

# [Editorial: pvt1 in cancer](https://assignbuster.com/editorial-pvt1-in-cancer/)

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Editorial on the Research Topic
[PVT1 in Cancer](https://www.frontiersin.org/research-topics/8624/pvt1-in-cancer)

The plasmacytoma variant translocation 1 (PVT1) gene is located at human chromosome 8q24, downstream of the well-known c-MYC oncogene ( [1](#B1) ). As chromosome 8q24 is a chromosomal region of genomic instability, it is not surprising that PVT1 was discovered in the context of cancer. PVT1 is now known to be dysregulated in non-cancerous diseases such as kidney disease (including diabetic nephropathy) ( [2](#B2) ), cardiac hypertrophy ( [3](#B3) ), vitiligo ( [4](#B4) ), osteoarthritis ( [5](#B5) ), and asthma ( [6](#B6) ). However, PVT1 is much better established to be dysregulated in a wide variety of cancers including plasmacytomas ( [7](#B7) , [8](#B8) ), lymphomas ( [9](#B9) , [10](#B10) ), leukemias ( [11](#B11) , [12](#B12) ), sarcomas (including osteosarcoma) ( [13](#B13) , [14](#B14) ), ovarian cancer ( [15](#B15) , [16](#B16) ), breast cancer ( [16](#B16) , [17](#B17) ), lung cancer ( [18](#B18) , [19](#B19) ), astrocytomas ( [20](#B20) ), pancreatic cancer ( [21](#B21) , [22](#B22) ), prostate cancer ( [23](#B23) – [26](#B26) ), cholangiocarcinoma ( [27](#B27) ), gliomas ( [28](#B28) ), medulloblastoma ( [29](#B29) ), mesothelioma ( [30](#B30) ), colorectal cancer ( [31](#B31) ), gastric cancer ( [32](#B32) ), hepatocellular carcinoma ( [33](#B33) , [34](#B34) ), thyroid cancer ( [35](#B35) ), bladder cancer ( [36](#B36) ), renal cell carcinoma ( [37](#B37) , [38](#B38) ), cervical cancer ( [39](#B39) ), esophageal cancer ( [40](#B40) ), melanoma ( [41](#B41) ), endometrial cancer ( [42](#B42) , [43](#B43) ), non-small cell lung cancer ( [44](#B44) , [45](#B45) ), and cutaneous squamous cell carcinoma ( [46](#B46) , [47](#B47) ).

PVT1 has at least 12 annotated exons: exon 1A, exon 1B, exon 1C, exon 2, exon 3A, exon 3B, exon 4A, exon 4B, exon 5, exon 6, exon 7, exon 8, and exon 9 ( [1](#B1) ). And it encodes six annotated microRNAs (miRNAs): miR-1204, miR-1205, miR-1206, miR-1207-3p, miR-1207-5p, and miR-1208 ( [48](#B48) ). PVT1 is expressed in the various organs throughout the human body. There is progressively increasing evidence that distinct PVT1 exons, and PVT1-encoded miRNAs have significant biological functions, as discussed in the well-written articles included in our Research Topic entitled “ PVT1 in Cancer.” In addition, there is evidence of alternative splicing at the PVT1 gene, resulting in at least 25 annotated PVT1 transcript variants ( [Martinez-Barriocanal et al.](https://doi.org/10.3389/fonc.2020.00038) ). As noted in several of the papers published in the Research Topic “ PVT1 in Cancer,” PVT1 induces cancer development and progression via a variety of biological mechanisms including but not limited to miRNA regulation ( [Wang et al.](https://doi.org/10.3389/fonc.2019.00609) ), and as a competing endogenous RNA (ceRNA) ( [Ogunwobi and Kumar](https://doi.org/10.3389/fonc.2019.00834) ).

The articles included in the Research Topic “ PVT1 in Cancer” are particularly interesting because they highlight the clinical relevance and potential clinical applications of PVT1 in cancer. For example, the article by [Boloix et al.](https://doi.org/10.3389/fonc.2019.01173) discusses the potential prognostic applications and the potential to target PVT1 for therapeutic applications in pediatric cancers. All of the other articles discuss potential clinical applications in a variety of adult cancers. Notably, [Ogunwobi and Kumar](https://doi.org/10.3389/fonc.2019.00834) identify PVT1 as a mediator of cancer chemoresistance. Thus, targeting PVT1 may have a future role in the treatment of many highly lethal cancers such as pancreatic cancer, and neuroendocrine prostate cancer where chemoresistance is common.

## Author Contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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## Conflict of Interest

OO is a co-founder of NucleoBio, Inc., a City University of New York start-up biotechnology company.

The remaining author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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