

Paolo Fiorina, MD PhD
Curriculum Vitae

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Name: Paolo Fiorina, MD PhD

Current Position:

Associate Professor of Endocrinology, University of Milan, Italy
Director of the International Center for T1D, Sacco Hospital, Milan
Assistant Professor of Pediatrics, Harvard Medical School, Boston, MA, USA
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Place of Birth: Bergamo, Italy

Education

1982-1987	B.S., Istituto Scientifico Sant' Alessandro, Bergamo, Italy
1987-1993	M.D., Cum laude, Universita' degli Studi di Milano, Milan, Italy
1998-2002	Ph.D., Universita' degli Studi di Milano, Milan, Italy

Postdoctoral Training

11/1993-11/1997	Residency in Allergy and Clinical Immunology, Universita' degli Studi di Parma, Parma, Italy
10/2004-07/2006	Research Fellowship, Harvard Medical School, Boston, MA
10/2002-06/2008	Residency in Internal Medicine, Vita-Salute San Raffaele University, Milan, Italy

Academic and Hospital Appointment

07/1999-10/2004 Physician, San Raffaele Scientific Institute, Milan, Italy
10/2004-07/2006 Research Fellow, Harvard Medical School, Boston
07/2006-09/2009 Instructor, Harvard Medical School, Boston
09/2009- Assistant Professor, Harvard Medical School, Boston
09/2013-03/2017 Part-time Physician at San Raffaele Scientific Institute, Milan
09/2013-03/2017 Part-time Associate Scientist at BCH
03/2017- Associate Professor, University of Milan (non-voting position granted)

Early achievements track-record

I have published 140 peer-reviewed articles in major international journals, with 4394 citations yielding an H-index of 43. The publication list includes 2 New England Journal of Medicine, 2 Lancet, 1 Cell Stem Cells, 1 Circulation, 1 Endocrine Reviews, 14 Diabetes.

Committee Service

National and International

2009-present Juvenile Diabetes Research Foundation (JDRF) Medical Science Review Committee (MSRC) for Islet Biology and Transplantation
2010-present Transplant Meeting Committee at the San Raffaele Hospital, Milan
2011-present American Heart Association (AHA) Grant Committee
2015- present American Society of Transplantation (AST) Grant Committee

Professional Societies

2005 American Society of Nephrology (ASN)
2005 Italian Society of Diabetes (SID)
2005 European Society of Transplantation (ESOT)
2005 American Society of Transplantation (AST)
2009 American Diabetes Association (ADA)
2011 Italian Society of Nephrology (SIN)
2011 The Transplantation Society (TTS)
2011 International Pancreas & Islet Transplant Association (IPITA)

Grant Review Activities

2004 Grant Commission of the European Community, European Community
2010 UK Diabetes Research
2010 Netherland Stem Cell Program
2011 National Fund for Scientific and Technological Development (FONDECYT) of the Chilean Government

- 2012 Reviewer for the Italian Ministry of Health, Call for targeted research and young researchers
- 2012 Czech Science Foundation (GAČR)
- 2012 American Diabetes Association (ADA)
- 2012 Catalyst Imaging program Harvard Medical School
- 2012 Flanders Odysseus funding programme (FWO Belgium)
- 2012 FWF Austrian Science Fund
- 2013 French National Research Agency (ANR)
- 2014 American Heart Association (AHA) Grant Committee
- 2014 Juvenile Diabetes Research Foundation (JDRF) Grant Committee

Editorial Activities

Journals

- 2004 International Journal of Cardiology
- 2005 Kidney International
- 2005 Transplantation
- 2006 Circulation
- 2007 Diabetes Care
- 2007 Acta Diabetologica
- 2007 Diabetic Medicine
- 2007 American Journal of Transplantation
- 2007 Atherosclerosis
- 2007 Cell Transplantation
- 2007 Expert Opinion in Pharmacotherapy
- 2008 Diabetes
- 2008 Transplant International
- 2008 Clinical Immunology
- 2009 Cells Tissue Transplantation & Therapy
- 2009 Expert Review in Clinical Immunology
- 2009 Cell Biology International
- 2009 Diabetologia
- 2010 Clinical Journal of the American Society of Nephrology (C-JASN)
- 2010 Nutrition, Metabolism and Cardiovascular Diseases (NMCD)
- 2010 PLOS One
- 2010 Diabetes Obesity and Metabolism (DOM)
- 2010 Expert Opinion in Therapeutic Targets
- 2010 Proteomic
- 2010 New England Journal of Medicine (NEJM)
- 2011 Differentiation
- 2012 Human Immunology
- 2012 Neuromolecular Medicine (NMM)
- 2012 Bone Marrow Transplantation (BMT)
- 2012 Journal of the American College of Cardiology (JACC)
- 2012 Cell Proliferation

2013 Experimental Eye Research (EER)
2013 Stem Cell Research (SCR)
2013 Cytotherapy
2013 Hypertension Research (HTR)
2013 Diabetes Research and Clinical Practise (DIAB)
2014 Heart, Lung and Vessel (HLV)
2014 Pharmacological Research
2014 Journal of American Society of Nephrology (JASN)
2014 The Lancet Diabetes & Endocrinology
2015 Nephrology Dialysis and Transplantation (NDT)
2016 Molecular Therapy
2016 Nature Communication
2016 Stem Cells
2016 Cell Stem Cell
2016 Cell Report
2016 Nature Communications
2016 JCI Insights

Editorial Board

2011 Experimental Diabetes Research
2011 PLOS One
2013 Biomed Research International
2013 Journal of Diabetes Research
2013 World Journal of Diabetes
2014 Heart Lung and Vessel
2014 Pharmacological Research
2014 Acta Diabetologica
2015 Transplantation

Honors and Prizes

2003 Young Investigator Award of Italian Society of Diabetes (SID)
2006 Young Investigator Award American Society of Transplantation (AST)
2007 Young Investigator Award American Society of Nephrology (ASN)
2007 AST-JDRF Faculty Grant, American Society of Transplantation (AST)
2007 Young Investigator Award, American Association of Immunology (AAI)
2008 Young Investigator Award of the American Diabetes Association (ADA)
2008 Career Development Award, Juvenile Diabetes Research Foundation (JDRF)
2010 Career Development Award, American Society of Nephrology (ASN)
2013 Grant-In-Aid, American Heart Association (AHA)

Report of Funded Projects

Past

AST-JDRF Faculty Grant: \$80,000

83559-2007 (Fiorina PI), 07/01/2007-06/30/2009

Title: Targeting the CXCR4-SDF axis to mobilize autologous hematopoietic stem cells in islet transplantation

Role: PI

The aim of this grant is to address the effect and mechanism of Hematopoietic stem cells mobilization in islet transplantation.

JDRF R&D Academic Grant: \$700,000

17-2008-368 (Sayegh PI), 04/01/2008-03/31/2010

Title: Mesenchymal Stem Cell: A Novel Therapeutic Strategy for Type 1 Diabetes Mellitus

Role: Co-PI

The aim of this grant is to understand the role of allogeneic or syngeneic mesenchymal stem cells in diabetes onset in a murine model of type 1 diabetes the NOD mice.

BADERC-Endocrinology Research Pilot Feasibility Grant: \$50,000

83460-2008 (Fiorina PI), 05/01/2008-04/30/2010

Title: Targeting B7.1 in diabetic nephropathy

Role: PI

The aim of this grant is to address the role of B7.1 expression at a podocytes levels in type 2 diabetes. This grant will be focusing on targeting B7.1 as a new therapeutic approach for diabetic nephropathy.

BADERC-Endocrinology Research Pilot Feasibility Grant: \$15,000

83460-2010 (Fiorina PI), 07/01/2010-06/01/2011

Title: Targeting B7.1 in diabetic nephropathy

Role: PI

The aim of this grant is to address the role of B7.1 expression at a podocytes levels in type 2 diabetes. This grant will be focusing on targeting B7.1 as a new therapeutic approach for diabetic nephropathy.

ASN (American Society of Nephrology): \$200,000

2-2008-531 (Fiorina PI) 04/01/2010-03/31/2012

Title: The role of B7.1 in diabetic nephropathy

Role: PI

The aim of this grant is to address the role of B7.1 and to target B7.1 with CTLA4-Ig in diabetic nephropathy aiming at preventing the development of the disease.

Novartis IIRP: \$752,000

2-2008-531 (Fiorina PI) 04/01/2010-03/31/2012

Title: ³¹P-MR spectroscopy evaluation of the effect of short-term treatment with Aliskiren on kidney β -ATP/Pi level in kidney transplanted patients

Role: PI

The aim of this grant is to address the effect of Aliskiren on kidney metabolism as evaluated with ³¹P-MR spectroscopy.

Children's Hospital Boston: \$100,000

Transplantation Research Program (Fiorina, PI) 07/01/2011-06/30/2012

Title: Role of B7.1 in Diabetic Nephropathy

Role: PI

The main goal of this project is to develop CTLA4-Ig-based approach to cure diabetic nephropathy.

JDRF (Juvenile Diabetes Research Foundation): \$750,000

2-2008-531 (Fiorina PI) 09/01/2008-08/31/2013

Title: Role of B cells in autoimmunity and islet transplantation

Role: PI

The aim of this grant is to address the role of B cells in autoimmune diabetes and in islet transplantation. Particularly, we will address if B cells depletion is a good option for islet transplanted patients.

Children's Hospital Boston: \$35,000

Transplantation Research Program (Fiorina, PI) 07/01/2012-06/30/2013

Title: Role of B7.1 in Diabetic Nephropathy

Role: PI

The main goal of this project is to develop CTLA4-Ig-based approach to cure diabetic nephropathy.

Italian Minister of Health: \$452,000

RF-FSR-2008-1213704 (Fiorina, PI) 02/01/2011-01/31/2013

Title: Immunological and regenerative properties of human cord blood mesenchymal stem cells to cure type 1 diabetes

Role: PI

The main goal of this project is to develop and characterize human mesenchymal stem cells in order to establish a novel cure for type 1 diabetes.

Harvard Stem Cell Institute DP-0123-12-00: \$166,666

80545 Diabetes Program (Fiorina, PI) 10/01/2012-09/30/2014

Title: Autologous PD-L1⁺ Hematopoietic Stem Cells to cure autoimmune diabetes

Role: PI

The main goal of this project is to expand and newly generate PD-L1⁺ HSC as a potential tool to cure type 1 diabetes.

American Diabetes Association: \$160,000

Grant #7-11-MN-17 Mentor-based fellowship 07/01/2011-06/30/2015

Title: Antigen specific regulatory B cells: a new therapy for type 1 diabetes (Fiorina, PI)

Role: PI

The main goal of this project is to expand regulatory B cells to cure autoimmune diabetes

Otsuka IIRP: \$98,000

(Fiorina, PI) 01/01/2013-12/31/2014

Title: The role of Copeptin as a marker of diabetic nephropathy progression: establishing a risk stratification and an enrichment strategy in the view of the Tolvaptan clinical trial
Role: PI

The main goal of this project is to understand the role of copeptin as a potential diagnostic marker in the onset of diabetic nephropathy.

Current

American Heart Association: \$198,000

Grant-in-Aid, 14GRNT18730002 (Fiorina, PI) 01/01/2014-12/31/2016

Title: P2X7R loss-of-function mutation is associated with accelerated cardiac allograft vasculopathy

Role: PI

The main goal of this project is to study the effect of a novel P2X7R mutation on chronic rejection

European Foundation for the Study of Diabetes (EFSD): \$110,000

Innovative Diabetes Program (Fiorina, PI) 07/01/2015-06/30/2016

Title: Autologous PD-L1+ Hematopoietic Stem Cells to cure autoimmune diabetes

Role: PI

The main goal of this project is to expand and newly generate PD-L1⁺ HSC as a potential tool to cure type 1 diabetes.

Dompè Ltd IIRP: \$297,500

Diabetes Program (Fiorina, PI) 02/15/2015-02/14/2017

Title: The role of the podocyte IL-8-CXCR1/2 axis in diabetic nephropathy

Role: PI

The main goal of this project is to evaluate the role of IL-8 in the onset of diabetic nephropathy

Fate Therapeutic IIRP: \$805,000

Stem Cells Research Grant (Fiorina, PI) 05/10/2015-04/30/2017

Title: The role of the podocyte IL-8-CXCR1/2 axis in diabetic nephropathy

Role: PI

The main goal of this project is to evaluate the role of IL-8 in the onset of diabetic nephropathy

Italian Minister of Health: \$483,000

RF-2010-2303119 (Fiorina, PI) 07/01/2012-06/30/2015

Title: B7.1 on podocytes: a new therapeutic target for diabetic nephropathy

Role: PI

The main goal of this project is to understand the role of B7.1 in the onset of diabetic nephropathy.

Italian Minister of Health: \$646,490

RF-2010-2314794 (Staudacher, PI) 07/01/2012-06/30/2015

Title: The effect of pancreas transplantation in diabetic patients revealed a potential novel stem cell-based mechanism that revert diabetic enteropathy

Role: Co-PI

The main goal of this project is to understand the role of B7.1 in the onset of diabetic nephropathy.

Report of Local Teaching and Training

Teaching of Students in Courses

10/2003-10/2004 International: Nurses School at Vita e Salute University, Milan Italy

Role: Lecturer Students' number: 40 per year Contact time involved: 20 hours per week

10/2003-10/2004 International: Medical School at Vita e Salute University, Milan Italy

Role: Lecturer Students' number: 20 per year Contact time involved: 10 hours per week

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)

10/2009-present Local: *Negotiation skills* class 3 times a year to Harvard Medical School post-docs

10/2010-present Local: *Flow cytometry* class 3 times a year to Harvard Medical School post-docs

10/2011-present Local: *Murine models* class 3 times a year to Harvard Medical School post-docs

10/2012-present Local: *Immunological methods and techniques* class 3 times a year to Harvard Medical School post-docs

10/2014-present Local: *Writing techniques* class 3 times a year to Harvard Medical School post-docs

Clinical Supervisory and Training Responsibilities

1997-2004 Supervision of Transplant fellows at the San Raffaele Hospital, Milan, Italy

Laboratory and Other Research Supervisory and Training Responsibilities

10/2004-present Local: Mentoring 2 summer students per year at the Nephrology Division of Boston Children's Hospital, as well as hosting 1 PhD per year from Milan University

10/2004-present Local: Teaching Laboratories techniques and skill at Harvard Medical School Research fellows

10/2004-present Local: Responsible for islet transplant surgery training for Surgeons Research fellow of the BWH Transplantation Research Center at Harvard Medical School

Formally Supervised Trainees

2002-2004	Chiara Gremizzi, MD	Staff Physician, San Raffaele Scientific Institute, Milan, Italy
2006-2009	Shirine Dada, MD	Resident, American University of Beirut, Lebanon
2006-2009	Andrea Vergani, MD	Resident, San Raffaele Scientific Institute, Milan, Italy
2006-2008	Andrea Augello	Research Fellow, Transplantation Research Center, Boston, MA
2008-2010	Francesca D'Addio, MD PhD	Staff Physician, San Raffaele Scientific Institute, Milan, Italy
2009-2010	Sonja Kleffel, BS	Research Fellow, Transplantation Research Center, Boston, MA
2009	Alessio Mocchi, MD	Resident, San Raffaele Scientific Institute, Milan, Italy
2009-2010	Alessandra Petrelli, MD	Resident, San Raffaele Scientific Institute, Milan, Italy
2009-2010	Michele Carvello, MD	Resident, San Raffaele Scientific Institute, Milan, Italy
2011-2013	Roberto Bassi, MD	Fellow, San Raffaele Scientific Institute, Milan, Italy

Formal Teaching of Peers (e.g., CME and other continuing education courses)

- 2009-2010 Lesson to Resident of the Milan University School of Medicine

Local Invited Presentations

- 2011-2012 Summer class at the BCH for Italian PhD and MD students

Report of Regional, National and International Invited Teaching and Presentations

Regional

- 1) October 18, 2008: New therapeutic approaches in Type 1 diabetes. Crotona Diabetes, Crotona, Italy
- 2) November 7, 2009: Attualita' e prospettive del trapianto di isole. Vibo Valentia, Italy
- 3) March 10, 2012: La terapia con le cellule staminali nel diabete di tipo 1. Milan, Italy
- 4) September 12, 2012: Immunological applications of stem cells in type 1 diabetes. Boston, The Transplantation Research Center Seminars, MA, USA
- 5) February 1, 2103: Targeting P2X7R in alloimmune response. Pediatric Transplant Center Meeting, Boston Children's Hospital, Boston, MA, USA
- 6) April 6, 2013: American Diabetes Association Leadership Conference. Doubletree by Hilton. Westborough, MA, USA.
- 7) October 16, 2013: A clinically relevant PD-L1⁺HSC-based immunotherapy for T1D. Harvard Stem Cells Institute (HSCI) Think tank. Boston
- 8) December 13, 2013: Update on islet transplantation. Pediatric Transplant Center (PTC), Boston Children's Hospital, Boston, MA, USA.

National

- 1) December 17, 2007: Role of B cells in autoimmune diabetes: Studies in NOD mice, The Ninth Annual Harvard Autoimmunity Symposium. Harvard Medical School, Boston, MA, USA
- 2) May 29, 2008: Pancreas alone Vs. Islet Transplantation-Current Controversies. American Transplant Congress, Toronto, Canada
- 3) April 1, 2009: New immunological strategy in islet transplantation. Diabetes Research Institute, University of Florida. Miami, FL, USA
- 4) May 30, 2009: Mesenchymal stem cells (MSCs) in autoimmune disease. American Transplant Congress, Boston, MA, USA
- 5) May 30, 2009: B cells making it on the VIP list in autoimmune diabetes and islet transplantation. American Transplant Congress, Boston, MA, USA
- 6) December 3, 2009: Islet transplantation for type 1 diabetes: Benefits and new immunological strategies. Northwestern University, Chicago, IL

7) May 3, 2010: Reversing (or Halting) the Curse of Chronic Graft Dysfunction in Transplanted Patients. Regulus Inc. San Diego, MA, USA

8) May 4, 2010: Proteomics Reveals Novel Oxidative and Glycolytic Mechanisms in Type 1 Diabetic Patients' Skin Which Are Normalized by Kidney-Pancreas Transplantation. American Transplant Congress, San Diego, MA, USA

9) June 8, 2010: Reversing (or Halting) the Curse of Chronic Graft Dysfunction in Transplanted Patients. University of Illinois (UIC), Chicago, USA

10) January 31, 2013: Immunological applications of stem cells in type 1 diabetes. Thursday Seminars, Joslin Diabetes Center, Boston, USA.

11) November 5, 2013: Options for the Diabetic Renal Transplant Recipient. American Society of Nephrology (ASN) Annual Meeting. Atlanta, GE, USA

12) February 7, 2015: Stem cells Immunoregulatory properties in T1D. Fate Therapeutics, San Diego, CA, USA.

13) April 3, 2015: Extracellular ATP and P2X7R: a dangerous liaison. University of Miami, Miami, FL.

14) June 5, 2015: Mesenchymal Stem Cells. American Diabetes Association (ADA) Annual Meeting. Boston, MA, USA.

15) June 5- 9, 2015: Symposium "Next Generation of Beta Cell Replacement, Mesenchymal Stem Cells, American Diabetes Association, Boston, MA, USA

International

1) May 17, 2008: Islet cells transplantation. European Society of Endocrinology, Berlin, Germany

2) May 26, 2008: New strategies in diabetes. From islet transplantation to immune intervention for type 2: What's next? University of Milan, Milan, Italy

3) April 22, 2009: New strategies for type 1 diabetes: from islet transplantation to stem cells. Università di Bologna, Bologna, Italy

4) May 4, 2009: New approaches in diabetic nephropathy: From immune intervention to stem cells therapy. University of Milan, Milan, Italy

5) October 1, 2009: Pancreatic islet cell transplant for treatment of Diabetes. CAST, Congress of the Asian Society of Transplantation, Beirut, Lebanon

- 6) October 2, 2009: Outcomes and Clinical effectiveness of Islet Transplantation. CAST, Congress of the Asian Society of Transplantation, Beirut, Lebanon
- 7) October 3, 2009: Stem cell therapy for the treatment of diabetes. CAST, Congress of the Asian Society of Transplantation, Beirut, Lebanon
- 8) October 31, 2009: New Immunological and anti-inflammatory strategies for diabetes. San Raffaele Scientific Institute, Milan, Italy
- 9) October 18, 2010: Mechanisms of Islet Allograft Loss. Congress of the Middle East Society for Organ Transplantation (MESOT), Tunis, Tunisia
- 10) October 19, 2010: Immunomodulatory and Reparative Properties of Stem Cells Therapy. Congress of the Middle East Society for Organ Transplantation (MESOT), Tunis, Tunisia
- 11) October 21, 2010: From Islet Isolation to Transplantation – Technical Aspects, Outcomes and Perspectives. Congress of the Middle East Society for Organ Transplantation (MESOT), Tunis, Tunisia
- 12) January 24, 2011: Novel strategies targeting allo and autoimmunity in islet transplantation. Congress of the European Pancreas Islet transplant Association (EPITA), Igls, Austria
- 13) January 24, 2011: Mesenchymal stem cells as immune modulators in islet transplantation. Congress of the European Pancreas Islet transplant Association (EPITA), Igls, Austria
- 14) October 15, 2011: Mechanisms of Immunoregulation by MSC. XXXVI Brazilian Congress of Immunology, 2011, Foz do Iguaçu, Paraná, Brazil
- 15) October 15, 2011: Treatment of autoimmune diseases with MSC. XXXVI Brazilian Congress of Immunology, 2011, Foz do Iguaçu, Paraná, Brazil
- 16) March 9, 2011: From immune mediated inflammatory diseases (IMIDs) to regenerative medicine. Università del Salento, Lecce, Italy
- 17) May 20, 2011: Immunological and regenerative properties of cord blood stem cells, Azienda Ospedaliera, Lamezia Terme, Italy
- 18) May 26, 2011: A New-Age for Cord Blood Stem Cells. San Raffaele Scientific Institute, Milan, Italy
- 19) October 11, 2011: Regenerative therapies of microangiopathy in diabetes. Italian Society of Diabetes, Riccione, Italy

- 20) January 13, 2012: Stem cells in type 1 diabetes. Universita di Cagliari, Cagliari, Italy
- 21) July 12, 2012: The match against diabetic autonomic neuropathy of the gastrointestinal tract: we have to win. San Raffaele Research Seminar “Bridge Series”, Milan, Italy
- 22) October 19, 2012: Stem cell therapies for type 1 diabetes. Ferrara Association of Gynecologists, Ferrara, Italy
- 23) October 20, 2012: Stem cell therapies for type 1 diabetes. RAK Medical and Health Sciences University and Emirates Medical Association Nephrology (EMA-N), Ras Al Khaimah, UAE
- 24) October 20, 2012: Diabetic nephropathy Management Update. RAK Medical and Health Sciences University and Emirates Medical Association Nephrology (EMA-N), Ras Al Khaimah, UAE
- 25) October 20, 2012: Islet and pancreas transplant in type 1 diabetes: Benefits and novel immunological strategies. RAK Medical and Health Sciences University and Emirates Medical Association Nephrology (EMA-N), Ras Al Khaimah, UAE
- 26) January 15, 2013: Immunological and Regenerative properties of cord blood stem cells. Cosenza Lions Club, Cosenza, Italy
- 27) April 15, 2013: Stem cells in type 1 diabetes. Giornata di Studio Salute e Biotecnologie organizzata nell’ambito della XIVa edizione del Premio Sapio per la Ricerca Italiana, Firenze, Italy.
- 28) November 9, 2013: Stem Cells in type 1 diabetes. National Meeting of the Italian Association of young diabetics. Como, Italy.
- 29) March 15, 2014: Stem cells in children. Italian Society of Pediatric. Milan, Italy.
- 30) May 16, 2014: Options for the Diabetic Renal Transplant Recipient. San Raffaele Hospital, Milan, Italy.
- 31) May 17, 2014: Podocyte B7-1 inhibition as a therapeutic strategy for diabetic nephropathy. European Diabetic Nephropathy Study Group (EDNSG). Royal College of Physician, London, UK.
- 32) October 17, 2014: Immunological applications of stem cells in type 1 diabetes. Update in Nephrology and Transplantation. RAK Medical District and Emirates Association of Nephrology. Ras al-Khaimah, UAE.

- 33) October 18, 2014: Novel insights into diabetic nephropathy. Update in Nephrology and Transplantation. RAK Medical District and Emirates Association of Nephrology. Ras al-Khaimah, UAE.
- 34) February 25, 2015: Novel therapies in diabetic nephropathy. Maastricht University, Brussels Campus, Belgium.
- 35) April 11, 2015: Update on MSC. PPSSC (Pan Pacific Symposium on Stem Cells and Cancer Research), Hinschu Sheraton Hotel, Taiwan.
- 36) April 12, 2015: Immunological applications of stem cells in type 1 diabetes. PPSSC (Pan Pacific Symposium on Stem Cells and Cancer Research), Hinschu Sheraton Hotel, Taiwan.
- 37) May 15, 2015: Novel diagnostics and therapies for diabetes. Italian Society of Ophthalmology (SIO). Milan Congress Center, Milan, Italy.
- 38) May 16, 2015: Diabetes and its complication. Transplant day. San Raffaele Hospital, Milan, Italy.
- 39) October 16-17, 2015: Update in Nephrology Transplantation, RAK Medical and Health Sciences University and Emirates Medical Association Nephrology (EMA-N), Ras Al Khaimah, UAE
- 40) October 23-24, 2015: Nuovi approcci terapeutici per la nefropatia diabetica, 33° Congresso SIN Lombarda, San Raffaele Hospital, Milan, Italy
- 41) October 27, 2015, The discovery of enterostaminine “Enterostam”, ERC-Consolidator Interview Step 2, Covent Garden Building of European Research Council Executive Agency, ERCEA, Brussels, Belgium
- 42) January 22, 2016: Scientific Board Harmonium Pharma on T1 Diabetes, NH Milano Touring, Milan, Italy
- 43) January 28, 2016: Seminar “The Discovery of Enterostaminine”, Harvard Medical School Brigham and Women’s Hospital, Boston, MA, USA
- 44) March 10-12, 2016: La Pediatria nella Pratica Clinica, Atahotel Executive, Milan, Italy
- 45) April 18, 2016: Unveiling the “Stamin” brave new world for diabetes, cardiovascular and kidney studies, Boehringer Ingelheim Pharmaceuticals, Inc, Biberach an der Riß, Germany
- 46) May 13, 2016: How can we Delay Organ Failure before and after Transplantation?, The 13th San Raffaele Transplant Meeting, San Raffaele Hospital, Milan, Italy

- 47) June 25, 2016: The eATP/P2X7R liaison in allotransplantation, Tonji Hospital, Huanzhong University of Science and Technology, Wuhan, PR China
- 48) March 18, 2017: Update on Stem Cell in Management of Type 1 Diabetes Mellitus, Update in Nefrology and Transplantation, RAK Medical District and Emirates Association of Nephrology. Ras al-Khaimah, UAE
- 49) March 30- April 1, 2017, La Pediatria nella Pratica Clinica, Terapia immunologica nel diabete mellito tipo 1, Congress Center - Palazzo delle Stelline, Milan, Italy
- 50) April 7, 2017: Il Polmone come nuovo target del diabete melliti, Up To Date in Diabetology and Internal Medicine, SID-Società Italiana di Diabetologia e malattie del Metabolismo, Tradate, Varese, Italy
- 51) April 13, 2017: XVI National Congress “Diabete-Obesità”, Michelangelo Hotel, Milan, Italy
- 52) April 29-May 3, 2017: “The purinergic system”. American Society of Transplant Surgeons and American Society of Transplantation, the American Transplant Congress, Chicago, IL, USA
- 53) May 27, 2017: Glifozine, Evoluzione nell’Approccio terapeutico del paziente con diabete di tipo 2, I.R.C.C.S. Policlinico San Donato, San Donato Milanese, Milan, Italy

Report of Clinical Activities and Innovations

Current Licensure and Certification

- European Certification in Internal Medicine
- European Certification in Allergology and Clinical Immunology

Practice Activities

10/1999-10/2004 Full Time: Medicine, Nephrology, Transplantation Medicine San Raffaele Scientific Institute

Clinical Activity Description: My clinical practice has been done in the field of Internal medicine, Immunology and Transplant medicine. I started in a public hospital in Parma working as a Resident in the Internal Medicine Department for 4 years. I attended twice a week an ambulatory of Allergology and Clinical Immunology, where I became confident with allergic reactions, asthma, SLE, arthritis and many other autoimmune diseases. After that I moved to Bergamo/Milan where I worked in the Emergency Area as attending

physician. This was a great experience, and I became confident with acute conditions, like heart failure, acute renal failure, arrhythmias, deep venous thrombosis etc. Finally I moved in an Academic Hospital in Milan (San Raffaele Scientific Institute and Vita e Salute University), where I started my teaching activities, and I joined the transplant team for 5 years. In this setting I started to be confident with the conditions of the transplanted patients.

2. Patient load: My patients were basically transplanted patients; so far they are by definition complicated patients. They had a history of end stage renal disease and diabetes too, at least for the majority of them. After the transplant they started to experience immunosuppressant therapy, with tendency to pneumonia, lymphoproliferative disease, neoplasm and other different kind of complications. After the transplant (kidney or kidney-pancreas) patients remained in the hospital many days experiencing different kind of viruses' infections (cytomegalovirus and EBV reactivation are the most common). Patient Load: 20/months

Clinical Innovations

- Introduction of flow cytometry analysis of protocol renal fine needle aspirate to early detect biomarkers of allograft rejection

Report of Technological and Other Scientific Innovations

Patents

1. Paolo Fiorina and Andrea Vergani. A method of preventing and treating type 1 diabetes, allograft rejection and lung fibrosis (by targeting the ATP/P2X7R axis). (U.S. Provisional Application Number 61/820,763 filed May 8, 2013).
2. Paolo Fiorina. Methods relating to kidney function (U.S. Provisional Application Number 61/899,337 filed November 4, 2013).

Report of Publications

Peer reviewed publications

1. **Fiorina P**, Lattuada G, Ponari O, Silvestrini C, Dall'Aglio P. Impaired nocturnal melatonin excretion and changes of immunological status in ischaemic stroke patients. **Lancet**. 1996 Mar 9;347(9002):692-3. PubMed PMID: 8596407.
2. Astorri E, **Fiorina P**, Gavaruzzi G, Contini GA, Fesani F. Perioperative myocardial cell damage assessed by immunoradiometric assay of beta-myosin heavy chain serum

levels in patients undergoing coronary bypass surgery. **Int J Cardiol.** 1996 Jul 26;55(2):157-62. PubMed PMID: 8842785.

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Thesis

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Title: Laser capture microdissection as a new tool to assess graft-infiltrating lymphocytes gene profile in islet transplantation

2010, Dott. Petrelli A., doctoral thesis.

Title: Improved function of circulating angiogenic cells is evident in type 1 diabetic islet-transplanted patients.

Narrative Report

Beginning in my early years of medical school, I have been fascinated by diabetes and its complications, and how a successful transplantation (e.g.; pancreas or islet) could have prevented the well-known ravages of diabetes. In 2004 I joined the Nephrology Division of the Children's Hospital at the Harvard Medical School, directed by Dr. Mohamed Sayegh to discover novel therapies for diabetes and diabetic nephropathy. My research fellowship at Children's Hospital allowed me to expand my research interest and to

improve my expertise in the field of diabetic complications. After becoming a faculty member at Harvard Medical School in 2006 and Assistant Professor at the Harvard Medical School in 2009, I significantly demonstrated novel insights into rejection of islet transplantation and into immunobiological basis of type 1 diabetes. I have published 129 peer-reviewed articles in major international journals between 1996 and 2015, with 3334 citations yielding an H-index of 35. My contribution to science can be summarized in the below four main areas:

1. Effects of pancreas-islet-kidney transplantation on diabetic complications. Patients with type 1 diabetes (T1D) are at high risk for developing several complications (cardiovascular disease, kidney failure) and kidney-pancreas and islet transplantation may play a protective role in preventing their onset/progression. Therefore, I first explored the effects of restoring β -cells function on diabetic complications. I showed that full (obtained with pancreas transplantation) and partial (obtained with islet transplantation) β -cell function prevent the progression of diabetic complications, despite the presence of immunosuppression and in some cases could actually completely restore normal organ function. My publications document the potential effects of pancreas-islet-kidney transplantation and suggest the relevance of treating diabetic complications to improve patients' quality of life. I served as the primary investigator in all of these studies.

2. Novel immunotherapies for islet transplantation and type 1 diabetes. Successful islet transplantation cures T1D, improves glycometabolic control, reduces hypoglycemic episodes, and halts diabetes complications. Unfortunately, the rate of functioning islet allografts at 5 years is below 30%. I established different powerful therapies that obtained remarkable prolongation of graft survival. Most of these strategies have been shown to be useful for autoimmune diabetes as well.

3. Use of stem cells to prevent/treat autoimmune diabetes and allograft rejection. Current approaches aiming to treat T1D have made a negligible number of patients insulin-independent. Many reports of clinical benefits following the use of stem cells in T1D have sparked much interest in the utility and value of stem cell therapy as a tool to induce tolerance. With my initial studies I was able to demonstrate the importance of allogeneic mesenchymal stem cells in treating T1D. More recently, I started to unveil the potential immunosuppressive properties of hematopoietic stem cells (HSCs), to provide important preclinical data supporting the basis for further development of stem cell based therapies for T1D and, potentially, for other autoimmune disorders. These data could ultimately help in the design of tolerogenic strategies in human islet cell transplantation, which is in distinct need of improvement.

Complete List of Published Work in MyBibliography:

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