



Adriana Borriello

Associate Professor of Biochemistry

Department of Precision Medicine

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Education and Training

- 2007 Board in Clinical Biochemistry (Specialty School), summa cum laude, Second University of Naples.
- 1999 PhD in Cellular Biochemistry, Second University of Naples. Her PhD Thesis received the praise of the PhD examination Committee.
- 1992 Post-graduate 1 year retraining Course in Hematology, Medical Physiopathology Chair, 1st Medical School, University of Naples “Federico II”.
- 1992 Professional Qualification as Biologist, University of Naples “Federico II”.
- 1991 Degree in Biological Science with “summa cum laude”, University of Naples “Federico II”.

Current Accademical Position

Since 2015

Associate Professor of Biochemistry, S.S.D. BIO/10, Department of Precision Medicine, School of Medicine, University of Campania “Luigi Vanvitelli”.

Professional Appointments and Former Research Experiences

2007 to date

Biology Manager (I level), Policlinico Hospital of University of Campania “Luigi Vanvitelli”, Department of Integrated Activity of the Laboratory Services and Public Health, Laboratories of Clinical and Molecular Medicine, Unit of Clinical Biochemistry.

Since 07/2018

Associated Researcher at the National Research Council (CNR), Institute of Food Science, Avellino, Italy.

10/2014-28/10/2015

Assistant Professor in Biochemistry S.S.D. BIO/10, by positive judgement by CUN (Consiglio Universitario Nazionale), Department of Biochemistry and Biophysics, School of Medicine, Second University of Naples.

2007-2014

Assistant Professor in Nutritional Sciences S.S.D. MED/49, Department of Biochemistry, Biophysics, School of Medicine, Second University of Naples. In 2010, she was confirmed in this role.

2002-2007

Post-doctoral fellow, Department of Biochemistry and Biophysics, Second University of Naples. In this period she attended the Board in Clinical Biochemistry.

1999-2004

4 years- post-doctoral fellowship (assegno di ricerca), Department of Biochemistry and Biophysics, Second University of Naples, in the field of “Characterization of the cell division cycle in childhood sarcomas and in sarcoma cell lines: identification of new molecular targets for the development of innovative therapies”.

1995-1999

PhD Student in Cellular Biochemistry, Department of Biochemistry and Biophysics, Second University of Naples. PhD Thesis Title: “Cell cycle regulation in malignant and normal cells proliferation and differentiation”.

1993-95

Visiting research scientist at the University of Sheffield, laboratories of Dr. Lynda Partridge, “Department of Biochemistry and Molecular Biology”, and of Prof. Michael G Blackburn, “Krebs Institute”, Sheffield, UK.

1989-92

Pre-graduate and post-graduate student at the Institute of Biochemistry of Macromolecules, I Medical School, University of Naples “Federico II”.

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Web-site: <https://scholar.google.it/citations?user=QazoBP4AAAAJ&hl=it>

https://www.researchgate.net/profile/Adriana_Borriello

Teaching activities: University of Campania “Luigi Vanvitelli”, Italy

CdL in Medicine and Surgery in English

2018-19 Biochemistry

CdL in Medicine and Surgery, Caserta

2014-15 to date Biochemistry

Postgraduate Specialty School in Pediatrics

2014-15 to date Biochemistry

Postgraduate Specialty School in Nutritional Sciences

2012-13 to date Human Nutrition

CdL of Pediatric Nursing

2016-17 to date Biochemistry

2007-08 to date Nutritional Biochemistry and Principle of Dietetics

2007-2013: Human Nutrition and Dietetics

CdL of Nursing

2016-17 to date Biochemistry

2016-17 to date Biochemistry (Istituto Nazionale Tumori “G. Pascale”)

2015-16 to date Chemistry and Propedeutic Biochemistry (polo Aversa)

CdL of Obstetrics

2018-19 Biochemistry

CdL of Physiotherapy

2015-16 to date Biochemistry (ASL NA1, Elena d'Aosta)

CdL of Dental Hygiene

2012-13 to date Nutritional Science

Scientific Society Memberships and Honors

Member of the Italian Society of Human Nutrition (SINU).

Member of the Italian Society of Biochemistry and Molecular Biology (SIB)

31/03/2017

National Scientific Qualification as Full Professor in Sector 05/E1 General Biochemistry

1992

Recipient of the "Emmanuele Palumbo" award for the best Thesis, post-graduate 1 year retraining Course in Hematology, Medical Physiopathology Chair, 1st Medical School, University of Naples "Federico II"

Grants

2010-12 - National PRIN (Project of National Relevant Interest, 2008) funded by Italian Ministry of University and Research, Title of the project: "Endocannabinoid/vanilloid system and cell cycle regulation in osteoclasts of healthy and osteoporotic women". (Principal investigator of a Research unit)

Since 1997 Dr. Borriello has been participant of research units supported mainly by MIUR-PRIN and by AIRC (Italian Association for Cancer Research) on the basis of peer-reviewing processes.

2015-18 3 years AIRC research grant.

2011-2013 3 years AIRC research grant. Title: "Mechanisms of p27 and p57 level modulation: relevance in cell growth, differentiation and cancer treatment"

2007-2009 3 years AIRC research grant. Title: "Novel mechanisms of p27 and p57 level modulation: relevance in cell phenotype and cancer therapy"

2005-2007 3 years AIRC research grant. Title: "Prostate cancer: molecular bases of invasiveness and identification of novel targets for therapy"

2006 1 year AIRC research grant (AIRC). Title: "Novel mechanisms of p21, p27 and p57 level modulation: their relevance in cell phenotype and cancer therapy"

2006-2007 2 years National PRIN (Project of National Relevant Interest) Title: "Meccanismi di controllo dell'eritropoiesi e policitemie congenite e familiari: ruolo delle vie di risposta alla pressione di ossigeno"

2005 1 year AIRC research grant (AIRC). Title: "Novel mechanisms of p21, p27 and p57 level modulation: their relevance in cell phenotype and cancer therapy"

2004-05 2 years National PRIN (Project of National Relevant Interest) Title: "Molecular and functional characterization of normal and pathological erythropoiesis: control of cell cycle and differentiation"

2004 1 year AIRC research grant. Title: "Novel mechanisms of p21, p27 and p57 level modulation: their relevance in cell phenotype and cancer therapy"

2003-2006 3 years FIRB research grant, funded by Italian Ministry of University and Research entitled “Mappa proteomica dell'eritrocita: implicazioni cliniche e terapeutiche”

2003 1 year AIRC research grant. Title: “Cellular metabolism and mechanism of action of two cyclin-dependent kinase inhibitors, p27Kip1 and p21Cip1”

2002-2003 - 2 years National PRIN (Project of National Relevant Interest). Title: “Genomic and post-genomic analysis of normal and pathological erythropoiesis” Analisi genomica e post-genomica dell'eritropoiesi normale e patologica” (participant);

2001 - 1 year AIRC research grant. Title “Cellular metabolism and mechanism of action of two cyclin-dependent kinase inhibitors, p27Kip1 and p21CIP1” (participant);

2000-2001 - Two years National PRIN (Project of National Relevant Interest). Title: “Molecular analysis of pediatric tumors: novel therapeutic approaches. (participant)

1998-2000 2 years National PRIN (Project of National Relevant Interest). Title: “Ciclo cellulare; geni oncosoppressori; sarcomi pediatrici; terapia antitumorale” (participant)

1998-2000 - 3 years AIRC research grant. Title: “Cyclin-dependent kinase inhibitors during proliferation and differentiation of normal and malignant cells” (participant)

1997-1998 - 2 years research grant funded by Istituto Superiore della Sanità, National Project Tuberculosis. Title of the research project: Title of the project: “Analisi del repertorio delle cellule T gamma/delta e preparazione di librerie combinatoriali del TCR gamma/delta” (participant).

Doctorate

2008-18

Member of the Academic Board of the PhD Program in Biochemical and Biotechnological Sciences University of Campania “Luigi Vanvitelli”.

Supervision of PhD students and PhD External evaluation activities

- PhD Supervisor of Dott. Arianna Aulitto (33rd cycle), PhD Program in Biochemical and Biotechnological Sciences.
- PhD Supervisor of Dott. Maria Carmela Speranza (29th cycle), PhD Program in Biochemical and Biotechnological Sciences. Thesis: Identification and functional characterization of p57^{Kip2} post-translational modifications: importance in human diseases.
- PhD External evaluator, Ph.D. program in “HUMAN BIOLOGY AND MEDICAL GENETICS” XXXI cycle, “Sapienza” University, Rome, Italy, December 2018.
- PhD External evaluator, University of Sannio, Benevento, Italy, December 2017.

Scientific Interests

Dr. Borriello main scientific interests fall in the field of basic biochemistry, cellular and molecular biology. They regard:

1. Mechanisms of cell division cycle regulation in normal and transformed cells.

Cell division represents a fundamental biological process whose deregulation is associated to human degenerative diseases, such as cancer. Several different papers studied the alteration (due to deletions, mutations or altered regulation) of the cyclin dependent kinase inhibitors belonging to both INK4 and Cip/Kip families in human tumors and in particular in paediatric tumors. The results of these studies have been published in journals such as Hepatology, Haematologica.

Further studies were dedicated to:

- i) cell division cycle regulation in the activation of “resting” T lymphocytes.
- ii) Molecular bases of retinoic acid action on neuroblastoma cells.

More recent studies focus on the mechanisms of synthetic and post-synthetic control of the Cip/Kip inhibitors p21^{Cip1}, p27^{Kip1} e p57^{Kip2}, and their relevance in cell growth, differentiation and cancer treatment. Emphasis is paid to the identification and functional characterization of phosphorylatable residues in these proteins. The results of these studies have been published in journals, such as *Oncogene*, *J. Biological Chemistry*, *Cancer Research*, *Carcinogenesis*, *Cell Cycle*.

2. Effects of non nutrients molecules such as polyphenols, present in our diet, on cell growth, differentiation and apoptosis.

Studies have exploited the effects of resveratrol, hydroxytyrosol, and other natural compounds produced during the food digestion and metabolism (butyrate), on cell growth, differentiation and apoptosis. Molecular analysis of the mechanism by which they are able to interfere with the signal transduction pathways and gene expression, modulating the proteins involved in cell cycle regulation, differentiation or apoptosis.

3. Preparation and *in vitro* culture of human mesenchymal stromal cells (MSCs) from bone marrow. Effects of drugs and/or natural diet molecules on MSC proliferation and differentiation.

Molecular mechanisms of osteogenesis and adipogenesis.

Effects of Retinoic acid, resveratrol and other diet molecules on MSC proliferation and differentiation.

Effects of Bcr-Abl inhibitors on human MSC proliferation and differentiation.

4. Genetical and biochemical mechanisms of congenital polycythaemias and of pathologies due the altered hypoxia response.

Structural and functional alterations of band 3 and of other erythrocyte membrane proteins.

Mechanisms of erythroid differentiation related to cell division cycle regulation.

Biochemical mechanisms of congenital polycythaemias.

Molecular mechanisms of oxygen pressure regulated processes.

5. Alteration of *FancD2* and *FancA* genes involved in the pathogenesis of Fanconi Anemia.

Analysis of *FANCA*, *FANCG* e *FANCD2* gene mutations in Italian Fanconi Anemia patients.

Biochemical characterization of the expression and post-translational modifications of these proteins, particularly Fanc D2.

Organization of Conferences and Speaker/Chairman at International Events

- Speaker at the XV FISV Congress, Sapienza University of Rome, Italy, 18-21 September 2018
- Chairperson at the 59th Italian Society of Biochemistry and Molecular Biology (SIB) Congress, Caserta, Italy, September 20 – 22, 2017.
- Invited speaker for a plenary talk at the 2nd international Conference on Natural products for Cancer Prevention and Therapy, Kayseri, Turkey, november 8-11, 2017.
- Invited speaker at the 56th National Meeting of the Italian Society of Biochemistry and Molecular Biology (SIB), Chieti, 26-29 September 2012.
- Member of:
 - the Scientific Committee of the 2nd international Conference on Natural products for Cancer Prevention and Therapy, Kayseri, Turkey, november 8-11, 2017.
 - the Organizing Committee of the International Conference on "Advances in Nutrition and Cancer 3", Naples, May, 21-25, 2012.

Speaker at Training Courses & Science Disseminating Activities

- Member of the Scientific Committee of the Training Course: Frontiers in the pharmacological treatment of tumors in clinical practise, Naples, 12/10/2018

- Speaker at the Training Course: Frontiers in the pharmacological treatment of tumors in clinical practise, Naples, 12/10/2018.
- Scientific editing of the volume “ BIOCHIMICA”, “I MANGA DELLE SCIENZE” series (ISBN: 978-88-8371-576-1) Ed. Le Scienze S.p.A. in collaboration with Comics&Science and C.N.R., Rome, 2017.
- Member the Organizing Committee of “Nutrimed@49: la nutrizione sotto la lente della scienza; parte webinar”, 2016.

Editorial and Peer *Reviewing* Activities

2015-17

Editorial Board Member of *New Horizons in Translational Medicine*, ELSEVIER, ISSN: 2307-5023.

2015- to date Associate Editor of Stem Cell Epigenetics, Smart Science & Technology LLC.

Referee for the following journals:

- BBA Molecular Cell Research
- Nutrition, Metabolism and Cardiovascular Diseases
- Oncotarget
- J. Biotechnology Advance
- Heliyon
- Molecular and Cellular Endocrinology
- Food and Chemical Toxicology
- Molecular Nutrition and Food Research
- Plos One
- Cell Proliferation
- J. Cell Physiol
- Life Sciences
- Nutrients

Expert Peer Reviewer present in REPRISE and MIUR Evaluator for:

Evaluation of Research Project Preselezione Futuro in Ricerca 2012

Evaluation of products VQR 2004-2010

Evaluation of PRIN (Progetti di Rilevante Interesse Nazionale) 2009