



Europass Curriculum Vitae

Personal information

First name(s) / Surname(s)

Insert photograph. (JPG format)



Anna Reale

Address

Department of Cellular Biotechnologies and Hematology
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Sapienza, University of Rome
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reale@bce.uniroma1.it

Nationality

Italian

Occupational field

Academic research and teaching: Clinical Biochemistry and Clinical Molecular Biology (BIO 12)

Work experience

Dates

From 2011

Occupation or position held

Associate Professor of Clinical Biochemistry and Clinical Molecular Biology

Main activities and responsibilities

Research, teaching

Name and address of employer

Department of Cellular Biotechnologies and Hematology, Faculty of Pharmacy and Medicine, "Sapienza" University of Rome, Rome, Italy

Dates

2005-2010

Occupation or position held

Associate Professor of Clinical Biochemistry and Clinical Molecular Biology

Main activities and responsibilities

Research, teaching

Name and address of employer

Department of Cellular Biotechnologies and Hematology, 2nd Faculty of Medicine, "Sapienza" University of Rome, Rome, Italy

Dates

1995-2005

Occupation or position held

Researcher of Clinical Biochemistry and Clinical Molecular Biology

Main activities and responsibilities

Research, teaching

Name and address of employer

Department of Cellular Biotechnologies and Hematology, 2nd Faculty of Medicine, "Sapienza" University of Rome, Rome, Italy

Education and training

Dates

1985 (degree), 1991 (specialization)

Title of qualification awarded

Degree in Pharmacy with honour, Specialist in Clinical Pathology with honour

Name and type of organisation providing education and training

"Sapienza" University of Rome

Personal skills and competences

Technical Skills:

bacterial cultures and transformations
 DNA extraction and analysis (digestion with restriction enzymes, analysis by agarose gels), cloning, PCR, sequencing
 recombinant proteins expression in bacteria
 RNA extraction and analysis (RT PCR, Real Time PCR)
 RNA-proteins interaction assays (RNA pull down, EMSA)
 in vitro analysis of enzymatic activity and protein-protein interactions (GST-pull down, immunoprecipitation)
 human and mouse cell cultures; gene silencing and expression by transfection.
 proteins extraction and analysis (Western Blotting)
 immunofluorescence

Computing skills:

use of Office, Access, PhotoShop. Windows (XP e Vista), access to the main database

Mother tongue(s)

Italian

Other language(s)

English

Self-assessment

European level (*)

English

Understanding				Speaking				Writing	
Listening		Reading		Spoken interaction		Spoken production			
C1	Effective Operational Proficiency or advanced	C1	Effective Operational Proficiency or advanced	C1	Effective Operational Proficiency or advanced	C1	Effective Operational Proficiency or advanced	C1	Effective Operational Proficiency or advanced

(*) [Common European Framework Clinical Biochemistry and Molecular Biology of Reference for Languages](#)

Teaching activity

The teaching activity has been performed since 1989 in many different courses.
 Currently, regular teacher of the following courses of the Sapienza University of Rome, Faculty of Medicine and Psychology (S. Andrea hospital)

- Clinical Biochemistry in Bases of Laboratory Medicine course, (Medicine and Surgery degree), since 2015;
- Clinical Biochemistry in Endocrine Diseases course, (Medicine and Surgery degree), since 2003;
- Clinical Biochemistry in Clinical Biochemistry course (Biomedical Laboratory Techniques degree), since 2002;
- Clinical Biochemistry in Basic Pathophysiological Mechanisms course (Physiotherapy, Podiatry, Occupational Therapy, Technique of psychiatric rehabilitation degrees), since 2012.
- Clinical Biochemistry in Basic Pathophysiological Mechanisms course (Nursing degree), since 2016
- Member of the teaching staff of the:
- Doctorate in Human Biology and Medical Genetics of the Dept. of Cellular Biotechnologies and Hematology of Sapienza, University of Rome; from 2007 until 2014

Research activity

From 1995 to 2004 (researcher, Sapienza University of Rome), RESEARCH FOCUS: "DNA methylation and chromatin structure"

DETAILED STUDIES

1. Characterization of chromatin protein involved in gene expression and study of post-translational modifications that can modulate their binding to DNA
2. Inhibitory role of H1 histone and its variants on DNA methylation
3. Study of specificity of murine DNMT1
4. Effect of DNA methylation and histone H1 modification or variant on chromatin condensation
5. Correlation between DNA methylation and poly(ADP-ribosylation) processes. The effects of interaction of poly(ADP-ribose) with DNMT1 have been analyzed: ADP-ribose polymers are able to inhibit DNMT1 activity and could therefore deny in vivo the accessibility of DNMT1 to the CpG-rich islands , protecting them from de novo methylation

From 2005 (Associate Professor, Sapienza University of Rome), RESEARCH FOCUS : "PARylation processes control the epigenetic profile"

DETAILED STUDIES

1. PARP-1 in DNA damage response-Che-1 poly ADP-ribosylation, beyond phosphorylation, is indispensable for its nuclear accumulation. Che-1 acts on downstream proteins, causes cell cycle arrest, allowing DNA repair.
2. PARP-1 in the regulation of transcription factors involved in Epithelial-mesenchymal transition (EMT) in breast cancer-PARP-1 controls the levels of Snail, a key factor of EMT. Snail acts as repressor of epithelial genes, and as fundamental anti-apoptotic gene involved in chemoresistance processes in cancer.

Scientific Publications

(max 30, last 20 years)

1. Valentini E, Zampieri M, Malavolta M, Bacalini MG, Calabrese R, Guastafierro T, Reale A, Franceschi C, Hervonen A, Koller B, Bernhardt J, Slagboom PE, Toussaint O, Sikora E, Gonos ES, Breusing N, Grune T, Jansen E, Dollé ME, Moreno-Villanueva M, Sindlinger T, Bürkle A, Ciccarone F, Caiafa P. Analysis of the machinery and intermediates of the 5hmC-mediated DNA demethylation pathway in aging on samples from the MARK-AGE Study. *Aging (Albany NY)*. 2016; 8(9): 1896-1922
2. De Matteis G, Grandoni F, Scatà MC, Catizone A, Reale A, Crisà A, Moiola B. Evaluation of leptin receptor expression on buffalo leukocytes *Vet Immunol Immunopathol*. 2016; 177: 16-23
3. Ciccarone F, Malavolta M, Calabrese R, Guastafierro T, Bacalini MG, Reale A, Franceschi C, Capri M, Hervonen A, Hurme M, Grubeck-Loebenstien B, Koller B, Bernhardt J, Schön C, Slagboom PE, Toussaint O, Sikora E, Gonos ES, Breusing N, Grune T, Jansen E, Dollé M, Moreno-Villanueva M, Sindlinger T, Bürkle A, Zampieri M, Caiafa P Age-dependent expression of DNMT1 and DNMT3B in PBMCs from a large European population enrolled in the MARK-AGE study. *Aging Cell* 2016; 15 (4): 755-765
4. Mariano G, Ricciardi MR, Trisciuglio D, Zampieri M, Ciccarone F, Guastafierro T, Calabrese R, Valentini E, Tafuri A, Del Bufalo D, Caiafa P, Reale A PARP inhibitor ABT-888 affects response of MDA-MB-231 cells to doxorubicin treatment, targeting Snail expression. *Oncotarget* 2015; 6(17): 15008-21.
5. Ciccarone F, Valentini E, Bacalini MG, Zampieri M, Calabrese R, Guastafierro T, Mariano G, Reale A, Franceschi C, Caiafa P. Poly(ADP-ribosylation) is involved in the epigenetic control of TET1 gene transcription. *Oncotarget*. 2014; 5(21): 10356-67
6. Guastafierro T, Catizone A, Calabrese R, Zampieri M, Martella O, Bacalini MG, Reale A, Di Girolamo M, Miccheli M, Farrar D, Klenova E, Ciccarone F, Caiafa P. ADP-ribose polymer depletion leads to nuclear Ctcf re-localization and chromatin rearrangement(1). *Biochem J*. 2013; 449(3): 623-30.
7. Bacalini MG, Tavolaro S, Peragine N, Marinelli M, Santangelo S, Del Giudice I, Mauro FR, Di Maio V, Ricciardi MR, Caiafa P, Chiaretti S, Foà R, Guarini A, Reale A. A subset of chronic lymphocytic leukemia patients display reduced levels of PARP1 expression coupled with a defective irradiation-induced apoptosis. *Exp Hematol*. 2012; 40(3): 197-206
8. Zampieri M., Guastafierro T., Calabrese R., Ciccarone F., Bacalini M.G., Reale A., Perilli M., Passananti C., Caiafa P. 2011. ADP-ribose polymers localized on Ctcf-Parp1-Dnmt1 complex prevent methylation of Ctcf target sites. *Biochem J*. 2012; 441(2): 645-52
9. Bacalini MG, Di Lonardo D, Catizone A, Ciccarone F, Bruno T, Zampieri M, Guastafierro T, Calabrese R, Fanciulli M, Passananti C, Caiafa P, Reale A. Poly(ADP-ribosylation) affects stabilization of Che-1 protein in response to DNA damage. *DNA Repair*. 2011; 10(4) :380-9.

10. Zampieri M, Ciccarone F, Guastafierro T, Bacalini MG, Calabrese R, Moreno-Villanueva M, Reale A, Chevanne M, Bürkle A, Caiafa P. Validation of suitable internal control genes for expression studies in aging. *Mech Ageing Dev.* 2010; 131(2): 89-95.
11. Chevanne M, Zampieri M, Caldini R, Rizzo A, Ciccarone F, Catizone A, D'Angelo C, Guastafierro T, Biroccio A, Reale A, Zupi G, Caiafa P. Inhibition of PARP activity by PJ-34 leads to growth impairment and cell death associated with aberrant mitotic pattern and nucleolar actin accumulation in M14 melanoma cell line. *J Cell Physiol.* 2010; 222(2): 401-10.
12. Guastafierro T, Cecchinelli B, Zampieri M, Reale A, Riggio G, Sthandier O, Zupi G, Calabrese L, Caiafa P. CCCTC-binding factor activates PARP-1 affecting DNA methylation machinery. *J Biol Chem.* 2008; 283(32):21873-80.
13. Carbone M, Reale A, Di Sauro A, Sthandier O, Garcia MI, Maione R, Caiafa P, Amati P. PARP-1 interaction with VP1 capsid protein regulates polyomavirus early gene expression. *J Mol Biol.* 2006; 363(4): 773-85
14. Reale A, Matteis GD, Galleazzi G, Zampieri M, Caiafa P. Modulation of DNMT1 activity by ADP-ribose polymers. *Oncogene.* 2005; 24(1): 13-9.
15. Zardo G, Reale A, De Matteis G, Buontempo S, Caiafa P A role for poly(ADP-ribosyl)ation in DNA methylation. *Biochem Cell Biol.* 2003; 81(3): 197-208.
16. Zardo G, Reale A, Passananti C, Pradhan S, Buontempo S, De Matteis G, Adams RL, Caiafa P. Inhibition of poly(ADP-ribosyl)ation induces DNA hypermethylation: a possible molecular mechanism. *FASEB J.* 2002; 16(10): 1319-21.
17. Reale A, Malanga M, Zardo G, Strom R, Scovassi AI, Farina B, Caiafa P. In vitro induction of H1-H1 histone cross-linking by adenosine diphosphate-ribose polymers. *Biochemistry.* 2000; 39(34): 10413-8.
18. Marenzi S, Adams RL, Zardo G, Lenti L, Reale A, Caiafa P. Efficiency of expression of transfected genes depends on the cell cycle. *Mol Biol Rep.* 1999; 26(4): 261-7.
19. Zardo G, D'Erme M, Reale A, Strom R, Perilli M, Caiafa P. Does poly(ADP-ribosyl)ation regulate the DNA methylation pattern? *Biochemistry.* 1997; 36(26): 7937-43. (IF 3.23)
20. Reale A, Marenzi S, Santoro R, D'Erme M, Zardo G, Strom R, Caiafa P. H1-H1 cross-linking efficiency depends on genomic DNA methylation. *Biochem Biophys Res Commun.* 1996; 227(3): 768-74.
21. D'Erme M, Zardo G, Reale A, Caiafa P. Co-operative interactions of oligonucleosomal DNA with the H1e histone variant and its poly(ADP-ribosyl)ated isoform. *Biochem J.* 1996; 316(Pt 2): 475-80.
22. Reale A, Lindsay H., Saluz H.P., Pradhan S., Adams R.L.P., Jost J-P, Strom R. DNA binding and methyl transfer catalysed by mouse DNA methyltransferase. *Biochem. J.* 1995; 312, 855-861
23. Strom R., Santoro R., D'Erme M., Mastrantonio S., Reale A., Marenzi S., Zardo G., Caiafa P. Specific variants of H1 histone regulate CpG methylation in eukaryotic DNA *Gene*, 1995; 157, 253-256
24. Caiafa P., Reale A., Santoro R., D'Erme M., Marenzi S., Zardo G., Strom R. Does hypomethylation of linker DNA play a role in chromatin condensation? *Gene* 1995; 157, 247-251
25. Santoro R., D'Erme M., Mastrantonio S., Reale A., Marenzi S., Saluz H.P., Strom R., Caiafa P. Binding of H1e-c variants to CpG-rich DNA correlates with the inhibitory effect on enzymic DNA methylation *Biochem. J.* 1995; 305, 739-744

Textbooks (Chapters, etc.)

(Max 5)

REALE A., ZARDO G., MALANGA M., ZLATANOVA J., CAIAFA P. (2005). Inhibition of poly(ADP-ribosyl)ation allows DNA hypermethylation. In: SZYF M.. DNA methylation and Cancer. vol. Chapter 11, Landes Bioscience, Eureka.com.

ZARDO G., REALE A, CAIAFA P. (2000). Poly(ADP-ribosyl)ation protects DNA methylation pattern. Review. In: RESEARCH SIGNPOST. Recent Res. Devel. Biochem. p. 137-146, TRIVANDRUM: Research Signpost.

ADAMS RL, LINDSAY H, REALE A, SEIVWRIGHT C, KASS S, CUMMINGS M, HOULSTON C. (1993) Regulation of de novo methylation. Review In: DNA methylation: molecular biology and biological significance; 64:120-44

EDITORIAL DUTIES AND SOCIETY FELLOWS

Reviewer for the Journal Oncology Reports, Spandidos Publications
Reviewer of research projects from NATIONAL SCIENCE CENTRE, Kraków, Poland
Member of the Italian group: "I Processi di ADP-ribosilazione", 1990-2015
Scientific organizer of the meeting "XVII Italian Meeting on Poly(ADP-ribosyl)ation Processes", University of Rome «La Sapienza», December 17-18, 2004.
Scientific organizer of the meeting "XXIII Italian Meeting on Poly(ADP-ribosyl)ation Processes", University of Rome «La Sapienza», September 23-24, 2010.
Member of the Epigenetics Society (named DNA methylation Society from 1994-2003)

GRANTS FUNDED AS P.I.

1996, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: Effetti differenziali dei diversi domini dell'istone H1 sulla metilazione enzimatica del DNA
1998, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: Effetto della composizione in basi e della frequenza in dinucleotidi CpG sulla formazione delle interazioni H1-H1
1999, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: Effetto dei polimeri di ADP-ribosio sull'interazione H1-DNA
2001, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: L'enzima DNMT1 come bersaglio di polimeri di ADP-ribosio
2002, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: Modulazione dell'attività DNMT1 da parte di polimeri di ADP-ribosio
2003-2004, Faculty of Medicine University of Rome "La Sapienza" Italy. Project Title: Interazione di DNMT1 con fattori regolatori della crescita cellulare e della trascrizione
2008, Ateneo Federato, Sapienza University of Rome, Italy. Project Title: Interazioni tra PARP-1 e Che-1: nuove prospettive nella risposta al danno al DNA
2011, Ateneo Federato, Sapienza University of Rome, Italy. Project Title: Ruolo della poli(ADP-ribosio) polimerasi sull'induzione di Snail nelle neoplasie epiteliali
2014, Ateneo Federato, Sapienza University of Rome, Italy. Project Title: Snail come bersaglio terapeutico degli inibitori delle PARP nelle cellule di cancro al seno MDA-MB231
2015, Ateneo Federato, Sapienza University of Rome, Italy. Project Title: PARP-1 as regulator of the epigenetic code on SNAI1 promoter in breast cancer cells

Firmato

Anna Reale