

**Dr. Rosa Anna Siciliano**

**SHORT CV**

**CURRENT POSITION**

Research scientist at the Institute of Food Sciences and Technology (ISA), CNR Avellino, Italy, since 1998

Head of the division of “Mass spectrometry, proteomics, metabolomics and bioinformatics in food science” at ISA-CNR, since 2008

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**EDUCATION**

Graduated in Chemistry at the University of Naples “Federico II”. Final Grade: 110 e lode/110 (summa cum laude) (1988)

Qualifying examination as Chemist - University of Naples "Federico II" (1990)

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**MAIN PROFESSIONAL APPOINTMENTS / AWARDS**

Professor of Proteomics, (Corso di Laurea Magistrale in Scienze e Tecnologie Genetiche) University of Sannio (A. A. 2014 – 2015).

National Scientific Qualification (art.16 of the law 30 December 2010, n.240) as Associate Professor in Biochemistry (2014).

Tenure-track investigator at ISA-CNR (1994 – 1998)

Awarded an Italian Chemical Society fellowship at the Mass Spectrometry Centre, CNR, Naples (1994)

Awarded a two-year CNR Research Fellowship to work on post-translational modifications of native and DNA recombinant proteins by mass spectrometry at the Mass Spectrometry Centre, CNR, Naples (1989-1991).

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**RESEARCH ACTIVITY CARRIED OUT ABROAD**

Visiting Scientist at the Hungarian Academy of Science – MTA in Budapest, in the frame of an Italy Hungary Bilateral Program CNR/MTA, titled “Problem solving in Genomics and Proteomics using Advanced Mass Spectrometric Techniques” (2003).

Visiting scientist at the Department of Physical and Structural Chemistry, SmithKline Beecham Pharmaceuticals, Philadelphia, USA, under the supervision of Dr. Steven Carr and dr. Roland Annan, gaining experience on the most up-to-date proteomic methodologies (2000).

During her staying in USA, she was awarded a fellowship in the frame of the "Short Term Mobility Program" of the CNR.

Post doctoral research assistant (funded by Wellcome Trust) to carry out studies on structural characterization of oligosaccharides from glycoproteins by mass spectrometry at the Biological Mass Spectrometry Laboratory, Department of Biochemistry, Imperial College of Science, Technology and Medicine, London, under the supervision of Prof. A. Dell and Prof. H. R. Morris (1992)

*Post-doctoral fellow (funded by CNR) at* at the Biological Mass Spectrometry Laboratory, Department of Biochemistry, Imperial College of Science, Technology and Medicine, London, under the supervision of Prof. A. Dell and Prof. H. R. Morris (1991)

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#### **OTHER PROFESSIONAL ACTIVITIES AND INFORMATIONS**

- Member of the Editorial Board of the peer review journal Food Research International (Elsevier, ISSN: 0963-9969)
- Editor of a Special Issue of Food Research International titled "Foodomics: from fundamental biological processes to impacts in food quality, safety and human health"
- Reviewer for many international journal in the field of proteomics, mass spectrometry, analytical chemistry, biochemistry, microbiology
- Responsible of the ISA-CNR Research Unit in several national projects funded by Italian Ministries
- Tutor of several under-graduated and PhD students
- Member of the Italian Proteomic Association

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#### **INTERNATIONAL PATENT**

**Title:** "Treatment of cereal flour and semolina for consumption by celiac patients".

**Authors:** Rossi Mauro, Gianfrani Carmela, Siciliano Rosa Anna

**Patent Number** PCT/IB2007/003245

**Date:** 29/10/2007

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#### **RESEARCH ACTIVITY**

Main research activity of Rosa Anna Siciliano is focused on the development and application of advanced analytical methodologies based on proteomics and mass spectrometry to study biological systems and food matrices of relevant interest in Food Science and Human Health areas.

The objectives of her studies are:

- the application of proteomics in order to: i) investigate the molecular mechanisms of the adhesion process of probiotic bacteria and the molecular basis of other probiotic functional

features, ii) clarify response mechanisms to several environmental stresses in food-borne bacteria and in species of technological interest in food processing, iii) elucidate response mechanisms to biotic and abiotic stresses in plants; iv)

- the development of rapid and reliable molecular profiling strategies based on MALDI-TOF/MS for monitoring food safety, quality and authenticity. In particular, these strategies were applied to the identification of food-borne bacteria and to the authentication of different fish species with the aim to reveal fraudulent substitutions;
- the structural characterization of proteins and their post-biosynthetic modified forms using analytical methodologies that integrate classical biochemical protocols to mass spectrometry. In particular, in the recent years, mass spectrometry has been applied to the identification of immunogenic epitopes of gliadins (native or modified by tTGase) and to the definition of site-specific deamidated and/or transamidated residues of gliadins extracted from wheat submitted to an enzymatic detoxification process based on microbial TGase. Mass spectrometric based methodologies have been also applied to the development of innovative analytical strategies for evaluating food quality in milk and cheese by monitoring structural modifications induced by technological processing on whey proteins and caseins.

**PUBLICATIONS (2005-2014)**

1. Gelardi M, Siciliano RA, Papa F, Mazzeo MF, De Nitto E, Quaranta N, Lippolis R. Proteomic analysis of human nasal mucosa: different expression profile in rhino-pathologic states. *Eur Ann Allergy Clin Immunol.* 2014, 46:164-171.
2. Siciliano RA, Mazzeo MF, Spada V, Facchiano A, d'Acerno A, Stocchero M, De Franciscis P, Colacurci N, Sannolo N, Miraglia N. Rapid peptidomic profiling of peritoneal fluid by MALDI-TOF mass spectrometry for the identification of biomarkers of endometriosis. *Gynecol Endocrinol.* 2014, 11:1-5.
3. Ciarmiello LF, Mazzeo MF, Minasi P, Peluso A, De Luca A, Piccirillo P, Siciliano RA, Carbone V. Analysis of different European hazelnut (*Corylus avellana* L.) cultivars: authentication, phenotypic features, and phenolic profiles. *J Agric Food Chem.* 2014, 62:6236-6246.
4. Mazzeo MF, Cacace G, Ferriello F, Puopolo G, Zoina A, Ercolano MR, Siciliano RA. Proteomic investigation of response to FORL infection in tomato roots. *Plant Physiol Biochem.* 2014, 74:42-49.
5. Vastano V, Salzillo M, Siciliano RA, Muscariello L, Sacco M, Marasco R. The E1 beta-subunit of pyruvate dehydrogenase is surface-expressed in *Lactobacillus plantarum* and binds fibronectin. *Microbiol Res.* 2014, 169:121-127.
6. Mazzeo MF, Bonavita R, Maurano F, Bergamo P, Siciliano RA, Rossi M. Biochemical modifications of gliadins induced by microbial transglutaminase on wheat flour. *Biochim Biophys Acta.* 2013, 1830:5166-5674.
7. Lippolis R, Siciliano RA, Mazzeo MF, Abbrescia A, Gnoni A, Sardanelli AM, Papa S. Comparative secretome analysis of four isogenic *Bacillus clausii* probiotic strains. *Proteome Sci.* 2013, 11, 28.
8. Vastano V, Capri U, Candela M, Siciliano RA, Russo L, Renda M, Sacco M. Identification of binding sites of *Lactobacillus plantarum* enolase involved in the interaction with human plasminogen. *Microbiol Res.* 2013, 168:65-72.
9. Mazzeo MF, Cacace G, Peluso A, Zotta T, Muscariello L, Vastano V, Parente E, Siciliano RA. Effect of inactivation of ccpA and aerobic growth in *Lactobacillus plantarum*: A proteomic perspective. *J Proteomics.* 2012, 75:4050-4061.
10. Ammendolia MG, Agamennone M, Pietrantoni A, Lannutti F, Siciliano RA, De Giulio B, Amici C, Superti F. Bovine lactoferrin-derived peptides as novel broad-spectrum inhibitors of influenza virus. *Pathog Glob Health.* 2012, 106:12-19.
11. Siciliano RA, Mazzeo MF. Molecular mechanisms of probiotic action: a proteomic perspective. *Curr Opin Microbiol.* 2012, 15:390-396.
12. Muscariello L, Vastano V, Siciliano RA, Sacco M, Marasco R. Expression of the *Lactobacillus plantarum* malE gene is regulated by CcpA and a MalR-like protein. *J Microbiol.* 2011, 49:950-955.

13. Cacace G, Mazzeo MF, Sorrentino A, Spada V, Malorni A, Siciliano RA. Proteomics for the elucidation of cold adaptation mechanisms in *Listeria monocytogenes*. J Proteomics. 2010, 73:2021-2030.
14. Castaldo C, Vastano V, Siciliano RA, Candela M, Vici M, Muscariello L, Marasco R, Sacco M. Surface displaced alfa-enolase of *Lactobacillus plantarum* is a fibronectin binding protein. Microb Cell Fact. 2009, 8:14.
15. Dipasquale L, Gambacorta A, Siciliano RA, Mazzeo MF, Lama L. Purification and biochemical characterization of a native invertase from the hydrogen-producing *Thermotoga neapolitana* (DSM 4359). Extremophiles. 2009 Mar;13(2):345-354.
16. Mazzeo MF, Giulio BD, Guerriero G, Ciarcia G, Malorni A, Russo GL, Siciliano RA. Fish authentication by MALDI-TOF mass spectrometry. J Agric Food Chem. 2008, 56:11071-6.
17. Russo GL, Ciarcia G, Presidente E, Siciliano RA, Tosti E. Cytotoxic and apoptogenic activity of a methanolic extract from the marine invertebrate *Ciona intestinalis* on malignant cell lines. Med Chem. 2008, 4:106-109.
18. Siciliano RA, Cacace G, Mazzeo MF, Morelli L, Elli M, Rossi M, Malorni A. Proteomic investigation of the aggregation phenomenon in *Lactobacillus crispatus*. Biochim Biophys Acta. 2008, 1784:335-342.
19. Gianfrani C, Siciliano RA, Facchiano AM, Camarca A, Mazzeo MF, Costantini S, Salvati VM, Maurano F, Mazzarella G, Iaquinto G, Bergamo P, Rossi M. Transamidation of wheat flour inhibits the response to gliadin of intestinal T cells in celiac disease. Gastroenterology. 2007, 133:780-789.
20. Cacciapuoti G, Gorassini S, Mazzeo MF, Siciliano RA, Carbone V, Zappia V, Porcelli M. Biochemical and structural characterization of mammalian-like purine nucleoside phosphorylase from the Archaeon *Pyrococcus furiosus*. FEBS J. 2007, 274:2482-2495.
21. Castaldo C, Siciliano RA, Muscariello L, Marasco R, Sacco M. CcpA affects expression of the groESL and dnaK operons in *Lactobacillus plantarum*. Microb Cell Fact. 2006, 5:35.
22. Nardone G, Rippa E, Martin G, Rocco A, Siciliano RA, Fiengo A, Cacace G, Malorni A, Budillon G, Arcari P. Gastrokine 1 expression in patients with and without *Helicobacter pylori* infection. Dig Liver Dis. 2007, 39:122-129.
23. Pocsfalvi G, Cuccurullo M, Schlosser G, Cacace G, Siciliano RA, Mazzeo MF, Scacco S, Cocco T, Gnani A, Malorni A, Papa S. Shotgun proteomics for the characterization of subunit composition of mitochondrial complex I. Biochim Biophys Acta. 2006, 1757:1438-1450.
24. Mazzeo MF, Sorrentino A, Gaita M, Cacace G, Di Stasio M, Facchiano A, Comi G, Malorni A, Siciliano RA. Matrix-assisted laser desorption ionization-time of flight mass spectrometry for the discrimination of food-borne microorganisms. Appl Environ Microbiol. 2006, 72:1180-1189.
25. Senger S, Maurano F, Mazzeo MF, Gaita M, Fierro O, David CS, Troncone R, Auricchio S, Siciliano RA, Rossi M. Identification of immunodominant epitopes of alpha-gliadin in HLA-DQ8 transgenic mice following oral immunization. J Immunol. 2005, 175:8087-8095.

26. Tosco A, Siciliano RA, Cacace G, Mazzeo MF, Capone R, Malorni A, Leone A, Marzullo L. Dietary effects of copper and iron deficiency on rat intestine: a differential display proteome analysis. *J Proteome Res.* 2005, 4:1781-1788.