



**Paola Campomenosi**  
UNIVERSITY OF INSUBRIA



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## Contact data

### Assistant Professor

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## Biography

Paola Campomenosi was born in Miraflores Lima Perù, in 1965.

She studied Biological Sciences at the University of Genoa, where she received her degree magna cum laude in 1989.

She worked at the National Institute for Cancer Research in Genoa as Research fellow between 1989 and 1996 and in the meantime she specialized in Hygiene at the University of Genoa (1992).

She held a Post-doctoral position at the University of Dundee, dept. of Pathology between 1996 and 1997.

Moving to Italy, she was Research fellow at the National Institute for Cancer Research between 1997 and 2000 and specialized in Medical Genetics at the University of Genoa.

She moved to the laboratory of Human Genetics of the University of Insubria as Research Fellow and became an Assistant Professor in 2002, in the Department of Structural and Functional Biology first and, since its foundation in 2004, in the Department of Biotechnology and Molecular Sciences.

## Qualifications and awards

Gaetano Fichera Fellow Award, Johns Hopkins Oncology Center, Baltimore, USA.

Fellowship from the University of Insubria.

Post-doctoral position at the University of Dundee, dept. of Pathology

Short term UICC (International Union against Cancer) fellowship (ICRETT) in Dr. P.B. Farmer laboratory, MRC Toxicology Unit, Carshalton, UK.

AIRC (Italian Association for Cancer Research) fellowship, laboratory of Mutagenesis, National Institute for Cancer Research, Genova, Italy.

Degree (magna cum laude) in Biological Sciences

Specialization in Hygiene, Public Health

Specialization in Medical Genetics

## Research interests

Since the beginning of her career, PC has been interested in studying the process of tumorigenesis by using molecular and cellular biology techniques. Specifically, she participated in the characterization of genes involved in the process of tumorigenesis, particularly tumor suppressor genes.

In the field of cancer research she started working in mutational spectrometry soon concentrating on a particular target, p53, frequently mutated during human carcinogenesis. She demonstrated p53 involvement in cancer development in different types of neoplasia, i.e. gliomas, colon and esophageal adenocarcinomas and relative preneoplastic lesions with her molecular epidemiology studies.

She applied a yeast based p53 transactivation assay to study the ability of specific p53 mutants to transactivate different targets and their ability to interact with other members of the p53 family. This powerful method also allowed her to study mutational and lethal capacity of novel chemotherapeutic drugs.

She also worked on GADD45, one of p53 targets and other genes involved in cellular growth control, showing that this gene does not represent a mutational target during cancer development.

Since joining Prof. Taramelli's group at the University of Insubria, she started the biochemical and functional characterization of a new candidate tumor suppressor gene named RNASET2, which maps on a chromosomal region frequently deleted in many types of cancers including ovarian carcinoma and melanoma. This gene codes for a ribonuclease belonging to a family highly conserved during evolution. In spite of conservation, a common biological function in all organisms remains to be discovered, although all the activities described so far have in common the inhibition of cell proliferation. PC demonstrated that RNASET2 is a secreted protein and is active as a ribonuclease. Moreover, with colleagues and collaborators, she has demonstrated the antitumorigenic and antimetastatic activities of this protein *in vivo*.

## Teaching experience and appointments

Teaching activities:

- Genetics
- Life Sciences I
- Laboratory of Experimental Biology (Genetics)

Committee for the attribution of Academic Funds for Research (FAR)

## Representative publications

1. Acquati F., Possati L., Ferrante L., Campomenosi P., Talevi S., Bardelli S., Margiotta C., Russo A., Bortoletto E., Rocchetti R., Calza R., Cinquetti R., Monti L., Salis S., Barbanti-Brodano G. and Taramelli R. (2005). Tumor and metastasis suppression by the human RNASET2 gene. *Int. J. Oncol.* 26, 1159-1168.

2. Monti P., Iannone R., Campomenosi P., Ciribilli Y., Varadarajan S., Shah D., Menichini P., Gold B. and Fronza G. (2004). Nucleotide excision repair defect influences lethality and mutagenicity induced by Me-Iex, a sequence-selective N3-adenine methylating agent, in the

absence of base excision repair. *Biochemistry* 43, 5592-5599.

3. Monti P., Campomenosi P., Ciribilli Y., Iannone R., Aprile A., Inga A., Tada M., Menichini P., Abbondandolo A. and Fronza G. (2003). Characterization of the p53 mutants ability to inhibit p73 transactivation using a yeast-based functional assay. *Oncogene* 22, 5252-5260.

4. Monti P., Campomenosi P., Ciribilli Y., Iannone R., Inga A., Shah D., Scott G., Burns P.A., Menichini P., Abbondandolo A., Gold B. and Fronza G. (2002). Influences of base excision repair defects on the lethality and mutagenicity induced by Me-Iex, a sequence-selective N3-Adenine methylating agent. *J. Biol. Chem.* 277, 28663-28668.

5. Monti P., Campomenosi P., Ciribilli Y., Iannone R., Inga A., Abbondandolo A., Resnick M.A., Fronza G. (2002). Tumour p53 mutations exhibit promoter selective dominance over wild type p53. *Oncogene* 21, 1641-1648.

6. Campomenosi P., Monti P., Aprile A., Abbondandolo A., Frebourg T., Gold B., Crook T., Inga A., Resnick M.A., Iggo R. and Fronza G. (2001). P53 mutants can often transactivate promoters containing a p21 but not Bax or PIG3 responsive elements. *Oncogene*, 20, 3573-3579.

7. Maurici D., Monti P., Campomenosi P., North S., Frebourg T., Fronza G. and Hainaut P. (2001). Amifostine (WR2721) restores transcriptional activity of specific p53 mutant proteins in a yeast functional assay. *Oncogene*, 20, 3533-3540.

8. Viaggi S., Gallerani E., Molina F., Nuesse M., Fronza G., Ottaggio L., Campomenosi P., Abbondandolo A. and Menichini P. (2001). Partial characterization of SUV1, a new mammalian gene induced by UV-C and expressed during the S-phase of the cell cycle. *Environ. Mol. Mutag.* 37, 76-84

9. Fais F., Fronza G., Roncella S., Inga A., Campomenosi P., Cutrona G., Pezzolo A., Fedeli F., Abbondandolo A., Chiorazzi N., Pistoia V. and Ferrarini M. (2000). Analysis of the stepwise genetic changes that occurred in an AIDS-related Burkitt's lymphoma. *Int. J. Cancer*, 88, 744-750.

10. Campomenosi P. and Hall P.A. (2000). Gadd45 mutations are uncommon in human tumour cell lines. *Cell Prolif.* 33, 301-306.

11. Ottaggio L., Bozzo S., Moro F., Sparks A., Campomenosi P., Miele M., Bonatti S., Fronza G., Lane D.P. and Abbondandolo A. (2000). Defective nuclear localization of p53 protein in a Chinese hamster cell line is associated with the formation of stable cytoplasmic protein multimers in cells with gene amplification. *Carcinogenesis* 21, 1631-1638.

12. Fronza G., Inga A., Monti P., Scott G., Campomenosi P., Menichini P., Ottaggio L., Viaggi S., Burns P.A., Gold B. and Abbondandolo A. (2000). The yeast p53 functional assay: a new tool for molecular epidemiology. *Hopes and facts. Mutation Res.* 462, 293-301.

13. Monti P., Inga A., Aprile A., Campomenosi P., Menichini P., Ottaggio L., Viaggi S., Ghigliotti G., Abbondandolo A. and Fronza G. (2000). P53 mutations experimentally induced by 8-methoxypsoralen plus UVA (PUVA) differ from those found in human skin cancers in PUVA-treated patients. *Mutagenesis* 15, 127-132.
14. Monti P., Inga A., Scott G., Aprile A., Campomenosi P., Menichini P., Ottaggio L., Viaggi S., Abbondandolo A., Burns P.A. and Fronza G. (1999). 5-Methylcytosine at HpaII sites in p53 is not hypermutable after UVC irradiation. *Mutation Res.*, 431, 93-103.
15. Ottaggio L., Moro F., Fronza G., Roncella S., Bozzo S., Campomenosi P., Inga A., Ferrarini M. and Abbondandolo A. (1999). Derivative chromosome 17 in a case of Burkitt Lymphoma with 8;14 translocation. *Cancer Genet Cytogenet* 110, 1-6.
16. Inga A., Chen F.X., Monti P., Aprile A., Campomenosi P., Menichini P., Ottaggio L., Viaggi S., Abbondandolo A., Gold B. and Fronza G. (1999). N-(2-Chloroethyl)-N-nitrosourea tethered to lexitropin induces minor groove lesions at the p53 cDNA that are more cytotoxic than mutagenic. *Cancer Res.* 59, 689-695.
17. Campomenosi P., Assereto P., Bogliolo M., Fronza G., Abbondandolo A., Capasso A., Bellomo P. F., Monaco R., Rapallo A., Sciutto A., Orecchia R., Geido E. and Giaretti W. (1998). p53 mutations and DNA ploidy in colorectal adenocarcinomas. *Analytical Cellular Pathology* 17, 1-12.
18. Campomenosi P., Fronza G., Ottaggio L., Roncella S., Inga A., Bogliolo M., Monti P., Assereto P., Moro F., Cutrona F., Bozzo S., Chiorazzi N., Abbondandolo A. and Ferrarini M. (1997). Heterogeneous p53 mutations in a Burkitt's lymphoma from an AIDS patient with monoclonal c-myc and vj rearrangements. *Int. J. Cancer* 73, 816-821.
19. Bogliolo M., Fronza G., Campomenosi P., Assereto P., Izzotti A., Petrilli G.L., Abbondandolo A. and De Flora S. (1996). Cancer biomarkers in human atherosclerotic lesions. Lack of mutations in K-ras codons 12 and 13. *Chem. Biol. Interact.* 102, 55-62.
20. Campomenosi P., Conio M., Bogliolo M., Urbini S., Aprile A., Assereto P., Inga A., Aste H., Lapertosa G., Abbondandolo A. and Fronza G. (1996). P53 is frequently mutated in Barrett's Esophagus of the intestinal type. *Cancer Epidemiol. Biomarkers & Prevention* 5, 559-565.
21. Campomenosi P., Ottaggio L., Moro F., Urbini S., Bogliolo M., Zunino A., Camoriano A., Inga A., Gentile S.L., Pellegata N., Bonassi S., Bruzzone E., Iannone R., Pisani R., Menichini P., Ranzani G.N., Bonatti S., Abbondandolo A. and Fronza G. (1996). Study on aneuploidy and p53 mutations in astrocytomas. *Cancer Genet. Cytogenet.* 88, 95-102.
22. Inga A., Iannone R., Campomenosi P., Molina F., Menichini P., Abbondandolo A. and Fronza G. (1995). Mutational fingerprint induced

by the antineoplastic drug Chloroethyl-Cyclohexyl-Nitroso-Urea in mammalian cells. *Cancer Res.* 55, 4658-4663.

23. De Agostini F., Fronza G., Campomenosi P., Izzotti A., Petrilli G.L., Abbondandolo A., De Flora S. (1994). Cancer biomarkers in human atherosclerotic lesions. II. No evidence of p53 involvement. *Cancer Epidemiol. Biomarkers & Prevention* 4, 111-115.

24. Fronza G., Madzak C., Campomenosi P., Inga A., Iannone R., Abbondandolo A. and Sarasin A. (1994). Influence of DNA structure on the mutation spectrum of 4-nitroquinoline 1-oxide damage single stranded shuttle vector DNA transfected into Monkey cells. *Mutation Res.* 308, 117-125.

25. Menichini P., Inga A., Fronza G., Iannone R., Degan P., Campomenosi P. and Abbondandolo A. (1994). Defective splicing induced by 4NQO in the hamster hprt gene. *Mutation Res.* 323, 159-165.

26. Inga A., Iannone R., Campomenosi P., Fronza G., Abbondandolo A. and Menichini P. (1994). Analysis of 4-nitroquinoline 1-oxide induced mutations at the hprt locus in mammalian cells: possible involvement of preferential DNA repair. *Mutagenesis*, 9, 67-72.

27. Campomenosi P., Iannone R., Inga A., Menichini P., Degan P., Abbondandolo A., Fronza G.. (1992). Multi-system approach to study mutagenesis induced by chemical carcinogens. *Bull. Italian Soc. Spermental Biol.* 68, 699-705.

28. Iannone R., Campomenosi P., Madzak C., Inga A., Caocci F., Abbondandolo A., Fronza G., Sarasin A.(1992) Single-stranded DNA vectors for analyzing processing of DNA damage induced by 4-nitroquinoline 1-oxide in prokaryotes and eukaryotes. *Bull. Italian Soc. Spermental Biol.* 68, 619-624.

29. Inga A., Menichini P., Iannone R., Degan P., Campomenosi P., Fronza G., Abbondandolo A. (1992). Study of 4-NQO induced mutations at the HPRT locus in CHO cell lines. Possible influences of preferential DNA-repair on the mutational spectrum. *Bull. Italian Soc. Spermental Biol.* 68, 581-586.

30. Fronza G., Campomenosi P., Iannone R. and Abbondandolo A. (1992). The 4-nitroquinoline 1-oxide mutational spectrum in single stranded DNA is characterized by guanine to pyrimidine transversions. *Nucleic Acids Res.*, 20, 1283-1287

## Clinical interests

Although not directly involved in clinical studies, PC has been characterizing genes directly involved in human pathologies, particularly cancer. She had several collaborations with clinical units and is currently collaborating with the Anatomopathology Unit of the University of Insubria.