

## ALLEGATO A

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n.1 posto di Ricercatore a tempo determinato ai sensi dell'art.24, comma 3, lettera a) della Legge 240/2010 per il settore concorsuale \_\_05/E1\_\_\_\_\_, settore scientifico-disciplinare \_\_BIO/10\_\_\_\_\_, presso il Dipartimento di Scienze Biomediche e Cliniche "L. Sacco"\_\_\_\_\_, (avviso bando pubblicato sulla G.U. n. \_91\_ del \_28/11/2017\_) Codice concorso \_\_3725\_\_\_\_\_

## Serena Mazzucchelli CURRICULUM VITAE

### INFORMAZIONI PERSONALI

COGNOME	MAZZUCHELLI
NOME	SERENA
DATA DI NASCITA	15 APRILE 1982

### EDUCATION

- 2015 *Corso di perfezionamento in "Welfare of the laboratory animal and animal-care"*, Faculty of Veterinary Medicine, University of Milan, Italy. Coordinator: Prof. Fabio Luzi.
- 2010 *PhD in Biology*, Supervisor: Prof. Paolo Tortora. Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy
- 2006 *Master Degree in Biology*, 110/110 cum laude  
Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy
- 2004 *Bachelor Degree in Biological Sciences*, 110/110 cum laude  
Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy

### • CURRENT POSITION(S)

- 2015 - present *Post-doctoral fellow*, Nanomedicine Unit, Department of Biomedical and Clinical Sciences "L. Sacco", University of Milan and "L. Sacco" University Hospital, Milan, Italy. Supervisor: Prof. Fabio Corsi. Project title: Development of bionanoparticles and hybrid nanoparticles for the treatment of HER2-positive and Triple Negative Breast Cancer.

### • PREVIOUS POSITIONS

- 2012 - 2015 *Biologist manager*; Nanomedicine Unit, "L. Sacco" University Hospital, Milan, Italy. Director: Prof. Fabio Corsi.
- 2010 - 2012 *Post-doctoral fellow*, Supervisor: Prof. Emilio Trabucchi.

Faculty of Medicine, Department of Biomedical and Clinical Sciences “L. Sacco”, University of Milan, Italy. Project title: Development of hybrid nanoparticle for diagnosis and therapy of HER2-positive mammary carcinoma.

2006 - 2009 *PhD student*, Supervisor: Prof. Paolo Tortora  
Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy

- **FELLOWSHIPS AND AWARDS**

2017 National scientific qualification as associate professor for 06/N1 (from 31/03/2017 to 31/03/2023 (art. 16, comma 1, Legge 240/10).

2016 - 2018 *Post-doctoral fellowship*, Faculty of Medicine, Department of Biomedical and Clinical Sciences “L. Sacco”, University of Milan, Italy. Supervisor: Prof. Fabio Corsi. Project title: Development of bionanoparticles and hybrid nanoparticles for the treatment of HER2-positive and Triple Negative Breast Cancer.

2017 Best paper award at the 2<sup>nd</sup> World Congress on “Recent advances in nanotechnology (RAN’17)”, 4-6 April 2017, Barcelona, Spain with the paper entitled “Metronomic Nanocaged Doxorubicin prevents chemoresistance and Cardiotoxicity in breast Cancer”.

2013 *Selected as one of the three Finalist of the Gianni Bonadonna Prize for New Drug Development in Oncology* with the project entitled: “Development of apoferritin nanoparticles for nuclear delivery of Doxorubicin in tumor”, Michelangelo Foundation, Italy. Number of participants: 121.

2010 - 2012 *Post-doctoral fellowship* Founded by “Romeo and Enrica Foundation”, Faculty of Medicine, Department of Biomedical and Clinical Sciences “L. Sacco”, University of Milan, Italy. Project title: Development of hybrid nanoparticle for diagnosis and therapy of HER2-positive mammary carcinoma.

2006 - 2009 *PhD Fellowship*, Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy.

- **SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS**

2006 - present 13 Master Students; Faculty of Mathematical, Physical and Natural Sciences, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy. Role: co-relator (10) and external relator (3). Published papers: 7

2012 - present 1 Master Students; Faculty of Medicine, Department of Biomedical and Clinical Sciences “L. Sacco”, University of Milan, Italy. Role: tutor Published paper: 2

- **TEACHING ACTIVITIES**

2017- present Course of Biological chemistry. Degree course in Medicine, Department of biomedical and clinical Sciences “L. Sacco”, Faculty of Medicine, University of Milan, Italy. Tutor in Medicinal biochemistry and Biochemistry of the nutrition (1CFU).

- 2007 - 2011 *Adjunct professor - Laboratory of Experimental Biology - Biochemistry, Faculty of Mathematical, Physical and Natural Sciences, University of Milan-Bicocca, Italy. Production of teaching materials, purchase and preparation of materials, training, final evaluation of the students.*
- 2008 - 2009 *Adjunct professor - Laboratory of Experimental Biology - Microbiology, Faculty of Mathematical, Physical and Natural Sciences, University of Milan-Bicocca, Italy. Production of teaching materials, purchase and preparation of materials, training, final evaluation of the students*
- 2013 - present *Lecturer - Elective Course of Nanomedicine, Faculty of Medicine, University of Milan, Italy.*

- **COMMISSIONS OF TRUST (IF APPLICABLE)**

- 2010 - present *Reviewer for ACS Nano, ACS Applied Materials, Molecules, Nanoscale, Nanomedicine: Nanotechnology, Biology and Medicine, Pharmacological Research and International Journal of Molecular Sciences, Nature Communication.*

- **MAJOR COLLABORATIONS**

- Prof. Wolfgang J. Parak*, Site-specific and highly controlled conjugation of biomolecules to inorganic nanoparticles, Philipps-Universität Marburg, Marburg, Germany. 3 joint publications
- Prof. Davide Prosperi*, Synthesis of organic and inorganic nanoparticles, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy. 10 publications
- Dr. Miriam Colombo*, Nanoparticle synthesis and functionalization, Department of Biotechnology and Biosciences, University of Milan-Bicocca, Italy. 7 publications
- Prof. Manuela Nebuloni*, Hystopathological analysis of samples, Department of Biomedical and Clinical Sciences "L. Sacco", University of Milan, Italy. 4 publications
- Prof. Pierangela Ciuffreda*, NMR or Mass-spectrometry quantification of encapsulated drug, Department of Biomedical and Clinical Sciences "L. Sacco", University of Milan, Italy. 2 publication
- Dr. Elda Tagliabue*, Department of Experimental Oncology and Molecular Medicine, Foundation IRCCS Istituto Nazionale dei tumori, Milan, Italy. 2 project submitted

- **CAREER BREAKS**

- From 19/02/2009 to 22/07/2009 Parental leave (Birth date 20/03/2009)
- From 22/09/2011 to 21/02/2012 Parental leave (Birth date 22/10/2011)
- From 06/01/2014 to 05/06/2014 Parental leave (Birth date 03/02/2014)

- **ON-GOING GRANTS**

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role</i>
Nanocages di ferritina per il delivery di agenti antitumorali in carcinomi	Joint Notice Cariplo Foundation-Lombardy	80000 €	01/10/2016-01/09/2018	PI

mammari primari ed in metastasi cerebrali	Region Submeasure B) strengthening 2016			
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• **SUBMITTED GRANT APPLICATIONS**

Project Title	Funding source	Amount (Euros)	Period	Role	
Nano-inhibitor for triple blocking of HER2 signalling: molecular mechanisms and anticancer activity in primary and brain metastasis of breast cancer	Cariplo Foundation-Biomedical research conducted by young researchers 2016	250.000 €	2017-2020 (36 months)	PI	<i>Admitted but not funded</i>
TOBYAS: nanomeTronOmic comBination to go beYond HER2+ breast cAncer challengeS	ERC starting grant	1.499.044 €	2018-2022	PI	<i>Evaluation B-Not funded</i>
Metronomic vs maximum tolerated dose of doxorubicin nanocAGES impact on cancer cells and tumor microenvironment in Triple negative breast cancer. (MIRAGE)	Cariplo-Biomedical research leaded by young researcher	249.450 €	2018-2020	PI	<i>Not funded</i>

• **PUBLICATIONS:**

SM is author of 39 publications on international peer-reviewed journals (34 publications in Q1). *H-index: 14 (Scopus.)*

28 publications without PhD supervisor (P. Tortora); 11 publications with PhD supervisor (9 Publications in Nanotechnological area where the PhD supervisor has been formally inserted as head of the Research Unit; 2 publications in Biochemistry area and related to my PhD, where the PhD supervisor has had a crucial role).

# corresponding author; \* equally contributed

1. "H-Ferritin-nanocaged olaparib: a promising choice for both BRCA-mutated and sporadic triple negative breast cancer" Mazzucchelli S., Truffi M., Baccarini F., Beretta M., Sorrentino L., Bellini M., Rizzuto M. A., Ottria R., Ravelli A., Ciuffreda P., Prosperi D., Corsi F., Nat. Sci.Rep. (2017) 7, 7505. IF: 4.847
2. "Bioengineered Approaches for Site-Orientation of Peptide-Based Ligands of Nanomaterials." S. Avvakumova, M. Colombo, E. Galbiati, S. Mazzucchelli, R. Rotem, D. Prosperi *Invited book chapter*

on “Biomedical Applications of Functionalized Nanomaterials”, Elsevier, editors B. Sarmento and J. das Neves. **Accepted**.

3. "Inhibition of fibroblast activation protein restores a balanced extracellular matrix and reduces fibrosis in Crohn's disease strictures ex vivo". *Inflamm. M.* Truffi, L. Sorrentino, M. Monieri, P. Fociani, S. Mazzucchelli, M. Bonzini, P. Zerbi, G. M. Sampietro, A. Di Sabatino, F. Corsi, *Inflammatory Bowel Disease*. **Accepted**. IF:4.525
4. "Cavity Shaving Reduces Involved Margins and Reinterventions Without Increasing Costs in Breast-Conserving Surgery: A Propensity Score-Matched Study". F. Corsi, L. Sorrentino, M. Bonzini, D. Bossi, M. Truffi, R. Amadori, M. Nebuloni, B. Brillat, S. Mazzucchelli. *Ann Surg Oncol*. 2017 doi: 10.1245/s10434-017-5774-x. IF: 3.655
5. "H-ferritin allows nanometronomic treatment of breast cancer with doxorubicin preventing drug resistance and circumventing cardiotoxicity". S. Mazzucchelli, L. Fiandra, M. Bellini, M. Truffi, M. Rizzuto, L. Sorrentino, E. Longhi, M. Nebuloni, D. Prosperi, and F. Corsi. Conference: San Antonio Breast Cancer Symposium Location: San Antonio, TX Date: DEC 06-10, 2016. *Cancer Res.* (2017) 77(4) Meeting Abstract: P6-12-17 IF:9.122
6. "Tumour homing and therapeutic effect of colloidal nanoparticles depend on the number of attached antibodies" Colombo M, Fiandra L, Alessio G, Mazzucchelli S, Nebuloni M, De Palma C, Kantner K, Pelaz B, Rotem R, Corsi F, Parak WJ, Prosperi D. *Nat Commun*. 2016;7:13818. doi: 10.1038/ncomms13818. IF: 11.329
7. "Nanometronomic treatment of 4T1 breast cancer with nanocaged doxorubicin prevents drug resistance and circumvents cardiotoxicity" Mazzucchelli S, Bellini M., Fiandra L., Truffi M., Rizzuto M.A., Sorrentino L., Longhi E., Nebuloni M., Prosperi D. and Corsi F. *Oncotarget*. 8(5):8383-8396. doi: 10.18632/oncotarget.14204 IF: 5.415
8. "Diabetes management strategies: Can nanoparticles be used to therapeutically deliver insulin?" Mazzucchelli S.<sup>#</sup> and Corsi F. *Ther Deliv*. 2017, 8(2):49-51. doi: 10.4155/tde-2016-0081 *Invited editorial*
9. "LC-MS/MS method development for quantification of doxorubicin and its metabolite 13-hydroxy doxorubicin in mice biological matrices: Application to a pharmaco-delivery study." Mazzucchelli S, Ravelli A, Gigli F, Minoli M, Corsi F, Ciuffreda P, Ottria R. *Biomed Chromatogr*. 2016 doi: 10.1002/bmc.3863. IF: 1.729
10. "What is the role of nanotechnology in diagnosis and treatment of metastatic breast cancer? Promising scenarios for the next future" Truffi M., Sorrentino L., Mazzucchelli S, Fiandra L., Corsi F. *J of Nanomaterials*, 2016 <http://dx.doi.org/10.1155/2016/5436458> *invited review* IF:1.644.
11. "Antiretroviral therapy through barriers: a prominent role for nanotechnology in HIV eradication from sanctuaries" Corsi F, Sorrentino L, Mazzucchelli S, Truffi M, Capetti A, Rizzardini G, Fiandra L. *J of Pharmacy and Pharmacology*, DOI:10.17265/2328-2150/2016.07.007 *invited review* IF:2,264
12. "Oral Delivery of Insulin via Polyethylene Imine-based Nanoparticles for Colonic Release Allows Glycemic Control in Diabetic Rats". Salvioni L, Fiandra L, Del Curto MD, Mazzucchelli S, Allevi R,

- Truffi M, Sorrentino L, Santini B, Cerea M, Palugan L, Corsi F, Colombo M. Pharmacol Res. 2016 doi: 10.1016/j.phrs.2016.05.016. IF: 4.408
13. "Ferritin nanocages: A biological platform for drug delivery, imaging and theranostics in cancer." Truffi M, Fiandra L, Sorrentino L, Monieri M, Corsi F, Mazzucchelli S.<sup>#</sup> Pharmacol Res. 2016 May;107:57-65. doi: 10.1016/j.phrs.2016.03.002. IF: 4.408
  14. "The potential of protein-based nanocages for imaging and drug delivery." Corsi F, Mazzucchelli S.<sup>#</sup> Ther Deliv. 2016 Mar;7(3):149-51. doi: 10.4155/tde.15.95. *Invited editorial*
  15. In Vitro Permeation of FITC-loaded Ferritins Across a Rat Blood-brain Barrier: a Model to Study the Delivery of Nanoformulated Molecules. Fiandra L, Mazzucchelli S., Truffi M, Bellini M, Sorrentino L, Corsi F. J Vis Exp. 2016 Aug 22;(114). doi: 10.3791/54279. IF: 1.1
  16. "Nanoformulation of antiretroviral drugs enhances their penetration across the blood brain barrier in mice" L. Fiandra, M Colombo, S Mazzucchelli, M Truffi, B Santini, R Allevi, M Nebuloni, A Capetti, G Rizzardini, D Prosperi, F Corsi. Nanomedicine: Nanotechnology, Biology and Medicine, DOI: <http://dx.doi.org/10.1016/j.nano.2015.03.009> IF:5.671
  17. "Peptide-Nanoparticle Ligation Mediated by Cutinase Fusion for the Development of Cancer Cell-Targeted Nanoconjugates" E Galbiati, M Cassani, P Verderio, E Martegani, M Colombo, P Tortora, S Mazzucchelli<sup>#</sup>, D Prosperi. Bioconjugate Chem., (2015) 26(4):680-9. IF: 4.513
  18. "Targeted approaches for HER2 breast cancer therapy: News from nanomedicine?" S. Mazzucchelli, M. Truffi, L. Fiandra, L. Sorrentino, F. Corsi. World J Pharmacol (2014) 3(4), 72-85.
  19. "Protein Nanocages for Self-Triggered Nuclear Delivery of DNA-Targeted Chemotherapeutics in Cancer Cells". M. Bellini, S. Mazzucchelli,<sup>#</sup> E. Galbiati, S. Sommaruga, L. Fiandra, M. Truffi, M. A. Rizzuto, M. Colombo, P. Tortora, F. Corsi, D. Prosperi. J Control Release (2014) 196, 184-196. IF: 7.261
  20. "Development of U11-Functionalized Gold Nanoparticles for Selective Targeting of Urokinase Plasminogen Activator Receptor-Positive Breast Cancer Cells"; S. Avvakumova, E. Galbiati, L. Pandolfi, S. Mazzucchelli, M. Cassani, A. Gori, R. Longhi, D. Prosperi. Bioconjug Chem. (2014) 25(8), 1381-1386. IF: 4.821
  21. "Antiproliferative effect of ASC-J9 delivered by PLGA nanoparticles against estrogen-dependent breast cancer cells." P. Verderio, L. Pandolfi, S. Mazzucchelli, M. R. Marinozzi, R. Vanna, F. Gramatica, F. Corsi, M. Colombo, C. Morasso, D. Prosperi. Mol Pharm. (2014) 11(8), 2864-2875. IF: 4.787
  22. "Interactions of ataxin-3 with its molecular partners in the protein machinery that sorts protein aggregates to the aggresome." M. Bonanomi, S. Mazzucchelli, A. D'Urzo, M. Nardini, P. V. Konarev, G. Invernizzi, D. I. Svergun, M. Vanoni, M. E. Regonesi, P. Tortora. Int J Biochem Cell Biol. (2014) 51, 58-64. IF: 4.240
  23. "Delivering Colloidal Nanoparticles to Mammalian Cells: A Nano-Bio Interface Perspective"; P. Verderio, S. Avvakumova, G. Alessio, M. Bellini, M. Colombo, E. Galbiati, S. Mazzucchelli, J. P. Avila, B. Santini, D. Prosperi. AdvHealthc Mater. (2014) 3(7), 957-76. IF: 5.797

24. "Assessing the in vivo targeting efficiency of multifunctional nanoconstructs bearing antibody-derived ligands"; L. Fiandra, S. Mazzucchelli, C. De Palma, M. Colombo, R. Allevi, S. Sommaruga, E. Clementi, M. Bellini, D. Prosperi, F. Corsi. *ACS Nano* (2013) 7(7), 6092-6102. IF: **12,062**.
25. "Dependence of nanoparticle-cell recognition efficiency on the surface orientation of scFv targeting ligands"; S. Mazzucchelli #, S. Sommaruga, M. O'Donnell, P. Galeffi, P. Tortora, D. Prosperi, M. Colombo. *Biomater. Sci.* (2013), 1, 728-735. IF: **3.831**
26. "O6-alkylguanine-DNA transferase (SNAP) as a capture module for site-specific covalent bioconjugation of targeting protein on nanoparticles"; S. Mazzucchelli, M. Colombo, E. Galbiati, F. Corsi, J. M. Montenegro, W. J. Parak, D. Prosperi. *Proc. SPIE* (2013), 8595, 859502-1- 859502-9.
27. "Orientation-controlled conjugation of haloalkane dehalogenase fused homing peptides to multifunctional nanoparticles for the specific recognition of cancer cells" S. Mazzucchelli #, M. Colombo, P. Verderio, E. Rozek, F. Andreatta, E. Galbiati, P. Tortora, F. Corsi D. Prosperi #. *Angew Chem Int Ed Engl.* (2013) 52(11), 3121-3125. IF: **13,734**.
28. "Protein-assisted one-pot synthesis and biofunctionalization of spherical gold nanoparticles for selective targeting of cancer cells"; M. Colombo \*, S. Mazzucchelli \*, V. Collico, S. Avvakumova, L. Pandolfi, F. Corsi, F. Porta, D. Prosperi. *Angew Chem Int Ed Engl.* (2012) 51(37), 9272-9275. IF: **13,734**.
29. "Protein Oriented Ligation on Nanoparticles Exploiting O(6) -Alkylguanine-DNA Transferase (SNAP) Genetically Encoded Fusion"; M. Colombo \*, S. Mazzucchelli \*, J. M. Montenegro, E. Galbiati, F. Corsi, W. J. Parak, D. Prosperi. *Small* (2012) 8 (10), 1492-1497. IF: **7,823**.
30. "Site-specific conjugation of scFvs antibodies to nanoparticles by bioorthogonal-strain promoted alkene-nitrone cycloaddition"; M. Colombo, S. Sommaruga, S. Mazzucchelli, L. Polito, P. Verderio, P. Galeffi, F. Corsi, P. Tortora, D. Prosperi. *Angew Chem Int Ed Engl.* (2012) 51, 496-499. IF: **13,734**.
31. "HER2 expression in breast cancer cells is downregulated upon active targeting by antibody-engineered multifunctional nanoparticles in mice"; F. Corsi, L. Fiandra, C. De Palma, M. Colombo, S. Mazzucchelli, P. Verderio, R. Allevi, A. Tosoni, M. Nebuloni, E. Clementi, D. Prosperi. *ACS Nano* (2011) 5 (8), 6383-6393. IF: **12,062**.
32. "Multiple presentation of scFv800E6 on silica nanospheres enhances targeting efficiency toward HER-2 receptor in breast cancer cells"; S. Mazzucchelli \*, P. Verderio \*, S. Sommaruga, M. Colombo, A. Salvadè, F. Corsi, P. Tortora, D. Prosperi. *Bioconj. Chem.* (2011), 16(22), 2296-2303. IF: **4,580**.
33. "Highly efficient production of anti HER-2 scFv antibody variant for targeting breast cancer cells"; S. Sommaruga, A. Lombardi, A. Salvadè, S. Mazzucchelli, F. Corsi, P. Galeffi, P. Tortora, D. Prosperi. *Applied Microbiology and Biotechnology.* (2011), 91(3), 613-621. IF: **3,689**.
34. "Magnetofluorescent nanoparticles for bimodal detection of breast cancer cells"; S. Ronchi, M. Colombo, P. Verderio, S. Mazzucchelli, F. Corsi, C. De Palma, R. Allevi, E. Clementi, D. Prosperi. *AIP conf. Proc.* (2010), 1275, 102-105.
35. "Single-domain Protein A-Engineered magnetic nanoparticles: Toward a universal strategy to site-specific labeling of antibodies for targeted detection of tumor cells"; S. Mazzucchelli\*, M. Colombo

- \*, P. Verderio, C. De Palma, M. D. Coghi, E. Clementi, P. Tortora, F. Corsi, D. Prosperi; ACS Nano (2010), (10), 5693-702. IF: 12,062.
36. "Towards a universal method for the stable and clean functionalization of inert perfluoropolymer nanoparticles: exploiting photopolymerizable amphiphilic diacetylenes"; C. Morasso, M. Colombo, S. Ronchi, L. Polito, S. Mazzucchelli, D. Monti, M. Buscaglia, T. Bellini, D. Prosperi. Adv. Funct. Mater. (2010), 20(22), 3932-3940. IF: 10,179.
  37. "Investigating the Structural Biofunctionality of Antibodies Conjugated to Magnetic Nanoparticles"; E. Occhipinti, P. Verderio, A. Nataello, E. Galbiati, M. Colombo, S. Mazzucchelli, A. Salvadè, P. Tortora, S. M. Doglia, D. Prosperi. Nanoscale, (2011), 3(2), 387-90. IF: 6,233.
  38. "HER2 targeting as a two sided strategy for breast cancer diagnosis and treatment: outlook and recent implications in nanomedical approaches"; M. Colombo, F. Corsi, D. Foschi, E. Mazzantini, S. Mazzucchelli, C. Morasso, E. Occhipinti, L. Polito, D. Prosperi, S. Ronchi, P. Verderio. Pharmacological Research, (2010), 62, 150-65. IF: 4,346.
  39. "Proteomic and biochemical analyses unveil tight interaction of ataxin-3 with tubulin"; S. Mazzucchelli, A. De Palma, M. Riva, A. D'Urzo, C. Pozzi, V. Pastori, F. Comelli, P. Fusi, M. Vanoni, P. Tortora, P. Mauri, M. E. Regonesi.; Int. J. Biochem. Cell. Biol., (2009), 41(12), 2485-92. IF: 4,152.

#### ***Submitted publications***

1. "Indocyanine green fluorescence-guided video-assisted sentinel node biopsy in breast cancer: a prospective comparative study and cost-analysis". L. Sorrentino, A. Sartani, G. Pietropaolo, D. Bossi, B. Brillat, S. Mazzucchelli, M. Truffi, D. Foschi, F. Corsi. *Submitted to breast Cancer Research and treatment*.
2. "One-step intraoperative radiotherapy optimizes conservative treatment of breast cancer with advantages in quality of life and work resumption". L. Sorrentino, S. Fissi, I. Meaglia, D. Bossi, O. Caserini, S. Mazzucchelli, M. Truffi, P. Tabarelli, M. Liotta, G. B. Ivaldi, F. Corsi. *Submitted to breast Cancer Research and treatment*.
3. "Multivalent exposure of trastuzumab on iron oxide nanoparticles improves antitumor potential and reduces resistance in HER2-positive breast cancer cells". M. Truffi, M. Colombo, L. Sorrentino, L. Pandolfi, S. Mazzucchelli, F. Pappalardo, C. Pacini, R. Allevi, A. Bonizzi, F. Corsi, D. Prosperi. *Submitted to Scientific reports*.

#### **INVITED ORAL PRESENTATIONS**

- "Development of nanoparticles for diagnosis and treatment of cancer", *Seminar "Nanoparticles and Health"* 18.04.2013, Milan.
- "Prevent doxorubicin chemoresistance and cardiotoxicity by metronomic treatment of breast cancer with DOX-loaded ferritin nanocages", Nanotechnology and material science congress, 2017, Barcelona, Spain, 2017.



- “Metronomic nanocaged Doxorubicin Prevents Chemoresistance and Cardiotoxicity in Breast Cancer”, World Congress in Recent Advances in Nanotechnology 2017, Barcelona, Spain, 2017.
- “Nanometronomic treatment of breast cancer with Doxorubicin loaded H-Ferritin prevents drug resistance and circumvents cardiotoxicity”, Pharmaceutica 2016, Madrid, 2016
- “Nanocages for self-triggered nuclear delivery of doxorubicin at cancer cells”, Pharmaceutica 2015, Dubai, 2015
- “O6-alkylguanine-DNA transferase (SNAP) as capture module for site-specific covalent bioconjugation of targeting protein on nanoparticles”, S. Mazzucchelli, et Al. SPIE Photonics West, San Francisco, USA February 2013
- “Active targeting by antibody engineered magnetite nanoparticles in mice downregulates HER2 expression in cancer cells”; S. Mazzucchelli, et Al. Zing Nanoscience Conference; February 2012 Lanzarote

#### **POSTER PRESENTATIONS:**

- Olaparib nanoformulation in H-ferritin as a promising option for both BRCA-mutated and sporadic triple negative breast cancer: an in vitro study. San Antonio Breast Cancer Symposium 2017; San Antonio (TX), 2017.
- Multivalent exposure of Trastuzumab on iron-oxide nanoparticles enhances antitumor activity and weakens drug resistance in HER2+ breast cancer cells. San Antonio Breast Cancer Symposium 2017; San Antonio (TX), 2017.
- Indocyanine green fluorescence-guided video-assisted sentinel node biopsy: A prospective comparative study and cost-analysis. San Antonio Breast Cancer Symposium 2017; San Antonio (TX), 2017.
- H-ferritin allows nanometronomic treatment of breast cancer with doxorubicin preventing drug resistance and circumventing cardiotoxicity, San Antonio Breast Cancer Symposium; San Antonio (TX), 2016
- H-ferritin nanocages for Self-Triggered Nuclear Delivery of doxorubicin at cancer Cells, 4 th Nanotoday Conference, Dubai, 2015
- Delivering of nanoformulated enfuvirtide across the blood-brain barrier, NanoDDS, Chapel Hill (NC), 2014
- Engineered apoferritin nanocages for self-triggered nuclear delivery of drugs at cancer cells, NanoDDS, Chapel Hill (NC), 2014
- “Nanocages for Self-Triggered Nuclear Delivery of Doxorubicin at Cancer Cells”, S. Mazzucchelli et al., 27th Annual Conference of Italian Association of Cell Cultures, 12-13 November, 2014, Verona (IT).
- “Engineered Apoferritin Nanocages for Self-triggered nuclear delivery of Drugs at Cancer Cells”, S. Mazzucchelli et al., 12th International Nanomedicine & Drug Delivery Symposium, 6-8 October 2014, Chapel Hill (NC).

- “Multifunctional Nanoparticles with Orientation -Controlled Conjugation of HALO-Fused Homing Peptides Specifically Recognize Cancer Cells”, S. Mazzucchelli et Al., Symposium on Nanoparticle-Based Technologies for Cell Tracking, 01-01 July, 2013, Liverpool (UK).
- “Nanoparticles Conjugated in Orientation-Controlled Manner with Halo-U11 Peptide for Cancer Cells Targeting”, S. Mazzucchelli et Al. “The Joint European Summit for Clinical Nanomedicine 2013 (CLINAM 2013)”, 23-26 June, 2013, Basel (CH).
- “Bioengineering a versatile magnetic nano probe to site-specific labeling of antibodies for targeted detection of tumor cells”; S. Mazzucchelli, M. Colombo, C. De Palma, P. Verderio, M. D. Coghi, F. Corsi, D. Prosperi. 4th European Conference for Clinical Nanomedicine (Clinam 2011) “The Great Strides Towards The Medicine Of The Future”; 23-25 May 2011, Basel (CH).
- “Proteomic and biochemical analyses unveil tight interaction of ataxin-3 with tubulin”; S. Mazzucchelli et al. VIII European Symposium of the Protein Society; 14-18 June 2009; Zurich (CH).
- “Ataxin-3 binds tubulin with high affinity”; S. Mazzucchelli et al. Neurodegenerative Diseases: Biology and Therapeutics; 4-7 December 2008; Cold Spring Harbor (NY).

#### **ADDITIONAL TRAINING**

- “Biomethodology of the laboratory mouse”, Charles River UK, London 28 october 2016
- “Approaching tumor biology by pre-clinical imaging”-Myiteni Biotec Workshop; October 2012; Bologna (IT);
- First theoretical and practical Leica course of confocal microscopy; October 2010, Milan (IT).
- NAD Project: “Traning Course Safety Of Nanoparticle For Biomedical Use”; 20-21 September 2011; Milano (IT).
- Nanoparticles: characterization and biological interactions; 24-26 March 2010, Milan (IT).
- 10 th Seminar of Fondazione Michelangelo “up-date on her-2 directed therapies in early breast cancer”; 23 October 2009; Milano (IT).

#### **JOURNAL COVERS:**

- L. Fiandra, M. Colombo, S. Mazzucchelli, M. Truffi, B. Santini, R. Allevi, M. Nebuloni, A. Capetti, G. Rizzardini, D. Prosperi, F. Corsi. Nanomedicine: Nanotechnology, Biology, and Medicine, Volume 11, Number 6, Pages 1387-1397. (Front Cover)
- M. Colombo, S. Mazzucchelli, V. Collico, S. Avvakumova, L. Pandolfi, F. Corsi, F. Porta, D. Prosperi. Protein-assisted one-pot synthesis and biofunctionalization of spherical gold nanoparticles for selective targeting of cancer cells: Angew. Chem. Int. Ed., 37/2012 (Back Cover)
- S. Mazzucchelli, S. Sommaruga, M. O'Donnell, P. Galeffi, P. Tortora, D. Prosperi, M. Colombo. Dependence of Nanoparticle-Cell Recognition Efficiency from Surface Orientation of ScFv Targeting Ligands: Biomat. Sci., 1/2013 (Cover)

#### **HONORS:**

- ORGANIZING COMMITTEE: Pharmaceutica 2016, Madrid, 2016

- CONFERENCE CHAIRING: 5th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems, Dubai, 16-18 March 2015
- MODERATOR: 5th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems Dubai, 16-18 March 2015

## TECHNICAL SKILLS AND COMPETENCES:

**BIOCHEMISTRY:** production and purification of recombinant proteins in *E. coli* and in *P. pastoris* using different expression systems, electrophoretic techniques, protein and enzymatic activity assays, Western blot, Dot-blot, chromatographic separation in FPLC, GST-pull down, immunoprecipitations, labeling of proteins with fluorescent molecules, design of fusion protein for conjugation of protein to nanoparticles, bioengineering of nanoparticles, drug loading in ferritin nanocages.

**CELL BIOLOGY:** isolation and culture of human cells from biopsies, culture of immortalized cell lines, cell fractionation, immunofluorescence and flow cytometry for analysis of the binding of nanoparticles to cell surface markers, studies of cytotoxicity of nanoparticles hybrid on human cell cultures, pathway analysis of internalization of nano-hybrid particles, immunofluorescence and confocal microscopy analysis. Development of murine breast cancer model. In vivo targeting evaluation of nanoformulations. In vivo evaluation of activity/toxicity of nanoformulations.

**MOLECULAR BIOLOGY:** extraction and purification of plasmid DNA, PCR, restriction analysis, cloning, transformation of bacterial strains, electrophoretic techniques (agarose gel).

**COMPUTER SKILLS:** knowledge of the Windows operative system and applications Excel, Word, Power-Point, Photoshop applications, imageJ, programs of analysis of flow cytometry result, use of the Internet, use of databases (PubMed and ISI Web) and the main server and bioinformatics programs

**ENGLISH KNOWLEDGE:** comprehension-excellent; written - very good; spoken - good.

Data

12/12/2017

Luogo

Milan