

## **Academic**

Gianfranco Liguri, full professor of Biochemistry and Molecular Biology at the Faculty of Medicine and Surgery of the University of Florence until 2011, at present teaches at the post-graduated school in clinical Biochemistry of the Florence University as contract Professor.

## **Publishing**

Editor, for Zanichelli S.p.A. Bologna, of "BIOLOGIA E MEDICINA, BIOLOGY AND MEDICINE, Dizionario enciclopedico bilingue di Scienze Mediche e Biologiche e di Biotecnologie", p.2144.

Editor, for Zanichelli S.p.A. Bologna, of "Handbook of Nutrition and Clinical Dietetics", 2014.

Author of scientific articles on international Journals with referees and communications at National and International Congresses (see annex).

## **Scientific interests – Area of expertise**

Gianfranco Liguri' main research interest has been focused to the interactions between structure and function of phosphomonoesterases and biochemistry alterations in several neurodegenerative diseases. His scientific activity aimed to highlight the role of acylphosphatase in intracellular calcium homeostasis regulation and its possible involvement in pathological disorders, such as Alzheimer's disease (AD) and muscle dystrophy. Moreover, he studied the effect of presenilins and amyloid precursor protein mutations on the cellular redox status and antioxidant capacity. Moreover, he studied the effect of presenilins and amyloid precursor protein mutations on the cellular redox status and antioxidant capacity. Results from such studies highlighted the alteration of lipoperoxidation, protein oxidation, total anti-oxidant capacity and the levels of ADP ribosylation of poly(ADP-ribose) polymerase in fibroblasts and lymphoblasts from patients affected by AD, both familial or sporadic. In particular, peripheral cells not involved in the degenerative process and carrying mutations in APP and PS1 genes elicit alterations of oxidative stress markers comparable to those demonstrated in the SNC, thus supporting the hypothesis that oxidative damages of DNA, proteins and lipids represent an early event in the pathogenesis of AD. Recently his interest focused on protein misfolding and neurodegenerative disease. Other fields of interest are the design and development of advanced, micro-devices for human diagnostics (based on dry-chemistry and biosensors technology) and design and development of novel biochemical rapid assays (mainly for enzymes activity and metabolites). G. Liguri carry out research on the above topics in cooperation with several National and International academic and private laboratories.

## **Technology - Achievements**

- Co-inventor in Italian patents dealing with microporous membrane-based dry chemistry.
- Inventor in PCT patents focused on nanotechnology-based diagnostic assay for HPV.
- Inventor in National and PCT patents protecting a new glutathione derivative with anti-oxidant properties.
- Co-inventor in National patent application on a new Total Antioxidant Capacity assay.

## Honours'

- Co- Founder, year 1993, of Inter-University Centre for the Biochemical and Clinical Investigation of the Memory.
- Editor of "BIOLOGIA E MEDICINA, BIOLOGY AND MEDICINE, Encyclopaedic Dictionary of Medical, Biological and Biotechnological Sciences ", p. 2144, Zanichelli S.p.A. Publisher, Bologna.
- Past member of The Italian Society of Biochemistry and Molecular Biology, of “The protein Society” and of AAAS (American Association for the Advancement of Science).
- Member of Società Italiana di Nutrizione Umana (SINU), Italian adhering Body of *IUNS - International Union of Nutritional Sciences Societies*.
- Invited speaker and attendee at many National and International Congresses of Molecular Biology and Biochemistry.
- Director of post-graduated course in “Innovative Diagnostic Technologies in Laboratory Medicine” until a.y. 2010-2011.
- Enrolled in the Register of experts of the “Ministero dell’Università e della Ricerca Scientifica”
- Scientific Referee of FP7-UE-Granted project Nanomubiop (<http://www.nanomubiop.eu/>).
- Referee for research project applications of Alzheimer’s Association (USA).
- European Commission Expert for evaluating Horizon 2020 proposals.
- Editorial Board Member of “Dataset Papers in Science”.

## Papers on peer-reviewed Journals

- Cascella R, Evangelisti E, Zampagni M, Becatti M, D'Adamio G, Goti A, Liguri G, Fiorillo C, Cecchi C. S-linolenoyl glutathione intake extends life span and stress resistance via Sir-2.1 upregulation in *Caenorhabditis elegans*. Free Radic Biol Med. 2014 May 15.
- Wright D, Zampagni M, Evangelisti E, Conti S, D'Adamio G, Goti A, Becatti M, Fiorillo C, Taddei N, Cecchi C, Liguri G. Protective properties of novel S-acyl-glutathione thioesters against ultraviolet-induced oxidative stress . Photochem Photobiol. 2013 Mar-Apr;89(2):442-52.
- ✂ Zampagni M, Cascella R, Casamenti F, Grossi C, Evangelisti E, Wright D, Becatti M, Liguri G, Mannini B, Campioni S, Chiti F, Cecchi C. A comparison of the biochemical modifications caused by toxic and non-toxic protein oligomers in cells. J Cell Mol Med. 2011 Oct; 15(10):2106-16.
- ✂ Zampagni M, Wright D, Cascella R, D'Adamio G, Casamenti F, Evangelisti E, Cardona F, Goti A, Nacmias B, Sorbi S, Liguri G, Cecchi C Novel S-acyl glutathione derivatives prevent amyloid oxidative stress and cholinergic dysfunction in Alzheimer disease models. Free Radic Biol Med. 2012 Apr 15; 52(8):1362-71.
- ✂ Cenini G, Cecchi C, Pensalfini A, Bonini SA, Ferrari-Toninelli G, Liguri G, Memo M, Uberti D. Generation of reactive oxygen species by beta amyloid fibrils and oligomers involves different intra/extracellular pathways. Amino Acids. 2010 Apr; 38(4):1101-6.
- ✂ Zampagni M, Evangelisti E, Cascella R, Liguri G, Becatti M, Pensalfini A, Uberti D, Cenini G, Memo M, Bagnoli S, Nacmias B, Sorbi S, Cecchi C. Lipid rafts are primary mediators of amyloid oxidative attack on plasma membrane. J Mol Med. 2010 Jun;88(6): 597-608.

✂ Pensalfini A, Zampagni M, Liguri G, Becatti M, Evangelisti E, Fiorillo C, Bagnoli S, Cellini E, Nacmias B, Sorbi S, Cecchi C. Membrane cholesterol enrichment prevents Abeta-induced oxidative stress in Alzheimer's fibroblasts. *Neurobiol Aging*. 2009 Mar 16.

✂ Cecchi C, Nichino D, Zampagni M, Bernacchioni C, Evangelisti E, Pensalfini A, Liguri G, Gliozzi A, Stefani M, Relini A. A protective role for lipid raft cholesterol against amyloid-induced membrane damage in human neuroblastoma cells. *Biochim Biophys Acta*. 2009 Oct;1788(10):2204-16.

✂ Cecchi, A. Pensalfini, G. Liguri, S. Baglioni, C. Fiorillo, S. Simone, M. Zampagni, L. Formigli, D. Nosi, M. Stefani. Differentiation increases the resistance of neuronal cell to amyloid toxicity. *Neurochem. Res.* 33: 2516-2531 (2008).

– Pensalfini, C. Cecchi, M. Zampagni, M. Becatti, F. Favilli, P. Paoli, S. Catarzi, S. Bagnoli, B. Nacmias, S. Sorbi, G. Liguri. Protective effect of new acyl-glutathione derivatives against amyloid-induced oxidative stress. *Free Rad. Biol. Med.* 44: 1624-1636 (2008).

– C. Cecchi, F. Rosati, A. Pensalfini, L. Formigli, D. Nosi, G. Liguri, F. Dichiaro, M. Morello, G. Danza, G. Pieraccini, A. Peri, Mario Serio, Massimo Stefani. Seladin-1/DHCR24 protects neuroblastoma cells against A toxicity by increasing membrane cholesterol content. *J. Cell. Mol. Med.* 12: 1990-2002 (2008).

– C. Cecchi, A. Pensalfini, M. Stefani, S. Baglioni, C. Fiorillo, S. Cappadona, R. Caporale, D. Nosi, M. Ruggiero, G. Liguri. Replicating neuroblastoma cells in different cell-cycle phases display different vulnerability to amyloid toxicity. *J Mol Med* 86: 197-209 (2008).

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– C. Cecchi, C. Fiorillo, S. Baglioni, A. Pensalfini, S. Bagnoli, B. Nacmias, S. Sorbi, D. Nosi, A. Relini, G. Liguri. Increased susceptibility to amyloid toxicity in familial Alzheimer's fibroblasts. *Neurobiol. Aging* 28: 863-876 (2007).

– C. Cecchi, A. Pensalfini, S. Baglioni, C. Fiorillo, R. Caporale, L. Formigli, G. Liguri, M. Stefani. Differing molecular mechanisms appear to underlie early toxicity of pre-fibrillar HypF-N aggregates to different cell types. *FEBS J.* 273: 2206-2222 (2006).

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– C. Nediani, A. Celli, L. Formigli, AM Perna, C. Fiorillo, V. Ponziani, L. Ibba-Manneschi, S. Zecchi-Orlandini, D. Nosi, G. Liguri, PA Modesti, P. Nassi. Possible role of acylphosphatase, Bcl-2 and Fas/Fas-L system in the early changes of cardiac remodeling induced by volume overload *B.B.A.* 1638: 217-26 (2003).

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### **Publications in Italian Language**

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### **Patents and Patent applications**

<b>Title</b>	<b>Publication number</b>	<b>Publication date</b>	<b>Inventor(s)</b>	<b>Applicant(s)</b>
COMPOSIZIONE FARMACEUTICA CONTENENTE TIOESTERI DEL GLUTATIONE PER INCREMENTARE LA LONGEVITÀ DI INDIVIDUI ANIMALI O UMANI	NA	2014-02 (expected)	Gianfranco Liguri	Solosale Srl
METODO E KIT PER LA DETERMINAZIONE RAPIDA DELLA CAPACITA' ANTIOSSIDANTE TOTALE SU SANGUE INTERO E ALTRI CAMPIONI BIOLOGICI	NA	2014-07 (expected)	Gianfranco Liguri, Riccardo Ciuti	Solosale Srl
PHARMACEUTICAL COMPOSITION FOR THE PREVENTION AND THE TREATMENT OF DEGENERATIVE SKIN DISORDERS ESPECIALLY CAUSED BY IONIZING RADIATIONS	ITPO20110021 (A1)	2013-05-09	Fedeli Enrichetta; Sernesi Ilaria	Fedeli Enrichetta; Sernesi Ilaria
METHOD AND DEVICE FOR THE DETERMINATION OF ANALYTES IN WHOLE BLOOD	WO2012143894 (A1)	2012-10-26	Liguri Gianfranco [It]	Liguri Gianfranco [It]
IMPROVED VERTICAL-AXIS AEROGENERATOR	WO2012176048 (A2); WO2012176048 (A3)	2012-12-27	Berti Andrea [It]; Liguri Gianfranco [It]	En Eco S P A [It]; Berti Andrea [It]; Liguri Gianfranco [It]
HIGH SENSITIVITY NANOTECHNOLOGY-BASED MULTIPLEXED BIOASSAY METHOD AND DEVICE	US2010240147 (A1)	2010-09-23	Liguri Gianfranco [It] Trisolini Francesco [It]	
NEW S-ACYL-GLUTATHIONE DERIVATIVES, THEIR SYNTESIS AND USE IN THE TREATMENT OF OXIDATIVE STRESS-RELATED DISEASES	WO2009047728 (A2); WO2009047728 (A3)	2009-04-16	Liguri Gianfranco [It]	Univ Firenze [It]; Liguri Gianfranco [It]
HIGH SENSITIVITY NANOTECHNOLOGY-BASED MULTIPLEXED BIOASSAY METHOD AND DEVICE	WO2009040652 (A3); WO2009040652 (A2)	2009-04-02	Liguri Gianfranco; Trisolini Francesco	Hospitex Diagnostics S R L [It]; Liguri Gianfranco; Trisolini Francesco
DISPOSITIVO E METODO PER LA DETERMINAZIONE DI GLUCOSIO E DI ALTRI ANALITI SU SANGUE INTERO MEDIANTE UNA MEMBRANA MICROPOROSA	ITAR960035 (A1); IT1288716 (B1)	1998-06-10	Giusti Oliviero Berti Andrea Grandi Paolo Liguri Gianfranco	Bs Biochem Sys Srl [It]
DEVICE AND METHOD FOR TAKING AND ANALYSING A BLOOD SAMPLE	ITAR940022 (A1); IT1271387 (B)	1997-05-27	Liguri Gianfranco Grandi Paolo Gregorio Berti Andrea Giusti Oliviero	Bs Biochem Sys Srl



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DEVICE AND METHOD FOR DETERMINING INTRACELLULAR ANALYTES	ITAR940021 (A1); IT1271386 (B)	1997-05-27	Liguri Gianfranco Berti Andrea Grandi Paolo Gregorio	Bs Biochem Sys Srl
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