

ALLEGATO B

UNIVERSITÀ DEGLI STUDI DI MILANO
selezione pubblica per n. 1 posto/i di Ricercatore a tempo determinato in tenure track (RTT)
per il settore concorsuale 05/F1 - Biologia Applicata ,
settore scientifico-disciplinare BIO/13 - Biologia Applicata
presso il Dipartimento di ONCOLOGIA ED EMATO-ONCOLOGIA,
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Alessandro Vitriolo
CURRICULUM VITAE

INFORMAZIONI PERSONALI

COGNOME	VITRIOLO
NOME	ALESSANDRO
DATA DI NASCITA	

TITOLI

TITOLO DI STUDIO

Master of Science, Bioinformatics, University of Milan Bicocca, 2013

Bachelor of Science, Biotechnology, University of Milan Bicocca, 2009

TITOLO DI DOTTORE DI RICERCA O EQUIVALENTI, OVVERO, PER I SETTORI INTERESSATI, DEL DIPLOMA DI SPECIALIZZAZIONE MEDICA O EQUIVALENTE, CONSEGUITO IN ITALIA O ALL'ESTERO

Systems Medicine, University of Milan La Statale, 29th January 2019.

BORSE DI STUDIO

Fondazione IEO-CCM fellowship (2017)

SEMM European School of Molecular Medicine (2014-2018)

CONTRATTI DI RICERCA, ASSEGNI DI RICERCA O EQUIVALENTI

(per ciascun contratto stipulato, inserire università/ente, data di inizio e fine, ecc.)

1 year assegno di ricerca signed in June 2023, renewed in 2024, currently expected to finish in May 2025. University of Milan La Statale, Department of Oncology and Emato-Oncology, Prof. Testa Lab.

Post-doctoral contract from May 2020 to May 2023 with Telethon Foundation, to work at Human Technopole Foundation, University of Milan La Statale and European Institute of Oncology (IEO) for the lab of Prof. Testa.

Assegno di ricerca Oct 2018-Oct 2019, renewed up to Oct 2020, interrupted in April 2020. University of Milan La Statale, Department of Oncology and Emato-Oncology, Prof. Testa Lab.

ATTIVITÀ DIDATTICA A LIVELLO UNIVERSITARIO IN ITALIA O ALL'ESTERO

(inserire periodo [gg/mm/aa inizio e fine], anno accademico, ateneo, corso laurea, numero ore, ecc.)

- 2020-current. **Adjunct professor**; Data Integration in Neurogenomics and Brain Disease modelling; Interuniversity MSc Bioinformatics Computational Genomics; University of Milan La Statale. **8 hours**.
- 2024. **Lecturer**; Profiling transcriptional regulation with next generation sequencing; BSc course in Biotechnology, University of Milan La Statale. **4 hours**.
- 2024. **Lecturer**; Neurogenomics approaches for translational medicine; 2nd Level vocational master, **Pharma Academy**, Naples. **10 hours**. University Federico II.
- 2023. **Lecturer**; Transcriptional Regulation in Neurodevelopment; 2nd Level vocational master; Master **Bioinformatics and Functional Genomics**; University of Milan La Statale. **4 hours**.
- 2020. **Lecturer**; Chromatin/Epigenetics, Computational Biology; 2nd Level vocational master; Master **Bioinformatics and Functional Genomics**; University of Milan La Statale. **4 hours**.
- 2019. **Lecturer**; Chromatin/Epigenetics, Computational Biology; 2nd Level vocational master; Master **Bioinformatics and Functional Genomics**; University of Milan La Statale. **4 hours**.

DOCUMENTATA ATTIVITÀ DI FORMAZIONE O DI RICERCA PRESSO QUALIFICATI ISTITUTI ITALIANI O STRANIERI;

(inserire anno accademico, ente, corso, periodo, ecc.)

- 2022. **Lecturer**; **BrainOmics** - computational approaches for single-cell multiomics integration in neuroscience. **Human Technopole**. **8 hours**.
- 2015. **Lecturer**, 2nd Level vocational master; Bioinformatics, Structural Biology, Drug Design; Consorzio **BioBresso**. **32 hours**.

REALIZZAZIONE DI ATTIVITÀ PROGETTUALE

(indicare, data, progetto, ecc.)

2019-Current: Mechanistic dissection of molecular convergences within an integrative cohort of neurodevelopmental disorders.

2019-Current: Orthogonal perturbations of gene expression synthetically dissect the molecular underpinnings of modern humans' cortical development.

2015-Current: Mechanistic dissection of Polycomb-dependent dysregulations in Weaver Syndrome neural lineages.

2020-2023. Single-cell multiomic dissection of electrophysiological correlates in Williams-Beuren- and 7q11.23 microduplication- Syndromes. Telethon Foundation. Won by Prof. Testa. GGP19226

2016-2023: Multiomic dissection of ADNP haploinsufficiency during cortical development.

2016-2023: Molecular and functional dissection of YY1-dependent dysregulations in cortical development.

2022-2023. Curation of causal interactions mediated by genes associated to autism accelerates the understanding of gene-phenotype relationships underlying neurodevelopmental disorders.

2016-2021. KMT2D haploinsufficiency in Kabuki syndrome disrupts neuronal function through transcriptional and chromatin rewiring independent of H3K4-monomethylation.

2016-2019. Dosage analysis of the 7q11.23 Williams region identifies BAZ1B as a major human gene patterning the modern human face and underlying self-domestication.

TITOLARITÀ DI BREVETTI

(per ciascun brevetto, inserire autori, titolo, tipologia, numero brevetto, ecc.)

Peptides having TrkA-receptor-agonistic activity and/or peptides having NGF-antagonistic activity IT102016000086689A. Piercarlo Fantucci, Stefano Govoni, Alessia Angela PASCALE, Nicoletta MARCHESI, Emilio VANOLI, Jacopo VERTEMARA, Alessandro VITRIOLO

ATTIVITÀ DI RELATORE A CONGRESSI E CONVEGNI NAZIONALI E INTERNAZIONALI

(inserire titolo congresso/convegno, data, ecc.)

GTF2I dosage regulates neuronal differentiation and mice behaviour. Convegno Nazionale **Associazione Persone Sindrome di Williams Italia**. Marina di Massa. 13th May 2023. **Invited Talk**

The regulatory determinants of modern human brain development and evolution. **EMBL Symposium: Brain genome: regulation, evolution, and function**. Heidelberg. 26th April 2023. **Selected Talk**

Mapping the regulatory interactome of neocortical development to dissect modern human evolution. **FANTOM6 Spring Meeting**. Milan. 11th April 2023. **Selected Talk**

ADNP haploinsufficiency impairs progenitors proliferation and prevents direct differentiation in Helsmortel Van Der Aa Syndrome. **HT seminars**. Milan. 14th February 2023. **Invited Talk**

Chromatin remodelling dysregulation at the crossroad between neurodevelopmental disorders and human evolution. **Neurodevelopmental Disorders Conference**. Antwerp. 8th of September 2022. **Invited Talk**

Emerging insights on the modern human brain through the prism of neurodevelopmental disorders. **FENS Forum 2022**. Paris. 10th July 2022. **Invited Talk**

The decoupling of brain and face development in Homo sapiens through selection of epigenetic switches. **EpiSyStem: Stem Cell Epigenetics International Conference**. University of Milan. 4-6 July 2022 **Selected Talk**

KMT2D haploinsufficiency impairs synaptic activity and neuronal maturation through transcriptional and chromatin rewiring in Kabuki Syndrome human models. **Neuroepigenetics: From Cells to Behaviour and Disease - Virtual. EMBO Workshop. 28 - 30 Oct 2020. Selected Talk**

Neurodevelopmental disorders share modules of transcriptional dysregulation explaining brain and craniofacial-development associated phenotypes. **13th Troina Meeting on Genetics of Neurodevelopmental Disorders. Troina 12th-14th April 2018. Selected Talk**

An integrative analysis of shared and unique molecular circuitries in patient-derived lineages from six neurodevelopmental disorders. A. Vitriolo, et al.. Troina, April 2017. 12th Meeting on Genetics of Neurodevelopmental Disorders. **Selected Talk**

From Williams Beuren Syndrome to several neurodevelopmental disorders and back. Contrasts and similarities harnessed with iPSCs, experimental and computational tools. April 2016. Troina (Italy). 11th Troina Meeting on Genetics of Neurodevelopmental Disorders. **Selected Talk**

The role of two conserved motif in the dynamics of E2 ubiquitin conjugating enzymes. Presented at the 3° Workshop “Metodi Computazionali per Processi Chimici e Biochimici”. Vignale Monferrato (AL), Italy. 24-27 Sept, 2013. **Selected talk**

Homology modeling and molecular dynamics of P450 Cytochromes: a bioengineering project. 11th International Symposium on Cytochrome P450: Biodiversity and Biotechnology. Museo della Scienza e della Tecnica di Torino, June 22, 2012 **Selected Talk**

PRODUZIONE SCIENTIFICA

PUBBLICAZIONI SCIENTIFICHE

(per ciascuna pubblicazione indicare: nomi degli autori, titolo completo, casa editrice, data e luogo di pubblicazione, codice ISBN, ISSN, DOI o altro equivalente)

Preprints: co-last¹, co-first²

Published co-first³⁻⁶

Other relevant papers⁷⁻¹⁵

1. Pereira, M. F. et al. YY1 Mutations Disrupt Corticogenesis through a Cell-Type Specific Rewiring of Cell-Autonomous and Non-Cell-Autonomous Transcriptional Programs. <http://biorxiv.org/lookup/doi/10.1101/2024.02.16.580337> (2024) doi:10.1101/2024.02.16.580337.
2. Gabriele, M. et al. KMT2D haploinsufficiency in Kabuki syndrome disrupts neuronal function through transcriptional and chromatin rewiring independent of H3K4-monomethylation. 2021.04.22.440945 Preprint at <https://doi.org/10.1101/2021.04.22.440945> (2021).
3. Iannuccelli, M. et al. Curation of causal interactions mediated by genes associated to autism accelerates the understanding of gene-phenotype relationships underlying neurodevelopmental disorders. 2023.01.09.523265 Preprint at <https://doi.org/10.1101/2023.01.09.523265> (2023).
4. Zanella, M. et al. Dosage analysis of the 7q11.23 Williams region identifies BAZ1B as a major human gene patterning the modern human face and underlying self-domestication. *Science Advances* **5**, eaaw7908 (2019).
5. Breglia, R. et al. Theoretical insights into [NiFe]-hydrogenases oxidation resulting in a slowly reactivating inactive state. *J Biol Inorg Chem* **22**, 137–151 (2017).

6. Vitriolo, A., Gabriele, M. & Testa, G. From enhanceropathies to the epigenetic manifold underlying human cognition. *Hum. Mol. Genet.* (2019) doi:10.1093/hmg/ddz196.
7. Germain, P.-L. et al. RNAontheBENCH: computational and empirical resources for benchmarking RNAseq quantification and differential expression methods. *Nucleic Acids Res.* **44**, 5054–5067 (2016).
8. Choufani, S. et al. DNA Methylation Signature for EZH2 Functionally Classifies Sequence Variants in Three PRC2 Complex Genes. *Am J Hum Genet* **106**, 596–610 (2020).
9. Di Domizio, A., Vitriolo, A., Vistoli, G. & Pedretti, A. SPILLO-PBSS: detecting hidden binding sites within protein 3D-structures through a flexible structure-based approach. *J Comput Chem* **35**, 2005–2017 (2014).
10. Papaleo, E. et al. An acidic loop and cognate phosphorylation sites define a molecular switch that modulates ubiquitin charging activity in Cdc34-like enzymes. *PLoS Comput Biol* **7**, e1002056 (2011).
11. López Tobón, A. et al. The guanine nucleotide exchange factor Arhgef7/ β Pix promotes axon formation upstream of TC10. *Sci Rep* **8**, 8811 (2018).
12. Arrigoni, A., Grillo, B., Vitriolo, A., De Gioia, L. & Papaleo, E. C-Terminal acidic domain of ubiquitin-conjugating enzymes: a multi-functional conserved intrinsically disordered domain in family 3 of E2 enzymes. *J. Struct. Biol.* **178**, 245–259 (2012).
13. D’Incal, C. P. et al. Chromatin remodeler Activity-Dependent Neuroprotective Protein (ADNP) contributes to syndromic autism. *Clinical Epigenetics* **15**, 45 (2023).
14. Caporale, N. et al. Multiplexing cortical brain organoids for the longitudinal dissection of developmental traits at single cell resolution. 2023.08.21.553507 Preprint at <https://doi.org/10.1101/2023.08.21.553507> (2023).
15. Mihailovich, M. et al. 7q11.23 CNV alters protein synthesis and REST-mediated neuronal intrinsic excitability. 2022.10.10.511483 Preprint at <https://doi.org/10.1101/2022.10.10.511483> (2022).

FINANZIAMENTI e bandi vinti.

- 100000+ ore di calcolo CINECA (progetti “AMDAHL” e “AMDAHL 2”)

CONFERENZE ORGANIZZATE.

- ENABLE 2021 Milan 2021 EXPLORING LIFE DYNAMICS: In and out of equilibrium.
- HT PhD & Postdoc Symposium 2024.

SCUOLE ESTIVE e di perfezionamento.

- “Lipari School on Computational Life Sciences - Jacob T. Schwartz International School for Scientific Research”. Computational Drug Science and High-Precision Medicine. Lipari. Italy, July 2017
- Autumn School on Computational Approaches to Chromatin Organization Bedlewo. Poland, October 2016

COMPETENZE CHIAVE ACQUISITE E APPLICATE NEGLI ULTIMI 10 ANNI

- Bulk and single-cell data analysis of RNA- ATAC- ChIP-seq, CUT&Tag CUT&RUN, DNA methylation, Whole Exome and Whole Genome Sequencing
- Network analysis, gene-regulatory-network reconstruction
- CRISPR-based screening design and analysis

- Machine-learning and knowledge-base annotation of single-cell omics
- Integration of multiple omics modalities
- Development of advanced approaches to reconstruct differentiation trajectories
- Python and R programming
- Biostatistics
- Bash and IT management
- Versioning
- Containers

SOFT SKILLS

- mentoring
- teaching
- creativity
- problem solving
- decision making
- experimental design
- empathy
- communication
- teamwork
- leadership

PERSONE SUPERVISIONATE. *Ruolo ai tempi della supervisione (asterisco * indica supervisioni attualmente in corso)*

Bioinformatici e biologi computazionali

Daniele Capocefalo. *Post-doc*; Davide Castaldi. *PhD student*; Veronica Finazzi. *master student*; Francesco Dossena. *master student*; Francesco Morettini. *master student*; Mirco Macchi. *master student*; Camilla Tafuro. *master student*; Michelangelo Marasco. *medicine student*; Marina Fuster, *bachelor student* * (da Gennaio 2024); Filippo Prazzoli, *master student* * (da Aprile 2024).

Scienziati “ibridi” coinvolti sia in esperimenti che in analisi di dati bulk e single-cell
Oliviero Leonardi. *PhD student* * (da Ottobre 2022).

Scienziati con un ruolo principalmente sperimentale

Martina Pezzali. *PhD student* * (da Ottobre 2023); Marlene Pereira. *PhD student*

Data

31/05/2024

Luogo

Milano