



Nicoletta Landsberger
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Contact data

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Biography

1989 -Milan -University of Milan –Ph.D.

1993 -Milan -University of Milan – Ph.D. in Cellular and Molecular Biology

1993-1997 Postdoctoral Fellowship in Dr. Wolffe's laboratory Bethesda (MD, USA) National Institute of Child Health (NIH) -

1998 –2003 Varese -University of Insubria - University Researcher in Molecular Biology

2004 - Varese -University of Insubria -Associate Professor of Molecular Biology

Qualifications and awards

1997: 1997 NIH Fellows Award for Research Excellence

1998-2000: AIRC GRANT “Molecular mechanisms of gene silencing mediated by DNA methylation”

2001-2003: TELETHON GRANT “Identification and characterization of proteins that, interacting with MeCP2, could be involved in Rett Syndrome”.

2001-2003: Rett Syndrome Association Grant (USA). “Identification and characterization of proteins that, interacting with MeCP2, could be involved in Rett Syndrome”

2003: AIRC GRANT “Chromatin Structure Modifications Induced By The Oncogenic Protein PML-RAR”

2001: FIRB “Caratterizzazione di nuovi interattori di MeCP2 e loro coinvolgimento nella sindrome di Rett”

2004: AIRC GRANT “Changes in chromatin structure and transcriptional regulation mediated by leukemic oncofusion proteins”.

2005-2007: TELETHON GRANT “Identification and characterization of

proteins that, interacting with MeCP2, could be involved in Rett Syndrome”.

2005-2007: AIRC GRANT“Changes in chromatin structure and transcriptional regulation mediated by leukemic oncofusion proteins”.

Research interests

In general my interest has always been in the field of chromatin and transcription. This became clear when I joined Dr. Wolffe's laboratory as a postdoctoral fellow. I have been in the Alan laboratory for 4.5 years. In 1998 I left NIH and I started my own group in Italy. Generally, the group is interested in analyzing the mechanisms of gene silencing driven by DNA methylation with a particular interest in the identification of novel proteins that by interacting with the methyl-binding protein MeCP2 might be involved in Rett Syndrome; moreover the laboratory is working on the influence of the main regulators of acute promyelocytic leukemia on gene expression and chromatin structure.

Regarding the MeCP2 interacting factors we have recently used a deductive approach and a genetic one to isolate novel interacting factors. We believe this strategy quite important to isolate novel loci either involved in Rett syndrome onset or in influencing its gravity. Some of these interactors have been further characterized in the laboratory.

Teaching experience and appointments

1998/2001 - Laboratory of Experimental Biology II. University. of Insubria; degree in Biology.

2000/2006 Methodologies in Molecular Biology. 5 CFU. University . of Insubria. 1st level degree in Biology.

2000/2003 – Gene expression regulation during development. University. of Insubria; degree in Biology.

2002/2004 – Subjects of Molecular Biology. 3 CFU. University. of Insubria; Second level degree in Biology.

2003/2006 Molecular Biology II. 4 CFU. Univ. of Insubria. Graduate level degree in Biology Applied to Biomedical Sciences.

2004/2006 Integrated Laboratory I: unit of Molecular Biology. 1 CFU. University of Insubria. Undergraduate level degree in Biology of Health.

2004//2006 1.5 CFU of Epigenetic Univ. of Vita e Salute (Milan). Graduate level degree in Medical, Molecular and Cellular Biotechnologies.

2005: Epigenetic mechanisms of transcriptional regulation. 3 CFU. University of Insubria; Graduate degree in Biology.

Representative publications

1) DG. Stump, N. Landsberger and A. P. Wolffe (1995) The cDNA encoding *Xenopus laevis* heat-shock factor 1 (XHSF1): nucleotide and deduced amino-acid sequences, and properties of the encoded protein. *Gene* 160, 207-211.

- 2) N. Landsberger, M. Ranjan, G. Almouzni, D. Stump and A. P. Wolffe (1995) The heat shock response in *Xenopus* oocytes, embryos and somatic cells: a regulatory role for chromatin. *Dev Biol.* 170, 62-74.
- 3) N. Landsberger and A. P. Wolffe (1995) Role of chromatin and *Xenopus laevis* heat shock transcription factor in regulation of transcription from the *X. laevis* hsp70 promoter in vivo. *Mol. Cell. Biol.* 15, 6013-6024.
- 4) G. Badaracco, M. Bellorini and N. Landsberger (1995) Phylogenetic study of bisexual *Artemia* using random amplified polymorphic DNA. *J Mol Evol* 41, 150-154.
- 5) S. U. Kass, N. Landsberger and A. P. Wolffe (1997) DNA methylation directs a time-dependent repression of transcription initiation. *Current Biology* 7, 157-165.
- 6) N. Landsberger and A. P. Wolffe (1997) Remodeling of regulatory nucleoprotein complexes on the *Xenopus* hsp70 promoter during meiotic maturation of the *Xenopus* oocyte. *EMBO J.* 16, 4361-4373.
- 7) Peter L. Jones, Gert Jan C. Veenstra, Paul A. Wade, Danielle Vermaak, Stefan U. Kass, Nicoletta Landsberger, John Strouboulis & Alan P. Wolffe (1998) Methylated DNA and MeCP2 recruit histone deacetylase to repress transcription. *Nature Genetics* 19, 187-191.
- 8) Motta MC., Landsberger N., Merli C., and Badaracco G. (1998) In vitro reconstitution of *Artemia* satellite chromatin. *J. Biol. Chem.* 273, 18028-18039.
- 9) Li Q., Herrler M., Landsberger N., Kaludov N., Ogryzko V.V., Nakatani Y., and Alan P. Wolffe. (1998) *Xenopus* NF-Y pre-sets chromatin to potentiate p300 and acetylation-responsive transcription from the *Xenopus* hsp70 promoter in vivo. *EMBO J.* 17, 6300-6315.
- 10) Chandler, S. P., Guschin, D., Landsberger, N. and Wolffe, A.P. (1999) The methyl-CpG binding transcriptional repressor MeCP2 stably associates with nucleosomal DNA. *Biochemistry* 38, 7008-7018.
- 11) Doren, S., Landsberger, N., Dwyer, N., Gold, L., Blanchette-Mackie, J. and Dean, J. (1999) Incorporation of mouse zona pellucida proteins into the envelope of *Xenopus laevis* oocytes. *Dev Genes Evol.* 209, 330-339.
- 12) Minucci S., Maccarana M., Cioce M., De Luca P., Gelmetti V., Segalla S., Di Croce L., Giavara S., Matteucci C., Gobbi A., Bianchini A., Colombo E., Schiavoni I., Badaracco G., Hu X., Lazar M.A., Landsberger N., Nervi C., Pelicci P.G. (2000) Oligomerization of RAR and AML1 transcription factors as a novel mechanism of oncogenic activation. *Mol. Cell* 5, 811-820.
- 13) Curradi, M., Izzo, A., Badaracco, G. and Landsberger N. (2002) Molecular mechanisms of gene silencing mediated by DNA methylation. *Mol. Cell Biol.* 22, 3157- 3173.

14) Segalla S., Rinaldi L., Kilstrup-Nielsen C., Badaracco G., Minucci S., Pelicci PG., and N. Landsberger (2003) RAR β fusion to PML affects its transcriptional and chromatin remodeling properties. *Mol. Cell Biol.* 23: 8795-808.

15) Carro S, Bergo A, Mengoni M, Bachi A, Badaracco G, Kilstrup-Nielsen C, Landsberger N. (2004). A novel protein, Xenopus p20, influences the stability of MeCP2 through direct interaction. *J. Biol. Chem.* 279: 25623-25631.

16) Mari F, Azimonti S, Bertani I, Bolognese F, Colombo E, Caselli R, Scala E, Longo I, Grosso S, Pescucci C, Ariani F, Hayek G, Balestri P, Bergo A, Badaracco G, Zappella M, Broccoli V, Renieri A, Kilstrup-Nielsen C, Landsberger N. (2005) CDKL5 belongs to the same molecular pathway of MeCP2 and it is responsible for the early-onset seizure variant of Rett syndrome. *Hum Mol Genet.* 14: 1935-46.

REVIEWS AND BOOKS CHAPTERS

1) N. Landsberger and A. P. Wolffe (1995) Chromatin and transcriptional activity in early *Xenopus* development. *Semin Cell Biol* 6, 191-199.

2) Wolffe A. P., Kass, S.U. and Landsberger, N. (1997) Regulatory roles for chromatin. *Chemtracts* 10, 935-955.

3) N. Landsberger and A. P. Wolffe (1997) Struttura della cromatina e controllo dell'espressione genica. *Frontiere della vita. Volume primo.* Enciclopedia La Treccani.

Clinical interests

Even if the projects in the laboratory are mainly of basic research they are focused on revealing new genes involved in Rett Syndrome and may therefore prove useful to the development of new diagnostic and therapeutic strategies.