CURRICULUM VITAE

MARCO TRIZZINO, PhD

Current position (2022-present): **Senior Lecturer** in Developmental Genomics, Department of Life Sciences, **Imperial College London**, UK. Adjunct Professor at **Thomas Jefferson University**, Department of Biochemistry and Molecular Biology, Philadelphia, PA.

Previous positions (2019-2022): **Assistant Professor**, Department of Biochemistry and Molecular Biology, and Farber Institute for Neuroscience, **Thomas Jefferson University**, Philadelphia, PA

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EDUCATION

PhD *Sapienza* University, Rome, Dept. of Biology and Biotechnology, 2011
M. Sc *Sapienza* University, Rome, Evolutionary Biology, 2007 (cum laude)
B. Sc *Bicocca* University, Milan, Biological Sciences, 2005

POSTDOCTORAL TRAINING

2016 – 2019: Postdoctoral fellow, Department of Gene Expression and Regulation, **The Wistar Institute**, Cancer Center affiliated to the **University of Pennsylvania**, Philadelphia, PA.

2014 – 2016: Postdoctoral fellow at **University of Pennsylvania**, Department of Genetics, Perelman School of Medicine, Philadelphia.

2012 – 2013: Teaching Faculty at *Insubria* University of Varese, Italy, and Assistant Project Manager, *Istituto Oikos* ONG, Milan, Italy

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GRANTS AS PRINCIPAL INVESTIGATOR

- BBSRC: "Control of human neurodevelopment by a group of hominoid-specific transposons". 1/11/2023-31/10/2026. Direct costs: **£521,700.** Total budget including indirect costs: **£751,448.**

- Alzheimer's Association – New to the Field Grant (P.I.): "Mechanisms regulating chromatin relaxation in Alzheimer's Disease". 10/01/2022-09/30/2025. Direct costs: **$136,000**. Total budget including indirect costs: **$150,000.**

- R35-MIRA, NIH NIGMS (P.I.): "Mechanisms of gene regulation mediated by SVA transposons". 07/01/2020-06/30/2025. Direct costs: **$1,250,000**. Total budget including indirect costs: **$1,950,000.** **Note: this grant was relinquished by NIH on 31/08/2022 because of my relocation to Imperial College.**

- G. Harold and Leila Y Mathers Foundation (P.I.): "The ARID1A/ARID1B crosstalk as a central regulator of neural and craniofacial development". 03/01/2020-02/28/2023. Direct costs: **$750,000**. Total budget including indirect costs: **$825,000.**

TEACHING EXPERIENCE

2022-present: **Course Convenor** of Genes and Genomics, Imperial College London, Biochemistry Core Course, year-2 undergraduate students.

2023-present: Lecturer in Principles of Developmental Biology (year-3 undergraduate students), Mechanisms of Gene Expression (year-3 undergraduate students) and Stem Cells and Regeneration (year-3 undergraduate students), Imperial College London

Spring 2022: Advanced topics in Genome Regulation and Organization (Thomas Jefferson University, **Course director**; to graduate students).

Spring 2021: Current Literature in Biochemistry and Molecular Pharmacology. Course focused on Evolutionary Medicine (Thomas Jefferson University, BI-725. Course director)

Spring 2021 and 2022: Genetic Information Transfer (BI-525. Thomas Jefferson University, Invited Guest Lecturer)

2012 – 2013: Teaching Faculty at *Insubria* University, Varese, Italy (Organismal Biology, laboratories).

2007 – 2011: Teaching Assistant at *Sapienza* University, Rome (Anatomy, Physiology, General Biology)

COMMUNITY SERVICE

Grant Reviewer: MRC Medical Research Council, UK

Invited (permanent) member of the Editorial Board: Physiological Genomics

Topic Editor: Frontiers in Ecology and Evolutionary Biology (Special Issue on Transposable Elements and Gene Regulation).

Reviewer for: Nature Structural and Molecular Biology, Genome Biology, Genome Research, eLife, Nature Communications, Life Science Alliance, Cell Reports, Genome Biology and Evolution, Molecular Biology and Evolution, Molecular Cancer Research, Proceedings of the Royal Society B, BMC Biology, Biological Control, Health Science Reports, Zootaxa, Molecular Phylogenetics and Evolution, European Journal of Zoology.

ACADEMIC SERVICE

Service at Imperial College London (2022-present)

2022: Viva panel member for Karolina Kuna (student returning to school after placement in industry)

2022: Viva panel member for Cherrie Quin (student returning to school after year abroad)

2022-present: Tutor to four undergraduate students and four master's students

Service at Thomas Jefferson University (2019-2022)

2021-2022: BMP PhD Program Committee

2021-2022: Department Education Committee

2019-present: College of Life Sciences, BMP PhD student admissions committee.

2020: Search Committee for recruitment of a new Faculty member in the Department of Biochemistry and Molecular Biology.

2021-present: Graduate committee for Mason Tracewell and Signe Caksa

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INVITED ACADEMIC TALKS (Last three years)

- 2021: The Fragile Nucleosome (international seminar series on chromatin biology). (streamed on YouTube, audience of ~1,500 people) **– invited speaker**
- 2021: Oregon Health and Science University, Division of Genetics (virtual) **– invited talk**
- 2021: State University of New York, Albany (virtual) **– invited talk**
- 2021: "Development presents" seminar series organized by the Journal "Development" (virtual; host Dr. James Wells). **– invited speaker**
- 2022: Drexel University, Department of Biology (virtual) **– invited talk**
-2022: Indiana University, Department of Biology (in person) **– invited talk**
- 2022: Cell and Experimental Biology (Boston, MA) **– invited speaker**
- 2022: FASEB Transposable Element Meeting (Dublin, Ireland) **– invited speaker**
- 2022: European Evo/Devo meeting (Naples, Italy) **– invited speaker**
- 2022: Cincinnati Children's Hospital, Division of Developmental Biology **– invited talk**
- 2022: UKDRI at Imperial College London – Department of Brain Sciences **– invited talk**
- 2022: Queen Mary University London, Epigenetics Hub **– invited talk**
- 2023: University of Exeter, Department of Clinical and Biomedical Sciences **– invited talk**
- 2023: University of Leicester, Department of Genetics and Genome Biology **– invited talk**
- 2023: King's College London, Centre for Craniofacial and Regenerative Biology **– invited talk**
- 2023: University of Edinburgh, Neuroscience Seminar Series **– invited talk**
- 2023: St Paul's High School – Science Society (Hammersmith, London) **– invited talk**
- 2023: London Alzheimer's research UK network Science Day **– invited speaker**
- 2024: Gordon Conference on Craniofacial Morphogenesis, Barcelona, Spain **– invited speaker**
- 2024: *Transposable Elements in Human Evolution and Diseases* Conference, Italy – **invited speaker**
- 2024: *Novelty, co-option and divergence during gene network evolution* Workshop (International University of Andalusia, Spain) **– invited speaker**
- 2024: University of Cambridge, Stem Cell Centre **invited talk**

PUBLICATIONS

Publications from the Trizzino lab

- C. Scopa, S. Barnada, M.E. Cicardi, M. Singer, D. Trotti and **M. Trizzino**, 2023. *JUN* upregulation drives impaired neurogenesis, induction of innate immune response and apoptosis via aberrant transposable element activation in familial and sporadic Alzheimer's disease. ***Nature Communications*** 14:8021.
- S. Patoori, S. Barnada, C. Large, J. Murray and **M. Trizzino**, 2022. Young transposable elements rewired gene regulatory networks in human and chimpanzee hippocampal intermediate progenitors. ***Development***, 149 (19): dev200413.
- S. Barnada, A. Isopi, D. Tejada-Martinez, C. Goubert, S. Patoori, L. Pagliaroli, M. Tracewell and **M. Trizzino,** 2022. Genomic features underlie the co-option of SVA transposons as cis-regulatory elements in human pluripotent stem cells. **PLOS Genetics**, 18(6): e1010225.

- D. Tejada-Martinez, R. Avelar, I. Lopes, B. Zhang, G. Novoa, GP De Magalhaes, and **M. Trizzino**, 2022. Positive selection and enhancer evolution shaped lifespan and body mass in great apes. ***Molecular Biology and Evolution***, 39(2): msab369.
- L. Pagliaroli, P. Porazzi, A. Curtis, C. Scopa, H.M.M. Mikkers, C. Freund, L. Daxinger, S. Deliard, S.A. Welsh, S. Offley, C. Ott, B. Calabretta, S.A. Brugmann, G.W.E. Santen and **M. Trizzino**, 2021. Inability to switch from ARID1A-BAF to ARID1B-BAF impairs exit from pluripotency and commitment towards neural crest formation in ARID1B-related neurodevelopmental disorders. ***Nature Communications***, 12(6469): 1–16.
- L. Pagliaroli and **M. Trizzino**, 2021. The Evolutionary Conserved SWI/SNF Subunits ARID1A and ARID1B Are Key Modulators of Pluripotency and Cell-Fate Determination. ***Frontiers in Cell and Developmental Biology***, 9: 643361.

Postdoc Publications

- **M. Trizzino**, A. Zucco, S. Deliard, F. Wang, E. Barbieri, F. Veglia, D. Gabrilovich, and A. Gardini, 2021. EGR1 is a gatekeeper of inflammatory enhancers in human macrophages. ***Science Advances,*** 7(3): eaaz8836.
- M. Caliskan, E. Manduchi, H. Rao, J.A. Segert, M. H. Beltrame, **M. Trizzino**, Y. Park, S.W. Baker, A. Chesi, M.E. Johnson, K.M. Hodge, M.E. Leonard, B. Loza, D. Xin, A.M. Berrido, N.J. Hand, R.C. Bauer, A.D. Wells, K.M. Olthoff, A. Shaked, D.J. Rader, S.F.A. Grant, C.D. Brown, 2019. Genetic and epigenetic fine mapping of complex trait associated loci in the human Liver. ***American Journal of Human Genetics*** 105(1): 89-107.
- A. Carrer, S. Trefely, S. Zhao, S. Campbell, R.J. Norgard, K.C. Schultz, S. Sidoli, J.L.D. Parris, H.C. Affronti, S. Sivanand, S. Egolf, Y. Sela, **M. Trizzino**, A. Gardini, B. A. Garcia, N.W Snyder, B. Z. Stanger and K. Wellen, 2019. Acetyl-CoA metabolism supports multi-step pancreatic tumorigenesis. ***Cancer Discovery*** 9(3):416-435
- **M. Trizzino**, E. Barbieri, A. Petracovici, S. Wu, S. Welsh, T. Owens, R. Zhang and A. Gardini, 2018. The tumor suppressor ARID1A controls global transcription via pausing of RNA Polymerase II. ***Cell Reports***, 23: 3933–3945. **Recommended by F1000.**
- **M. Trizzino**, A. Kapusta, and C.D. Brown, 2018. Transposable elements generate regulatory novelty in a tissue specific fashion. ***BMC Genomics,*** 19:468.
- E. Barbieri*, **M. Trizzino*,** S.A. Welsh, T. Owens, B. Calabretta, M. Carrol, K. Sarma and A. Gardini, 2018. Targeted enhancer activation by a subunit of the Integrator complex. ***Molecular Cell***, 71: 1–14. ***co-first author.**
- S. Wu, N. Fatkhutdinov, T. Fukumoto, B. Bitler, PH Park, A.V. Kossenkov, **M. Trizzino**, A. Gardini, D.W. Speicher, R. Zhang, 2018. Catalytic subunits switch drives resistance to EZH2 inhibitors in ARID1A-mutated cells. ***Nature Communications,*** 9: 4116.
- **M. Trizzino***, Y. Park*, M. Holsbach-Beltrame, K. Aracena, K. Mika, M. Caliskan G. Perry, V. Lynch and C.D. Brown, 2017. Transposable elements are the primary source of novelty in primate gene regulation. ***Genome Research,*** 27:1623–1633.

Key publications from PhD

- S. Sabatelli, P. Audisio, G. Antonini, E. Solano, A. Martinoli and **M. Trizzino** (2016). Molecular ecology and phylogenetics of the water beetle genus *Ochthebius* revealed multiple independent shifts to marine rockpools lifestyle. ***Zoologica Scripta***, 45: 175–186.
- **M. Trizzino**, F. Bisi, L. Maiorano, A. Martinoli, M. Petitta, D.G. Preatoni and P. Audisio 2015. Mapping biodiversity hotspots and conservation priorities for the Euro-Mediterranean headwater ecosystems, as inferred from diversity and distribution of a water beetle lineage. ***Biodiversity and Conservation***, 24(1): 149–160*.*
- **M. Trizzino**, M. Jäch, P. Audisio, R. Alonso and I. Ribera, 2013. A molecular phylogeny of the cosmopolitan hyperdiverse genus *Hydraena* Kugelann (Coleoptera, Hydraenidae). ***Systematic Entomology***, 38: 192–208.
- **M. Trizzino**, P. Audisio, G. Antonini, E. Mancini and I. Ribera, 2011. Molecular phylogeny and diversification of the "*Haenydra* lineage" (Hydraenidae, genus *Hydraena*), a North-Mediterranean endemic-rich group of rheophilic Coleoptera. ***Molecular Phylogenetics and Evolution*** 61: 772–783.
- **M. Trizzino**, P. Audisio, G. Antonini, A. De Biase, E. Mancini, 2009. Comparative analysis of sequence and secondary structure of the rRNA internal transcribed spacer 2 (ITS2) in pollen-beetles of the subfamily Meligethinae (Coleoptera, Nitidulidae): potential use of slippage-derived sequences in molecular systematics. ***Molecular Phylogenetics and Evolution*** 51: 215-226.

<u>Other PhD publications</u>

- S. Sabatelli, M. Liu, D. Badano, E. Mancini, M. Trizzino, A. R. Cline, A. Endrestøl, M. Huang, P. Audisio, 2020. Molecular phylogeny and host-plant use (Lamiaceae) of the Thymogethes pollen beetles (Coleoptera). ***Zoologica Scripta*** 49(1): 28-46.
- **M. Trizzino**, F. Bisi, C. Morelli, D. Preatoni, L. A. Wauters and A. Martinoli. 2014. Spatial niche partitioning of two saproxylic sibling species (Coleoptera, Cetoniidae, genus *Gnorimus*). ***Insect Conservation and Diversity****,* 7: 223–231.
- **M. Trizzino**, L. Carnevali, S. De Felici and P. Audisio, 2013. A revision of the *Hydraena* species of the "*Haenydra*" lineage. ***Zootaxa*** 3607 (1): 1–173.
- **M. Trizzino**, L. F. Valladares, J. Garrido and P. Audisio, 2012. Morphological reply to a DNA call: a new cryptic species of *Hydraena* from western Europe, with a complete overview of the *H. gracilis* complex (Coleoptera, Hydraenidae, "*Haenydra*" lineage). ***Journal of Natural History*** 46: 1065–1078.
- A. De Biase, G. Antonini, E. Mancini, **M. Trizzino**, A. Cline and P. Audisio, 2012. Discordant patterns in the genetic, ecological, and morphological diversification of a recently radiated phytophagous beetle clade (Coleoptera: Nitidulidae: Meligethinae). ***Rendiconti dell'Accademia Nazionale dei Lincei***: 23(2): 207–215.
- **M. Trizzino**, P. Audisio, M. Jäch and I. Ribera, 2011. Molecular and morphological data confirm two new species of *Hydraena* s.str. of the *H. emarginata-saga* complex (Coleoptera, Hydraenidae). ***Zootaxa*** 2760: 29–38.
- P Audisio, H Brustel, GM Carpaneto, G Coletti, E Mancini, **M Trizzino**, G Antonini, A De Biase, 2009. Data on molecular taxonomy and genetic diversification of the European Hermit beetles,

a species complex of endangered insects (Coleoptera: Scarabaeidae, Cetoniinae, Osmoderma). ***Journal of Zoological Systematics and Evolutionary Research***. 47(1): 88–95.