Grazia Lombardi

PERSONAL DATA

Born in Florence November 21, 1951
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BIO AND EDUCATION

After classical studies at the “Liceo Dante Alighieri" of Florence, Grace Lombardi (GL) graduated in Biological Sciences at the University of Florence (summa cum laude). GL started her research at the Department of Pharmacology and Toxicology of the University of Florence, first as a fellow and later on as a PhD student. She obtained a PhD in Pharmacology and Toxicology and spent a period abroad as a Research Assistant Professor at the Medical School of Georgetown University (Washington D.C., USA). GL then continued working as a Post-Doc at the Department of Pharmacology and Toxicology of the University of Florence and, in 1995, she obtained a role of Assistant Professor at the University of Turin (Novara), then Eastern Piedmont, where she has playing a role of Associate Professor (Bio-14) since 2000 at the Department of Pharmaceutical Sciences.

UNIVERSITY CAREER

2000-today	Associate Professor, University of Piemonte Orientale
1996-2000	Assistant Professor, University of Torino/Piemonte Orientale
1991-1996	Post-Doc , University of Florence
1990-1991	Research Assistant Professor, Medical School Georgetown University, Washington D.C. (USA)

MAIN FIELDS OF INTEREST

1. Neuropharmacology
2. Immunopharmacology
3. Immunotherapy

CURRENT ISSUES OF RESEARCH

1. **Title** "Biological characterization of new synthetic analogues of saccharide antigens for the development of new vaccines"

Bacterial surface polysaccharides are mediators of virulence and possess antigenic properties, useful in vaccine settings. Zwitterionic polysaccharides (ZPS) have an unique immunological activity, since they are able to activate both APC and T cells. The project focuses on the synthesis of ZPS analogues of: *i*) *Salmonella typhi* Vi, and *ii*) *Neisseria meningitidis* A antigens. The new compounds will be conjugated to gold nanoparticles and submitted to biological characterizations.

2. **Title** "Studies on the expression of specific carbohydrate receptors on natural killer cells"

Oncogenic transformation is often associated with the expression of tumor-associated carbohydrate antigens (TACA). TACA can be recognized as non-self by immune cells, through highly specialized receptors, stimulating specific immune responses. The aim of our project is to investigate the expression of specific binding-sites for carbohydrates on natural killer cells, a subset of innate immune cells specialized to eliminate malignant cells.

3. **Title** "In vitro characterization of new inhibitors of indolamine 2,3-dioxygenase"

Indoleamine 2,3-dioxygenase is involved in pathological immune escapes and recently become an attractive target for anti-cancer therapy. 4-Phenylimidazole provides a promising starting point for the development of new IDO1 inhibitors. With the aim of discovering more potent inhibitors, a set of 4,5- and 1,5-disubstituted imidazoles were synthesized and biologically evaluated. The new IDO1 inhibitors showed a good potency both in enzymatic and cellular assays with no detectable cellular toxicity.

4. **Title** "Biological characterization of new saccharides for boron neutron capture therapy (BNCT) in tumours"

Boron Neutron Capture Therapy (BNCT) is an example of targeted therapy with increased efficacy and decreased toxicity, that provides a highly tumor-selective delivery of 10-B. BNCT is a binary experimental therapy, based on the neutron capture by 10-B nuclei, useful for treatment of therapy-resistant tumors. The present proposal is focused on the development of new boron containing compounds derived from or conjugated to sugars, their nanoformulations, and their evaluation in vitro.

CURRENT FUNDED PROJECTS

PROGRAMME	FUNDED PROJECT
Call Cariplo 2013	"Multifunctional gold nanoparticles as a platform for new carbohydrate-based vaccines (NANOVAC)"
Call Compagnia San Paolo 2014	"New boronated sugars and their incorporation in functional nanocarriers for a breakthrough in neutron capture therapy (GlycoBNCT)

TOP FIVE PAPERS

1. MORONI F., RUSSI P., **LOMBARDI G.**, BENI M., CARLA' V. Presence of kynurenic acid in the mammalian brain. *J. Neurochem.,* 51, 177-180, 1988
2. MORONI F., **LOMBARDI G.,** THOMSEN C., LEONARDI P., ATTUCCI S., PERUGINELLI F., TORREGROSSA SA., PELLEGRINI-GIAMPIETRO DE, LUNEIA R., PELLICCIARI R. Pharmacological characterization of 1-aminoindan-1,5-dicarboxylic acid, a potent mGluR1 antagonist. *J. Pharmacol. Exp. Ther.,* 281, 721-729, 1997
3. **LOMBARDI G.,** DIANZANI C., MIGLIO G., CANONICO P. L., FANTOZZI R. Characterization of ionotropic glutamate receptors in human lymphocytes. *Br. J. Pharmacol*., 133, 936-944, 2001
4. CHIOCCHETTI A., MIGLIO G., MESTURINI R., VARSALDI F., MOCELLIN M., ORILIERI E., DIANZANI C., FANTOZZI R., DIANZANI U., **LOMBARDI G.** Human T lymphocytes express group-I metabotropic glutamate receptors functionally active in inhibiting activation-induced cell death. *Br. J. Pharmacol.* 148, 760-768., 2006
5. FALLARINI S, PAOLETTI T, ORSI BATTAGLINI N, **LOMBARDI G** iNKT cells increase drug-induced osteosarcoma cell death *Br. J. Pharmacol.* 167, 1533-1549, 2012
6. FALLARINI SILVIA, BUZZI BENEDETTA, GIOVARRUSCIO SARA, POLITO LAURA, BROGIONI GIULIA, TONTINI MARTA, BERTI FRANCESCO, ADAMO ROBERTO, LAY LUIGI, **LOMBARDI GRAZIA** A Synthetic Disaccharide Analogue fromNeisseria meningitidisA Capsular Polysaccharide Stimulates Immune Cell Responses and Induces Immunoglobulin G (IgG) Production in Mice When Protein-Conjugated ACS Infectious Diseases 1, 487-496, 2015