Silvia Fallarini

Personal Data

Born in Borgomanero, 16.3.1978
Residence in Suno (NO)
Phone: 0321375723

Bio and education

Dr. Fallarini got the degree in Biological Sciences (110/110 cum laude) in 2002 at the University of Pavia. She achieved the qualification of PhD in Cellular Biology in the 2006 studying the effects of sympathetic activity on cardiac interstitial remodelling in a mouse model of pressure overload hypertrophy. She attended to advanced courses in microscopy, digital photomicrography and imaging analysis, confocal microscopy and flow cytometry. During her research activity she acquired excellent experiences in immunochemical, biochemical, biomolecular and cellular techniques applied to study phonotypical, morphological, functional and bimolecular changes of cells during phatological conditions. Her area of scientific interest is mainly in the field of the immunopharmacology and in particular in the identification of tumour mechanism of immune escape and in the study of new strategy to improve the immune responses in pathological conditions.

University career

2011-	Assistant professor, Università del Piemonte Orientale
2007-2011	Postdoctoral fellowship, Università del Piemonte Orientale

Scientific positions

2008-	Member of the “Società Italiana di Farmacologia”

Main fields of interest

1. Immunology
2. Immunopharmacology

CURRENT ISSUES OF RESEARCH

1. **Biological characterization of newly synthesized analogues of bacterial polysaccharide 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 is focused on the synthesis of ZPS analogues of: *i*) *Salmonella typhi* Vi, and *ii*) *Neisseria meningitidis* A antigens. The molecules will be conjugated to gold nanoparticles and submitted to biological characterizations.

2. **Study on the expression of 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 receptors for carbohydrate, on the natural killer cells, a subset of innate immune cells specialized to eliminate malignant cells.

3. ***In vitro* characterization of newly synthesized inhibitors of indoleamine 2,3-dioxygenase**

Indoleamine 2,3-dioxygenase is involved in pathological immune escape 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. **Biological characterization of new sugar compounds for the born neutron capture therapy (BNCT)**

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
TRIDEO 2014 Bando AIRC-Fondazione Cariplo	Turn off the IDO in cancer immunotherapy in silico driven multicomponent synthesis of small molecule inhibitors.

TOP FIVE PAPERS

1. **Fallarini S**, Massarrotti A, Gesù A, Giovarruscio S, Coda Zabetta G, Bergo R, Giannelli B, Brunco A, Lombardi G, Sorba G, Pirali T. *In silico*-driven multicomponent synthesis of 4,5- and 1,5-disubstituted imidazoles as indoleamine 2,3-dioxygenase inhibitors. *Med. Chem. Commun.*, 2016 7: 409-419
2. **Fallarini S**, Paoletti T, Battaglini CO, Ronchi P, Lay L, Bonomi R, Jha S, Mancin F, Scrimin P, Lombardi G. Factors affecting T cell responses induced by fully synthetic glyco-gold-nanoparticles. *Nanoscale.* 2013 5(1):390-400.
3. **Fallarini S**, Magliulo L, Paoletti T, de Lalla C, Lombardi G. Expression offunctional GPR35 in human iNKT cells. *Biochem Biophys Res Commun.* 2010 398(3):420-425
4. **Fallarini S**, Paoletti T, Panza L, Lombardi G. Alpha-galactosylceramide modulates the induction of indoleamine 2,3-dioxygenasein antigen presenting cells. *Biochem Pharmacol*. 2008 76(6):738-750
5. Perlini S, Palladini G, Ferrero I, Tozzi R, **Fallarini S**, Facoetti A, Nano R, Clari F, Busca G, Fogari R, Ferrari AU. Sympathectomy or doxazosin, but not propranolol, blunt myocardial interstitial fibrosis in pressure-overload hypertrophy. *Hypertension*. 2005 46(5):1213-1218