Prof. Loredana Capobianco (born 1961) is an Associate Professor of Biochemistry of the Department of Biological Science and Technology at University of Salento (Lecce, Italy). In 1986, she obtained her Bachelor Degree in Farmacy from the University of Bari (Italy). In 1991, she obtained a PhD in Biochemistry from the University "Federico II" of Naples (Italy), after having spent four years of research in the Laboratory of Biochemistry and Molecular Biology directed by Prof. Ferdinando Palmieri at University of Bari. She occupied a stable position of Researcher in Biochemistry from 1996 to 2000 (Department of Pharmaco-Biology of the University of Calabria), before attaining in 2000, the rank of Associate Professor in Biochemistry in the University of Salento.
Her research activity has been carried out in collaboration with

- Prof. Ferdinando Palmieri director of the laboratory of Biochemistry and Molecular Biology of the Department of Pharmaco-Biology of the University of Bari;
- Prof. Vincenza Dolce of the laboratory of Biochemistry and Molecular Biology of the Department of Pharmaco-Biology of the University of Calabria;
- Prof. Giovanni Cenci of the laboratory of Genetic of the Biology and Biotechnology Department "Charles Darwin" (BBCD) of the Sapienza University.

She was visiting researcher at the following foreign laboratories: a) Laboratoire de Biochimie, Departement de Recherche Fondamentale, Centre D'Etudes Nucleaires, Grenoble (France), directed by prof. Pierre Vignais; b) laboratory of Biochemistry of ETH Zurich directed by Dr. Josef Brunner.
From 2006-2014, she was a member of the PhD council in "Morphological Molecular Sciences" (Cellular and Molecular Biomedical Sciences), Università Cattolica del Sacro Cuore - Rome.
From 2017, she is a member of the PhD council in "Nanotechnology", Università del Salento – Lecce.

Prof. Capobianco is an expert in mitochondrial bioenergetics and cell metabolism. Her studies have mainly been focused on the functional characterization of a family of proteins of the inner mitochondrial membrane, which shuttle metabolites, nucleotides, ions and cofactors through this membrane, and connect mitochondrial pathways with others in the cytosol.
She mainly works on the identification and characterization of enzyme and membrane transport systems, in particular on the functional characterization of mitochondrial carrier family members in man and model organisms such as *Saccharomyces cerevisiae* and *Drosophila melanogaster*. Moreover, she also worked on:

- the characterization of the *Drosophila melanogaster* citrate carrier (Sea/SLC25A1). She studied its involvement in the maintenance of chromosome integrity providing a link between cellular metabolism and epigenetics;
- the role of mitochondrial dysfunction and of citrate carrier in the alteration of lipid metabolism in biliary cirrhosis. In this contest, it was been demonstrated the capacity of silybin, an extract of silymarin with antioxidant and anti-inflammatory properties, to limit the impairment of mitochondrial function and to restore lipid metabolism;
- the role of mitochondrial energy metabolism in cancer thanks to the research collaboration, as part of the PRIN project 2010-2011 "*NANO Molecular Technologies for Drug delivery - NANOMED*".
- the role of mitochondria in the toxicity of platinum-based drugs. In particular, it has been demonstrated that platinated purines are transported into mitochondria by a mitochondrial carrier (DmTpc1, mitochondrial thiamine pyrophosphate carrier from *D. melanogaster*, orthologous of the human Tpc, indicated also as deoxynucleotide carrier or DNC) and incorporated in the mtDNA, causing a substantial reduction in the *in vitro* mtDNA synthesis. These evidences suggest the possible existence of an alternative and parallel mechanism of action for cisplatin, based on its binding to free cytoplasmic nucleobases, nucleosides or nucleotides, rather than on its direct bonds with the purine bases of nuclear DNA. In fact, inside cells, free nucleobases are available due to their many functional roles, not least the

constitution of building blocks for the synthesis of DNA and RNA. For this reason, under physiological conditions, the erroneous insertion of platinated bases in the nucleic acids synthesized by DNA/RNA polymerases could compete with direct DNA/RNA platination. Moreover, since mitochondria play an important role in cell death activation and in a significant portion of the clinical activity and pharmacological properties associated with *cisplatin*, a direct effect of platinated nucleotides on these organelles is possible. These results might present a wide range of applications both pharmacological (design of a new generation of platinum drugs, anti-cancer deoxynucleotide analogues, with a specific cellular target and fewer side effects) and technological (DNA-template-based production of metal arrays)Her scientific contributions have been also recognized by several laboratories since she has been invited to give lecture in several Institute in Europe and US and as a speaker and chairman in several conferences.

Her research activity is documented by publications on International journals.
Since 2008, in the papers of functional characterization of the mitochondrial carriers prof Capobianco is corresponding author.

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