized (and lecturing at) the T32 educational seminar series. I was also appointed as a member in the Department of Medicine Committee on the Advancement of Women, I took part in the training course organized by Professor Zeidel for residents in Internal Medicine and General Surgery. The course is hold at the Mount Desert Island Biological Laboratories and is aimed at understanding of basic physiological concepts through hands-on experiments in a research laboratory. The course is organized around several research modules that examine all aspects the physiology of the body organ and how to translate the pathological changes within clinical cases. In each module, classical experiments using model systems (toad, zebrafish, roundworm, shark, Xenopus oocyte, in an evolutionary comparative approach) are combined with modern molecular techniques. The goals of the *Squalus* Cardiac Module are geared towards understanding the Starling Principle of the heart and appreciating the hormonal response of the heart to changes in preload and afterload. By way of a simple experimental design, students will have the opportunity to change the working conditions of the heart and see how this alters the cardiac function. This has clinical applicability particularly in thinking about how to care for patients with cardiogenic shock and those who demonstrate septic physiology with impaired cardiac function.

 Since 2007 I have been invited to teach at one of the most prestigious courses at MIT (HST cardiovascular physiology).

 In July 2017, I joined the Medical University of South Carolina. Here I have initiated and Direct the Heart and Brain program and the Cardiovascular biobank. The program represents the first program to study the mechanisms of protein misfolding and degradation linking diseases either as a systemic or metastatic condition from the bench side to the clinic. The biobank support my research as well as research of all investigators in the world. I have also been granted an academic license to initiate and interdisciplinary clinic to care for patients with a Heart Failure and Alzheimer’s Disease.