

PERSONAL INFORMATION

Name and surname: Marzia Bianchi

Place and date of birth:

E-mail: marzia.bianchi@uniurb.it

Place of work: Department of Biomolecular Sciences, Section of Biochemistry and Biotechnology, University of Urbino Carlo Bo, Italy

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ACTUAL POSITION

Associate Professor in Molecular Biology (SSD BIO/11), University of Urbino Carlo Bo.

EDUCATION

1987: Graduated in Biological Sciences, University of Urbino; 110/110 with honours. Dissertation title: "Metabolic properties of human red blood cells with encapsulated hexokinase".

1987-1988: Training and (1989) Abilitation to the profession of Biologist.

1988-1992: Ph.D. in "Biochemistry" at the Institute of Biological Chemistry "G. Fornaini", University of Urbino and (1993) Ph.D. degree with the thesis entitled "Cloning and engineering of a recombinant human mini-hexokinase".

1993-1999: Technician, Institute of Biological Chemistry "G. Fornaini", University of Urbino.

1999-2003: Researcher position in Biochemistry (SSD BIO/10), at the Institute of Biological Chemistry "G. Fornaini", University of Urbino.

Since 2003: Associate Professor in Molecular Biology (SSD BIO/11), University of Urbino Carlo Bo.

INSTITUTIONAL ROLES

2007-2012: President and Member of the Academic Credit Committee for the "Biotechnology" Course, University of Urbino Carlo Bo.

2013- Coordinator (Referent) for the "Biotechnology" Course, University of Urbino Carlo Bo.

Member of the evaluation commission for the admission to the PhD program in "Biochemical and Pharmacological Methodologies", member of several scholarship commissions, member of commissions for the selection of University personnel - scientific area (University of Urbino Carlo Bo).

Member of the evaluation commission for the final examination for the PhD program in "Life Sciences: Molecular Biology, Biochemistry and Biotechnology", University of Camerino (S.A.S. Disposition n. 151, dated 25/01/2016).

Member of the committee for the selection procedure for one position of university researcher in Molecular Biology (SSD BIO/11), Dipartimento di Scienze della Terra dell'Ambiente e della Vita (DISTAV), University of Genoa (D.R. N 364 dated 31/10/2016).

For the academic years 2012/13 -2015/16: member of the Quality Assurance Group (ANVUR) for the Biotechnology Course.

Since academic year 2012/13 to today: component of the Re-examination Group (ANVUR) for the Biotechnology Course.

TEACHING

Since academic year 2001/02: Teacher of the course "Molecular Biology" (BIO/11) - degree course in Biotechnology (L-2) - University of Urbino Carlo Bo.

Since academic year 2013/14: Teacher of the course "Laboratory of Biotechnology II" (BIO/11) - *Gene cloning strategies and screening techniques* - degree course in Biotechnology (L-2) - University of Urbino Carlo Bo.

Lecturer of the Master in "Biotechnology" (2003, 2004, 2006, 2007) and in "Biotechnology in Molecular Diagnostics" (2009)- University of Urbino Carlo Bo.

Member of the Board of the PhD course in "Biochemical and Pharmacological Methodologies" (from A.A. 2003/04 to 2012/13) and in "Life Sciences, Health and Biotechnologies" (from A.A. 2013/14 to 2018/19), University of Urbino Carlo Bo.

Tutor of PhD students in:

- “Biochemical and Pharmacological Methodologies” - Cycle XXIII (A.A. 2009/10) and Cycle XXVII (A.A. 2013/14);
- “Life Sciences, Health and Biotechnologies - curriculum: Biochemical and Pharmacological Sciences and Biotechnology” - Cycle XXXIII (A.A. 2019/20).

REVIEWER

Reviewer for international journals in the Molecular Biology and Biochemistry field (Gene; Cellular and Molecular Life Sciences; Cell Biochemistry and Biophysics; Cancers (MDPI); Future Oncology; Pathology - Research and Practice; European Journal of Pharmaceutical Sciences; Plant Cell Biotechnology and Molecular Biology).

Expert evaluator of research projects for the Piemonte region in the context of the “Bando regionale sulla Ricerca scientifica applicata 2004” and of projects granted by CIB (Consorzio Interuniversitario per le Biotecnologie).

SEMINARS/INVITED SPEAKER

Brallo di Pregola (PV) 22° Riunione Nazionale “A. Castellani” dei Dottorandi di Ricerca in Discipline Biochimiche. (9-12 June 2009). Lecturer as a Teacher. “*The polyubiquitin C gene: its function, its structure, its transcriptional regulation*”.

ABSTRACT SELECTION FOR ORAL PRESENTATION

SIB 2017 59th Congress - Italian Society of Biochemistry and Molecular Biology Caserta, September 20 - 22, 2017. “*New insights into the polyubiquitin gene UBC transcriptional regulation under oxidative stress*”.

The 43rd FEBS Congress, July 7-12, 2018, Prague. “*UBC gene transcriptional induction under arsenite-triggered cellular stress: unraveling the trans-acting factors*”.

AFFILIATION

Since 1990: Member of the “Italian Society of Biochemistry and Molecular Biology”.

BIOGRAPHICAL SKETCH

My research activity started in 1988-1992, as PhD student at the Institute of Biological Chemistry “G. Fornaini”, University of Urbino, and continued in the same University first as a Technician, then as Researcher in Biochemistry (1999-2003) and since 2003 as Associate Professor in Molecular Biology (BIO/11) at the Department of Biomolecular Sciences.

My research was initially aimed at studying of metabolic properties of red blood cells, mainly focusing on the glycolytic regulatory enzyme hexokinase, for which new mutations have been identified and the molecular mechanisms underlying different isoforms of hexokinase I elucidated. I have performed several studies of structure/function relationship of enzymatic proteins, by also expressing different recombinant forms.

Then my research moved to the engineering of red blood cells as bioreactors for enzyme and drug delivery. Different kinds of molecules (enzyme proteins, peptides, antibodies, nucleic acids) have been encapsulated in erythrocytes for biotechnological and therapeutic applications.

In this context, I worked on the development and optimization of strategies to express, purify and characterize recombinant proteins in the *E. coli* host to be used for enzyme replacement therapy.

My work also focused on the activation pathway of the transcription factor -κB (NF-κB) by different stimuli under pathophysiological conditions, to identify potential targets to modulate NF-κB activation and its DNA binding ability. For the first aspect, my colleagues and I investigated the control exerted by the ubiquitin-proteasome pathway both in the signal-induced NF-κB activation and in maintaining its basal activity (using different ubiquitin analogues). For the second line, I have been involved in the design and delivery of modified decoy oligonucleotides to interfere with transcription factor-DNA interaction.

For the past 10 years, I have participated in molecular studies of Dexamethasone-mediated effects in the treatment of ataxia telangiectasia, highlighting that the glucocorticoid plays a role in redox homeostasis and antioxidant activity in ATM deficient cells.

But mainly my work has focused on the study of the ubiquitin-proteasome system, in particular on the expression of the ubiquitin genes (mainly *UBB* and *UBC*) in basal and stressful conditions. A comprehensive molecular study was performed to dissect the *cis-trans* elements regulating the *UBC* promoter activity.

Most recently, *UBB* and *UBC* have been identified as pro-survival genes in primary gastric adenocarcinoma cells.

Co-author of 72 peer-reviewed publications in international journals (60 research articles; 5 reviews; 7 book chapters).

H-index 21 (Scopus); Total Citations 1348 (Scopus)

AWARDS: Winner of the “Robert G. Edwards Prize Paper Award 2013”.

PATENTS: MAGNANI M, ROSSI L, BIANCHI M, BIAGIOTTI S (2009). Drug delivery systems. UK 0909754.4

PARTICIPATION TO THE FOLLOWING FINANCED RESEARCH PROJECTS

POR MARCHE FESR 2014/2020 - ASSE 1 - OS 2 - AZIONE 2.1 - Sostegno allo sviluppo di una piattaforma di ricerca collaborativa negli ambiti della specializzazione intelligente. Area tematica: medicina personalizzata, farmaci e nuovi approcci terapeutici.

European Project NACBO - Contract no: 500804-2 (2004-2009): *Novel and Improved Nanomaterials, Chemistries and Apparatus for Nano-Biotechnology.*

PRIN 2008 - prot. 2008BP25KN_001: *Molecular mechanisms coupling cellular ubiquitin levels to signal transduction and gene expression dynamics.*

PRIN 2006 - prot. 2006058482_001: *New approaches to modulate gene expression: the example of NF- κ B.*

PRIN 2003 - prot. 2003058397_001: *NF- κ B and its activators as targets for new approaches to modulate gene expression.*

PRIN 2002 - prot. 2002062119_007: *Post-translational modification of erythrocyte proteins: ubiquitination during erythropoiesis.*

PRIN 2001 - prot. 2001053777_001: *The role of the ubiquitin-dependent proteolytic pathway in the regulation of specific transcription programs upon adhesion receptor activation.*

PRIN 1998 - prot. 9805634227_001: *NF- κ B activation and modulation in the endothelial compartment in response to inflammatory factors released by activated macrophages.*

FIRB 2003 (art. 8) prot. RBLA03WK4R_005: *“NANOMED NANOTecnologie per la bioMEDicina”.*

PNR 2001-2003 (FIRB art.8) prot. RBNE01TBTR_001: *Red blood cells as drug carriers.*

PNR 2001-2003 (FIRB art.8) prot. RBNE01T8C8_008.