

**CURRICULUM VITAE****Prof. Silvia Maria Luisa Barabino****PERSONAL INFORMATION**

PLACE OF BIRTH: Sorengo, Canton Ticino, Switzerland  
DATE OF BIRTH: September, 7<sup>th</sup>, 1963  
NATIONALITY: Italian  
PROFESSIONAL ADDRESS: Dept. of Biotechnology and Biosciences  
University of Milano-Bicocca  
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**EDUCATION**

**2012:** National Scientific Qualification as Full Professor in Biochemistry (Abilitazione sc. Nazionale, settore 05/E1-BIOCHIMICA GENERALE E BIOCHIMICA CLINICA)  
**1988:** Specialization in Genetics, Università degli Studi di Pavia,  
**1987:** Degree in Biology at the Università degli Studi di Pavia, Italy; 110/110 summa cum laude.  
Thesis: "*Biological and Enzymatic Effects of DNA-Caffeine interaction.*"  
**1982:** Abitur (International Baccalaureate), German School of Milan, Italy.

**RESEARCH EXPERIENCE**

**Present Position** Associated Professor in Molecular Biology, Department of Biotechnology and Biosciences, University of Milano - Bicocca  
**2001 – 2007** Assistant Professor in Molecular Biology, Department of Biotechnology and Biosciences, University of Milano - Bicocca  
**2000 – 2001** Independent PI in Prof. F. Cotelli's laboratory, Department of Biology, University of Milan, Milano, Italy

- 1994 – 2000:** Assistant in Prof. W. Keller's laboratory, Cell Biology Department, Biozentrum, University Basel, Switzerland.
- 1992 - 1994:** Post-doctoral Fellow in Dr. E. Boncinelli's laboratory, DIBIT, H S. Raffaele, Milan, Italy.
- 1988 - 1992:** Post-doctoral Fellow in Dr. A.I Lamond's laboratory, European Molecular Biology Laboratory, Heidelberg, Germany.
- July - October 1988:** Training in Prof. P.J. Hagerman's laboratory, Department of Biochemistry, Biophysics and Genetics, University of Colorado, Health Sciences Center, Denver, Colorado, U.S.A.
- 1985 – 1987** Experimental thesis for the Laurea (Degree) in Biology, in the lab of Dr. MA Pedrini, Institute of Molecular Genetics, National Research Council, CNR, Pavia

### ***RESEARCH INTEREST***

*“Mechanisms of post-transcriptional regulation of mammalian gene expression and their role in human disease”*

The main lines of research in the laboratory are:

1. Multiple roles of RNA-binding proteins in the regulation of mRNA metabolism
2. Alterations of RNA metabolism in human disease

Current projects:

Alterations of miRNA and mRNA metabolism in models of neurodegeneration

RNA-binding proteins in the control of genome stability

### ***GRANT SUPPORT AND FELLOWSHIPS***

*“ALS molecular therapy exploiting integrated small RNAs analysis of patient-derived induced pluripotent stem cells”* – Coordinator: Prof. S. Corti (University of Milan)

Source ARiSLA (Agenzia di Ricerca per la Sclerosi Laterale Amiotrofica)

Duration: 2015 -2017

*“Elucidating the biological function of FUS and its role in neurodegeneration“* –

Coordinator: O. Mühlemann (University Bern): additional partners: M. Neumann (University Zürich), F. Allain (ETH, Zürich)

Source: Swiss National Science Foundation

Period: 2011-2013

*“Unravelling the multiple roles of FUS in RNA processing and the impact of microRNAs on ALS pathogenesis”* - joined project with Oliver Mühlemann (University Bern, Switzerland)

Source: Gottfried und Julia Bangerter-Rhyner-Stiftung

Period: 2011-2012

*Characterizing the impact of microRNAs on ALS pathogenesis*

Source: ARISLA (Agenzia di Ricerca per la Sclerosi Laterale Amiotrofica)

Period: 2011

*“Epigenetic markers and regulation of gene expression in amyotrophic lateral sclerosis”*

Source: Italian Ministry of University and Research

Period: 2009-2011

*“A role for the pre-mRNA processing factor CF Im in quality control of mRNA function”*

Source: Italian Ministry of University and Research

Period: 2006-2008

*“Genomic and Proteomic Analysis of Pre-mRNA Processing in Amyotrophic Lateral Sclerosis*

Source: Fondazione CARIPLLO

Period: 2006-2008

*“Role of Alterations of RNA Metabolism in Motor Neurone Diseases”*

Source: Fondazione CARIPLLO

Period: 2004-2006

*“Studio delle alterazioni del processamento degli RNA messaggeri in patologie degenerative del motoneurone” (Study of pre-mRNA processing alterations in motor neuron pathologies)*

Source: Ministry of Health

Period: 2004-2006

*“Mechanisms of post-transcriptional processing of pre-mRNAs in neural cells and in the genesis of brain tumors”*

Source: A.I.R.C.

Period: 2001-2003

*“Regulation of pre-mRNA processing in amyotrophic lateral sclerosis (ALS) and in muscle cells differentiation”*

Source: Telethon Foundation

Period: 2001-2003

***Fellowships***

**Human Capital Mobility**, September 1994. - January 1997  
**Istituto Superiore di Sanità**, September 1992 - August 1994  
**EMBL Short Term Fellowship**, December 1991 - March 1992  
**H.F.S.P. Long Term Fellowship**, June 1990 - December 1991  
**EC Junior Training Grant in Biotechnology**, June 1989 - May 1990  
**EMBL Short Term Fellowship**, October 1988 - May 1989

***SEMINARS PRESENTED AND INVITED LECTURES AT INTERNATIONAL MEETINGS***

RNA 2016. The 22<sup>nd</sup> annual meeting of the RNA Society. Kyoto, Japan June 28 - July 2, 2016  
 Swiss RNA Workshop, January 22, 2016, Bern, Switzerland  
 RNA 2013. The 18th annual meeting of the RNA Society. Davos, Switzerland, June 11 to 16, 2013  
 1st Post-EURASNET Symposium “Regulation of Gene Expression through RNA Splicing”, Trieste, March 24-27, 2012  
 Workshop “Frontiers in Epigenomics” Baeza, Spain, October 17-19, 2011  
 2010 SIBBM Seminar Frontiers in Molecular Biology, 6<sup>th</sup> meeting of the Italian Society for Biochemistry and Molecular Biology, 3 – 5 June 2010, Padua, Italy  
 ALS/MND, European young investigator meeting, 22-24 May 2009, Turin,, Italy  
 Swiss RNA Workshop, January 30, 2009, Bern, Switzerland  
 RNA 2008 Annual Meeting of the RNA Society, July 28 - August 3<sup>rd</sup>, 2008, Berlin, Germany  
 9<sup>th</sup> Meeting of the Italian life Science Federation, September 26-29, 2007, Riva del Garda TN, Italy  
 EMBO Workshop on “Mechanisms of nuclear transport”, Taormina, November 1st – 5<sup>th</sup> 2003  
 Cold Spring Harbor Meeting on "Eukaryotic mRNA processing", 25 – 29 August 1999, Cold Spring Harbor, N. Y., U.S.A.  
 RNA'97, Second Annual Meeting of The RNA Society, 27 May - 1 June 1997, Banff, Canada

***SERVICE ACTIVITIES***

***Grant reviewer for***

MNDA, Motor Neurone Disease Association  
 National Science Foundation  
 Austrian Science Foundation

Inserm

European Young Investigator Award Scheme (EURYI)

***Reviewer for professional journals***

Nucleic Acids Research

PLoS Biology

Journal Leukocyte Biology

RNA

Cell Research

Experimental Cell Research

Molecular and General Genetics

***Editor for Scientific Reports***

***ACADEMIC SERVICE***

***Ph.D. Student Recruitment Committee***

PhD program in Molecular and Translation Medicine, DIMET, University of Milano-Bicocca (2005-present)

International Graduate School in Molecular Medicine – Neuroscience, Vita-Salute University San Raffaele, Milano (2002-2005)

***STUDENTS AND THESES***

***Undergraduate students currently doing their thesis work in the lab:*** Francesca Conte

***Former undergraduate students:*** Chiara Aringhieri, Stefano Cardinale, Paolo Bonetti, Davide Bonanno, Katia Mariniello, Simona Paro, Valentina Romeo, Andrea Maffioletti, Francesco Ranzini, Giuseppe Mauro, Roberta Bigatti

***Current PhD student:*** Cise Kizilmark

***Former PhD students:*** Chiara Aringhieri, Silvia Vivarelli, Gabriele Fontana, Giuseppe Filosa, Aurora Rigamonti

**TEACHING****Associate Professor** 2007 - present

Molecular Biology, University of Milano – Bicocca, Milano, Italy

Eukaryotic Molecular Biology – advanced course for Master students

Molecular Biology – introductory course for 2<sup>nd</sup> year studentsIntegrated Advanced Biology Course – current topics in Molecular Biology for 4<sup>th</sup> year studentsAdvanced Molecular Biology Practical – practical course for 4<sup>th</sup> year students**Assistant Professor** 2001 - 2007

Molecular Biology, University of Milano – Bicocca, Milano, Italy

Molecular Biology I – introductory course for 2<sup>nd</sup> year studentsMolecular Biology, II – advanced course for 3<sup>rd</sup> year studentsAdvanced Biology – advanced course in Mol. Biology for 5<sup>th</sup> year studentsMolecular Biology Laboratory - practical course for 3<sup>rd</sup> year studentsMolecular Biology of the Eukaryotic Cell for 4<sup>th</sup> year students**Teaching Assistant** 1996 - 2000

Biozentrum, University Basel, Basel, Switzerland

Grundkurs in Zellbiologie: Transcription and pre-mRNA Processing - theoretical and practical course for 3<sup>rd</sup> year studentsÜbungen zu Grundlagen der Allgemeine Biologie - tutoring for 1<sup>st</sup> year students**ADDITIONAL PERSONAL DATA****Languages**

Italian (mother language)

Fluent German, English, and French

**Hobby and Interests**

Sailing, cruising instructor of the French Sailing Federation (FFV)

Alpine and cross-country skiing

## *LIST OF PUBLICATIONS*

### *Original Papers and Reviews*

1. Loffreda A, Arosio A, Ruepp MD, Calogero R, Volinia S, Bendotti C, Ferrarese C, Lunetta C, Mühlemann O, Tremolizzo L, Barabino **SML** “MiR-129-5p downregulates HuD expression impairing neuritogenesis in Amyotrophic Lateral Sclerosis” (*submitted*)
2. Fontana GA, Rigamonti A, Lenzken SC, Filosa G, Alvarez R, Calogero R, Bianchi ME, **Barabino SM**. “BRCA1/BARD1 recruitment by the SWI/SNF complex mediates ubiquitination of the 3’ end processing factor CstF controlling the choice of alternative last exons“ *Nucleic Acids Res.* 2017 Jan 25;45(2):902-914. doi: 10.1093/nar/gkw780.
3. Reber R, Stettler J, Filosa, G., Colombo M, Jutzi D, Lenzken, SC, Schweingruber C, Bruggmann R, Bachi A, **Barabino SML**, Mühlemann O, Ruepp M-D “Minor intron splicing is regulated by FUS and affected by ALS-associated FUS mutants.” *EMBO J.* 2016 Jul 15;35(14):1504-21. Doi: 10.15252/emj.201593791.
4. Loffreda A, Rigamonti A, **Barabino SM**, Lenzken SC. “RNA-Binding Proteins in the Regulation of miRNA Activity: A Focus on Neuronal Functions. *Biomolecules.*” 2015 Sep 30;5(4):2363-87. doi: 10.3390/biom5042363.
5. Lenzken SC, Achsel T, Carrì MT, **Barabino SM**. “Neuronal RNA-binding proteins in health and disease”. *Wiley Interdiscip Rev RNA.* 2014 Jul-Aug;5(4):565-76. doi:10.1002/wrna.1231.
6. T. Achsel, T., Barabino, S.M., Cozzolino, M., Carrì, MT “The intriguing case of motor neuron disease: ALS and SMA come closer” *Biochem Soc Trans.* (2013) Dec 1;41(6):1593-7
7. G. Filosa, S.M. Barabino, A. Bachi "Proteomics Strategies to Identify SUMO Targets and Acceptor Sites: A Survey of RNA-Binding Proteins SUMOylation." *Neuromolecular Med.* (2013) Dec;15(4):661-76. doi: 10.1007/s12017-013-8256-8. Epub 2013 Aug 25
8. M.-D. Ruepp, D. Schümperli, , S. M.L. Barabino "mRNA 3' end processing and more - multiple functions of mammalian cleavage factor I-68" *Wiley Interdiscip Rev RNA.* (2011) Jan-Feb;2(1):79-91. doi: 10.1002/wrna.35.
9. S.C. Lenzken, V. Romeo, F. Zolezzi, F. Corsero, G. Lamorte, D. Bonanno, D. Biancolini, M.Cozzolino, A. Maracchioni, R. Sanges, T. Achsel, M.T. Carrì, R. A. Calogero, **S.M.L. Barabino** “Dysregulated expression and alternative

- splicing of genes controlling neuritogenesis and axon guidance revealed by exon-sensitive microarrays in models of neurodegeneration” Hum Mutat. 2011 Feb;32(2):168-82. doi: 10.1002/humu.21394.
10. M.-D. Ruepp, S. Vivarelli, R. S. Pillai, N. Kleinschmidt, T. N. Azzouz, **S. M.L. Barabino** and D. Schümperli “Association of the 68 kDa subunit of mammalian cleavage factor I with the U7 snRNP: possible role in 3' end processing of animal histone mRNAs” Nucl. Acids Res., 2010 Nov 1;38(21):7637-50.
  11. M.-D. Ruepp, C. Aringhieri, S. Vivarelli, S. Cardinale, S. Paro, D. Schümperli and **S. M.L. Barabino** “Mammalian 3' end processing factor CF Im68 functions in mRNA export.” Mol. Biol. Cell, (2009), **20**, 5211-5223.
  12. B. Cisterna, F. Flach, L. Vecchio, **S.M.L. Barabino**, S. Battistelli, T.E. Martin, M. Malatesta, M. Biggiogera “Can a genetically-modified organism-containing diet influence embryo development? A preliminary study on pre-implantation mouse embryos.” Eur. J. Histochem. (2008), **52**, 263-267.
  13. Raucci, A., Cugusi, S., Antonelli, A., De Marchis, F. **S.M.L. , Barabino**, Bierhaus, A., Saftig, P., Bianchi, M.E. “A Disintegrin and Metalloprotease 10 cleaves the Receptor for Advanced Glycation Endproducts and is necessary for HMGB1-induced cell migration” FASEB J., (2008), **22**, 3716-3727.
  14. M. Malatesta, M. Biggiogera, B. Baldelli, **S.M.L. Barabino.**, T.E. Martin, C. Zancanaro “Hibernation as a far-reaching program for the modulation of RNA transcription.” Microsc. Res. Tech. (2008), **71**, p. 564-572.
  15. S. Cardinale, B. Cisterna, P. Bonetti, C. Aringhieri, M. Biggiogera, and **S.M.L. Barabino**, “Subnuclear localization and dynamics of the pre-mRNA 3' end processing factor CF Im68”, Mol. Biol. Cell (2007), **18**:1282-1292.
  16. C. Collart, J. E. Remacle, **S. Barabino**, L. A. van Grunsven, L. Nelles, A. Schellens, T. Van de Putte, S. Pype, D. Huylebroeck, K. Verschueren “Smicl is a novel Smad interacting protein and cleavage and polyadenylation specificity factor associated protein” Genes Cells (2005), **10**: 897-906.
  17. S. Dettwiler, C. Aringhieri, S. Cardinale, W. Keller, and **S.M.L. Barabino**, “Distinct structural motifs mediate specific protein interactions and subcellular localization of the 68 kDa subunit of the pre-mRNA 3'-end processing factor CF Im” J.Biol.Chem (2004), **279**: 35788-35797.
  18. **S.M.L. Barabino**<sup>#</sup>, M. Ohnacker, and W. Keller "Distinct roles of two Yth1p domains in 3'-end cleavage and polyadenylation of yeast pre-mRNAs" EMBO J., (2000), **19**: 3778-3787, # Corresponding author



19. M. Ohnacker, **S.M.L. Barabino**, P.J. Preker, and W. Keller "The WD-repeat protein Pfs2 bridges two essential factors within the yeast pre-mRNA 3'-end processing complex" EMBO J., (2000), **19**: 37-47.
20. **S.M.L. Barabino** and W. Keller "Last but not least: regulated poly(A) tail formation" Cell, (1999), **99**: 9-11, *review*.
21. **S.M.L. Barabino**<sup>#</sup>, M.E.Nemeroff<sup>#</sup>, Y. Li, W. Keller and S.M.Krug<sup>#</sup> "Influenza virus NS1 protein interacts with the 30kd subunit of cleavage and polyadenylation specificity factor and inhibits 3' end formation of cellular pre-mRNAs" Mol. Cell (1998), **1**., 991-1000. <sup>#</sup> These two authors contributed equally to this work.
22. **S.M.L. Barabino**, W. Hübner, A. Jenny, L. Minvielle-Sebastia, and W. Keller "The 30 kDa subunit of mammalian Cleavage and Polyadenylation Specificity Factor and its yeast homologue are RNA-binding zinc finger proteins." Genes & Dev. (1997), **11**: 1703-1716.
23. **S.M.L. Barabino**<sup>#</sup>, F. Spada, F. Cotelli, and E. Boncinelli "Inactivation of the zebrafish homologue of Chx10 by antisense oligonucleotides causes eye malformations similar to the Ocular Retardation phenotype." Mech. Dev. (1997), **63**: 133-143. <sup>#</sup> Corresponding author
24. **S.M.L. Barabino**, B.S. Sproat, and A.I. Lamond "Antisense probes targeted to an internal domain in U2 snRNP specifically inhibit the second step of pre-mRNA splicing", Nucl. Acids Res., (1992), **20**: 4457-4464.
25. M. Carmo-Fonseca, D. Tollervey, R. Pepperkok, **S.M.L. Barabino**, A. Merdes, C. Brunner, P.D. Zamore, M.R. Green, E. Hurt, and A.I. Lamond, "Mammalian nuclei contain foci which are highly enriched in component of the pre-mRNA splicing machinery.", EMBO J., (1991), **10**: 195-206.
26. **S.M.L. Barabino**, B.J Blencowe, U. Ryder, B.S. Sproat, and A.I. Lamond, "Targeted snRNP depletion reveals an additional role for mammalian U1 snRNP in spliceosome assembly", Cell, (1990), **63**: 293-302.
27. Lamond, A.I., **Barabino, S.** Blencowe, B.J, Sproat, B.S., Ryder, U., "Studying pre-mRNA splicing using antisense 2-OMe RNA oligonucleotides." Mol Biol Rep.(1990) **14**, 201, *review*.
28. **S. Barabino**, B.S. Sproat, U. Ryder, B.J. Blencowe, and A.I. Lamond, "Mapping U2 snRNP:pre-mRNA Interactions Using Biotinylated Oligonucleotides Made of 2'-OMe RNA", EMBO J.,(1989) **8**: 4171-4177.

29. B.J. Blencowe, B.S. Sproat, U. Ryder, **S. Barabino**, and A.I. Lamond: "Antisense probing the Uman U4/U6 snRNP with biotinylated 2'-OMe RNA oligonucleotides", *Cell*, (1989) **59**: 531-539.
30. A. M. Pedrini, S. Tornaletti, **S. Barabino**, P. Menichini, G. Fronza, A. Abbondandolo, "Perturbation of DNA Tertiary Structure by Physical and Chemical Carcinogens: Effects on DNA Repair Processes", *Ann.Ist.Super.Sanita'* (1989), **25**: pp. 91-98.

### ***Book Chapters***

1. Fontana, GA, Rigamonti, A, Barabino, S. "An epigenetic view on alternative splicing" in *New Developments in Alternative Splicing Research*, Editors: Samuel DiMaggio, Emma Braschi, Nova Science Publishers, Incorporated
2. Blencowe, B.J. and **Barabino, S.M.L.**, "Antisense affinity depletion of RNP particles: application to spliceosomal snRNPs", in *Methods in Molecular Biology*, Vol. 37, Humana Press Inc., Totowa, NJ, U.S.A., (1995).
3. Lamond, A.I., **Barabino, S.** and Blencowe, B.J. "The mammalian splicing apparatus" in *Nucleic Acids and Molecular Biology*, Vol.4, Springer Verlag Berlin Heidelberg, Germany, (1990).
4. A.M. Pedrini, S. Tornaletti, **S. Barabino**, G. Fronza, P. Menichini, A. Abbondandolo: "DNA unwinding: common modifications induced by bulky adducts to DNA structure", in *DNA Damage and Repair*, A. Castellani ed. Plenum Press, New York, U.S.A., (1987).