

CURRICULUM VITAE

Ferdinando Di Cunto

Born in Forchia (BN), Italy on 20-12-1969

EDUCATION

- 1988: Classic highschool degree, obtained at the Liceo Classico Pietro Giannone, Benevento (BN), with the score of 60/60
- 1994: Degree in Medicine e Surgery, Medical School of the University of Torino with the score of 110/110 and honor.
- 1994/1996: Resident, Department of Neurosciences, University of Torino.
- 2001: Ph.D. in "human biology, molecular and cellular basis ", Department of Genetics, Biology and Biochemistry, University of Torino.

PROFESSIONAL ACTIVITIES

- 1990: visiting student, Department of Pediatrics, Children's Hospital, Pittsburg, Pennsylvania, USA.
- 1991 and 1992: visiting student, Department of Pathology, Yale University, Connecticut, USA.
- 1993: visiting student, Cutaneous Biology Research Center, Massachusetts General Hospital and Harvard Medical School, Boston, Massachusetts, USA.
- 1996-1997: research fellow, Cutaneous Biology Research Center, Massachusetts General Hospital, Boston, Massachusetts, USA.
- 1999 Researcher, Department of Genetics, Biology and Biochemistry, University of Torino.
- 2005: Associate Professor of Molecular Biology, Department of Genetics, Biology and Biochemistry, University of Torino.
- Since 2011: Full Professor of Molecular Biology, University of Torino.
- Since Jan. 2017: Group Leader, Department of Neuroscience and Neuroscience Institute Cavalieri Ottolenghi, Orbassano, Torino.

BIBLIOMETRIC DATA

Ferdinando Di Cunto has authored 80 articles published on peer reviewed international journals. According to Scopus, these publications have received a total of 3976 citations, with an H-index of 32.

FUNDING AND AWARDS

2023 MUR – PRIN Program. Title: Dissection of common mechanisms in genetic primary microcephaly. Amount: 316.379 €.

2019 AIRC, investigator grant. Title: Development of Citron Kinase as a therapeutic target for brain tumors. Amount: 757000 €.

2017, Fondation Jerome Lèjeune (Paris), two years grant. Title: Identification and initial validation of new possible treatments for intellectual disability in Down syndrome through drug repositioning. Amount: 40000 €

2016, International Foundation for CDKL5 research, one year grant. Title: Exploiting computational biology for target identification and drug repositioning in CDKL5 disorder. Amount: 30000 €

2015, AIRC, investigator grant. Title: Validation of Citron kinase as a therapeutic target for medulloblastoma. Amount: 322000 €.

2013, Telethon Foundation, multicentric grant. Title: Relevance of the axonal SMN protein (a-SMN) for spinal muscular atrophy: novel cell models, transgenic mice and therapeutic approaches. Amount 130000 €.

2013, CNR, Epigen flagship project, three years Title: Disruption of circadian rhythms and epigenetic modifications in *D. melanogaster*. Amount: 83000 €.

2012, Telethon Foundation, regular grant. Title: Identification of therapeutic targets in primary microcephaly through the analysis of the CIT-K/ASPM pathway. 270000 €

2012, Fondation Jerome Lèjeune (Paris). Functional analysis of the DSCR gene TTC3 in neuronal differentiation and in a Down syndrome mouse model. Amount: 45000 €.

2011, ARISLA. Title: Molecular characterization of TDP-43 function in vivo and the mechanisms that lead to motoneuron disease in *Drosophila* models of ALS. Amount: 25000 €.

2011, Italian Ministry of Health. Title: Motor neuron death in Spinal Muscular Atrophy (SMA) : new animal models and innovative therapeutic strategies. Amount: 105000 €

2011, San Paolo Bank Foundation. Title: Role of the excitatory/inhibitory balance in long-term memory storage. Amount: 40000 €.

2009, San Paolo Bank Foundation, Neuroscience call. Title: Bioinformatic and experimental dissection and modeling of the molecular events underlying dendritic spine biogenesis and remodelling. 180000 €.

2009, Cavalieri Ottolenghi foundation. Title: Implementation of a two-photon microscopy setup for the dynamic analysis of cells and subcellular structures. Amount: EURO 100000 €.

2008, MIUR, PRIN 2008. Title: Computational and experimental identification of functional Citron kinase partners involved in cytokinesis. Amount: 57000 €.

2006, MIUR, PRIN 2006. Title: Identification of new cytokinesis genes by bioinformatic approaches and experimental validation in mammalian cells. Amount: 55700 €.

2009, Piedmont Region, Technological Platforms. Title: DRUIDI project. Amount 100000 €.

2007, Piedmont Region, Converging Technologies. Title: Biother project. Amount 100000 €.

2006, MIUR, PRIN 2006. Title: Identification of new cytokinesis genes by bioinformatic approaches and experimental validation in mammalian cells. Amount: 55700 €.

2005, Piedmont Region, CIPE 2005. Bioinformatic identification of new molecules involved in the pathogenesis of Alzheimer's disease and validation in neuronal cultures. e loro validazione in

culture neuronali. Amount 180000 €.

2005, Fondation Jerome Lèjeune (Paris). Title: Characterization of the DCR-encoded protein TTC3 and of its interaction with Citron proteins. Amount: 50000 €.

2003, MIUR, PRIN 2003. Title: In vitro and in vivo analysis of Rho-GTPase effector Citron Kinase in mammalian cytokinesis. Amount: 71500 €.

2002, Telethon Foundation, regular grant. Title: Molecular analysis of the citron kinase pathway in human microcephalies and in experimental models. Amount: 160000 €.

2002, Fondation Jerome Lejeune (Paris). Title: Generation and analysis of new genetically modified mouse models of abnormal cortical function by targeting of the CIT-K and MRCKa transcription units. Amount: 40000 €.

2000, Italian Society of Biophysics and Molecular Biology (SIBBM), Best paper of the year award. Amount : 1000 €.

1999, Telethon Foundation, startup grant. Title: Molecular analysis of Crik, a new rho/rac interacting ser/thr kinase, in experimental models and human diseases. Amount: 52000 €.

PEER REVIEWD PUBLICATIONS

1. Pallavicini G, Iegiani G, Parolisi R, Ferraro A, Garelo F, Bitonto V, Terreno E, Gai M, Di Cunto F. Lestaurtinib inhibits Citron kinase activity and medulloblastoma growth through induction of DNA damage, apoptosis and cytokinesis failure. *Front Oncol.* 2023 Jun 19;13:1202585. doi: 10.3389/fonc.2023.1202585. PMID: 37404750.
2. Iegiani G, Ferraro A, Pallavicini G, Di Cunto F. The impact of TP53 activation and apoptosis in primary hereditary microcephaly. *Front Neurosci.* 2023 Jun 28;17:1220010. doi: 10.3389/fnins.2023.1220010. PMID: 37457016.
3. Boda E, Lorenzati M, Parolisi R, Harding B, Pallavicini G, Bonfanti L, Moccia A, Bielas S, Di Cunto F, Buffo A. Molecular and functional heterogeneity in dorsal and ventral oligodendrocyte progenitor cells of the mouse forebrain in response to DNA damage. *Nat Commun.* 2022 Apr 28;13(1):2331. doi: 10.1038/s41467-022-30010-6. PMID: 35484145.
4. Iegiani G, Di Cunto F, Pallavicini G. Inhibiting microcephaly genes as alternative to microtubule targeting agents to treat brain tumors. *Cell Death Dis.* 2021 Oct 18;12(11):956. doi: 10.1038/s41419-021-04259-6. PMID: 34663805
5. Pallavicini G, Gai M, Iegiani G, Berto GE, Adrait A, Couté Y, Di Cunto F. Goldberg-Shprintzen syndrome protein KIF1BP is a CITK interactor implicated in cytokinesis. *J Cell Sci.* 2021 Jun 1;134(11):jcs250902. doi: 10.1242/jcs.250902. Epub 2021 Jun 8. PMID: 34100550.
6. Ghibaudi M, Boido M, Green D, Signorino E, Berto GE, Pourshayesteh S, Singh A, Di Cunto F, Dalmay T, Vercelli A. miR-7b-3p Exerts a Dual Role After Spinal Cord Injury, by Supporting Plasticity and Neuroprotection at Cortical Level. *Front Mol Biosci.* 2021 Mar 31;8:618869. doi: 10.3389/fmolb.2021.618869. PMID: 33869277; PMCID: PMC8044879.

7. Iegiani G, Gai M, Di Cunto F, Pallavicini G. CENPE Inhibition Leads to Mitotic Catastrophe and DNA Damage in Medulloblastoma Cells. *Cancers (Basel)*. 2021 Mar 1;13(5):1028. doi: 10.3390/cancers13051028. PMID: 33804489; PMCID: PMC7957796.
8. Frasca A, Spiombi E, Palmieri M, Albizzati E, Valente MM, Bergo A, Leva B, Kilstrup-Nielsen C, Bianchi F, Di Carlo V, Di Cunto F, Landsberger N. MECP2 mutations affect ciliogenesis: a novel perspective for Rett syndrome and related disorders. *EMBO Mol Med*. 2020 Jun 8;12(6):e10270. doi: 10.15252/emmm.201910270. Epub 2020 May 8. PMID: 32383329; PMCID: PMC7278541.
9. Pallavicini G, Iegiani G, Berto GE, Calamia E, Trevisiol E, Veltri A, Allis S, Di Cunto F. CITK Loss Inhibits Growth of Group 3 and Group 4 Medulloblastoma Cells and Sensitizes Them to DNA-Damaging Agents. *Cancers (Basel)*. 2020 Feb 26;12(3):542. doi: 10.3390/cancers12030542. PMID: 32111106; PMCID: PMC7139701.
10. Chiotto AMA, Migliorero M, Pallavicini G, Bianchi FT, Gai M, Di Cunto F, Berto GE. Neuronal Cell-Intrinsic Defects in Mouse Models of Down Syndrome. *Front Neurosci*. 2019 Oct 10;13:1081. doi: 10.3389/fnins.2019.01081. PMID: 31649502; PMCID: PMC6795679.
11. Grasso S, Cangelosi D, Chapelle J, Alzona M, Centonze G, Lamolinara A, Salemme V, Angelini C, Morellato A, Saglietto A, Bianchi FT, Cabodi S, Salaroglio IC, Fusella F, Ognibene M, Iezzi M, Pezzolo A, Poli V, Di Cunto F, Eva A, Riganti C, Varesio L, Turco E, Defilippi P. The SRCIN1/p140Cap adaptor protein negatively regulates the aggressiveness of neuroblastoma. *Cell Death Differ*. 2020 Feb;27(2):790-807. doi: 10.1038/s41418-019-0386-6. Epub 2019 Jul 8.
12. Grassi E, Santoro R, Umbach A, Grosso A, Oliviero S, Neri F, Conti L, Ala U, Provero P, DiCunto F, Merlo GR. Choice of Alternative Polyadenylation Sites, Mediated by the RNA-Binding Protein Elavl3, Plays a Role in Differentiation of Inhibitory Neuronal Progenitors. *Front Cell Neurosci*. 2019 Jan 10;12:518. doi: 10.3389/fncel.2018.00518. PMID: 30687010; PMCID: PMC6338052.
13. Pallavicini G, Berto GE, Di Cunto F. Precision Revisited: Targeting Microcephaly Kinases in Brain Tumors. *Int J Mol Sci*. 2019 Apr 28;20(9). pii: E2098. doi: 10.3390/ijms20092098. Review.
14. Tran THY, Yang DW, Kim M, Lee DH, Gai M, Di Cunto F, Choi KW, Lim DS. Citron kinase interacts with LATS2 and inhibits its activity by occluding its hydrophobic phosphorylation motif. *J Mol Cell Biol*. 2019 Mar 13. pii: mjz013. doi: 10.1093/jmcb/mjz013.
15. Burla R, La Torre M, Zanetti G, Bastianelli A, Merigliano C, Del Giudice S, Vercelli A, Di Cunto F, Boido M, Verni F, Saggio I. p53-Sensitive Epileptic Behavior and Inflammation in Ft1 Hypomorphic Mice. *Front Genet*. 2018 Nov 27;9:581. doi: 10.3389/fgene.2018.00581.
16. Canosa A, De Marco G, Lomartire A, Rinaudo MT, Di Cunto F, Turco E, Barberis M, Brunetti M, Casale F, Moglia C, Calvo A, Marklund SL, Andersen PM, Mora G, Chiò A. A novel p.Ser108LeufsTer15 SOD1 mutation leading to the formation of a premature stop codon in an apparently sporadic ALS patient: insights into the underlying pathomechanisms. *Neurobiol Aging*. 2018 Dec;72:189.e11-189.e17.
17. Bianchi FT, Berto GE, Di Cunto F. Impact of DNA repair and stability defects on cortical development. *Cell Mol Life Sci*. 2018 Aug 16. doi: 10.1007/s00018-018-2900-2.
18. Pallavicini G, Sgrò F, Garelli F, Falcone M, Bitonto V, Berto GE, Bianchi FT, Gai M, Chiotto AMA, Filippi M, Cutrin JC, Ala U, Terreno E, Turco E, Di Cunto F. Inactivation of Citron

Kinase Inhibits Medulloblastoma Progression by Inducing Apoptosis and Cell Senescence. *Cancer Res.* 2018 Aug 15;78(16):4599-4612. doi:10.1158/0008-5472.CAN-17-4060.

19. Dema A, Macaluso F, Sgrò F, Berto GE, Bianchi FT, Chiotto AA, Pallavicini G, Di Cunto F, Gai M. Citron kinase-dependent F-actin maintenance at midbody secondary ingression sites mediates abscission. *J Cell Sci.* 2018 Apr 26;131(8). pii: jcs209080. doi: 10.1242/jcs.209080.
20. Bandini C, Pupuleku A, Spaccarotella E, Pellegrino E, Wang R, Vitale N, Duval C, Cantarella D, Rinaldi A, Provero P, Di Cunto F, Medico E, Bertoni F, Inghirami G, Piva R. IRF4 Mediates the Oncogenic Effects of STAT3 in Anaplastic Large Cell Lymphomas. *Cancers (Basel).* 2018 Jan 18;10(1). pii: E21. doi:10.3390/cancers10010021.
21. Zamboni V, Armentano M, Berto G, Ciraolo E, Ghigo A, Garzotto D, Umbach A, Di Cunto F, Parmigiani E, Boido M, Vercelli A, El-Assawy N, Mauro A, Priano L, Ponzoni L, Murru L, Passafaro M, Hirsch E, Merlo GR. Hyperactivity of Rac1-GTPase pathway impairs neuritogenesis of cortical neurons by altering actin dynamics. *Sci Rep.* 2018 May 8;8(1):7254. doi: 10.1038/s41598-018-25354-3.
22. Bianchi FT, Gai M, Berto GE, Di Cunto F. Of rings and spines: The multiple facets of Citron proteins in neural development. *Small GTPases.* 2017 Nov 29;1-9. doi: 10.1080/21541248.2017.1374325. [Epub ahead of print]
23. Bianchi FT, Tocco C, Pallavicini G, Liu Y, Verni F, Merigliano C, Bonaccorsi S, El-Assawy N, Priano L, Gai M, Berto GE, Chiotto AM, Sgro F, Caramello A, Tasca L, Ala U, Neri F, Oliviero S, Mauro A, Geley S, Gatti M, Di Cunto F. 2017. Citron Kinase Deficiency Leads to Chromosomal Instability and TP53-Sensitive Microcephaly. *Cell Rep* 18:1674-1686.
24. Bosia C, Sgro F, Conti L, Baldassi C, Brusa D, Cavallo F, Di Cunto F, Turco E, Pagnani A, Zecchina R. 2017. RNAs competing for microRNAs mutually influence their fluctuations in a highly non-linear microRNA-dependent manner in single cells. *Genome Biol* 18:37.
25. Gai M, Di Cunto F. 2017. Citron kinase in spindle orientation and primary microcephaly. *Cell Cycle* 16:245-246.
26. Gai M, Bianchi FT, Vagnoni C, Verni F, Bonaccorsi S, Pasquero S, Berto GE, Sgro F, Chiotto AM, Annaratone L, Sapino A, Bergo A, Landsberger N, Bond J, Huttner WB, Di Cunto F. 2016. ASPM and CITK regulate spindle orientation by affecting the dynamics of astral microtubules. *EMBO Rep* 17:1396-1409.
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28. Harding BN, Moccia A, Drunat S, Soukarieh O, Tubeuf H, Chitty LS, Verloes A, Gressens P, El Ghouzzi V, Joriot S, Di Cunto F, Martins A, Passemard S, Bielas SL. 2016. Mutations in Citron Kinase Cause Recessive Microlissencephaly with Multinucleated Neurons. *Am J Hum Genet* 99:511-520.
29. Sgrò F, Bianchi FT, Falcone M, Pallavicini G, Gai M, Chiotto AM, Berto GE, Turco E, Chang YJ, Huttner WB, Di Cunto F. Tissue-specific control of midbody microtubule stability by Citron kinase through modulation of TUBB3 phosphorylation. *Cell Death Differ.* 2015 Nov 20.
30. Bergo A, Strollo M, Gai M, Barbiero I, Stefanelli G, Sertic S, Cobolli Gigli C, Di Cunto F, Kilstrup-Nielsen C, Landsberger N. (2015). Methyl-CpG binding protein 2 (MeCP2) localizes

at the centrosome and is required for proper mitotic spindle organization. *J Biol Chem* 290:3223-3237.

31. Berto, G. E., Iobbi, C., Camera, P., Scarpa, E., Iampietro, C., Bianchi, F., Gai, M., Sgrò, F., Cristofani, F., Gärtner, A., Dotti, C. G., and Di Cunto, F. (2014). The DCR protein TTC3 affects differentiation and Golgi compactness in neurons through specific actin-regulating pathways. *PLoS One* 9:e93721.
32. Repetto, D., Camera, P., Melani, R., Morello, N., Russo, I., Calcagno, E., Tomasoni, R., Bianchi, F., Berto, G., Giustetto, M., Berardi, N., Pizzorusso, T., Matteoli, M., Di Stefano, P., Missler, M., Turco, E., Di Cunto, F., and Defilippi, P. (2014). p140Cap regulates memory and synaptic plasticity through Src- and CitN-mediated actin reorganization. *Journal of Neuroscience*, 34(4):1542-53.
33. Di Gregorio, E., Bianchi, F. T., Schiavi, A., Chiotto, A. M., Rolando, M., Verdun di Cantogno, L., Grosso, E., Cavalieri, S., Calcia, A., Lacerenza, D., Zuffardi, O., Retta, S. F., Stevanin, G., Marelli, C., Durr, A., Forlani, S., Chelly, J., Montarolo, F., Tempia, F., Beggs, H. E., Reed, R., Squadrone, S., Abete, M. C., Brussino, A., Ventura, N., Di Cunto, F., and Brusco, A. (2013). A de novo X;8 translocation creates a PTK2-THOC2 gene fusion with THOC2 expression knockdown in a patient with psychomotor retardation and congenital cerebellar hypoplasia. *J Med Genet* 50, 543-551.
34. Fagoonee, S., Bearzi, C., Di Cunto, F., Clohessy, J. G., Rizzi, R., Reschke, M., Tolosano, E., Provero, P., Pandolfi, P. P., Silengo, L., and Altruda, F. (2013). The RNA Binding Protein ESRP1 Fine-Tunes the Expression of Pluripotency-Related Factors in Mouse Embryonic Stem Cells. *PLoS ONE* 8, e72300.
35. Molineris, I., Ala, U., Provero, P., and Di Cunto, F. (2013). Drug repositioning for orphan genetic diseases through Conserved Anticoexpressed Gene Clusters (CAGCs). *BMC Bioinformatics* 14, 288.
36. Pavan, S., Musiani, D., Torchiario, E., Migliardi, G., Gai, M., Di Cunto, F., Erriquez, J., Olivero, M., and Di Renzo, M. F. (2013). HSP27 is required for invasion and metastasis triggered by hepatocyte growth factor. *Int J Cancer*.
37. Piro, R. M., Molineris, I., Di Cunto, F., Eils, R., and König, R. (2013). Disease-gene discovery by integration of 3D gene expression and transcription factor binding affinities. *Bioinformatics* 29, 468-475.
38. Spaccarotella, E., Pellegrino, E., Ferracin, M., Ferreri, C., Cuccuru, G., Liu, C., Iqbal, J., Cantarella, D., Taulli, R., Provero, P., Di Cunto, F., Medico, E., Negrini, M., Chan, W. C., Inghirami, G., and Piva, R. (2013). STAT3-mediated activation of microRNA cluster 17~92 promotes proliferation and survival of ALK positive anaplastic large cell lymphoma. *Haematologica*.
39. Ugolotti, R., Mesejo, P., Zongaro, S., Bardoni, B., Berto, G., Bianchi, F., Molineris, I., Giacobini, M., Cagnoni, S., and Di Cunto, F. (2013). Visual Search of Neuropil-Enriched RNAs from Brain In Situ Hybridization Data through the Image Analysis Pipeline Hippo-ATESC. *PLoS ONE* 8, e74481.
40. Piro, R. M., and Di Cunto, F. (2012a). Computational approaches to disease-gene prediction: rationale, classification and successes. *Febs J* 279, 678-696.
41. Piro, R. M., Molineris, I., Ala, U., and Di Cunto, F. (2012b). Evaluation of candidate genes from orphan FEB and GEFS+ loci by analysis of human brain gene expression atlases. *PLoS ONE* 6, e23149.

42. Bosio, Y., Berto, G., Camera, P., Bianchi, F., Ambrogio, C., Claus, P., and Di Cunto, F. (2012). PPP4R2 regulates neuronal cell differentiation and survival, functionally cooperating with SMN. *Eur J Cell Biol* 91, 662-674.
43. Lembo, A., Di Cunto, F., and Provero, P. (2012). Shortening of 3'UTRs correlates with poor prognosis in breast and lung cancer. *PLoS ONE* 7, e31129.
44. Tay Y, Kats L, Salmena L, Weiss D, Tan SM, Ala U, Karreth F, Poliseno L, Provero P, Di Cunto F, Lieberman J, Rigoutsos I, Pandolfi PP. 2011. Coding-Independent Regulation of the Tumor Suppressor PTEN by Competing Endogenous mRNAs. *Cell* 147:344-357.
45. Bianchi FT, Camera P, Ala U, Imperiale D, Migheli A, Boda E, Tempia F, Berto G, Bosio Y, Oddo S, LaFerla FM, Taraglio S, Dotti CG, Di Cunto F. 2011. The collagen chaperone HSP47 is a new interactor of APP that affects the levels of extracellular beta-amyloid peptides. *PLoS One* 6:e22370.
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50. Molineris, I., Grassi, E., Ala, U., Di Cunto, F., and Provero, P. (2011). Evolution of promoter affinity for transcription factors in the human lineage. *Mol Biol Evol*.
51. Amoresano, A., Di Costanzo, A., Leo, G., Di Cunto, F., La Mantia, G., Guerrini, L., and Calabro, V. (2010). Identification of DeltaNp63alpha protein interactions by mass spectrometry. *J Proteome Res* 9, 2042-2048.
52. Forlani, G., Giarda, E., Ala, U., Di Cunto, F., Salani, M., Tupler, R., Kilstrup-Nielsen, C., and Landsberger, N. (2010). The MeCP2/YY1 interaction regulates ANT1 expression at 4q35: novel hints for Rett syndrome pathogenesis. *Hum Mol Genet* 19, 3114-3123.
53. Molineris, I., Sales, G., Bianchi, F., Di Cunto, F., and Caselle, M. (2010). A new approach for the identification of processed pseudogenes. *J Comput Biol* 17, 755-765.
54. Piro, R. M., Molineris, I., Ala, U., Provero, P., and Di Cunto, F. (2010). Candidate gene prioritization based on spatially mapped gene expression: an application to XLMR. *Bioinformatics* 26, i618-624.
55. Roetto, A., Di Cunto, F., Pellegrino, R. M., Hirsch, E., Azzolino, O., Bondi, A., Defilippi, I., Carturan, S., Miniscalco, B., Riondato, F., Cilloni, D., Silengo, L., Altruda, F., Camaschella, C., and Saglio, G. (2010). Comparison of 3 Tfr2-deficient murine models suggests distinct functions for Tfr2-alpha and Tfr2-beta isoforms in different tissues. *Blood* 115, 3382-3389.

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58. Ala, U., Piro, R. M., Grassi, E., Damasco, C., Silengo, L., Oti, M., Provero, P., and Di Cunto, F. (2008). Prediction of human disease genes by human-mouse conserved coexpression analysis. *PLoS Comput Biol* 4, e1000043.
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