

Curriculum vitae

FRANCESCA RE



PERSONAL DATA

Full name: Francesca Re

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ASN: 05/E1; BIO/10 (from 31/03/2017 to 31/03/2023)

CURRENT INSTITUTION

School of Medicine and Surgery

Laboratory of Biochemistry and Nanomedicine

University of Milano-Bicocca

Via Cadore 48

20900 Monza (MB)

Italy

CURRENT POSITION

Research Associate - Ricercatore a Tempo determinato, lettera (b) Macrosettore 05/E1; SSD BIO/10

Biochimica

KEYWORDS

Neuroscience, brain biochemistry, blood-brain barrier, nanomedicine, Alzheimer's disease.

MAJOR CONTRIBUTIONS / HIGHLIGHTS

My career has been focused into the field of biochemistry, being engaged either in teaching and formation activity for the students or in scientific research. Concerning the teaching activity, I have been appointed as responsible either for fundamentals of biochemistry in base courses or in advanced courses of high degree of complexity.

My scientific activity has been devoted in general to the study the biochemical properties of simple and complex molecules. More in details, the research developed throughout my career on the one side contributed to advance the knowledge of the mechanisms underlying the transport of molecules (lipids, proteins and supramolecular complexes) across the blood-brain barrier (BBB). At the same time, within the frame of studying the functions and transformations of biochemical constituents and the regulation of functions, I investigated the molecular mechanisms underlying the dynamics of aggregation, disaggregation and clearance of amyloid- β peptide, which accumulates in high amounts within the brain of Alzheimer's patients and plays a central role in the pathogenesis of the disease.

The combination of the accumulated expertise on these issues allowed myself to devise new strategies for the therapy of Alzheimer's disease, based on nanomedicine tools, by designing nanoparticles (liposomes) able to cross the BBB and to target amyloid- β peptide, and obtaining a proof-of-principle in animal models of the disease. The I.P. related to these liposomes has been protected by two families of Patents and a Spin-off company has been established (AmypoPharma S.r.l.). Within the same frame, most recently I started a project, awarded by an H2020 funding, aiming to develop advanced experimental cellular models of the BBB, to reproduce features present in neurodegenerative diseases.

Main steps in research career

During my undergraduate thesis at the University of Milano-Bicocca (UNIMIB) (from 2004 to 2005), I gained insights into discovery of key factors that affect the prion protein structure by identifying conditions (i.e. pH and membrane lipid composition) that trigger conformational changes towards pathological structure of the protein [FEBS Letters, PMID: 18082145]. During my PhD (from 2005 to 2008), I enlighten how the lipid microenvironment and the membrane curvature can affect the enzymatic activity of GPI-anchored proteins, using human placental alkaline phosphatase as a model [Biochemistry, PMID: 18416535] and liposomes as model membranes.

After the PhD (from 2009) my research then turned from the use of liposomes as model membranes to their use in nanomedicine as multi-functional nanoparticles, in particular for the therapy and diagnosis of Alzheimer's disease. The opportunity to pursue this line of research were given by my participation as PI of the Laboratory of Biochemistry of UNIMIB, into a large European FP7 Project (NAD "Nanoparticles for therapy and diagnosis of Alzheimer's disease" from 2008 to 2013, FP7-NMP-2007-LARGE-1 – 19 EU Partners). At the beginning my research was devoted to the identification of physiological ligands able to bind with high affinity and to modulate the aggregation features of amyloid- β peptide [Biochim Biophys Acta, PMID: 26774643;

Journal of Alzheimer's Disease, DOI: 10.3233/JAD-2012-129000; Nanomedicine, PMID: 21722618; Int J Nanomed, PMID: 21703989; Biomaterials, PMID: 21529932]. After having identified phosphatidic acid to specifically bind the amyloid- β peptide, I demonstrated that its insertion into artificial membranes (liposomes) confers them a very high affinity for the peptide by multivalency interaction [Biomaterials, PMID: 20553982].

Afterwards, my scientific interest was directed to the identification of new strategies to target and to cross the BBB. My interest was concentrated into taking advantage of biochemical mechanisms existing at the BBB and utilized by macromolecules for crossing the barrier, such as receptor-mediated transcytosis and adsorptive-mediated transcytosis. This approach allowed myself to identify ligands able to drive phosphatidic-acid functionalized nanoliposomes from the blood to the brain [J Pharm Sci, PMID: 26852859; Nanomedicine, PMID: 24333591; Journal of Nanomedicine & Nanotechnology DOI: 10.4172/2157-7439.1000171; Int J Nanomed, PMID: 23674890; Nanomedicine, PMID: 21658472; J Biotechnol, PMID: 21763360].

These researches brought additional significant contributions in the field of Alzheimer's disease as well as in the nanomedicine field, in particular after demonstration that the administration of these nanoparticles to animal models of AD induces a significant decrease of brain amyloid- β peptide levels and impressive amelioration of memory impairment [NanoResearch, DOI 10.1007/s12274-016-1108-8; Nanomedicine, PMID: 25461285; J Neurosci, PMID: 25319699]. Biocompatibility issues for these nanoparticles have been also investigated [Int J Nanomed, PMID: 23717039].

The positive results obtained with multifunctional liposomes led us to the filing of two families of international Patents where I am co-inventor, that have been granted, and in year 2015 to the establishment of a Spin-off company of UNIMIB (AmypoPharma S.r.l.), where I am currently shareholder and Chief Operating Officer (COO)/Head of R&D. Moreover, these results are the starting point also for the design of nanoparticles for diagnosis of Alzheimer's disease [Label Compd Radiopharm, DOI: 10.1002/jlcr.3055; Eur J Pharm Sci, PMID: 26993963; ACS Nano, PMID: 22545858].

In year 2016, thanks to a project funded by EU Joint Programme (JPND) titled "Development of a Novel Multicellular In Vitro Model of Alzheimer's disease-like Blood-Brain Barrier (NAB₃)" where I am the Coordinator, I have built up a Consortium composed of #5 EU Partners which is in charge to generate a novel *in vitro* model of BBB to mimic the BBB alterations present on Alzheimer's disease. This innovative idea can have future implications in the design of feasible tool to screen *in vitro* potential drugs/contrast agents for AD in a more realistic condition, without the use of animal models. Using my previous knowledge on the nanoparticles design and Alzheimer's disease, I progressively focused my interests in the identification of new ligands to boost the amyloid- β peptide clearance from the brain, across the BBB [Nanomedicine, PMID: 26410276].

I believe that my advanced technical skills and accumulated knowledge combined with my leadership competences will allow me to continue making outstanding contributions within the field as a future independent researcher.

Worth of noting is that I had 3 career breaks between 2009 and 2016 due to maternity leave and was absent from research during approximately 15 months.

SYNOPSIS OF THE CV

Francesca Re graduated in Medical Biotechnology from the University of Milano-Bicocca (UNIMIB) in 2005 and in 2008 completed a PhD degree in Neuroscience at UNIMIB with research conducted at the Laboratory of Biochemistry, School of Medicine and Surgery (Monza) under the supervision of Prof. Massimo Masserini (UNIMIB). From 2009, she worked with Prof. Massimo Masserini, a world-leading laboratory in Neuro-Nanomedicine, for a 6-year post-doctoral period. Starting 2015, she is creating her independent line of research at the UNIMIB. During her scientific career, F.R. has published 40 articles in top international peer-reviewed journals (including high IF journals, i.e. ACSNano, IF 12.88; Biomaterials, IF 8.55; NanoResearch, IF 7.01 and J. Neurosci., IF 6.34; J Cont. Rel., IF 7.63) and she has currently 3 papers in revision process; Her *h*-index is 17 and has 820 citations (Scopus). From her 4 PhD papers, she appears as 1st author position in 2 articles revealing that the pH, the lipid composition and the membrane curvature affect the protein structure and enzymatic activity of GPI-anchored proteins. In addition, F.R. made important advances in the field of the search for ligands to target and overcome the blood-brain barrier (BBB) in order to design nanoparticles carrying drugs for CNS disorders, i.e. Alzheimer's disease, during her post-doctoral stay at the UNIMIB, as part of a research project funded by the European Community (NAD "Nanoparticles for therapy and diagnosis of Alzheimer's disease" from 2008 to 2013 FP7-NMP-2007-LARGE-1). This research resulted in 18 articles published in collaboration with different EU partners. Of note, F.R. had 3 career breaks between 2009 and 2016 due to maternity leave and was absent from research during approximately 15 months. Throughout her career, F.R. has been mainly focused in understanding the mechanisms to cross the BBB by macromolecules and nanoparticles and, most recently, to study new strategies to boost the amyloid- β peptide clearance from the brain across the BBB, as potential therapy for Alzheimer's disease. She has also acquired skills in the study of nanoparticles protein corona composition and its implication in the BBB crossing. F.R. has been able to attract funding from prestigious European entities, being a recipient of a H2020 Project funded by EU Joint Programme (JPND) as a project coordinator in 2015, where will be developed a novel in vitro model of Alzheimer's disease-like BBB; She has been a recipient of a Project founded by the European Center of Nanomedicine (CEN) as PI of the UNIMIB Unit in 2014, with the aim to design nanoparticles for human glioblastoma imaging and treatment. In 2013, she was a coordinator of a Privately funded Project (Fondazione Banca del Monte di Lombardia) with the aim to study the toxicity of nanoparticles designed for the therapy and diagnosis of neurodegenerative diseases. In 2013, she was awarded of "63rd

Lindau Nobel Laureate Meeting – Chemistry”. During her trajectory, F.R. has been able to establish close collaborations with outstanding researchers from very diverse scientific backgrounds. She has been invited to give Ad Hoc seminars; her research work was presented in major conferences and contributed for attracting competitive funding from international agencies. In addition, F.R. has knowledge in drug discovery as she is co-inventor in 2 families of international patents and is Chief Operating Officer (COO)/Head of R&D of AmypoPharma S.r.l. (spin-off of UNIMIB). She has also teaching experience as lecturer in Biochemistry and Nanomedicine of graduate students and as tutor for students degree at UNIMIB. In summary, F.R. track record demonstrates an extended research experience and technical maturity (also proven by #5 articles where she appears as last author position) that allows her to conduct future research with leadership and independent-thinking abilities (also proven by #5 articles where she appears without her PhD supervisor).

ACADEMIC DEGREES

ASN – 2017	Abilitazione Scientifica Nazionale 05E1 – BIO/10
PhD – 2008	Degree date: 4 th December 2008 Final grade: PhD in Neurosciences Degree granting institution: University of Milano-Bicocca, Monza (Italy) Thesis title: <i>Nanoliposomes for the study of molecular mechanisms and potential therapy of neurodegenerative diseases.</i> Supervisor: Prof. Massimo Masserini Scientific area: neurosciences, biochemistry.
M.Sc. – 2005	Degree date: 15 th July 2005 Final grade: Master Degree in Medical Biotechnology (110/110 L) Degree granting institution: University of Milano-Bicocca, Monza (Italy) Thesis title: <i>Biological role of lipid-protein interactions: studies on membrane models (liposomes).</i> Supervisor: Prof. Massimo Masserini Scientific area: neurosciences, biochemistry.
B.Sc. – 2003	Degree date: 06 th November 2003 Final grade: Bachelor Degree in Biotechnology (110/110) Degree granting institution: University of Milano-Bicocca, Monza (Italy) Thesis title: <i>Proteome analysis in subcellular fractions of normal and tumor human kidney tissue</i> Supervisor: Prof. Marina Pitto. Scientific area: biology, biochemistry.

PROFESSIONAL ACTIVITY

PERIOD	POSITION	INSTITUTION	COUNTRY
Nov 2016-today	Research Associate - Ricercatore a Tempo determinato, lettera (b) Macrosettore O5/E1; SSD BIO/10 Biochimica	School of Medicine and Surgery, University of Milano-Bicocca, Monza	Italy
Mar 2013-Feb 2018	Research Associate - Ricercatore a Tempo determinato, lettera (a) Macrosettore O5/E1; SSD BIO/10 Biochimica NOTE: career breaks due to maternity leave with the duration of 10 months (from 30/12/13 to 30/05/14 and from 02/12/2015 to 02/05/2016), according to the Italian Legislation.	School of Medicine and Surgery, University of Milano-Bicocca, Monza	Italy
From July 2015	Chief operating officer (COO)/Head of R&D	AmypoPharma Srl (spin-off of University of Milano-Bicocca)	Italy
Jan 2013-Feb 2013	CO.CO.CO term contract	Nanovector Srl, Torino under the supervision of Dr. Paolo Gasco	Italy
Dec 2009-Dec 2012	Research Associate - Ricercatore a Tempo determinato, lettera (a) Macrosettore O5/E1; SSD BIO/10 Biochimica	School of Medicine and Surgery, University of Milano-Bicocca, Monza	Italy
Feb 2009-Dec 2009	Post-Doctoral Fellow NOTE: career break due to maternity leave with the duration of 5 months (from 14/06/09 to 14/11/09), according to the Italian Legislation.	School of Medicine and Surgery, University of Milano-Bicocca, Monza	Italy
Dec 2008-Jan 2009	CO.CO.CO term contract	School of Medicine and Surgery, University of Milano-Bicocca, Monza	Italy
May 2008-June 2008	PhD in Neurosciences	Neurogenetics laboratory, Academic Medical Center (AMC), University of Amsterdam, Amsterdam under the supervision of Prof. Wiep Scheper	The Netherlands
July 2006-Sept 2006	PhD in Neurosciences	Department of Biological Sciences, University of Warwick, Coventry CV4 7AL under the supervision of Prof. Teresa J. T. Pinheiro	United Kingdom

TEACHING EXPERIENCE WITHIN 05/E1 - BIO/10 AT UNIVERSITY OF MILANO-BICOCCA

2014-2016	<ul style="list-style-type: none"> · Owner of the course "Human Systematic Biochemistry" (6 CFU/year) for the Bachelor's degree in Biotechnology, University of Milano-Bicocca (appointed from 2014) · Appointed for the laboratory teaching of the course of Nanomedicine of the master's degree in Biotechnology, University of Milano-Bicocca (1 student/a.a.).
2013-2014	<ul style="list-style-type: none"> · Contract professor of the Course "Nanobiotechnology" as integrative teaching in the "Nanomedicine" course at Faculty of Medicine and Surgery, master's degree in Medical Biotechnology, University of Milano-Bicocca (64 h/year; 4 CFU/year). · Teaching within the course of "Systematic Human Biochemistry" (16 h/year; 2 CFU/year) at Faculty of Biotechnology and Biosciences, Bachelor's degree in Biotechnology, University of Milano-Bicocca.
2012-2013	<ul style="list-style-type: none"> · Teaching for the Physiopathology module (24 h/year; 2 CFU/year) within the course of "Pathology and Physiopathology" at Faculty of Biotechnology and Biosciences, Bachelor's degree in Biotechnology, University of Milano-Bicocca. · Contract professor of the Course "Nanobiotechnology" as integrative teaching in the "Nanomedicine" course at Faculty of Medicine and Surgery, master's degree in Medical Biotechnology, University of Milano-Bicocca (64 h/year; 4 CFU/year).
2008-2012	<ul style="list-style-type: none"> · Tutoring students for degree university thesis in Medical Biotechnology.
2011-2012	<ul style="list-style-type: none"> · Teaching within the Nanomedicine module (24 h/year) within the course of "Advanced Biochemical Technologies" at Faculty of Medicine and Surgery, master's degree in Medical Biotechnology, University of Milano-Bicocca.
2008-2009	<ul style="list-style-type: none"> · Contract professor of the Course "Nanobiotechnology" as integrative teaching in the "Nanomedicine" course at Faculty of Medicine and Surgery, master's degree in Medical Biotechnology, University of Milano-Bicocca (64 h/year; 4 CFU/year). · Teaching within the Nanomedicine module (4 h/year) within the course of "Advanced Biochemical Technologies" at Faculty of Medicine and Surgery, master's degree in Medical Biotechnology, University of Milano-Bicocca.
2007-2008	<ul style="list-style-type: none"> · Contract professor of the Course "Structure, function and metabolism of molecules of biological interest" as integrative teaching in Biological Chemistry and Molecular Biology of the master's degree course in Medicine and Surgery, Faculty of Medicine, Milano-Bicocca University (42 h/year; 3 CFU/year). · Collaborator to the activities of teaching-supplementary tutoring, preparatory and recovery (of biochemistry teaching) at the Faculty of Medicine, Master of Science in Medicine, Milano-Bicocca University (30 h/year). · Tutoring students for post-graduate thesis in Food Science, University of Milano-Bicocca. Tutoring students for post-graduate thesis in Medical Biotechnology, University of Milano-Bicocca. · Tutoring students for post-graduate thesis in Medicine and Surgery, University of Milano-Bicocca. · Member of the Commission of Biochemistry examination of the degree course in Medicine and Surgery, Faculty of Medicine and Surgery.
2006-2007	<ul style="list-style-type: none"> · Contract professor of the Course "Structure, function and metabolism of molecules of biological interest" as integrative teaching in Biological Chemistry and Molecular Biology of the master's degree course in Medicine and Surgery, Faculty of Medicine, Milano-Bicocca University (39 h/year). · Collaborator to the activities of teaching-supplementary tutoring, preparatory and recovery (of biochemistry teaching) at the Faculty of Medicine, Master of Science in

Medicine, Milano-Bicocca University. Tutoring students for post-graduate thesis in Medicine and Surgery, University of Milano-Bicocca (30 h/year).

AREA OF SCIENTIFIC ACTIVITY

Area of scientific activity	<p><u>Research Interests:</u> nanomedicine, Alzheimer's disease, blood-brain barrier, in vitro and in vivo models.</p> <p><u>Scientific Expertise:</u></p> <ul style="list-style-type: none">- Experience on handling of laboratory animals (mice), pharmacokinetics and pharmacodynamics experiments, treatment of transgenic mouse models of Alzheimer's disease with nanoparticles by intravenous, intraperitoneal or intratracheal injections.- Cellular and Molecular Biology, Biochemical and Genetic Techniques: tissue and cell culture (immortalized brain capillary endothelial cells of human, mouse and rat origin, primary human macrophages, fibroblast, SK-n-SH human neuroblastoma cells, human umbilical vein endothelial cells); in vitro manipulations (growth curves, cytotoxicity assays and nitric oxide production, differentiation assays in vitro, preparation of transwell system as in vitro model of barriers (intestinal, air-blood, blood-brain, blood-CSF barriers); tissue handling (preparation of cryostat, vibrotome and microtome brain sections, histology, immunohistochemistry, immunofluorescence); biochemistry (SDS-PAGE, Western-blot, Southern-blot, dot-blot, radiochemical techniques (liquid scintillation counting, radiochromatoscanning, native gel-electrophoresis), promoter luciferase assays, ELISAs, ultracentrifugation on a discontinuous sucrose density gradient, thin layer chromatography (TLC), protein and nucleic acid assays, lyophilization, protein structural analysis with circular dichroism (CD) and Thioflavin T assay, column chromatography, enzymatic assays, fluorescence anisotropy, spectroscopic techniques, lipid and protein extraction from cells and tissues.- Neuropharmacological Techniques: animal handling (rodents), tissue handling (dissection of rodent brains, autoradiography), imaging and anatomy of the central nervous system; extraction of soluble and insoluble β-amyloid from tissues; analysis of β-amyloid oligomers.- Nanotechnology Techniques: liposomes and solid-lipid nanoparticles preparation (by extrusion procedure, dialysis, sonication and reverse phase evaporation); functionalization of liposomes surface using different chemical coupling strategy; incorporation of hydrophilic/hydrophobic molecules in nanoparticles; preparation of radiolabeled or fluorescent labeled nanoliposomes and solid-lipid nanoparticles; protein corona analysis; Dynamic Light Scattering (DLS) and Z-potential measurements; Surface Plasmon Resonance (SPR), Differential Scanning Calorimetry (DSC).- Microscopic imaging: optical, fluorescence and confocal microscopy; fluorescence atomic force (AFM) microscopy.
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	<ul style="list-style-type: none"> - Computing: Advanced knowledge and use of several softwares, including Microsoft Office, Adobe Photoshop, Adobe Illustrator, Graph Pad Prism, Image J and biological databases (NCBI, EMBL), Origin, SwissModel, Expasy, MatLab.
Specialization domain	<p>During my PhD, I developed a solid background in biochemical, molecular and cell biology techniques applied to the study of the lipid-protein interactions in vitro. My research has brought into light key players that drive nanoparticles across the blood-brain barrier from the blood to the brain and that make them capable to bind with high affinity the β-amyloid peptide, modulating its aggregation/disaggregation processes. During my post-doctoral studies, I expanded my knowledge and skills in the field of treatment of Alzheimer's diseases with multi-functional nanoparticles using a combination of in vitro cell culture and transgenic mouse models. I created a novel in vitro model of the blood-brain barrier that mimics the alterations present in Alzheimer's patients, which will allowed the scientific community to screen in advance drugs/nanodrugs designed for Alzheimer's disease. In addition, I have acquired expertise in nanoparticles biocompatibility assessments.</p>
Current main scientific area	<p>My scientific interest in Alzheimer's research stretch beyond understanding new strategies to overcome the blood-brain barrier from the periphery: I have a strong interest to apply basic biochemistry knowledge to the discovery of new ligands among the physiological plasma proteins to boost the β-amyloid peptide clearance from the brain, across the blood-brain barrier.</p> <p>I am currently following several lines of research that aim to design multi-functional nanoparticles to overcome the blood-brain barrier either for therapeutic and diagnostic purposes for Alzheimer's disease and CNS brain tumors. Moreover, I am currently following also the development of nanoparticles for gene delivery for the rheumatoid arthritis.</p>
Other scientific activities	<p>Scientific courses:</p> <ul style="list-style-type: none"> - Theoretical and Practical Course "New Frontiers of real-time", December 1, 2005, Milano. - ECM, Courses Continuing Medical Education: anxiety disorders, agoraphobia and panic in neurological diseases. March 9, 2006, Monza. - Theoretical and Practical Course "Multiphoton confocal microscopy", January 16, 2006, Milano. - Theoretical and Practical Course "Atomic Force Microscopy", July 4, 2007, Genova. - 2nd training course of NAD project: Pharmacokinetics of nanoparticles and their passage through the blood-brain barrier. September 22-24, 2010, Milano, Italy. - 3rd training course of NAD project: Course on ethics and animal welfare. September 19-20, 2010, Milano, Italy.

PUBLICATIONS

PAPERS IN INTERNATIONAL SCIENTIFIC PERIODICALS WITH REFEREES		
1.	Dal Magro R, Cox A, Zambelli V, Mancini S, Masserini M, Re F. <i>The ability of liposomes, tailored for BBB targeting, to reach the brain is dramatically affected by the disease state.</i> Nanomedicine (Lond), <i>in press</i>	IF = 4.73
2.	Carradori D, Balducci C, Re F , Brambilla D, Le Droumaguet B, Flores O, Gaudin A, Mura S, Forloni G, Ordoñez-Gutierrez L, Wandosell F, Masserini M, Couvreur P, Nicolas J, Andrieux K. <i>Antibody-Functionalized Polymer Nanoparticle Leading to Memory Recovery in Alzheimer's Disease-like Transgenic Mouse Model.</i> Nanomedicine. 2017 Dec 14. pii: S1549-9634(17)30584-1. DOI: 10.1016/j.nano.2017.12.00 PMID: 29248676	IF = 6.40
3.	Snellman A, Rokka J, López-Picón FR, Helin S, Re F , Löyttyniemi E, Pihlaja R, Forloni G, Salmons M, Masserini M, Solin O, Rinne JO, Haaparanta-Solin M. <i>Applicability of [¹¹C]PIB micro-PET imaging for in vivo follow-up of anti-amyloid treatment effects in APP23 mouse model.</i> Neurobiology of Aging 2017;57:84-94 DOI: 10.1016/j.neurobiolaging.2017.05.008 PMID: 28605642	IF = 5.15
4.	Mancini S, Balducci C, Micotti E, Tolomeo D, Forloni G, Masserini M, Re F . <i>Multifunctional liposomes delay phenotype progression and prevent memory impairment in a presymptomatic stage mouse model of Alzheimer disease.</i> J Control Release 2017;258:121-129. DOI: 10.1016/j.jconrel.2017.05.013. PMID: 28501671	IF = 7.44
5.	Conti E, Gregori M, Radice I, Da Re F, Grana D, Re F , Salvati E, Masserini M, Ferrarese C, Zoia CP, Tremolizzo L. <i>Multifunctional liposomes interact with Abeta in human biological fluids: Therapeutic implications for Alzheimer's disease.</i> Neurochem Int. 2017; pii: S0197-0186(16)30345-X. DOI: 10.1016/j.neuint.2017.02.012. PMID: 28238790	IF = 3.09
6.	Orlando A, Cazzaniga E, Tringali M, Gullo F, Becchetti A, Minniti S, Taraballi F, Tasciotti E, Re F . <i>Mesoporous silica nanoparticles trigger mitophagy in endothelial cells and perturb neuronal network activity in a size- and time-dependent manner.</i> Int J Nanomedicine 2017;12:3547-3559. DOI: 10.2147/IJN.S127663. PMID: 28507435	IF = 4.32
7.	Dal Magro R, Ornaghi F, Cambianica I, Beretta S, Re F , Musicanti C, Rigolio R, Donzelli E, Canta A, Ballarini E, Cavaletti G, Gasco P, Sancini G.	IF = 7.44

	<p><i>ApoE-modified solid lipid nanoparticles: A feasible strategy to cross the blood-brain barrier.</i> J Control Release. 2017;249:103-110. DOI: 10.1016/j.jconrel.2017.01.039 PMID: 28153761</p>	
8.	<p>Gregori M, Taylor M, Salvati E, Re F, Mancini S, Balducci C, Forloni G, Zambelli V, Sesana S, Michael M, Michail C, Tinker-Mill C, Kolosov O, Scherer M, Harris S, Fullwood NJ, Masserini M, Allsop D. <i>Retro-inverso peptide inhibitor nanoparticles as potent inhibitors of aggregation of the Alzheimer's Aβ peptide.</i> Nanomedicine. 2017;13(2):723-732. DOI: 10.1016/j.nano.2016.10.006. PMID: 27769888</p>	IF = 5.67
9.	<p>Sancini G, Dal Magro R, Ornaghi F, Balducci C, Forloni G, Gobbi M, Salmona M, Re F. <i>Pulmonary administration of functionalized nanoparticles significantly reduces beta-amyloid in the brain of an Alzheimer's disease murine model.</i> Nano Research 2016; 9 (7): 2190-2201 ISSN: 19980124 DOI: 10.1007/s12274-016-1108-8</p>	IF = 7.01
10.	<p>Rokka J, Snellman A, Kaasalainen M, Salonen J, Zona C, La Ferla B, Nicotra F, Re F, Masserini M, Forsback S, Lopez-Picon F, Rinne JO, Haaparanta-Solin M, Solin O. <i>18F-labeling syntheses and preclinical evaluation of functionalized nanoliposomes for Alzheimer's disease.</i> Eur J Pharm Sci. 2016;88:257-66. ISSN: 09280987 DOI: 10.1016/j.ejps.2016.03.016 PMID: 26993963</p>	IF = 3.35
11.	<p>Nardo L, Re F, Brioschi S, Cazzaniga E, Orlando A, Minniti S, Lamperti M, Gregori M, Cassina V, Brogioli D, Salerno D, Mantegazza F. <i>Fluorimetric detection of the earliest events in amyloid β oligomerization and its inhibition by pharmacologically active liposomes.</i> Biochim Biophys Acta 2016;1860(4):746-56 ISSN: 03044165 DOI: 10.1016/j.bbagen.2016.01.003 PMID: 26774643</p>	IF = 4.38
12.	<p>Gregori M, Orlando A, Re F, Sesana S, Nardo L, Salerno D, Mantegazza F, Salvati E, Zito A, Malavasi F, Masserini M, Cazzaniga E. <i>Novel Antitransferrin Receptor Antibodies Improve the Blood-Brain Barrier Crossing Efficacy of Immunoliposomes.</i> J Pharm Sci 2016;105(1):276-283 ISSN: 00223549 DOI: 10.1016/j.xphs.2015.11.009 PMID: 26852859</p>	IF = 2.59
13.	<p>Mancini S, Minniti S, Gregori M, Sancini G, Cagnotto A, Couraud PO, Ordóñez-Gutiérrez L, Wandosell F, Salmona M, Re F. <i>The hunt for brain Aβ oligomers by peripherally circulating multi-functional nanoparticles: Potential therapeutic approach for Alzheimer disease.</i> Nanomedicine 2016;12(1):43-52 ISSN: 15499634 DOI: 10.1016/j.nano.2015.09.003 PMID: 26410276</p>	IF = 6.15

14.	<p>Gregori M, Bertani D, Cazzaniga E, Orlando A, Mauri M, Bianchi A, Re F, Sesana S, Minniti S, Francolini M, Cagnotto A, Salmona M, Nardo L, Salerno D, Mantegazza F, Masserini M, Simonutti R.</p> <p><i>Investigation of Functionalized Poly(N,N-dimethylacrylamide)-block-polystyrene Nanoparticles As Novel Drug Delivery System to Overcome the Blood-Brain Barrier In Vitro.</i></p> <p>Macromol Biosci 2015;15(12):1687-97 ISSN: 16165187 DOI: 10.1002/mabi.201500172 PMID: 26198385</p>	IF = 3.85
15.	<p>Ordóñez-Gutiérrez L, Re F, Bereczki E, Ioja E, Gregori M, Andersen AJ, Antón M, Moghimi SM, Pei JJ, Masserini M, Wandosell F.</p> <p><i>Repeated intraperitoneal injections of liposomes containing phosphatidic acid and cardiolipin reduce amyloid-β levels in APP/PS1 transgenic mice.</i></p> <p>Nanomedicine 2015;11(2):421-30 ISSN: 15499634 DOI: 10.1016/j.nano.2014.09.015. PMID: 25461285</p>	IF = 6.15
16.	<p>Balducci C, Mancini S, Minniti S, La Vitola P, Zotti M, Sancini G, Mauri M, Cagnotto A, Colombo L, Salmona M, Snellman A, Haaparanta-Solin M, Forloni G, Masserini M, Re F.</p> <p><i>Multi-functional liposomes reduce brain β-amyloid burden and ameliorate memory impairment in Alzheimer's disease mouse models.</i></p> <p>J Neurosci 2014;34(42):14022-31 ISSN: 02706474 DOI: 10.1523/JNEUROSCI.0284-14.2014 PMID: 25319699</p>	IF = 6.34
17.	<p>Bana L, Minniti S, Salvati E, Sesana S, Zambelli V, Cagnotto A, Orlando A, Cazzaniga E, Zwart R, Scheper W, Masserini M, Re F.</p> <p><i>Liposomes bi-functionalized with phosphatidic acid and an ApoE-derived peptide affect Aβ aggregation features and cross the blood-brain-barrier: Implications for therapy of Alzheimer disease.</i></p> <p>Nanomedicine 2014;10(7):1583-90 ISSN: 15499634 DOI: 10.1016/j.nano.2013.12.001 PMID: 24333591</p>	IF = 6.15
18.	<p>Sancini G, Gregori M, Salvati E, Cambianica I, Re F, Ornaghi F, Canovi M, Fracasso C, Cagnotto A, Colombo M, Zona C, Gobbi M, Salmona M, La Ferla B, Nicotra F, Masserini M.</p> <p><i>Functionalization with TAT-peptide enhances blood-brain barrier crossing in vitro of nanoliposomes carrying a curcumin-derivative to bind amyloid-β peptide.</i></p> <p>Journal of Nanomedicine & Nanotechnology 2013;4:1-8 ISSN: 21577439 DOI: 10.4172/2157-7439.1000171</p>	IF = 5.72
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22.	Canovi M, Lucchetti J, Stravalaci M, Re F , Moscatelli D, Bigini P, Salmona M, Gobbi M. <i>Applications of Surface Plasmon Resonance (SPR) for the characterization of nanoparticles developed for biomedical purposes.</i> Sensors 2012;12(12):16420-16432 ISSN: 14248220 DOI: 10.3390/s121216420 PMID: 23443386	IF = 2.47
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CONFERENCE PROCEEDING		
41.	Minniti S, Bana L, Masserini M, Re F . <i>'Sink effect' of dually-decorated nanoliposomes on Aβ clearance in an in vitro model of the blood-brain barrier.</i> Technical Proceedings of the 2013 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2013; 3: 351-353 ISBN: 978-148220586-2	
42.	Masserini M, Salmona M, Gregori M, Forloni G, Re F . <i>Nanoparticles for therapy of Alzheimer Disease.</i> Technical Proceedings of the 2013 NSTI Nanotechnology Conference and Expo, NSTI-Nanotech 2013; 3: 339-342 ISBN: 978-148220586-2	
43.	Masserini M, Gregori M, Salvati E, Re F . <i>NAD-Nanoparticles for Therapy and Diagnosis of Alzheimer Disease.</i> Nanotech 2013; 3: 339 – 342 ISBN: 978-1-4822-0586-2	
44.	Re F, Cambianica I, Cagnotto A, Salmona M, Masserini M, Sancini G. <i>Nano-liposomes targeting Abeta peptide and functionalized to interact with the blood-brain barrier.</i> 24th European Conference on Biomaterials - Annual Conference of the European Society for Biomaterials 2011, 1p	
45.	Bulbarelli A, Lonati E, Cazzaniga E, Re F , Sesana S, Masserini M.	

	<p><i>Attempt of neuroprotective response of rat hippocampal neurons against Abeta insult.</i> Conference on Alzheimer's disease and Related Disorders. BOLOGNA: Medimond, p. 507-511 ISBN: 978-88-7587-322-6</p>	
MEETING ABSTRACT		
1.	<p>Gregori M, Re F, Rodighiero S, Passoni L, Tamborini M, Francolini M, Matteoli M, Masserini M. <i>Design of Nanoparticles for the treatment and diagnosis of brain tumors.</i> CRS Italy local Chapter, Micro and Nanotechnology to overcome biological barriers. Location: Naples, ITALY Date: NOV 12-14, 2015, pag.112 ISBN 978-88-941404-0-8</p>	
2.	<p>Balducci C, Mancini S, Minniti S, La Vitola P, Zotti M, Sancini G, Mauri M, Cagnotto A, Colombo L, Fiordaliso F, Grigoli E, Salmona M, Snellman A, Haaparanta-Solin M, Forloni G, Masserini M, Re F. <i>A nanomedicine-based therapeutic approach restores memory and ameliorates amyloid pathology in Alzheimer's mouse models.</i> Conference: 12th International Conference AD/PDTM Location: Nice, FRANCE Date: MAR 18-22, 2015 Neurodegenerative Diseases 2015;15:707 ISSN: 1660-2854 DOI: 10.1159/000381736</p>	IF = 3.51
3.	<p>Mancini S, Minniti S, Cagnotto A, Salmona M, Re F. <i>Potential nanotherapeutic approach for Alzheimer's disease: in vitro clearance of beta-amyloid across the blood-brain barrier by multifunctional liposomes.</i> Conference: 12th International Conference AD/PDTM Location: Nice, FRANCE Date: MAR 18-22, 2015. Neurodegenerative Diseases 2015, 15:713 ISSN: 1660-2854 DOI: 10.1159/000381736</p>	IF = 3.51
4.	<p>Cigni C, Panariti A, Cazzaniga E, Re F, Masserini M, Miserocchi G, Rivolta I. <i>Lipid-based nanoparticles (NPs) with high binding affinity for amyloid-beta1-42 peptide modulate the barrier properties of a monolayer of endothelial cells.</i> Conference: 62nd National Congress of the Italian Physiological Society, Location: Sorrento, ITALY Date: NOV 25-27, 2011 Acta Physiologica 2011 ISSN: 1748-1708</p>	IF = 4.38
5.	<p>Re F, Cambianica I, Sesana S, Cagnotto A, Salmona M, Sancini G. <i>Tat-1-liposomes to overcome the blood-brain barrier: an in vitro study.</i> Conference: 14th International Biotechnology Symposium and Exhibition (IBS-2008) Location: Rimini, ITALY Date: SEP 14-18, 2010 Journal of Biotechnology 2010;150:S467-S468 ISSN: 0168-1656 DOI: 10.1016/j.jbiotec.2010.09.694</p>	IF = 3.04
6.	<p>Re F, Gobbi M, Salmona M, Gasco P, Cazzaniga E, Moore S. <i>Preparation and characterization of lipid-based nanoparticles binding with high affinity amyloid-beta(1-42) peptide.</i> Conference: 14th International Biotechnology Symposium and Exhibition (IBS) Location: Rimini, ITALY Date: SEP 14-18, 2010 Journal of Biotechnology 2010;150:S27 ISSN: 0168-1656 DOI: 10.1016/j.jbiotec.2010.08.081</p>	IF = 3.04

7.	<p>Andersen AJ, Hashemi SH, Galimberti G, Re F, Masserini M, Moghimi SM. <i>The interaction of complement system with abeta-binding liposomes: towards engineering of safer vesicles for the management of Alzheimer's disease.</i></p> <p>Conference: 14th International Biotechnology Symposium and Exhibition (IBS) Location: Rimini, ITALY Date: SEP 14-18, 2010 Journal of Biotechnology 2010;150:S97-S98 ISSN: 0168-1656 DOI: 10.1016/j.jbiotec.2010.08.252</p>	IF = 3.04
CONTRIBUTIONS TO SCIENTIFIC BOOKS		
1.	<p>Pharmaceutical Nanotechnology "Nanotechnology-based Production of Pharmaceuticals".</p> <p>Nanodrugs in Medicine & Healthcare - Brain delivery (Neurodegenerative Diseases – Alzheimer).</p> <p>Wiley Online Library, <i>in press</i></p>	

PATENTS

- I. Masserini M, **Re F**, Sancini G, Salmona M, Forloni G. "Liposomes active in-vivo on degenerative diseases"
 - US Patent No. US 8,877,236 of Nov. 04, 2014
 - International Patent Application No. PCT/EP2013/001660 of June 05, 2013
 - European Patent Application 13733948.7 of Jan 27, 2015
 - Canadian Patent Application 2,877,765 of Dec. 23, 2014
 - Japan Patent Application 2015-518879 of Dec. 26, 2014
 - US Patent Application for "Continuation" No. US 14/505,481 of Oct.2, 2014
- II. Masserini M, **Re F**, Sesana S. "Liposomes capable of effectively binding the beta-amyloid peptide"
 - Italian Patent No. 0001387779 of May 03, 2011;
 - International Patent No. PCT/IT2009/000251 of June 10, 2009
 - European Patent No. EP2306979 of Oct. 31, 2012 (granted: Belgium, France, Germany, UK, Greece, Italy, Netherlands, Sweden).
 - Japan Patent 5645813 of Nov. 14, 2014
 - Canadian Patent Application No. 2,727,417 of Jun.10, 2009 (granted, wait for official notice)
 - US Patent Application 12/997,079 of Dec. 9, 2010

COMMUNICATIONS

POSTERS IN CONFERENCES

50° SIB, Italian Society of Biochemistry and Molecular Biology, September 27-30, 2005, Riccione, Italy.
Poster session: Binding of recombinant prion protein to liposomes.

SIB, Italian Society of Biochemistry and Molecular Biology, section Ligure-Lombardo-piemontese (SIB-LLP), May 19, 2006, Pavia, Italy. *Poster session*: Lipids affect the activity of GPI-anchor proteins: a study on model membranes.

A joint FEBS and ELI Special Meeting “new concepts in lipidology: from lipidomics to disease” October 21-25, 2006, Noordwijkerhout, NL. *Poster session*: Raft lipids affect the biological activity of GPI-anchored proteins: alkaline phosphatase reconstituted in model membranes.

XIX International Symposium on Glycoconjugates (GLYCO-19), July 15-20, 2007, Cairns-Australia. *Poster session*: Glycolipids and pH affect prion protein structure.

Meeting Metodologie e Tecnologie Innovative per la Farmaceutica, March 13-14, 2008, Lecce, Italy. *Poster session*: Evaluation of lipid metabolism in T cells of WAS patients.

EuroNano Forum, Nanotechnology for Sustainable Economy, June 2-5, 2009, Prague, Czech Republic. *Poster session*: The NAD project: nanoparticles for therapy and diagnosis of Alzheimer’s disease – preliminary results with nanoliposomes.

Transalp’Nano2010 Conference, June 2, 2010, Como, Italy. *Poster session*: Preparation and characterization of liposomes binding with high affinity amyloid-beta peptide.

NanoFutures: The European Technology Integration and Innovation Platform (ETIP) in Nanotechnology, June 15-16, 2010, Gijon, Spain. *Poster session*: Overcoming the blood-brain barrier with nanoparticles on in vitro system.

14th International Biotechnology Symposium and Exhibition IBS, September 14-18, 2010, Rimini, Italy. *Poster session*: TAT-1 liposomes to overcome the blood-brain barrier: an in vitro study.

12th NN15, International Conference on Nanosciences & Nanotechnologies, July 7-10, 2015, Thessaloniki, Greece. *Poster session*: Crucial role of the ‘protein corona’ for the blood-brain barrier crossing of Au nanoparticles.

2° Consiglio Scientifico del Centro di Neuroscienze di Milano (NeuroMi) 2015, Milano, Italy. *Poster session*: Crucial role of the ‘protein corona’ for the blood-brain barrier crossing of Au nanoparticles.

NeuroMI, July 6-8, 2016, Milano. *Poster session*: Effect of modified collagen on amyloid beta peptide aggregation.

INVITED ORAL COMMUNICATIONS

ABCD membrane trafficking and biogenesis of organelles, April 21-22, 2006, Siena, Italy. *Talk session*: Lipids affect the activity of GPI-anchor proteins: a study on model membranes.

ABCD membrane trafficking and biogenesis of organelles, April 13-14, 2007, Siena, Italy. *Talk session*: Lipids rafts and pH influence on prion protein conformation: a study on model membranes.

14th International Biotechnology Symposium and Exhibition IBS, September 14-18, 2010, Rimini, Italy. *Talk session*: Preparation and characterization of lipid-based nanoparticles binding with high affinity amyloid-beta42 peptide.

3rd Annual Meeting and Conference in combination with Satellite Event to the EuroNanoForum. May-June 30-3, Budapest, Hungary. *Talk session*: ApoE-nanoliposomes for transport of A β 1-42-ligands across the blood-brain barrier: a study in a model system.

24th Annual Conference of the European Conference for Biomaterials – ESB, September 5-7, 2011, Dublin, Ireland. *Talk session*: Nano-liposomes targeting β -amyloid peptide and functionalized to interact with the blood-brain barrier.

8th World Meeting on Pharmaceuticals, Biopharmaceutics and Pharmaceutical Technology. March 1-22, 2012, Istanbul, Turkey. *Talk session*: Nanoliposomes for therapy and diagnosis of Alzheimer disease.

CLINAM 2013 on 23rd to 26th June 2013 in Basel. *Talk session*: Nanoparticles for brain targeting.

CEN Foundation congress 2013 October, Milano. *Talk session*: design of nanoparticles for brain targeting.

63rd Lindau Nobel Laureate Meeting – Chemistry, 1-7 July 2013, Lindau. Master class: Prof. Aaron Ciechanover: New Frontiers in Deciphering Mechanisms of Diseases and in Drug Development. *Talk session*: Dually-decorated liposomes inhibit A β fibril formation, disaggregate preformed fibrils and cross the blood-brain barrier: in vitro characterization

Invited scientific seminary to Department of Medical Biotechnology and Translational Medicine, University of Milano, 10 Jan 2013. *Talk session:* In vitro models of blood-brain barrier to study the passage of nanoparticles intended for biomedical uses.

FISV 2014, XIII Congress, 24-27 September, Pisa, Italy. *Talk session:* Engineering membrane models capable to target beta-amyloid and to modulate its aggregation features: implications for therapy of Alzheimer's disease.

58° SIB, Italian Society of Biochemistry and Molecular Biology, September 14-16, 2015, Urbino, Italy. *Talk session:* Exploiting physiological proteins to drive drug-carrying nanoparticles across the blood-brain barrier.

Gruppo Membrane della Società italiana di Biochimica e Biologia molecolare (SIB). The new frontiers of biological membranes. 30 May 2016, Milano, Italy. *Talk session:* Exploiting physiological proteins to cross the blood-brain barrier.

E-MRS 2013 SPRING MEETING. Congress Center - Strasbourg, France. *Talk session:* Nanoparticles for therapy and diagnosis of Alzheimer disease.

International school of cardiac surgery and international school of solid state physics, 2015, Erice, Sicilia, Italy. *Talk session:* Interaction of engineered nanoparticles with endothelial cells an experimental approach.

12th NN15, International Conference on Nanosciences & Nanotechnologies, July 7-10, 2015, Thessaloniki, Greece. *Talk session:* The potential use of multi-functional nanoliposomes in the treatment of Alzheimer's disease.

1° Nanomib, Nanomedicine Center of University of Milano Bicocca, 2015, Milano, Italy. *Talk session:* Biomolecular corona on nanoparticles: implication for blood-brain barrier crossing.

Riunione dei Giovani Biochimici dell'Area Milanese (SIB), 20-22 March, Gargnano 2016. *Talk session:* The blood-brain barrier under physiological conditions and in Alzheimer's disease.

Invited scientific seminary to Department of Chemistry, University of Pavia, 20 June 2016. *Talk session:* Exploiting protein corona to drive drug-carrying nanoparticles across the blood-brain.

R&D PROJECTS

01/06/2016-31/05/2019. Project funded by EU Joint Programme – Neurodegenerative Disease Research (JPND) “Development of a Novel Multicellular In Vitro Model of Alzheimer's disease-like Blood-Brain Barrier (NAB₃)” Role: Coordinator – 982.409 €

2015 – ATE, Fondo Ateneo – Quota Dipartimentale, University of Milano-Bicocca. “Development of a novel In Vitro Model of Blood-Brain Barrier that mimics the alterations seen in Alzheimer's disease”. Role: PI - 3.226 €

01/03/2014–31/08/2015. Project founded by The European Center of Nanomedicine (CEN) “mApoE-Functionalized Lipidic -and Polymeric- Nanocomposite for Human Glioblastoma Imaging and Treatment” Role: PI – 181.000 €

01/04/2014–30/09/2015. Project founded by The European Center of Nanomedicine (CEN) “Smart Nanoparticles For Boosted Drug Brain Targeting”. Role: Co-Investigator. 169.500 €

01/01/2015–31/12/2017. Project funded by H2020 MSCA ITN Action. “Design and Development of advanced NANomedicines to overcome Biological BARriers and to treat severe diseases (NABBA)”. Role: Co-Investigator; tutor of PhD student.

01/01/2014-31/12/2014. Privately funded Project - Fondazione Banca del Monte di Lombardia. “Evaluation of the toxicity of nanoparticles designed for the therapy and diagnosis of neurodegenerative diseases”. Role: Coordinator. 20.000 €

2014 – ATE, Fondo Ateneo - Quota Dipartimentale, University of Milano-Bicocca. “Nanoparticelle multifunzionali per la terapia dell'artrite reumatoide”. Role: PI - 2.756 €

01/08/2008–31/08/2013. Project funded by EU-FP7 “Nanoparticles for therapy and diagnosis of Alzheimer disease (NAD)”. Role: Co-Investigator.

2013 – ATE, Fondo Ateneo - Quota Dipartimentale, University of Milano-Bicocca. “Design di Nanoparticelle per la Terapia dell’Artrite Reumatoide”. Role: PI - 1.454 €

AWARDS

2013 Award winner of “63rd Lindau Nobel Laureate Meeting – Chemistry”.

LANGUAGES

Italian: Native Language

English: Written and spoken (good)

OTHERS

Member of the Editorial Board	<ul style="list-style-type: none">· Journal of Nanoscience, Nanomedicine & Nanobiology· Nanobiomedicine Journal· Journal of Nanotechnology and Nanomedicine
Member of Center	<ul style="list-style-type: none">· Interdepartmental Center of Nanomedicine, NanoMiB of UNIMIB· Milan Center for Neuroscience, NeuroMi
Member of Society	<ul style="list-style-type: none">· Società Italiana di Biochimica e Biologia Molecolare (SIB)· AmypoPharma S.r.l. (spin-off UNIMIB)

Date _____08/01/2018_____

Signature __________