FBXW7

Overview

FBXW7 mutations are found in a range of lymphoid malignancies, including B-cell lymphomas. These mutations often include missense mutations, deletions, frameshift mutations and splice-site mutations. Overall, these mutations are relatively rare in DLBCL and occur more frequently in other solid tumors as well as T-cell acute lymphocytic leukemia.[1] The most commonly observed mutations in those cancers are the hot spots R465 and R479.[1] In leukemias, FBXW7 mutations enhance the activity of leukemia-initiating cells by stabilizing oncogenic MYC.[2] Whether they have this role in DLBCL remains to be determined.

History

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%%{init: { 'logLevel': 'debug', 'theme': 'dark' } }%%
timeline
    title Publication timing
      2013-01-01 : Zhang : DLBCL
```

Relevance tier by entity

Entity	Tier	Description
DLBCL	1	high-confidence DLBCL gene

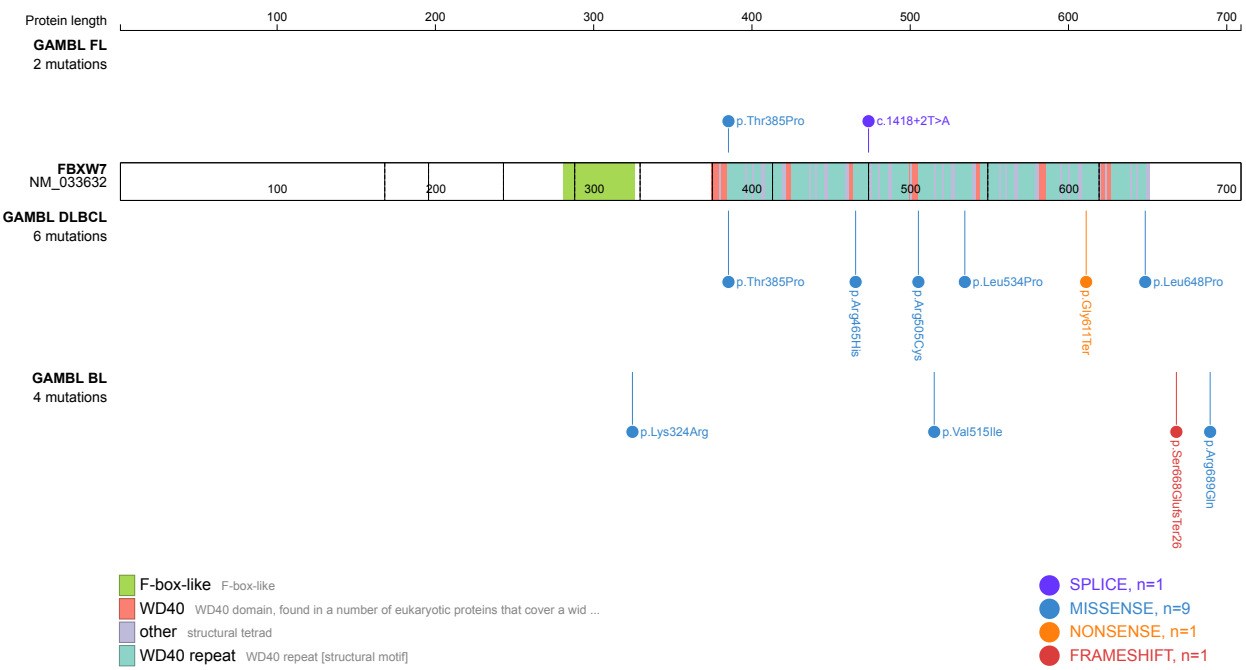
Mutation incidence in large patient cohorts (GAMBL reanalysis)

Entity	source	frequency (%)
DLBCL	GAMBL genomes	2.10
DLBCL	Schmitz cohort	2.98
DLBCL	Reddy cohort	1.30
DLBCL	Chapuy cohort	1.71

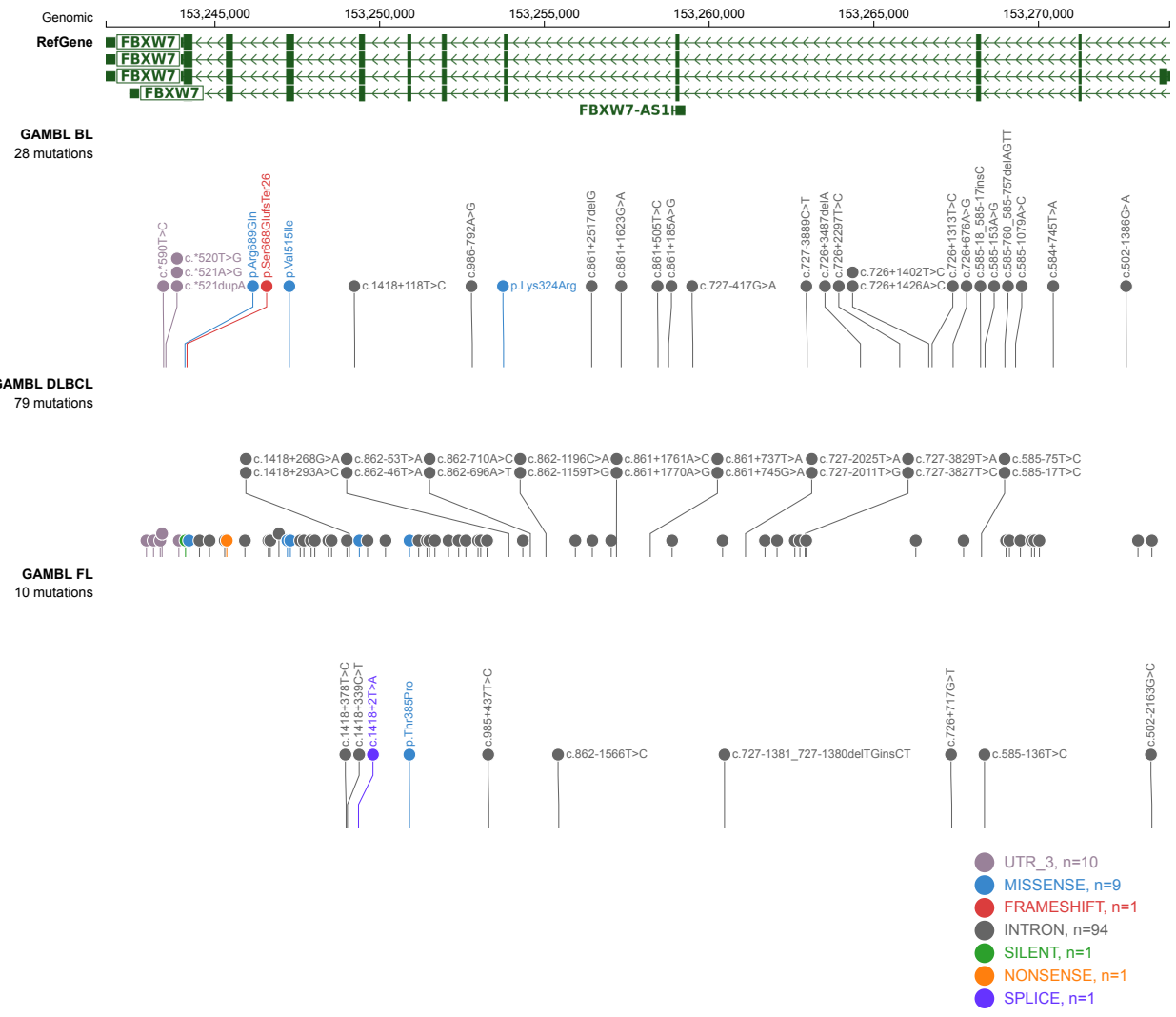
Mutation pattern and selective pressure estimates

Entity	aSHM	Significant selection	dN/dS (missense)	dN/dS (nonsense)
BL	No	No	3.846	0.000
DLBCL	No	No	2.734	10.734
FL	No	No	2.987	22.593

View coding variants in ProteinPaint hg19 or hg38



View all variants in GenomePaint hg19 or hg38



References

1. *Akhoondi, S., Sun, D., Lehr, N., Apostolidou, S., Klotz, K., Maljukova, A., Cepeda, D., Fiegl, H., Dafou, D., Marth, C., Mueller-Holzner, E., Corcoran, M., Dagnell, M., Nejad, S., Nayer, B., Zali, M., Hansson, J., Egyhazi, S., Petersson, F., Sangfelt, P., Nordgren, H., Grandér, D., Reed, S., Widschwendter, M., Sangfelt, O., & Spruck, C. (2007). FBXW7/hCDC4 is a general tumor suppressor in human cancer.. Cancer research, 67 19, 9006-12 . https://doi.org/10.1158/0008-5472.CAN-07-1320.*
2. *King, B., Trimarchi, T., Reavie, L., Xu, L., Mullenders, J., Ntziachristos, P., Aranda-Orgilles, B., Pérez-García, A., Shi, J., Vakoc, C., Sandy, P., Shen, S., Ferrando, A., & Aifantis, I. (2013). The Ubiquitin Ligase FBXW7 Modulates Leukemia-Initiating Cell Activity by Regulating MYC Stability. Cell, 153, 1552-1566. https://doi.org/10.1016/j.cell.2013.05.041.*

FBXW7 Expression