

Curriculum Vitae CONCETTA GARDI

Prof. Concetta Gardi was born in Catanzaro (Italy) on October 26th, 1959

CURRENT POSITION

Assistant Professor in General Pathology, Dept. of Molecular and Developmental Medicine, School of Medicine, University of Siena, Italy.

Head of the Laboratory for the study of stress-related diseases, Siena University

EDUCATION AND TRAINING

1990: PhD in Experimental and Molecular Pathology, University of Turin (Italy)

1984: qualified as a Professional Biologist.

1983: Degree in Biological Sciences at the University of Siena, Italy (summa cum laude).

1981-83 Graduate student at the Institute of General Pathology, University of Siena (Italy).

Since 2011: Senior Instructor of MBI programs (AIM-Associazione Italiana Mindfulness, Italy).

WORK EXPERIENCE

2003 – present: Assistant Professor, Dept. of Molecular and Developmental Medicine, University of Siena, Italy.

1991 – 2003 Senior Researcher, Department of Physiopathology, University of Siena, Italy.

09/1992 Visiting Scientist, Dept. Pharmacology, Cassella AG, Hoechst Frankfurt, Germany.

1990 – 1991 Postdoctoral fellowship, (Borsa di Studio MURST) Department of Physiopathology, University of Siena.

10/1990 NATO fellowship (NATO Awards for International Collaborative Research), Hoechst Research Center, Frankfurt, Germany.

TEACHING ACTIVITIES:

2013 - present: Assistant Professor of General Pathology at the University of Siena Medical School

2017-2019, teaching of “Applicazioni delle pratiche di Mindfulness” Master of 1st level in “Medicine Complementari e Terapie Integrate” (A.A. 2017/2018, 2018/2019).

May, 4-5, 2017 Seminars on *Neurotransmitters, hormones, neurotrophic factors and inflammatory markers* in the intensive course (theory and practice) in Neuroscience of Meditation for PhD students, University of Pavia, Pavia (Italy).

2003-2013: Assistant Professor of Immunology and Immunopathology, Siena University, Course in Biological Sciences.

1991-2007: Assistant Professor of Cellular and Ultrastructural Pathology, Immunology, and General Pathology at the Medical School and Biological Sciences School, Siena University.

1991- present: Tutor and supervisor of graduate students attending to the Faculty of Natural and Biological Sciences, and Environment and Workplace Prevention Techniques Course. Supervisor of PhD students attending to the PhD Course in Cell Biology and Physiopathology, Siena University.

AWARDS/HONORS

15.11.18- at present: Member of Teaching Committee for degree in Environment and Workplace Prevention Techniques, Siena University

2013-present: Coordinator of the Course in Pathology and Microbiology, degree in Environment and Workplace Prevention Techniques, Siena University.

2003-2007: Member of Teaching Committee for Biological Sciences under graduate course.

2002-2011: Member of the Faculty Board of the PhD School for Biology and Cellular Physiopathology of the University of Siena.

2010 - present: Associate Member to the Institute of Food Sciences (CNR, Italy)

Since 1990: Member of the New York Academy of the Sciences (NYAS)

Since 1984: Member of Italian Society of Pathology (SIP)

1990 – 1991 Postdoctoral fellowship, (Borsa di Studio MURST), University of Siena.

1990 NATO fellowship (NATO Awards for International Collaborative Research)

RESEARCH INTERESTS

At present, her main lines of research are:

1. EVALUATION OF MBSR PROGRAMS ON BRAIN PLASTICITY AND STRESS-RELATED DISEASES

A condition of chronic stress can lead to a disturbance of the functioning of the internal systems of self-regulation, with increase of inflammatory and oxidative processes. In addition to causing sleep disorders, headaches, anxiety and depression, chronic stress may contribute to the development of diseases such as diabetes, dementia and cardiovascular disorders. Mindfulness Based Stress Reduction (MBSR) is a specific mental training program aimed at changing mental and behavioural patterns or attitudes towards thoughts, sensations and emotions. Several studies have proposed possible neuroanatomical changes due to mindfulness. We demonstrated cortical thickness changes after an 8-weeks MBSR on mindfulness naïve subjects, finding significant thickness increase in right insula, somatosensory and cingulate cortices. Moreover, a significant reduction of several psychological indexes related to worry, state anxiety, depression and alexithymia have been observed, with a significant correlation between aforementioned anatomical changes and alexithymia level changes after MBSR (Santarnecchi et al. PlosOne 2014). In order to clarify the mechanistic links between psychological functioning and physical health, the aim of our recent studies is to evaluate the effect of Mindfulness intervention on biological markers, in particular oxidative and inflammation parameters and mental stress proteins such as cortisol. Our preliminary results (presented at the II International Conference on Mindfulness, Rome 2016) suggest that the practice of Mindfulness can not only alleviate psychological distress but also help to improve some biomarkers of inflammation.

2. EVALUATION OF NEW PHARMACOLOGICAL COMPOUNDS IN THE TREATMENT OF RHEUMATOID ARTHRITIS.

Studies have been carried out in “in vivo” and “in vitro” models of rheumatoid arthritis for the evaluation of natural drugs (such as pinosylvin, N-feruloylserotonin and quercetin) in the treatment of arthritis. These compounds were able to ameliorate all markers of inflammation and improve anti-oxidant defences. Our data suggest that this effect on the inflammation in arthritic rats could occur through the blocking of the ERK signalling pathway and regulation of NF-κB activation. ((Bauerova et al *Autoimmunity*, 2015; Bauerova et al *World Biomedical Frontiers*, 2015; Kuncirova et al *Fundam Clin Pharmacol*, 2014; Gardi et al *Arch Biochem Biophys*, 2015). In combination with methotrexate (MTX), a basic anti-rheumatic drug, these compounds markedly potentiated the therapeutic effect of MTX low dose, which resulted in significant improvement of all parameters measured.

More recent studies are investigating the effect of green tea extract on clinical and selected biochemical parameters in monotherapy as well as with combination therapy with MTX.

3. ROLE OF OXIDATIVE STRESS IN THE PATHOGENESIS OF LIVER AND LUNG FIBROSIS

In these studies, an in vivo model of chronic CCl₄ intoxication, leading to fibrosis and cirrhosis, have been used to investigate the role of oxidative stress in such disease. We have shown that the levels of plasma F₂-Isoprostanes (F₂-Iso) are maintained elevated in this model and correlated to the increased hepatic collagen (Comporti et al. *Lab Invest* 2005). In addition to being robust markers of in vivo oxidant stress, F₂-IsoPs can exert potent biological activity and potentially mediate some of the adverse effects of oxidant injury. We demonstrated that in hepatic stellate cells (HSC) some fibrogenic events (such as cell proliferation and collagen synthesis) are induced by F₂-Iso through the activation of receptors analogous to those for thromboxane A₂ (TP receptor) (Comporti et al. *Free Radic. Biol. Med.* 2008; Gardi et al. *Lab Invest* 2008). Furthermore, we demonstrated that the fibrogenic effects of F₂-IsoPs in HSC are mediated by downstream activation of MAPK, through TP binding that couples via both Gq α and Gi α proteins (Acquaviva et al. *Free Radic. Biol. Med.* 2013). Targeting TP receptor, or its downstream pathways, may contribute to prevent oxidative damage in liver fibrosis.

In a recent study (Arezzini et al. *Free Radic. Biol. Med.* 2018), we demonstrated that F₂-IsoPs are in vivo markers of OS during pulmonary fibrosis and also serve as key regulators of fibrogenesis by activating fibroblasts to myofibroblasts and by inducing cell proliferation and collagen synthesis. These effects are mediated by the TP receptor which we found to be expressed by rat lung fibroblasts. Together, these results may have important implications in the development of more effective therapies for lung fibrosis.

REVIEWER FOR INTERNATIONAL JOURNALS

- American Journal of Respiratory Cell and Molecular Biology
 - Annals of the New York Academy of Sciences
 - European Journal of Pharmacology
 - Current Drug Discovery Technologies
 - Journal of Medical Toxicology
 - Mediators of Inflammation
 - International Journal of Molecular Sciences
 - Monatshefte für Chemie - Chemical Monthly
 - Tissue and Cell
 - Frontiers
 - J Nutritional Biochemistry
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- Member of the **Editorial Board** of ISRN Pulmonology

CONFERENCE ORGANIZATION

Organizer for the “First International Conference on Environmental Stressors in Biology and Medicine”, 4–6 June, 2008, University of Siena, Siena.

Organizer for the “Second International Conference on Environmental Stressors in Biology and Medicine”, 5-7 October 2011, University of Siena, Siena.

Organizer for the “III International Conference on Cellular Environmental Stressors in Biology and Medicine”, 25-27 June 2014, University of Ferrara, Ferrara.

Member of the Scientific Committee for the “Second International Conference on Mindfulness (ICM-2)”, May 11-15, 2016, Sapienza University, Rome.

Member of the Scientific Committee for the “International Conference Trends on Mindfulness (TIM)”, November 9-11, 2018, Turin.

Member of the Scientific Committee for the “XXIII National Conference AIPS “Corpo-mente in movimento: Attività motoria e prestazione nell’arco della vita”, May 22-24, 2020, Siena.