

<i>Curriculum vitae et studiorum of Dr. Antonella Leone</i>

Position: **Researcher (level III)**

Institution: **National Research Council (CNR) - Institute of Science of Food Production (ISPA) Unit of Lecce**

Phone: +39 0832 422615; Fax: +39 0832422620-627

E-mail: antonella.leone@ispa.cnr.it

Website: http://www.ispa.cnr.it/?page=organico&id_p=71

Associated member of **CoNISMa** (Consorzio Nazionale Interuniversitario Scienze del Mare), p.le Flaminio, 9- 00196 Roma (<http://www.conisma.it/>);

Member of PSE, Phytochemical Society of Europe (<http://phytochemicalsociety.org/>)

1. Education and Training

1990- Degree in Biological Sciences

1991 - 1994. Ph.D. in "Plant Genetics" Tuscia University, Viterbo, Italy

1994 - Plants in drought-stress conditions, Univ. Bologna, Italy

1995 - One-year CNR-scholarship at CNR-IRBA (now ISPA), Italy

1996 - Stages in Science and Technology (ACTINIA project, STRIDE program, ENEA).

2003 - 4th International Advanced Course "Chemistry and Biochemistry of Antioxidants" VLAG, Wageningen, The Netherlands.

2003 - Training course at Department of Experimental Botany, Radboud University Nijmegen, (The Netherlands).

2. Skills and competences

- Studies of the biological activities of natural compounds from plants, by-products originating from agrofood processing, marine invertebrate organisms and microalgae.
- Extraction by innovative technologies (supercritical CO₂), purification and analysis of bio-compounds or natural extracts.
- Study of the anticancer effect of bio-compounds or natural extracts by focusing on modulation of Gap Junction Intercellular Communication (GJIC) in mammalian (human) cells (e.g. active compounds from plants microalgae, jellyfish, etc.).
- Study of the role of GJIC in neurogenesis, morphogenesis and differentiation of neural cells in marine basal organisms (Cnidaria, Hydrozoa). Analysis of the effects of toxicant and antioxidants on GJIC and connexins in animal cell cultures.
- Study of plant lipoxygenases in physiologic or pathologic conditions.

Expertise: Cellular and Molecular Biology (Confocal Microscopy, Biochemistry)

3. Main research projects [participation (P) and responsibility (R)]

2015- EuroMarine funds, EM/PFB/BR/2015.003, supporting the Conference "Research, Innovation and Sustainability in Novel Foods" "Jellyfish as resource" in EXPO2015 (R)

2012-2015 – Med-Jellyrisk, Project founded by ENPI-CBC MED (<http://jellyrisk.eu/it/>) (P)

2013 –EU-Project Assemble: "Role Of Gap Junction Intercellular Communications in Morphogenesis of Basal Metazoa". (R)

2011-13 -EU Project: BIO-OLEA "Utilization of biophenols from *Olea Europea* products - Olives, virgin olive oil and olive mill wastewater", INTERREG European Territorial Cooperation Programme "Greece-Italy 2007–2013". (P)

2010-2013 EU-Project - OCEAN.2010-2 VECTORS- Vectors of change in marine life, impact on economic sectors. For the part related to the exploitation, biotechnological processes (food, bioactive molecules, aquaculture feeds). (P)

2008 –2010 *PRIN_ PROTOBRAIN* - Origin of central nervous system and extraretinal photoreception in basal metazoans. (PRIN – National Project MiUR, 2007 - prot. 20075WCPWM_001) (P)

2003 –2006 National grant, Industrial Research Project "Innovative Systems for Lycopene Production from Tomato Berries" (MIUR, L. 297/99) (P)

2001-2002 FISR_ National grant, Valorisation of Italian Biotype Of Wild Strawberry (*Fragaria Vesca*, L.) by Molecular and Biochemical Analyses of Aroma. FISR D.M. 10/5/00 in G.U. 195 del 22/8/00 (P)

4. Invited lectures

- **Leone A.** “Blue Growth: jellyfish biomasses as a resource” Workshop SSD PESCA: Sistema di Supporto alle Decisioni per la gestione sostenibile della Pesca -Iniziativa CNR per il Mezzogiorno, Foggia 28 settembre 2015.
- **Leone A.** “Blue Growth and marine biotechnology: uses of jellyfish biomasses as a resource for human consumption and pharmacology” Jellyfish Proliferation and Mitigation: Monitoring and Management of Jellyfish as part of our Marine Biodiversity & Treatments of Jellyfish Stings. 22-23rd May **2014, Malta**.
(http://www.um.edu.mt/__data/assets/file/0020/215237/Programme_fisheries_and_jellyfish_DoB_AVELLA.pdf)
- **Leone A.** The Good Side Of Pro-Oxidative Action Of Plant Polyphenols: An Action Mechanism For The Pro-Apoptotic. In the final Conference BIO_OLEA Project, “Table Olives, Virgin Olive Oil and Olive Mill Wastewater Developments and Potential Solutions” Corfu, **Greece**, 21-22 February **2014**.
- **Leone A.** Natural Bioactive compounds: A world of opportunities. Sino-Italian Marine Biological and Ecological Forum held by Zhejiang Ocean University, Zhoushan City, Zhjiang Province, PR **China**. China, 8-12 November **2012**.
- **Leone A.** Molecular Mechanisms Underlies the Biological Activities of Phytochemicals. 15th World Congress Clinical Nutrition El Sokhna - **Egypt** 19th – 22nd September **2010**
- **Leone A.** “Health Promoting Effects of Plant Antioxidants” - 1st Euro-Mediterranean Conference on “Plant Natural Products: from Biodiversity to Industry” Cairo, **Egypt** December 8-10, **2009**
- **Leone A.** Lycopene, Gap Junctions and Human Keratinocytes. Workshop "The Role Of Gap Junction Intercellular Communication in the Carcinogenesis by Industrial and Environmental Chemicals" *Facoltà di Medicina Università degli studi di Foggia (FO)*, **Italy** 20– 22 March **2007**

5. Project evaluation & Referee activities

- **Project evaluator instructed by:**

- **UE-FISCDI** for Research Council Romania Projects (11 evaluations) Romanian National Council for Scientific Research (<http://www.excellenceinresearch.ro/>)
- **CINECA** (Italy) for MIUR – SIR Projects (1 ev.)
- **CNR** in Bando Industria Sostenibile MISE (1 ev)

- **Referee for international scientific journals:**

Nutrition and Cancer: An International Journal (Taylor & Francis); *Food Chemistry, Toxicology, Toxicology in vitro, Journal of Food Composition and Analysis* (Elsevier); *Journal of Agriculture and Food Chemistry* (ACS Pub.), *Plant Biology* (Wiley), *BioMed Research International* (Hindawi); *Marine drugs, Foods* (MDPI) *Phytopathologia Mediterranea*,

6. Scientific Visits

2013. Short Term Mobility Program of CNR, at Consejo Superior de Investigaciones Cientificas, Institut de Ciències del Mar (CSIC-ICM) - Barcelona, with Dr. Veronica Fuentes, on the project “Extraction and analysis of bioactive compounds from the zooxanthellatae jellyfish *Cotylorhiza tuberculata*; Jellyfish a new source of food/feed”

2013. Research activity within the Assemble project (as principal investigator) at the Station Biologique de Roscoff for experimental activity on the study of gap junctions in morphogenesis of basal metazoans.

2012. Zhejiang Ocean University, Zhoushan City, Zhjiang Province, PR China, for experiences exchanges.

2012 Research activity within the Assemble project (as co-applicant) at the Sven Lovén Centre for Marine Sciences at Kristineberg for experimental activity on the study on the role of intercellular gap junction communications in morphogenesis and neural development of the basal metazoan *Clava multicornis* (Hydrozoa, Cnidaria).

2009 and 2010. Research activity at the Station Biologique de Roscoff for experimental activity on the study of gap junctions in basal metazoans.

2008. Short Term Mobility Program of CNR, at Michigan State University, National Food Safety and Toxicology Center, in collaboration with Prof. C.C. Chang, Prof. J. Trosko and Dr. B. Upham. Project: “Biological properties and effect on gap junction intercellular communications in animal and human cell cultures of grape seed extracts from Negramaro cultivar ” Jun-Jul **2008**.

2007. Short Term Mobility Program of CNR, at Michigan State University, National Food Safety and Toxicology Center, in collaboration with Prof. J. Trosko and Dr. B. Upham. Project: “Study of biological properties of an innovative food product derived from tomato (lycopene)” Stages in Sept-Oct **2007**

7. Professional Experience

From 2001 at present, position as permanent researcher at National Research Council (CNR), Institute of Sciences of Food Production (ISPA), Lecce, Italy.

2010-2015 – Studies on bioactive compounds from marine biomasses (e.g. jellyfish). Extraction, purification, biochemical analysis and study of biological properties of jellyfish and microalgae extracts. Studies on antiproliferative, pro-apoptotic effects on cancer cell cultures, ability to modulate gap junction intercellular communications (GJIC) on human cell cultures.

2008-2010 - Study on the GJIC in basal metazoans, analysis of their functions, innexin immunolocalization and *inx* gene expression, related to the development and function of the nervous and muscular systems in the presence or not of GJIC inhibitors.

2004-2010 Biological activity study of plant-derived products (e.g. lycopene, polyphenols, grape seed extracts) extracted by innovative (supercritical fluid extraction) and conventional technologies, targeted at the pharmaceutical, nutraceutical and/or cosmetic market. Antioxidant activity assays of phytochemicals, biological activity on animal cell cultures, as well as effect on gap junction intercellular communications and connexin expression (by RT-PCR, Real Time PCR, western blot, immunolocalization), as mechanism involved in cancerogenesis, in normal and cancer cells.

Study on neural system development in larvae of *Clava multicornis*, gap junction functionality evaluation by dye microinjection, immunocytochemical localization of innexins, and expression study of *inx* genes.

2001-2003 Study of the lipoxygenase (LOX) pathway in pea roots and strawberry fruits. Experience in HPLC analyses, enzymatic activity, lipoxygenase protein isolation and immunolocalization also by confocal microscopy in plant tissues. LOX gene expression analysis by RT-PCR and *in situ* hybridization.

1997 – 2000 Fixed-term researcher at Institute of Agricultural Nematology of Bari (Italy)– CNR, in the within of EU Project CNR/CE BIO 40318 Biotechnology: “Basis and Development of Molecular Approaches to Nematode Resistance”, on transient expression of nematode-responsive genes in *Arabidopsis* roots infected by *M. incognita* by means of microinjection of plasmids containing nematode-responsive-promoter in root cells.

Research in EU project FAIR CT96 1714 “Ultra-structural study of the hairy roots containing the NR constructs after nematode infection”.

Research on the lipoxygenase expression in pea roots in response to nematode infection.

Collaboration with Occupational Medicine of the Hospital of Bari, Italy, to evaluate the epigenetic carcinogen effect of HgCl₂ and CH₃HgCl on gap junctions-mediated intercellular communication (GJIC) in cultures of human keratinocytes, by microinjection methods.

1996 - 1997 Research activity on the project “Protein inhibitors of cysteine proteinases “at Institute of Research on Agricultural and Food Biotechnology (now ISPA) - CNR – Lecce, Italy.

7.1. Tutoring in more of 21 senior/master/bachelor’s degree theses

7.2. Teaching:

2010 - IFTS/RICERCA “*Elementi di Biotecnologie*” Course for “Tecnico Superiore Esperto delle Metodologie per l’Estrazione di Sostanze Antiossidanti” II year;

April-May 2009 – Course in Science: “Scienza è Sapere: il confronto come momento di ulteriore crescita” Obiettivo C -Azione 4 - *codice* C-4-FSE-2008-55 PON- 2007/2013 - “Competenze per lo sviluppo”)

May 2008 C.I.P.E. IFTS/RICERCA Coursefor “Tecnico Superiore Esperto delle Metodologie per l’Estrazione di Sostanze Antiossidanti”; Title: “*Basi teoriche e pratiche per la valutazione dell’attività antiossidante*”.

February- March 2006 “*Herbis non Verbis*” Title: “La ricerca in campo fitoterapico: le nuove frontiere”

2006 - training course “Ricercatore bioindustriale esperto in tecniche di analisi ed estrazione di antiossidanti naturali” - as educational activity in the Industrial Research Project: “Sistemi innovativi per la produzione di lycopene da bacche di pomodoro” (MIUR, L. 297/99), CNR-ISPA Lecce.

8. Selected Publications

- **Leone A., Piraino S. 2015.** Jellyfish: old Eastern food becomes the Western novel food. EFSA (European Food Safety Authority), 2015. Shaping the Future of Food Safety, Together: Proceedings of the 2nd EFSA Scientific Conference. Milan, Italy, 14–16 October 2015. *EFSA Journal* 2015;13(10):s1310, 137 pp. doi:10.2903/j.efsa.2015.s1310

- **Leone A.**, Lecci R.M., Durante M., Meli F., Piraino S. **2015**. The bright side of gelatinous blooms: nutraceutical value and antioxidant properties of three Mediterranean jellyfish (Scyphozoa). *Marine Drugs*, *13*, 4654-4681; Special Issue "Marine Functional Food" doi:10.3390/md13084654
- Lecci RM., D'Antuono I., Cardinali A., Linsalata V., Tasioula-Margari M., Logrieco A. **Leone A.** Antioxidant capacity and biologic activity on UVA-damaged human keratinocytes of six Italian and Greek Olive Mill Waste Waters. Submitted to *Journal of Dermatological Science*.
- Lecci RM., Logrieco A. **Leone A.** **2014**. Pro-oxidative action of polyphenols as action mechanism for their pro-apoptotic activity. *Anticancer Agents Med Chem.* 2014;14(10):1363-75.
- **Leone A.**, Lecci R.M., Durante M., Piraino S. **2013**. Extract from the zooxanthellate jellyfish *Cotylorhiza tuberculata* modulates gap junction intercellular communication in human cell cultures. *Mar. Drugs* *11*, 1728-1762; doi:10.3390/md11051728.
- **Leone A.**, Longo C. Trosko J.E. **2012**. The chemopreventive role of dietary phytochemicals through gap junctional intercellular communication. *Phytochemistry Reviews*, 1-23 (23 May 2012) SI "Phytochemicals in Nutrition and Health". DOI: 10.1007/s11101-012-9235-7.
- Longo C., Leo L., **Leone A.** **2012** Carotenoids, Fatty Acid Composition and Heat Stability of Supercritical Carbon Dioxide-Extracted-Oleo-resins. *International Journal of Molecular Sciences*. 2012, *13*(4), 4233-4254; doi:10.3390/ijms13044233.
- Gnoni V.G., Rochira A., **Leone A.**, Damiano F., Marsiliante S., Siculella L. **2012**. 3,5,3'triiodo-L-thyronine induces SREBP-1 expression by non-genomic actions in human Hep G2 cells. *Journal of cellular physiology* *227* (6), 2388-2397; DOI: 10.1002/jcp.22974
- Melillo MT., Leonetti P., **Leone A.**, Veronico P., Bleve-Zacheo T. **2011**. ROS and NO production in compatible and incompatible tomato-*Meloidogyne incognita* interactions. *European Journal of Plant Pathology*, *130*:489-502 (DOI: 10.1007/s10658-011-9768-4)
- Piraino S., Zega G., Di Benedetto C., **Leone A.**, Dell'Anna A., Pennati R., Candia Carnevali D., Schmid V. Reichert H. **2011**. Complex neural architecture in the diploblastic larva of *Clava multicornis* (Hydrozoa, Cnidaria). *Journal of Comparative Neurology*. *519*(10):1931–1951, DOI: 10.1002/cne.22614.
- **Leone A.**, Zefferino R., Longo C., Leo L., Zacheo G. **2010** Supercritical CO₂-extracted tomato oleoresins enhance gap junction intercellular communications and recover from mercury chloride inhibition in keratinocytes. *J. Agric. Food Chem*, *58*(8):4769-78.
- Mangiullo R., Gnoni A., **Leone A.**, Gnoni G.V., Papa S., Zanotti F. **2008**. Structural and functional characterization of FoF1-ATP synthase on the extracellular surface of rat hepatocytes. *Biochim. Biophys. Acta - Bioenergetics* *1777*:1326-1335.
- Leo L., **Leone A.**, Longo C, Lombardi, D., Raimo A., Zacheo, G. **2008**. Antioxidant Compounds and Antioxidant Activity in "Early Potatoes" *J. Agric. Food Chem.*, *56*, 4154–4163.
- Zefferino R., **Leone A.**, Piccaluga S., Cincione R., Ambrosi L. **2008**. Mercury modulates interplay between IL-1 β , TNF- α , and gap junctional intercellular communication in keratinocytes: mitigation by lycopene. *J Immunotoxicol.* Oct;5(4):353-60
- Fornelli F., **Leone A.**, Verdesca I., Minervini F., Zacheo G. **2007** The influence of lycopene on the proliferation of human breast cell line (MCF-7). *Toxicol in vitro*;21(2):217-23.
- **Leone A.**, Bleve-Zacheo T, Gerardi C, Melillo MT, Leo L, Zacheo G **2006**. Lipoxygenase involvement in ripening strawberry. *J. Agric. Food Chem.* Sep 6;54(18):6835-44
- Fachechi C., Nisi R., Gala R., **Leone A.**, Caretto S. **2006** Tocopherol biosynthesis is enhanced in photomixotrophic sunflower cell cultures. *Plant Cell Rep.* *26*:525-530
- Veronico P, Giannino D, Melillo MT, **Leone A.**, Reyes A, Kennedy MW, Bleve-Zacheo T. **2006** A novel lipoxygenase in pea roots. Its function in wounding and biotic stress. *Plant Physiol.* Jul;141(3):1045-55.
- Leone A., Melillo M.T., Bleve-Zacheo T. 2001. Lipoxygenase in pea roots subjected to biotic stress. *Plant Science* *161*:4, 703-717
- **Leone A.**, Piro G., Leucci MR., Dalessandro G., Zacheo G. **2000**. Membrane-and cell wall-associated heat shock proteins in two genotypes of barley seedlings. *Plant Biosystems* *134* (2), 171-178.
- Santino A., Gallo A., **Leone A.**, Poltronieri P., Zacheo G. **1998**. Purification and characterisation of a novel papain inhibitor from common bean (*Phaseolus vulgaris*) seed. *Physiologia Plantarum* *104* (3), 293-298.
- Santomauro L., Corsi P., **Leone A.**, Brescia G., Roncali L., Nico B., Pisoni B., et al. **1998**. Effects of Aroclor 1254 on intercellular communication in human keratinocytes. *La Medicina del lavoro* *90* (3), 497-512.