# ELENA GAMMELLA

## EMPLOYMENT

- 01/2018 RTD (di tipo B) SSD MED/04 at the Department of Biomedical Sciences for Health of the University of Milan
- 03/2017-12/2017 Post-Doc fellow in the Iron Metabolism Laboratory of Prof. Gaetano Cairo at the Department of Biomedical Sciences for Health of the University of Milan
- 12/2013 – 12/2016 Researcher for 3 years at the Department of Biomedical Science for Health, University of Milan.
- 2010 - 2013 Post-Doc fellow for 4 years in the Iron Metabolism Laboratory of Prof. Gaetano Cairo at the Department of Biomedical Sciences for Health of the University of Milan

## EDUCATION AND TRAINING

- 2009 PhD in Pathology and Experimental Neurology from the University of Milan with the thesis "Adenosine A2A receptor-mediated modulation of gene expression under different pathophysiological conditions:role of HIF-1"
- 2009 Certification for the LTK Module 1E: Introductory Course in Laboratory Animal Science at the University of Zurich
- 2008 - 2009 Work in the laboratory of Prof. Max Gassmann at the University of Zurich, Department of Veterinary Physiology
- 2006 - 2008 work in the Hypoxia laboratory of Prof.ssa Lorenza Tacchini at the Department of Biomedical Sciences for Health of the University of Milan
- 2006 Master degree in Medical Biotechnology and Molecular Medicine from the University of Milan (110/110 cum laude) with the thesis "Effect of the gamma secretase inhbition in Notch pathway in T-ALL, HD and cellular lines of NHL"
- 2004 Bachelor degree in Medical Biotechnology from the University of Milan (110/110), with the thesis "Use of molecular biology techniques to analyze genes potentially protective in viral infections"

## REASERCH ACTIVITY

Dr Gammella has co-authored 21 pubblication in peer-reviewed international journals with a total IF 100.02, H-index 10 and 336 citations (source Scopus). Elena Gammella started working in the field of hypoxia as graduate student. Her PhD thesis was focused on the relationship between the production of adenosine and the activation of the hypoxia-inducible transcription factor HIF-1. She was able to show that in hypoxic cells the induction of tyrosine hydroxylase, the enzyme responsible for the production of cathecolamines necessary for systemic adaptation to oxygen deficiency, is mediated by adenosine but not HIF-1. Dr Gammella also took active part in a collaborative project focusing on the characterization of the molecular events at the basis of the protective effects of hepatic preconditioning. The study demonstrated that the stimulation of the A2A adenosine receptor induce preconditioning in hepatocytes through carbonic anhidrase IX-mediated HIF-1 activation, and consequently increased the tolerance of hepatocytes to ischemia. Furthermore, as the inflammatory microenvironment is characterized by hypoxic conditions, Dr Gammella investigated the interaction between the transcription factors HIF-1 and NF-kB in the modulation of the expression of the transferrin receptor 1 by inflammatory and anti-inflammatory stimuli. Altogether these results highlighted the molecular pathways underlying the important role of adenosine as a molecule able to modulate several signaling pathways and exert protective effects at local and systemic levels.

Elena Gammella maintained her interest in the field of hypoxia during the year she spent at the laboratory of Prof. Gassmann at the University of Zurich. There, she was in charge of a project aimed at the characterization of the synergistic effect of sildenafil and erythopoietin in conditions of endothelial dysfunction induced by hypoxia, an important event in the development of pulmonary hypertension and several other diseases. Dr Gammella was able to demonstrate that the co-treatment with sildenafil and erythropoietin prevented hypoxia-mediated endothelial dysfunction, an important observation for the development of therapeutic strategies aimed at improving endothelial dysfunction in patients affected by this kind of diseases.

In the last years the research activity of Dr. Gammella focused on the regulation of iron metabolism, and in particular of its modifications under conditions of increased erythropoiesis. Dr. Gammella devised and managed a project based on the use of a transgenic mouse line (Tg6) characterized by over-expression of erythropoietin and consequently increased hematocrit. This transgenic mouse line has been developed and characterized at the Department of Physiology of the University of Zurich and thus this project was made possible by the productive (and still ongoing) collaboration initiated by Dr Gammella during her stay in Prof Gassmann's lab. This project highlighted the molecular mechanism of regulation of hepcidin, the key regulator of iron homeostasis, in conditions of elevated and efficient erythropoiesis. She then continued to study the relationship between the iron homeostasis and erythropoiesis, analyzing the molecular

mechanisms at the bases of the regulation of the erythropoietin receptor expression and showing that the erythropoietin action on hepcidin is indirect. This study was possible due to an intensive collaboration with the laboratory of Zurich of Prof. Gassmann and the laboratory of Prof Noguchi at the NHI of Bethesda. This study was also supported by the grant got on the project "Signals and cellular pathways involved in erythropoiesis-dependent regulation of hepcidin, the iron hormone". Dr. Gammella also study alterations of iron metabolism in other pathological conditions; she demonstrated that mithocondrial ferritin (FtMt) has a protective role against the cardiac damage induced by doxorubicin. This study represents the first evidence in vivo of the antioxidant role of FtMt and could be important for the development of new therapies. Recently, she has actively collaborated with the generation of a transgenic mouse line with specific inactivation of ferroportin in macrophages, with the aim to study the role of macrophage iron in different pathological conditions in which the inflammatory response is involved, such as wound healing. She studies also the role of iron metabolism in cholangiocarcinoma. She was responsible for a project, in collaboration with the group of Prof Pier Paolo di Fiore (IFOM), in which they have been characterized new molecular mechanisms at the basis of the iron dependent inhibition of the transferrin receptor in hepatic dells.

**AWARDS**

- 2011 Elena Gammella has qualified in a global competition among young scientist worldwide to participate in the 61st Lindau Nobel Laureates Meeting dedicated to Physiology and Medicine. Lindau June 26 – July 01, 2011

TRAVEL AWARDS

- 2013 Travel Award for the presentation "Liver iron is the primary signal modulating hepcidin expression during chronically elevated erythropoiesis." **Elena Gammella**, Victor Diaz, Stefania Recalcati, Paolo Santambrogio, Arianne Monge-Naldi, Johannes Vogel, Max Gassmann and Gaetano Cairo at the 2013 International BioIron Society Meeting, London, UK May 2013
- 2011 Travel Award for the presentation "Effects of erythropoietin on hepcidin-mediated regulation of iron homeostasis". **Elena Gammella**, Stefania Recalcati, Victor Diaz, Valentina Ceresoli, Domenico Girelli, Paolo Santambrogio, Max Gassmann, Paul Robach, Carsten Lundby Gaetano Cairo at the 2011 International BioIron Society Meeting, Vancouver, BC, May 22-26, 2011

**GRANTS**

- 2016 Collaborator of the project "Evaluating Erthroferrone as a New Marker of Erthropoesis Stimulators Abuse" from PCC (PI Prof. G. Cairo)
- 2016 Principal Investigator of Progetto Ricerca Linea "2": "Role of iron macrophages in wound healing" 12000 euro (15-6-3016000-201)
- 2014 Principal investigator of Progetto di Ricerca Linea "B" "Signal and cellular pathways involved in erythropoiesis-dependent regulation of hepcidin, the iron hormone.
- 2012/2014 Co-investigator of a grant from MIUR- PRIN 2010/2011 "Disordini della regolazione di epcidina e dell'omeostasi del ferro: meccanismi, diagnosi e trattamenti innovativi" (Coordinator Prof P. Arosio)
- 2011 Collaborator of the project "Biosensor-based detection of hepcidin as a new biomarker of erythropoiesis stimulators abuse" from World Doping Agency (PI Prof. G. Cairo)
- 2010/2012 Co-investigator of a grant from MIUR-PRIN 2008 "Effetti dell'eritropoietina sulla regolazione epcidina-dipendente del metabolismo del ferro nell'uomo e nel topo" (Coordinator Prof A. Pietrangelo)
- 2008-2011 Collaborator of lthe project Pfizer with the title "The modulation of pulmonary vascular tone: synergistic effects of sildenafil and erythropoietin?" (PI Prof Max Gassmann and Dr. Louise Ostergaard, University of Zurich)
- 2008 Co-investigator in a grant PUR 2008, Università di Milano, "Basi molecolari della regolazione della TH da parte di un agonista del recettore A2A dell'adenosina in cellule di feocromocitoma" (PI Prof.ssa L. Tacchini)
- 2007 Co-investigator in a grant FIRST 2007, Università di Milano, "Regolazione trascrizionale dell'espressione del recettore della transferrina mediante stimoli infiammatori e anti-infiammatori" (P I. Prof.ssa L. Tacchini

**PROFESSIONAL MEMBERSHIP**

- International BioIron Society

**TEACHING**

- 2017-2018 Insegnamento di Tirocinio primo anno (D74-27) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (30 h)

- 2017-2018 Titolare dell'insegnamento di Patogenesi e Diagnostica – modulo di Patologia Generale (D64-11) nel corso di laurea in Infermieristica (Classe L/SNT3) (D74), presso la sezione di Magenta, (30 h)
- 2016-2017 Titolare dell'insegnamento di Patogenesi e Diagnostica – modulo di Patologia Generale (D64-11) nel corso di laurea in Infermieristica (Classe L/SNT3) (D74), presso la sezione di Magenta, (30 h)
- 2015-2016
    - Insegnamento di Patologia generale, immunologia e storia della medicina– modulo di Patologia Generale (D74-33) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (10 h)
    - Titolare dell'insegnamento di Patogenesi e Diagnostica – modulo di Patologia Generale (D64-11) nel corso di laurea in Infermieristica (Classe L/SNT3) (D74), presso la sezione di Magenta, (30 h)
    - Insegnamento di Tirocinio primo anno (D74-27) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (50h)
- 2013-2014 Insegnamento di Tirocinio primo anno (D74-27) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (50 h)
- 2012-2013
    - Partecipazione come cultore della materia agli esami del Corso di Laurea Magistrale in Alimentazione e Nutrizione Umana, corso integrato di fisiopatologia e genetica delle malattie multifattoriali
    - Tirocinio primo anno (D74-27) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (50 h)
- 2011-2012
    - Tirocinio primo anno (D74-27) nel corso di laurea in Tecniche di Laboratorio Biomedico (Classe L/SNT3) (D74), (15 h)