# MARCO BARCHI, Ph.D.

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## EDUCATION

**University of Rome Tor Vergata, Rome, Italy**

Ph.D. in Medical Embryology, Feb. 2000

**University of Rome "La Sapienza", Rome, Italy**

Bachelor of Sciences (*Cum Laude*), Dec. 1995

## EMPLOYMENT AND RESEARCH EXPERIENCE

**University of Rome "Tor Vergata", Rome, Italy**

- Assistant Professor of human anatomy, Department of Biomedicine and Prevention, 2006 –to date

  *-Project 1:* Role of *H2afx* and *Mdc1* in the maintenance of genome stability in male mouse germ cells
  *-Project 2:* Mechanisms of X-Y recombination in mouse meiosis
  *-Project 3:* Role of DNA damage repair in Testicular Germ Cell Tumors sensitivity and resistance to cisplatin

- PhD. Student, Department of Biomedicine and Prevention, with Prof. Raffaele Geremia, 1996-2000

  *Project:* Study of the mechanisms controlling cell cycle progression in mouse germ cells

- Research Fellow, Department of Physiology, with Prof. Stefano Rufini

  *Project:* Effect of MTX1 and MTX2 venome drugs on differentiation of muscle cells

**Memorial Sloan-Kettering Cancer Center, New York, NY, USA**

- Post-doc with Dr. Maria Jasin, 2002-2006

  *-Project 1:* DNA damage-dependent and independent checkpoints during meiosis in mammals
  *-Project 2:* Role of ATM kinase in meiotic recombination in mammals
  *-Project 3:* Investigating the role of Spo11 splice variants in meiotic

recombination

**Columbia University in the City of New York, USA**

- Post-doc with Dr. Lili Yamasaki, 2001-2002
  *Project: Elucidating the function of E2F1, in mouse spermatogenesis*

**Italian National Agency for New Technologies, Energy and the Environment (ENEA), Anguillara, Italy**

- Undergraduate student with Dr. Anna Giovanetti, 1993-1995

*Project: Study of the effects of ozone inhalation on rat respiratory system*

## Scientific national qualification - associate professor rank -

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|---|---|---|
| 1. | Human anatomy | 05H1 (2013) |
| 2. | hystology | 05H2 (2013) |
| 3. | Genetics | 05I1 (2013) |
| 4. | Applied biology | 05F1 (2012) |
| 5. | Molecular Biology | 05E2 (tornata 2012) |

## PUBLICATIONS (Orcid ID: 0000-0003-1104-6234)

1. Cavallo F, Caggiano C, Jasin M and **Barchi M**. (2018). Assessing Homologous Recombination and Interstrand Crosslink Repair in Embryonal Carcinoma Testicular Germ Cell Tumor Cell Lines. *Springer Protocols* (In press)

2. Testa E, Nardozi D, Antinozzi C, Faieta M, Di Cecca S, Caggiano C, Fukuda T, Bonanno E, Zhenkun L, Maldonado A, Roig I, Di Giacomo M and **Barchi M** (2018). *H2afx* and *Mdc1* promote mantainance of genome integrity in male germ cells. *JCS* 131, jcs214411

3. **Barchi M**, Cohen P, Keeney S. (2016). Special Issue on "Recent advances in meiotic chromosome structure, recombination and segregation". *Chromosoma* 125(2), 173-175.

4. Faieta M, Di Cecca S, De Rooij DG, Luchetti A, Murdocca M, Di Giacomo M, Di Siena S, Pellegrini M, Rossi P, **Barchi M** (2016). A surge of late-occurring double-strand breaks rescues chromosome synapses of mice with hipomorphyc expression of SPO11. *Chromosoma* 125(2), 189-203.

5. Cavallo, F., Feldman, D.R., **Barchi, M**. (2013) Revisiting DNA damage-repair, p53-mediated apoptosis and cisplatin sensitivity in germ cell tumors. *International Journal of Developmental Biology* 57(2-4) pp. 273-280.

6. Kauppi L, **Barchi M**, Lange J, Baudat F, Jasin M, Keeney S. (2013). Numerical constraints and feedback control of double-strand breaks in mouse meiosis. *Genes & Development*. Apr 15;27(8):873-86.

7. Cavallo F, Graziani G, Antinozzi C, Feldman DR, Houldsworth J, Bosl GJ, Chaganti RS, Moynahan ME, Jasin M, **Barchi M**. (2012). Reduced proficiency in homologous recombination underlies the high sensitivity of embryonal carcinoma testicular germ cell tumors to Cisplatin and poly (adp-ribose) polymerase inhibition. *PLoS One*. 7(12):e51563.

8. La Volpe A, **Barchi M**. (2012). Meiotic double strand breaks repair in sexually reproducing eukaryotes: we are not all equal. *Exp Cell Res*. Jul 15;318(12):1333-9.

9. Illert AL, Kawaguchi H, Antinozzi C, Bassermann F, Quintanilla-Martinez L, von Klitzing C, Hiwatari M, Peschel C, de Rooij DG, Morris SW, **Barchi M**, Duyster J. (2012). Targeted inactivation of nuclear interaction partner of ALK disrupts meiotic prophase. *Development*. Jul;139(14):2523-34.

10. Paronetto MP, Messina V, **Barchi M**, Geremia R, Richard S, Sette C. (2011). Sam68 mark transcriptionally active stages of spermatogenesis, and modulates alternative splicing in male germ cells. *Nucleic Acid Research*. Feb 25.

11. Nakanishi K, Cavallo F, Perrouault L, Giovannangeli C, Moynahan ME, **Barchi M,** Brunet E, and Jasin M. (2011). Homology−directed Fanconi anemia pathway crosslink repair is dependent on DNA replication. *Nature Struct. Mol. Biol.,* IApr;18(4):500-3.

12. Kauppi L, **Barchi M**, Baudat F, Romanienko PJ, Keeney S, Jasin M. (2011). Distinct Properties of the XY Pseudoautosomal Region Crucial for Male Meiosis. *Science* 18 February 2011: 916-920.

13. Muciaccia B, Sette C, Paronetto MP, **Barchi M**, Pensini S, et al. (2010). Expression of a truncated form of KIT tyrosine kinase in human spermatozoa correlates with sperm DNA integrity. *Hum Reprod* 25: 2188-2202.

14. **Barchi M.**, Geremia, R., Magliozzi, R., Bianchi, E. Isolation and analyses of enriched populations of male mouse germ cells by sedimentation velocity: the centrifugal elutriation (2009). *Methods in molecular biology* (Clifton, N.J.) 558, pp. 299-321.

15. Paronetto MP, Messina V, Bianchi E, **Barchi M**, Vogel G, et al. (2009). Sam68 regulates translation of target mRNAs in male germ cells, necessary for mouse spermatogenesis. *J Cell Biol* 185: 235-249.

16. **Barchi M**, Roig I, Di Giacomo M, de Rooij DG, Keeney S, et al. (2008). ATM promotes the obligate XY crossover and both crossover control and chromosome axis integrity on autosomes. *PLoS Genet 4: e1000076.*

17. Perera D, Tilston V, Hopwood JA, **Barchi M**, Boot-Handford RP, et al. (2007). Bub1 maintains centromeric cohesion by activation of the spindle checkpoint. *Dev Cell* 13: 566-579.

18. Liebe B, Petukhova G, **Barchi M**, Bellani M, Braselmann H, et al. (2006). Mutations that affect meiosis in male mice influence the dynamics of the mid-preleptotene and bouquet stages. *Exp Cell Res* 312: 3768-3781.

19. **Barchi M**, Mahadevaiah S, Di Giacomo M, Baudat F, de Rooij DG, Burgoyne PS, Jasin M, Keeney S. Surveillance of different recombination defects in mouse spermatocytes yields distinct responses despite elimination at an identical developmental stage (2005). *Mol Cell Biol.* Aug;25(16):7203-15.

20. Di Giacomo M, **Barchi M**, Baudat F, Edelmann W, Keeney S, Jasin M. Distinct DNA-damage-dependent and - independent responses drive the loss of oocytes in recombination-defective mouse mutants (2005). *Proc Natl Acad Sci US A*. Jan 18;102(3):737-42.

21. Couëdel C, Mills KD, **Barchi M**, Shen L, Olshen A, Johnson RD, Nussenzweig A, Essers J, Kanaar R, Li GC, Alt FW, Jasin M (2004). Collaboration of homologous recombination and nonhomologous end-joining factors for the survival and integrity of mice and cells. *Genes Dev*. Jun 1;18(11):1293-304.

22. Oishi K, **Barchi M**, Au AC, Gelb BD, Diaz GA (2004). Male infertility due to germ cell apoptosis in mice lacking the thiamin carrier Tht1. A new insight into the critical role of thiamin in spermatogenesis. *Dev Biol.* Feb 15;266(2):299-309.

23. **Barchi M**, Jasin M (2003). Seeking new meiotic genes. *Proc Natl Acad Sci U S A*. Dec 23;100(26):15287-9

24. Chieffi P, **Barchi M**, Di Agostino S, Rossi P, Tramontano D, Geremia R. (2003). Prolin-rich tyrosine kinase 2 (PYK2) expression and localization in mouse testis. *Mol Reprod Dev*. Jul;65(3):330-5.

25. Guardavaccaro D, Kudo Y, Boulaire J, **Barchi M**, Busino L, Donzelli M, Margottin-Goguet F, Jackson PK, Yamasaki L, Pagano M (2003). Control of meiotic and mitotic progression by the F box protein beta-Trcp1 in vivo. *Dev Cell.* Jun;4(6):799-812.

26. Sette C, Paronetto MP, **Barchi M**, Bevilacqua A, Geremia R, Rossi P (2002). Tr-kit-induced resumption of the cell cycle in mouse eggs requires activation of a Src-like kinase. *EMBO J*. Oct 15;21(20):5386-95.

27. Chieffi P, Battista S, **Barchi M**, Di Agostino S, Pierantoni GM, Fedele M, Chiariotti L, Tramontano D, Fusco A (2002). HMGA1 and HMGA2 protein expression in mouse spermatogenesis. *Oncogene*. May 16;21(22):3644-50.

28. Sette, C, **Barchi, M**, Bianchini A, Conti M, Rossi P, Geremia R (1999). Activation of the mitogen-activated protein kinase ERK1 during meiotic progression of mouse pachytene spermatocytes. *Journal of Biological Chemistry*. 274(47), pp. 33571-33579.

## RESEARCH SUPPORT

- Mission Sustainability Grant (18 months). Agency: University of Rome Tor Vergata. Role: **Principal Investigator**

*Project: Impact of genetic and epigenetic alterations on transmission of aneuploidies in mammals*

- Telethon Grant 2012 (36 months). Agency: Telethon Foundation.
  Role: **Coordinator**
  *Project*: Understanding XY chromosome segregation defects in mammals: new insights from the regulation of expression and function of SPO11 splice isoforms

- PRIN 2010-2011 (36 months). Agency: Ministry of University and Scientific Research of Italy (MIUR). Role: **Principal Investigator**
  *Project:* Processes and Mechanisms that Control the Integrity of the Genome

- Cooperlink Grant 2011 (24 months). Agency: MIUR. Role: **Principal Investigator**
  *Project:* Identification of new therapeuthic strategies for the cure of cisplatin-resistant germ cell tumours: study of the effect of of AZD2281 (olaparib) in monotherapy or in combination with cisplatin, in vivo.

- Italian Association for Cancer Researcher (AIRC) Grant, 2007 (36 months). Agency: AIRC. Role: **Principal Investigator**
  *Project:* Role of ATM checkpoint kinase in the testes and its cancers

- "Brain Gain Grant" (Rientro dei Cervelli) 2005, (48 months). Agency: MIUR. Role: **Principal Investigator**
  *Project:* Mechanisms of meiotic recombintion in mammals

## HONORS

**Fellowships:**

- 2003-2005, American-Italian Cancer Foundation, at Memorial Sloan-Kettering Cancer Center, USA. Mentor: Maria Jasin.
- 2003-2005, The Lalor Foundation, at Memorial Sloan-Kettering Cancer Center, New York, USA. Mentor: Maria Jasin.
- 1999, Short Term Mobility Fellowship from the National Research Center (CNR) of Italy, at University of California UC Davis, USA. Mentor: Richard Nuccitelli.

**Awards:**

2008 - Research prize Award from the Department of Public Health and Cell Biology, University of Rome Tor Vergata (code 020902081).

## INVITED/SELECTED SPEAKER AT NATIONAL/INTERNATIONAL SCIENTIFIC MEETINGS

- XV FISV Congress, University of Rome "La Sapienza", September 18-21, 2018 (invited)
- The Klinefelter Syndrome. Meeting of the Italian society of Andrology and Sexual Medicine, Padova Sept. 16$^{th}$ 2017 (invited)

- XIV FISV national Congress, Rome 20-23 September, 2016 (seleced)
- 17th European Testis Workshop. Stockholm April 20-24, 2012 (selected)
- EMBO conference Series, MEIOSIS, September 17-21, 2011, Capaccio/Paestum, Italy (invited)
- 16th European Testis Workshop, May 8-12, 2010, Elba Island, Italy (selected)
- VIII Congress of Italian Federation of Science (FISV). Riva del Garda, Italy, September 28, 2006 (invited)
- Italian National Center (CNR) "seminar events", 2006, Napoli, Italy, January 16th, 2006 (invited)
- 7th EMBO meeting on Meiosis, Spain September 13-18, 2005 (selected)

## MENTORSHIP

**Postdocs:**

(Current position indicated) (1 total)

Cinzia Caggiano (Research Fellow at Santa Lucia Scientific Institute with Dr. Pamela Bielli, Rome, Italy)

**Ph.D. Students:**

Completed dissertation in my laboratory (current position indicated) (4 total)

Francesca Cavallo (Post-doc at Memorial Sloan-Kettering Cancer Center, USA)

Cristina Antinozzi (Researcher at the University of Rome “Foro Italico”, Italy)

Monica Faieta (Professional at GENOMA-Molecular Genetics Laboratory, Rome, Italy)

Erika Testa (Post-doc in my laboratory)

**Undergraduate Students:**

Via the University of Rome “Tor Vergata”, undergraduate program (subsequent training and/or current position indicated) (4 total)

Roberto Magliozzi (Post-doc with Daniele Guardavaccaro at Hubrecht Institute, Netherlands)

Claudia Montanari (Food Consultant at Natur House)

Simone Balsano (Biolology analist at Alessandrini analysis Laboratory, Rome, Italy)

Luisa Guttieri (Trainee at the University of Rome “Tor Vergata” with Prof. M. Campanella, Rome, Italy.)

## INSTITUTIONAL SERVICES

- 2008 to date, permanent member of the board of Ph.D. committee of the Ph.D. course in Biotechnology of Reproduction and Development
- 2008, Committee member of XXIV Ph.D. call on Biotechnology of Reproduction and Development

- 2011, Committee member of XXVII Ph.D. call on Biotechnology of Reproduction and Development
- 2015, Committee member of XXXI Ph.D. call on Biotechnology of Reproduction and Development
- 2014-2016, Committee member of Central Election Commission of the University of Rome "Tor Vergata"
- 2014- to date, Committee member of the commission for evaluation of the Scientific activity of the Department of Biomedicine and Prevention
- July 2018, President of the commission board of the Doctoral degree in Science of nutrition, metabolism, aging and gender disease, "Cattolica University", Rome.
- December 2018, Committee member of the board of the Doctoral degree in Morphogenesis and tissue engineering, University of Rome, "La Sapienza".

## EXTRAMURAL SERVICES

**Editorial Review**

- Chromosoma, Guest Editor, for the "Special Issue on Recent advances in Meiotic Chromosome Structure, Recombination and Segregation" (2015-2016)
- Biomedicine & Prevention, Board Editor (2016 to date)
- Ad hoc reviewer. PLOS Genetics, Developmental Biology, Chromosoma, Biomedicine & Prevention, Journal of Genetic Syndromes & Gene Therapy, Journal of Health & Medical Informatics, Journal of Visualized Experiments

**Grant Reviews**

- Israel Science Foundation

**Conferences Organization Committee**

- 16$^{th}$ European Testis Workshop.

## SCIENTIFIC SOCIETIES

- Italian Association of Enviromental Mutagenesis (SIMA) - 2016 to date
- Italian Society of Andrology and Sexual Medicine (SIAMS) - 2016 to date
- European Society of Human Reproduction (ESHRE) - 2014/2015