

RUGGIERO NORFO

PhD, MSc

Associate Professor

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Academic history

2025-to date	Associate Professor in Experimental Cell Biology. Scientific Field: BIOS-10/A (former BIO/13).
2022-2025	Tenure Track Assistant Professor in Experimental Cell Biology (RTD-B, Ricercatore a tempo determinato di tipo B). Scientific Field: BIOS-10/A (former BIO/13).
2014-2022	Postdoctoral Research Scientist – Haematopoietic Stem Cell Biology lab <i>Weatherall Institute of Molecular Medicine (WIMM), University of Oxford, U.K.</i> Study of the role of collaborating mutations on haematopoietic stem cell heterogeneity in myeloproliferative neoplasm mouse models. Co-supervisors: Prof. Adam Mead, Prof. Sten Eirik Jacobsen
2011-2014	PhD student - PhD program in Molecular and Regenerative Medicine – XXVI cycle University of Modena and Reggio Emilia, Italy Supervisor: Prof. Rossella Manfredini
2008-2010	Master of science in Medical and Pharmaceutical Biotechnologies Experimental thesis title: “ Valproic acid interferes with myeloid differentiation of hematopoietic stem cells” University of Modena and Reggio Emilia, Italy Grade: 110/110 cum laude and distinct honors of the degree committee. Supervisor: Prof. Rossella Manfredini
2005-2008	Bachelor of science in Biotechnologies Experimental thesis title: “Analysis of DNA methylation and histone acetylation in the gene expression regulation of hematopoietic stem cells” University of Modena and Reggio Emilia, Italy Grade: 110/110 cum laude and distinct honors of the degree committee. Supervisor: Prof. Rossella Manfredini

Awards

2019	ASH-EHA Translational Research Training in Hematology (TRTH) – year-long programme run as joint effort by the American Society of Hematology (ASH) and the European Hematology Association (EHA) for future leaders in hematology. <u>Directors</u> : Rajesh Chopra, Mary Dinuer. <u>Personal Mentors</u> : Maria Figueroa, John Gribben, Janis Abkowitz.
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2017	EHA Abstract Award (EHA- European hematology association) for the abstract “Disruption of haematopoietic stem cell heterogeneity in a mouse model of myeloproliferative neoplasm” (first author: Norfo R.)- selected as oral presentation- 22nd EHA congress, Madrid, Spain.
2014	Research Fellowship (“Assegno di Ricerca”) -University of Modena and Reggio Emilia, Italy. Supervisor: Prof. Rossella Manfredini.
2011-2013	Doctoral Research Fellowship - <i>Italian Ministry for University and Research</i>
2011	“Biology and Medicine Advances” (€15,000) – Collegio Ghislieri, Pavia, Italy
2005-2010	Yearly scholarships (5X) for academic excellence – <i>University of Modena and Reggio Emilia, Italy</i>

Editorial work

2020	Guest associate editor for <i>Frontiers in Cell and Developmental Biology</i> (I.F. 5.18) -topic: “The bone marrow niche in normal and malignant haematopoiesis”. See Editorial: The Bone Marrow Niche in Normal and Malignant Haematopoiesis .
2021	Reviewer for <i>Haematologica</i> (I.F. 7.116)
2022	Review Editor in <i>Frontiers in Hematology</i> (section <i>Hematopoiesis and Stem Cells</i>)- newly launched journal

Scientific dissemination

2025-2026 Member of public engagement committee “STEM4ALL”

December 2021 *Modelling Myelofibrosis in Vivo : Success With NSG-S – The hematologist-ASH news and report*. ASH Official magazine (*ASH-American society of Hematology*).

December 2020 *Clonal Selection of Mutant HSC in MPN: “What Do I Know?” – The hematologist-ASH news and report* official magazine

Peer-reviewed Publications

Tavernari L, Bertesi M, Neroni A, Papa E, Rontautoli S, Bianchi E, Mirabile M, **Norfo R**, Parenti S, Tombari C, Carretta C, Malerba M, Fabbiani L, Guglielmelli P, Losi L, Tagliafico E, Vannucchi AM, Manfredini R; MYNERVA (MYeloid NEoplasms Research Venture AIRC) investigators. Combined MEK and JAK inhibition reduces osteopontin plasma level and bone marrow fibrosis in a myelofibrosis mouse model. **Blood Cancer J.** **2025** Nov 15;15(1):197. doi: 10.1038/s41408-025-01409-3. PMID: 41238572; PMCID: PMC12618570.

Mirabile M, Tombari C, Neroni A, Tavernari L, **Norfo R**, Bianchi E, Maccaferri M, Mora B, Parenti S, Carretta C, Bertesi M, Malerba M, Papa E, Fabbiani L, Bartalucci N, Guglielmelli P, Potenza L, Losi L, Passamonti F, Tagliafico E, Luppi M, Rontautoli S, Vannucchi AM, Manfredini R; MYNERVA (Myeloid NEoplasms Research Venture AIRC) investigators. CD44 Participates to Extramedullary Haematopoiesis Onset by Mediating the Interplay Between Monocytes and Haematopoietic Stem Cells in Myelofibrosis. **J Cell Mol Med.** **2025** Jul;29(14):e70720. doi: 10.1111/jcmm.70720. PMID: 40690545; PMCID: PMC12279041.

Caselli L, De Pasquale L, Palumbo R, Ricchiuto S, Montanari M, Rontautoli S, Ottani A, **Norfo R**, Zanocco-Marani T, Grande A. Supra-Physiological Levels of Magnesium Counteract the Inhibitory Effect of Zoledronate on RANKL-Dependent Osteoclastogenesis. **Biology (Basel).** **2025** May 11;14(5):533. doi: 10.3390/biology14050533. PMID: 40427722; PMCID: PMC12109320.

Preston AE, Frost JN, Teh MR, Badat M, Armitage AE, **Norfo R**, Wideman SK, Hanifi M, White N, Roy NB, Babbs C, Ghesquiere B, Davies J, Howden AJ, Sinclair LV, Hughes JR, Kassouf M, Beagrie R, Higgs DR, Drakesmith H. "Ancient genomic linkage of α -globin and Nprl3 couples metabolism with erythropoiesis." **Nat Commun.** **2025** Mar 24;16(1):2749. doi: 10.1038/s41467-025-57683-z. PMID: 40128524; PMCID: PMC11933693.

Li R, Colombo M, Wang G, Rodriguez-Romera A, Benlabiod C, Jooss NJ, O'Sullivan J, Brierley CK, Clark SA, Pérez Sáez JM, Fernández PA, Schoof EM, Porse B, Meng Y, Khan AO, Wen S, Dong P, Zhou W, Sousos N, Murphy L, Clarke M, Olijnik AA, Wong ZC, Karali CS, Sirinukunwattana K, Ryou H, **Norfo R**, Cheng Q, Carrelha J, Ren Z, Thongjuea S, Rathinam VA, Krishnan A, Royston D, Rabinovich GA, Mead AJ, Psaila B. "A proinflammatory stem cell niche drives myelofibrosis through a targetable galectin-1 axis." **Sci Transl Med.** **2024** Oct 9;16(768):eadj7552. doi: 10.1126/scitranslmed.adj7552. Epub 2024 Oct 9. PMID: 39383242; PMCID: PMC7616771.

Carretta C, Parenti S, Bertesi M, Rontautoli S, Badii F, Tavernari L, Genovese E, Malerba M, Papa E, Sperduti S, Enzo E, Mirabile M, Pedrazzi F, Neroni A, Tombari C, Mora B, Maffioli M, Mondini M, Brociner M, Maccaferri M, Tenedini E, Martinelli S, Bartalucci N, Bianchi E, Casarini L, Potenza L, Luppi M, Tagliafico E, Guglielmelli P, Simoni M, Passamonti F, **Norfo R**[†], Vannucchi AM[†], Manfredini R[†]; MYNERVA (Myeloid NEoplasms Research Venture AIRC). "Chromosome 9p trisomy increases stem cells clonogenic potential and fosters T-cell exhaustion in JAK2-mutant myeloproliferative neoplasms." **Leukemia.** **2024** Oct;38(10):2171-2182. doi: 10.1038/s41375-024-02373-w. Epub 2024 Aug 23. PMID: 39179669; PMCID: PMC11436358.

[†]shared senior authorship

Tavernari L^{*}, Rontautoli S^{*}, **Norfo R**^{*}, Mirabile M, Maccaferri M, Mora B, Genovese E, Parenti S, Carretta C, Bianchi E, Bertesi M, Pedrazzi F, Tenedini E, Martinelli S, Bochicchio MT, Guglielmelli P, Potenza L, Lucchesi A, Passamonti F, Tagliafico E, Luppi M, Vannucchi AM, Manfredini R; MYNERVA (Myeloid NEoplasms Research Venture AIRC) investigators. Targeting exhausted cytotoxic T cells through CTLA-4 inhibition promotes elimination of neoplastic cells in human myelofibrosis xenografts. **Am J Hematol.** **2024** Oct;99(10):1939-1950. doi: 10.1002/ajh.27428. Epub 2024 Jul 2. PMID: 38953347.

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Carrelha J, Mazzi S, Winroth A, Hagemann-Jensen M, Ziegenhain C, Höglstrand K, Seki M, Brennan MS, Lehander M, Wu B, Meng Y, Markljung E, **Norfo R**, Ishida H, Belander Strålin K, Grasso F, Simoglou Karali C, Aliouat A, Hillen A, Chari E, Siletti K, Thongjuea S, Mead AJ, Linnarsson S, Nerlov C, Sandberg R, Yoshizato T, Woll PS, Jacobsen SEW. "Alternative platelet differentiation pathways initiated by nonhierarchically related hematopoietic stem cells." **Nat Immunol.** **2024** Jun;25(6):1007-1019. doi: 10.1038/s41590-024-01845-6. Epub 2024 May 30. PMID: 38816617; PMCID: PMC11147777.

Luis TC, Barkas N, Carrelha J, Giustacchini A, Mazzi S, **Norfo R**, Wu B, Aliouat A, Guerrero JA, Rodriguez-Meira A, Bouriez-Jones T, Macaulay IC, Jasztal M, Zhu G, Ni H, Robson MJ, Blakely RD, Mead AJ, Nerlov C, Ghevaert C, Jacobsen SEW. "Perivascular niche cells sense thrombocytopenia and activate hematopoietic stem cells in an IL-1 dependent manner." **Nature communications,** **2023** Sep 14(1), 6062. doi: 10.1038/s41467-023-41691-y

Rodriguez-Meira A^{*}, **Norfo R**^{*}, Wen S, Chédeville AL, Rahman H, O'Sullivan J, Wang G, Louka E, Kretschmar WW, Paterson A, Brierley C, Martin JE, Demeule C, Bashton M, Sousos N, Moralli D, Subha Meem L, Carrelha J, Wu B, Hamblin A, Guermouche H, Pasquier F, Marzac C, Girodon F, Vainchenker W, Drummond M, Harrison C, Chapman JR, Plo I, Jacobsen SEW, Psaila B, Thongjuea S, Antony-Debré I, Mead, AJ. "Single-cell multi-omics identifies chronic inflammation as a driver of TP53-mutant leukemic evolution." **Nature genetics,** **2023** Sep 55(9), 1531–1541. doi: 10.1038/s41588-023-01480-1

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Matsuoka S, Facchini R, Luis TC, Carrelha J, Woll PS, Mizukami T, Wu B, Boukarabila H, Buono M, **Norfo R**, Arai F, Suda T, Mead AJ, Nerlov C, Jacobsen SEW. "Loss of endothelial membrane KIT ligand affects systemic KIT ligand levels but not bone marrow hematopoietic stem cells" **Blood,** **2023** Nov 9;142(19):1622-1632. doi: 10.1182/blood.2022019018

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Di Genua C, **Norfo R**, Rodriguez-Meira A, Wen WX, Drissen R, Booth CAG, Povinelli B, Repapi E, Gray N, Carrelha J, Kettle LM, Jamieson L, Neo WH, Thongjuea S, Nerlov C, Mead AJ. “Cell-intrinsic depletion of AML1-ETO-expressing pre-leukemic hematopoietic stem cells by K-RAS activating mutation”. **Haematologica** 2019, Nov;104(11):2215-2224 (doi: 10.3324/haematol.2018.205351)

Carrelha J, Meng Y, Kettle LM, Luis TC, **Norfo R**, Alcolea V, Grasso F, Gambardella A, Grover A, Höglstrand K, Lord AM, Sanjuan-Pla A, Woll PS, Nerlov C, Jacobsen SEW. “Hierarchically related lineage-restricted fates of multipotent haematopoietic stem cells”. **Nature**, 2018, Feb 1;554(7690):106-111 (doi: 10.1038/nature25455)

Ruberti S, Bianchi E, Guglielmelli P, Rontautoli S, Barbieri G, Tavernari L, Fanelli T, **Norfo R**, Pennucci V, Fattori GC, Mannarelli C, Bartalucci N, Mora B, Elli L, Avanzini MA, Rossi C, Salmoiraghi S, Zini R, Salati S, Prudente Z, Rosti V, Passamonti F, Rambaldi A, Ferrari S, Tagliafico E, Vannucchi AM, Manfredini R. “Involvement of MAF/SPP1 axis in the development of bone marrow fibrosis in PMF patients” **Leukemia**. 2018 Feb;32(2):438-449. (doi: 10.1038/leu.2017.220)

Giustacchini A, Thongjuea S, Barkas N, Woll PS, Povinelli BJ, Booth CAG, Sopp P, **Norfo R**, Rodriguez-Meira A, Ashley N, Jamieson L, Vyas P, Anderson K, Segerstolpe Å, Qian H, Olsson-Strömberg U, Mustjoki S, Sandberg R, Jacobsen SEW, Mead AJ. “Single-cell transcriptomics uncovers distinct molecular signatures of stem cells in chronic myeloid leukemia”. **Nature Medicine** 2017 Jun;23(6):692-702. (doi: 10.1038/nm.4336)

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Zini R, Rossi C, **Norfo R**, Pennucci V, Barbieri G, Ruberti S, Rontautoli S, Salati S, Bianchi E, Manfredini R. “miR-382-5p Controls Hematopoietic Stem Cell Differentiation Through the Downregulation of MXD1”. **Stem Cells Development** 2016 Oct 1;25(19):1433-43. (doi: 10.1089/scd.2016.0150)

Calura E, Pizzini S, Bisognin A, Coppe A, Sales G, Gaffo E, Fanelli T, Mannarelli C, Zini R, **Norfo R**, Pennucci V, Manfredini R, Romualdi C, Guglielmelli P, Vannucchi AM, Bortoluzzi S. “A data-driven network model of primary myelofibrosis: transcriptional and post-transcriptional alterations in CD34+ cells.” **Blood Cancer Journal** 2016 Jun 24;6(6):e439. (doi: 10.1038/bcj.2016.47)

Salati S, Zini R, Nuzzo S, Guglielmelli P, Pennucci V, Prudente Z, Ruberti S, Rontautoli S, **Norfo R**, Bianchi E, Bogani C, Rotunno G, Fanelli T, Mannarelli C, Rosti V, Salmoiraghi S, Pietra D, Ferrari S, Barosi G, Rambaldi A, Cazzola M, Biccato S, Tagliafico E, Vannucchi AM, Manfredini R; AGIMM group. “Integrative analysis of copy number and gene expression data suggests novel pathogenetic mechanisms in primary myelofibrosis” **International Journal of Cancer**. 2016 Apr 1;138(7):1657-69. (doi: 10.1002/ijc.29920)

Bianchi E*, **Norfo R***, Pennucci V, Zini R, Manfredini R. “Genomic Landscape of megakaryopoiesis and platelet function defects” **Blood**. 2016 Mar 10;127(10):1249-59. (doi: 10.1182/blood-2015-07-607952)

*these authors contributed equally

Bianchi E, Bulgarelli J, Ruberti S, Rontautoli S, Sacchi G, **Norfo R**, Pennucci V, Zini R, Salati S, Prudente Z, Ferrari S, Manfredini R. “MYB controls erythroid versus megakaryocyte lineage fate decision through the miR-486-3p-mediated downregulation of MAF”. **Cell Death Differentiation** 2015 Dec;22(12):1906-21. (doi: 10.1038/cdd.2015.30)

Pennucci V, Zini R, **Norfo R**, Guglielmelli P, Bianchi E, Salati S, Sacchi G, Prudente Z, Tenedini E, Ruberti S, Paoli C, Fanelli T, Mannarelli C, Tagliafico E, Ferrari S, Vannucchi AM, Manfredini R; AGIMM group. “Abnormal expression patterns of WT1-as, MEG3 and ANRIL long non-coding RNAs in CD34+ cells from patients with primary myelofibrosis and their clinical correlations” **Leukemia and Lymphoma**. 2015 Feb;56(2):492-6. (doi: 10.3109/10428194.2014.910661)

Norfo R*, Zini R*, Pennucci V*, Bianchi E, Salati S, Guglielmelli P, Bisognin A, Rosti V, Pietra D, Ricci C, Fanelli T, Salmoiraghi S, Sacchi G, Ruberti S, Barosi G, Cazzola M, Bortoluzzi S, Ferrari S, Tagliafico E, Vannucchi AM, and Manfredini R “miRNA-mRNA integrative

analysis in primary myelofibrosis CD34+ cells: role of miR-155/JARID2 axis in abnormal megakaryopoiesis." **Blood**, 2014 Sep 25;124(13):e21-32. (doi: 10.1182/blood-2013-12-544197)

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Salati S, Lisignoli G, Manferdini C., Pennucci V, Zini R, Bianchi E, **Norfo R**, Facchini A, Ferrari S, and Manfredini R. "Co-culture of Human Hematopoietic Stem Cells with Osteoblasts Affects Mono/macrophage versus Erythroid Lineage Choice". **Plos One**, 2013 8(1):e53496, (doi: 10.1371/journal.pone.0053496)

Zini R, **Norfo R**, Ferrari F, Bianchi E, Salati S, Carboni C, Ceccherelli GB, Tagliafico E, Ferrari S, and Manfredini R. "Valproic acid stimulates erythroid and megakaryocyte differentiation of human CD34+ cells through induction of GFI1B and MLLT3 expression". **Experimental Hematology**, 2012 40(12):1043-1054. (doi:10.1016/j.exphem.2012.08.003)

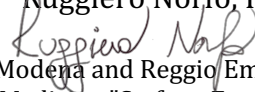
Bortoluzzi S, Bisognin A, Biasiolo M, Guglielmelli P, Biamonte F, **Norfo R**, Manfredini R, Vannucchi AM; AGIMM Investigators "Characterization and discovery of novel miRNAs and mRNAs in JAK2V617F-mutated SET2 cells". **Blood**. 2012 Mar 29; 119(13):e120-30. (doi: 10.1182/blood-2011-07-368001)

Bianchi E, Zini R, Salati S, Tenedini E, **Norfo R**, Tagliafico E, Manfredini R, and Ferrari S. "c-myc supports erythropoiesis through the transactivation of KLF1 and LMO2 expression". **Blood**. 2010 Nov 25;116(22):e99-110. (doi: 10.1182/blood-2009-08-238311).

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Modena, 19th April 2026

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