

Curriculum Vitae

Personal information

First name(s)/Surname(s) Emanuela Tolosano

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Nationality Italian

Date of birth 13/10/1965

Gender Female

Education and training

1988: Graduated in Biology, University of Torino (110 cum laude), Italy

1994: PhD in Endocrinological and Metabolic Sciences, University of Milano, Italy

Level in national or international classification

1994-2000: Postdoctoral fellow, Dept. of Genetics, Biology and Biochemistry, University of Torino. Research programs: (i) characterization of the regulatory regions of the hemopexin gene; (ii) generation and characterization of hemopexin knock-out mouse model.

2001-2005: Assistant Professor, University of Torino, School of Medicine.

2005-2017: Associate Professor Biology, University of Torino, School of Medicine.

Since December 2017: Full Professor Biology, University of Torino, School of Medicine.

Work experience

Occupation or position held Full Professor of Molecular Genetics

Main activities and responsibilities

- Research group leader
- Teacher
- Coordinator of the Master Programme in Molecular Biotechnology, University of Torino, Italy

Name and address of employer University of Torino, Via Verdi 8, Torino, Italy

Type of business or sector Academic

Other activities

- Reviewer for scientific journals including *Blood*, *Haematologica*, *Journal of Clinical Investigation*, *Cardiovascular Research*, *Anti-Oxidants and Redox Signaling*, *Circulation*, *Molecular Medicine*, *Critical Care*, *Nature Communications*
- Reviewer for public and private funding agencies including Cineca, MRC (Medical Research Council, UK), Inserm (Institut national de la santé et de la recherche médicale, France), ETH (Swiss Federal Institute of Technology, Zurich, Switzerland)

Personal skills and competences

Mother tongue **Italian**

Other language(s)

English (Good)

Memberships

- American Society of Hematology (ASH)
- European Iron Club
- Biolron Society
- ABCD, Associazione di Biologia Cellulare e del Differenziamento
- AIBG, Associazione Italiana di Biologia e Genetica

Participation in relevant research contracts with companies and/or administration (2014-2019)

Title of contract: *The heme exporter FLVCR1 as a drugable target to control cell proliferation in colon cancer*

2014-2017

Financing: 190000

From: AIRC

Principal Investigator: Emanuela Tolosano

Title of contract: *Assessment of therapeutic potentials of hemopexin/haptoglobin I a mouse model of sickle cell disease*

2015-2016

Financing: 60000

From: CSL Berhing

Principal Investigator: Emanuela Tolosano

Title of contract: Modulation of intracellular heme in cancer cells to control proliferation and/or sensitivity to chemotherapy

2017-2019

Financing: 260000 Euro

From: AIRC

Principal Investigator: Emanuela Tolosano

Title of contract: Diagnosi e terapia del cancro al colon-retto: un approccio innovativo basato sul metabolismo del ferro-eme

2018-2020

Financing: 45000 Euro

From: Fondazione CRT

Principal Investigator: Emanuela Tolosano

Patents

M.G. Faga; A. Bellosi; F. Altruda; S. Carossa; S. Coluccia; G. Martra; F. Mussano; E. Tolosano, "Impianto dentale od osseo, in particolare in nanocomposito allumina-zirconia", Italian patent N. TO2012A000029, 2012

Scientific activity

ET significantly contributed to our knowledge of the mechanisms of free heme toxicity and protective role of plasma scavengers haptoglobin and hemopexin in the cardiovascular system (*Circulation* 2013, *Free Radical Biology and Medicine* 2017) and in the immune system (*Blood* 2016). She collaborates with CSL Berhing for the development of drugs for the prevention/treatment of heme damage in hemolytic disorders (sickle cell disease). Recently, she focused her research on cellular heme trafficking by studying the heme exporter FLVCR1. She identified a mitochondrial isoform of FLVCR1 gene (*Journal of Clinical Investigation* 2012) and contributed to the clarification of the role of heme export, associated to heme biosynthesis, in the liver (*Gastroenterology* 2014), intestine (*Antioxidants & Redox Signaling* 2015), erythroid compartment (*Haematologica* 2015) and endothelial compartment (*Cell Death & Differentiation* 2017). She is actually working on the role of heme in the control of cellular energetic metabolism in tumors and in tumor-associated vessels.

10 selected Publications 2014-2019

1. Vinchi F., Ingoglia G., Chiabrando D., Mercurio S., Turco E., Silengo L., Altruda F., **Tolosano E.**, "Heme Exporter FLVCR1a Regulates Heme Synthesis and Degradation and Controls Activity of Cytochromes P450", *Gastroenterology* 146: 1325–1338 (2014).
2. Fiorito V., Neri F., Pala V., Silengo L., Oliviero S., Altruda F., **Tolosano E.**, "Hypoxia controls Flvcr1 gene expression in Caco2 cells through HIF2 α and ETS1", *BBA - Gene Regulatory Mechanisms* 1839(4): 259-264 (2014).
3. Mercurio S, Petrillo S, Chiabrando D, Bassi ZI, Gays D, Camporeale A, Vacaru A, Miniscalco B, Valperga G, Silengo L, Altruda F, Baron MH, Santoro MM, **Tolosano E.**, "Heme exporter Flvcr1 regulates expansion and differentiation of committed erythroid progenitors by controlling intracellular

- heme accumulation", *Haematologica* 100(6):720-9 (2015).
4. Fiorito V., Forni M., Silengo L., Altruda F., **Tolosano E.**, "Crucial role of Flvcr1a in the maintenance of intestinal heme homeostasis", *Antioxidants & Redox Signaling* 23(18): 1410-1423 (2015).
 5. Vinchi F., Costa da Silva M., Ingoglia G., Petrillo S., Brinkman N., Zuercher A., Cerwenka A., **Tolosano E.**, Muckenthaler M.U., "Hemopexin therapy reverts heme-induced pro-inflammatory phenotypic switching of macrophages in a mouse model of sickle cell disease", *Blood* 127(4): 473-486 (2016).
 6. Chiabrando D., Castori M., Di Rocco M., Voigt M., Gießelmann S., Di Capua M., Madeo A., Grammatico P., Hübner C.A., Altruda A., Silengo L., **Tolosano E.**, Kurth I., "MUTATIONS IN THE HEME EXPORTER FLVCR1 CAUSE SENSORY NEURODEGENERATION WITH LOSS OF PAIN PERCEPTION", *PLOS Genetics* 12(12):e1006461. doi: 10.1371/journal.pgen.1006461 (2016).
 7. Ingoglia G., Sag C.M., Rex N., De Franceschi L., Vinchi F., Cimino J., Petrillo S., Wagner S., Silengo L., Altruda F., Maier L., Hirsch E., Ghigo A. and **Tolosano E.**, "Hemopexin counteracts systolic dysfunction induced by heme-driven oxidative stress", *Free Radical Biology and Medicine*, 108: 452-464 (2017).
 8. Petrillo S., Chiabrando D., Genova T., Fiorito V., Ingoglia G., Vinchi F., Mussano F., Carossa S., Silengo L., Altruda F., Merlo G.R., Munaron L., **Tolosano E.**, "Heme accumulation in endothelial cells impairs angiogenesis by triggering paraptosis", *Cell Death & Differentiation* 25:573-588 (2018) doi: 10.1038/s41418-017-0001-7.
 9. Destefanis F., Fiorito V. Altruda F. and **Tolosano E.**, "Investigating the Connection Between Endogenous Heme Accumulation and COX2 Activity in Cancer Cells", *Front. Oncol.* 9:162. doi: 10.3389/fonc.2019.00162 (2019).
 10. Bertino F., Firestone K., Bellacchio E., Jackson K.E., Asamoah A., Hersh J., Fiorito V., Destefanis F., Gonser R., Tucker M.E., Altruda F., **Tolosano E.**, Chiabrando D., "Heme and sensory neuropathy: insights from novel mutations in the heme exporter FLVCR1", *Pain* 2019 Aug 10. doi: 10.1097/j.pain.0000000000001675.

Bibliometrics

Number of Full Papers (2014-2019): 24 (21 on journals with IF)
 Number of papers as Last/Co-last author (2014-2019): 9 (38%)
 Number of Reviews/Editorials (2014-2019): 7 (4 on journals with IF)
 Number of Reviews/Editorials as First/Last (2014-2019): 5
 Mean IF (2014-2019): 6,014 (IF of publication year)

h-index: 27 (Harzing)
 g-index: 54
 i10-index: 51

Recent International Meeting/Workshops (as Invited Speaker)

- European Iron Club Meeting, September 11-14, 2014, Verona, Italy
- CSL Behring Workshop "Haptoglobin/Hemopexin intervention in CPB-assisted cardiac surgery and Sickle Cell Disease: Rationale and Clinical Development Perspectives", November 12-14, 2014, Bern, Switzerland
- American Society of Hematology (ASH), 57th Annual Meeting&Exposition, December 5-8, 2015, Orlando FL, USA
- 3rd Jena HHDP (Heme and Heme Degradation Products) Symposium, May 25-26, 2016, Jena, Germany
- 23rd Congress of European Hematology Association (EHA), June 14-17, 2018, Stockholm, Sweden
- 30th Jena HHDP (Heme and Heme Degradation Products) Workshop, November 16, 2018, Jena, Germany

Academic activity

ET teaches Biology and Genetics at the University of Torino (Italy) in: (i) Level Degree in Biotechnology, (ii) Degree in Medicine and Surgery, (iii) Master Program in Molecular Biotechnology, (iv) Master Program in Medical Biotechnology and (v) Master Program in Clinical Chemistry.
 She is tutor of Master and Doctorate students for the preparation of experimental thesis.
 She is the Coordinator of the Master Program in Molecular Biotechnology (University of Torino (Italy))

Torino, October 4, 2019



Emanuela Tolosano