CURRICULUM VITAE

Personal Informations

Name: Margherita Branno
Date of Birth: June 13, 1949
Place of Birth: Napoli Italy
Nationality: Italian

Home Address: Via Vecchia delle Vigne 15
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Education:

December, 1974	Degree in Chemistry with 100/110. Thesis presented:" Characterization of tryptic action on RNAse BS-1 monomeric derivate"
May 1974-March 1976	Fellowship at the Laboratory of Biochemistry, University of Groningen (The Netherlands)
April 1977-July1980	Fellowship at the Stazione Zoologica "A. Dohrn",
August 1, 1980-May 1992	Researcher Group Leader Stazione Zoologica
May 1992-December 2005	Senior researcher Group Leader Stazione Zoologica
January 2006 to the present	Research Director, Group Leader Stazione Zoologica
September 2006-January2008	Head of Laboratory Biochemistry and Molecular Biology
January 2008-July 2014	Head of Laboratory Cellular and Developmental Biology

Didactics activities:

Tutor:	PhD students in the international programme Stazione Zoologica-Open Univesity of London; PhD students of "Università degli Studi di Napoli Federico II" (PhD in "Molecular and Cellular Biology and Pathology" and "Molecular Systematic"; PhD students of "Università della Calabria in "Animal biology"

Correlator: Experimental thesis for students of the faculty of Biologycal Science, Università degli Studi di Napoli Federico II.

Research Activities:

1974 to date Publications: 100 presentations to National and International Meeting, 67 publications in International Journals.

1972-1973 Research student in the Biochemistry Laboratory of the University of Napoli.

Main research topics: Conformational studies on the ribonuclease BS-1.

1974-1976 Fellowship at the Laboratory of Biochemistry, University of Groningen (The Netherlands).

Main research topics: Determination of the amino acid sequence of the enzyme parahydroxybenzoate hydroxylase of Pseudomonas fluorescens.

1980 to 1995 Research Investigator at the Stazione Zoologica "A. Dohrn", Napoli.

Main research topics: molecular mechanisms of embryonic differentiation of the sea urchin *Paracentrotus lividus*.

i) characterization of histone methyltransferases
ii) relevance of epigenetic mechanisms in early embryogenesis: we have found that the sea urchin embryo is particularly sensitive to 5-azacytidine (5-AzaCR) treatment in the very initial cell divisions.
iii) methylation of DNA: a) it has been identified the DNA (cytosine-5)-methyltransferase (DNA MeTase) activity and studied the change in activity depending on the embryo stage. b) it has been characterized the cDNA coding for the DNA MeTase from *Paracentrotus lividus*.
iiii) it has been characterized the genomic structure of the DNA MeTase. Furthermore, it has been demonstrated the existence of five alternative spliced isoform of the DNA MeTase gene that are differentially expressed during embryonic development.

1994 to date Main research topics: molecular mechanisms of embryonic differentiation of the ascidian *Ciona intestinalis*.

i) Isolation and characterization of the spatial and temporal expression pattern of different homeobox-containing genes from the Ascidia *Ciona intestinalis*: *CiHox3*, *CiHox5*, *Ci-msxb*, *Ci-Rx*, *Ci-IPF1*, *Ci-DllA, B* and *C*, *Ci-ttf1*.
Detailed studies have been performed on:
CiHox3
Transgenic analysis of CiHox3 regulatory elements responsible of its nervous specific expression pattern and comparative study between mouse and *Ciona* Hox3 promoters have been performed
Ci-msxb
its genomic structure and regulatory upstream region have been characterized. By electroporation experiments have been demonstrated that a 3.8 kb region

located upstream of the *Ci-msx*b gene contains all the regulatory elements able to reproduce its spatial expression pattern.

Ci-Rx

The translational inhibitions of endogenous Ci-Rx by morpholino oligonucleotide injection give a phenotype lacking the ocellus. To check if Ci-Rx knockdown embryo changed the photic behaviour electrophysiological measurements have been carried out. Ci-Rx knockdown larvae showed a complete lack of sensitivity to repeated light off stimuli suggesting that the Ci-Rx gene may be involved in photoreceptor differentiation. By electroporation experiments have been demonstrated that a 0.2 kb region located upstream of the Ci-Rx gene contains all the regulatory elements able to reproduce its spatial expression pattern. Bioinformatic studies carried out on these sequences revealed that they contains binding sites recognized by the Onecut transcription factor. By in vivo and in vitro experiments we demonstrated that Rx promoter *Ciona intestinalis* is regulated by Onecut protein at least in two different region of its promoter. We extensively characterized the Onecut upstream cis-regulatory DNA in the ascidian *Ciona intestinalis*. By electroporation experiments of a 2.5 kb genomic fragment and of a series of deletion constructs we identified a small region of 262 bp able to reproduce most of all Onecut expression profile during embryonic development. Further analyses both bioinformatics and in vivo using transient transgenes permitted to identify the transcription factors responsible for Onecut endogenous expression. We provide evidence that Neurogenin is a direct activator of Onecut and that an autoregulatory loop is responsible for the maintenance of its expression. Furthermore, for the first time we propose the existence of a direct connection among Neurogenin, Onecut and Rx transcription factors in photoreceptor cells formation.

PUBLICATIONS

1) Parente, A., **Branno, M**., Malorni, M. C., Welling. G. W. , Libonati, M. & G. D'Alessio, 1976. Proteolytic enzymes as structural probes for ribonuclease BS-1. *Biochem. Biophys. Acta*, 445, 377-385.

2) **Branno, M**. 1980. Determination of S-adenosylmethionine and S-adenosylhomocysteine in nuclei isolated from sea urchin embryos durine early development. *Bol. Soc. Ital. Biol. Sper.* 15, 1769-1771.

3) **Branno, M**. 1980. Effect of trypsin on the methylation of nuclear proteins in sea urchin embryos. *Bol. Soc. Ital. Biol. Sper*. 15, 1772-1777.

4) **Branno, M**. & Tosi, L. 1980. Methylation of nuclear proteins during early embryogenesis in sea urchin. *Bol. Soc. Ital. Biol. Sper*. 15, 1778-1784.

5) De Franciscis, V., **Branno, M**., Scarano, E. & Tosi, L. 1981. DNA methylase(s) in the early embryonic development of the sea urchin. *Acta Embryol. Morphol. Exper*. 2, XXV-XXVI

6) Ortolani, G., Tosi, L., **Branno, M**., & Patricolo, E. 1982. Development of animal halves of sea urchin eggs after trypsin treatment. *Acta Embryol. Morphol. Exper*. 3, XVII-XVIII

7) **Branno, M**., De Franciscis, V. & Tosi, L. 1983. In vitro methylation of histones in sea urchin nuclei during early embryogenesis. *Biochem. Biophys. Acta*, 741, 136-142.

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9) Aniello, F., **Branno, M**., Geraci, G. & Tosi, L. 1986. Methylation of sea urchin embryo chromatin. Two mutually interacting binding sites for S-adenosylmethionine. *Biochem. Biophys. Acta*, 868, 100-107.

10) Puccia, E., **Branno, M**., Tosi, L., Villa, L. & Ortolani, G. 1986. Effects of cytidine analogs in ascidian embryonic development. *Acta Embryol. Morphol. Exper*. 7, 43-69.

11) Maharajan, P., Maharajan, V., **Branno, M**. & Scarano, E. 1986. Effects of 5-azacytidine on DNA methylation and early development of sea urchin and ascidia. *Differentiation*, 32, 200-207.

12) **Branno, M**., Aniello, F. , Geraci, G. & Tosi, L. 1987. Some properties of histones H3 and H4 methyltransferase partially purified from sea urchin embryo nuclei. *Ital. J. Biochem*. 36, 290-291.

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16) **Branno, M**., Aniello, F., Lancieri, M., Fucci, L. & Geraci, G. 1993. Determination in sea urchin embryo: dependence on events occurring in the initial 4 cell divisions. *J. Submicrosc. Cytol. Pathol*. 25, 19-27.

17) Fucci, L., Aniello, F., **Branno, M**., Biffali, E. & Geraci, G. 1994. Isolation of a new H3.3 histone variant cDNA of *P. lividus* sea urchin and embryonic expression. *Biochem. Biophys. Acta*, 1219, 539-542.

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