

**CURRICULUM VITAE**  
EUROPEAN FORMAT

**PERSONAL INFORMATION**

Name, Surname	<b>NICOLA GIANGREGORIO</b>
Address	CNR INSTITUTE OF BIOMEMBRANES , BIOENERGETICS AND MOLECULAR BIOTECHNOLOGIES C/O DEPARTMENT OF BIOSCIENCES, BIOTECHNOLOGIES AND BIOFARMACEUTICS VIA ORABONA 4, 70125 BARI, ITALY
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E-mail	n.giangregorio@ibiom.cnr.it
Nationality	Italian
Date of birth	05, AUGUST, 1966

**WORK EXPERIENCE**

- Dates (from – to) 19/03/2001 - to date
- Name and address of employer CNR (National Council of Research) "Centre for the study of mitochondria and energetic metabolism", now become IBIOM (Institute of Biomembranes, Bioenergetics and Molecular Biotechnologies), Via Amendola 165 A, 70126 Bari (Italy)
- Type of business or sector Life Sciences - Biochemistry and Molecular biology
- Occupation or position held CNR Researcher
- Main activities and responsibilities Scientific research
  
- Dates (from – to) 01/12/1995 - 18/03/2001
- Name and address of employer Department of Pharmaco-Biology, University of Bari, Via Orabona 4, 70125 Bari (Italy).
- Type of business or sector Life Sciences - Biochemistry and Molecular biology
- Occupation or position held Graduate laboratory technician
- Main activities and responsibilities Scientific research
  
- Dates (from – to) 1995
- Name and address of employer CNR "Centre for the study of mitochondria and energetic metabolism", Via Amendola 165/A, 70126 Bari (Italy)
- Type of business or sector Life Sciences - Biochemistry and Molecular biology
- Occupation or position held Research grant: "Finalized Project of Biotechnologies and Bio-Instrumentation"
- Main activities and responsibilities Scientific research

**EDUCATION AND TRAINING**

- Dates (from – to) 2018, March 28
- Title of qualification awarded National Scientific Habilitation for Associate Professor
  
- Dates (from – to) 1992-1995
- Name and type of organisation providing education and training Department of Pharmaco-Biology, University of Bari, Via Orabona 4, 70125 Bari (Italy)
- Principal subjects/occupational skills covered Cellular Biochemistry and Cellular Pharmacology
- Title of qualification awarded PhD in Biochemistry

• Dates (from – to)	1990
• Name and type of organisation providing education and training	University of Bari, (Italy)
• Principal subjects/occupational skills covered	Biochemistry: " Purification of the mitochondrial carnitine carrier from rat liver".
• Title of qualification awarded	Degree in Pharmacy

## RESEARCH ACTIVITIES

Research Sectors and Scientific Activities	<p>Expertise in biochemical and molecular biology techniques with particular regard in:</p> <ul style="list-style-type: none"> <li>- identification, isolation and purification of membrane proteins;</li> <li>- their reconstitution in artificial membranes (liposomes);</li> <li>- functional and kinetic studies of transport proteins;</li> <li>- identification of primary and secondary structure;</li> <li>- cloning and protein over-expression in bacteria;</li> <li>- site-directed mutagenesis;</li> <li>- genetic pathologies correlated to mutations in mitochondrial carriers;</li> <li>- protein chemical and functional modifications (xenobiotics compounds such as toxic molecules, drugs or newly synthesized compounds);</li> <li>- identification of posttranslational modifications (GSH, H<sub>2</sub>S, NO, acylations, etc.) and their regulator role of the protein function;</li> <li>- use of bioinformatics for the comparative structural analysis of membrane proteins or docking;</li> <li>- polyclonal antibodies production of membrane proteins and immunochemical detection</li> </ul>
Publications	<p>Scopus Citations Report (January 2020): 643; H-index = 14          Google Scholar Citations Report (January 2020): 803; H-index = 16</p>

1. Bolognino I, **Giangregorio N**, Pisani L, de Candia M, Purgatorio R, Tonazzi A, Altomare CD, Cellamare S, Catto M, A Prospective Repurposing of Dantrolene as a Multitarget Agent for Alzheimer's Disease, *Molecules* (2019) 25, 24(23)
2. **Giangregorio N**, Tonazzi A, Console L, Pistillo M, Scalera V, Indiveri C, Tryptophan 224 of the rat mitochondrial carnitine/acylcarnitine carrier is crucial for the antiport mechanism. *Biochim Biophys Acta Bioenerg.* (2019) 1860, 708-716
3. Scalise M, Console L, Galluccio M, Pochini L, Tonazzi A, **Giangregorio N**, Indiveri C. Exploiting Cysteine Residues of SLC Membrane Transporters as Targets for Drugs. *SLAS Discov.* (2019) 24, 867-881
4. Console L, **Giangregorio N**, Cellamare S, Bolognino I, Palasciano M, Indiveri C, Incampo G, Campana S, Tonazzi A, Human mitochondrial carnitine acylcarnitine carrier: Molecular target of dietary bioactive polyphenols from sweet cherry (*Prunus avium* L.), *Chemico-biological interactions* (2019), 307, 179-185
5. **Giangregorio N**, Tonazzi A, Console L, Galluccio M, Porcelli V, Indiveri C, Structure/function relationships of the human mitochondrial ornithine/citrulline carrier by Cys site-directed mutagenesis. Relevance to mercury toxicity, *Int J Biol Macromol.* (2018), 120, 93-99
6. Scalera V, **Giangregorio N**, De Leonardis S, Console L, Carulli ES, Tonazzi A, Characterization of a novel Mitochondrial Ascorbate Transporter from rat liver and potato mitochondria, *Front Mol Biosci* (2018), 5, 1-9
7. Console L, Scalise M, Tonazzi A, **Giangregorio N**, Indiveri C, Characterization of Exosomal SLC22A5 (OCTN2) carnitine transporter, *Sci Rep* (2018), 8, 3758
8. Pisani L, De Palma A, **Giangregorio N**, Miniero DV, Pesce P, Nicolotti O, Campagna F, Altomare CD, Catto M, Mannich base approach to 5-methoxyisatin 3-(4-isopropylphenyl)hydrazone: A water-soluble prodrug for a multitarget inhibition of cholinesterases, beta-amyloid fibrillization and oligomer-induced cytotoxicity, *Eu J Pharm Sci* (2017), 109, 381-388
9. Scalise M, Galluccio M, Pochini L, Console L, Barile M, **Giangregorio N**, Tonazzi A, Indiveri C, Studying interactions of drugs with cell membrane nutrient transporters: new frontiers of proteoliposome nanotechnology, *Curr Pharm Des* (2017) 23, 3871-3883
10. Tonazzi A, **Giangregorio N**, Console L, De Palma A, Indiveri C, Nitric oxide inhibits

- the mitochondrial carnitine/acylcarnitine carrier through reversible S-nitrosylation of cysteine 136, *Biochimica et Biophysica Acta - Bioenergetics*, (2017) 1858, 475-482
11. **Giangregorio N**, Tonazzi A, Console L, Indiveri C, Post-translational modification by acetylation regulates the mitochondrial carnitine/acylcarnitine transport protein, *Mol Cell Biochem* (2017), 426, 65-73
  12. **Giangregorio N**, Tonazzi A, Console L, Lorusso I, De Palma A, Indiveri C, The mitochondrial carnitine/acylcarnitine carrier is regulated by hydrogen sulfide via interaction with C136 and C155, *Biochimica et Biophysica Acta (BBA)-General Subjects* (2016) 1860, 20-27
  13. Tonazzi A, **Giangregorio N**, Console L, Scalise M, La Russa D, Notaristefano C, Brunelli E, Barca D, Indiveri C, Mitochondrial Carnitine/Acylcarnitine Transporter, a Novel Target of Mercury Toxicity, *Chemical research in toxicology* (2015) 28, 1015-1022
  14. Tonazzi A, **Giangregorio N**, Console L, Indiveri C, Mitochondrial Carnitine/Acylcarnitine Translocase: Insights in Structure/Function Relationships, Basis for Drug Therapy and Side Effects Prediction, *Mini reviews in medicinal chemistry* (2015) 15, 396-405
  15. Console L, **Giangregorio N**, Indiveri C, Tonazzi A, Carnitine/acylcarnitine translocase and carnitine palmitoyltransferase 2 form a complex in the inner mitochondrial membrane, *Molecular and cellular biochemistry* (2014) 394, 307-314
  16. **Giangregorio N**, Console L, Tonazzi A, Palmieri F, Indiveri C, Identification of Amino Acid Residues Underlying the Antiport Mechanism of the Mitochondrial Carnitine/Acylcarnitine Carrier by Site-Directed Mutagenesis and Chemical Labeling, *Biochemistry* (2014) 53, 6924-6933
  17. Scalise M, Pochini L, **Giangregorio N**, Tonazzi A, Indiveri C, Proteoliposomes as tool for assaying membrane transporter functions and interactions with xenobiotics, *Pharmaceutics* (2013) 5, 472-497
  18. **Giangregorio N**, Palmieri F, Indiveri C, Glutathione controls the redox state of the mitochondrial carnitine/acylcarnitine carrier Cys residues by glutathionylation, *Biochimica et Biophysica Acta (BBA)-General Subjects* (2013) 1830, 5299-5304
  19. Tonazzi A, Console L, **Giangregorio N**, Indiveri C, Palmieri F, Identification by site-directed mutagenesis of a hydrophobic binding site of the mitochondrial carnitine/acylcarnitine carrier involved in the interaction with acyl groups, *Biochim Biophys Acta - Bioenergetics* (2012) 1817, 697-704
  20. Indiveri C, Iacobazzi V, Tonazzi A, **Giangregorio N**, Infantino V, Convertini P, Console L, Palmieri F. The mitochondrial carnitine/acylcarnitine carrier: Function, structure and physiopathology. *Mol Aspects Med.* 32 (2011) 223-33
  21. **Giangregorio N**, Tonazzi A, Console L, Indiveri C, Palmieri F, Site-directed mutagenesis of charged amino acids of the human mitochondrial carnitine/acylcarnitine carrier: Insight into the molecular mechanism of transport, *Biochim Biophys Acta* 1797 (2010) 839-45
  22. Tonazzi A, **Giangregorio N**, Indiveri C and Palmieri F, Site directed mutagenesis of the His residue of the rat mitochondria carnitine/acylcarnitine carrier: implications for the role of His-29 in the transport pathway, *Biochim Biophys Acta* 1787 (2009) 1009-15
  23. De Lucas JR, Indiveri C, Tonazzi A, Perez P, **Giangregorio N**, Iacobazzi V, Palmieri F, Functional characterization of residues within the carnitine/acylcarnitine translocase RX2PANAAXF distinct motif, *Mol Membr Biol.* 25 (2008) 152-63
  24. Pochini L, Galluccio M, Scumaci D, **Giangregorio N**, Tonazzi A, Palmieri F, Indiveri C, Interaction of beta-lactam antibiotics with the mitochondrial carnitine/acylcarnitine transporter, *Chem Biol Interact.* 173 (2008) 187-94
  25. **Giangregorio N**, Tonazzi A, Indiveri C, Palmieri F. Conformation-dependent accessibility of Cys-136 and Cys-155 of the mitochondrial rat carnitine/acylcarnitine carrier to membrane-impermeable SH reagents. *Biochim Biophys Acta.* 1767 (2007) 1331-9
  26. Tonazzi A, **Giangregorio N**, Palmieri F and Indiveri C, Relationships of Cysteine and Lysine residues with the substrate binding site of the mitochondrial ornithine/citrulline carrier: an inhibition kinetic approach combined with the analysis of the homology structural model, *Biochim Biophys. Acta* 1718 (2005) 53-60
  27. Tonazzi A, **Giangregorio N**, Indiveri C and Palmieri F, Identification by site-directed mutagenesis and chemical modification of three vicinal cysteine residues in rat mitochondrial carnitine/acylcarnitine transporter, *J. Biol. Chem.* 280 (2005) 19607-12
  28. Indiveri C, **Giangregorio N**, Tonazzi A and Palmieri F. (2004). Site-directed mutagenesis of the mitochondrial carnitine/acylcarnitine carrier: identification of four

- vicinal cysteine residues. *Biochim Biophys. Acta - Bioenergetics*, vol. 1658, ISSN: 0005-2728
29. Indiveri C, **Giangregorio N**, Iacobazzi V, Palmieri F, Site-directed mutagenesis and chemical modification of the six native cysteine residues of the rat mitochondrial carnitine carrier: implications for the role of cysteine-136, *Biochemistry* 41 (2002) 8649-56
  30. Indiveri C, Iacobazzi V, **Giangregorio N**, Palmieri F, Bacterial overexpression, purification, and reconstitution of the carnitine/acylcarnitine carrier from rat liver mitochondria, *Biochem Biophys Res Commun.* 249 (1998) 589-94
  31. Indiveri C, Iacobazzi V, **Giangregorio N**, Palmieri F, The mitochondrial carnitine carrier protein: cDNA cloning, primary structure and comparison with other mitochondrial transport proteins, *Biochem J.* 321 (1997) 713-9
  32. Indiveri C, Tonazzi A, **Giangregorio N**, Palmieri F, Probing the active site of the reconstituted carnitine carrier from rat liver mitochondria with sulfhydryl reagents. A cysteine residue is localized in or near the substrate binding site, *Eur J Biochem.* 228 (1995) 271-8

### **ADDITIONAL INFORMATION**

#### Recent Funded Research Projects

03/10/2011 - 31/05/2015

PON 2007-2013 Progetto cod. 01-00937 - Modelli sperimentali biotecnologici integrati per lo sviluppo e la selezione di molecole di interesse per la salute dell'uomo

#### Management

2009 to April 2016

Member of the Institute Committee of IBBE (Institute of Biomembrane and Bioenergetics)-CNR

Member of the organizing committee of the Italian Group of Biomembranes and Bioenergetics (GIBB) meeting, Matera, May 29-31, 2014

Academic appointments	<p>Lecturer in charge at the University of Bari in the following specified academic years and course:</p> <ul style="list-style-type: none"> <li>- (2019/2020), (2018/2019), (2017/2018) <b>"Animal and Vegetable Biology"</b> (100 hours course of frontal lessons, Faculty of Pharmacy, degree course in Pharmacy)</li> <li>- (2016/2017), (2015/16), (2014/15) <b>"Animal and Vegetable Biology"</b> (80 hours course of frontal lessons, Faculty of Pharmacy, degree course in Pharmacy)</li> <li>- (2013/14), (2012/13), (2011/12), (2010/11) <b>"Animal and Vegetable Biology"</b> (60 hours course of frontal lessons, Faculty of Pharmacy, degree course in Pharmacy)</li> </ul> <p>2012 - to 2018: Board member of the PhD School in "Genomica e Proteomica Funzionale Applicata", Department of Biosciences, Biotechnologies and Biopharmaceutics, University of Bari A. Moro</p> <p>2012 - to 2018: Board member of the PhD School in "Scienze Biochimiche e Farmacologiche", Department of Pharmacy - Pharmaceutical Sciences, University of Bari A. Moro</p> <p>Lecturer in charge at the University of Calabria in the following specified academic years and course:</p> <ul style="list-style-type: none"> <li>- (2011/12), (2010/11), (2009/10) <b>"Biochemistry and molecular biology applicated"</b> (32 hours course of frontal lessons, Faculty of SMFN, degree course in Biological Science)</li> <li>- (2011/12), (2010/11), (2009/10), (2008/09), (2007/08), (2006/07), (2005/06) <b>"Biochemistry of the cellular membrane"</b> (32 hours course of frontal lessons, Faculty of SMFN, degree course in Biological Science)</li> <li>- (2008/09), (2007/08), (2006/07), (2005/06), (2004/05), (2003/04), <b>"Applicated Biology II"</b> (32 hours course of frontal lessons, Faculty of SMFN, degree course in Biological Science)</li> <li>- (2004/05), (2003/04) <b>"Cellular Biochemistry"</b>(16 hours course of frontal lessons, Faculty of SMFN, degree course in Biological Science)</li> <li>- (2004/05) <b>" Biochemistry of the cellular membranes"</b> (16 hours course of frontal lessons, Faculty of SMFN, degree course in Biological Science)</li> </ul> <p>Teacher in Master courses:</p> <p>(2009), (2007), (2005): <b>"Protein Engineering Course"</b> in <b>"Master of Biotechnology"</b>, University of Calabria</p>
Training	<ul style="list-style-type: none"> <li>- Formation course in " Confocal microscopy". Bari, 2012</li> <li>- Formation course in " Cytofluorimetry". Bari, 11-12 May 2010</li> <li>- Formation course in " Mass spectrometry for the study of proteomic and genomic". Bari, 9-10 December 2003</li> <li>- Visiting Ph.D. student at "Institut fur Biotechnologie" of Julich (Germany), headed by Prof. Reinhard Krämer. from January to April 1993, studying the transport mechanism of the mitochondrial ADP/ATP carrier</li> </ul>
Collaborations	<p>Prof. Cesare Indiveri, Università degli Studi della Calabria, Department of Biology, Ecology and Earth Sciences (DIBEST), Cosenza (Italy)</p> <p>Dr. Matteo Gelardi, M.D., Departments of Otolaryngology and Ophthalmology, University School of Medicine, Bari (Italy)</p>

Prof. Saverio Cellamare, Università degli Studi di Bari A. Moro, Department of Pharmacy – Drug Sciences, Bari (Italy)

Prof. Cosimo Altomare, Università degli Studi di Bari A. Moro, Department of Pharmacy – Drug Sciences, Bari (Italy)

Prof. Marco Catto, Università degli Studi di Bari A. Moro, Department of Pharmacy – Drug Sciences, Bari (Italy)