

Curriculum vitae ARESE MARCO

March 7th, 2023

Personal details

Born in: Pinerolo-TO-Italy

Nationality: Italian

Email: marco.arese@unito.it

Website: <https://medchirurgiasl.campusnet.unito.it/do/docenti.pl/Alias?marco.arese#tab-profilo>

ORCID ID: 0000-0002-7384-9406 ; Scopus ID: 7004105670 Researcher ID: J-6119-2013

Educations

Oct 1996 Jul 1999 Specialization School in Clinical Biochemistry Università degli Studi di Torino

Oct 1988 Jul 1992 MSc in Biology Università degli Studi di Torino

Professional experiences and current position

Mar 2005 March 2023 ASSOCIATE PROFESSOR Università degli Studi di Torino

Feb 2000 Mar 2005 ASSISTANT PROFESSOR Università degli Studi di Torino

Dec 1996 Feb 2000 Research Scientist New York University Medical Center

Sep 1992 Nov 1996 RESEARCH FELLOW Università degli Studi di Torino

Teaching activity:

- ADE - INTRODUCTION TO MEDICAL BIOCHEMISTRY (SCB0309)
MedInTO Medicine and Surgery
- Basi biochimico-molecolari del metabolismo (MSL0410)
Laurea magistrale in Medicina e Chirurgia San Luigi Gonzaga
- Biochemical and Molecular Basis of Metabolism (SCB0314)
MedInTO Medicine and Surgery
- Biochemical and Molecular Basis of Metabolism - Module of Biochemistry (SCB0314C)
MedInTO Medicine and Surgery
- Biochimica (MSL0426G)
Laurea magistrale in Medicina e Chirurgia San Luigi Gonzaga
- Exploiting neuronal biology to fight tumor progression. Instructor prof Marco Arese
Programma MD-PhD della Scuola di Medicina
- Preparatory biochemistry (SCB0313)
MedInTO Medicine and Surgery
- Scienze psichiatriche (SCB0063)
Laurea magistrale in Medicina e Chirurgia San Luigi Gonzaga

Research main topics

- I dedicated my early scientific work to various mediators involved in vascular biology. During my experience abroad (New York) I worked on the cellular transforming role of intranuclear forms of FGF-2.
- Upon returning to Italy I devoted myself to the study of the extra-neuronal functions of two synaptic proteins, Neurexin and Neuroligin, originally isolated from the synapses of the central nervous system. I provided the first evidence that these proteins are expressed by endothelial and smooth muscle cells and modulate physiological angiogenesis
- In the last ten years I studied the role of Neuroligin as a tumor-produced protein and its role in the progression of Colorectal cancer (CRC). When discovered at the metastatic stage, CRC is still incurable. Despite recent improvements in precision treatment for this disease, new molecular targets and prognostic/predictive indicators are highly needed. At the synapse, Neuroligin interacts with the tumor suppressor adenomatous polyposis Coli (APC), which in turn is highly involved in the development of CRC and is a major player in the WNT/beta-catenin pathway. Neuroligin is expressed in human CRC, including clusters of aggressive migratory (budding) single tumor cells and vascular emboli. Moreover Neuroligin induces cancer cells intra/extravasation and in vivo metastatization. Our goal now is to investigate the mechanistic involvement of Neuroligin in the WNT pathway and in the

promotion of CRC cell metastatization, as well as its synergy/antagonism with anti-WNT drugs, in the hope to obtain future therapeutic leads.

Bibliometry (1992-present)

h index: 24 (www.scopus.com)

10 best publications

- 1) Pergolizzi M, Bizzozero L, Maione F, Maldi E, Isella C, Macagno M, Mariella E, Bardelli A, Medico E, Marchiò C, Serini G, Di Nicolantonio F, Bussolino F, Arese M. The neuronal protein Neuroligin 1 promotes colorectal cancer progression by modulating the APC/ β -catenin pathway. *J Exp Clin Cancer Res.* 2022 Sep 2;41(1):266. doi: 10.1186/s13046-022-02465-4. PMID: 36056393; PMCID: PMC9438340.
- 2) Bizzozero L, Pergolizzi M, Pascal D, Maldi E, Villari G, Erriquez J, Volante M, Serini G, Marchiò C, Bussolino F, Arese M. Tumoral Neuroligin 1 Promotes Cancer-Nerve Interactions and Synergizes with the Glial Cell Line-Derived Neurotrophic Factor. *Cells.* 2022 Jan 14;11(2):280. doi: 10.3390/cells11020280. PMID: 35053395; PMCID: PMC8774081.
- 3) Arese M, Bussolino F, Pergolizzi M, Bizzozero L, Pascal D. Tumor progression: the neuronal input. *Ann Transl Med.* 2018 Mar;6(5):89. doi:10.21037/atm.2018.01.01. PMID: 29666812; PMCID: PMC5890045.
- 4) Samarelli AV, Riccitelli E, Bizzozero L, Silveira TN, Seano G, Pergolizzi M, Vitagliano G, Cascone I, Carpentier G, Bottos A, Primo L, Bussolino F, Arese M. Neuroligin 1 induces blood vessel maturation by cooperating with the $\alpha 6$ integrin. *J Biol Chem.* 2014 Jul 11;289(28):19466-76. PMID: 24860089; PMCID: PMC4094057.
- 5) Graziano S, Marchiò S, Bussolino F, Arese M. A peptide from the extracellular region of the synaptic protein α Neurexin stimulates angiogenesis and the vascular specific tyrosine kinase Tie2. *Biochem Biophys Res Commun.* 2013 Mar 22;432(4):574-9. doi: 10.1016/j.bbrc.2013.02.045. Epub 2013 Feb 26. PMID: 23485462.
- 6) Rissone A, Foglia E, Sangiorgio L, Cermenati S, Nicoli S, Cimbri S, Beltrame M, Bussolino F, Cotelli F, Arese M. The synaptic proteins β -neurexin and neuroligin synergize with extracellular matrix-binding vascular endothelial growth factor during zebrafish vascular development. *Arterioscler Thromb Vasc Biol.* 2012 Jul;32(7):1563-72. doi: 10.1161/ATVBAHA.111.243006. Epub 2012 Apr 19. PMID: 22516065.
- 7) Bottos A, Rissone A, Bussolino F, Arese M. Neurexins and neuroligins: synapses look out of the nervous system. *Cell Mol Life Sci.* 2011 Aug;68(16):2655-66. doi: 10.1007/s00018-011-0664-z. Epub 2011 Mar 11. PMID: 21394644.
- 8) Bottos A, Destro E, Rissone A, Graziano S, Cordara G, Assenzio B, Cera MR, Mascia L, Bussolino F, Arese M. The synaptic proteins neurexins and neuroligins are widely expressed in the vascular system and contribute to its functions. *Proc Natl Acad Sci U S A.* 2009 Dec 8;106(49):20782-7. doi:10.1073/pnas.0809510106. Epub 2009 Nov 19. PMID: 19926856; PMCID: PMC2791601
- 9) Arese M, Chen Y, Florkiewicz RZ, Gualandris A, Shen B, Rifkin DB. Nuclear activities of basic fibroblast growth factor: potentiation of low-serum growth mediated by natural or chimeric nuclear localization signals. *Mol Biol Cell.* 1999 May;10(5):1429-44. doi: 10.1091/mbc.10.5.1429. PMID: 10233154; PMCID: PMC25296.
- 10) Bussolino F, Arese M, Montrucchio G, Barra L, Primo L, Benelli R, Sanavio F, Aglietta M, Ghigo D, Rola-Pleszczynski MR, et al. Platelet activating factor produced in vitro by Kaposi's sarcoma cells induces and sustains in vivo angiogenesis. *J Clin Invest.* 1995 Aug;96(2):940-52. doi: 10.1172/JCI118142. PMID: 7543496; PMCID: PMC185282.

More relevant publications in the last 5 yrs (2018-2022)

1: Arese M, Bussolino F, Pergolizzi M, Bizzozero L. An Overview of the Molecular Cues and Their Intracellular Signaling Shared by Cancer and the Nervous System: From Neurotransmitters to Synaptic Proteins, Anatomy of an All-Inclusive Cooperation. *Int J Mol Sci.* 2022 Nov 24;23(23):14695. doi: 10.3390/ijms232314695. PMID: 36499024; PMCID: PMC9739679.

2: Pergolizzi M, Bizzozero L, Maione F, Maldi E, Isella C, Macagno M, Mariella E, Bardelli A, Medico E, Marchiò C, Serini G, Di Nicolantonio F, Bussolino F, Arese M. The neuronal protein Neuroligin 1 promotes colorectal cancer progression by modulating the APC/ β -catenin pathway. *J Exp Clin Cancer Res.* 2022 Sep 2;41(1):266. doi: 10.1186/s13046-022-02465-4. PMID: 36056393; PMCID: PMC9438340.

3: Bizzozero L, Pergolizzi M, Pascal D, Maldi E, Villari G, Erriquez J, Volante M, Serini G, Marchiò C, Bussolino F, Arese M. Tumoral Neuroligin 1 Promotes Cancer-Nerve Interactions and Synergizes with the Glial Cell Line-Derived Neurotrophic Factor. *Cells.* 2022 Jan 14;11(2):280. doi: 10.3390/cells11020280. PMID: 35053395; PMCID: PMC8774081.

4: Camillo C, Facchinello N, Villari G, Mana G, Gioelli N, Sandri C, Astone M, Tortarolo D, Clapero F, Gays D, Oberkersch RE, Arese M, Tamagnone L, Valdembri D, Santoro MM, Serini G. LPHN2 inhibits vascular permeability by

differential control of endothelial cell adhesion. *J Cell Biol.* 2021 Nov 1;220(11):e202006033. doi: 10.1083/jcb.202006033. Epub 2021 Sep 28. PMID: 34581723; PMCID: PMC8480966.

5: Gualandris A, Noghero A, Cora' D, Astanina E, Arese M, Bussolino F. Role of TGF β 1 and WNT6 in FGF2 and BMP4-driven endothelial differentiation of murine embryonic stem cells. *Angiogenesis.* 2022 Feb;25(1):113-128. doi: 10.1007/s10456-021-09815-4. Epub 2021 Sep 3. PMID: 34478025; PMCID: PMC8813801.

6: Amatu A, Schirripa M, Tosi F, Lonardi S, Bencardino K, Bonazzina E, Palmeri L, Patanè DA, Pizzutilo EG, Mussolin B, Bergamo F, Alberti G, Intini R, Procaccio L, Arese M, Marsoni S, Nichelatti M, Zagonel V, Siena S, Bardelli A, Loupakis F, Di Nicolantonio F, Sartore-Bianchi A, Barault L. High Circulating Methylated DNA Is a Negative Predictive and Prognostic Marker in Metastatic Colorectal Cancer Patients Treated With Regorafenib. *Front Oncol.* 2019 Jul 12;9:622. doi: 10.3389/fonc.2019.00622. PMID: 31355139; PMCID: PMC6640154.

7: Pergolizzi M, Bizzozero L, Riccitelli E, Pascal D, Samarelli AV, Bussolino F, Arese M. Modulation of Angiopoietin 2 release from endothelial cells and angiogenesis by the synaptic protein Neuroligin 2. *Biochem Biophys Res Commun.* 2018 Jun 18;501(1):165-171. doi: 10.1016/j.bbrc.2018.04.204. Epub 2018 May 4. PMID: 29709479.