ANDREA MASOTTI

PLACE AND DATE OF BIRTH	Firenze 17/10/1972
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PRESENT OCCUPATION

From January 2006 *Bambino Gesù Children's Hospital*

Post-Doctoral Fellow *(Cicle: years 2006-2009)* and (*Cycle: years 2009-2011*) in the Gene Expression and Microarrays Laboratory of Bambino Gesù Children's Hospital under the supervision of Prof. G.F.Bottazzo.

Main activity: coordination of the research group involved in several projects (almost 10) about gene expression and microRNA profiling. Other activities: mRNA and microRNA data analysis from different commercial (Applied Biosystems, Affymetrix, Agilent) and custom microarray platforms. Several bioinformatic tools and software are currently used in daily practice.

From November 2003 to October 2005 Bambino Gesù Children's Hospital

- Post-Doctoral Fellowship entitled *"Identification of "prediabetic" pancreas: implications on pancreas transplantation and in the etiopathogenesis of type-I diabetes"* and later "*Study of the etiopathogenesis of thyroid autoimmunity with thyroidal molecular repertoires: identification of novel autoantigens and/or antigens related to possible etiological factors* " (Scientific Directorate and Gene Expression and Microarrays Laboratory).

From 2009 to 2010 - Children's Hospital Bambino Gesù

- Principal Investigator of the project ***Ricerca Corrente "Genetic approaches to investigate Inorganic Arsenic metabolism in a pediatric population"***

From 2008 to 2009 - Children's Hospital Bambino Gesù

- Principal Investigator of the project ***Ricerca Corrente "CGH-SNPs Arrays"***

From 2005 to 2008 - Children's Hospital Bambino Gesù

- Principal Investigator of the project ***Ricerca Corrente "Progetto miRNA"***

From July 2002 to October 2003 University of Rome "La Sapienza"

- Collaboration at the Chemistry Department for the projects "**MULTIFOCAL COMBINED APPROACHES FOR GENE THERAPY OF MALIGNANT GLIOMAS"** and "**NOVEL CONTRAST AGENTS FOR MAGNETIC RESONANCE IMAGING (MRI) AND TISSUTAL TARGETING: CEREBRAL DAMAGES IN ANIMAL MODELS**".

PERSONAL EXPERIENCE

From May 2001 to June 2002 Advanced Biotechnology Center (CBA)

- National Project Research concerning Oncology (PNR N°4: "Methodologies to analyze molecular alterations of genes involved in neoplasies") entitled "**MICROCHIPS TO REVEAL GENETIC ALTERATIONS IN HUMAN TUMOURS**" attended at the Immunogenetic Laboratory (Prof. GB Ferrara) – Advanced Biotechnology Center (CBA) - Genova.

From January 2001 to May 2001

- Consultant for the company "Prisma" - Florence for a job concerning the environment and waste management.

EDUCATION

February 2007 University of Rome "La Sapienza"

- ***II Level Master in Bioinformatics*** (Prof. A.Tramontano)

From 1997 to 2000 University of Study of Florence

- (20 December 2000) Ph.D fellowship – Department of Inorganic Chemistry "**HOST-GUEST SYSTEMS IN MOLECULAR RECOGNITION**"

From 1997 to 1998 University of Study of Florence

- Research project concerning "**NATURAL PHYTOEXTROGENS IN BIOLOGICAL FLUIDS QUANTITATIVELY DETERMINED BY SPE AND HPLC TECHNIQUES**" – Department of Medicine and Immunoallergology – Faculty of Medicine and Pharmacy.

From 1991 to 1997 University of Study of Florence

- (18 April 1997) Degree in Chemistry. Title: "**THE 2,2'-BIPYRIDIL UNIT IN THE SYNTHESIS OF NEW POLYAMINE MACROCYCLIC LIGANDS. A STUDY OF THEIR COORDINATION PROPERTIES TOWARDS CD(II) AND PB(II) CATIONS**"

INSTITUTIONAL LESSONS AND OTHER ACTIVITIES

Year 2002/2003 - University of Study "La Sapienza" - Rome:

- Complements in Industrial Organic Chemistry (I year students) – School of Biotechnology.
- Biotechnology in Pharmaceutic Companies (III years students) – School of Biotechnology.

Supervisor (Faculty of Chemistry and Pharmaceutical Technology) for the following thesis:

1) "Synthesis, characterization, physicochemical and biological properties of acyl and alkyl derivatives of polyethylenimine".

2) "Miristyl-bromide and miristoyl-chloride for derivatisation of polyethylenimine. Synthesis, chemical and biological properties of selected derivatives".

3) “Polyethylenimine short-chain hydrophobic derivatives. Synthesis and study of chemical properties and application to biomedicine”.

4) “Superparamagnetic iron oxide nanoparticles coated by carboxylated polyethylenimine. Synthesis and study of their physicochemical properties”.

5) “Synthesis and characterisation of novel polyamidoamine dendrimers with a poliamine core”

6) “Synthesis and characterization of novel Gd(III)-containing contrast agents in nuclear magnetic resonance applications”.

Supervisor (Chemistry Department) for the thesis:

“Synthesis and evaluation of biological activity of novel hystone deacetylase (HDAC) inhibitors.”

MEMBERSHIP

- Member of SCI - Società Chimica Italiana – Italian Chemistry Society (Inorganic and Photochemical Chemistry Divisions)
- Member of ACS - American Chemical Society (Inorganic, Organic and Medicinal Chemistry Divisions)

PAPERS

1) Alisi A, Da Sacco L, Bruscalupi G, Piemonte F, Panera N, De Vito R, Leoni S, Bottazzo GF, Nobili V and Masotti A. ***Mirnome analysis reveals novel molecular determinants in the pathogenesis of diet-induced nonalcoholic fatty liver disease***. Lab Invest. (**2011**); 91(2):283-93.

2) Andrea Masotti, Letizia Da Sacco, Gian Franco Bottazzo and Anna Alisi. ***Microarray Technology: a Promising Tool in the Field of Nutrigenomics Discoveries***, Crit Rev Food Sci Nutr. (**2010**); 50(7):693-8.

3) Letizia Da Sacco and Andrea Masotti, ***Chitin and Chitosan as Multipurpose Natural Polymers for Groundwater Arsenic Removal and As_2O_3 Delivery in Tumor Therapy***, *Mar. Drugs* (**2010)**, *8*(5), 1518-1525.

4) A. Masotti, P. Vicennati, A. Alisi, C. Marianecci, F. Rinaldi, M. Carafa, G. Ortaggi, ***Novel Tween®20 derivatives enable the formation of efficient pH-sensitive drug delivery vehicles for human hepatoblastoma***, Bioorg Med Chem Lett, (**2010**); 20(10), 3021-5.

5) N. Panera, A. Alisi, A. Masotti, L. Da Sacco, M. Pezzullo, R. Devito, G. Bruscalupi, S. Leoni, M. Manco, V. Nobili, ***Inflammatory molecules involved in non-alcoholic steatohepatitis in rats fed different diets***, Dig Liver Dis, (2010), 42(S1), S47-S48.

6) Masotti A., ***Multifuntional nanoparticles: preparation and applications in biomedicine and in non-invasive bioimaging***. Recent Pat Nanotechnol. **2010** Jan;4(1):53-62.

7) A. Masotti, A. Giuliano, G. Ortaggi, ***Efficient Complexation-Ultrafiltration Process for Metal Ions Removal from Aqueous Solutions Using a Novel Carboxylated Polyethylenimine Derivative (PEI-COOH)***, Curr. Anal. Chem. (**2010**), 6(1), 37-42.

8) Del Cornò M, Michienzi A, Masotti A, Da Sacco L, Bottazzo GF, Belardelli F, Gessani S. ***CC chemokine ligand 2 down-modulation by selected Toll-like receptor agonist combinations contributes to T helper 1 polarization in human dendritic cells.*** Blood. **2009** Jul 23;114(4):796-806.

9) Barbato C, Arisi I, Frizzo ME, Brandi R, Da Sacco L, Masotti A.
Computational challenges in miRNA target predictions: to be or not to be a true target? J Biomed Biotechnol. **2009**;2009:803069.

10) A. Alisi, A. Masotti, L. Da Sacco, F. Piemonte, R. Devito, A. Alterio, G. Bruscalupi, S. Leoni, G.F. Bottazzo, V. Nobili, ***MicroRNA expression profiles in liver tissues from rat fed high fat/high carbohydrate diet may help to elucidate molecular pathogenesis of non-alcoholic fatty liver disease***. Journal of Hepatology, **2009**, 50, S254-S255.

11) Anna Alisi, Andrea Masotti and Valerio Nobili. ***Profiling MicroRNA Expression: a Snapshot of Nonalcoholic Steatohepatitis and a Recording of its Pathogenesis***, Hepatology. **2009** Feb;49(2):706-7.

12) Masotti A, Caputo V, Da Sacco L, Pizzuti A, Dallapiccola B, Bottazzo GF. ***Quantification of small non-coding RNAs allows an accurate comparison of miRNA expression profiles.*** J Biomed Biotechnol. **2009**;2009:659028.

13) E.Sturchio, C. Minoia, M. Zanellato, A. Masotti, E. Leoni, C. Sottani, G. Biamonti, A. Ronchi, L. Casorri, S. Signorini, M. Imbriani. ***Endocrine disruptors -- Monograph. 3. Arsenic.*** G Ital Med Lav Ergon. **2009** Jan-Mar;31(1):5-32.

14) Masotti A, Da Sacco L, Bottazzo GF, Sturchio E. ***Risk assessment of inorganic arsenic pollution on human health.*** Environ Pollut. **2009** Jun;157(6):1771-2.

15) Masotti A, Ortaggi G. ***Chitosan micro- and nanospheres: fabrication and applications for drug and DNA delivery.*** Mini Rev Med Chem. **2009** Apr;9(4):463-9.

16) Pampaloni F, Stelzer EH, Masotti A. ***Three-dimensional tissue models for drug discovery and toxicology.*** Recent Pat Biotechnol. **2009**;3(2):103-17.

17) A.Masotti, G.Mossa, C.Cametti, G.Ortaggi, A.Bianco, N.Del Grosso, D.Malizia, C.Esposito, ***Comparison of different commercially available cationic liposome-DNA lipoplexes: parameters influencing toxicity and transfection efficiency***, Colloids and Surfaces B: Biointerfaces, (**2009**), 68(2):136-44.

18) P.Vicennati, G.Ortaggi and A.Masotti, ***Polyethylenimine in medicinal chemistry***, Current Medicinal Chemistry, **2008**, 15(27), 2826-
2839.

19) A. Masotti, F. Bordi, G. Ortaggi, F. Marino and C. Palocci, ***A novel method to obtain chitosan/DNA nanospheres and a study of their release properties***, Nanotechnology (**2008**), 19 055302, doi: 10.1088/0957-4484/19/05/055302

20) Masotti A, Pitta A, Ortaggi G, Corti M, Innocenti C, Lascialfari A, Marinone M, Marzola P, Daducci A, Sbarbati A, Micotti E, Orsini F, Poletti G, Sangregorio C. ***Synthesis and characterization of polyethylenimine-based iron oxide composites as novel contrast agents for MRI.*** MAGMA. **2009**; 22(2):77-87.

21) M. Corti, A. Lascialfari, M. Marinone, A. Masotti, E. Micotti, F. Orsini, G. Ortaggi, G. Poletti, C. Innocenti, C. Sangregorio, ***Magnetic and relaxometric properties of polyethylenimine-coated superparamagnetic MRI contrast agents***, Journal of Magnetism and Magnetic Materials 320 (**2008**) e316–e319

22) Masotti A, Ortaggi G. ***Peptide nucleic acid-polyethylenimine conjugates promising multifunctional therapeutic tools for the future.*** Oligonucleotides. **2008**;18(3):301-3.

23) Masotti A, Vicennati P, Boschi F, Calderan L, Sbarbati A, Ortaggi G. ***A novel near-infrared indocyanine dye-polyethylenimine conjugate allows DNA delivery imaging in vivo.*** Bioconjug Chem. **2008**;19(5):983-7.

24) Masotti A, Moretti F, Mancini F, Russo G, Di Lauro N, Checchia P, Marianecci C, Carafa M, Santucci E, Ortaggi G. ***Physicochemical and biological study of selected hydrophobic polyethylenimine-based polycationic liposomes and their complexes with DNA.*** Bioorg Med Chem. **2007**;15(3):1504-15.

25) A. Masotti, L. Remollino, M. Carafa, C. Marianecci, E. Santucci, G. Ortaggi, ***Synthesis of a Novel Lipophilic Gadolinium Complex as a Potential MRI Contrast Agent***, Synlett, **2006**, 2815-2817.

26) Esposito C, Generosi J, Mossa G, Masotti A, Castellano AC. ***The analysis of serum effects on structure, size and toxicity of DDAB-DOPE and DC-Chol-DOPE lipoplexes contributes to explain their different transfection efficiency*** Colloids Surf B Biointerfaces. **2006** ;53(2):187-92.

27) Masotti A, Mangiola A, Sabatino G, Maira G, Denaro L, Conti F, Ortaggi G, Capuani G. ***Intracerebral diffusion of paramagnetic cationic liposomes containing Gd(DTPA)$^{2-}$ followed by MRI spectroscopy: assessment of pattern diffusion and time steadiness of a non-viral vector model.*** Int J Immunopathol Pharmacol. **2006**;19(2):379-90.

28) Niola F, Evangelisti C, Campagnolo L, Massalini S, Buè MC, Mangiola A, Masotti A, Maira G, Farace MG, Ciafrè SA. ***A plasmid-encoded VEGF siRNA reduces glioblastoma angiogenesis and its combination with interleukin-4 blocks tumor growth in a xenograft mouse model.*** Cancer Biol Ther. **2006**;5(2):174-9.

29) Andrea Masotti, Viviana Caputo, Sabrina Prudente e Gian Franco Bottazzo, ***Analysis of small RNAs with the Agilent 2100 Bioanalyzer***, Agilent Application Note, (**2006**), Publication Number 5989-5215EN.

30) Andrea Masotti and Tobias Preckel, ***Analysis of small RNAs with the Agilent 2100 Bioanalyzer***, Nat. Methods, (**2006**), 2006, doi:10.1038/nmeth908

31) Esposito, Claudio; Masotti, Andrea; Del Grosso, Nicoletta; Malizia, Daniela; Bianco, Armandodoriano; Bonadies, Francesco; Napolitano, Raffaella; Ortaggi, Giancarlo; Mossa, Giuseppe. ***Novel pH-Dependent Cationic Liposomes as Transfecting Agents for Glioma Cells.*** Comptes Rendus Chimie, (**2003**), 6(5-6), 617-622.

32) Lodeiro, Carlos; Pina, Fernando; Parola, A. Jorge; Bencini, Andrea; Bianchi, Antonio; Bazzicalupi, Carla; Ciattini, Samuele; Giorgi, Claudia; Masotti, Andrea; Valtancoli, Barbara; de Melo, J. Seixas. ***Exploring the photocatalytic properties and the long-lifetime chemosensor ability of $Cl_2[Ru(Bpy)_2L]$*** (L = 2,5,8,11,14-Pentaaza[15])-2,2'-bipyridilophane) Inorg. Chem. **2001**; 40(26); 6813-9.

33) Bazzicalupi, Carla; Bencini, Andrea; Berni, Emanuela; Bianchi, Antonio; Fornasari, Patrizia; Giorgi, Claudia; Masotti, Andrea; Paoletti, Piero; Valtancoli, Barbara. ***Cleft-like hexaamine ligands containing large heteroaromatic moieties as receptors for both anions and metal cations.*** J. Phys. Org. Chem. (**2001**), 14(7), 432-443.

34) Lodeiro, Carlos; Parola, A. Jorge; Pina, Fernando; Bazzicalupi, Carla; Bencini, Andrea; Bianchi, Antonio; Giorgi, Claudia; Masotti, Andrea; Valtancoli, Barbara. ***Protonation and Zn(II) Coordination by Dipyridine-Containing Macrocycles with Different Molecular Architecture. A Case of pH-Controlled Metal Jumping Outside-Inside the Macrocyclic Cavity***, Inorg. Chem.; **2001**; 40(13); 2968-2975.

35) Bencini, Andrea; Bianchi, Antonio; Masotti, Andrea; Valtancoli, Barbara; Lodeiro, Carlos; Parola, A. Jorge; Pina, Fernando; de Melo, J. Seixas. ***A novel Fluorescent Chemosensor Exibiting Exciplex Emission. An Example of an Elementary Molecular Machine Driven by pH.*** J. Chem. Soc., Chem. Comm. **2000**, 1639-1640.

36) Bazzicalupi, Carla; Bencini, Andrea; Ciattini, Samuele; Giorgi, Claudia; Masotti, Andrea; Paoletti, Piero; Valtancoli, Barbara; Navon, Nadav; Meyerstein, Dan. ***Cu(II) and Cu(I) Coordination by Hexaamine Ligands of Different Rigidity. A Thermodynamic, Structural and Electrochemical Investigation.*** J. Chem. Soc., Dalton Trans. **2000**, 2383-2391

37) Bencini, Andrea; Bianchi, Antonio; Giorgi, Claudia; Fusi, Vieri; Masotti, Andrea; Paoletti, Piero. ***Synthesis of Polyamine Macrocycles and Cryptands Incorporating Bipyridyle and Phenanthroline Moieties*** J.Org.Chem,**2000**, 65, 7686-7689.

38) Bazzicalupi, Carla; Bencini, Andrea; Bianchi, Antonio; Giorgi, Claudia; Masotti, Andrea; Valtancoli, Barbara; Fusi, Vieri; Roque, Ana; Pina, Fernando. ***pH Modulation of the Luminescence Emission of a New Europium Cryptate*** Complex. J. Chem. Soc., Chem. Comm. **2000**, 561-562.

39) Bazzicalupi, Carla; Beconcini, Alessia; Bencini, Andrea; Fusi, Vieri; Giorgi, Claudia; Masotti, Andrea; Valtancoli, Barbara. ***Phenanthroline-containing Macrocycles as Multifunctional Receptors for Nucleotide Anions. A Thermodinamic and NMR Study.*** J. Chem. Soc., Perkin Trans. 2, **1999**, 1675-1682.

PATENTS

- PCT patent entitled "***METHOD FOR CULTURING AND DETACHING CELLS ADHERING TO SURFACES***", WO2007083344.
- Italian patent entitled "Metodo per la coltura di cellule". RM2006A000020.

BOOK CHAPTERS

1) **Fluorescence and Scanning Electron Microscopy of Chitosan/DNA Nanoparticles for Biological Applications**, A. Masotti, F. Marino, G. Ortaggi and Cleofe Palocci, Modern Research and Educational Topics in Microscopy, A. Méndez-Vilas and J. Díaz (Eds.), p.690 -696, © FORMATEX 2007

2) **Multifunctional delivery vehicles for biomedical applications. Polyethylenimine as a multipurpose polymer**. A. Masotti, P. Vicennati and G. Ortaggi. Medicinal Chemistry Research Progress, Nova Science Publishers 2008.

3) **Polyethylenimine In Medicinal Chemistry**. P.Vicennati, A.Masotti and G.Ortaggi. Medicinal Chemistry Research Progress, Nova Science Publishers 2008.

4) **Chitosan Micro- and Nanospheres: fabrication and applications for drug and DNA delivery**. A.Masotti and G.Ortaggi, pp. 59-69 in Nanotechnology Research Progress (2009).

5) "**Biomimetic and Bioinspired Self-assembled Peptide Nanostructures**", Authors: F.Pampaloni and A.Masotti, in (Kumar Ed.) Biomimetic and Bioinspired Nanomaterials (NmLS Vol.7), Wiley-VCH Verlag GmbH & Co. KgaA (2010).

6) "**Polyethylenimine Bioconjugates for Imaging and DNA Delivery *in vivo***" in Bioconjugation Protocols, 2nd Ed. Series: Methods in Molecular Biology. Authors: A.Masotti and F.Pampaloni. (2010, in press), Springer – Humana Press.

7) "**Quantification of small non-coding RNAs may allow accurate comparisons of miRNA expression profiles from plant specimens**" in Non coding RNAs in Plants, Authors: L.Da Sacco, A.Palma, B.Chi-Hang Lam, Y.Haj-Ahmad, N.Rghei and A.Masotti, Springer (2010, in press)

8) "**Multifunctional nanospheres and applications to cardiology**", in Nanomedicine and the Cardiovascular System, Author: A.Masotti, CRC Press, (2011 in press).

Investigator Citation Profile

To date, the H-index is 12 and the sum of the Times Cited (33 papers) is 362.
(See also http://www.researcherid.com/rid/D-5306-2009).

Early Achievement-Track-Record

- **Editor-Selected Papers in Imaging.** ACS- Bioconjugate Chemistry. 2008, Thematic Compilations (IMAGING) for the publication: **A Novel Near-Infrared Indocyanine Dye–Polyethylenimine Conjugate Allows DNA Delivery Imaging in Vivo.** Masotti, A.; Vicennati, P.; Boschi, F.; Calderan, L.; Sbarbati, A.; Ortaggi, G. Bioconjugate Chem.; (Communication); 2008; 19(5); 983-987. DOI: 10.1021/bc700356f

Invited Speaker and Achievements

- **Invited Speaker** at the Workshop "**MicroRNAs and their targets**", 2 November 2010, Charles Darwin House, London, UK with a talk entitled "MicroRNAs delivery with novel synthetic vectors and site accessibility in target recognition"
- **Invited Speaker** at the Workshop "NANOTECH-Lazio" (22 April 2009), Chemistry Department, SAPIENZA University of Rome with a talk entitled "**Nanospheres and Nanoparticles for DNA Delivery and Magnetic Resonance Imaging**".
- **Editor-Selected Papers in Imaging.** ACS- Bioconjugate Chemistry. 2008, Thematic Compilations (IMAGING) for the publication: **A Novel Near-Infrared Indocyanine Dye–Polyethylenimine Conjugate Allows DNA Delivery Imaging in Vivo.** Masotti, A.; Vicennati, P.; Boschi, F.; Calderan, L.; Sbarbati, A.; Ortaggi, G. Bioconjugate Chem.; (Communication); 2008; 19(5); 983-987. DOI: 10.1021/bc700356f

Other Duties

- **Associate Editor** for the Journal "BMC Neuroscience"
- **Editorial Member** of the journal "Journal of Computational Biology and Bioinformatics Research – JCBBR (http://www.acadjourn.org/JCBBR/Email.htm).

Reviewer of the following International Journals

- **Annals of Biomedical Engineering** (Springer)
- **Analytical Chemistry** (ACS - American Chemical Society)
- **Biomaterials** (Elsevier)
- **Bioorganic & Medicinal Chemistry** (Elsevier)

- **BMC Neuroscience** (Biomed Central)
- **Chemical Communication** (RSC - Royal Society of Chemistry)
- **Colloids and Surfaces. B, Biointerfaces** (Elsevier)
- **Comparative and Functional Genomics** (Hindawi)
- **Current Drug Delivery** (Bentham Science Publishers)
- **Drug Delivery** (Informa Healthcare)
- **Drug News and Perspectives** (Thomson Reuters)
- **Ecotoxicology and Environmental Safety** (Elsevier)
- **Environmental Monitoring and Assessment** (Springer)
- **Food Analytical Methods** (Springer)
- **Gene Therapy** (Nature Publishing Group)
- **Journal of Microencapsulation** (Informa Healthcare)
- **Journal of Nucleic Acids** (Hindawi)
- **Journal of the American College of Nutrition** (American College of Nutrition)
- **Journal of Plant Breeding and Crop Science** (Academic Journals)
- **Letters in Drug Design & Discovery** (Bentham Science Publishers)
- **Molecular BioSystems** (RSC - Royal Society of Chemistry)
- **Nanomedicine** (Future Medicine)
- **Nanoscale** (RSC - Royal Society of Chemistry)
- **Nucleic Acid Research** (Oxford Journals)
- **PLoS Computational Biology** (Public Library of Science)
- **PLoS One** (Public Library of Science)
- **Proteomics** (Wiley-VCH)
- **Tetrahedron Letters** (Elsevier)
- **The Journal of Gene Medicine** (Wiley InterScience)

and of the project proposals coming from the following Organizations

- University of Padua (Italy)
- International Multi-Conference on Engineering and Technological Innovation: IMETI (Orlando, Florida, USA)

- International Symposium on Optical Engineering and Photonic Technology: OEPT (Orlando, Florida, USA)
- World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI (Orlando, Florida, USA)
- The Alzheimer's Association (225 N. Michigan Ave., Fl. 17 Chicago, IL 60601-7633)
- NSERC / CRSNG (Natural Sciences and Engineering Research Council of Canada) - Collaborative Health Research Projects.