CURRICULUM VITAE

Name: **Francesca Nuti**

Address: Interdepartmental Laboratory of Peptide & Protein Chemistry & Biology (PeptLab) via della Lastruccia, 13 I-50019 Sesto Fiorentino (FI)

Nationality Italian

Place and date of birth: Prato (Italy) 18/04/1975

PROFESSIONAL CAREER

June 2011 – May 2013: Assegno di ricerca at the PeptLab, Dept of Chemistry "Ugo Schiff", University of Florence on the research project: "Research of new biomarkers for the diagnosis of diseases mediated by the immune system". Scientific Supervisor: Prof. A. M. Papini.

March 2010 - May 2011: Post-doc fellowship on a research project based on "Synthesis and immunochemistry characterization of peptide for developing of biomarker of autoimmune diseases " University of Florence, Italy.

March 2007-February 2010: 'Assegno Premiante at the PeptLab, Dept of Organic Chemistry "Ugo Schiff", University of Florence on the research project "Glicopeptides e peptides modified to study molecular mechanism of the Multiple Sclerosis". Scientific Supervisor: Prof. A. M. Papini.

March 2002-February 2007: 'Assegno di Ricerca' at the PeptLab, Dept of Organic Chemistry "Ugo Schiff", University of Florence on the research project "Synthesis of modified amino acids to obtain for a Plasma filtration and Immunoadsorbtion project" (Scientific Supervisor: Prof. A. M. Papini).

May 2001-December 2001: Scholarship at the Laboratory of Peptide Chemistry of the Dept of Organic Chemistry "Ugo Schiff", University of Florence (Italy) in collaboration with the Dept of Occupational and Social Medicine, University of Tübingen, (Germany) on the research project "Measurement of the amounts of di-(2ethylhexyl)phthalate (DEHP) and dibutylphthalate(DBP) and their metabolites in serum and urine of humans" (scientific coordinator Dr. Sibylle Hildenbrand, scientific supervisor for the synthetic part of the project: Prof. A. M. Papini).

EDUCATION AND TRAINING

April 2001: "Laurea" in Chemistry. Degree thesis title: "Stereoselective synthesis of lipophilic amino acids orthogonally protected for solid phase peptide synthesis following Fmoc/tBu strategy". Tutors: Prof. M. Ginanneschi, Prof. P. Frediani; Dept of Organic Chemistry "Ugo Schiff", University of Florence (Italy).

November 2001: Habilitation for the Chemistry Profession.

January 2005: Ph.D granted in “Chemical Sciences”. Title: “Lipophilic and glycosyl amino acids protected for solid-phase synthesis of post-translationally modified peptides of myelin proteins”. Tutor: Prof. Alberto Brandi. PeptLab, Dept of Organic Chemistry ”Ugo Schiff”, University of Florence.

Organization of courses and congresses

2003 Member of Organizing Committee. Innovative combinatorial approaches and technologies: Practical Training Course Firenze, April 9-11, 2003.

2007 Member of the Organizing Committee of Eurocombi4, Symposium, the first International Symposium on Combinatorial Sciences in Biology, Chemistry, Catalysts and Materials, Chiostro del Maglio, Firenze (Italy), 15-18 July, 2007.

2011 Member of Scientific and Organizing Committee. International Microwave-Assisted Organic and Peptide Synthesis Symposium, Firenze (Italy), April 27-29, 2011.

Awards and scientific acknowledgments

2006 Best Poster Award Lucio Senatore, XXII Congresso Nazionale della Società Chimica Italiana [V. Volkov, F. Nuti, Y.Takaoka, R. Chelli, A.M. Papini, and R. Righini. Structure and bonding of water molecules in the polar region of phospholipid membrane investigated by two-dimensional IR spectroscopy and MD computer simulation. XXII Congresso Nazionale della Società Chimica Italiana, Firenze, September 10-15, 2006, Abstract FIS-P-135].

2005 Best Poster Award. XVIII International Symposium on Glycoconjugates “Glyco XVIII”, Florence, Italy [F. Nuti, I. Paolini, B.Mulinacci, M. Pazzagli, F. Lolli, M. Chelli, P. Rovero, and A.M. Papini. Sugar-scan of CSF114(Glc) for autoantibody recognition in Multiple Sclerosis. XVIII International Symposium on Glycoconjugates. Glyco XVIII”, Firenze, September 4-9, 2005, Abstract P057, Glycoconjugate J., 2005, 22(4–6), 254].

PERSONAL SKILLS AND COMPETENCES

Fields of interest

Diagnostics. Biomarkers. Autoimmune diseases. Bioorganic chemistry of peptides and proteins. Glycoconjugates as diagnostic and prognostic tools for human, animal, and plant diseases. Diagnosis and therapy of autoimmune diseases: role of co- or post-translational modifications of myelin proteins and peptides for immunological studies on multiple sclerosis for the development of diagnostic/prognostic tools, innovative immunotherapies and characterization of biomarkers of disease activity. Unnatural amino acids orthogonally protected for peptide synthesis (constrained amino acids, glycosyl and lipophilic amino acids). Coupling reagents for peptide chemistry (amide and ester bond formation). DEHP and phthalates as endocrine disruptor. Qualitative and quantitative analysis of phthalates in the biological fluid (urine and serum). Synthesis of SGPG and analogues for studding the peripherical nervous system.

Scientific contributions

35 peer reviewed publications (15 in journals, and 20 articles in books), 53 communications at International Symposia (2 oral communications and 51 posters).

Scientific and editorial advisory board memberships

Since 2007 Assistant of Editor-for-Europe of Protein & Peptide Letters, Bentham Science Publishers Ltd.

Scientific societies membership
2004: Member of the European Peptide Society.
2005 European Society of Combinatorial Chemistry (ESCS).
2008: Member of the American Peptide Society

SCIENTIFIC PUBLICATIONS LIST

[2002]

[1] E. Peroni, G. Caminati, P. Baglioni, **F. Nuti**, M. Chelli, and A.M. Papini. A New Lipophilic Fluorescent Probe for Interaction Studies of Bioactive Lipopeptides with Membrane Models. *Bioorg. Med. Chem. Lett*. (**2002**) 12, 1731-1734. **[IF 2.051].**

[2] A.M. Papini, E. Nardi, **F. Nuti**, J. Uziel, M. Ginanneschi, M. Chelli, and A. Brandi. Diastereoselective Alkylation of Schiff Bases for the Synthesis of Lipidic Unnatural Fmoc-protected α-Amino Acids. *Eur. J. Org. Chem.* (**2002**) 2736-2741. **[IF 2.195]**

[2005]

[3] **F. Nuti**, S. Hildenbrand, M. Chelli, R. Wodarz, and **A.**M. Papini Synthesis of DEHP metabolites as biomarkers for GC-MS evaluation of phthalates as endocrine disrupters.*Bioorg. Med. Chem.* (**2005**) *13*, 3461-3465. **[IF 2.286]**

[4] F. Lolli, B. Mulinacci, A. Carotenuto, B. Bonetti, G. Sabatino, B. Mazzanti, A.M. D'Ursi, E. Novellino, M. Pazzagli, L. Lovato, M.C. Alcaro, E. Peroni, M.C. Pozo-Carrero, **F. Nuti**, L. Battistini, G. Borsellino, M. Chelli, P. Rovero, and A.M. Papini. An N-glucosylated peptide detecting disease-specific autoantibodies, biomarkers of Multiple Sclerosis. *Proc. Natl. Acad. Sci., U.S.A.* (**2005**) *102*(29), 10273-10278. **[IF 10.231]**

[2006]

[5] V.V. Volkov, **F. Nuti**, Y. Takaoka, R. Chelli,A.M. Papini, and R. Righini. Hydration and Hydrogen Bonding of Carbonyls in Dimyristoyl-Phosphatidylcholine Bilayer. *J. Am. Chem. Soc. (***2006***), 128*, 9466-9471*.* **[IF 7.696]**

[2007]

[6] F. Nuti, I. Paolini, F. Cardona, M. Chelli, F. Lolli, A. Brandi, A. Goti, P. Rovero and Anna M. Papini Fmoc-protected iminosugar modified asparagine derivatives as building blocks for glycomimetics-containing peptides. *Bioorg. Med. Chem.* (**2007**), 15, 3965–3973. **[IF 2.662]**

[7] I. Paolini, **F. Nuti**, M.C. Pozo-Carrero, F. Barbetti, B. Kolesinska, Z.J. Kaminski, M. Chelli, and A.M. Papini. A convenient microwave-assisted synthesis of *N*-glycosyl amino acids *Tetrahedron Letters* (**2007**), 48, 2901–2904. **[IF 2.615]**

[8] V.V. Volkov, R. Chelli, W. Zhuang, **F. Nuti**, Y. Takaoka, A.M. Papini, S. Mukamel, and R. Righini. Electrostatic interactions in phospholipid membranes revealed by coherent two-dimensional infrared spectroscopy. *Proc. Natl. Acad. Sci., U.S.A.* (**2007**) 2007, 10.1073. **[IF 9.598]**

[2008]

[9] F. Real Fernández, A. Chamois-Colson, J. Bayardon, **F. Nuti**, E. Peroni, R. Meunier-Prest, F. Lolli, M. Chelli, C. Darcel, S. Jugè, and A.M. Papini. Ferrocenyl Glycopeptides as Electrochemical Probes to Detect Autoantibodies in Multiple Sclerosis Patients' Sera *Biopolymers: Peptide Science Biopolymers.* (**2008**); 90(4):488-95*.* **[IF 2.823]**

[10] Carotenuto A, Alcaro MC, Saviello MR, Peroni **E, Nuti** F, Papini AM, Novellino E, Rovero P. Designed glycopeptides with different beta-turn types as synthetic probes for the detection of autoantibodies as biomarkers of multiple sclerosis. *J Med Chem.* (**2008**),51 (17):5304-9. **[IF 4.898]**

[2009]

[11] M.A Bonache, **F. Nuti**, A. Le Chevalier Isaad, F. Real-Fernández, M. Chelli, P. Rovero, and A.M. Papini*.* Synthesis of new ribosylated Asn building blocks as useful tools for glycopeptide and glycoprotein synthesis. Tetrahedron Letters 50 (**2009**) 4151–4153. **[IF 2.538]**

[12] M.C Alcaro., Carotenuto A., **Nuti F**., Paolini I., Peroni E., Sabatino G., Novellino E., Lolli F., Papini A.M., Rovero P. "Modified peptides for the diagnosis of autoimmune diseases". *New Perspectives in Medicinal Chemistry* S. Alcaro (Ed.), (**2009**), 149-158.

[2010]

[13] F. Real-Fernández, F Nuti, M. A Bonache, M Boccalini, S Chimichi, M Chelli, AM. Papini. Microwave-assisted reaction of glycosylamine with aspartic acid. *Amino Acids*. (**2010**), 39, 599-604 **[IF 4.132]**

[14] **F. Nuti**, E. Peroni, F Real-Fernández, M.A Bonache, A. Le Chevalier-Isaad, M. Chelli, N. Lubin-Germain, J. Uziel, P. Rovero, F. Lolli, A.M. Papini. Post-translationally modified peptides efficiently mimicking neo-antigens: a challenge for theragnostics of autoimmune diseases. *Biopolymers: Peptide Sciences.* (**2010**), 94, 791-799. **[IF 2.605]**

[2012]

[15] C. Testa, **F. Nuti**, J. Hayek, C. De Felice, M. Chelli, P. Rovero, G. Latini, and A M Papini*.* Di(2-ethylhexyl)phthalate and Autism Spectrum Disorders. *ASN NEURO (American Society for Neurochemistry),* **2012**, 4, 223-229. **[IF2010 3.833]**

Patent

[1] "Nuovi peptidi glicosilati" Filing date: 05.06.2012 Inventors: Joussef Hayek, Claudio De Felice, Anna Maria Papini, Paolo Rovero, Francesca Nuti, Feliciana Real-Fernandez, Giuseppina Sabatino, Caterina Tiberi. Italian Patent n FI2012A000107.