



CURRICULUM VITAE

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Fiorella Altruda

- Born in Torino, the 12th of August 1952
- Ph D in Biology , University of Torino, July 1975
- Full Professor of Molecular Genetics

ACADEMIC APPOINTMENTS

From 1987 to 1994: Associate Professor in Genetics

1994-at present: Full Professor in Molecular Genetics, University of Torino, School of Medicine

From 2005-2015: President of the School of Biotechnology, University of Torino

From 2010: Coordinator of the European Master Program in BioHealth Computing for the University of Torino

From 2002 Scientific member of the Consorzio Interuniversitario Biotecnologie (CIB) and member of the Executive Board from 2014

From 2006: Director of the Center for in vivo functional Genomics, University of Torino

From 2009-2015: University coordinator of the Polo di Innovazione- Biotecnologie (BioPmed), Regione Piemonte

From 2013: Director of the Molecular Biotechnology Center, University of Torino

From 2013: in charge of the organization of the Cell Factory, University of Torino

From 2015: Member of the Senate of the University of Torino

NON ACADEMIC APPOINTMENTS

From 2012-2016: Member of the Director Board of the University Federico II, Naples

From 2012: member of the Scientific Board of CentroScienza Foundation and from 2014 member of the Executive Board

From 2015: President of the Bioindustry Park S.p.A. Colletterto Giacosa (Torino)

PAST RELEVANT RESEARCH EXPERIENCE IN FOREIGN INSTITUTION

November 1976-December 1977	Postdoctoral fellow- Dept. of Molecular Biophysics and Biochemistry, Yale University, USA
January-April 1981	Visiting fellow- Dept. of Animal Embryology, University of Geneva, Switzerland
January 1982-December 1982	Postdoctoral fellow, European Molecular Biology Laboratory, Heidelberg, Germany
October-December 1984	Visiting fellow- European Molecular Biology Laboratory, Heidelberg, Germany
July-September 1989	Visiting scientist, Scripps Clinic and Research Laboratory, La Jolla, USA

CURRENT RESEARCH INTEREST

Stem cells and regenerative medicine research is particularly active in the lab and regards mainly the use of stem cells for the cure of liver diseases. We have previously demonstrated that functional hepatocytes can be generated from mouse germline cell-derived pluripotent stem cells and that these cells can engraft in and participate to liver regeneration in vivo. Our aim is to generate functional hepatocytes from human stem cells in vitro, and research is currently focused on:

- a) Generating functional hepatocytes from human stem cells (human liver stem cells);
- b) Correcting gene deficiency, responsible for liver metabolic diseases, with stem cells as platform for gene delivery or with microvesicles for delivery of therapeutic agents;
- c) Studying the long term engraftment of stem cell-derived hepatocytes in the liver in mice models of liver diseases.

Another research area regards studying the role of an RNA-binding protein, ESRP1 in neoplastic transformation. We came across this gene in a large-scale cDNA microarray analysis on mouse embryonic stem cells aiming at finding novel genes involved in stemness- and pluripotency-maintenance. ESRP1 is responsible for epithelial differentiation and we are now studying:

- a) The role of ESRP1, by modulating its expression, in the neoplastic transformation of epithelial cells;
- b) Tumor growth (primary and metastatic) in vivo in immunocompromised animals.

Patents:

1) 19 December 2002 (WO2004056176)

“MELUSIN, A MUSCLE SPECIFIC PROTEIN, AS A DRUG TARGET FOR PREVENTION AND TREATMENT OF HEART FAILURE AND APPLICATIONS THEREOF”

Il brevetto è di proprietà dell'Università di Torino e gli inventori sono: Mara Brancaccio, Lorenzo Silengo, Fiorella Altruda, Giuseppe Lembo, Luigi Fratta, e Guido Tarone.

2) 17 Gennaio 2012 M.G. Faga, A. Bellosi, F. Altruda, S. Carossa, S. Coluccia, G. Martra, F. Mussano, E. Tolosano (2012). Impianto dentale od osseo, in particolare in nanocomposito allumina-zirconia. TO2012A000029, 50% Università degli Studi di Torino, 50% CNR

Fiorella Altruda- Relevant Publications 2010-2016

1) Fagoonee S, Hobbs RM, De Chiara L, Cantarella D, Piro RM, Tolosano E, Medico E, Provero P, Pandolfi PP, Silengo L, Altruda F.

Generation of functional hepatocytes from mouse germ line cell-derived pluripotent stem cells in vitro. *Stem Cells Dev.* 2010 Aug;19(8):1183-94.

2) Roetto A, Di Cunto F, Pellegrino RM, Hirsch E, Azzolino O, Bondi A, Defilippi I, Carturan S, Miniscalco B, Riondato F, Cilloni D, Silengo L, Altruda F, Camaschella C, Saglio G.

Comparison of 3 Tfr2-deficient murine models suggests distinct functions for Tfr2-alpha and Tfr2-beta isoforms in different tissues.

Blood. 2010 Apr 22;115(16):3382-9. Epub 2010 Feb 23.

3) Canavese M, Altruda F, Silengo L.

Therapeutic efficacy and immunological response of CCL5 antagonists in models of contact skin reaction. *PLoS One.* 2010 Jan 15;5(1):e8725.

4) Ciraolo E, Morello F, Hobbs RM, Wolf F, Marone R, Iezzi M, Lu X, Mengozzi G, Altruda F, Sorba G, Guan K, Pandolfi PP, Wymann MP, Hirsch E.

Essential role of the p110beta subunit of phosphoinositide 3-OH kinase in male fertility.

Mol Biol Cell. 2010 Mar;21(5):704-11. Epub 2010 Jan 6.

5) Spiller F, Costa C, Souto FO, Vinchi F, Mestriner FL, Laure HJ, Alves-Filho JC, Freitas A, Rosa JC, Ferreira SH, Altruda F, Hirsch E, Greene LJ, Tolosano E, Cunha FQ.

Inhibition of Neutrophil Migration by Hemopexin Leads to Increased Mortality Due to Sepsis in Mice. *Am J Respir Crit Care Med.* 2010 Oct 22.

6) Canavese M, Altruda F, Ruzicka T, Schaubert J.

Vascular endothelial growth factor (VEGF) in the pathogenesis of psoriasis--a possible target for novel therapies?

J Dermatol Sci. 2010 Jun;58(3):171-6. Epub 2010 Apr 9. Review.

- 7)** Canavese M, Altruda F, Silengo L, Castiglioni V, Scanziani E, Radaelli E.
Clinical, pathological and immunological features of psoriatic-like lesions affecting keratin 14-vascular endothelial growth factor transgenic mice.
Histol Histopathol. 2011 Mar;26(3):285-296.
- 8)** Ognibene M, Barbieri O, Vanni C, Mastracci L, Astigiano S, Emionite L, Salani B, Fedele M, Resaz R, Tenca C, Fais F, Sabatini F, De Santanna A, Altruda F, Varesio L, Hirsch E, Eva A. High frequency of development of B cell lymphoproliferation and diffuse large B cell lymphoma in Dbl knock-in mice.
J Mol Med. 2011 May;89(5):493-504.
- 9)** Perino A, Ghigo A, Ferrero E, Morello F, Santulli G, Baillie GS, Damilano F, Dunlop AJ, Pawson C, Walser R, Levi R, Altruda F, Silengo L, Langeberg LK, Neubauer G, Heymans S, Lembo G, Wymann MP, Wetzker R, Houslay MD, Iaccarino G, Scott JD, Hirsch E.
Integrating Cardiac PIP(3) and cAMP Signaling through a PKA Anchoring Function of p110 γ .
Mol Cell. 2011 Apr 8;42(1):84-95.
- 10)** Costa C, Germena G, Martin-Conte EL, Molineris I, Bosco E, Marengo S, Azzolino O, Altruda F, Ranieri VM, Hirsch E.
The RacGAP ArhGAP15 is a master negative regulator of neutrophil functions.
Blood. 2011 Jul 28;118(4):1099-108.
- 11)** Morello N, Bianchi FT, Marmiroli P, Tonoli E, Rodriguez Menendez V, Silengo L, Cavaletti G, Vercelli A, Altruda F, Tolosano E.
A Role for Hemopexin in Oligodendrocyte Differentiation and Myelin Formation
PLoS One. 2011;6(5):e20173.
- 12)** Fagoonee S, Pellicano R, Silengo L, Altruda F.
Potential applications of germline cell-derived pluripotent stem cells in organ regeneration.
Organogenesis. 2011 Apr 1;7(2):116-22. doi: 10.4161/org.7.2.16284.
- 13)** Canavese M, Altruda F, Silengo L, Castiglioni V, Scanziani E, Radaelli E.
Clinical, pathological and immunological features of psoriatic-like lesions affecting keratin 14-vascular endothelial growth factor transgenic mice.
Histol Histopathol. 2011 Mar;26(3):285-296.
- 14)** Fiorito V, Geninatti Crich S, Silengo L, Altruda F, Aime S, Tolosano E.
Assessment of iron absorption in mice by ICP-MS measurements of (57)Fe levels.
Eur J Nutr. 2012 Oct;51(7):783-9. Epub 2011 Oct 19.
- 15)** Robin M, Hobbs, Sharmila Fagoonee, Antonella Papa, Kaitlyn Webster, Fiorella Altruda, Ryuichi Nishinakamura, Li Chai, Pier Paolo Pandolfi
Functional Antagonism between Sall4 and Plzf Defines Germline Progenitors
Cell Stem Cell, Volume 10, Issue 3, 284-298, 2 March 2012.
- 16)** Lorenzo N, Barberá A, Domínguez MC, Torres AM, Hernandez MV, Hernandez I, Gil R, Ancizar J, Garay H, Reyes O, Altruda F, Silengo L, Padrón G.
Therapeutic effect of an altered peptide ligand derived from heat-shock protein 60 by suppressing of inflammatory cytokines secretion in two animal models of rheumatoid arthritis
Autoimmunity 2012 Sep;45(6):449-59. doi: 10.3109/08916934.2012.697592. Epub 2012 Jul 20
- 17)** Giorgio Merlo, Fiorella Altruda, Valeria Poli (2012). Mice as experimental organisms.
CHICHESTER:JOHN WILEY & SONS, LTD., p. 1-11, 2012.
- 18)** Chiabrando D, Marro S, Mercurio S, Giorgi C, Petrillo S, Vinchi F, Fiorito V, Fagoonee S, Camporeale A, Turco E, Merlo GR, Silengo L, Altruda F, Pinton P, Tolosano E.
The mitochondrial heme exporter FLVCR1b mediates erythroid differentiation.

J Clin Invest. 2012 Dec 3;122(12):4569-79. doi: 10.1172/JCI62422. Epub 2012 Nov 26

19) Chiabrando D, Fiorito V, Marro S, Silengo L, Altruda F, Tolosano E.

Cell-specific regulation of Ferroportin transcription following experimentally-induced acute anemia in mice. *Blood Cells Mol Dis.* 2013 Jan;50(1):25-30. doi: 10.1016/j.bcmd.2012.08.002. Epub 2012 Aug 24

20) Vinchi F, De Franceschi L, Ghigo A, Townes T, Cimino J, Silengo L, Hirsch E, Altruda F, Tolosano E. Hemopexin Therapy Improves Cardiovascular Function by Preventing Heme-Induced Endothelial Toxicity in Mouse Models of Hemolytic Diseases.

Circulation. 2013 Mar 26;127(12):1317-29. doi: 10.1161/CIRCULATIONAHA

21) Fiorito V, Geninatti Crich S, Silengo L, Aime S, Altruda F, Tolosano E.

Lack of Plasma Protein Hemopexin Results in Increased Duodenal Iron Uptake. *PLoS One.* 2013 Jun 27;8(6):e68146.

22) Sharmila Fagoonee, Claudia Bearzi, Ferdinando Di Cunto, John G.Clohessy, Roberto Rizzi, Marcus O. Reschke, Emanuela Tolosano, Paolo Provero, Pier Paolo Pandolfi, Lorenzo Silengo and Fiorella Altruda The RNA binding protein ESRP1 fine-tunes the expression of pluripotency-related factors in mouse embryonic stem cells

PLoS One, 2013 Aug 27;8 (8):e72300.DOI: 10.1371.

23) Letizia De Chiara, Sharmila Fagoonee, Andrea Ranghino, Stefania Bruno, Giovanni Camussi, Emanuela Tolosano, Lorenzo Silengo and Fiorella Altruda

Renal cells from germline stem cells protect against kidney injury

J Am Soc Nephrol. 2014 Feb;25(2):316-28. doi: 10.1681/ASN.2013040367.

24) Vallée A, Faga MG, Mussano F, Catalano F, Tolosano E, Carossa S, Altruda F, Martra G.

Alumina-zirconia composites functionalized with laminin-1 and laminin-5 for dentistry: Effect of protein adsorption on cellular response.

Colloids Surf B Biointerfaces. 2013 Oct 17;114C:284-293. doi: 10.1016/j.colsurfb.2013.09.053.

25) Rolla S, Ingoglia G, Bardina V, Silengo L, Altruda F, Novelli F, Tolosano E.

Acute-Phase Protein Hemopexin Is a Negative Regulator of Th17 Response and Experimental Autoimmune Encephalomyelitis Development.

J Immunol. 2013 Dec 1;191(11):5451-9. doi: 10.4049/jimmunol.1203076. Epub 2013 Oct 23.

26) Juan Valiente, Diana García del Barco, Gerardo Guillén, Héctor Santana,

Fiorella Altruda, Guido Tarone, Lorenzo Silengo, Jorge Berlanga

Cardiotropic effect of GHRP-6: in vivo characterization by echocardiography

Biotechnología Aplicada 2013;30:285-289

27) Maccarinelli F, Gammella E, Asperti M, Regoni M, Biasiotto G, Turco E, Altruda

F, Lonardi S, Cornaghi L, Donetti E, Recalcati S, Poli M, Finazzi D, Arosio P,

Cairo G. Mice lacking mitochondrial ferritin are more sensitive to

doxorubicin-mediated cardiotoxicity. *J Mol Med (Berl).* 2014 Apr 13. [Epub ahead of print] PubMed PMID: 24728422.

28) 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.

Biochim Biophys Acta. 2014 Apr;1839(4):259-64. doi: 10.1016/j.bbagr.2014.02.010.

Epub 2014 Feb 24. PubMed PMID: 24576667.

29) 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.* 2014 Jan 31. pii:

S0016-5085(14)00144-9. doi: 10.1053/j.gastro.2014.01.053. [Epub ahead of print]

PubMed PMID: 24486949.

30) Rusconi F, Paganini L, Braida D, Ponzoni L, Toffolo E, Maroli A, Landsberger N, Bedogni F, Turco E, Pattini L, Altruda F, De Biasi S, Sala M, Battaglioli E.

LSD1 Neurospecific Alternative Splicing Controls Neuronal Excitability in Mouse Models of Epilepsy. *Cereb Cortex*. 2014 Apr 15. [Epub ahead of print]

31) Antonini D, Sirico A, Aberdam E, Ambrosio R, Campanile C, Fagoonee S, Altruda F, Aberdam D, Brissette JL, Missero C.

A composite enhancer regulates p63 gene expression in epidermal morphogenesis and in keratinocyte differentiation by multiple mechanisms.

Nucleic Acids Res. 2015 Jan 30;43(2):862-74. doi: 10.1093/nar/gku1396. Epub 2015 Jan 7

32) 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. 2015 Mar 20. pii: haematol.2014.114488. [Epub ahead of print]

33) Sharmila Fagoonee^{1*}, Elvira S. Famulari², Lorenzo Silengo², Emanuela Tolosano², Fiorella Altruda^{2*}

Long term liver engraftment of functional hepatocyte precursors obtained from germline cell-derived pluripotent stem cells

PLoS One. 2015 Aug 31;10(8):e0136762. doi: 10.1371/journal.pone.0136762. eCollection 2015.

34) Voena C, Menotti M, Mastini C, Di Giacomo F, Longo DL, Castella B, Merlo ME, Ambrogio C, Wang Q, Minero VG, Poggio T, Martinengo C, D'Amico L, Panizza E, Mologni L, Cavallo F, Altruda F, Butaney M, Capelletti M, Inghirami G, Jänne PA, Chiarle R.

Efficacy of a Cancer Vaccine against ALK-Rearranged Lung Tumors.

Cancer Immunol Res. 2015 Dec;3(12):1333-43. doi: 10.1158/2326-6066.CIR-15-0089. Epub 2015 Sep 29.

35) Voena C, Varesio LM, Zhang L, Menotti M, Poggio T, Panizza E, Wang Q, Minero VG, Fagoonee S, Compagno M, Altruda F, Monti S, Chiarle R.

Oncogenic ALK regulates EMT in non-small cell lung carcinoma through repression of the epithelial splicing regulatory protein 1.

Oncotarget. 2016 Apr 23. doi: 10.18632/oncotarget.8955. [Epub ahead of print]

36) Lorenzo N, Altruda F, Silengo L, Del Carmen Dominguez M.

APL-1, an altered peptide ligand derived from heat-shock protein, alone or combined with methotrexate attenuates murine collagen-induced arthritis.

Clin Exp Med. 2016 May 9. [Epub ahead of print]

37) Giuseppe Orlando, Giuseppe Remuzzi and David F Williams Editors

Chapter's Title. In: *Kidney Transplantation, Bioengineering and Regeneration*. Giuseppe Orlando, Giuseppe Remuzzi, David F Williams, Eds. Associated Press, NY, USA. In press

38) Fagoonee S, Famulari ES, Silengo L, Camussi G, Altruda F.

Prospects for Adult Stem Cells in the Treatment of Liver Diseases.

Fagoonee S, Famulari ES, Silengo L, Camussi G, Altruda F.

Stem Cells Dev. 2016 Sep 7. [Epub ahead of print]