

Curriculum vitae of Irene Bozzoni

Education

1979: Specialization in General Pathology.

1975: Laurea (MS) Degree with honours in Biology, University of Rome

Academic career and research experience

- 1994 to date: Full Professor of Molecular Biology, University of Rome.
- 1986-94: Associate Professor of Molecular Biology, University of Rome
- 1980-86: Staff scientist at the Center for Nucleic Acid Research, CNR, Rome, Italy
- 1978-80: Research fellow at the Centro Acidi Nucleici of C.N.R., Rome
- 1977-78: Post-doctoral fellow - Institute of Molecular Biology - University of Zurich

Academic appointments

- Director of the Master Degree in Genetics and Molecular Biology in Basic and Biomedical Research – Sapienza, University of Rome
- Deputy Director of the “Sapienza Advanced Studies High School” - University of Rome
- President of the Evaluation Committee of the Faculty of Sciences – Sapienza, University of Rome
- Member of the “Committee for the Innovation of Research and Technologies” of the Sapienza, University of Rome
- Representative of the University "La Sapienza" at the “Consorzio Interuniversitario per le Biotecnologie”.
- Member of the Technical and Scientific Committee of the Consorzio Sapienza Innovazione of the University La Sapienza and of the Italian Federation for Life Sciences.

Memberships and scientific committees

- Member of European Molecular Biology Organization (EMBO) and of the "Accademia Europaea"
- Member of the EMBO “Membership committee"
- Served in: Pezcoller Foundation Standing Committee, Scholarship Advisory Committee of the Armenise-Harvard Foundation and “Fondazione Chiara D’Onofrio”.
- Serves as referee to several national and international agencies (ERC, ESF, AERES, Wellcome Trust, EMBO, HFSP, AFM) and several international scientific journals.
- Author of more than 100 publications on peer-review international journals and of 8 patents three of which have been licensed to the industry.
- Coordinates a research group of 20 people, including researchers, post-docs, PhD and undergraduate students.

Honours and awards

- In 2003 and 2006 was awarded two Prizes by the Accademia Nazionale dei Lincei.
- In 2008 invited to give the “Lectio magistralis” for the inauguration of the academic year at the Sapienza, University of Rome
- In 2010 was awarded the "Sapienza Ricerca Award".

Research interests

The field of scientific interest of Irene Bozzoni is the study of RNA metabolism in eukaryotic cells with specific concern to the role of post-transcriptional processes in the control of gene expression. In the past her activity has mainly focused on the functional role of several classes of small non coding RNAs (snRNA, snoRNA) and on the control of their biogenesis.

More recently, her interest moved to other classes of non coding RNAs: her group showed, among the first, the relevance of microRNAs (miRNAs) in the control of cell differentiation: she successfully accomplished the characterization of several miRNA-dependent circuitries both in hematopoietic (Fazi et al., 2005 *Cell*, **123**:819; Rosa et al., 2007 *Natl. Acad. Sci. USA*, 104:19849) and neuronal (Laneve et al., 2007 *Proc. Natl. Acad. Sci. USA*, 104:7957) differentiation. Several RNA-based methodologies, for the control of gene expression, have been set up: unusual RNA activities have been successfully exploited to interfere with gene expression and for therapeutic use. A successful application has been the utilization of antisense RNAs for the correction at the post-transcriptional level of the Duchenne Muscular Dystrophy disorder (Denti et al., 2006 *Proc. Natl. Acad. Sci. USA*, 103: 3758; Incitti et al., 2010 *Mol. Ther.* 18:1675-82). While studying normal and pathological myogenesis, she described a new function for the dystrophin protein in the control of gene expression (Cacchiarelli et al., *Cell Metabolism*, 2010, 12:341-51) and identified several important miRNA activities in controlling muscle homeostasis (Cacchiarelli et al., 2011 *EMBO Rep.* 12:136). Moreover she disclosed the existence of circulating muscle miRNAs describing their use as effective biomarkers of muscle degeneration (Cacchiarelli et al., 2011 *EMBO Mol Med* 5:258). More recently, she disclosed a new function for a long non coding RNA in the control of muscle differentiation (Cesana et al., 2011 *Cell*, 147: 358). The role of this new class of transcripts is currently analysed in several different cellular model systems (Fatica and Bozzoni, 2014 *Nature Review Genetics*, 15:7-21).

Research projects coordinated:

- European Union (Integrated Projects of the VII Research Framework - RIGHT and SIROCCO)
- European Science Foundation (ESF)
- Italian Ministry of University (PRIN e FIRB)
- National Research Council (CNR)
- Telethon
- Italian Cancer Research Association (AIRC)
- Istituto Pasteur, Fondazione Cenci-Bolognetti
- Parent Project ONLUS
- Italian Institute of Technology (IIT) –SEED projects

Relevant recent publications:

Fazi F., Rosa A., Fatica A., De Marchis M. L., Gelmetti V., Nervi C. and Bozzoni I. (2005) A mini-circuitry comprising microRNA-223 and transcription factors NFI-A and C/EBP α regulates human granulopoiesis. *Cell*, 123: 819-831.

Denti M.A., Rosa A., D'Antona G., Sthandier O., De Angelis F.G., Nicoletti C., Allocca M., Pansarasa O., Parente V., Musarò A., Auricchio A., Bottinelli R. and Bozzoni I. (2006) Body-wide gene therapy of Duchenne Muscular Dystrophy in the *mdx* mouse model. *Proc. Natl. Acad. Sci. USA*, 103: 3758-3763.

- Rosa A., Ballarino M., Sorrentino A., Sthandier O., De Angelis F.G., Marchioni M., Guarini A., Fatica A., Peschle C. and Bozzoni I. (2007) The interplay between the master transcription factor PU.1 and miR-424 regulates human monocytic differentiation, *Proc. Natl. Acad. Sci. USA*, 104:19849-54.
- Morlando M., Ballarino M., Gromak N., Pagano F., Bozzoni I. and Proudfoot N. (2008) Primary microRNA transcripts are processed co-transcriptionally, *Nat Struct. Mol. Biol.*, 15: 902 – 909.
- Incitti T., De Angelis F.G., Cazzella V., Sthandier O., Pinnarò C., Legnini I., and Bozzoni I. (2010) Exon skipping and Duchenne Muscular Dystrophy therapy: selection of the most active U1 snRNA-antisense able to induce dystrophin exon 51, *Mol. Ther.*, 18:1675-82.
- Cacchiarelli D., Martone J., Girardi E., Cesana M., Incitti T., Nicoletti C., Santini T., Sthandier O., Auricchio A., Musarò A. & Bozzoni I. (2010). microRNAs Involved in Molecular Circuitries Relevant for the Duchenne Muscular Dystrophy Pathogenesis Are Controlled by the Dystrophin/nNOS Pathway. *Cell Metabolism*, 12:341-51
- Cacchiarelli D., Incitti T., Martone J., Cesana M., Cazzella V., Santini T., Sthandier O. and Bozzoni I. (2011) miR-31 modulates dystrophin expression: novel implications in Duchenne Muscular Dystrophy therapy. *EMBO Rep.*, 12:136-41
- Cacchiarelli D., Legnini I., Martone J., D'Amico A., Bertini E. and Bozzoni I. (2011) miRNAs as serum biomarkers for Duchenne Muscular Dystrophy. *EMBO Mol Med.*, 5:258-265.
- Cesana M., Cacchiarelli D., Legnini I., Santini T., Sthandier O., Chinappi M., Tramontano A. and Bozzoni I. (2011) Key ceRNA role for the long non-coding RNA linc-MD1 in the control of muscle differentiation. *Cell*, 147: 358-369.
- Morlando M., Dini Modigliani S., Torrelli G., Rosa A., Di Carlo V., Caffarelli E. and Bozzoni I. (2012) FUS stimulates microRNA biogenesis by facilitating co-transcriptional Drosha recruitment. *EMBO J.* 31:4502-10.
- Fatica A. and Bozzoni I. (2014) Long non-coding RNAs: new players in cell differentiation and development. *Nature Review Genetics*, 15:7-21
- Legnini I., Morlando M., Mangiavacchi A., Fatica A. and Bozzoni I. (2014) A feed forward regulatory loop between the HuR protein and the long non coding RNA linc-MD1 controls early phases of muscle differentiation. *Mol. Cell*, 53:1–9.