

CURRENT POSITION

Associate Professor of Molecular Biology (05/BIOS-08)

Oct 2026 – present

Department of Life and Environmental Sciences, Biomedical Section – Block D, 1st floor

University of Cagliari, University Campus of Monserrato, SS554 – 09042 Monserrato (CA), Italy

RESEARCH INTERESTS

My research addresses the molecular mechanisms linking RNA metabolism, ageing and neurodegeneration, with *Drosophila melanogaster* as the principal *in vivo* model. Current lines of work focus on how age-dependent changes in gene expression, epigenetic regulation and neuroinflammation compromise neuronal and synaptic function, using TDP-43 and ALS-related pathways as an entry point, and on translating these findings into therapeutic strategies through drug-based, RNA-based and gene delivery approaches.

EDUCATION

Ph.D. in Molecular Genetics and Biotechnology

Dec 2014

University of Nova Gorica, Slovenia

Dissertation: “Characterization of TDP-43, an ALS related protein, using a D. melanogaster model.”

M.Sc. in Medical Nanobiotechnology (110/110)

Apr 2009

Faculty of Medicine and Surgery, University of Trieste, Italy

Dissertation: “Molecular analysis of TDP-43 function in D. melanogaster.”

Certification for Functions A/B on Mus musculus (Italian Ministerial Decree 228/2021)

2025

National Scientific Habilitation (ASN) as Associate Professor

2023

Italian Ministry of University and Research — 05/BIOS-08 Molecular Biology; 05/BIOS-04 Comparative Anatomy, Cell Biology and Developmental Biology

RESEARCH EXPERIENCE

Research Scientist — Telethon / AFM grant

Jan 2023 – Sep 2026

Mouse Molecular Genetics Lab (PI: Andrés Muro), ICGEB Trieste, Italy

Research Scientist — NIH grant

Jan 2019 – Dec 2022

Human Molecular Genetics Lab (PI: Franco Pagani), ICGEB Trieste, Italy

Postdoctoral Fellow — AriSLA grant (CHRONOS)

Jan 2015 – Dec 2018

Neurobiology Lab (PI: Fabian Feiguin), ICGEB Trieste, Italy

TEACHING APPOINTMENTS

- **Adjunct Professor** (docente a contratto) – Comparative Anatomy and Developmental Biology (BIO/06), 44 h of lectures, B.Sc. in Biological Sciences and Technologies (SM51), Department of Life Sciences, University of Trieste (A.Y. 2025/2026).
- **Adjunct Professor** (docente a contratto) – Comparative Anatomy and Developmental Biology (BIO/06), 36 h of lectures, B.Sc. in Biological Sciences and Technologies (SM51), Department of Life Sciences, University of Trieste (A.Y. 2024/2025).
- **Adjunct Professor** (docente a contratto) – Bioscience with Laboratory (BIO/06), course FI050002-1, A050 Natural, Chemical and Biological Sciences curriculum (9 ECTS), University of Trieste (A.Y. 2024/2025).

OTHER TEACHING AND SUPERVISION

- **Lecturer** – Theoretical and practical course “*Drosophila melanogaster* models for neurodegenerative diseases”, ICGEB Trieste, 17–20 April 2018.
- **Instructor** – Summer School “Tuffi nella Scienza 2022”, Fondazione Pittini, Sistiana (TS): 8 h Molecular Biology laboratory module.
- **Lecturer** – Liceo Scientifico “Galileo Galilei”, Trieste (2015): “*Drosophila melanogaster*: a model for studying neurodegenerative diseases”.
- **Co-supervisor** of Master’s theses at the Universities of Trieste, Ferrara and Urbino (Italy) and the University of Belgrade (Serbia), 2015 – present (n = 7).
- **Member of Master's thesis examination committees**, University of Trieste, 2015 – present; co-examiner since 2020 (n = 3).

EDITORIAL SERVICE

- **Peer reviewer:** Communications Biology (Nature Portfolio), Heliyon (Cell Press), Frontiers in Neuroscience (Frontiers Media), IJMS (MDPI).
- **Guest Associate Editor:** Developmental and Regenerative Neuroscience (Frontiers Media).
- **Editorial Board:** Current Gene Therapy Research (Bentham Science Publishers).

FELLOWSHIPS AND AWARDS

- Travel Award for an outstanding research contribution, 4th International Conference on the Long and the Short of Non-Coding RNAs, Aegean Conferences, Rhodes, Greece (2022).
- Prize “Progetto Diventerò 2016”, Fondazione Bracco, 6th AriSLA Conference, Milan, Italy.
- Arturo Falaschi Fellowship (2015).
- Best poster prize “Cesare Scoccimarro – Giovani per la Ricerca”, 4th AriSLA Conference, Milan (2013).
- Best poster prize “Cesare Scoccimarro – Giovani per la Ricerca”, 3rd AriSLA Conference, Milan (2012).
- Top cited article 2009–2011 in *FEBS Letters*: “Depletion of TDP-43 affects *Drosophila* motoneurons terminal synapsis and locomotive behavior”.

SELECTED CONFERENCE CONTRIBUTIONS

- **ESGCT Congress**, Seville, Spain, 7–10 Oct 2025 — “Development of mRNA–LNP therapy for the treatment of ornithine transcarbamylase deficiency.”
- **2nd ICGEB Alumni Meeting**, Trieste, 11–13 Jun 2025 (poster) — “Liver-directed gene targeting as a potential therapy for Fabry disease.”
- **1st Biennial Conference on TDP-43 Function and Dysfunction in Disease**, Trieste, 6–8 Sep 2023 (poster) — “Su(var)3-9-mediated epigenetic regulation of TDP-43 expression and its implications in age-related neurodegeneration.”
- **4th International Conference on the Long and the Short of Non-Coding RNAs**, Rhodes, Greece, 12–17 Jun 2022 (talk) — “Rescue of a familial dysautonomia mouse model by AAV9-ExSpe U1 snRNA.”
- **EMBO Workshop “RNP network dynamics in development and disease”**, Ljubljana, 29 Sep–2 Oct 2019 (poster) — “Rescue of ELP1 exon 20 definition with exon-specific U1 snRNAs in a familial dysautonomia mouse model.”
- **NEUROFLY 2018**, 17th European *Drosophila* Neurobiology Conference, Krakow, 3–7 Sep 2018 (poster) — “Gad1 downregulation in dTDP-43 ALS fly model.”

- **2nd ALS Symposium**, Turin, 2017 (poster) — “Chronic and sporadic mechanisms in TDP-43 dysfunction.”
- **6th AriSLA Conference**, Milan, 2016 (poster) — “Glial TDP-43 regulates axon wrapping, GluRIIA clustering and fly motility by autonomous and non-autonomous mechanisms.”
- **ICGEB Council of Scientific Advisers Congress**, Trieste, 2016, 2013 and 2010 (posters).
- **1st ALS Symposium**, Naples, 2015 (poster) — “dTDP-43: an unexpected role in glial cells in an ALS fly model.”
- **1st EURASNET Conference**, Trieste, 2014 (poster) — “Chronological requirements of TDP-43 function in synaptic organization and locomotive control.”
- **3rd and 2nd AriSLA Conferences**, Milan, 2013 and 2012 (posters).

ADVANCED TRAINING COURSES

- “Molecular Biology of *Leishmania*”, ICGEB Trieste, Oct 2012 (21 h).
- “Mouse Genetics: Models for Human Diseases”, ICTP Trieste, Feb 2011 (23 h).
- “RNA Function and Structure”, ICTP Trieste, 29 Mar–1 Apr 2010 (21 h).

RESEARCH AND LABORATORY SKILLS

- **Gene therapy and gene delivery:** mRNA–lipid nanoparticle (LNP) formulation and *in vivo* delivery; AAV administration in neonatal and adult mice (intraperitoneal, intracerebroventricular, retro-orbital, tail vein); *in vivo* gene editing by AAV–CRISPR/Cas9; lentiviral particle production and transduction.
- **Molecular biology:** recombinant DNA technology, mammalian cell culture, co-transfection and gene silencing; primary human lymphocyte culture; enzyme kinetics and inhibition; cell viability and IC₅₀ assays.
- ***Drosophila* models:** generation and recombination of fly strains and genetic interaction studies; conditional expression systems (UAS-Gal4, GeneSwitch, TARGET); *in vivo* drug screening; lifespan, developmental and climbing assays; neuromuscular junction and glial morphology analysis.
- **Mouse models:** colony management, genetic manipulation and genotyping; liver surgery; organ and ganglia dissection (dorsal root, superior cervical, trigeminal); motor phenotyping (rotarod, hanging test, righting reflex, gait analysis).
- **Histology and imaging:** paraffin and cryostat sectioning, histological stains and immunostaining; fluorescence and confocal microscopy (Zeiss LSM510–880 Airyscan / ZEN, Nikon C2); live imaging (FM1-43) and TUNEL assay.
- **Data analysis:** ImageJ, GraphPad Prism; basic RNA-seq analysis.

PUBLIC ENGAGEMENT AND OUTREACH

- Trieste Science+Fiction Festival (2024).
- Maker Faire Trieste (2022) — Foldscope and microscopy.
- Trieste Next, ICGEB stand (2015, 2016, 2018, 2019, 2021, 2022).
- European Researchers' Night, ICGEB stand (2013) — Q&A for the general public.
- Open Day events, AREA Science Park Trieste (2014, 2018).

PUBLICATIONS IN PEER-REVIEWED JOURNALS

25 publications, listed from the most recent; author name in bold. 11 as first or co-first author (8 first, 3 shared first, [†] equal contribution) and 2 as corresponding author ([§]).

1. **G Romano**[§], R Klima, F Feiguin. Loss of TDP-43 drives innate immune activation through Relish in *Drosophila*. *Int J Mol Sci* 2026;27(12):5359. doi:10.3390/ijms27125359
2. H Saxena, R Domenis, **G Romano**, J Biasizzo, M Ferro, D Ferino, A Vicidomini, A laconcig, G Bortolussi, L Zentilin, A Dardis, AF Muro. Liver gene therapy in Fabry disease mice with low doses of rAAV2/8 expressing a codon-optimized hGLA cDNA results in long-term disease correction. *J Inherit Metab Dis* 2026;49(3):e70188. doi:10.1002/jimd.70188
3. A Vicidomini, F Boisgerault, **G Romano**, C Guarnaccia, P Vidal, F Collaud, LR Soria, G De Sabbata, N Tedesco, M Lisjak, H Saxena, L Camparini, A laconcig, L Moretti, N Skoko, P Ilyinskii, N Brunetti-Pierri, G Bortolussi, G Ronzitti, TK Kishimoto, AF Muro. Rapamycin nanoparticles mitigate anti-AAV antibody formation in a mouse model of ornithine transcarbamylase deficiency. *Mol Ther Adv* 2026;34(3):201793. doi:10.1016/j.omta.2026.201793
4. A Chekuri, K Kondabolu, EG Kirchner, S Koli, M Chagnon, D Krasniqi-Vanmeter, ME Stern, J Bolduc, **G Romano**, F Pagani, LH Vandenberghe, E Morini, SA Slaugenhaupt. AAV2-mediated intravitreal delivery of exon-specific U1 snRNA rescues optic neuropathy in a mouse model of familial dysautonomia. *Mol Ther Nucleic Acids* 2025;102788. doi:10.1016/j.omtn.2025.102788
5. M Gbadamosi, **G Romano**, M Simbula, G Canarutto, L Ottoboni, S Corti, F Feiguin. TDP-43 regulates Rab4 levels to support synaptic vesicle recycling and neuromuscular connectivity in *Drosophila* and human ALS models. *Int J Mol Sci* 2025;26(22):11030. doi:10.3390/ijms262211030
6. E Kriukov, DY Shu, W Yan, **G Romano**, WL Tai. Editorial: Multiomics approaches in the central nervous system and neuropathies. *Front Neurosci* 2025;19. doi:10.3389/fnins.2025.1670706
7. F Riccardi, **G Romano**, D Licastro, F Pagani. Age-dependent regulation of ELP1 exon 20 splicing in familial dysautonomia by RNA polymerase II kinetics and chromatin structure. *PLoS One* 2024;19(6):e0298965. doi:10.1371/journal.pone.0298965
8. M Marzullo, **G Romano**[†], C Pellacani, F Riccardi, L Ciapponi, F Feiguin. Su(var)3-9 mediates age-dependent increase in H3K9 methylation on TDP-43 promoter triggering neurodegeneration. *Cell Death Discov* 2023;9(1):357. doi:10.1038/s41420-023-01643-3
9. **G Romano**, F Riccardi, E Bussani, S Vodret, D Licastro, I Ragone, G Ronzitti, E Morini, SA Slaugenhaupt, F Pagani. Rescue of a familial dysautonomia mouse model by AAV9-exon-specific U1 snRNA. *Am J Hum Genet* 2022;109(8):1534–1548. doi:10.1016/j.ajhg.2022.07.004
10. **G Romano**, R Klima, F Feiguin. Immunoprecipitation for protein–protein interactions and for RNA enrichment in *Drosophila melanogaster*. *Bio-protocol* 2021;11(23). doi:10.21769/BioProtoc.4250
11. R Klima, **G Romano**, M Gbadamosi, A Megighian, F Feiguin. Immuno-electrophysiology on neuromuscular junctions of *Drosophila* third instar larva. *Bio-protocol* 2021;11(3):e3913. doi:10.21769/BioProtoc.3913
12. **G Romano**[§], N Holodkov, R Klima, F Feiguin. TDP-43 regulates GAD1 mRNA splicing and GABA signaling in *Drosophila* CNS. *Sci Rep* 2021;11(1):18761. doi:10.1038/s41598-021-98241-z
13. N Strah, **G Romano**[†], C Introna, R Klima, M Marzullo, L Ciapponi, A Megighian, M Nizzardo, F Feiguin. TDP-43 promotes the formation of neuromuscular synapses through the regulation of Disc-large expression in *Drosophila* skeletal muscles. *BMC Biol* 2020;18(1):34. doi:10.1186/s12915-020-00767-7
14. **G Romano**, R Klima, F Feiguin. TDP-43 prevents retrotransposon activation in the *Drosophila* motor system through regulation of Dicer-2 activity. *BMC Biol* 2020;18(1):82. doi:10.1186/s12915-020-00816-1
15. I Donadon, E Bussani, F Riccardi, D Licastro, **G Romano**, G Pianigiani, M Pinotti, P Konstantinova, M Evers, S Lin, MA Rüegg, F Pagani. Rescue of spinal muscular atrophy mouse models with AAV9-exon-specific U1 snRNA. *Nucleic Acids Res* 2019;47(14):7618–7632. doi:10.1093/nar/gkz469
16. **G Romano**, N Holodkov, R Klima, F Grilli, C Guarnaccia, M Nizzardo, F Rizzo, R Garcia, F Feiguin. Downregulation of glutamic acid decarboxylase in *Drosophila* TDP-43-null brains provokes paralysis by affecting the organization of the neuromuscular synapses. *Sci Rep* 2018;8(1):1809. doi:10.1038/s41598-018-19802-3
17. S Langellotti, **G Romano**, F Feiguin, FE Baralle, M Romano. RhoGAPP190: a potential player in tbph-mediated neurodegeneration in *Drosophila*. *PLoS One* 2018;13(4):e0195845. doi:10.1371/journal.pone.0195845

18. L Lo Piccolo, R Bonaccorso, A Attardi, L Li Greci, **G Romano**, M Sollazzo, G Giurato, AMR Ingrassia, F Feiguin, DFV Corona, MC Onorati. Loss of ISWI function in *Drosophila* nuclear bodies drives cytoplasmic redistribution of *Drosophila* TDP-43. *Int J Mol Sci* 2018;19(4):1082. doi:10.3390/ijms19041082
19. S Langellotti, V Romano, **G Romano**, R Klima, F Feiguin, L Cragnaz, M Romano, FE Baralle. A novel *Drosophila* model of TDP-43 proteinopathies: N-terminal sequences combined with the Q/N domain induce protein functional loss and locomotion defects. *Dis Model Mech* 2016;9(6):659–669. doi:10.1242/dmm.023382
20. L Cragnaz, R Klima, L De Conti, **G Romano**, F Feiguin, E Buratti, M Baralle, FE Baralle. An age-related reduction of brain TBPH/TDP-43 levels precedes the onset of locomotion defects in a *Drosophila* ALS model. *Neuroscience* 2015;311:415–421. doi:10.1016/j.neuroscience.2015.10.037
21. **G Romano**, C Appocher, M Scorzeto, R Klima, FE Baralle, A Megighian, F Feiguin. Glial TDP-43 regulates axon wrapping, GluRIIA clustering and fly motility by autonomous and non-autonomous mechanisms. *Hum Mol Genet* 2015;24(21):6134–6145. doi:10.1093/hmg/ddv330
22. M Romano, E Buratti, **G Romano**, R Klima, L Del Bel Belluz, C Stuani, F Baralle, F Feiguin. Evolutionarily conserved heterogeneous nuclear ribonucleoprotein (hnRNP) A/B proteins functionally interact with human and *Drosophila* TAR DNA-binding protein 43 (TDP-43). *J Biol Chem* 2014;289(10):7121–7130. doi:10.1074/jbc.M114.548859
23. **G Romano**, R Klima, E Buratti, P Verstreken, FE Baralle, F Feiguin. Chronological requirements of TDP-43 function in synaptic organization and locomotive control. *Neurobiol Dis* 2014;71:95–109. doi:10.1016/j.nbd.2014.07.007
24. VK Godena, **G Romano**[†], M Romano, C Appocher, R Klima, E Buratti, FE Baralle, F Feiguin. TDP-43 regulates *Drosophila* neuromuscular junctions growth by modulating Futsch/MAP1B levels and synaptic microtubules organization. *PLoS One* 2011;6(3):e17808. doi:10.1371/journal.pone.0017808
25. F Feiguin, VK Godena, **G Romano**, A D'Ambrogio, R Klima, FE Baralle. Depletion of TDP-43 affects *Drosophila* motoneurons terminal synapsis and locomotive behavior. *FEBS Lett* 2009;583(10):1586–1592. doi:10.1016/j.febslet.2009.04.019