
BIOGRAPHICAL SKETCH

NAME: Federico Lazzaro

POSITION TITLE: Associate Professor of Molecular Biology (BIO/11 – BIOS-08A), University of Milan

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Milan	Post-Doc	03/2012	Genetics and Biomolecular Sciences
University of Milan	PhD	12/2005	Genetics and Biomolecular Sciences
University of Milan	MS	10/2002	Biological Sciences (cum laude)
Liceo Scientifico "P. Bottoni", Milan	HS	06/1997	Scientific High School Diploma

A. Personal Statement

My research focuses on genome integrity, DNA damage response, and replication stress. I have over 20 years of experience using yeast and human models to dissect DNA repair mechanisms, with several publications in high-impact journals. My work on rNMP incorporation, post-replication repair, and chromatin regulation of checkpoints has significantly contributed to understanding genome stability. I have coordinated national projects (e.g., PRIN, FIRB), mentored students, and developed molecular biology teaching programs at the University of Milan.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2019–Present: Associate Professor, Dept. of Biosciences, Univ. of Milan

2016–2019: Assistant Professor TD_B, Univ. of Milan

2012–2016: Assistant Professor TD_A, Univ. of Milan

Honors and Fellowships

- 2013: Research prize for best work in molecular biology – Fondazione Adriano Buzzati-Traverso
- 2011–2013: Fellowship – Department of Biomolecular Sciences, University of Milan
- 2006–2010: Research Fellowship – University of Milan
- 2005–2006: Fellowship – Fondazione Buzzati-Traverso
- 2002–2005: PhD Fellowship – Fondazione F.lli Confalonieri

C. Contributions to Science

1. DNA Damage Checkpoint Mechanisms in Yeast

My early work revealed the importance of histone modifications in checkpoint activation, linking chromatin remodeling to genome surveillance.

- Giannattasio M, **Lazzaro F**, Longhese MP, Plevani P, Muzi-Falconi M. Physical and functional interactions between nucleotide excision repair and DNA damage checkpoint. **EMBO J**. 2004;23(2):429–38. DOI:10.1038/sj.emboj.7600051 [Scopus: **106**]

- Giannattasio M, **Lazzaro F**, Siede W, Nunes E, Plevani P, Muzi-Falconi M. DNA decay and limited Rad53 activation after liquid holding of UV-treated nucleotide excision repair deficient *S. cerevisiae* cells. **DNA Repair** (Amst) . 2004 Dec;3(12):1591–9. DOI:10.1016/j.dnarep.2004.06.019 [Scopus: **14**]
- **Lazzaro F**, Sapountzi V, Granata M, Pellicoli A, Vaze M, Haber JE, Plevani P, Lydall D, Muzi-Falconi M. Histone methyltransferase Dot1 and Rad9 inhibit single-stranded DNA accumulation at DSBs and uncapped telomeres. **EMBO J** . 2008 Apr 17;27(10):1502–12. DOI:10.1038/emboj.2008.81 [Scopus: **148**]

2. Role of Ribonucleotides in Genome Stability

I demonstrated that ribonucleotides incorporated into DNA during replication can cause genome instability and replication stress if not removed. These findings have implications in mismatch repair and human disease.

- **Lazzaro F**, Novarina D, Amara F, Watt DL, Stone JE, Costanzo V, Burgers PM, Kunkel TA, Plevani P, Muzi-Falconi M. RNase H and Postreplication Repair Protect Cells from Ribonucleotides Incorporated in DNA. **Mol Cell** . 2012 Jan;45(1):99–110. DOI:10.1016/j.molcel.2011.12.019. [Scopus: **149**]
- Ghodgaonkar, M M, **Lazzaro, F**, Olivera-Pimentel, M, Artola-Borán, M, Cejka, P, Reijns, M. A., Jackson, A. P., Plevani, P., Muzi-Falconi, M., & Jiricny, J. Ribonucleotides Misincorporated into DNA Act as Strand-Discrimination Signals in Eukaryotic Mismatch Repair. **Mol Cell** . 2013 May;50(3):323–32. DOI:10.1016/j.molcel.2013.03.019 32 [Scopus: **134**]
- Pizzi S, Sertic S, Orcesi S, Cereda C, Bianchi M, Jackson AP, **Lazzaro F**, Plevani P, Muzi-Falconi M. Reduction of hRNase H2 activity in Aicardi-Goutières syndrome cells leads to replication stress and genome instability. **Hum Mol Genet**. 2015;24(3):649–58. DOI: 10.1093/hmg/ddu485 658 [Scopus: **65**]

3. Structural and Functional Genomics Tools

Using atomic force microscopy and functional assays, I co-developed tools to quantify and visualize rNMPs and DNA structures.

- Meroni A, **Lazzaro F**, Muzi-Falconi M, Podestà A. Characterization of structural and configurational properties of DNA by atomic force microscopy. Vol. 1672, **Methods in Molecular Biology**. 2018. DOI:10.1007/978-1-4939-7306-4_37 [Scopus: **5**]
- Meroni A, Mentegari E, Crespan E, Muzi-Falconi M, **Lazzaro F**, Podestà A. The Incorporation of Ribonucleotides Induces Structural and Conformational Changes in DNA. **Biophys J** . 2017 Oct;113(7):1373–82. DOI:10.1016/j.bpj.2017.07.013 [Scopus: **14**]

4. TLS Polymerase η and Replication Stress

I uncovered how polymerase eta activity under low dNTP conditions can be toxic, and how RNase H mitigates this stress.

- Meroni A, Nava GM, Bianco E, Grasso L, Galati E, Bosio MC, Delmastro D, Muzi-Falconi M, **Lazzaro F**. RNase H activities counteract a toxic effect of Polymerase η in cells replicating with depleted dNTP pools. **Nucleic Acids Res** . 2019 May 21;47(9):4612–23. DOI:10.1093/nar/gkz165 [Scopus: **23**]

5. VID22 and G-Quadruplex Stability

I identified the VID22 gene as a novel factor that counteracts genome instability at G4 DNA structures, advancing our understanding of genome maintenance.

- Galati E, Bosio MC, Novarina D, Chiara M, Bernini GM, Mozzarelli AM, García-Rubio ML, Gómez-González B, Aguilera A, Carzaniga T, Todisco M, Bellini T, Nava GM, Frigè G, Sertic S, Horner DS, Baryshnikova A, Manzari C, D'Erchia AM, Pesole G, Brown GW, Muzi-Falconi M, **Lazzaro F**. VID22 counteracts G-quadruplex-induced genome instability. **Nucleic Acids Res** . 2021 Dec 16;49(22):12785–804. DOI:10.1093/nar/gkab1156 [Scopus: **5**]

Complete List of Published Work in MyOrcid:

<https://orcid.org/my-orcid?orcid=0000-0001-6415-2925>