



Paragon x Watkins Landrace JIC 2014 QTL Plots

The bread wheat landrace NAM (nested association mapping) panel is a panel of bi-parental segregating F4 single-seed populations from crosses of spring wheat accession 'Paragon' with diverse wheat germplasm, particularly from the core set of the AE Watkins landrace collection. Population development and KASP genotyping was conducted within the WISP¹ project. Wheat landraces and varieties were collected from markets from 32 countries across the world. 119 of these accessions have been selected as a diverse core set, which is available from Seed-Stor². A changing set of several NAM populations is grown every year in field trials at JIC. Phenotype data is available from Designing Future Wheat (DFW) WP3 Landraces³. QTL analyses are conducted on resulting phenotype data using R/qtl software⁴.

QTL plots on 2014 trials for the following populations are attached:

population name	traits
ParW126	GLCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW127	AWNS, GLCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW139	GLCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW160	Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW216	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW218	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW219	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW223	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW231	Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW239	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW254	AWNS, STCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW291	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW299	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW349	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW387	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW396	AWNS, STCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW397	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW420	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW475	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW566	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG

¹ www.wheatisp.org ² <https://seedstor.ac.uk> ³ <http://wisplandrangepillar.jic.ac.uk/> ⁴ www.rqtl.org

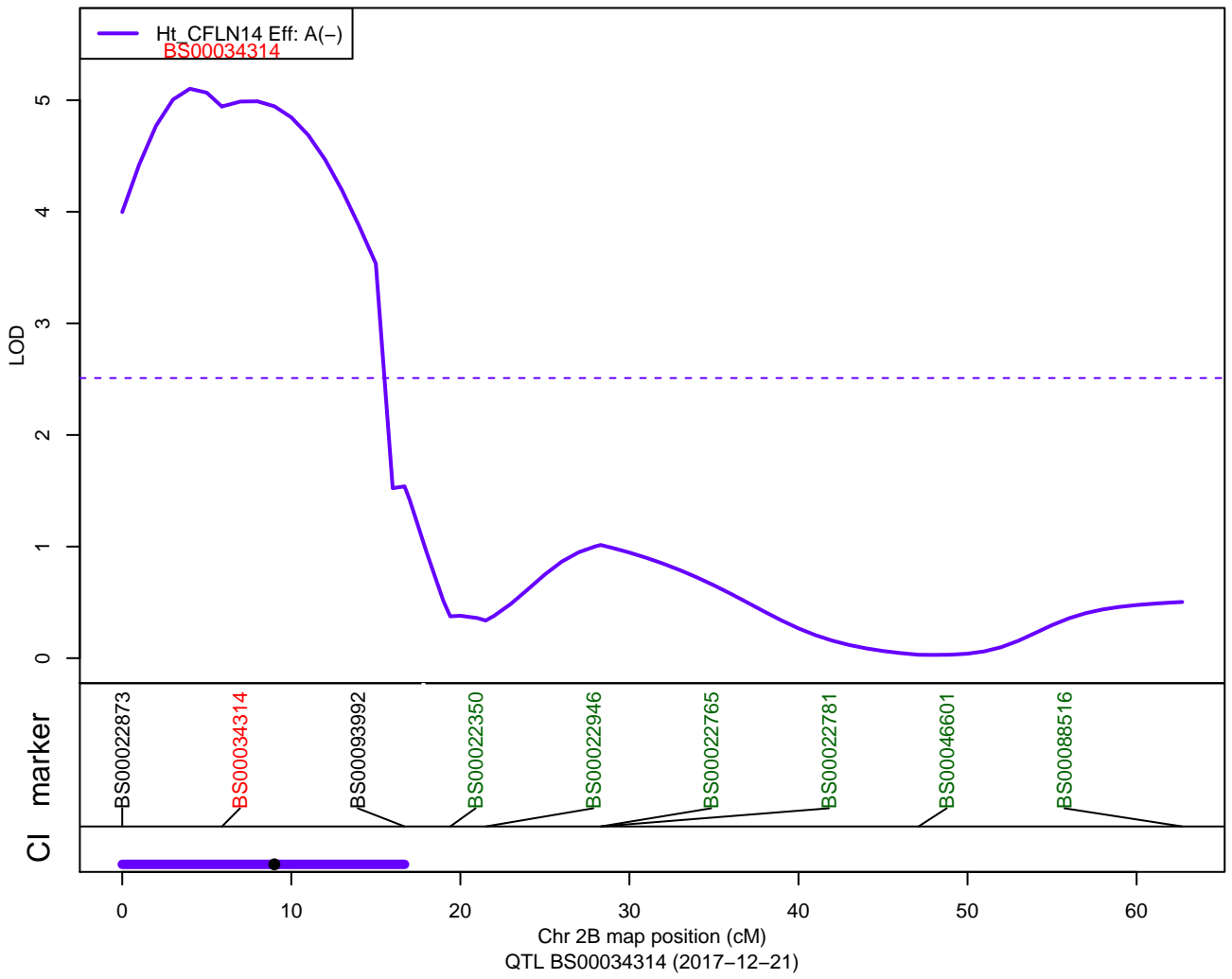
ParW629	AWNS, GLCOL, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW731	AWNS, Ht, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW777	AWNS, GLCOL, Ht, WXN, DTEM, TGRWT, GRSA, GRWD, GRLG
ParW811	Ht, DTEM, TGRWT, GRSA, GRWD, GRLG

Plot legends: The title names trait, chromosome and population. QTL LOD scores are plotted against the chromosome. Marker names are given at the bottom of the plot. Peak markers are given over the QTL peak. Significance LOD thresholds are indicated as horizontal dotted lines. Abbreviations: AWNS: presence of awns, DTEM: days to ear emergence after May 1st, GLCOL: glume colour, GRLG: grain length [mm], GRSA: grain cross section area [mm²], GRWD: grain width [mm], Ht: plant height [cm], STCOL: stem colour, TGRWT: thousand grain weight [g], WXN: leaf waxiness.

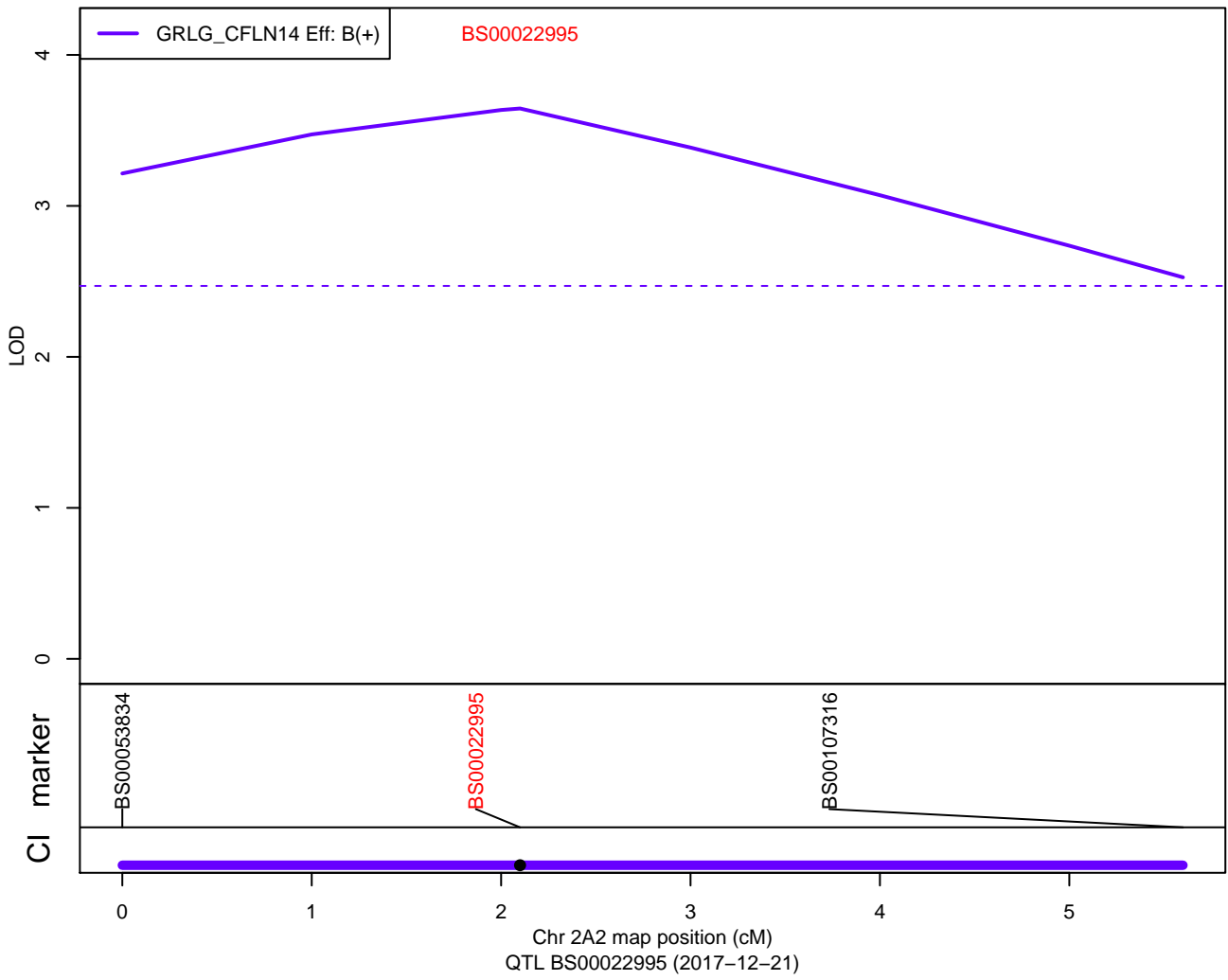
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22/01/2018 Luzie Wingen (luzie.wingen@jic.ac.uk)

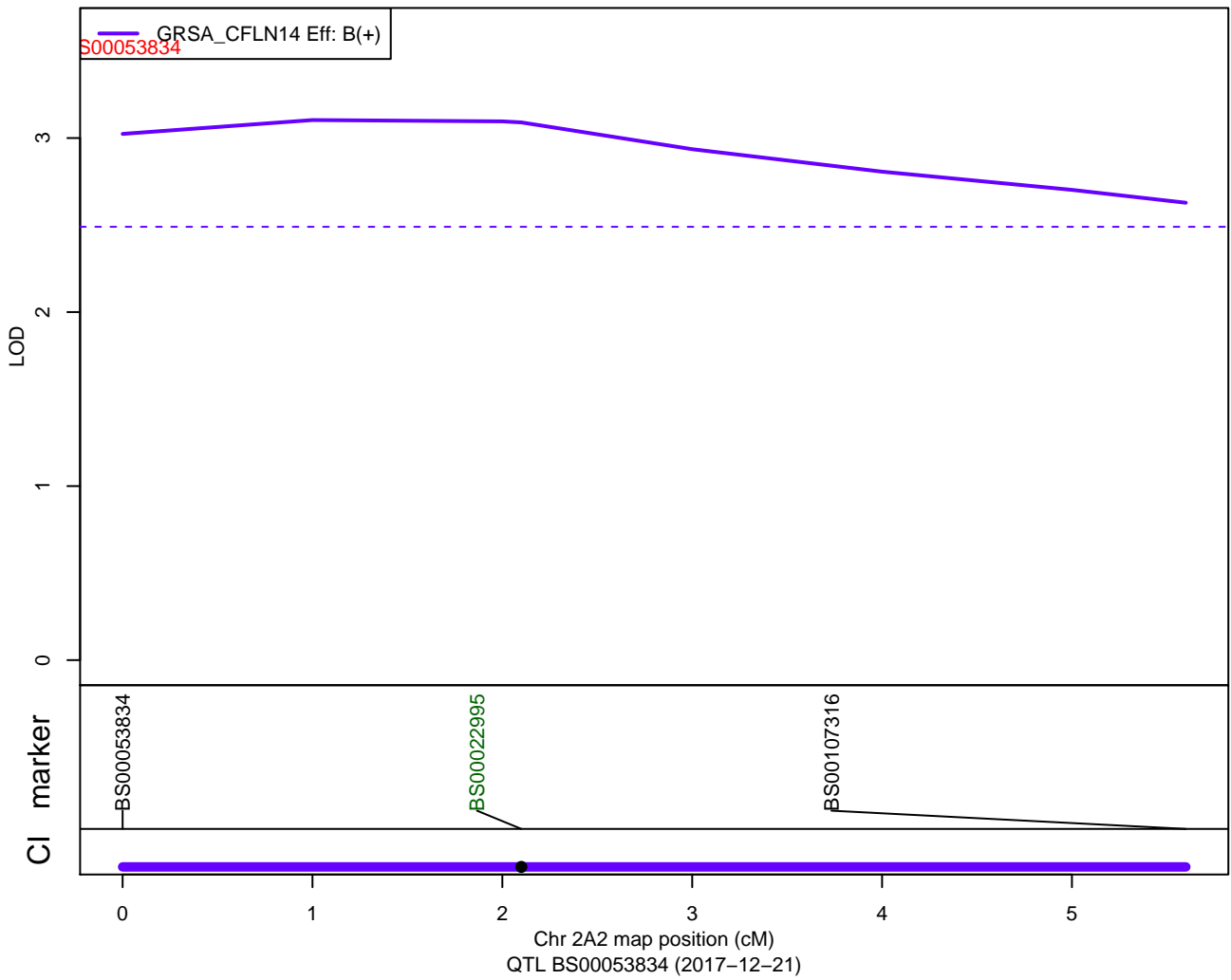
QTLs: ParW126 - Ht - 2B



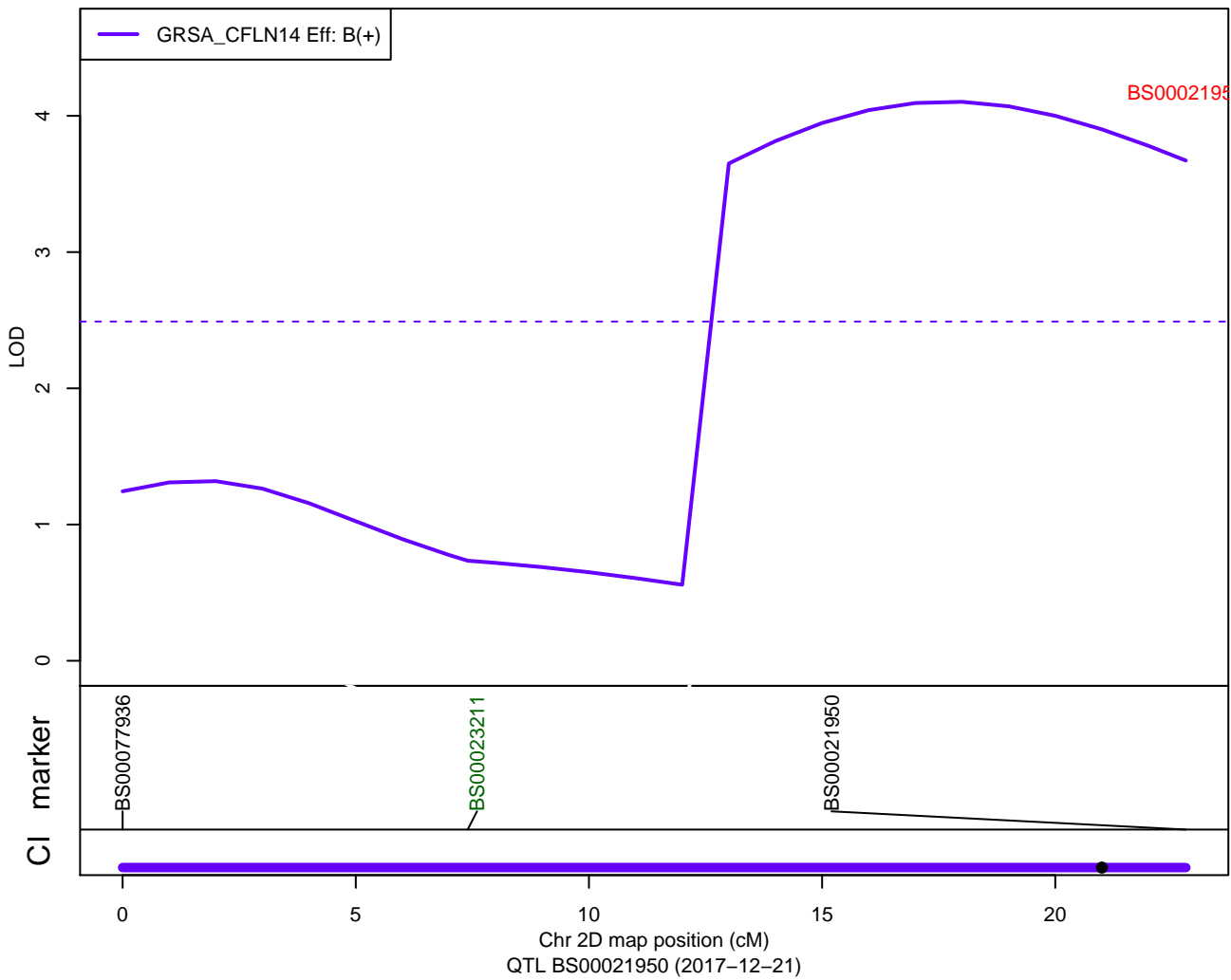
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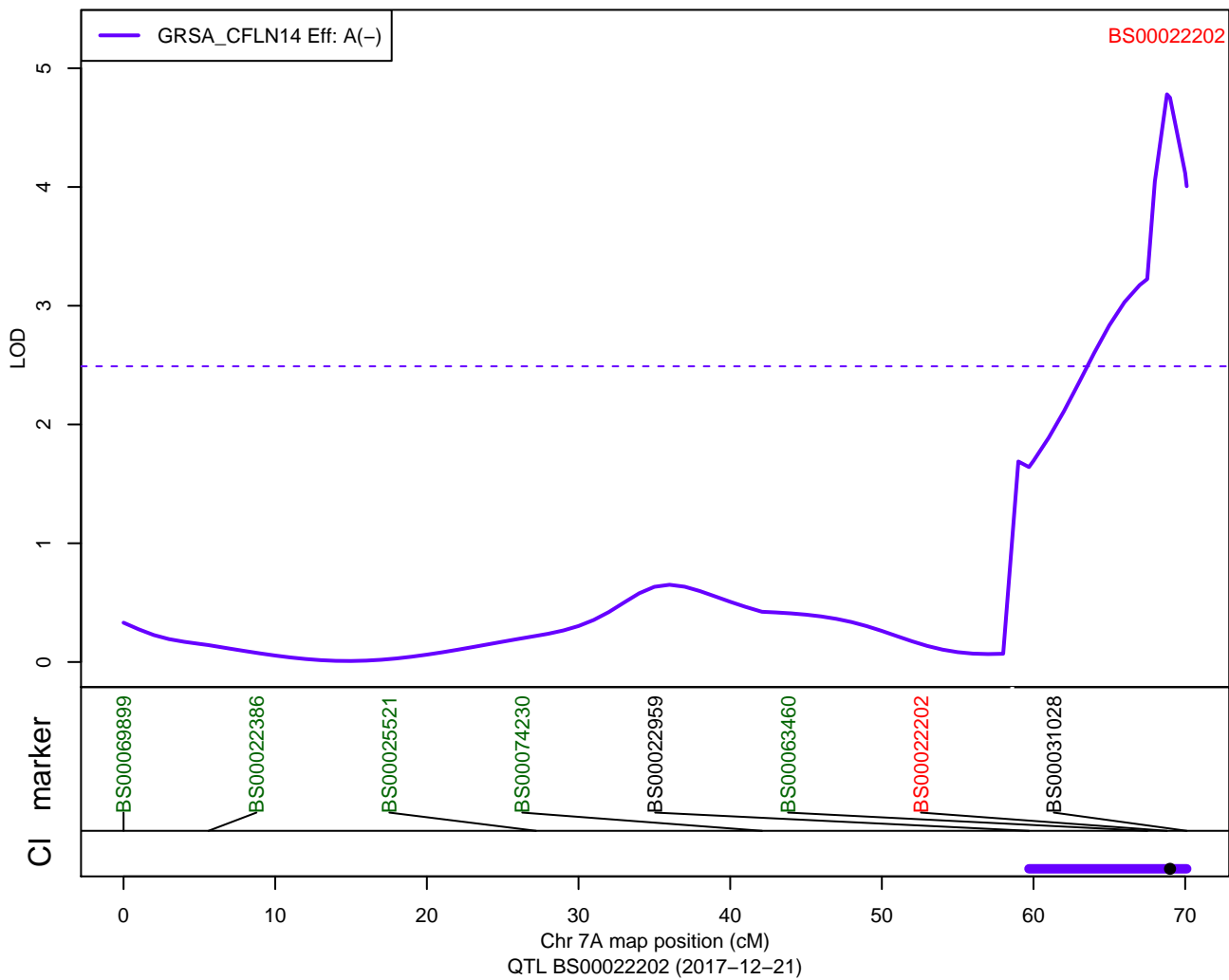
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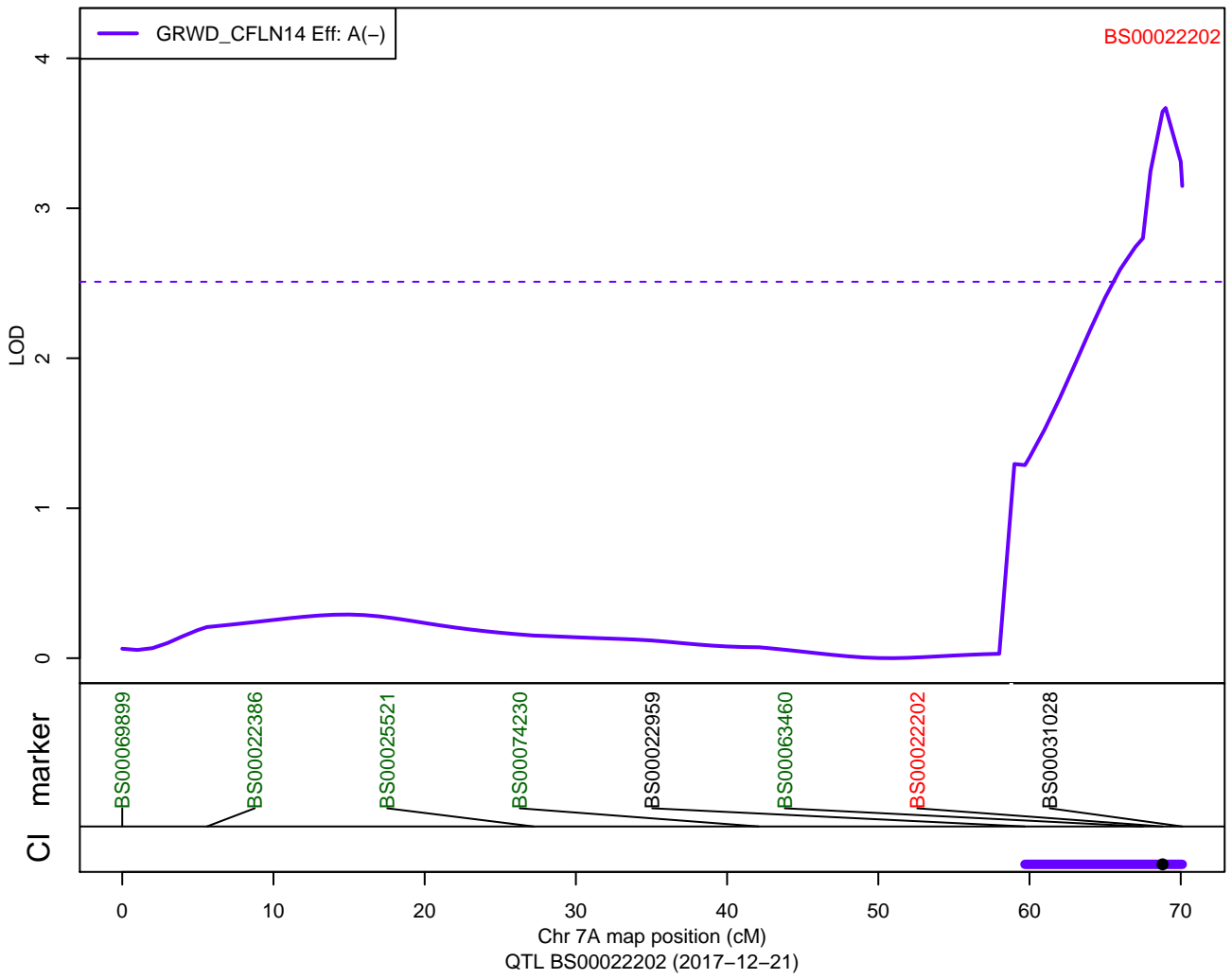
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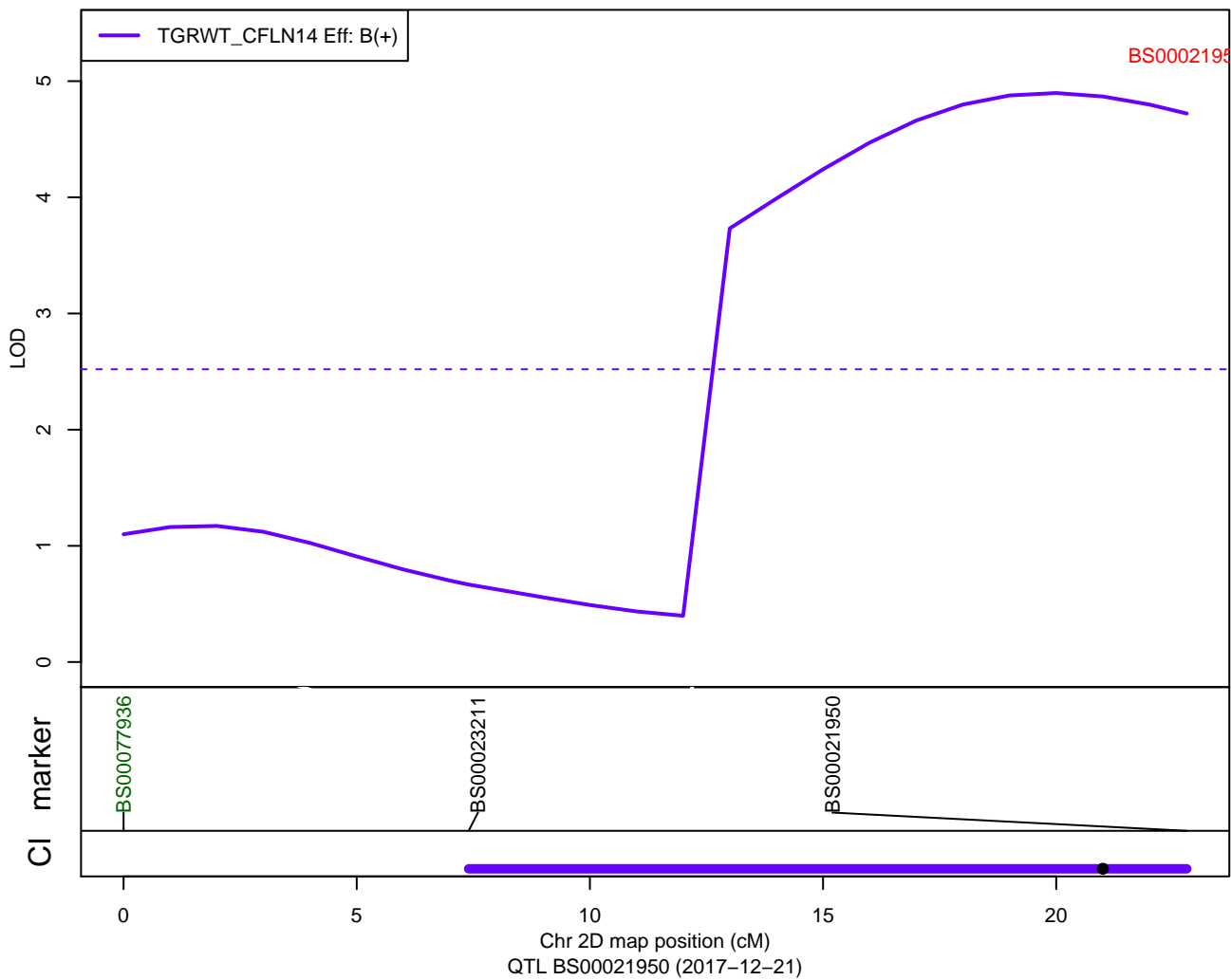
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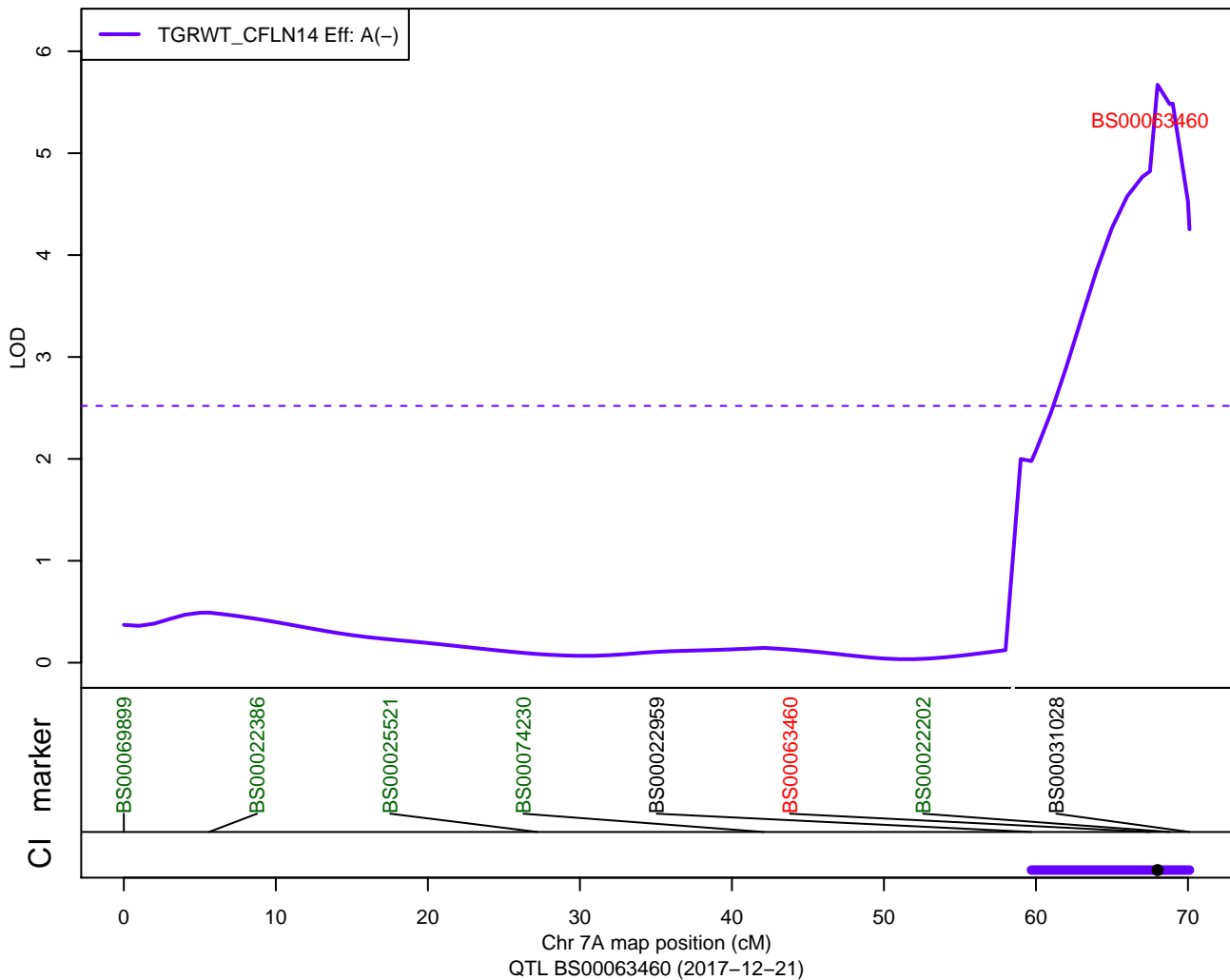
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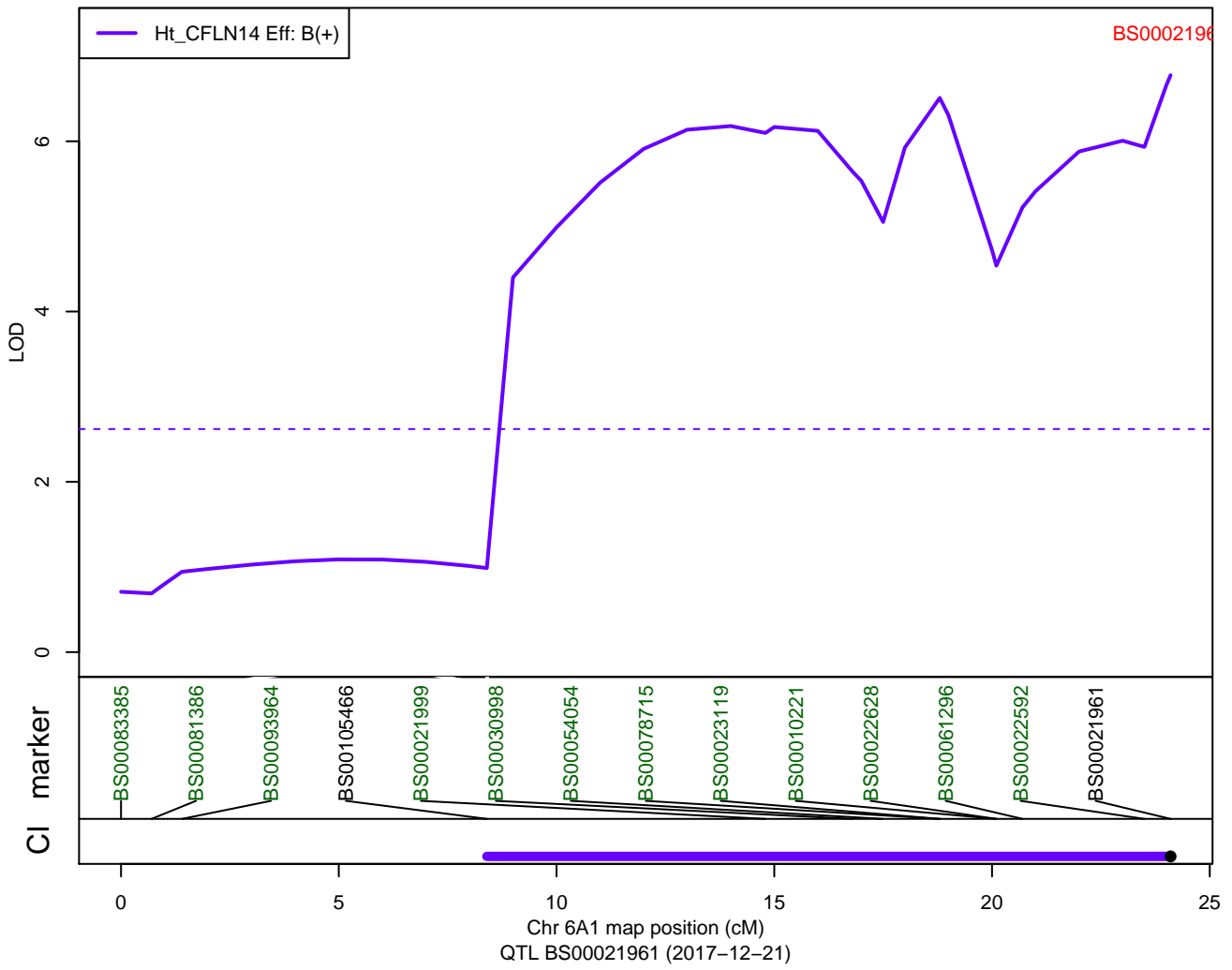
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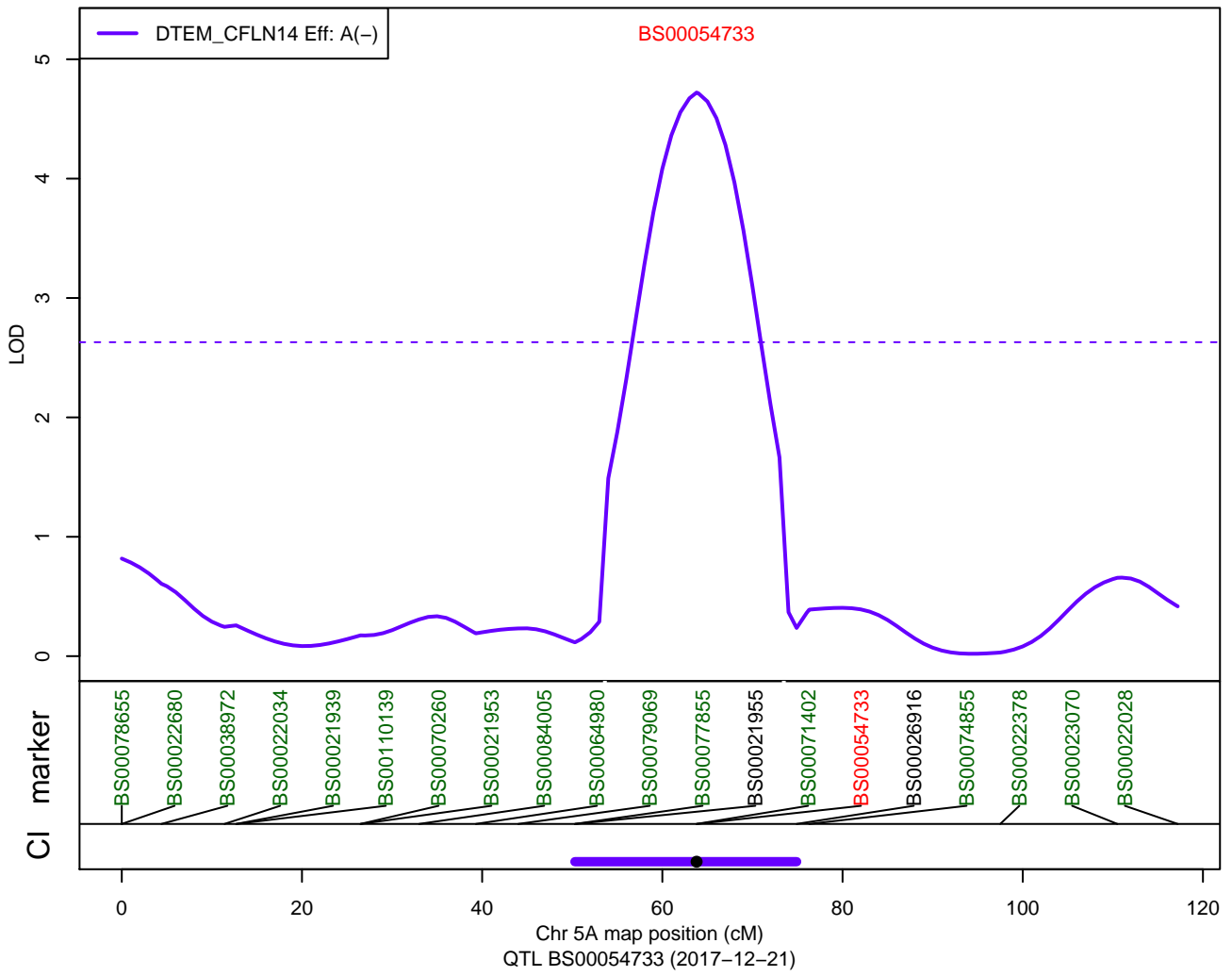
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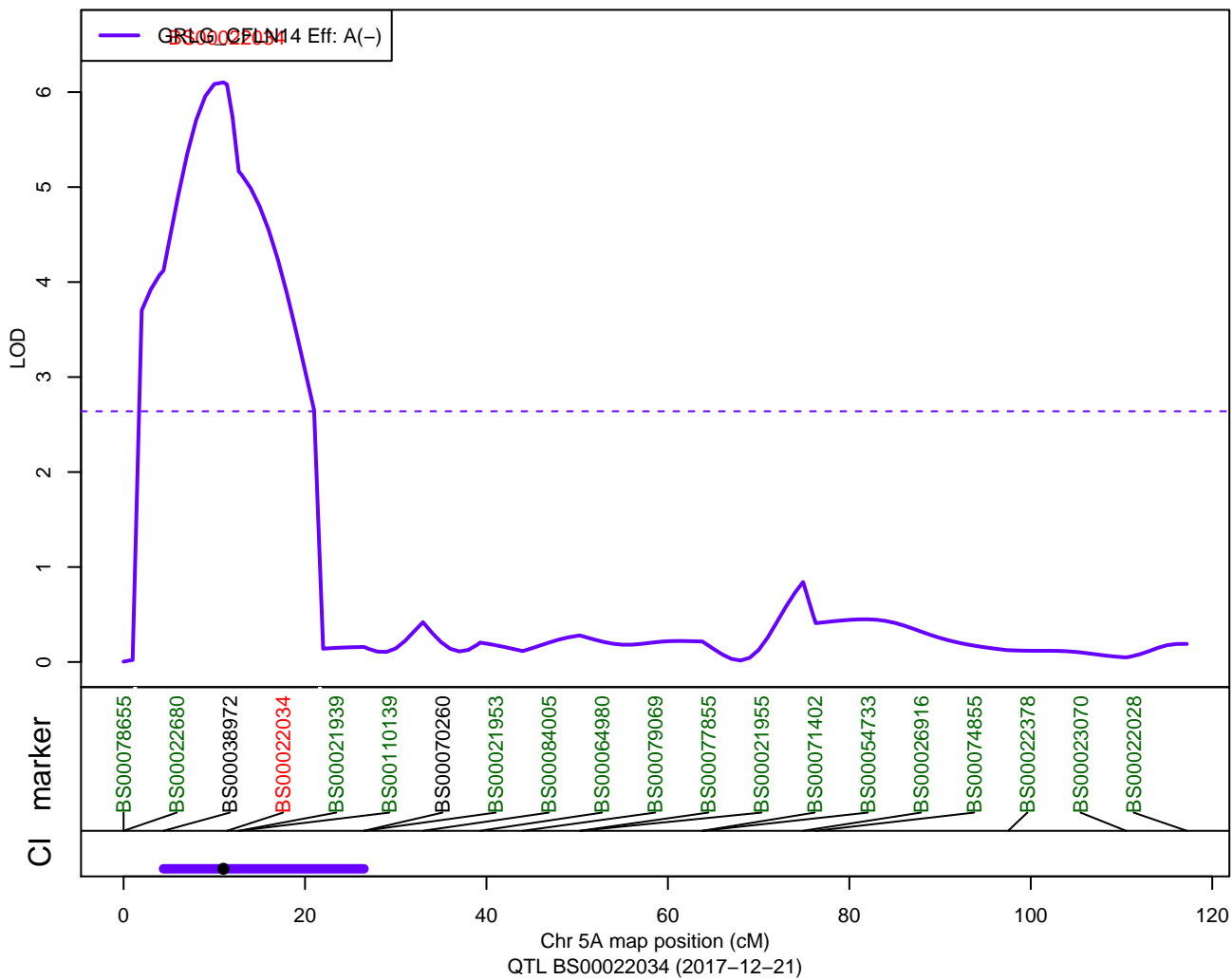
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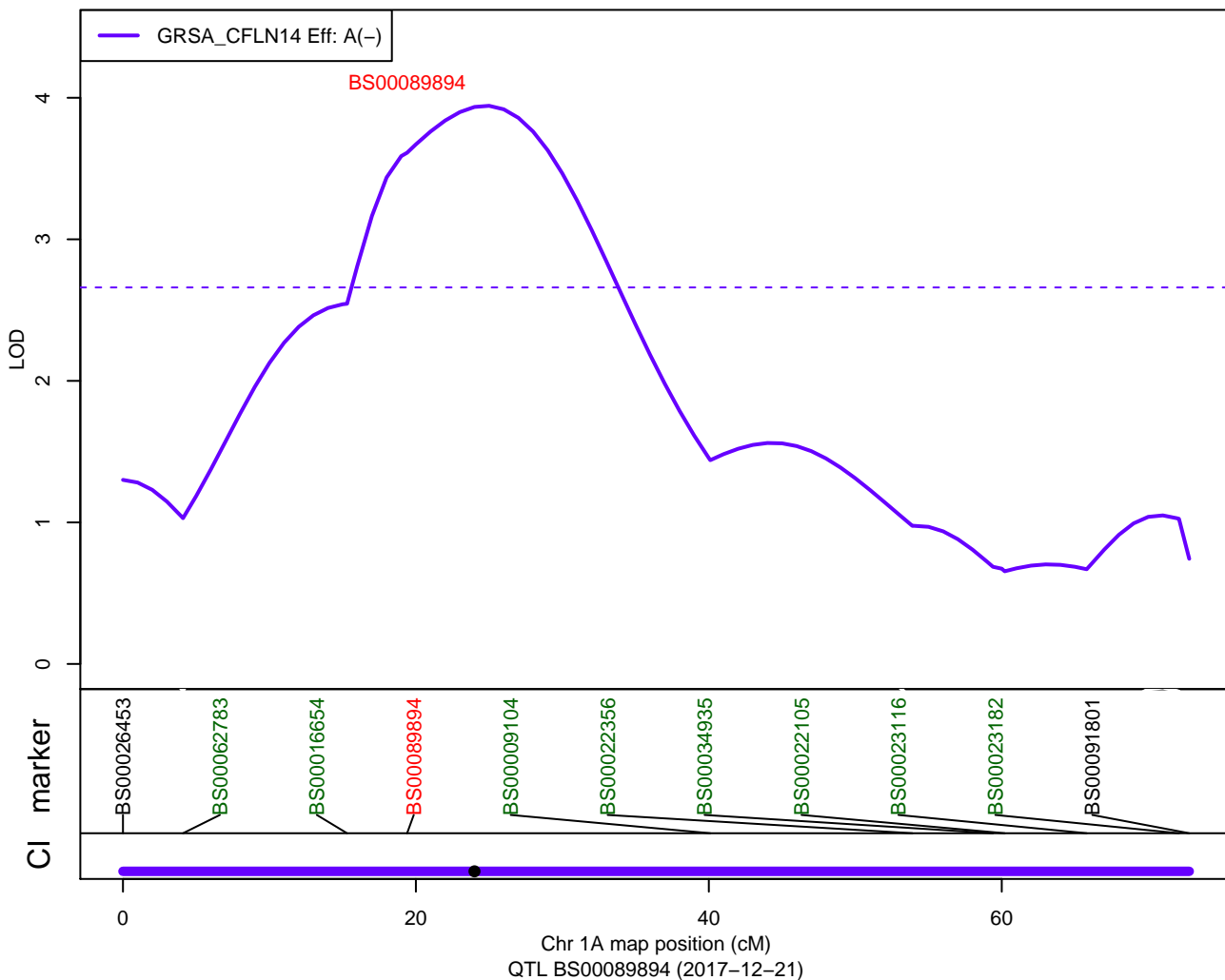
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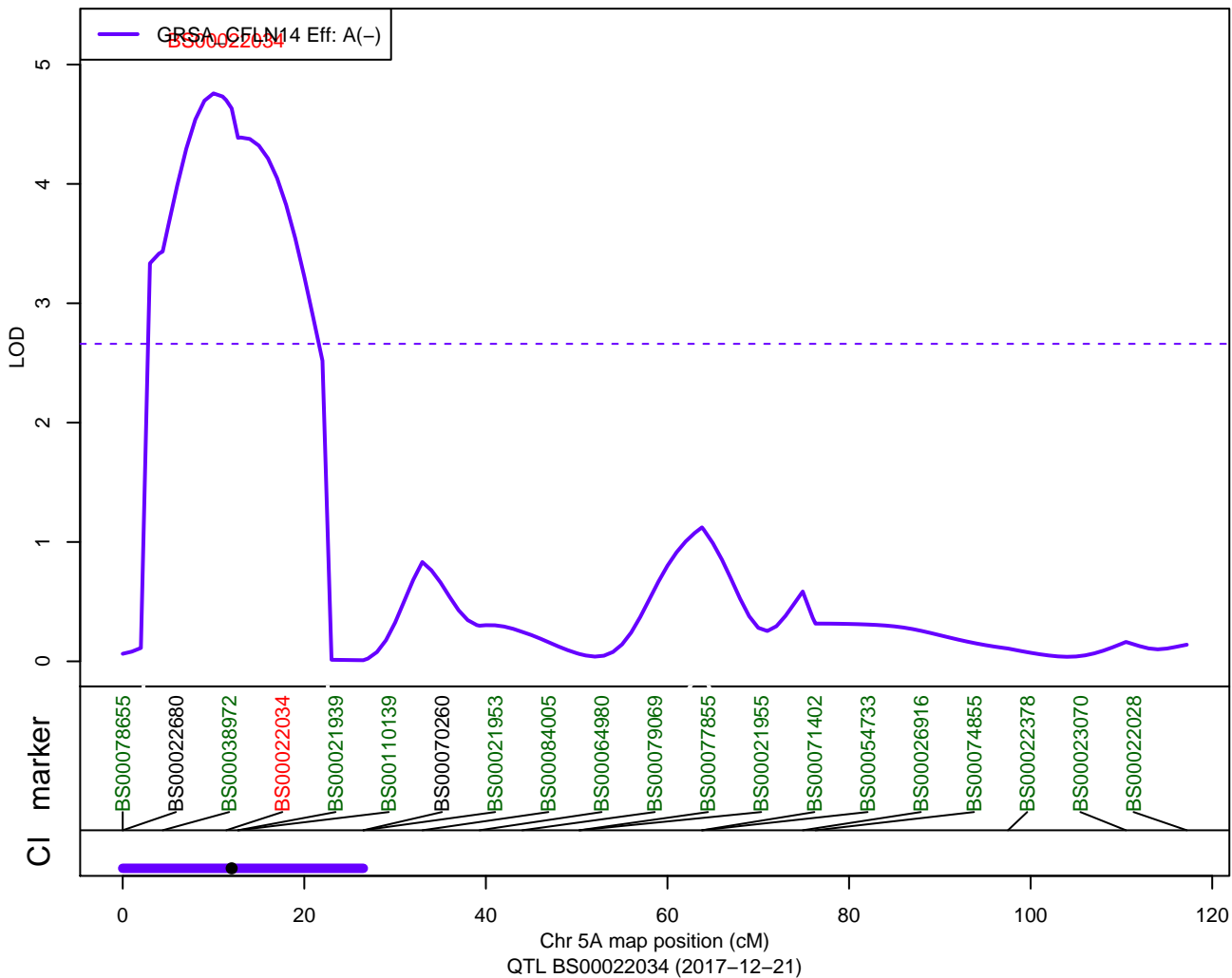
QTLs: ParW127 - GRLG - 5A



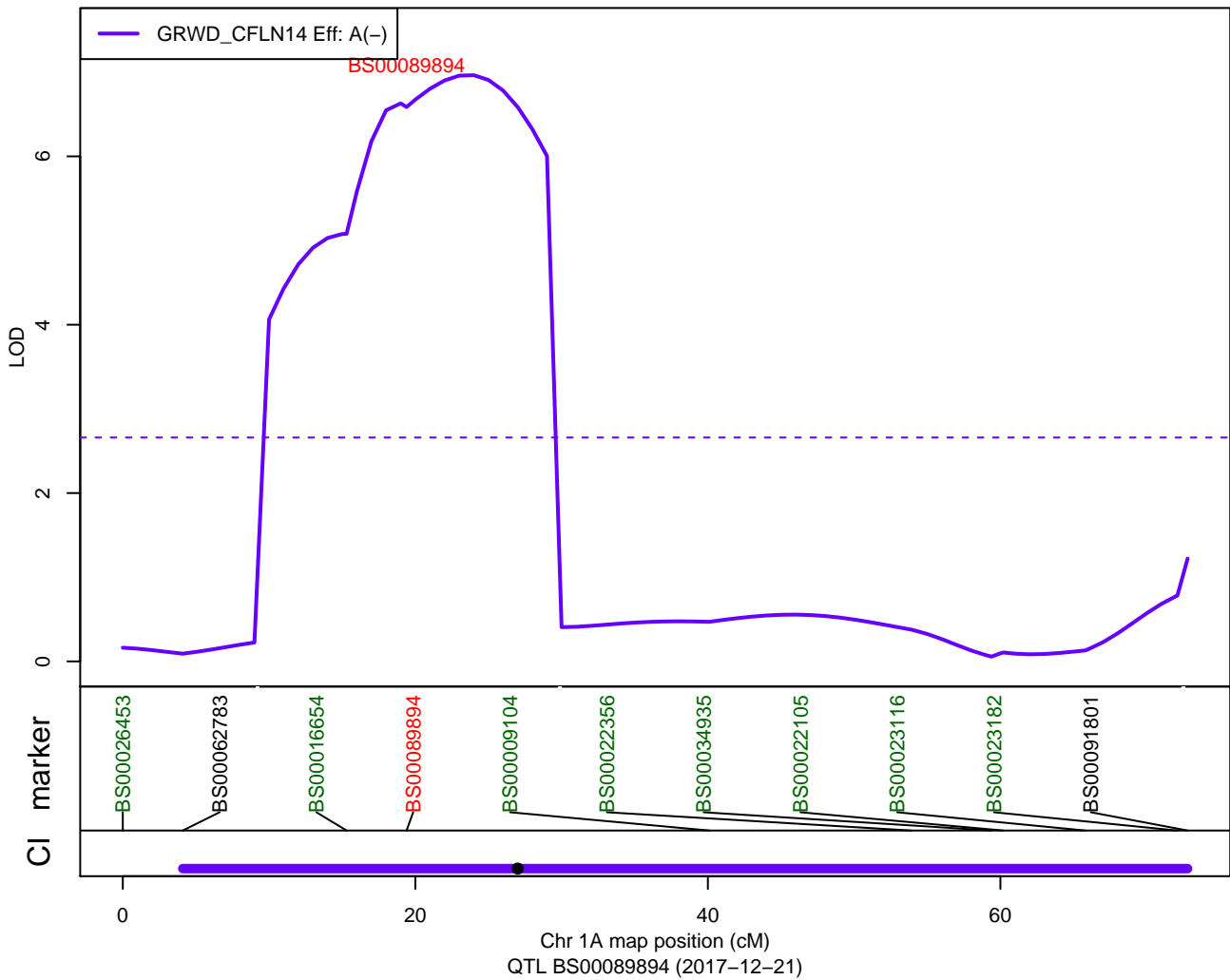
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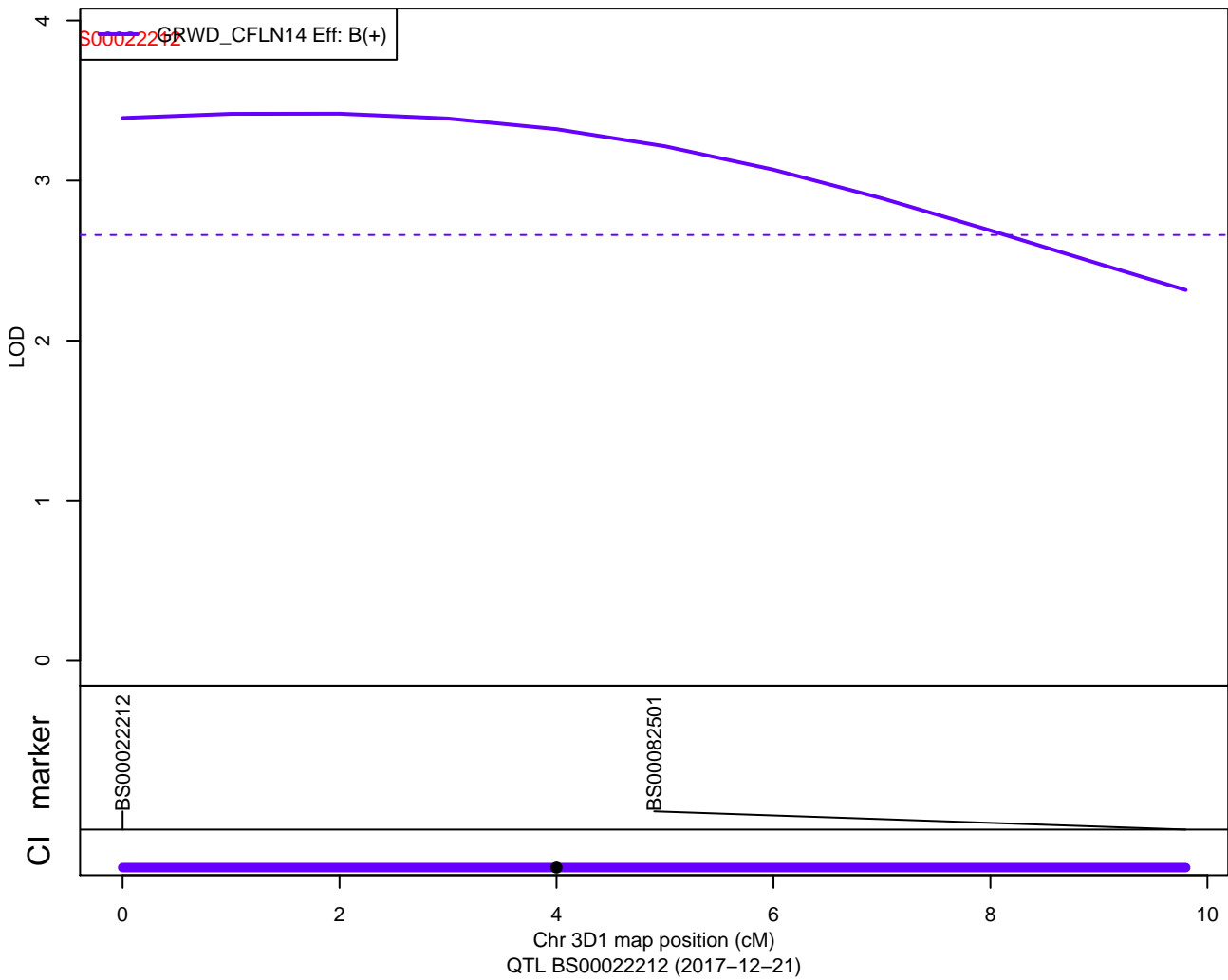
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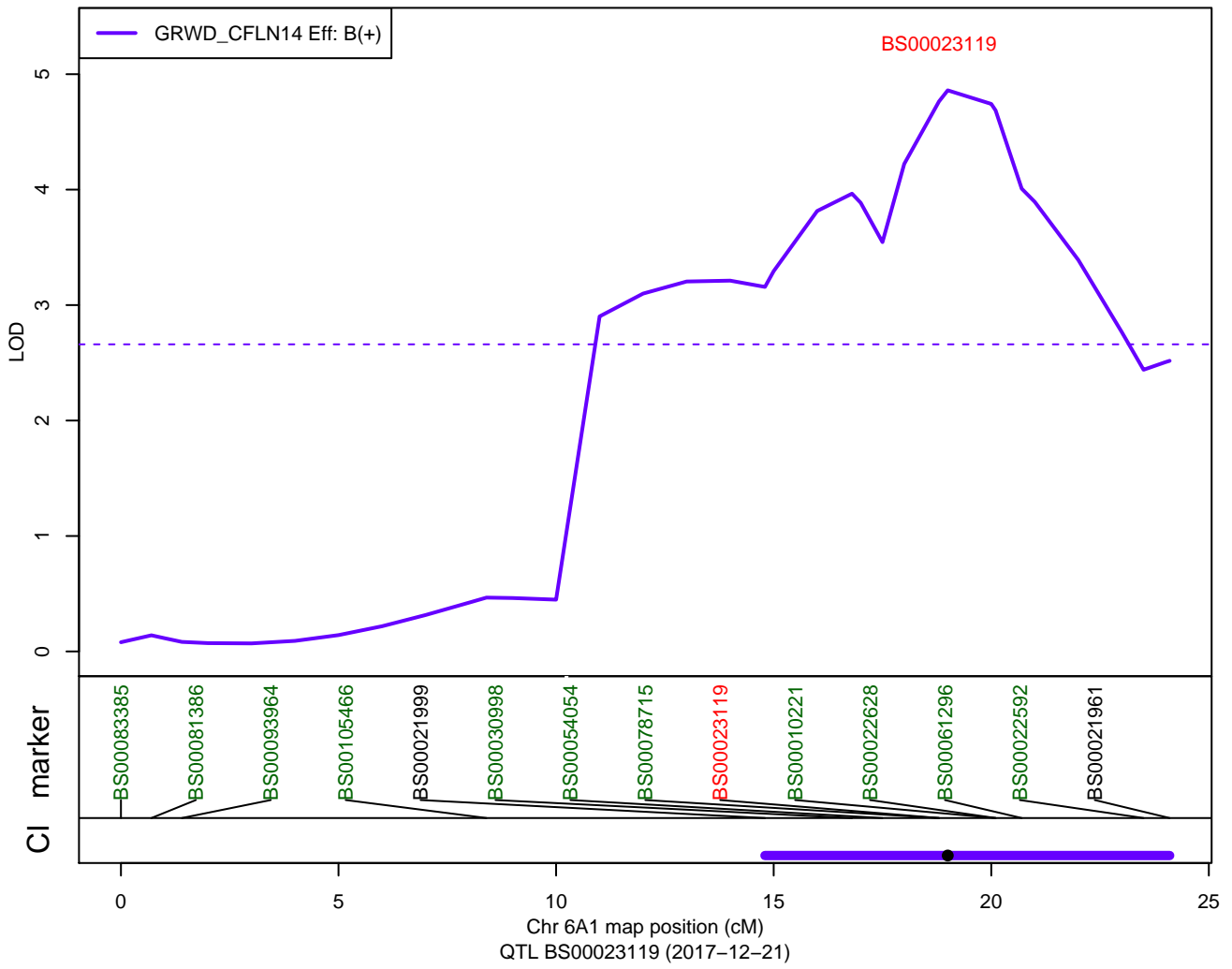
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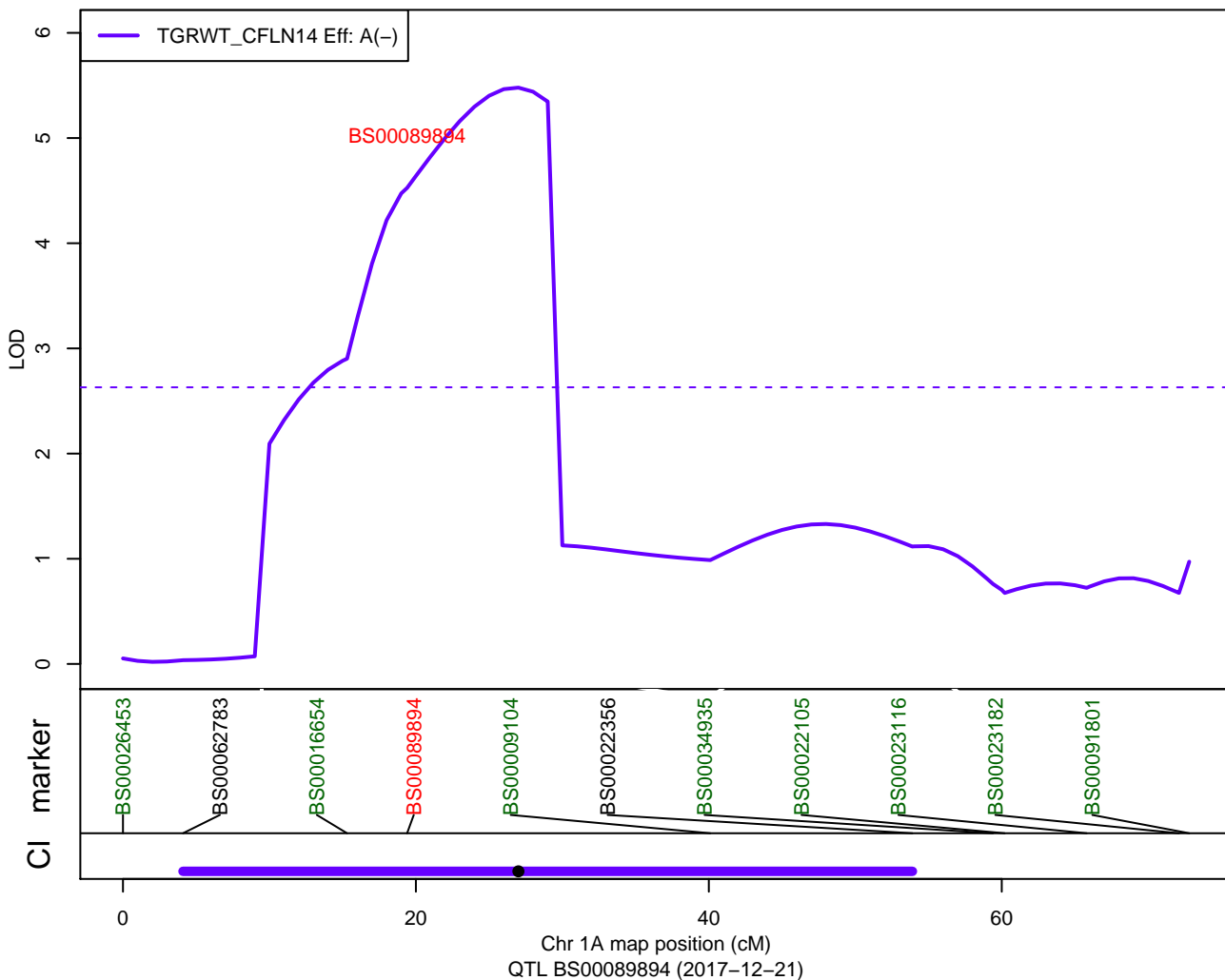
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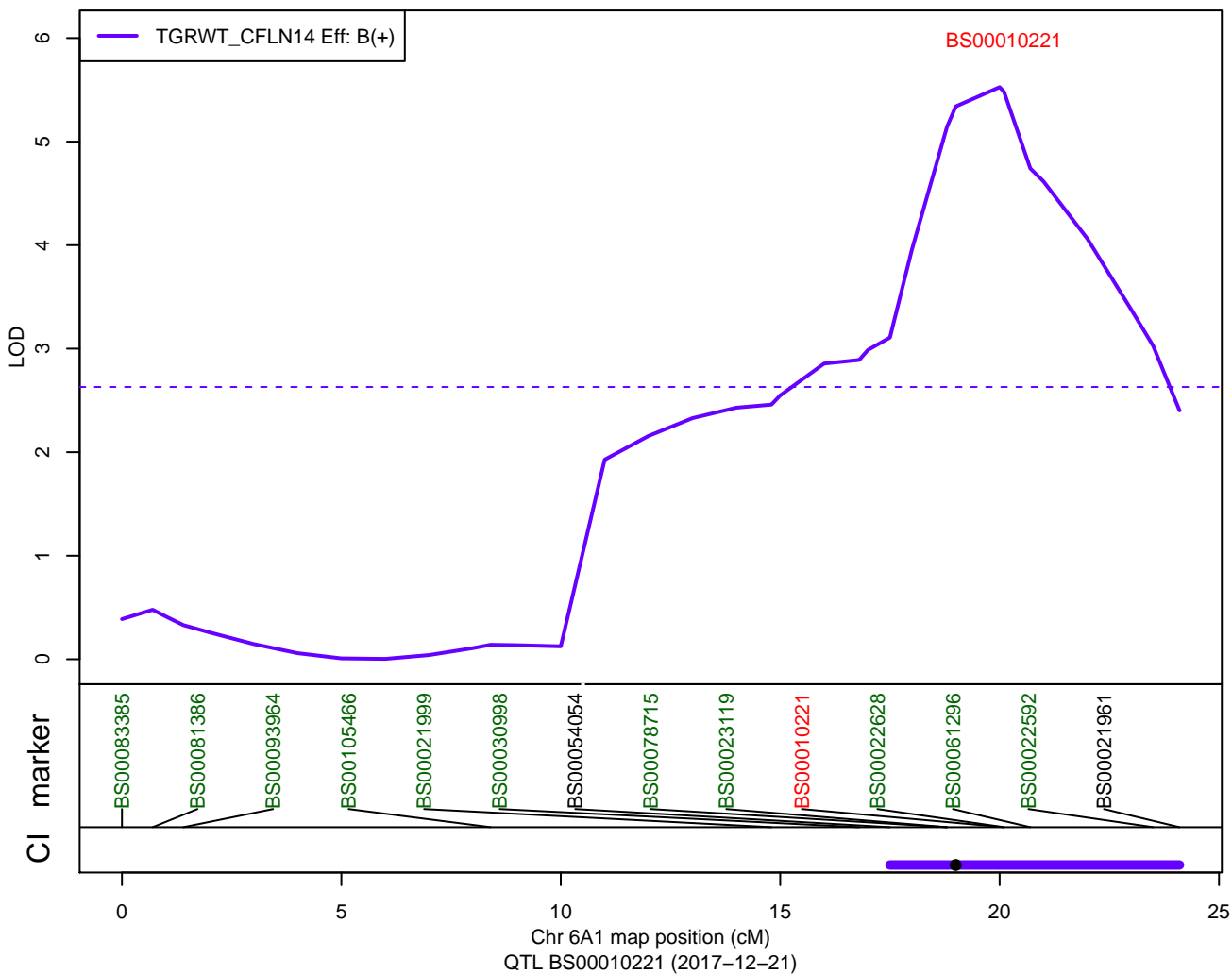
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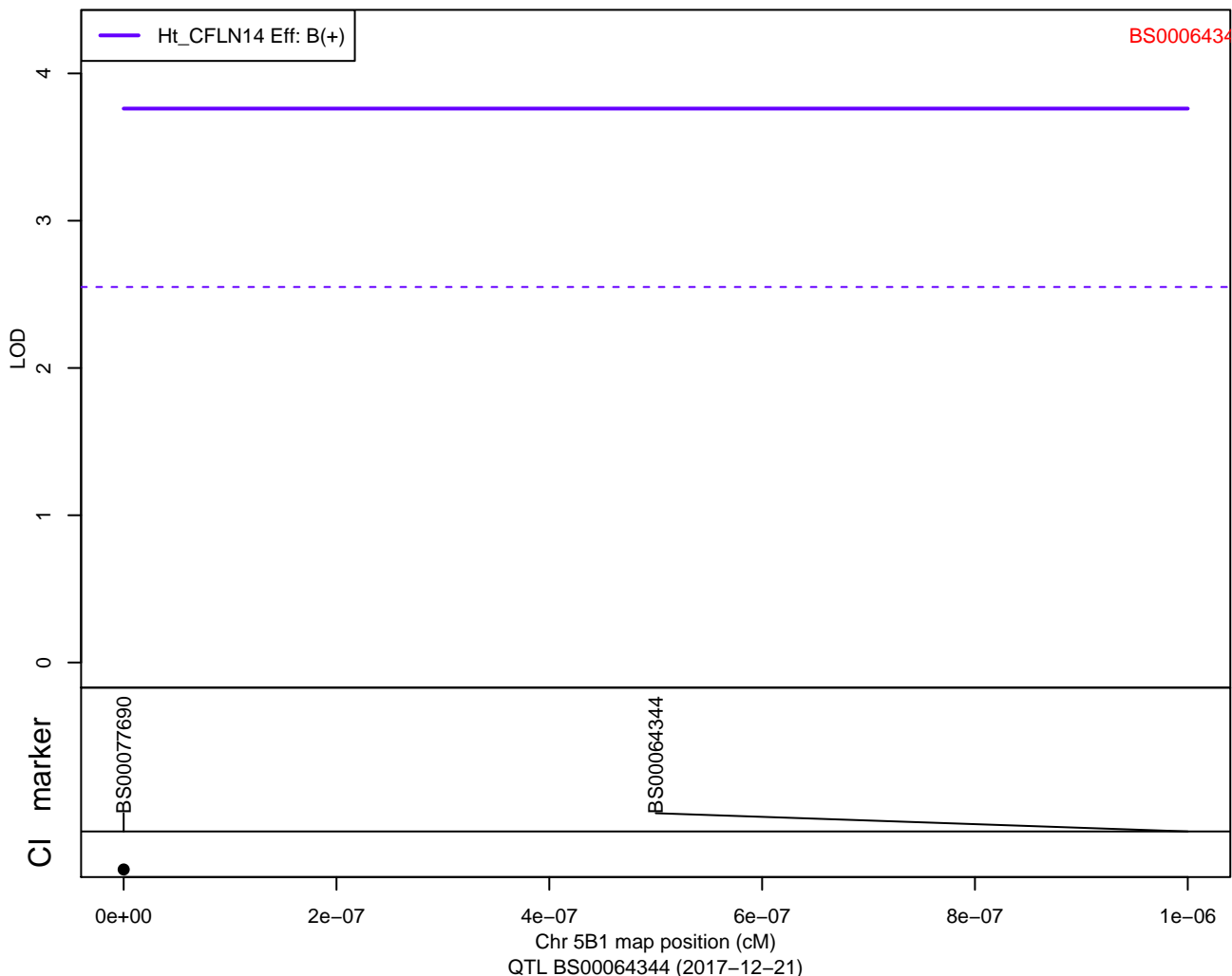
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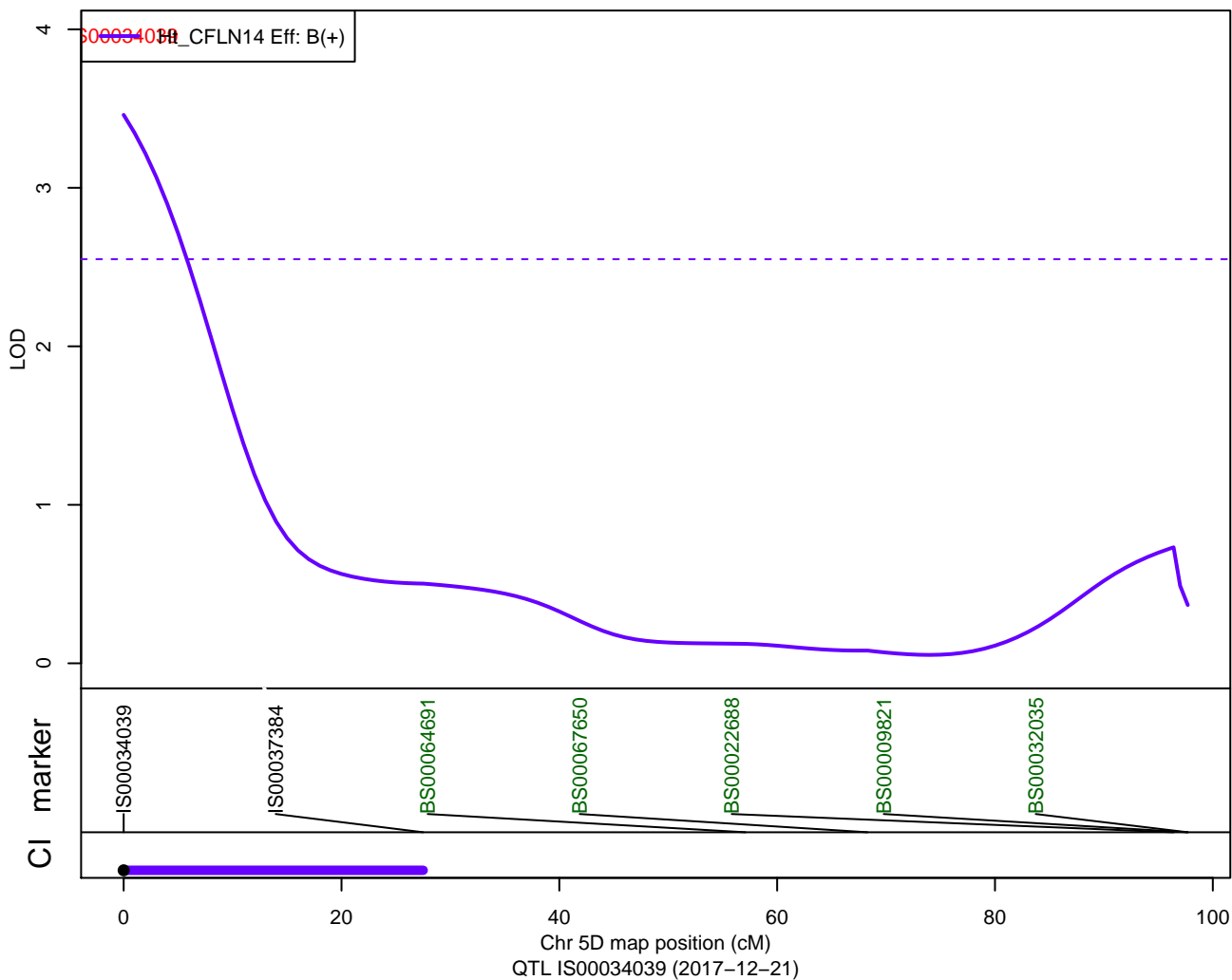
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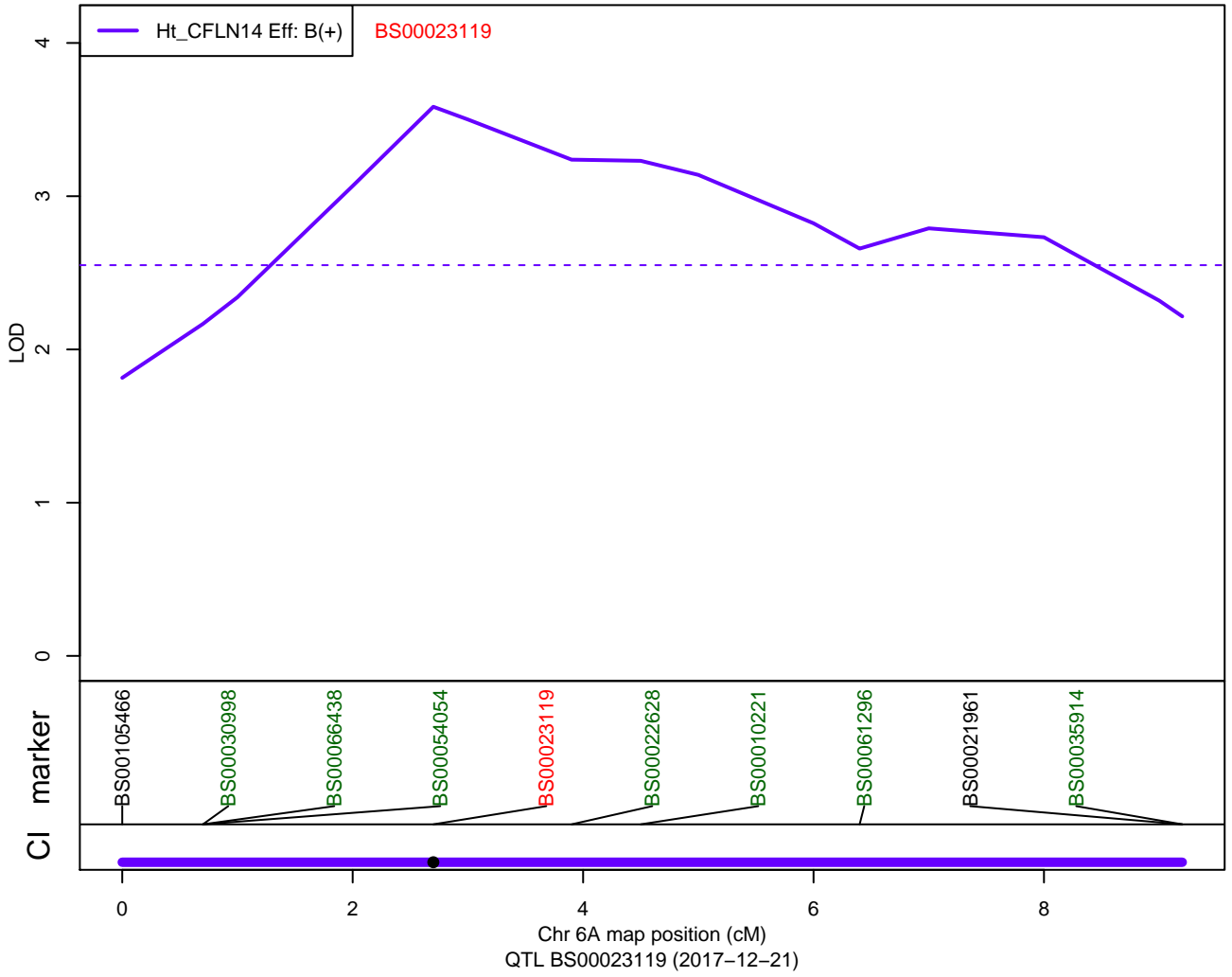
QTLs: ParW139 - Ht - 5B1



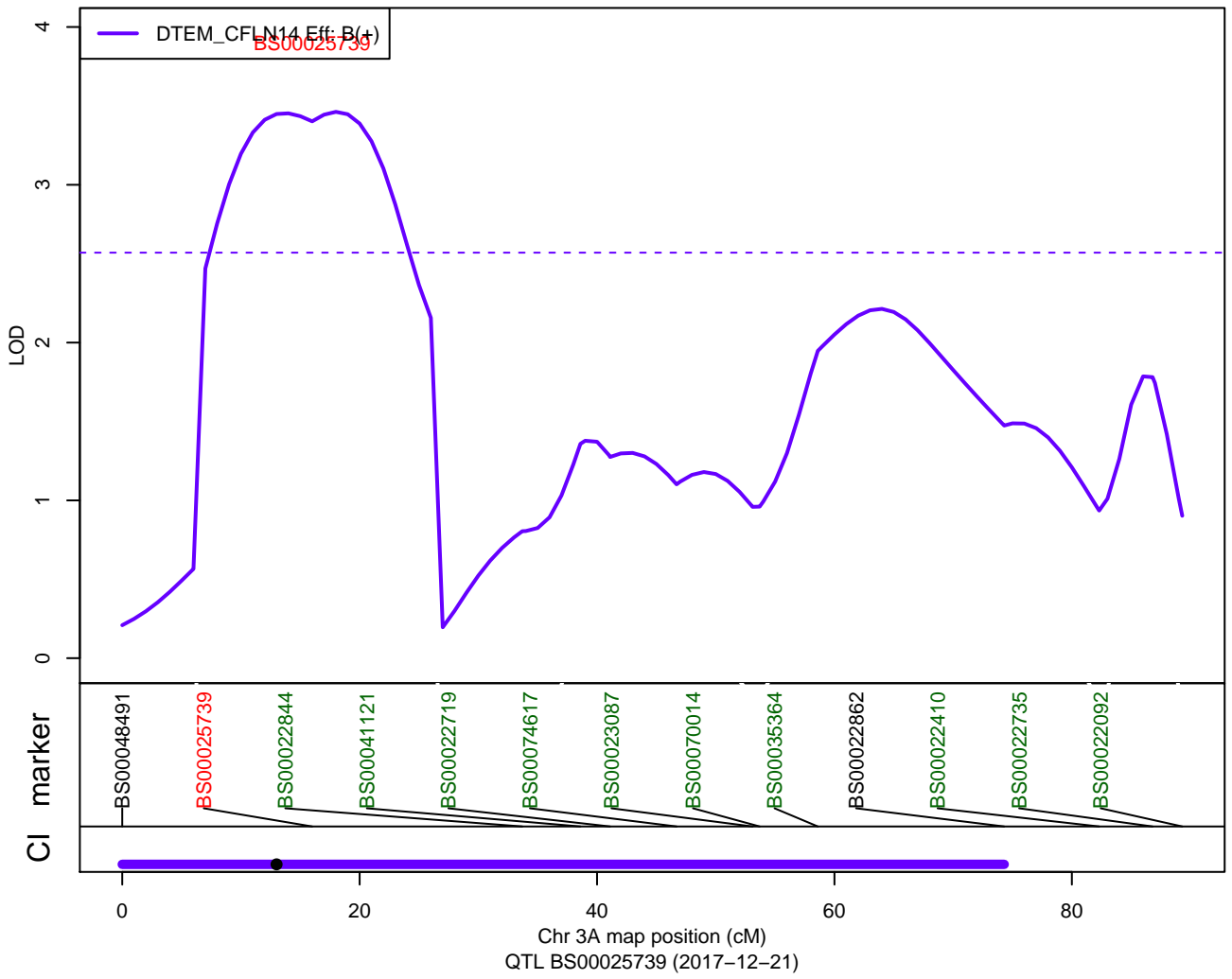
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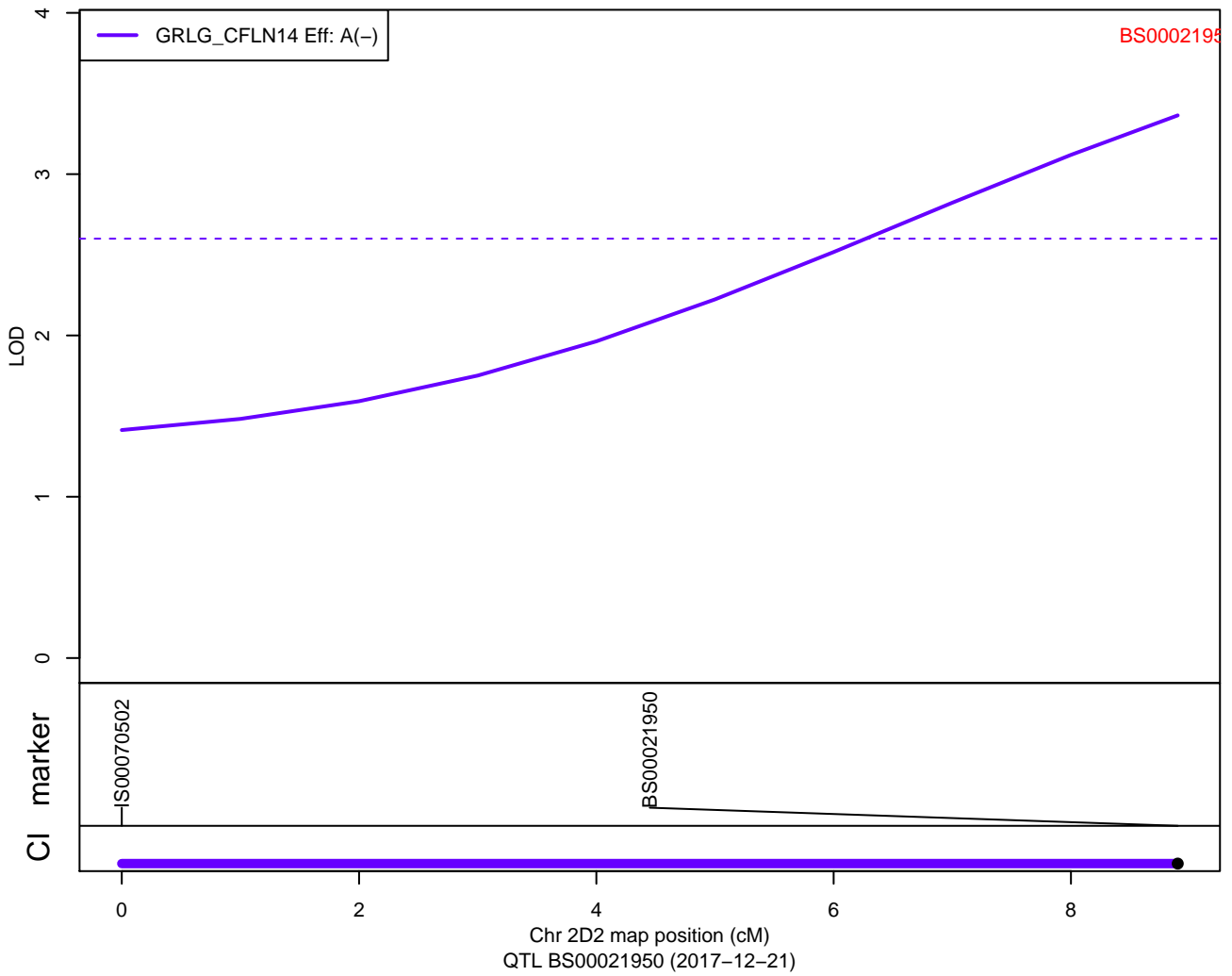
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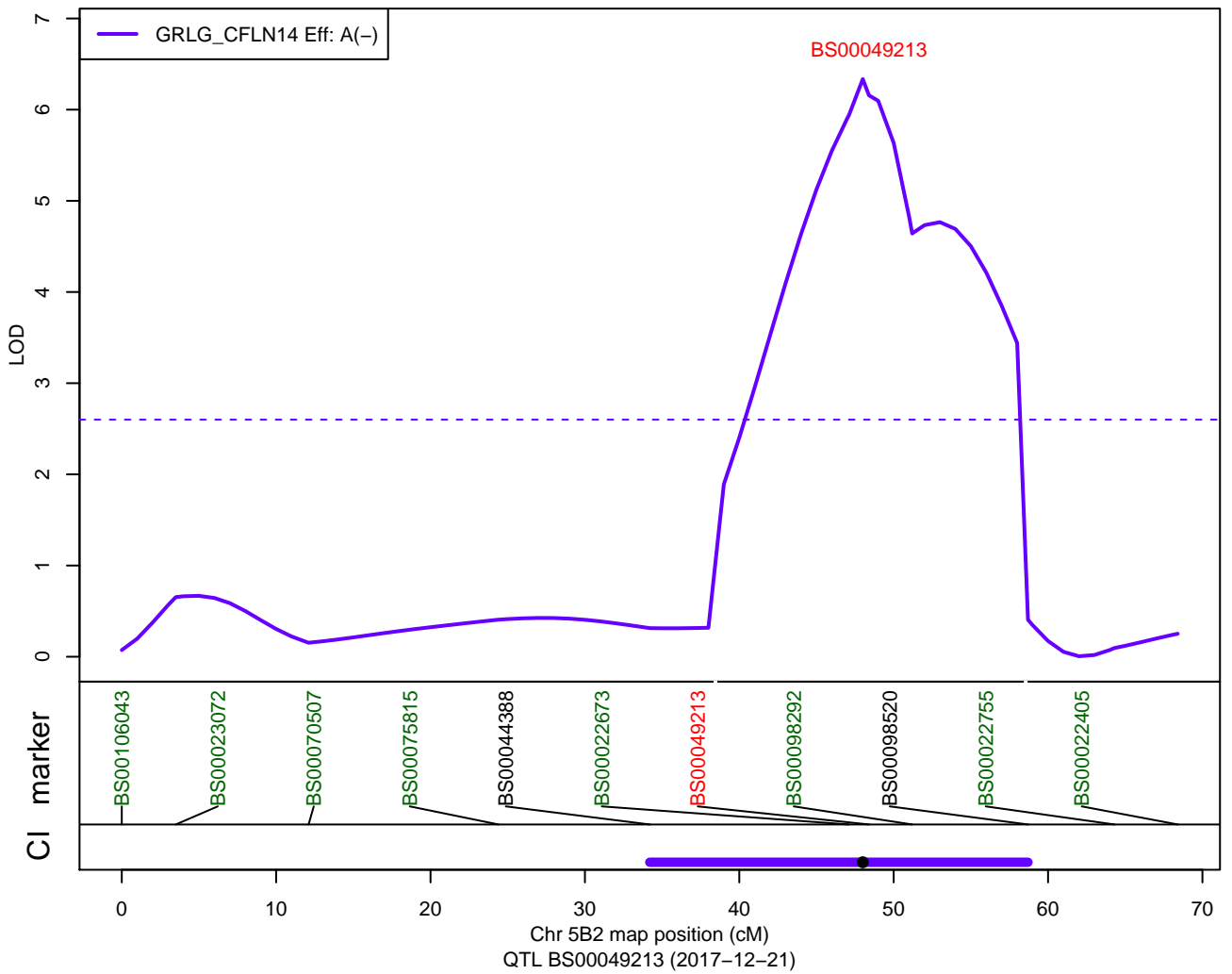
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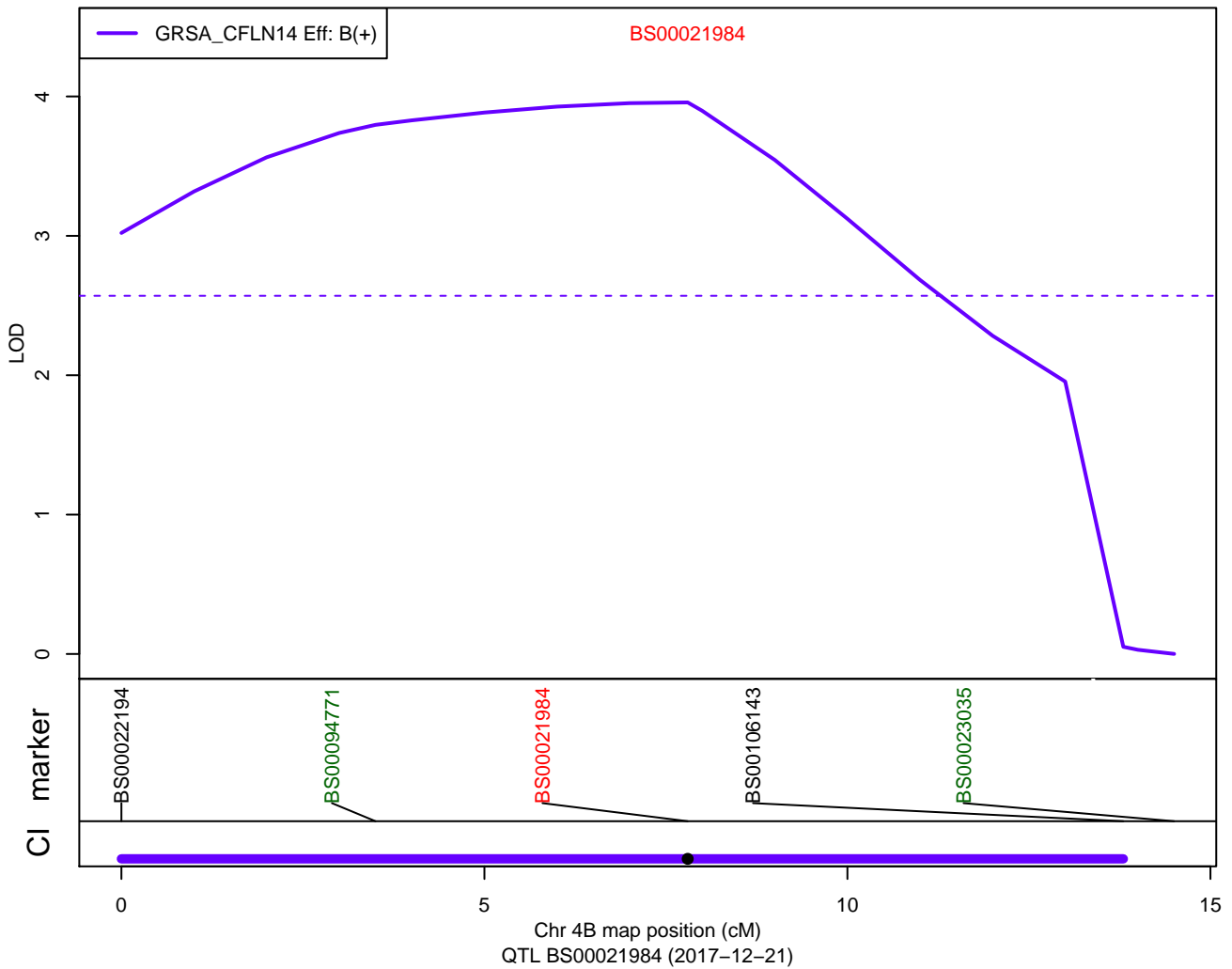
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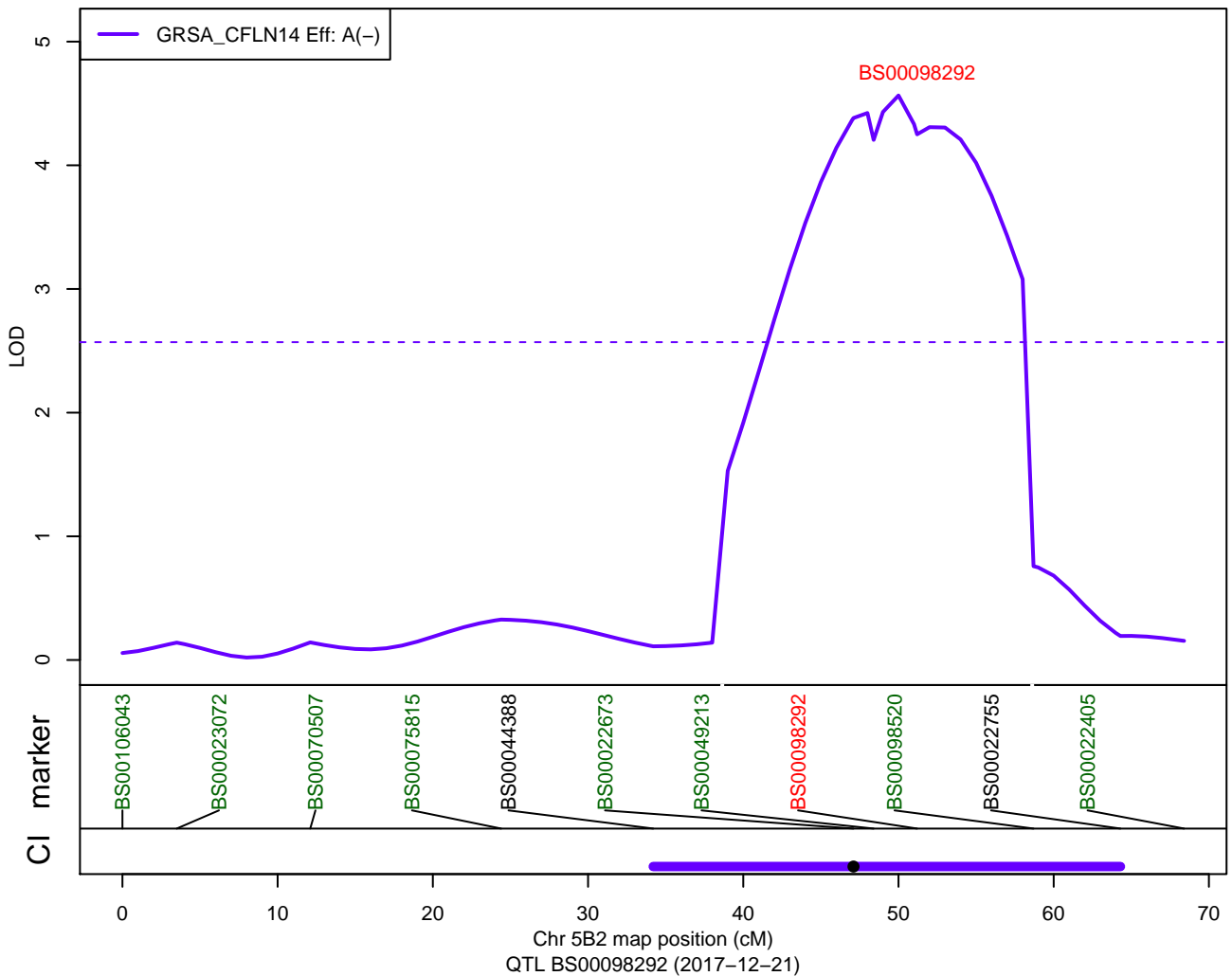
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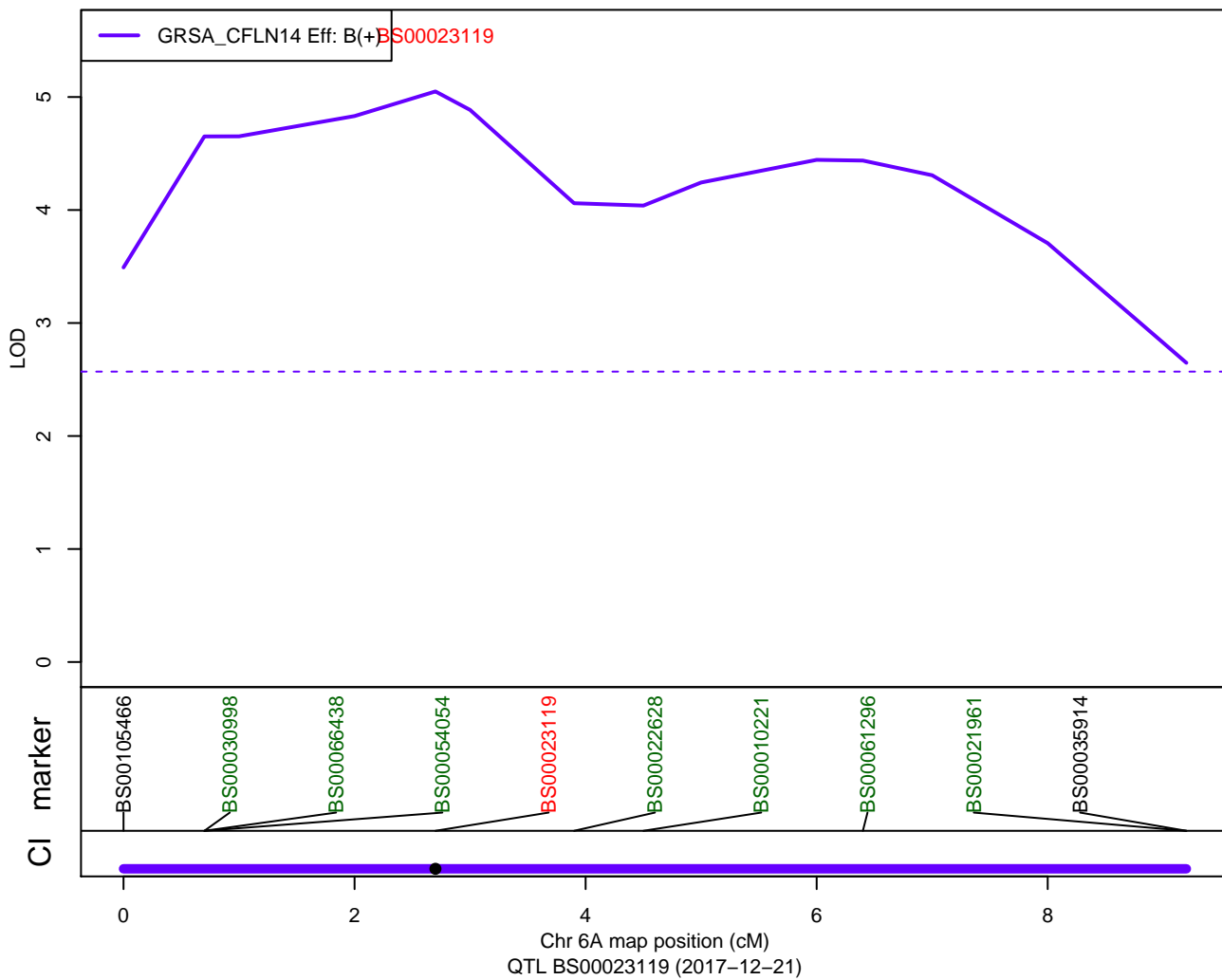
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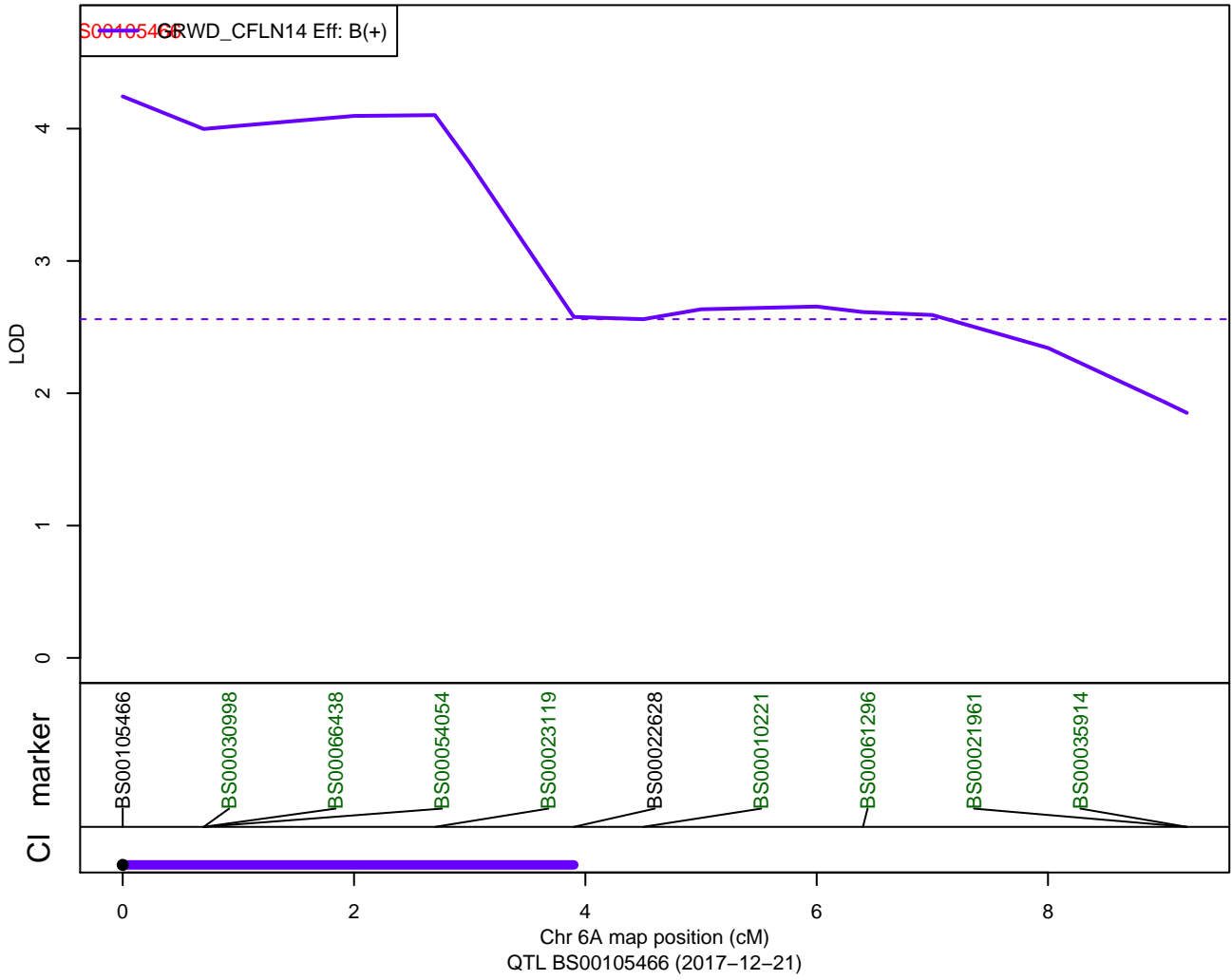
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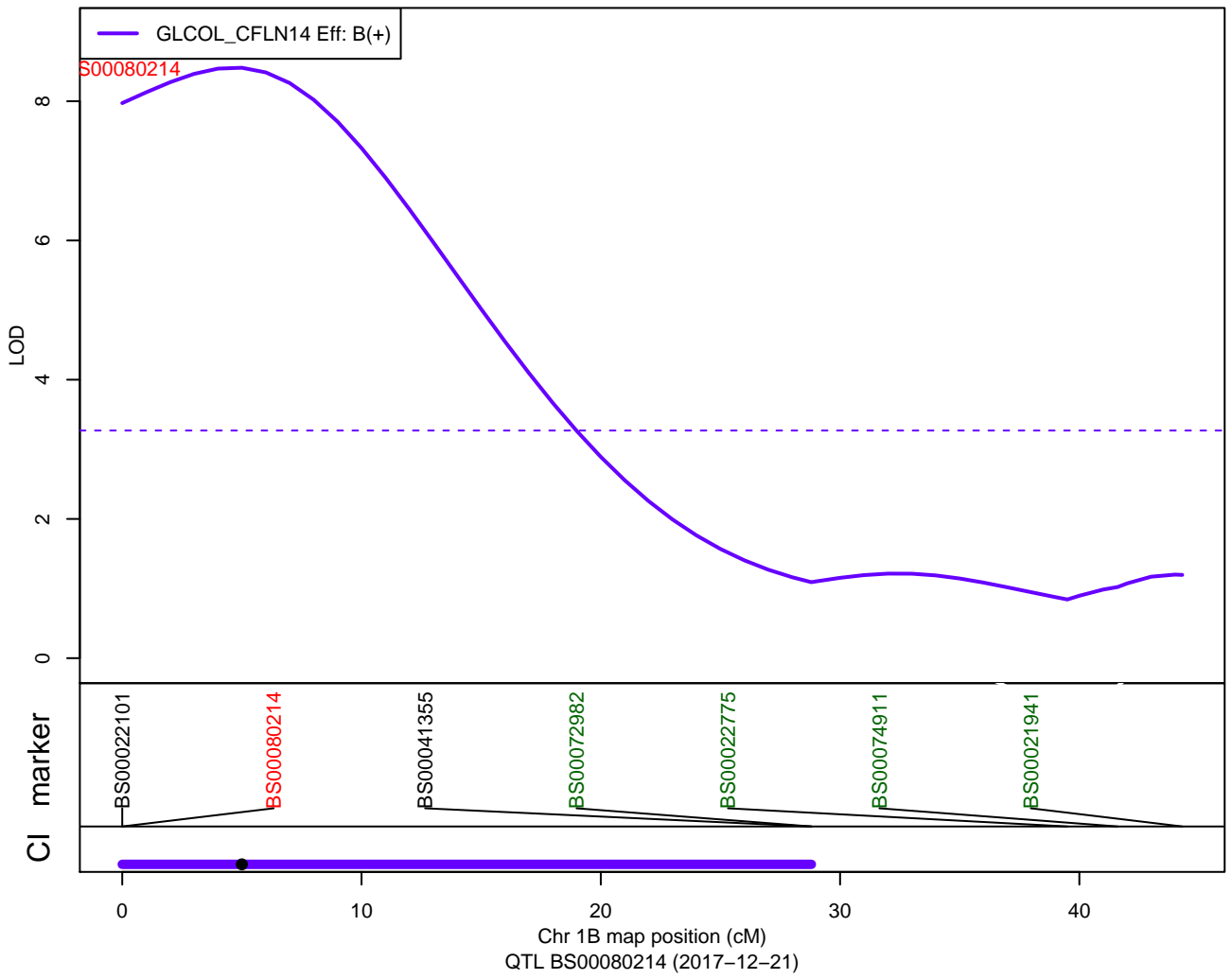
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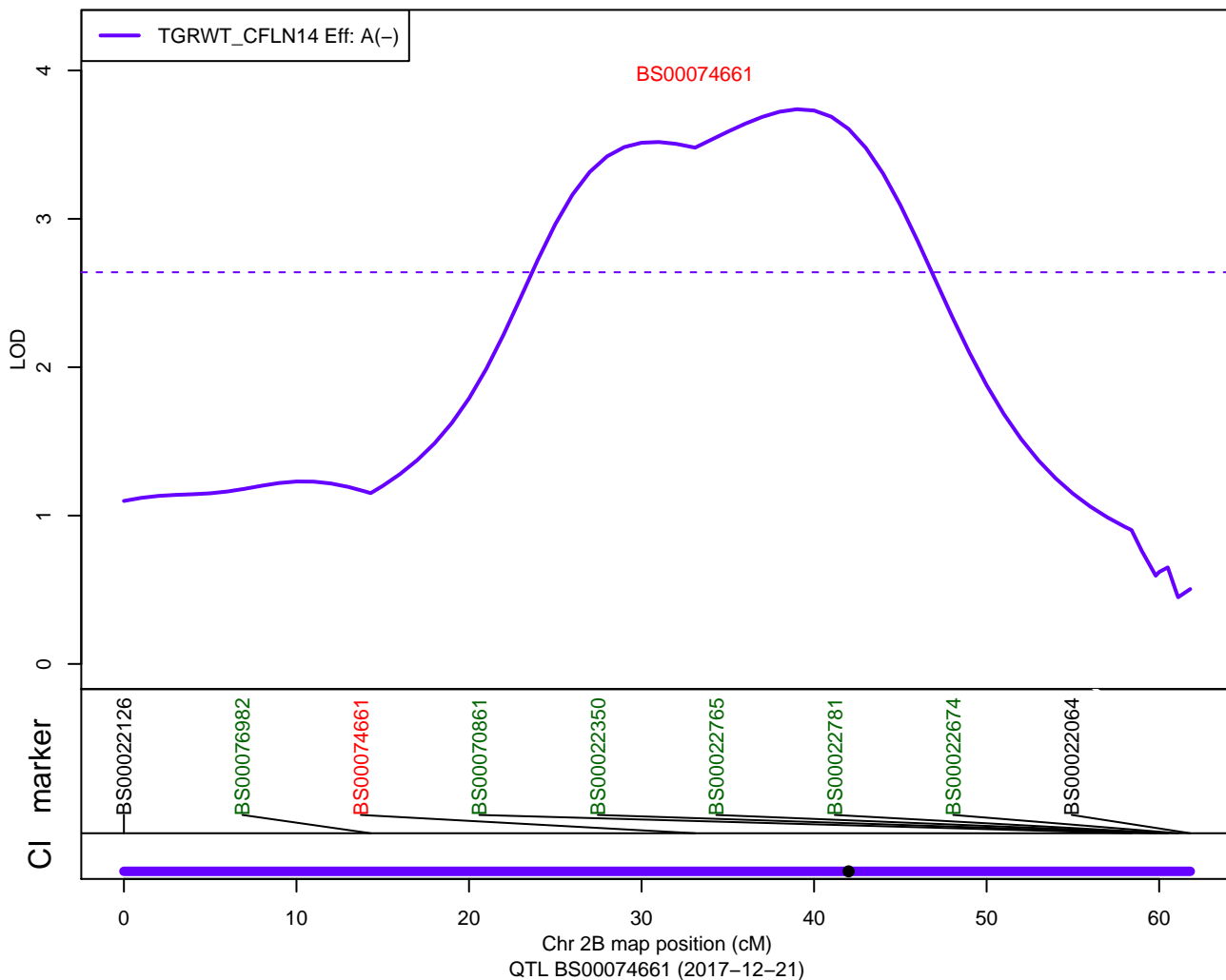
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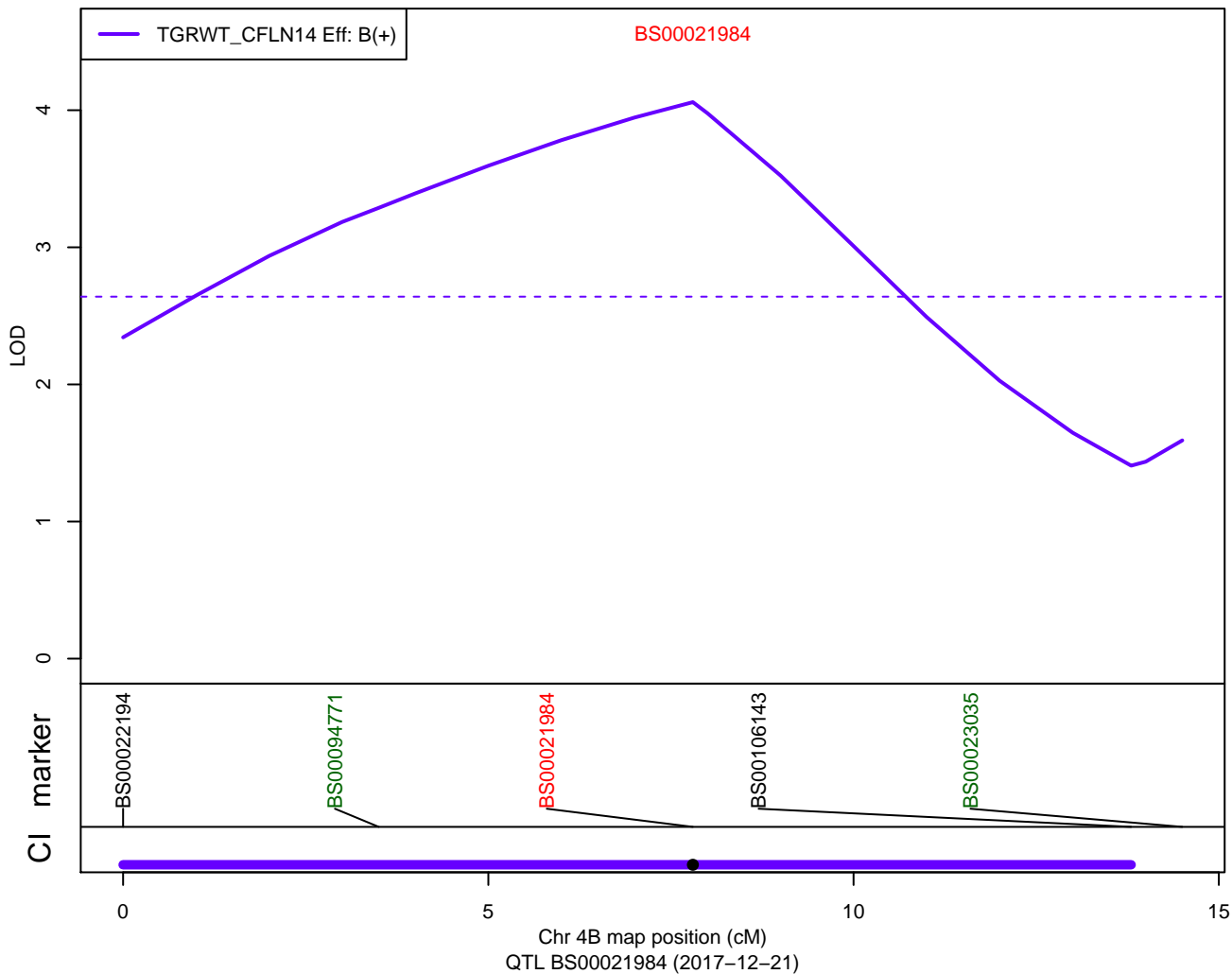
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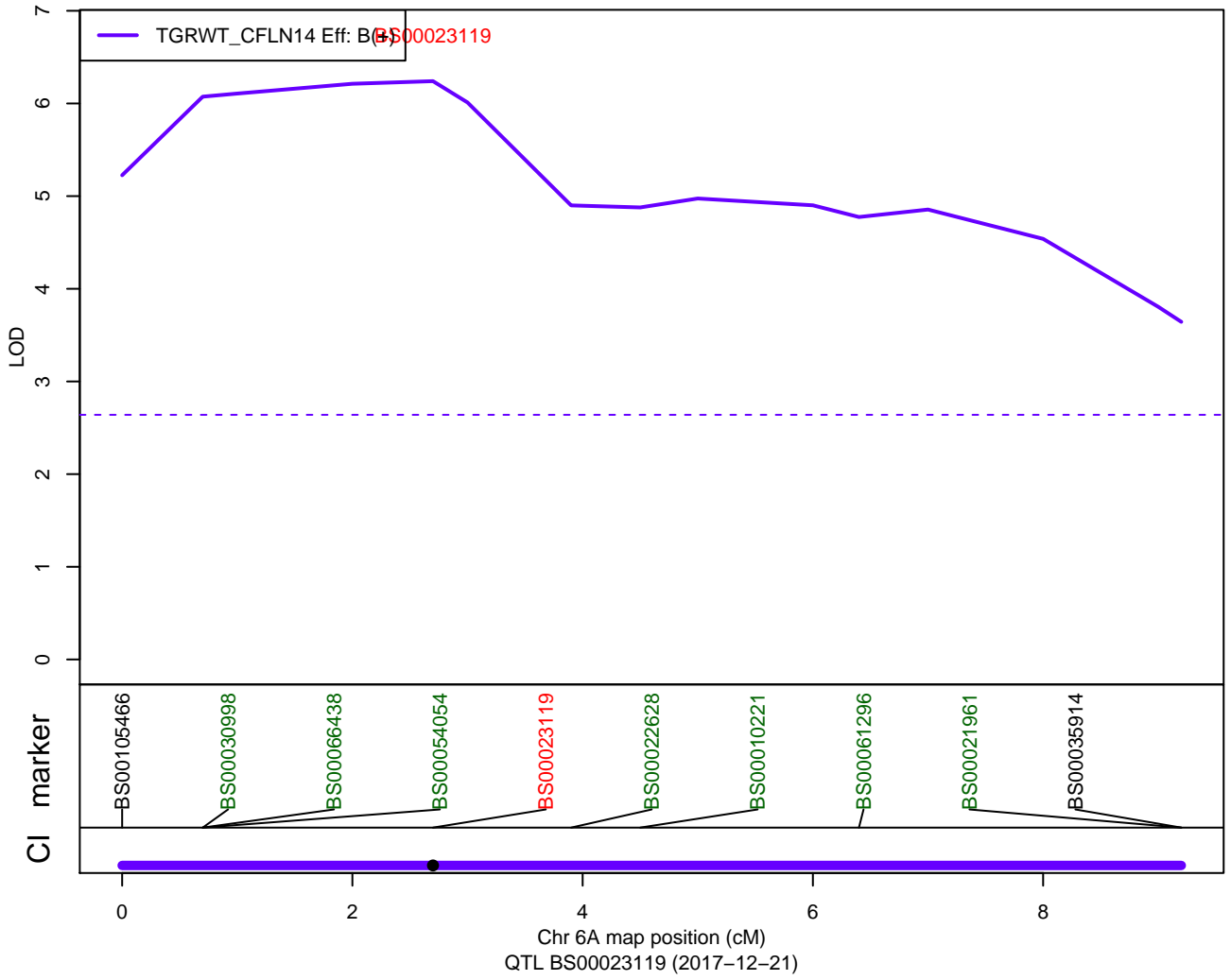
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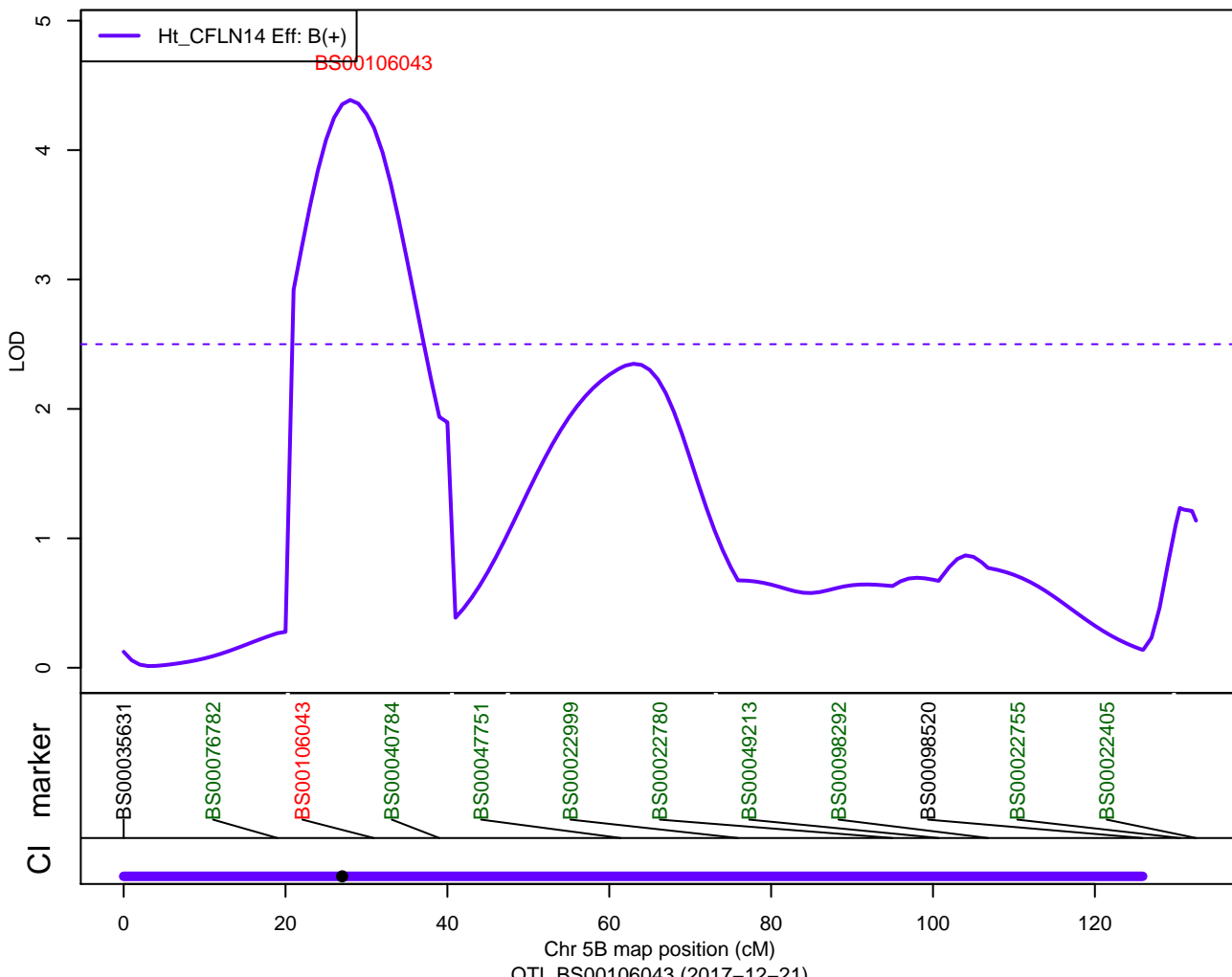
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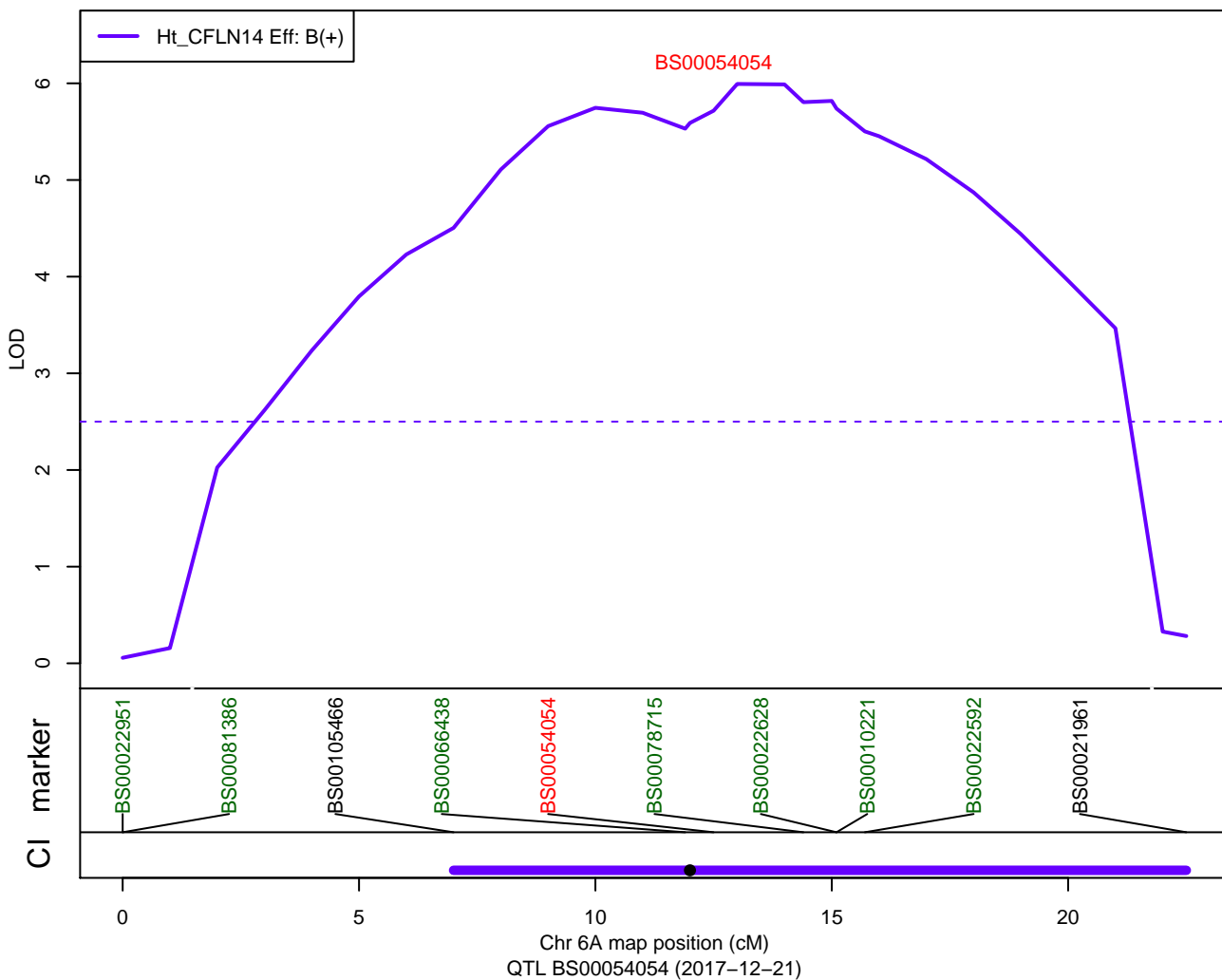
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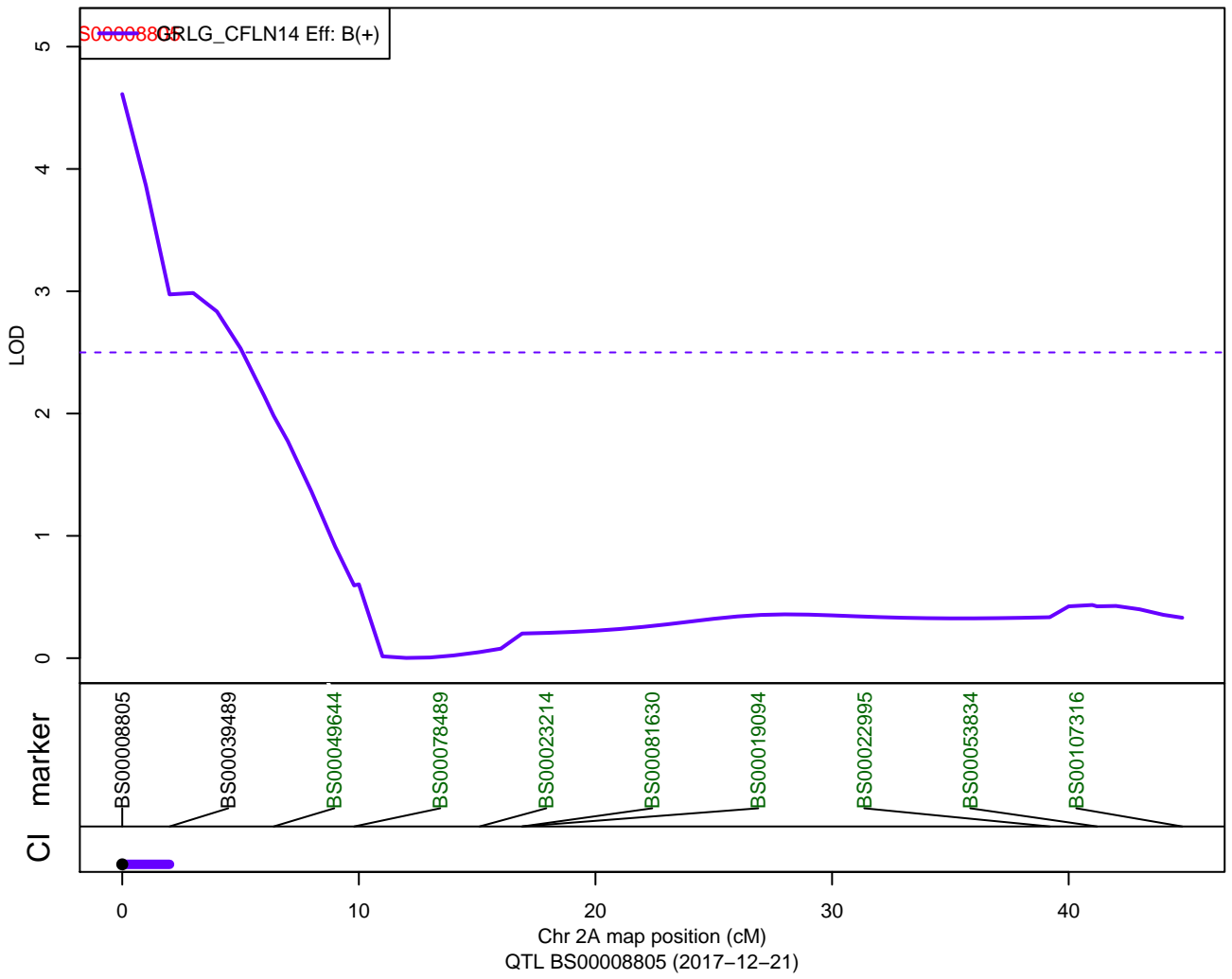
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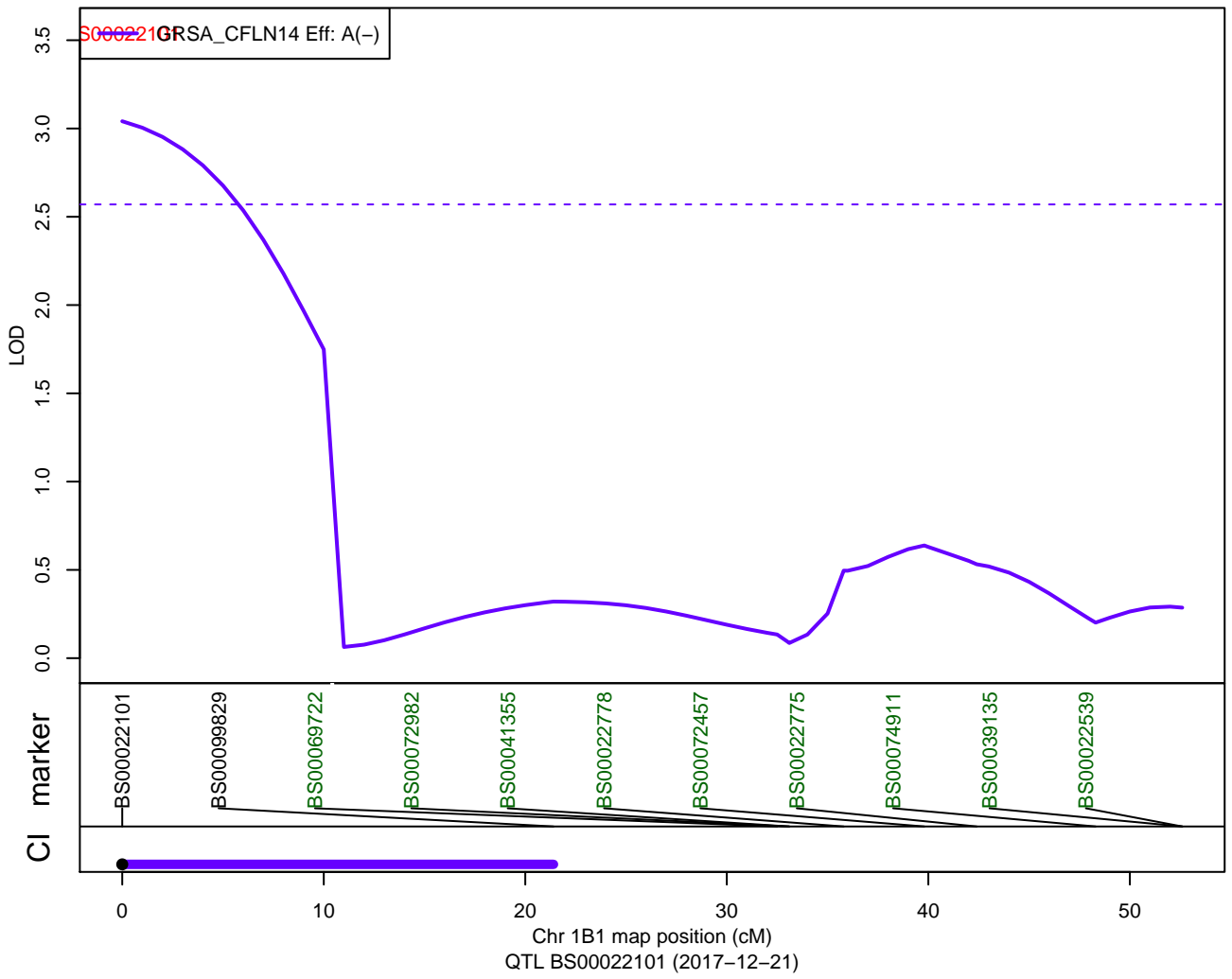
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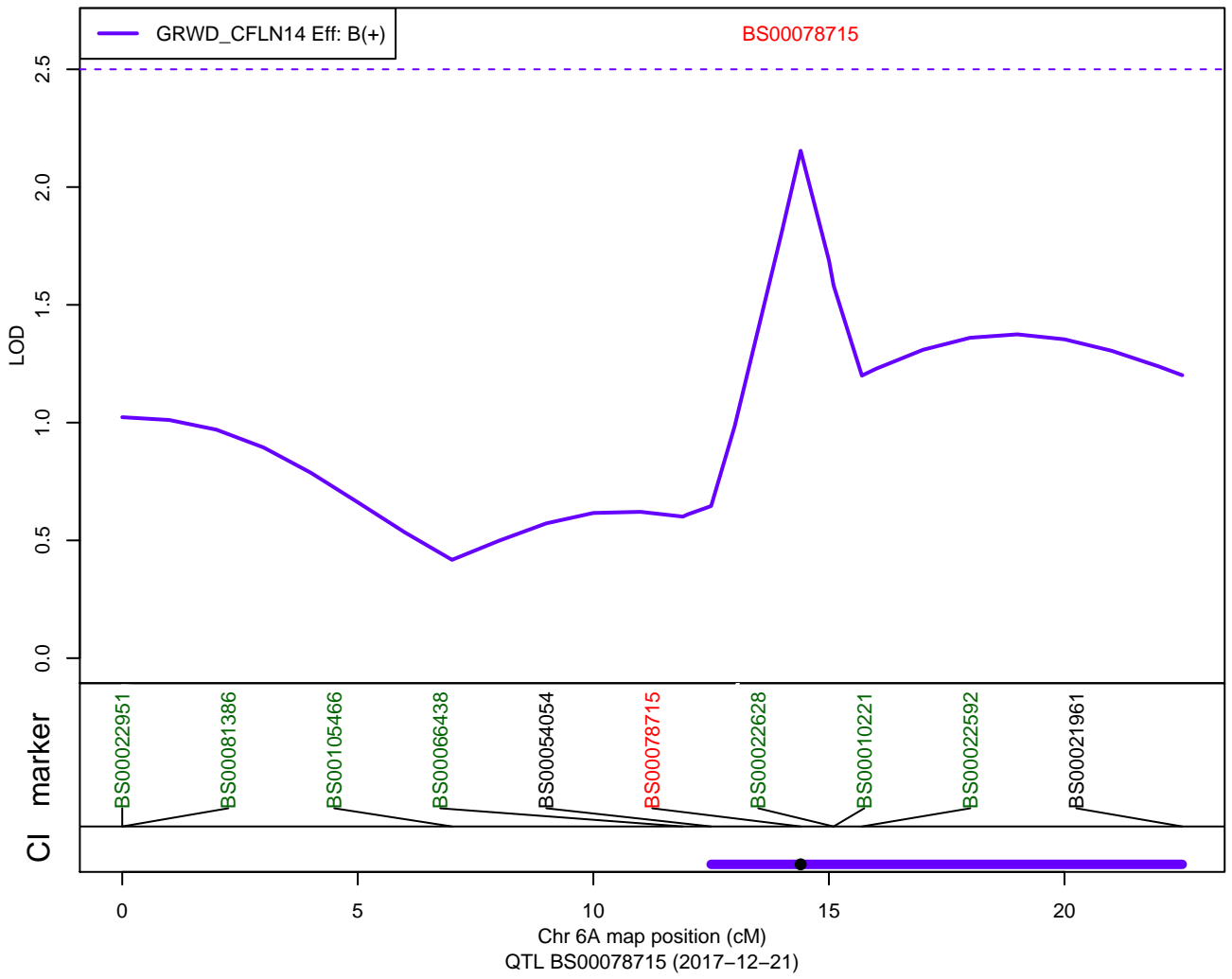
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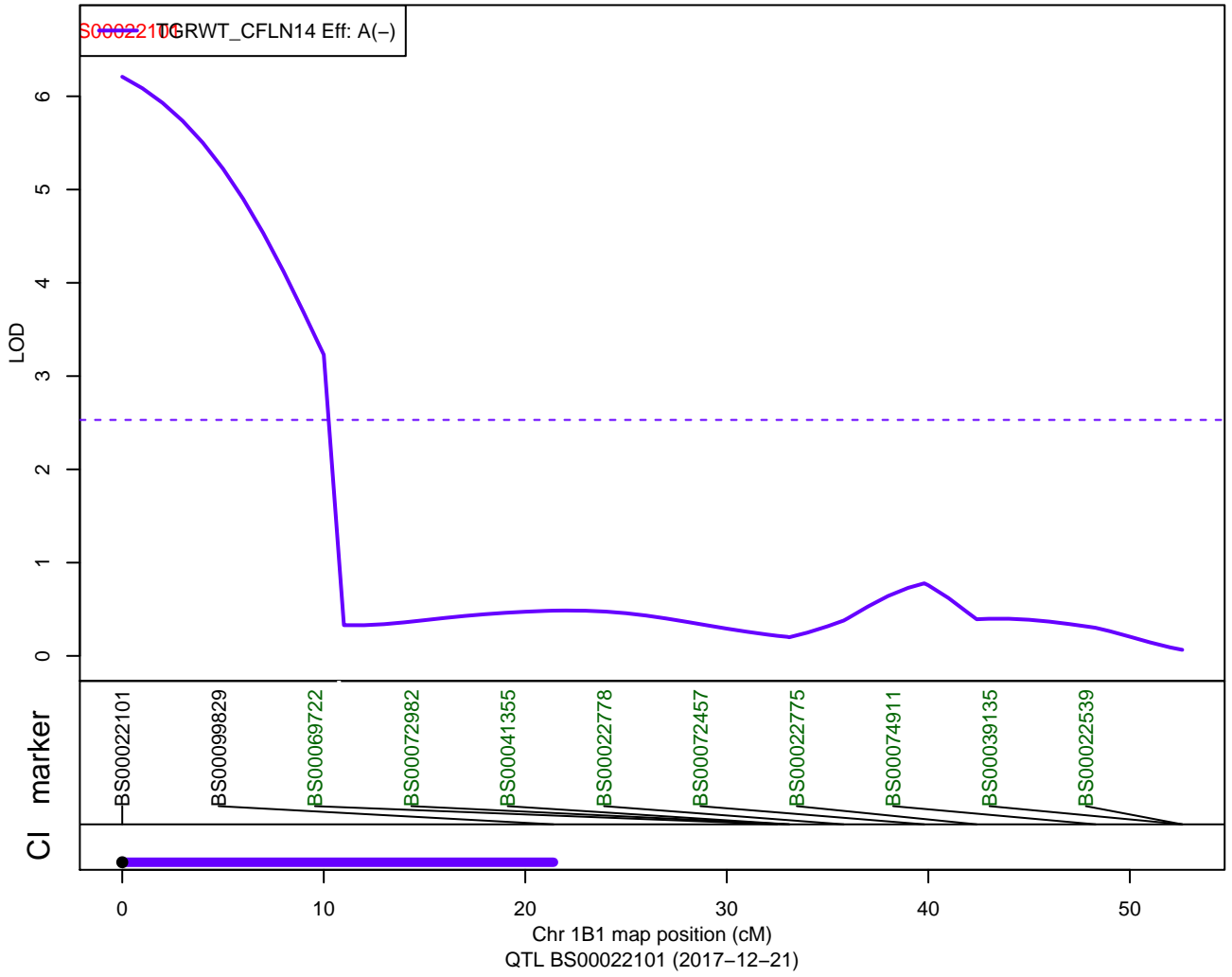
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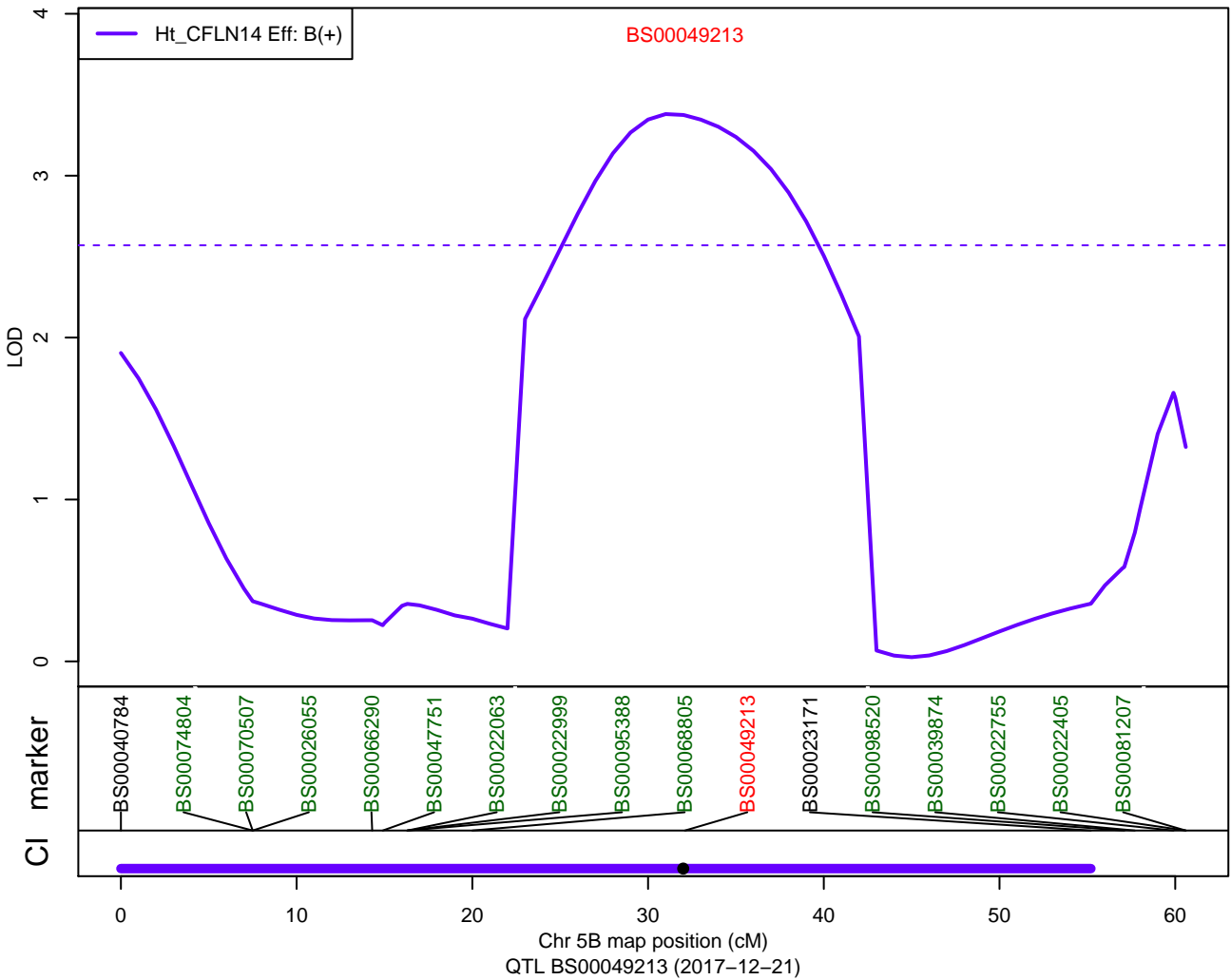
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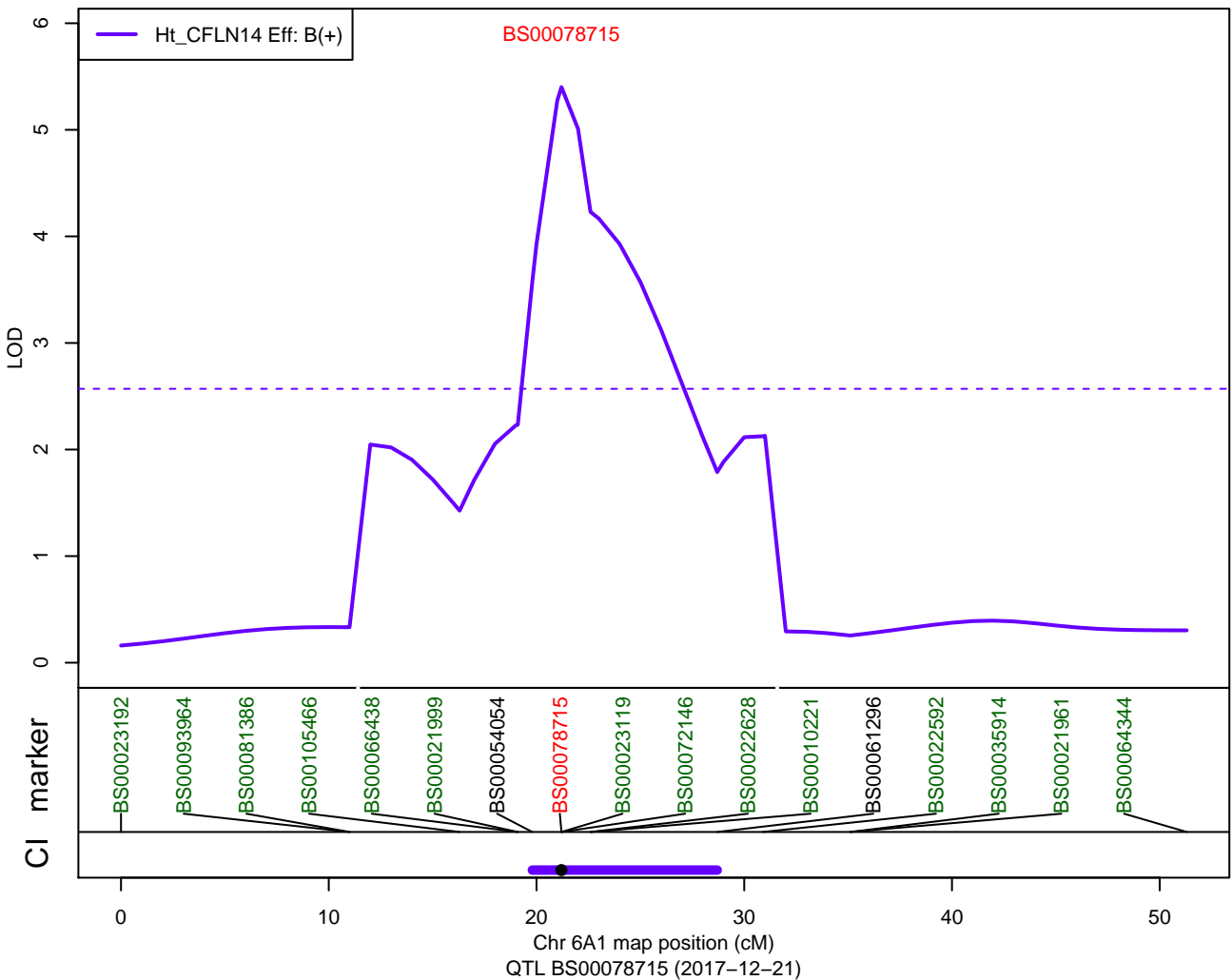
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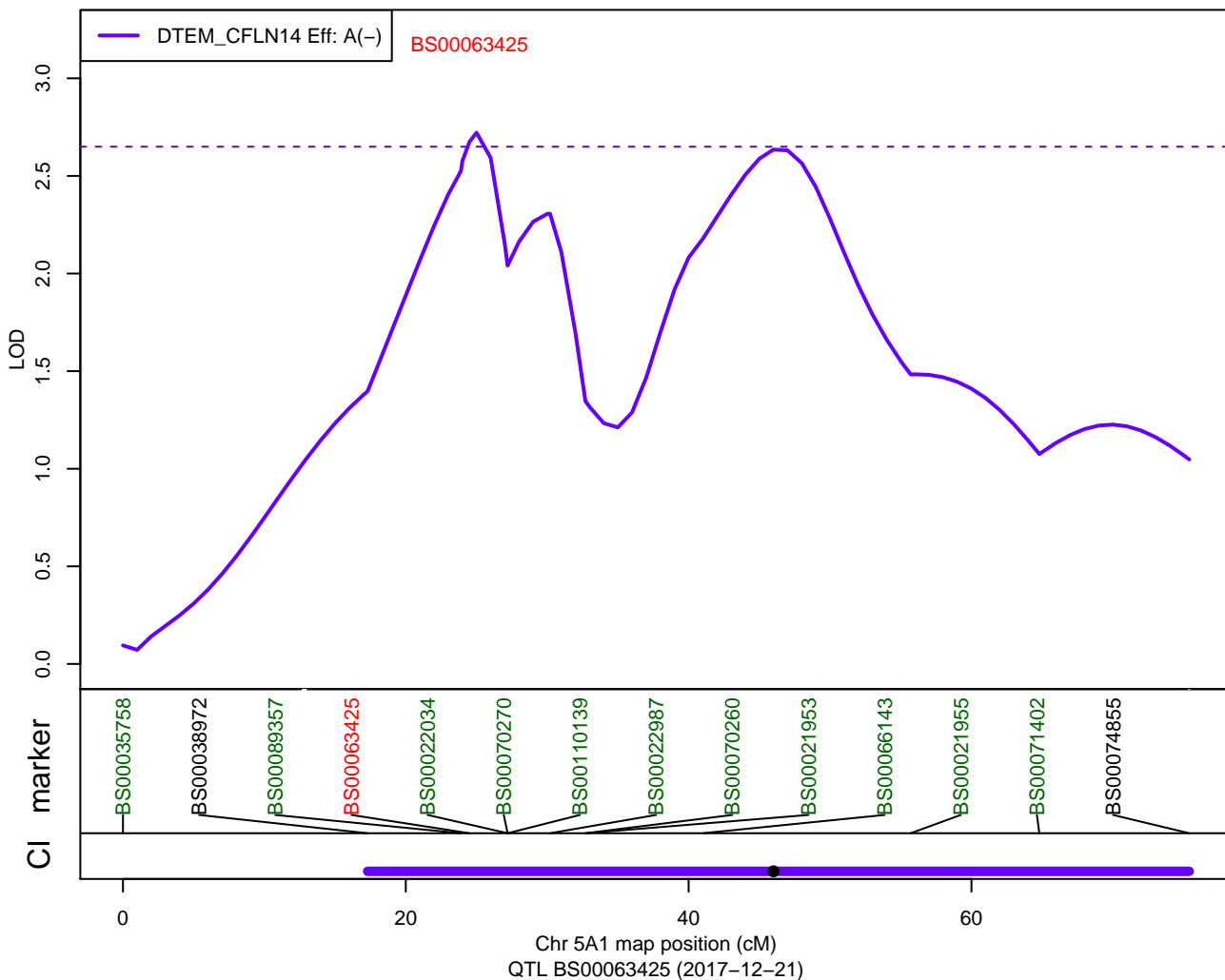
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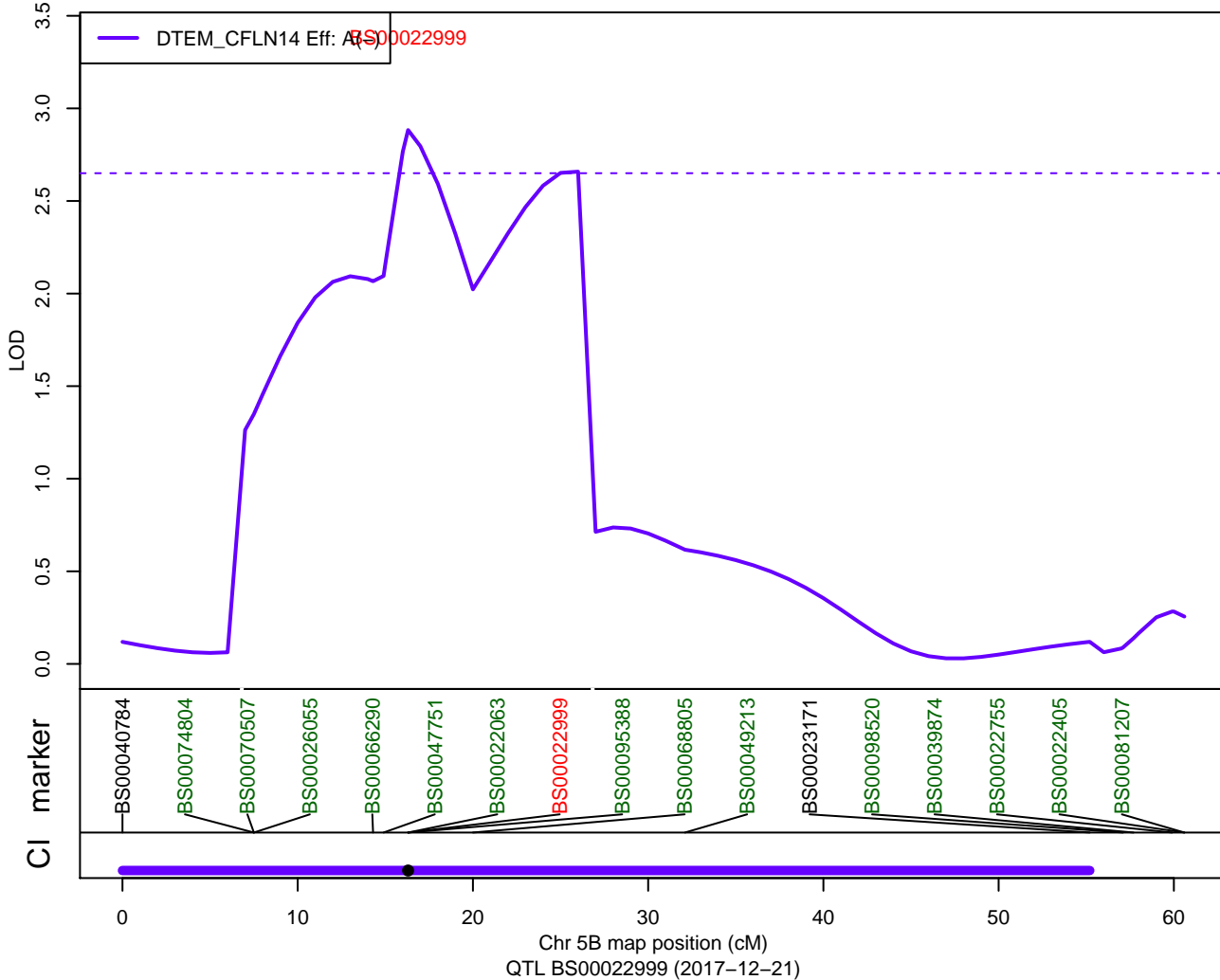
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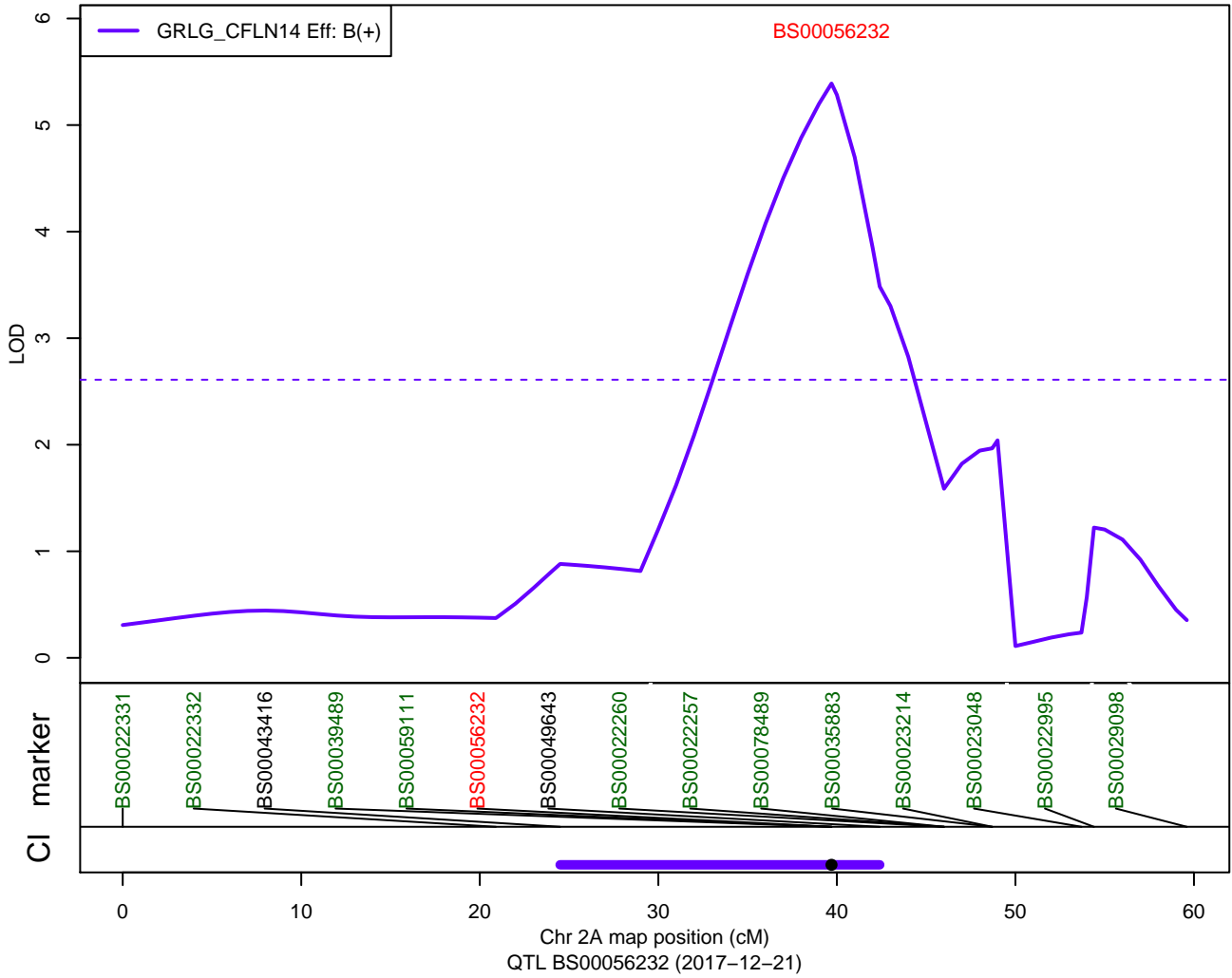
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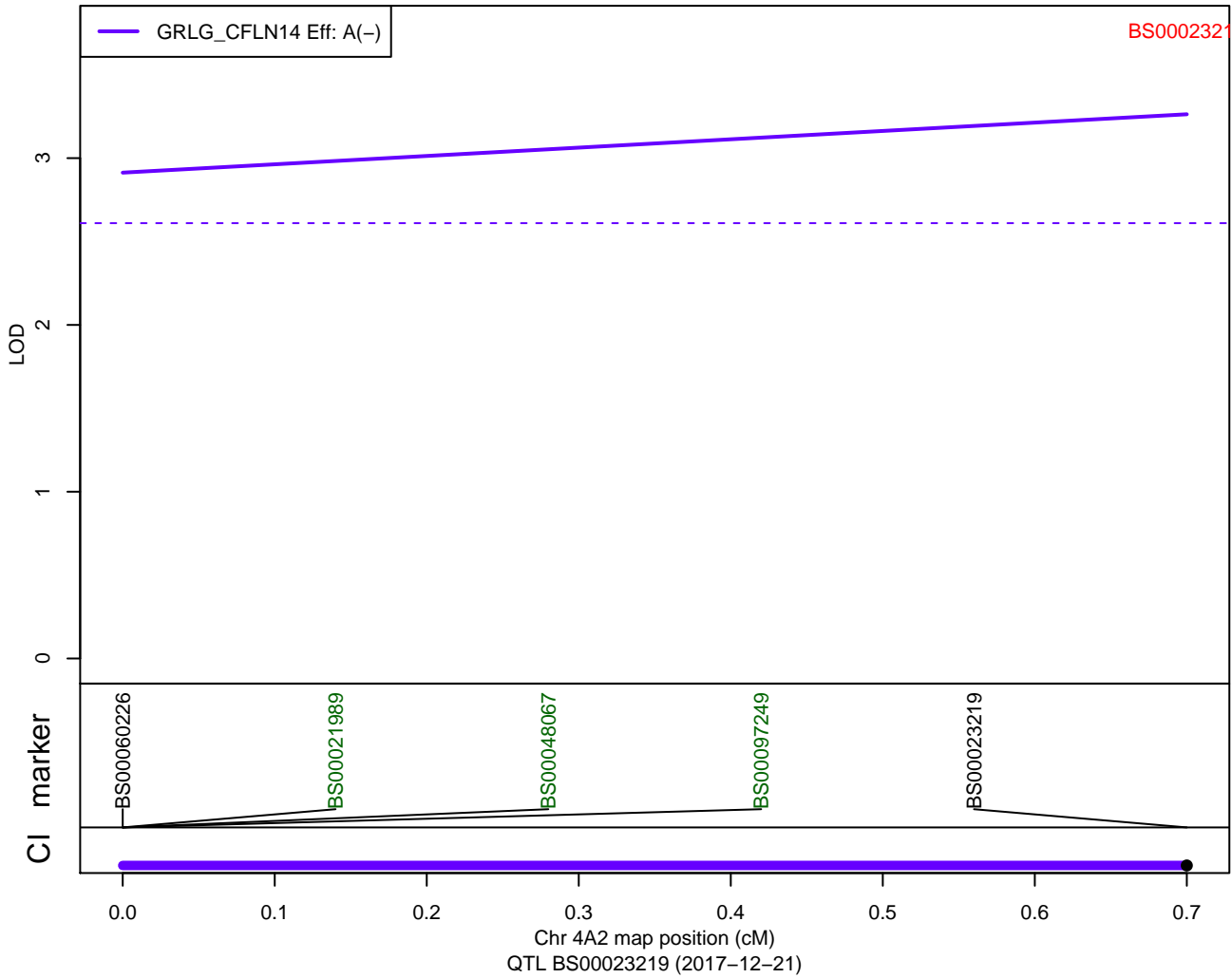
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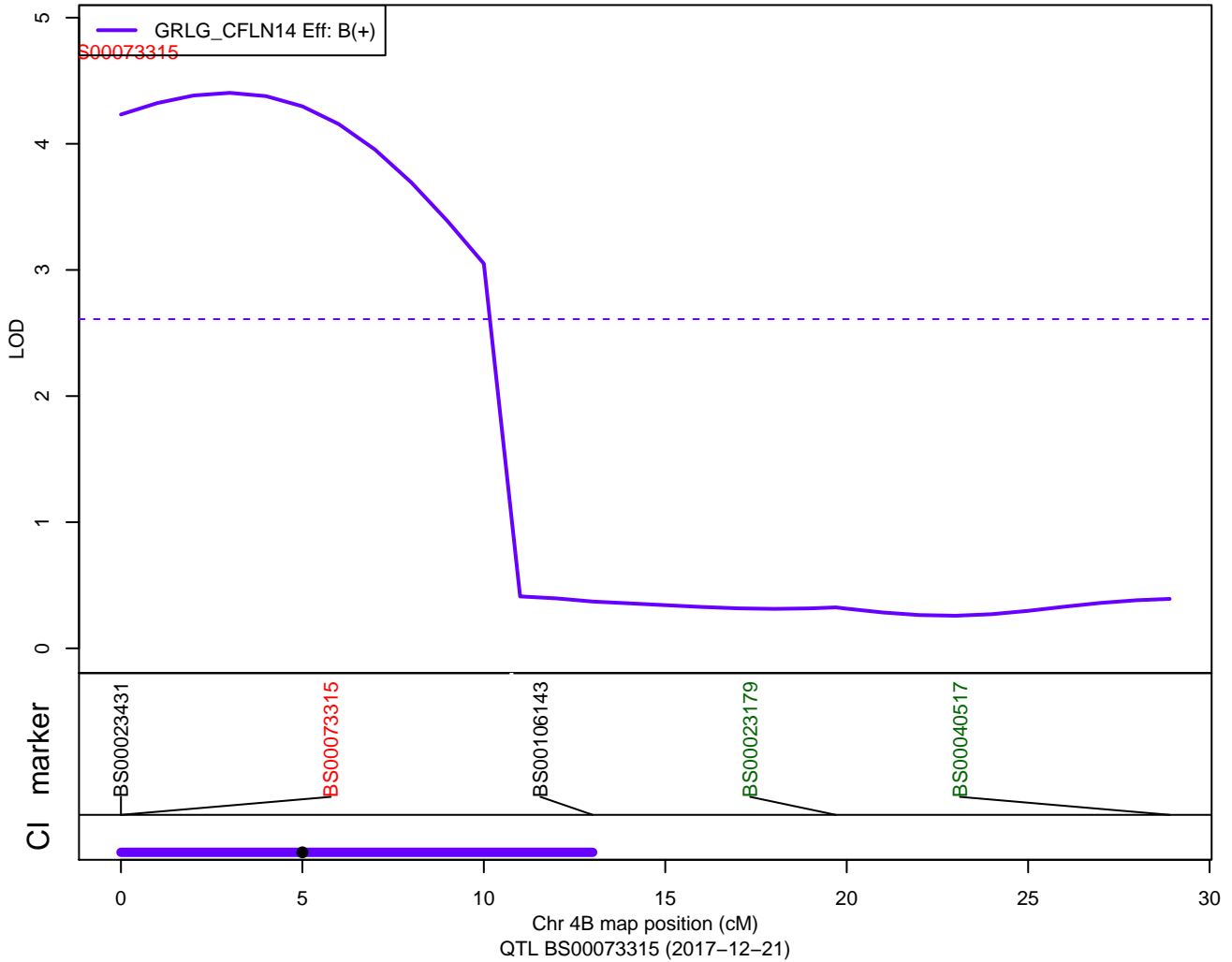
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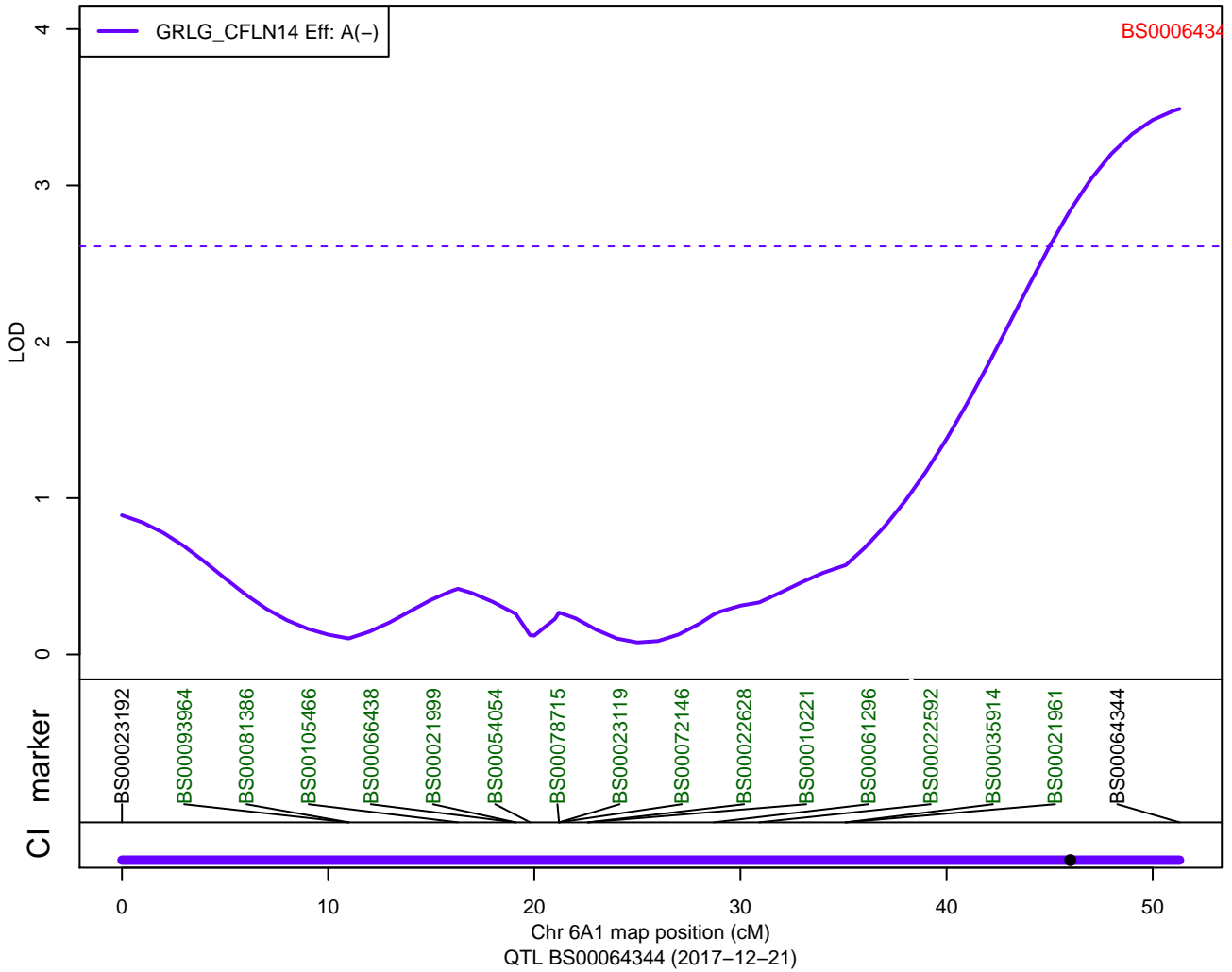
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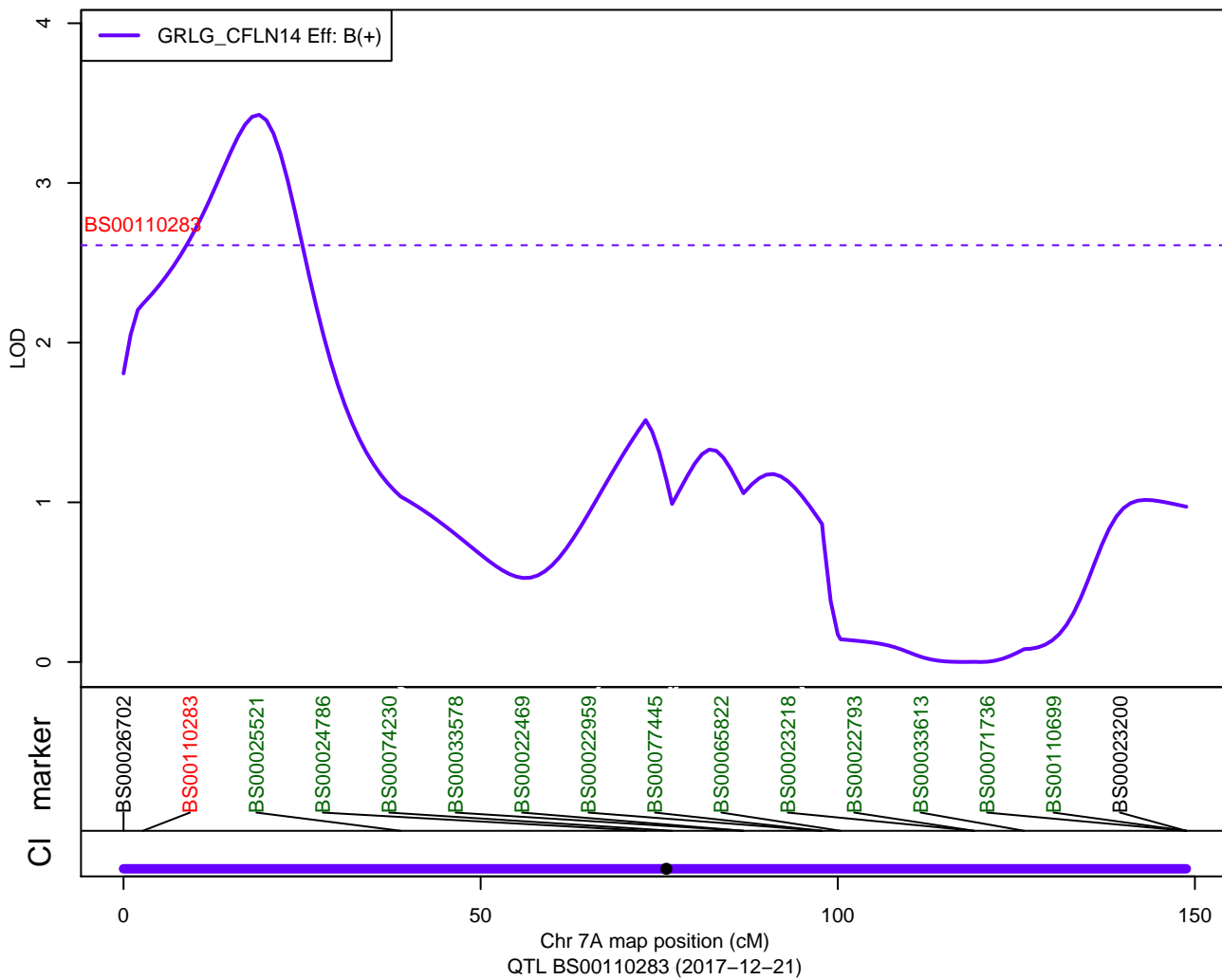
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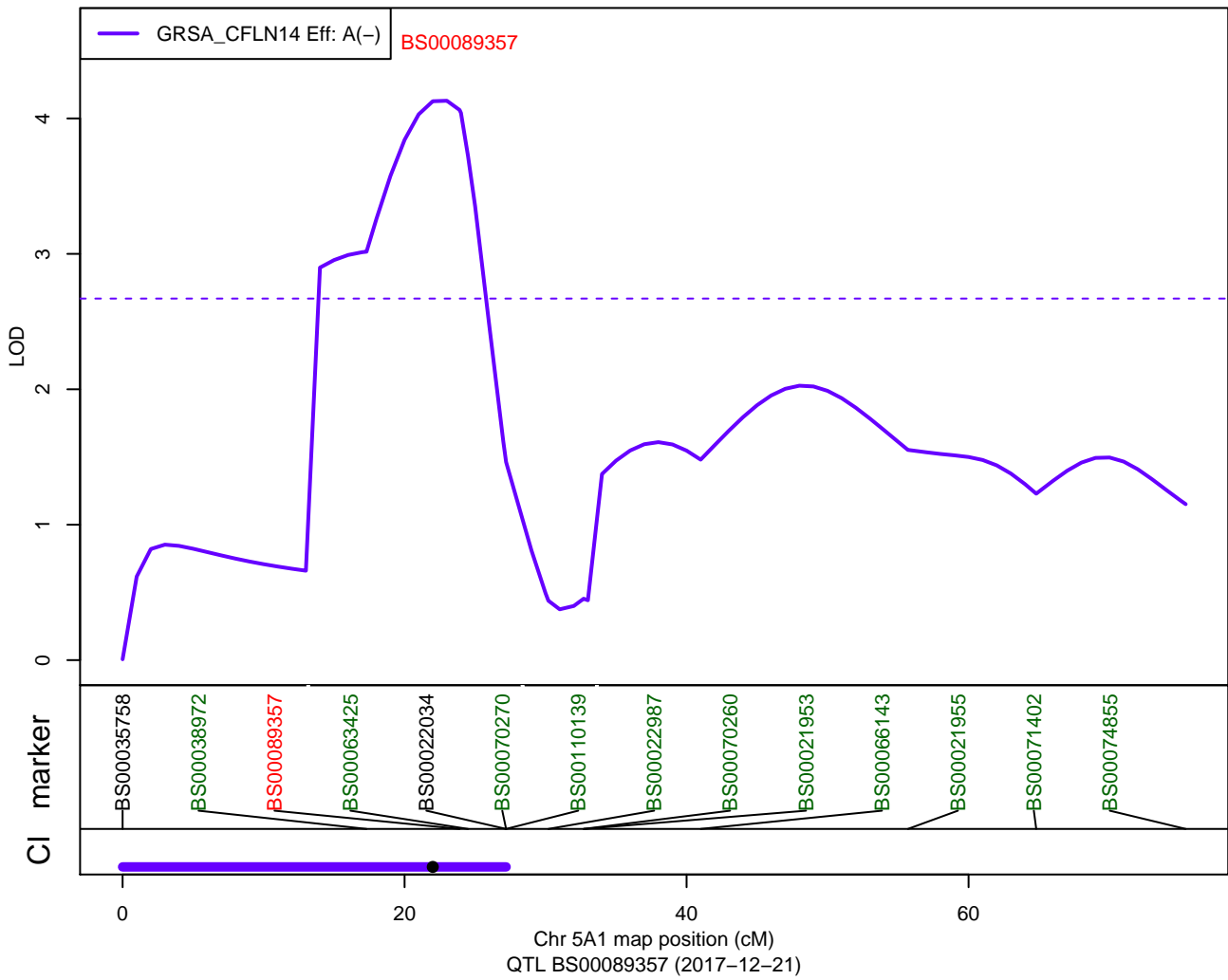
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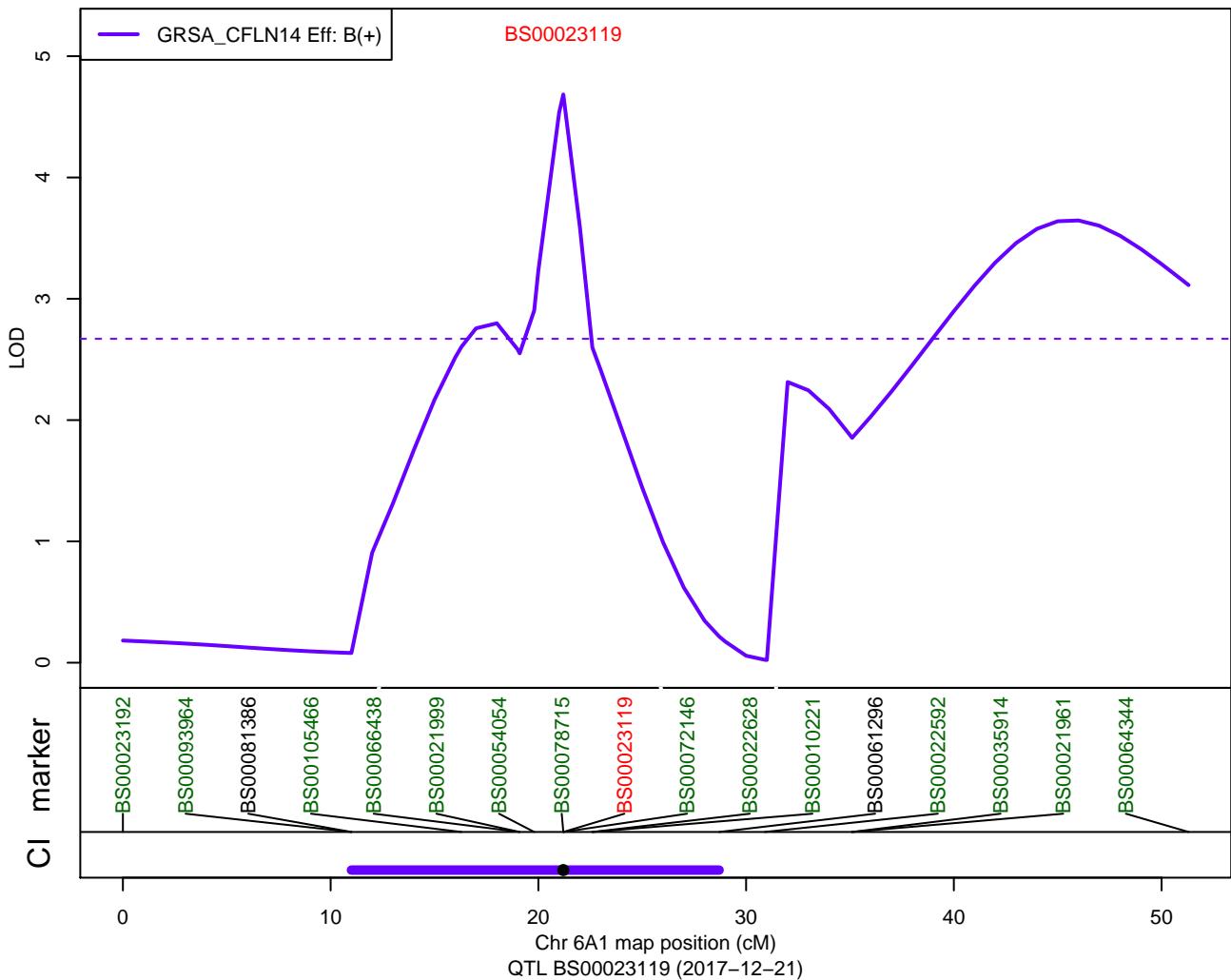
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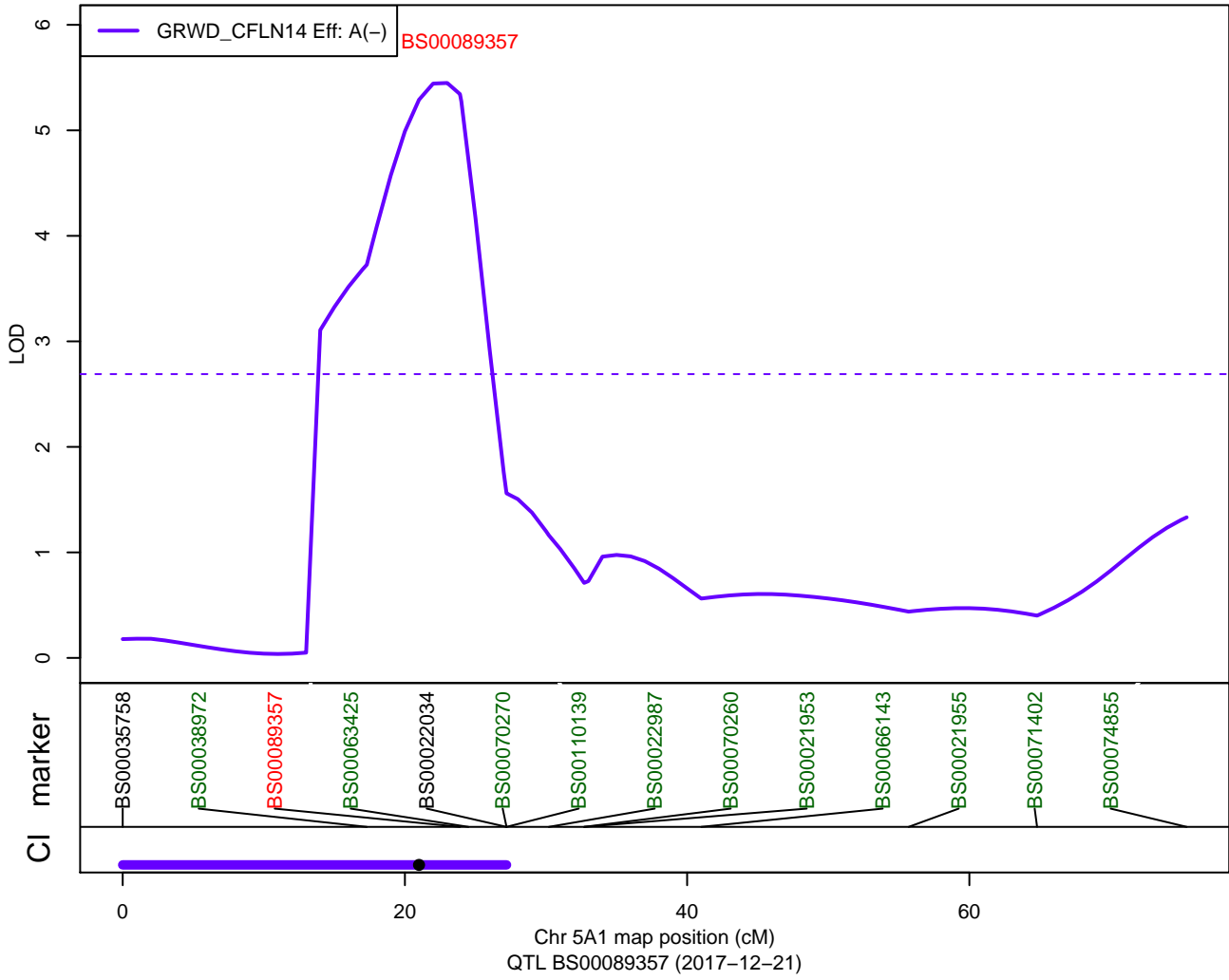
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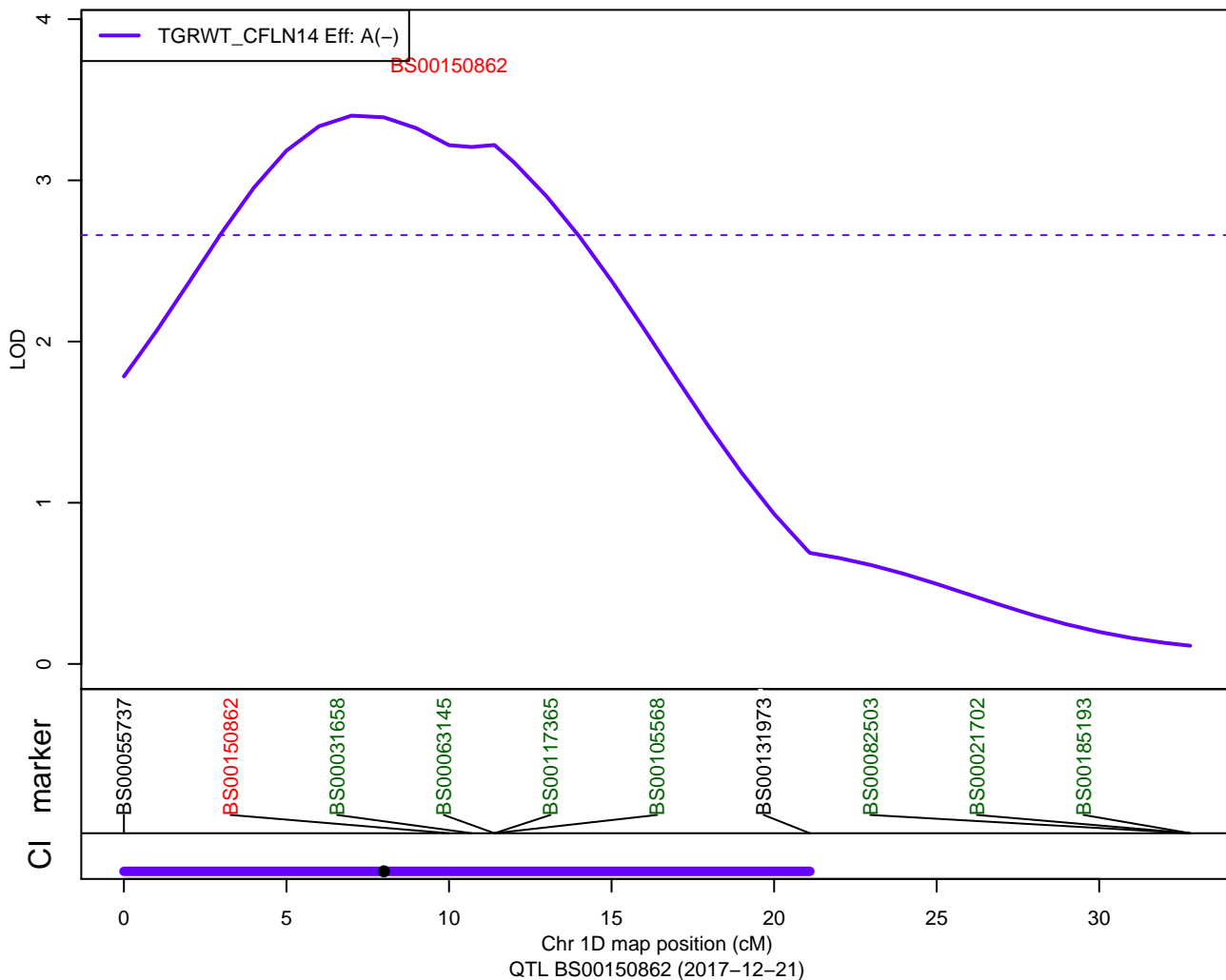
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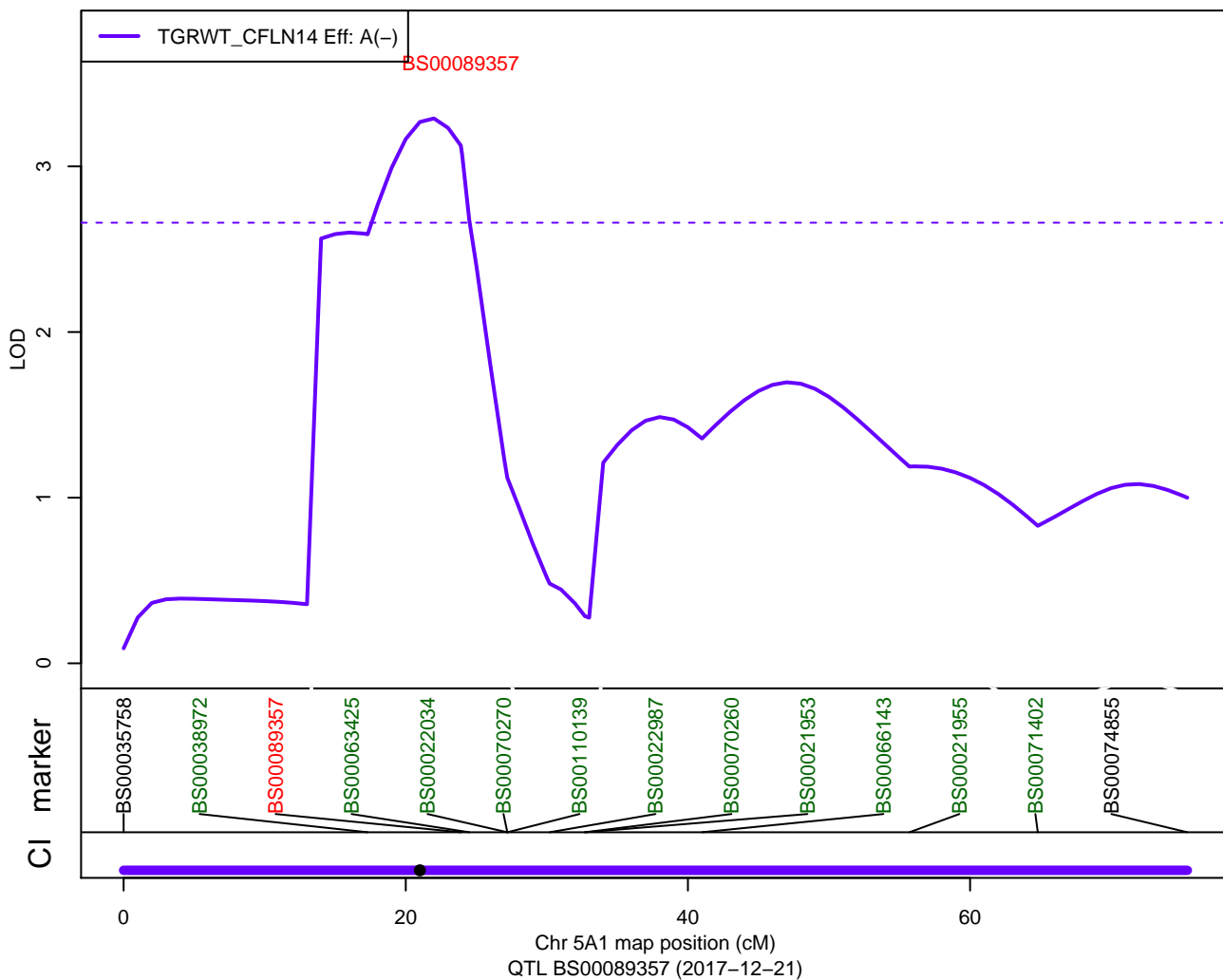
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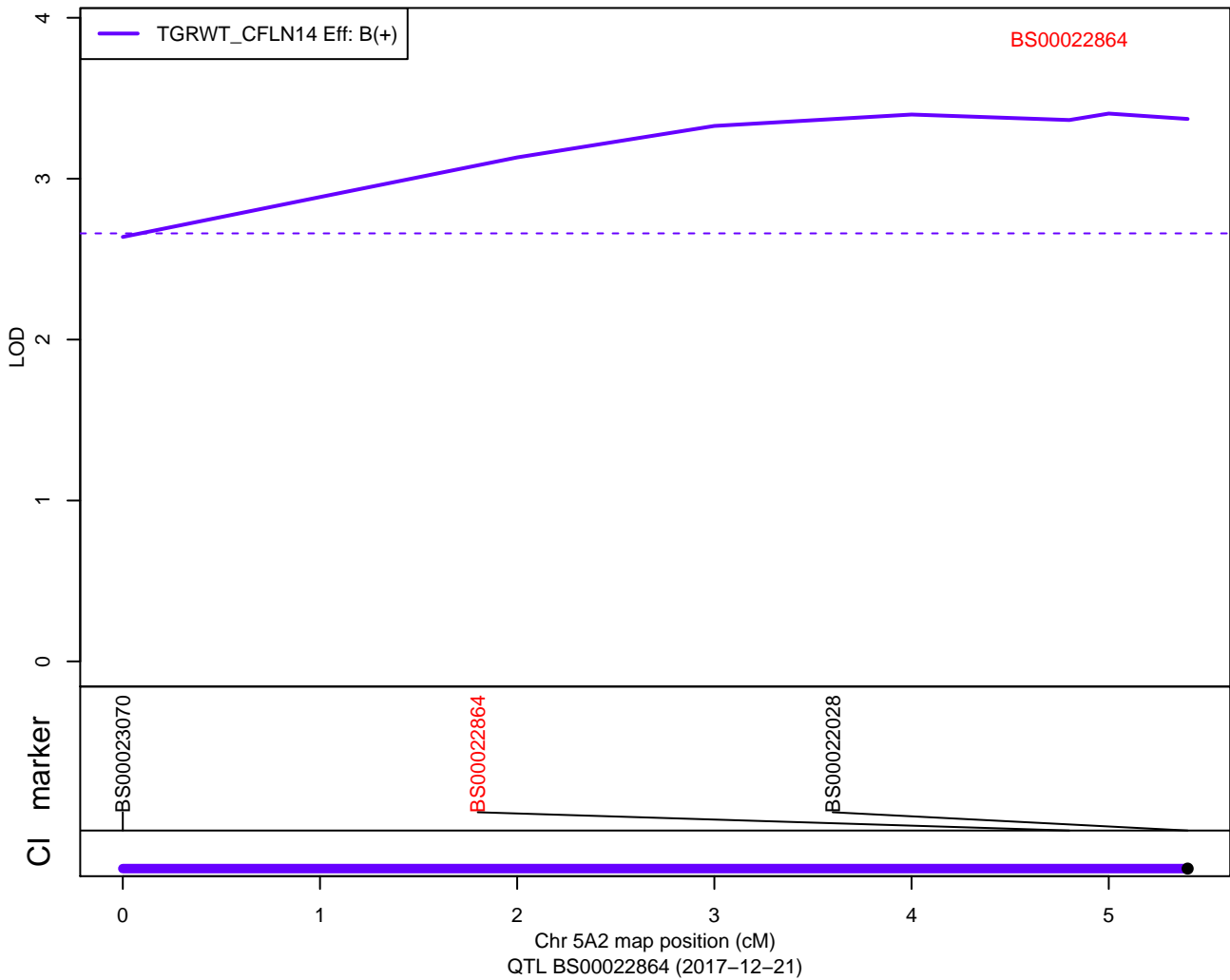
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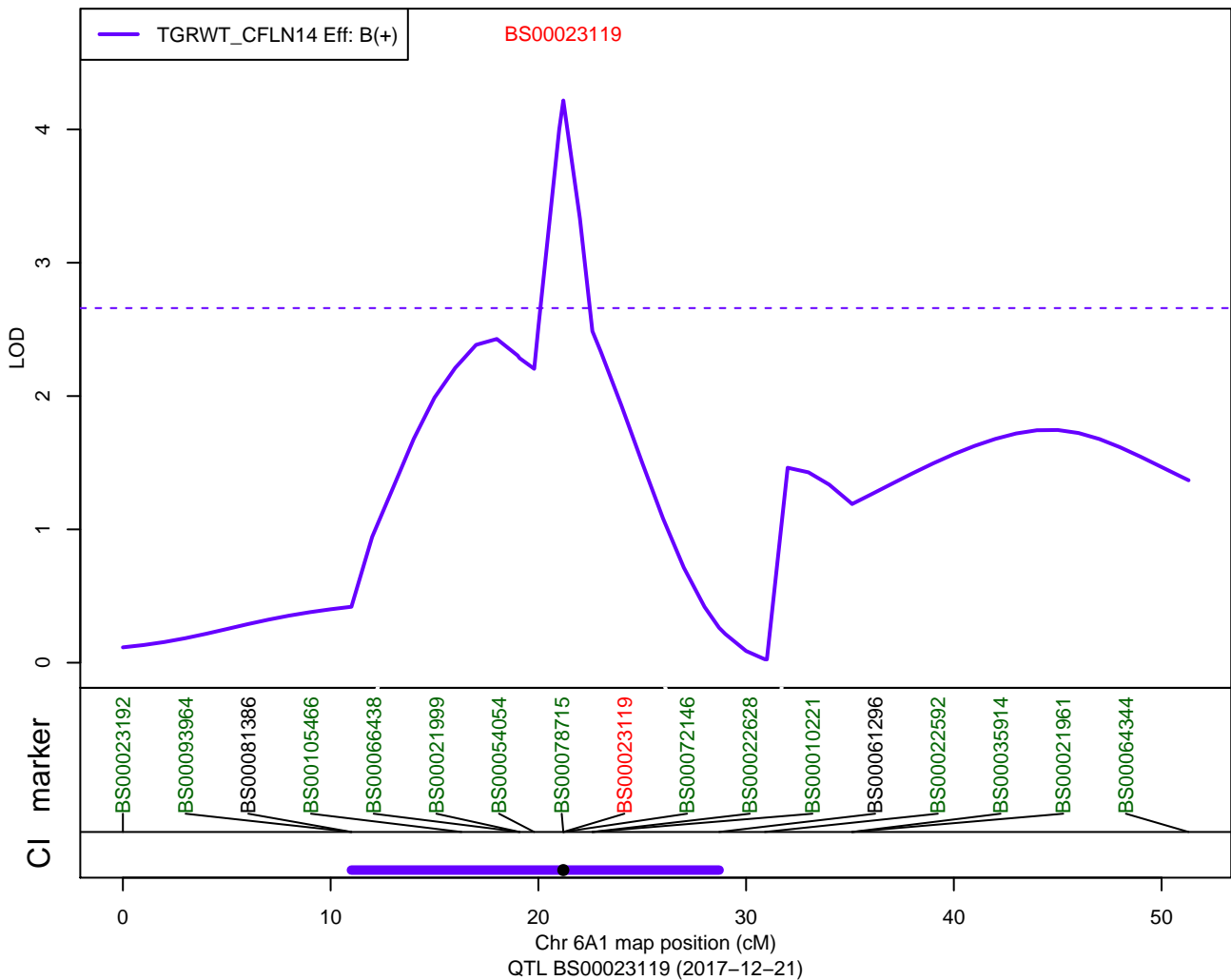
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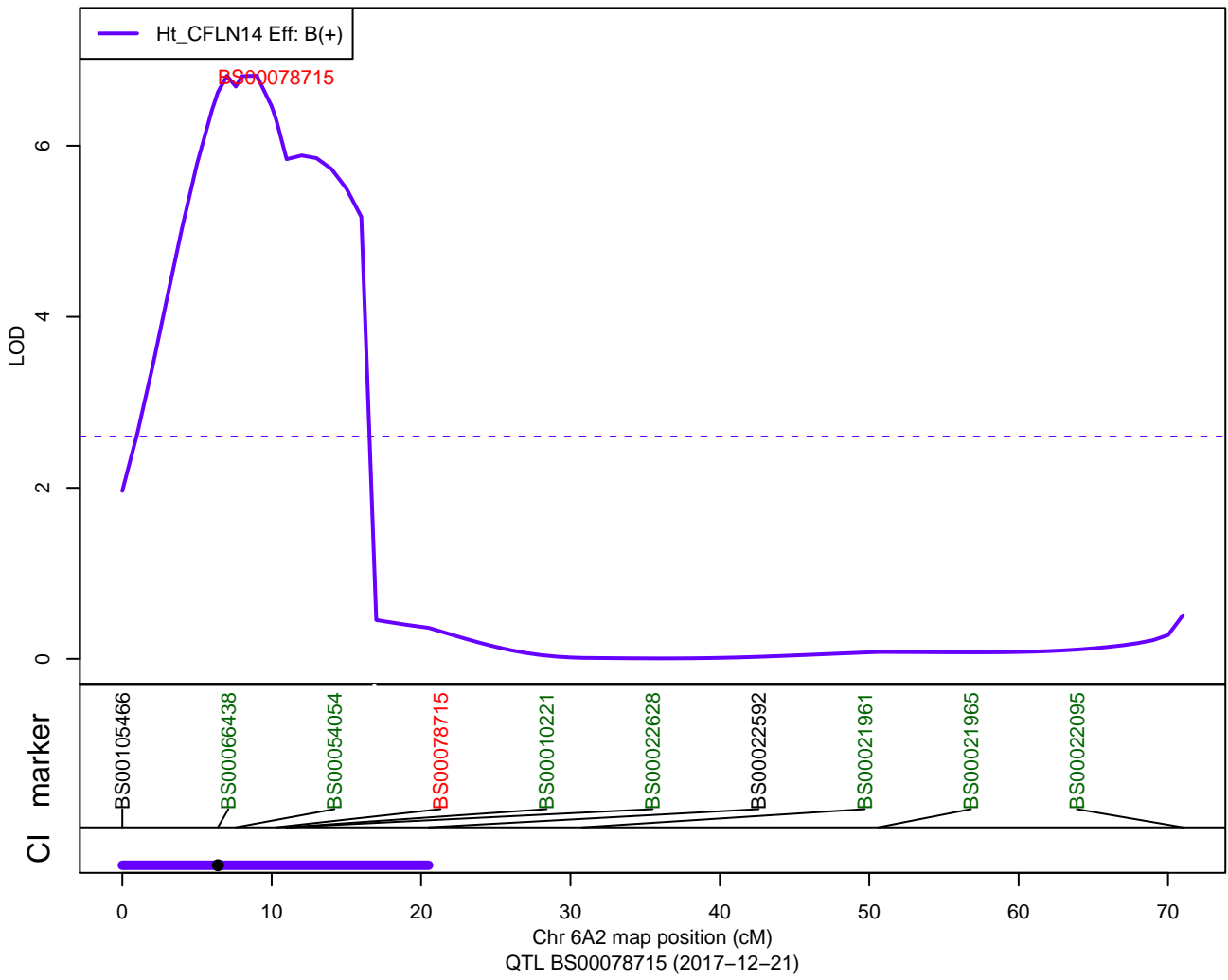
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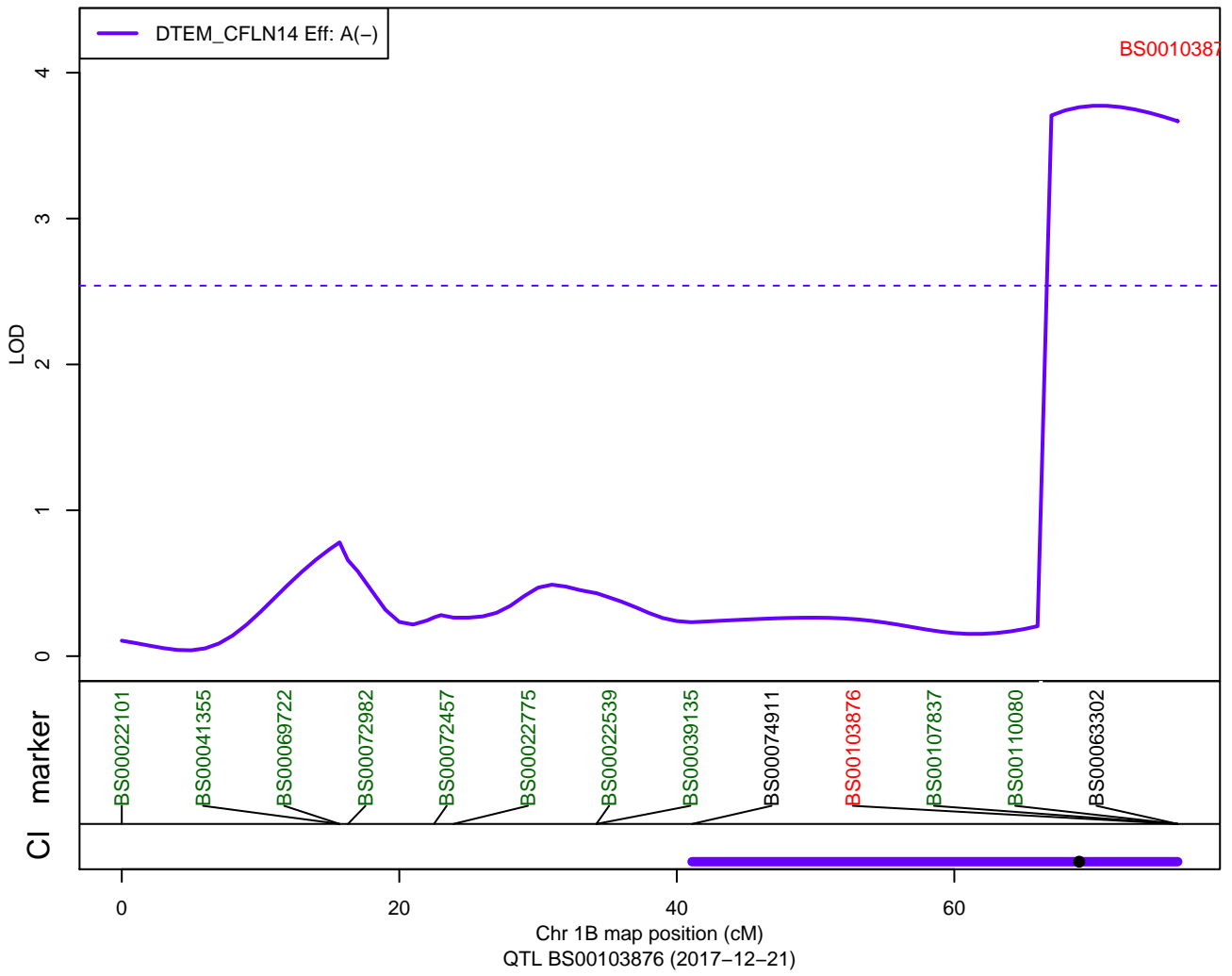
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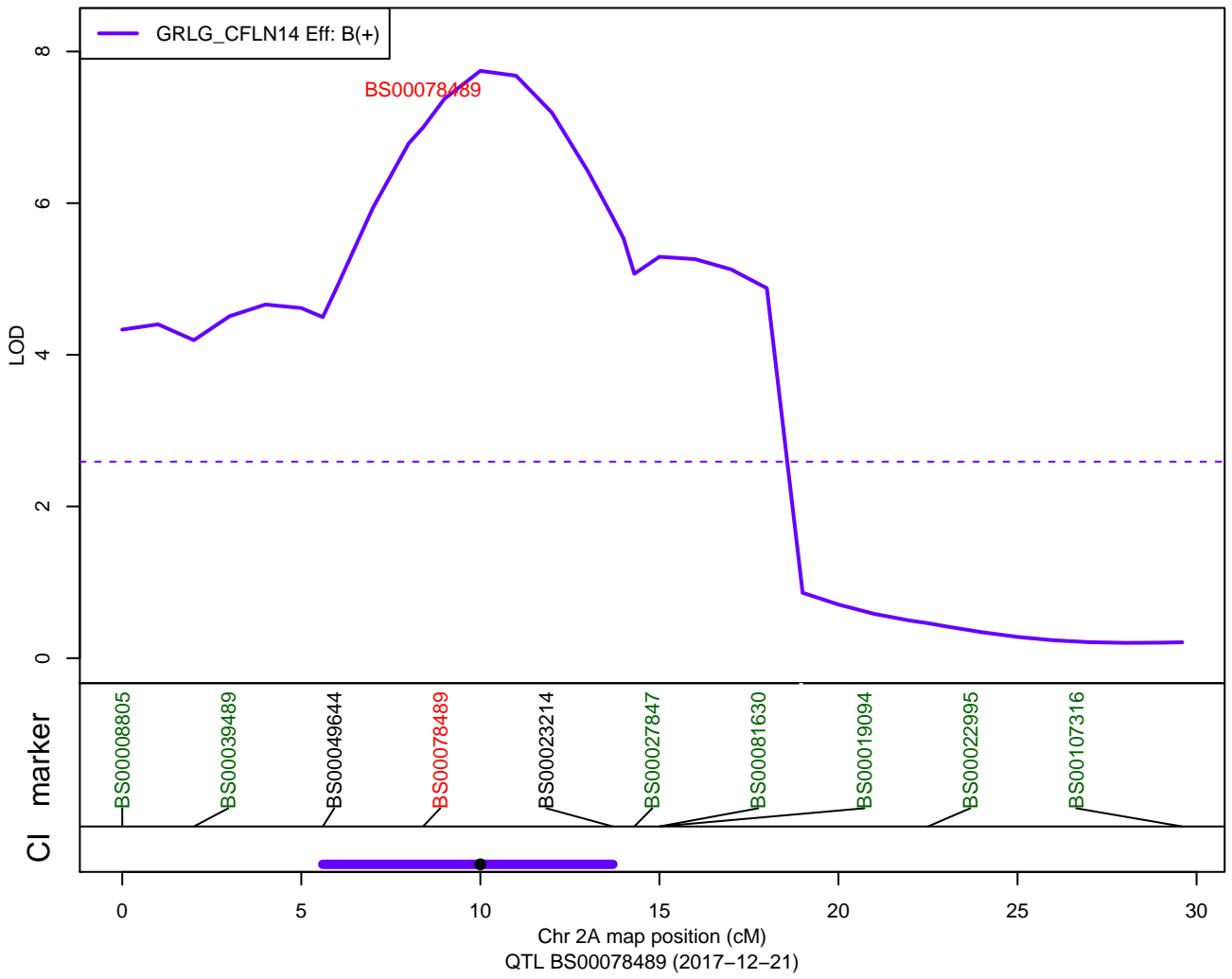
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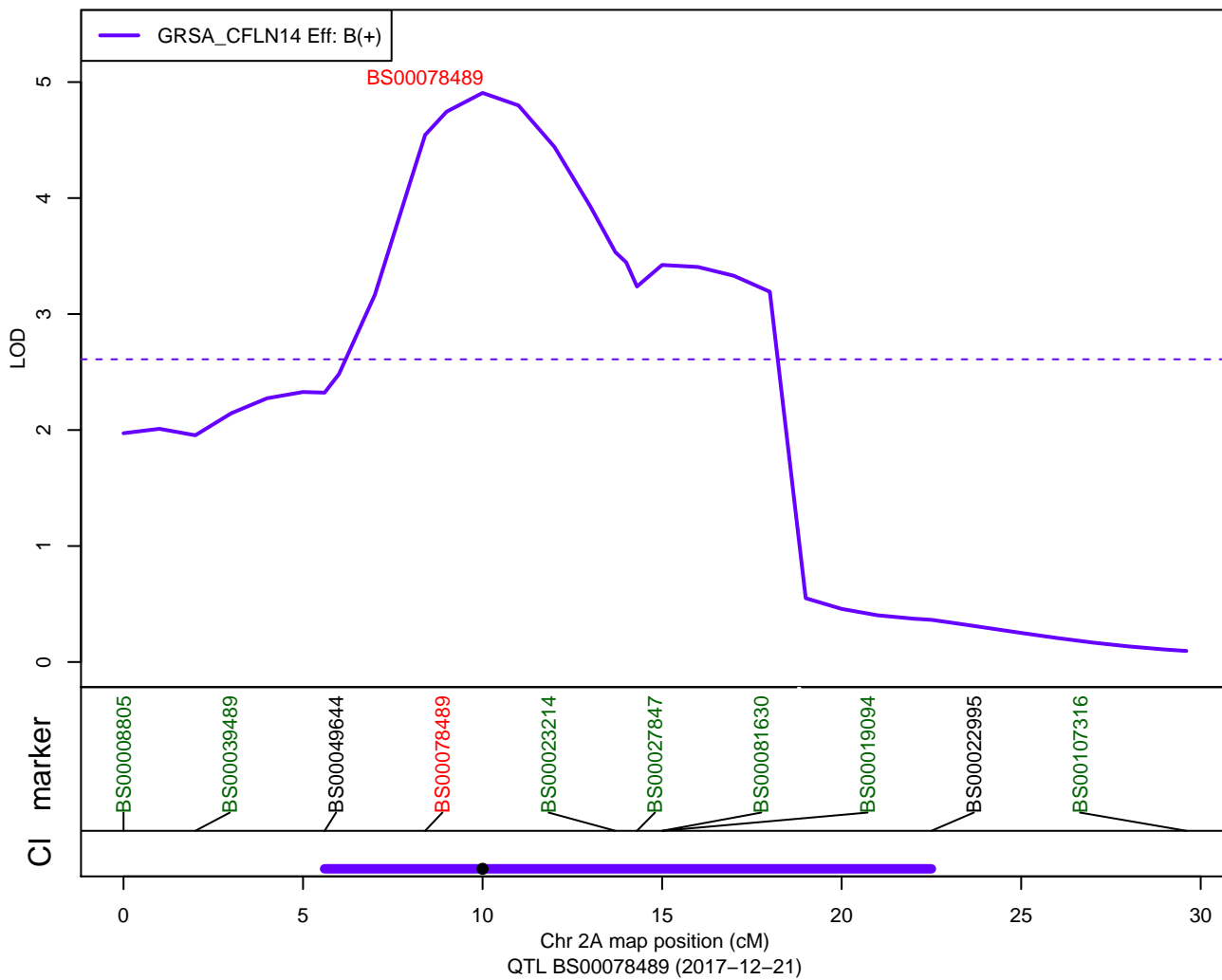
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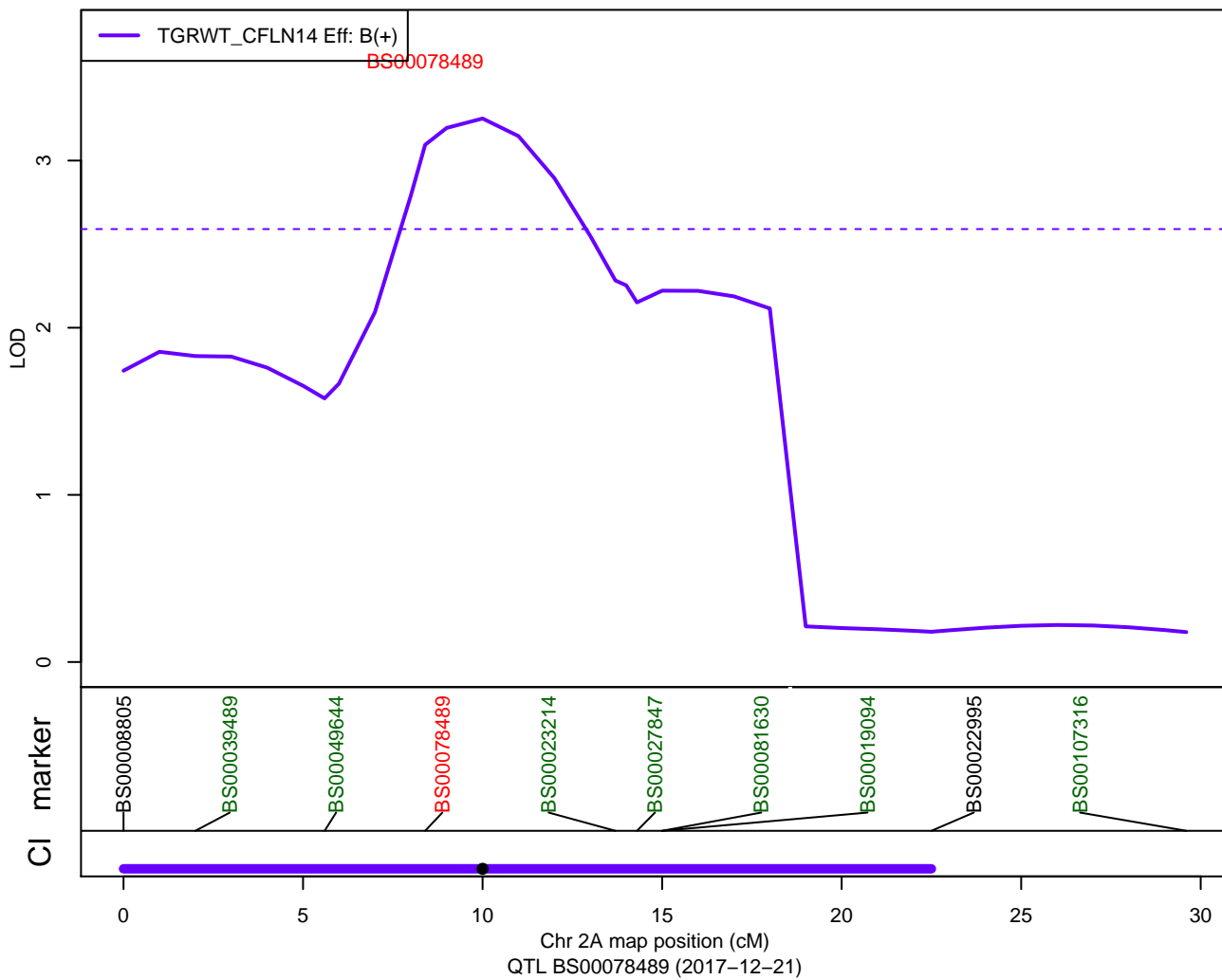
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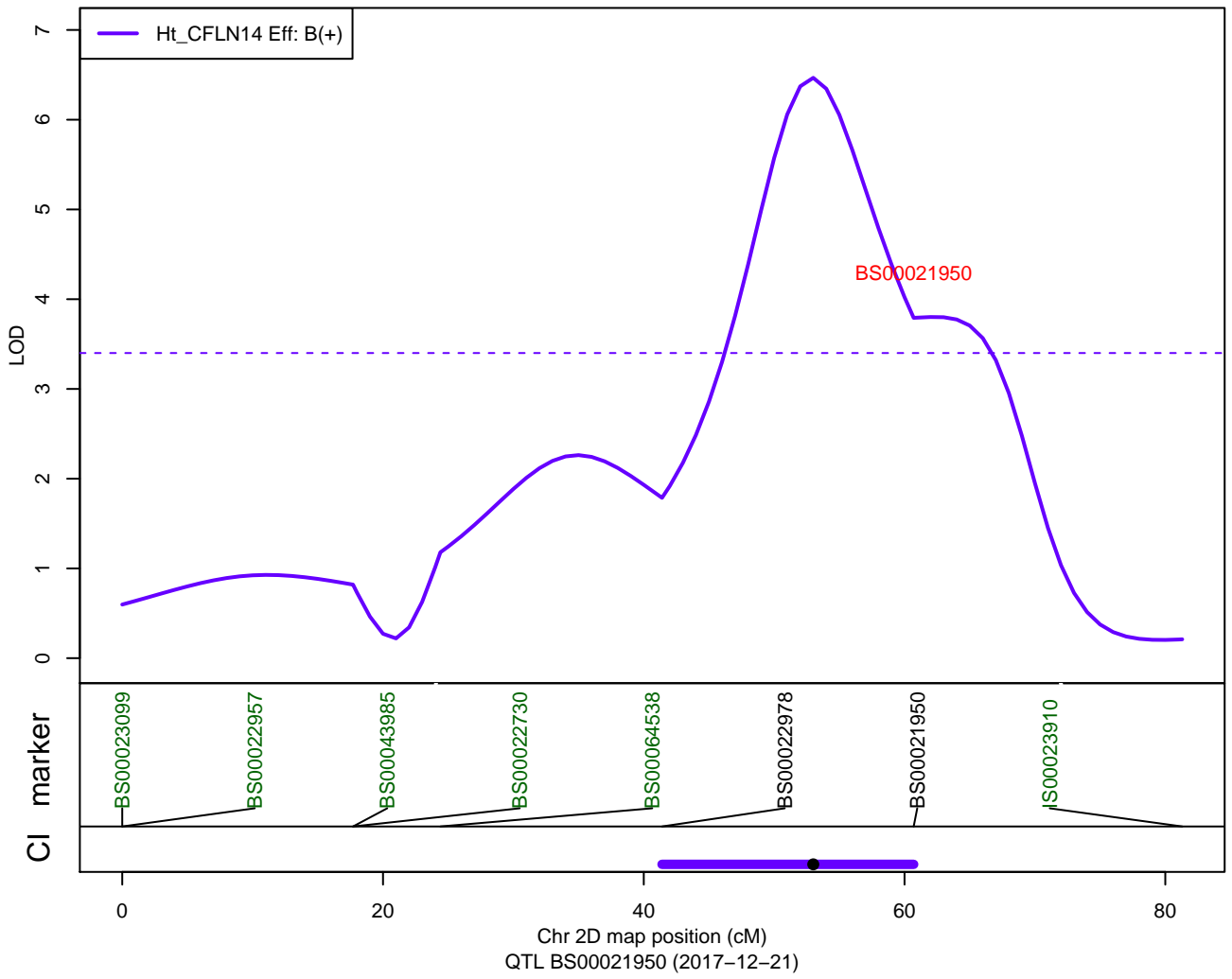
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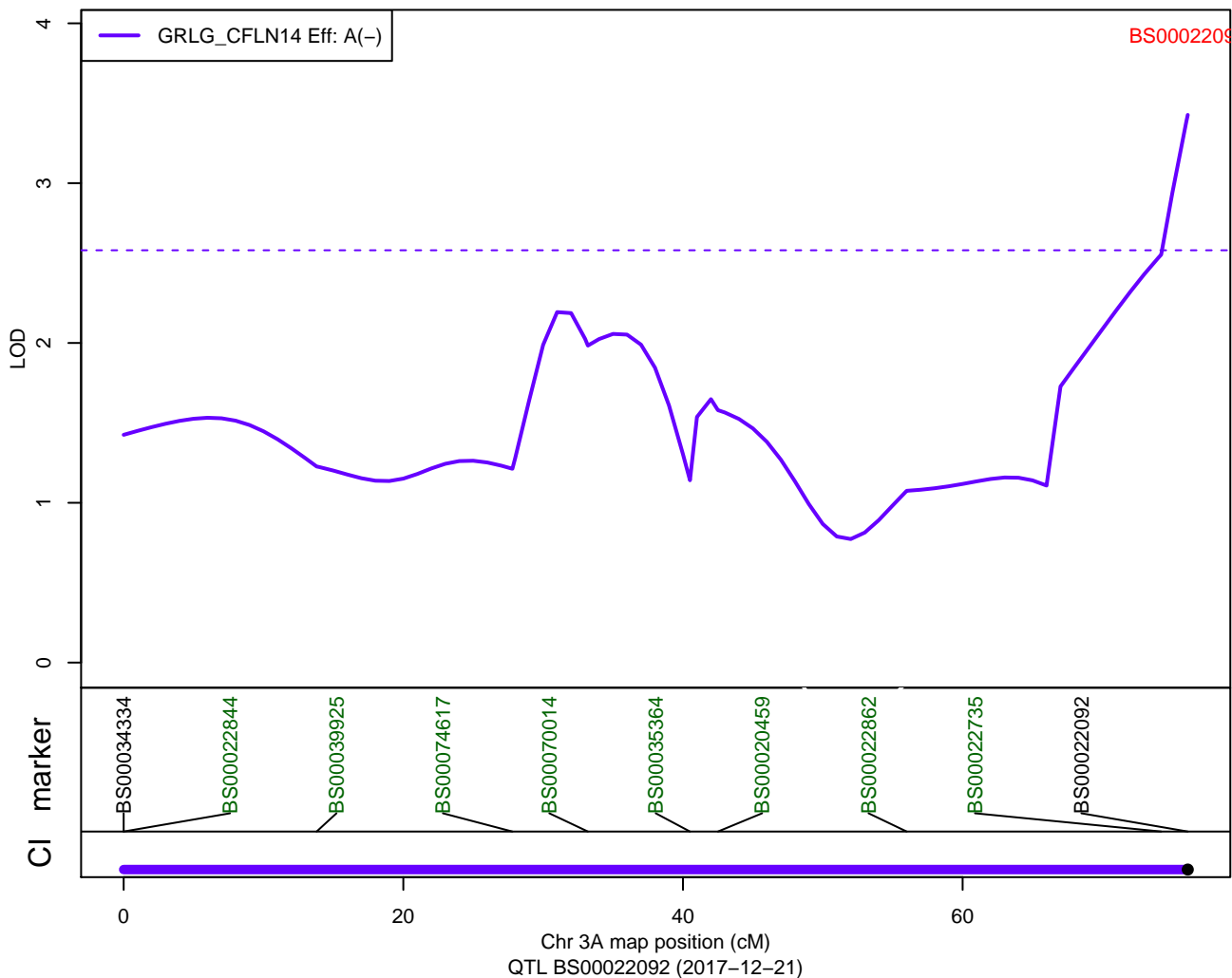
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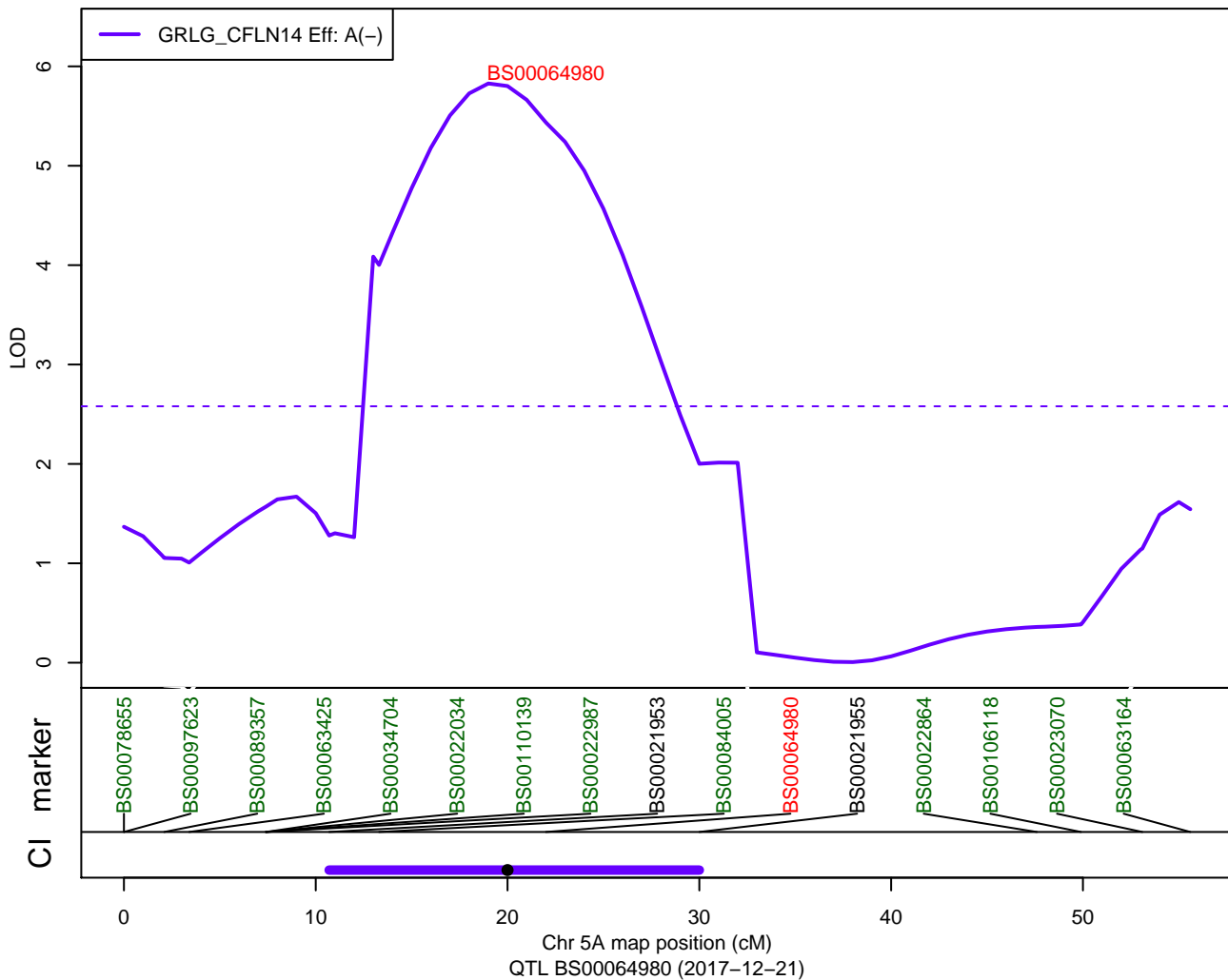
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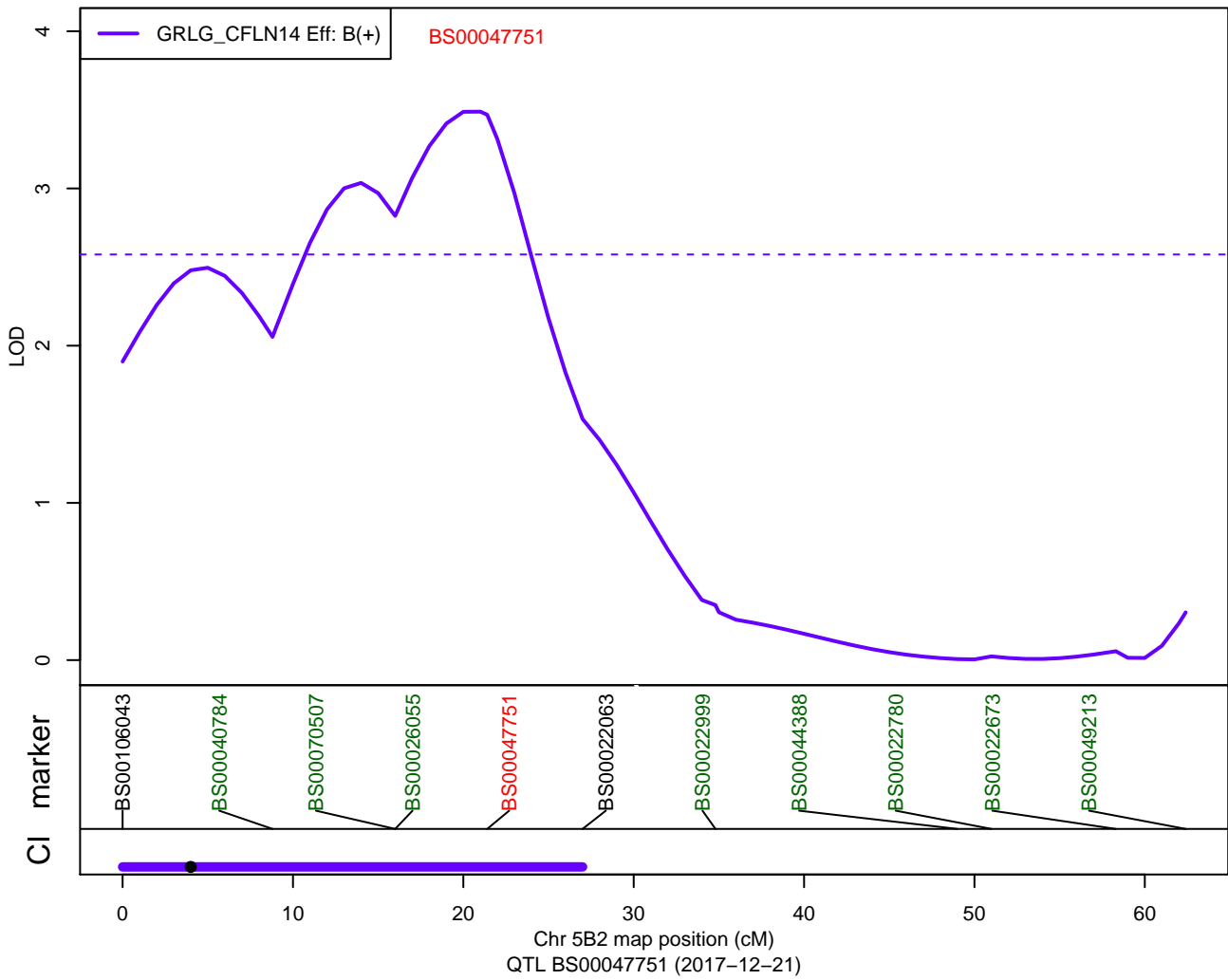
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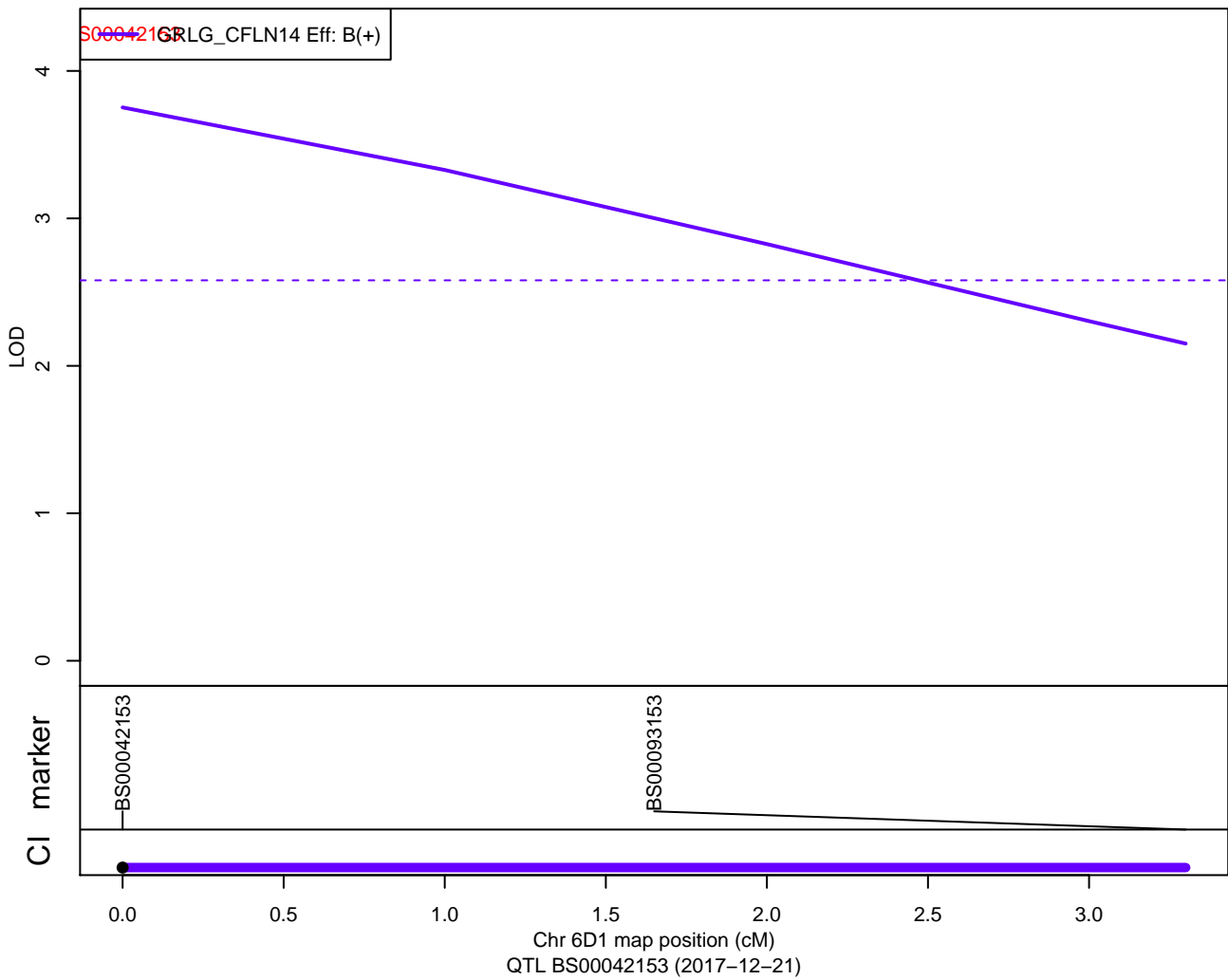
QTLs: ParW219 – GRLG – 5A



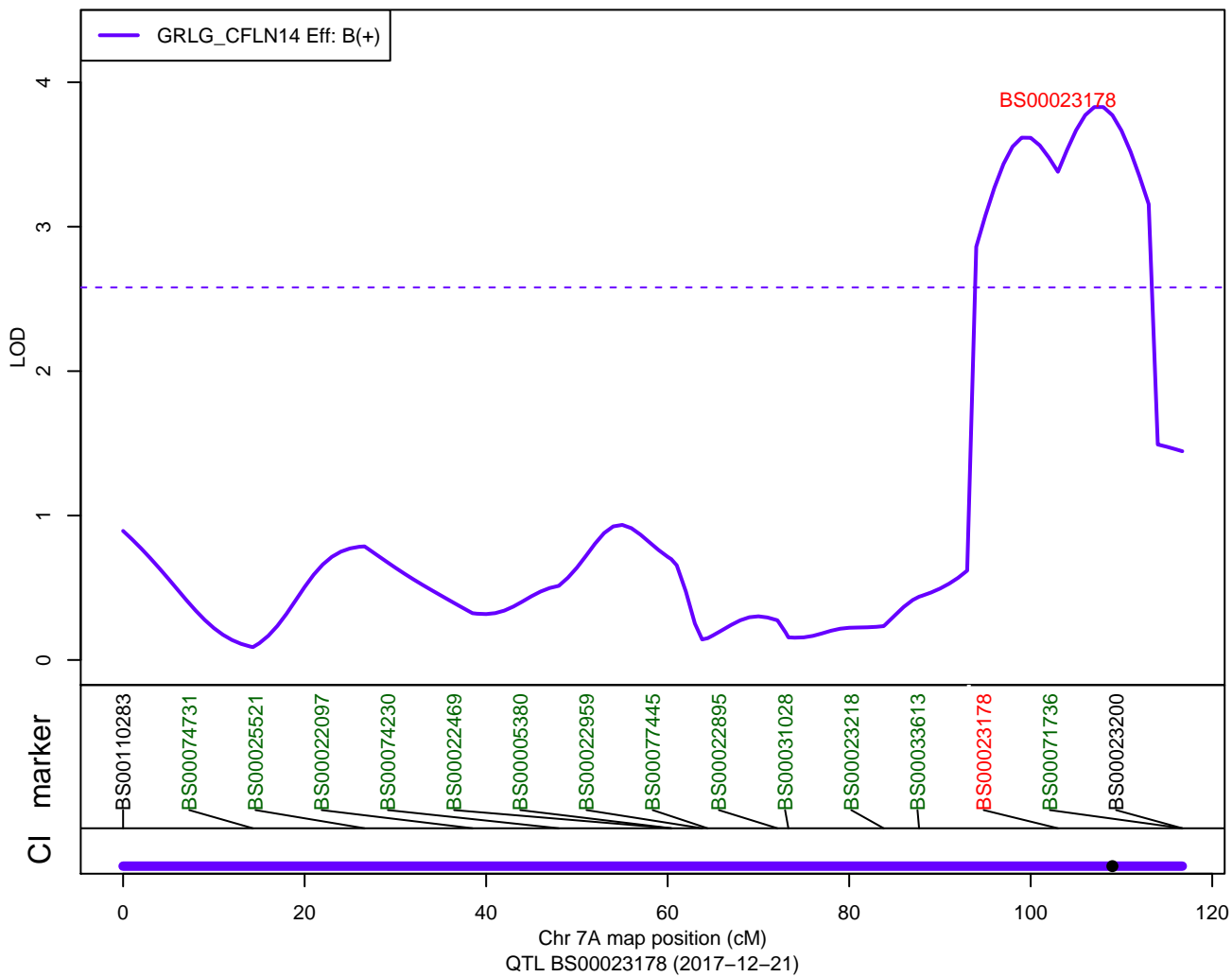
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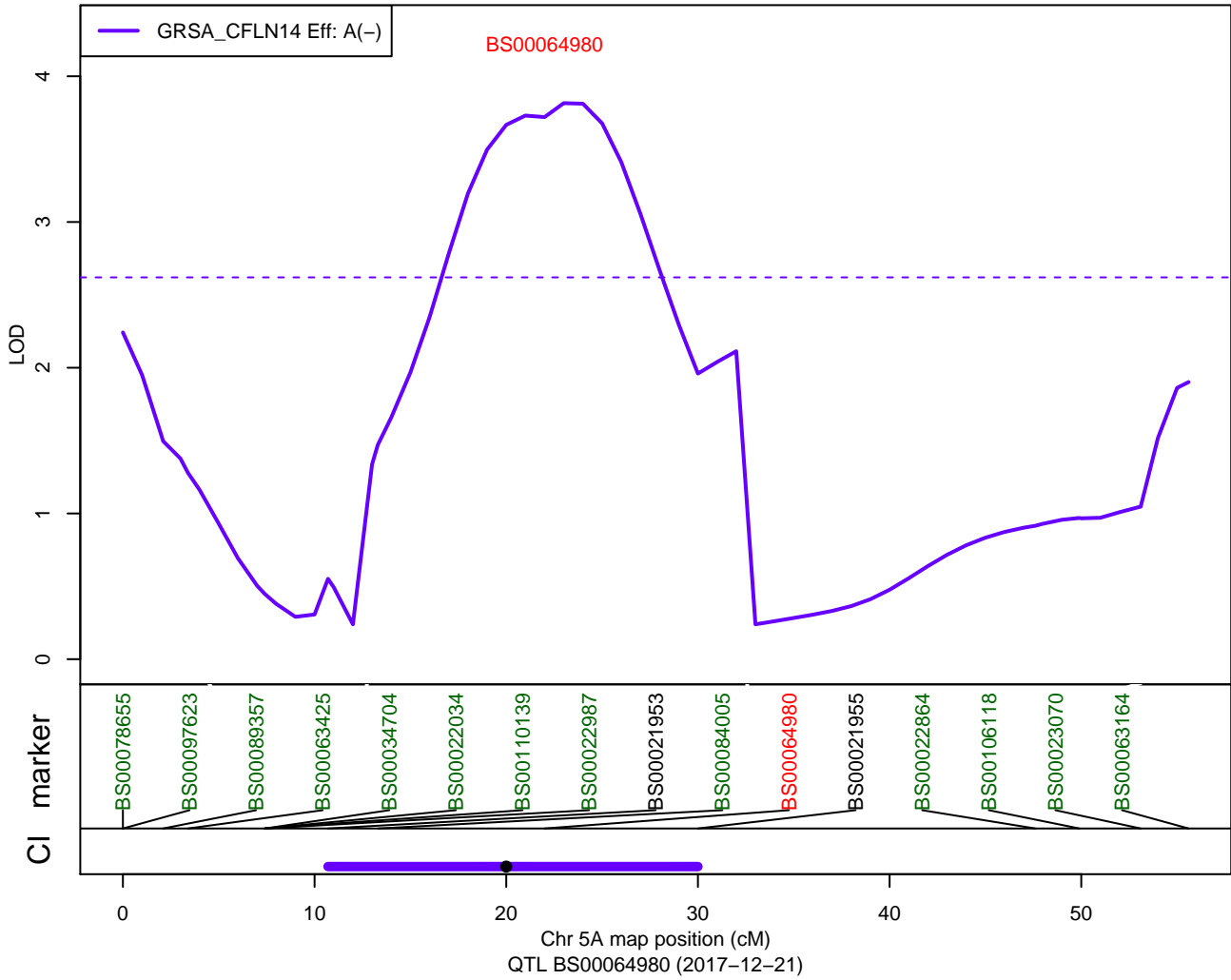
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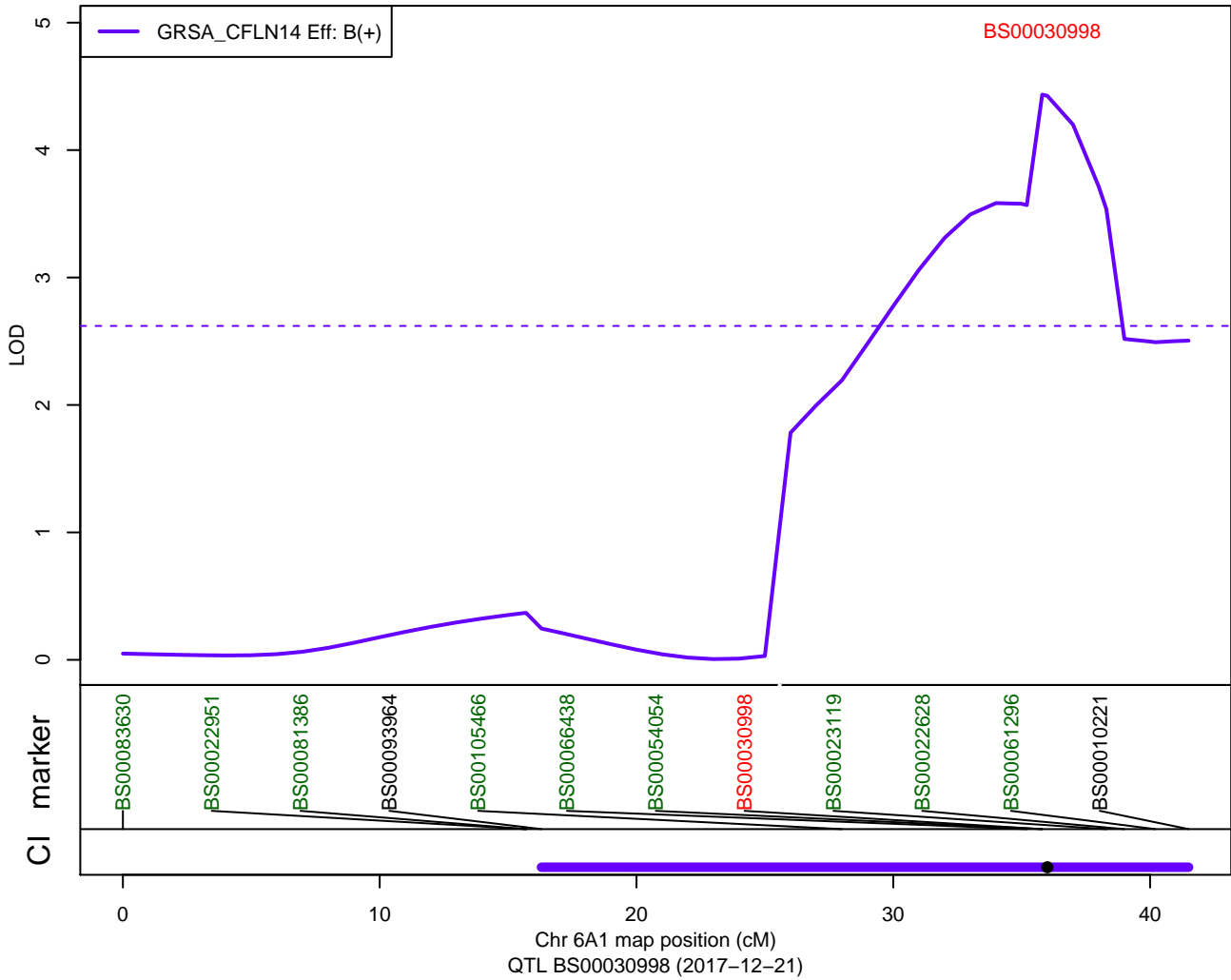
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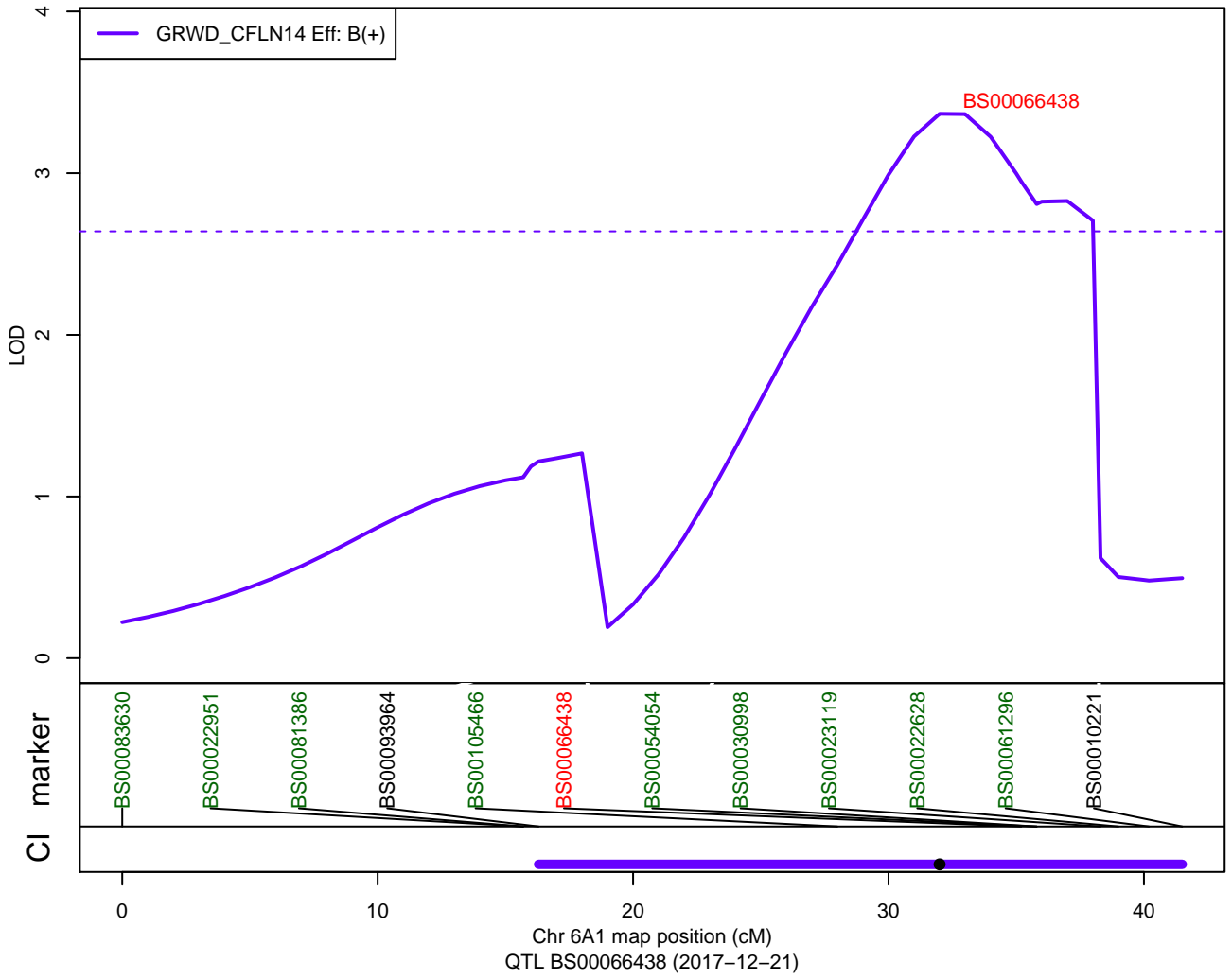
QTLs: ParW219 – GRSA – 5A



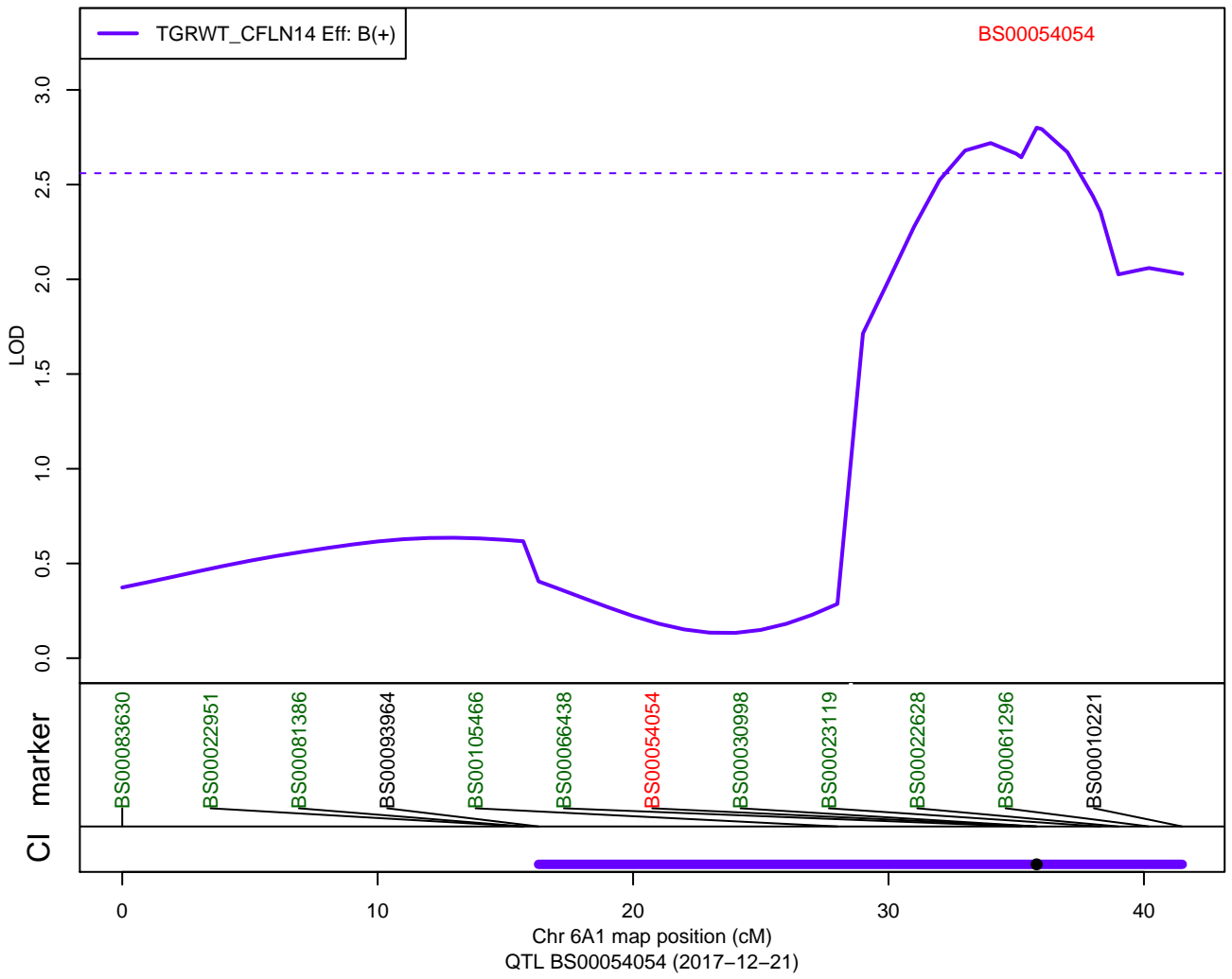
QTLs: ParW219 – GRSA – 6A1



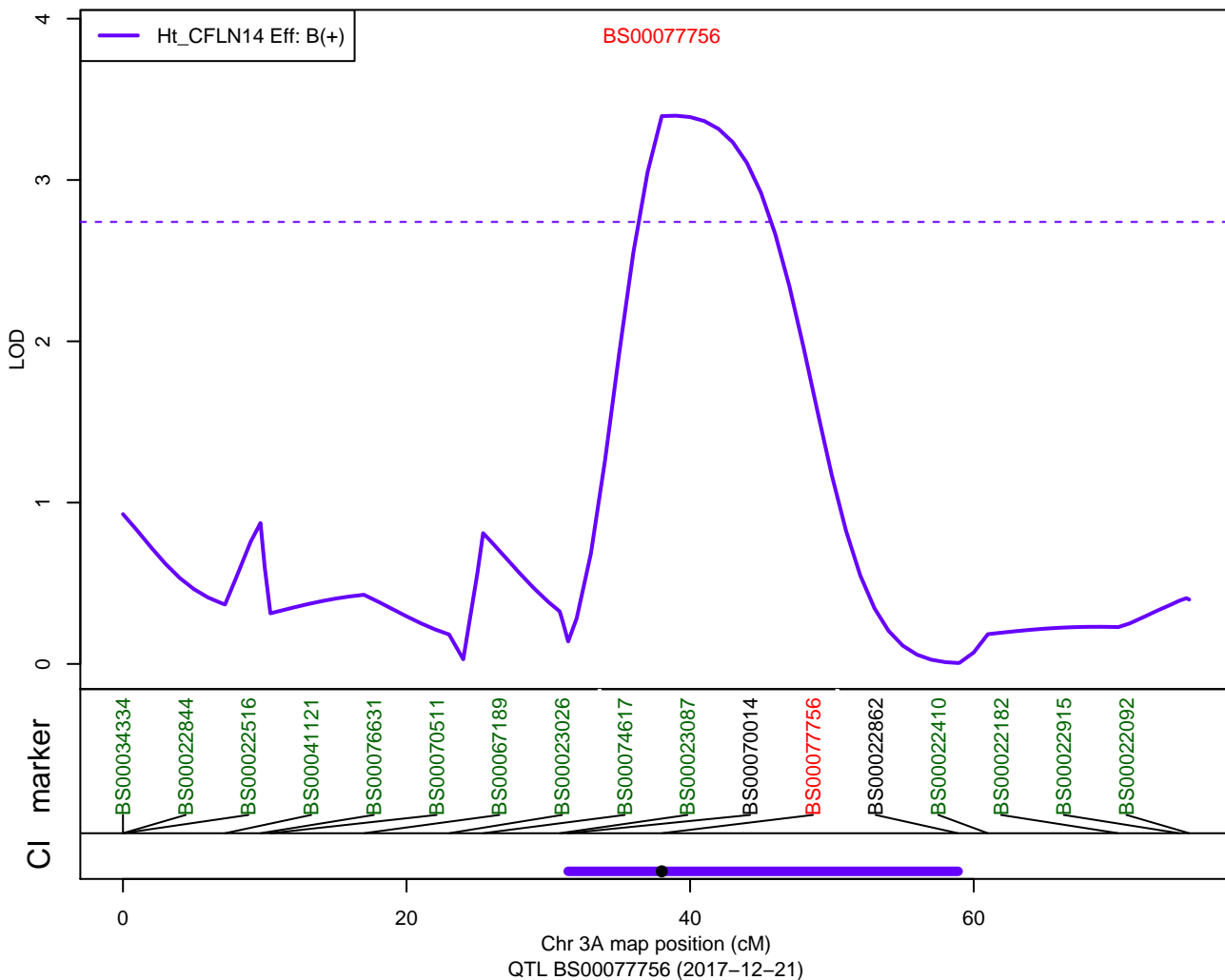
QTLs: ParW219 – GRWD – 6A1



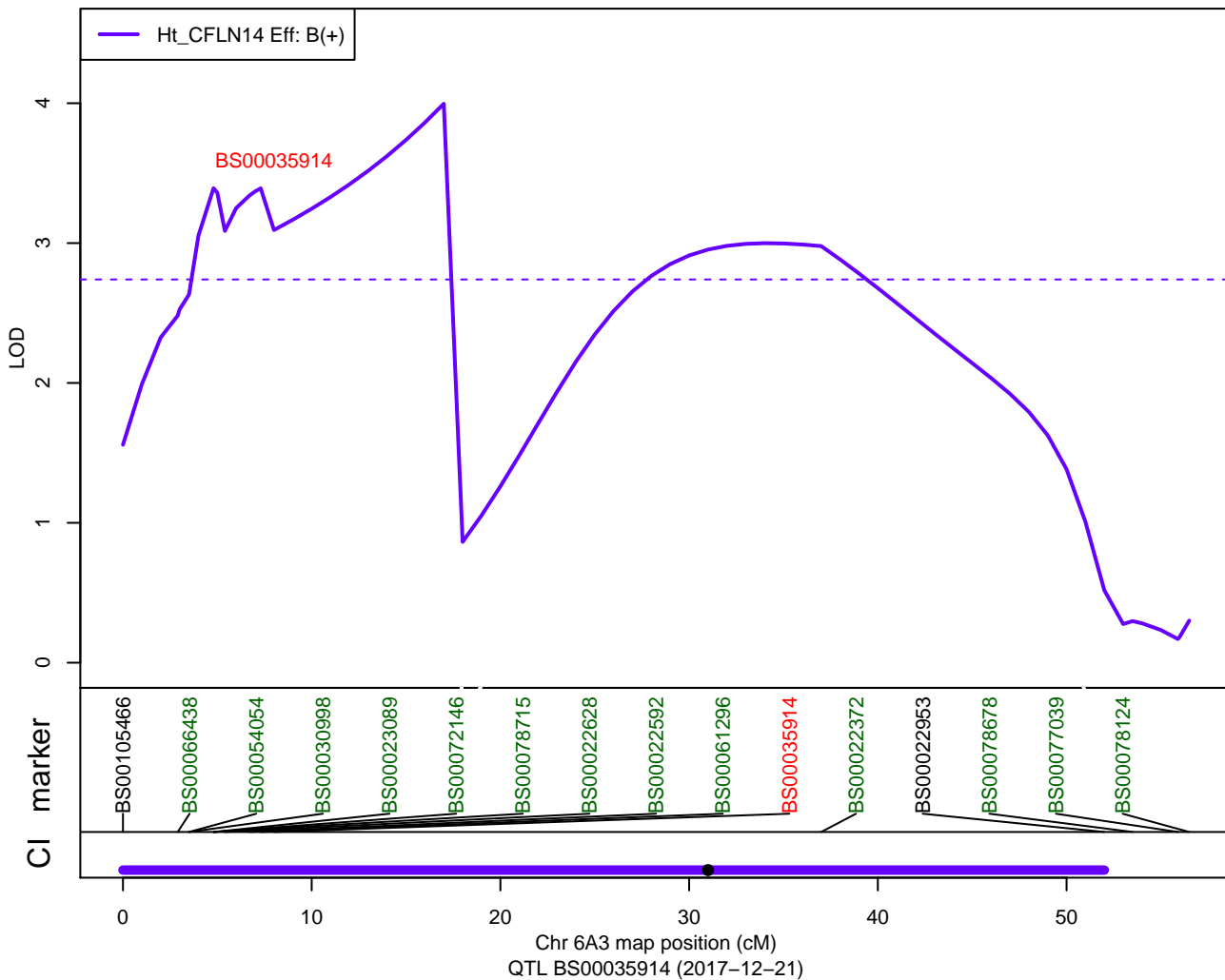
QTLs: ParW219 – TGRWT – 6A1



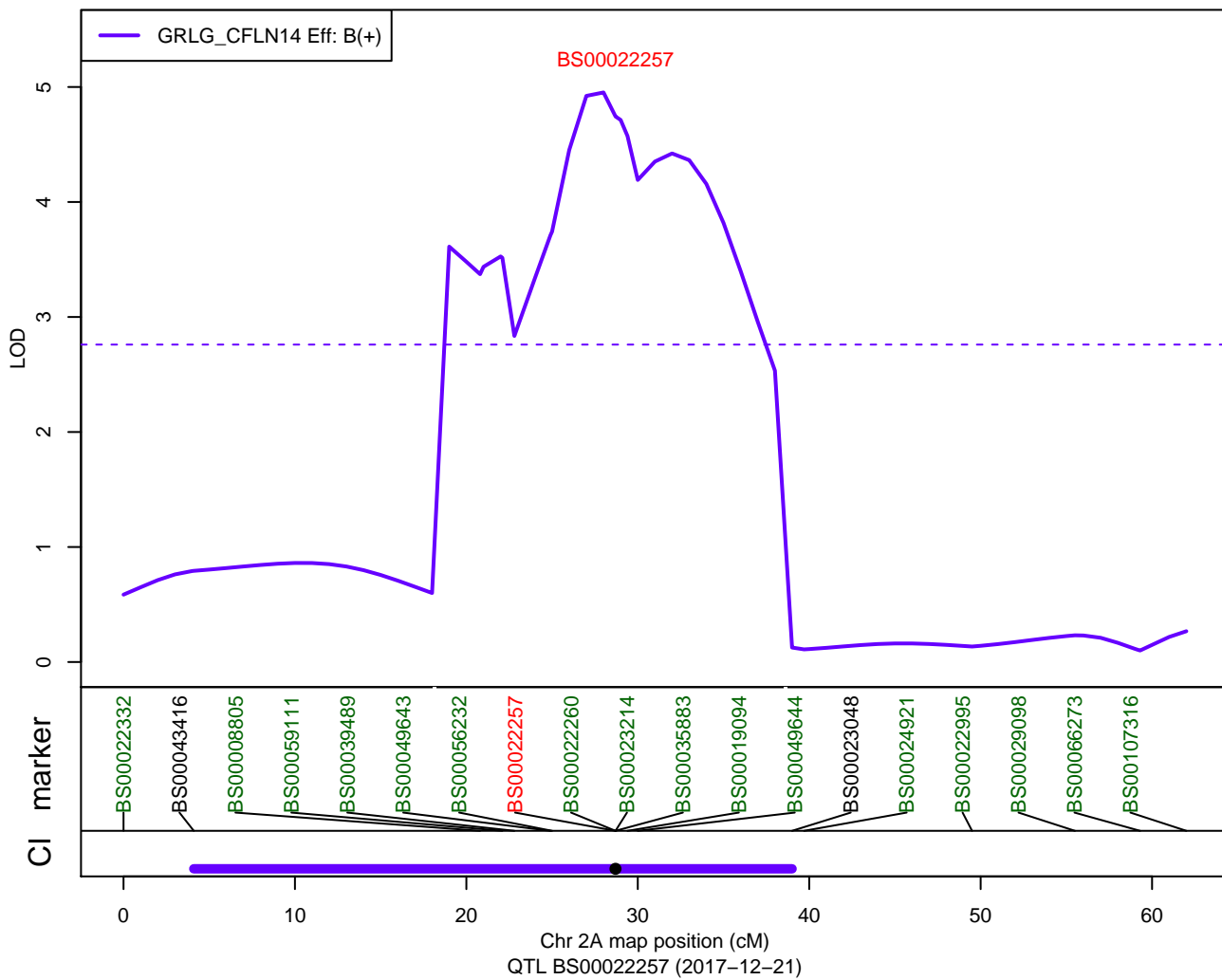
QTLs: ParW223 – Ht – 3A



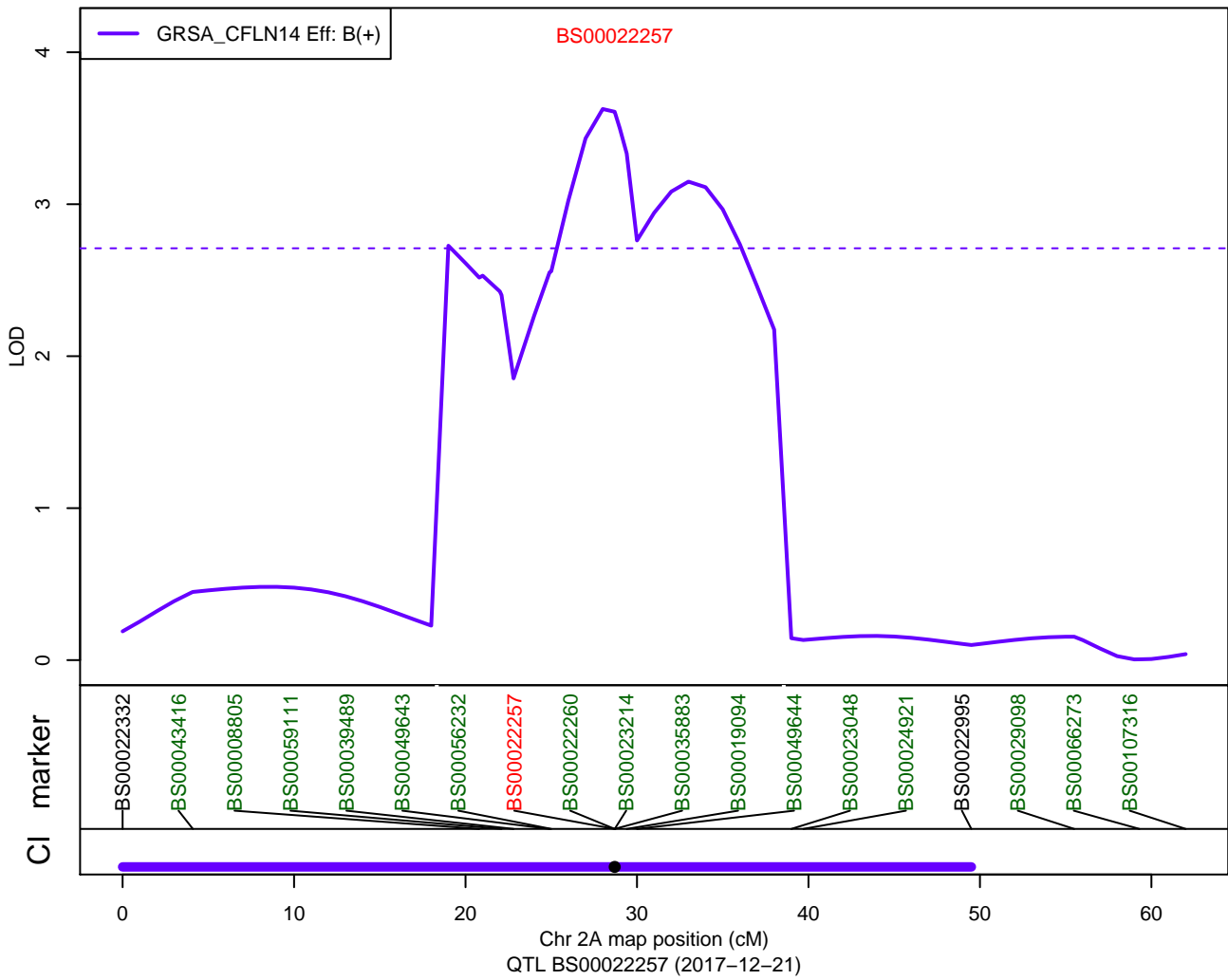
QTLs: ParW223 – Ht – 6A3



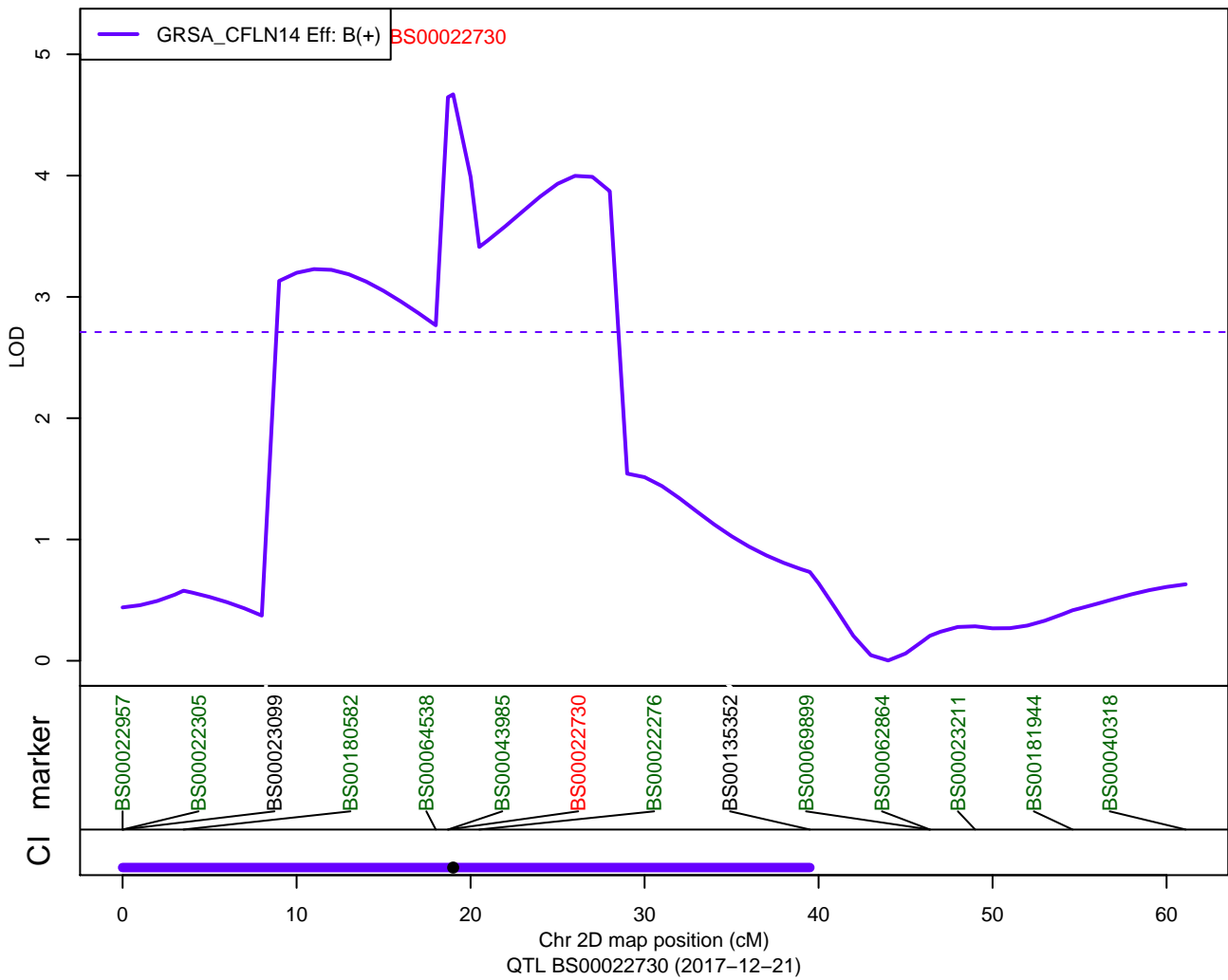
QTLs: ParW223 – GRLG – 2A



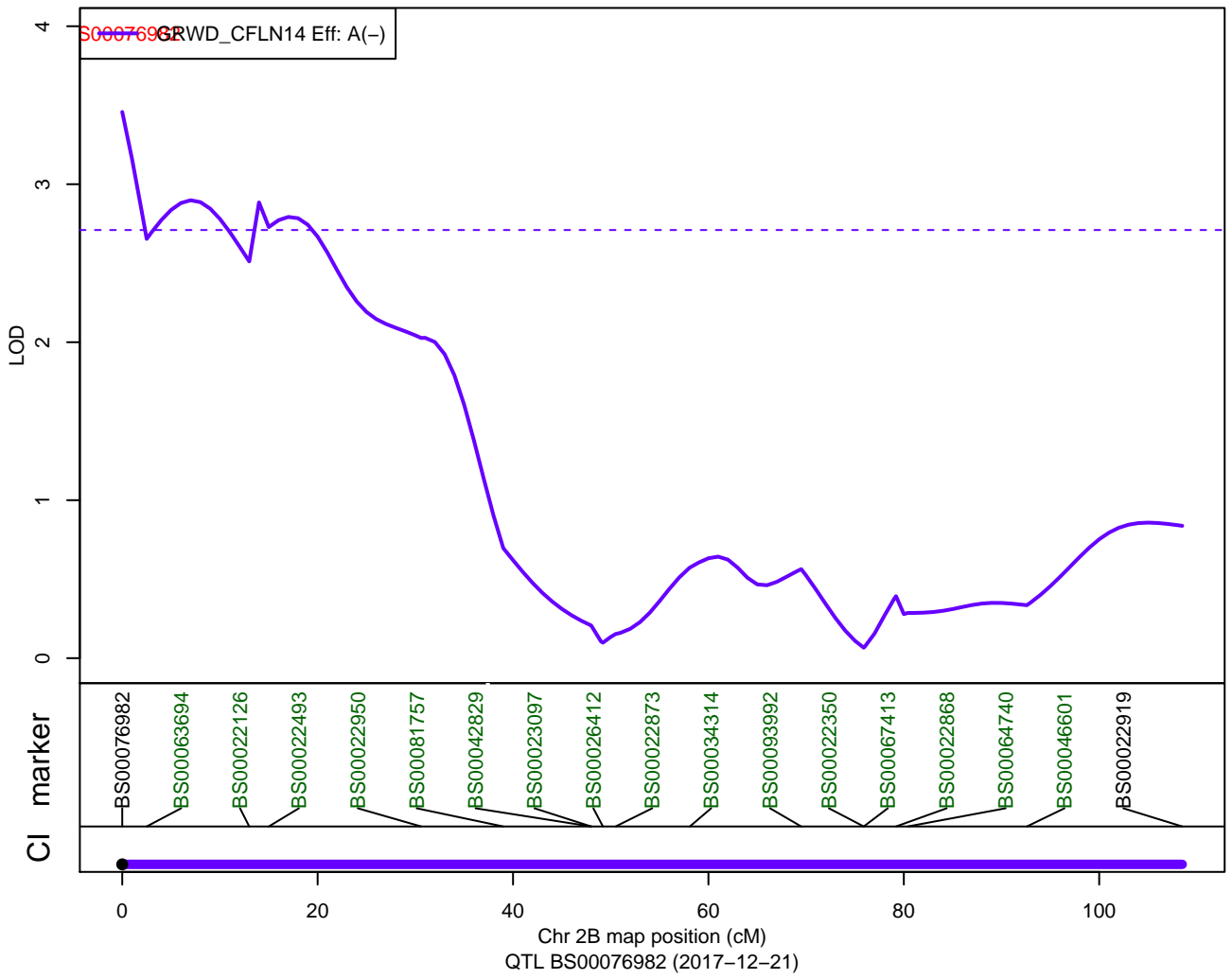
QTLs: ParW223 – GRSA – 2A



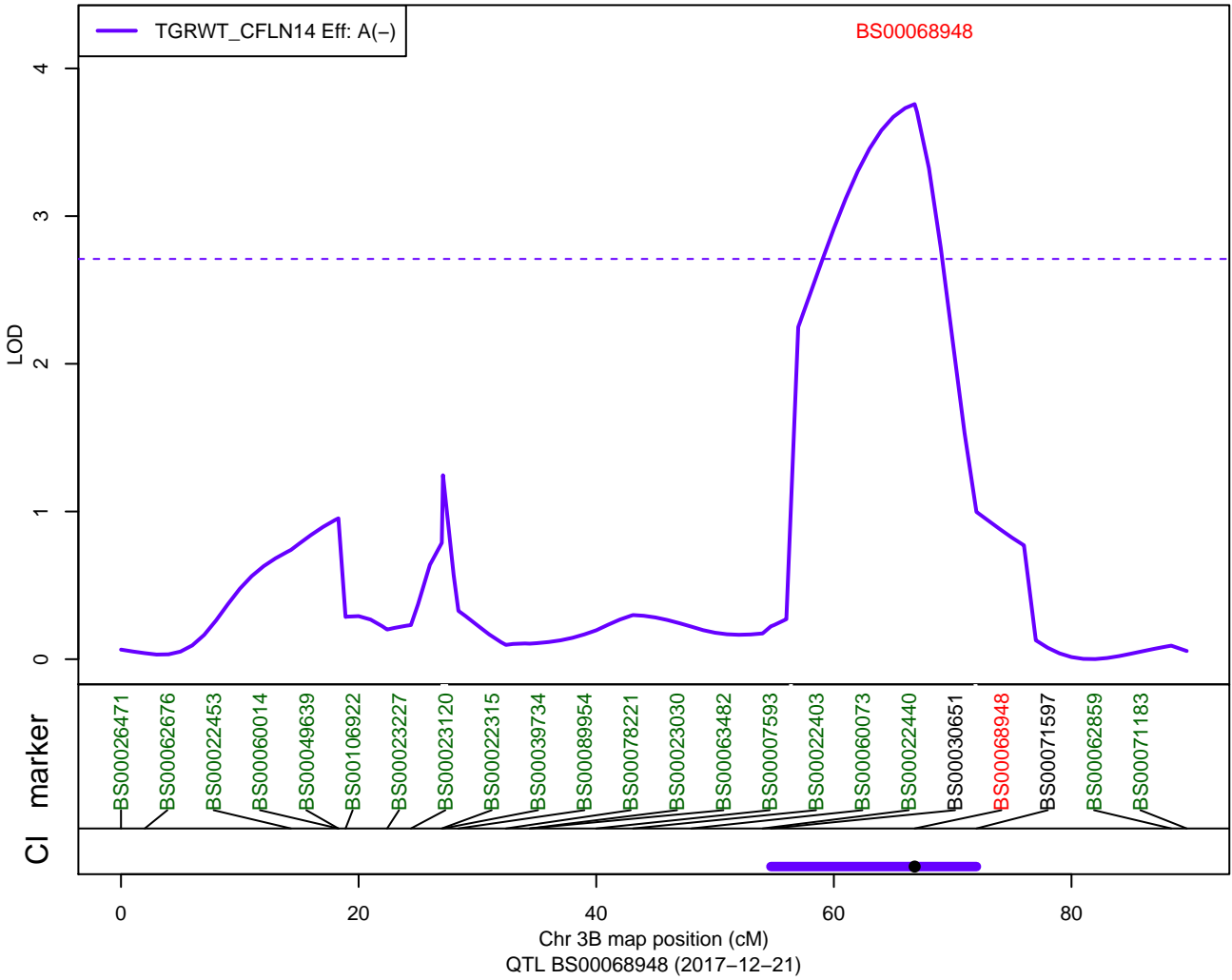
QTLs: ParW223 – GRSA – 2D



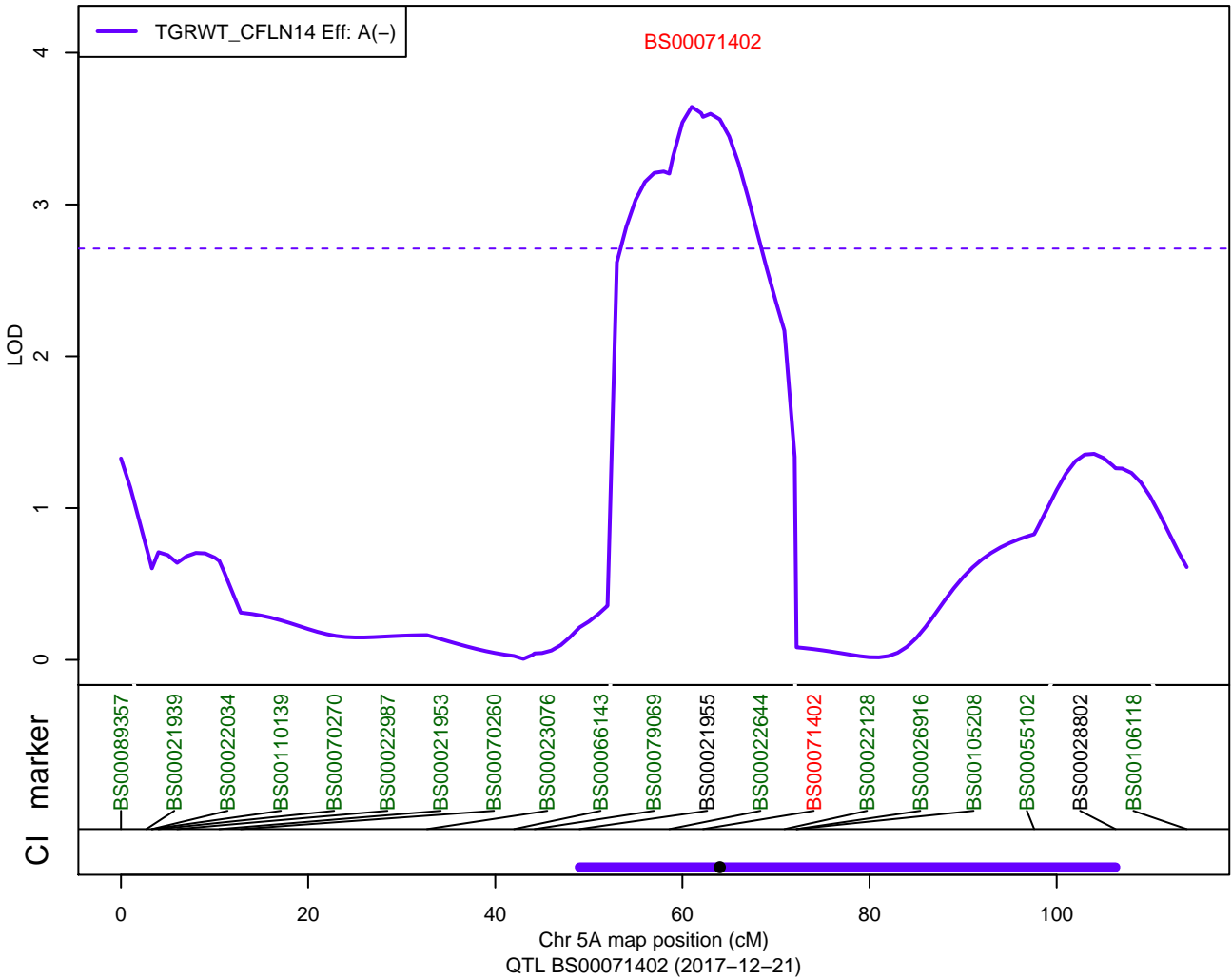
QTLs: ParW223 – GRWD – 2B



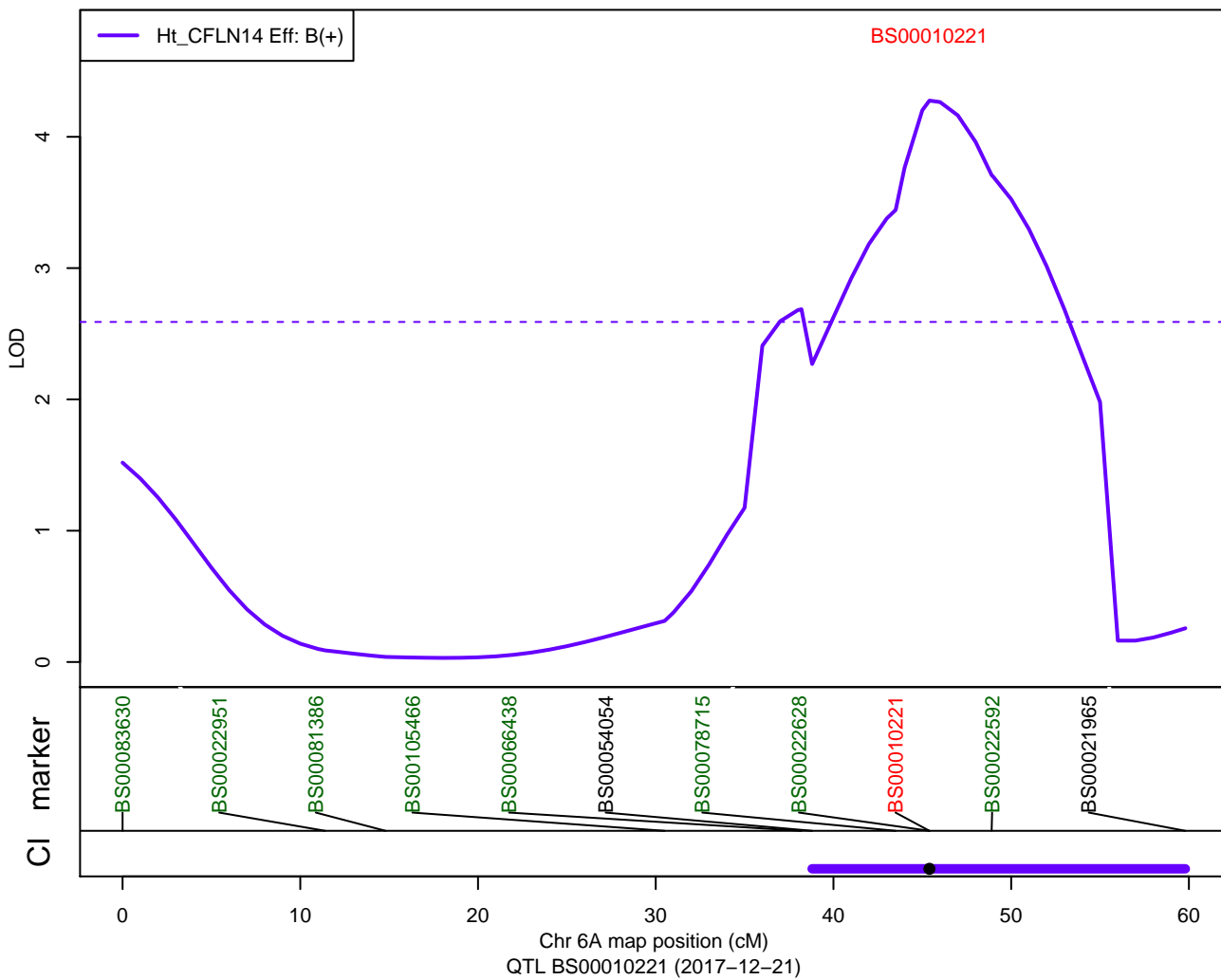
QTLs: ParW223 - TGRWT - 3B



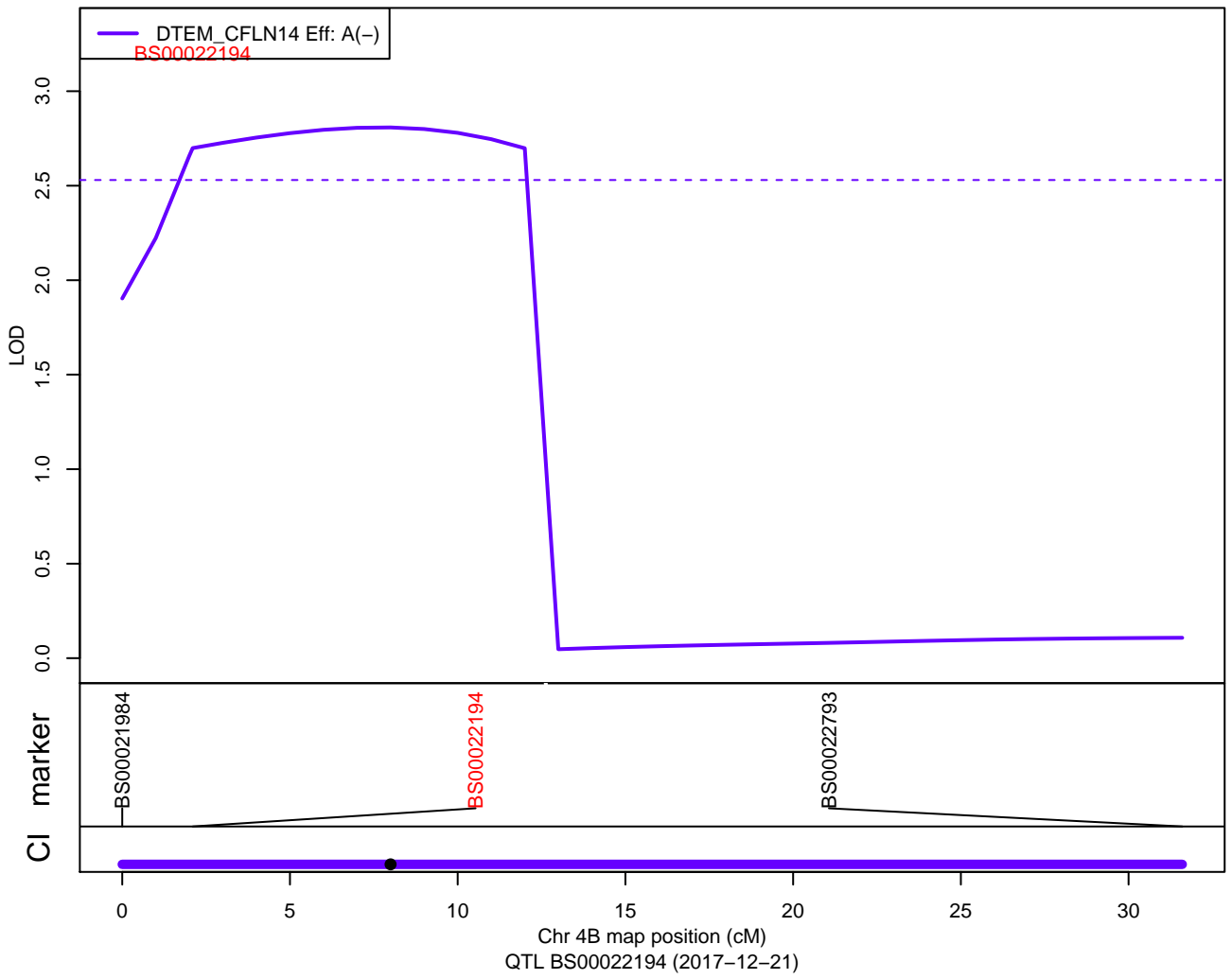
QTLs: ParW223 - TGRWT - 5A



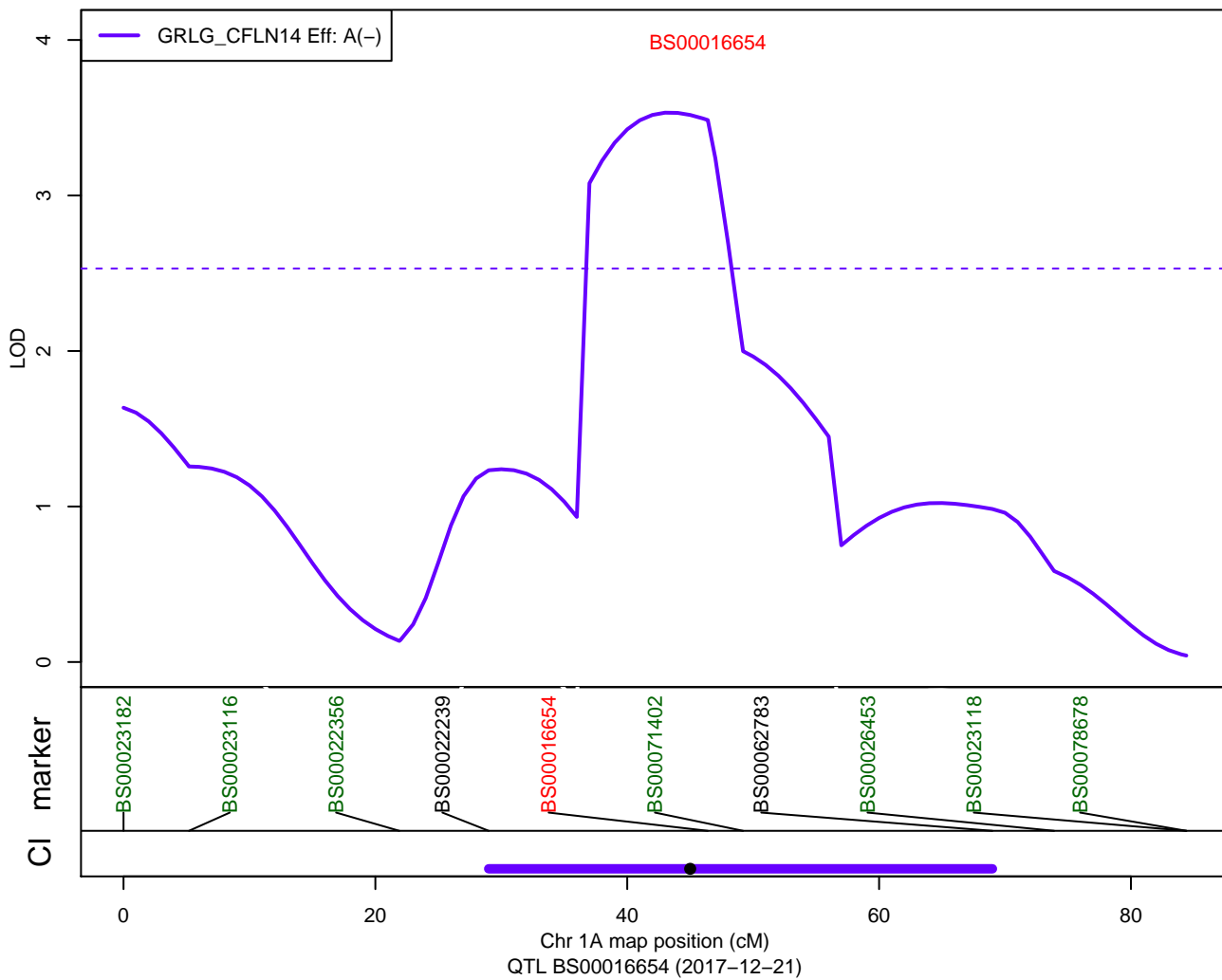
QTLs: ParW231 - Ht - 6A



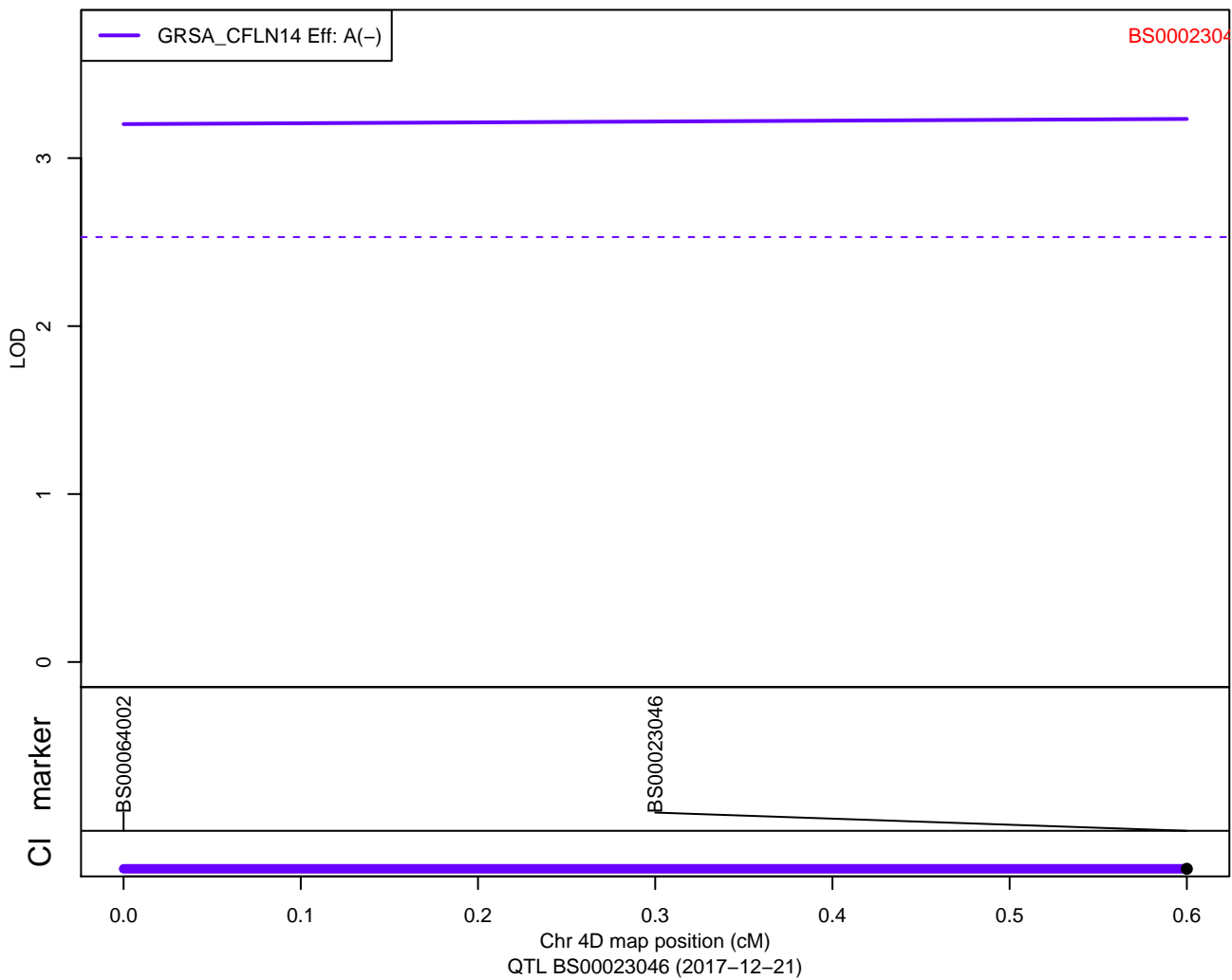
QTLs: ParW231 - DTEM - 4B



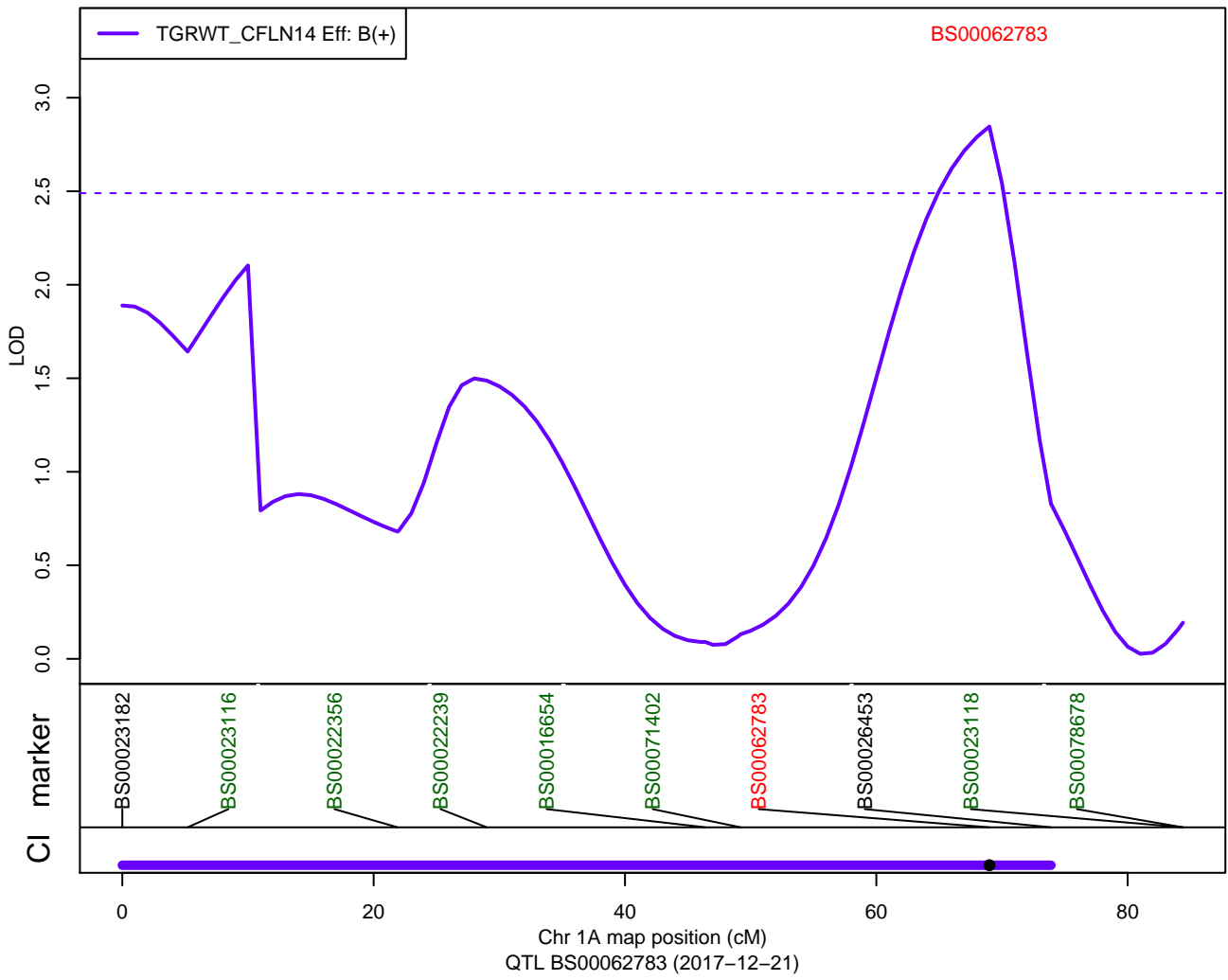
QTLs: ParW231 – GRLG – 1A



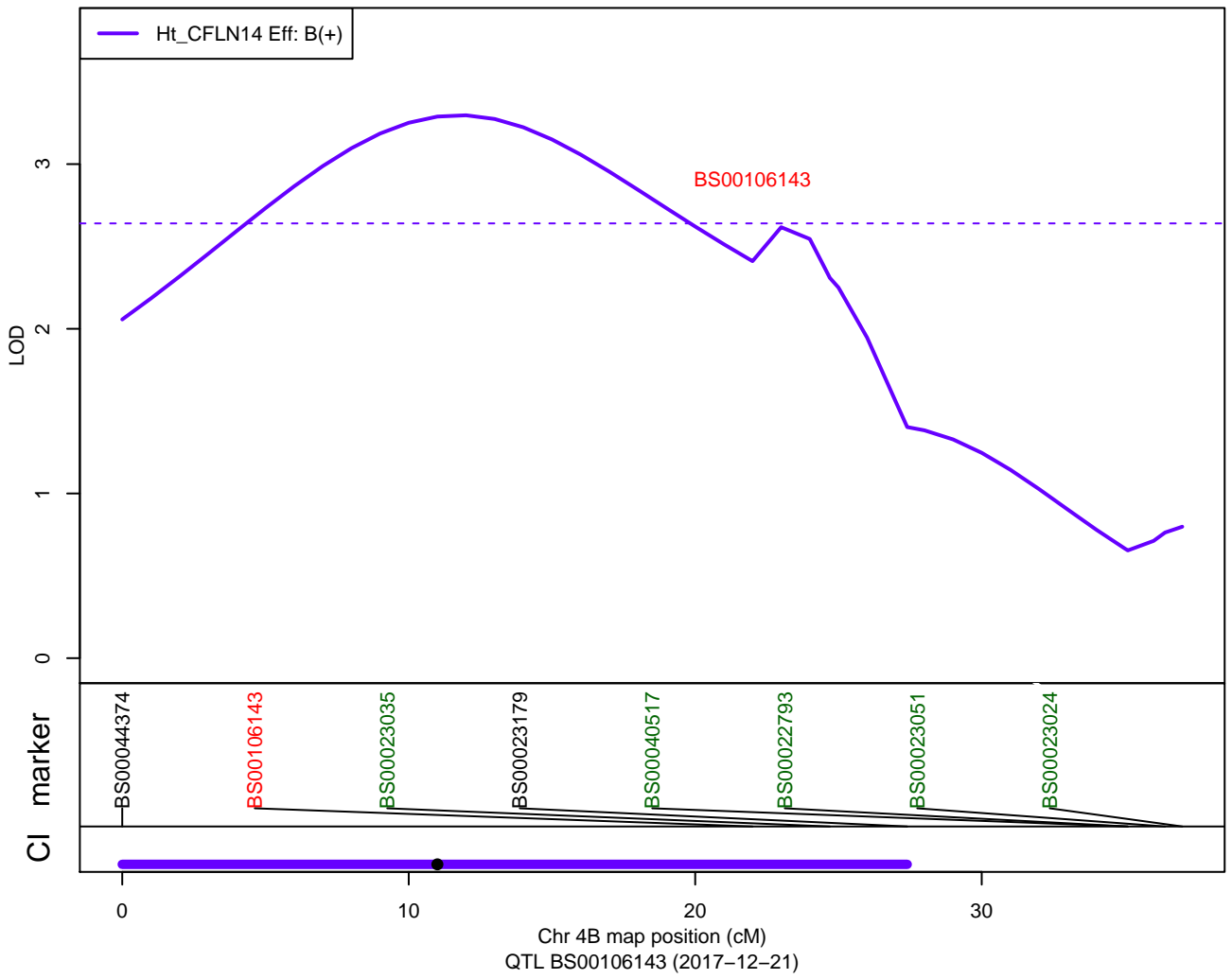
QTLs: ParW231 – GRSA – 4D



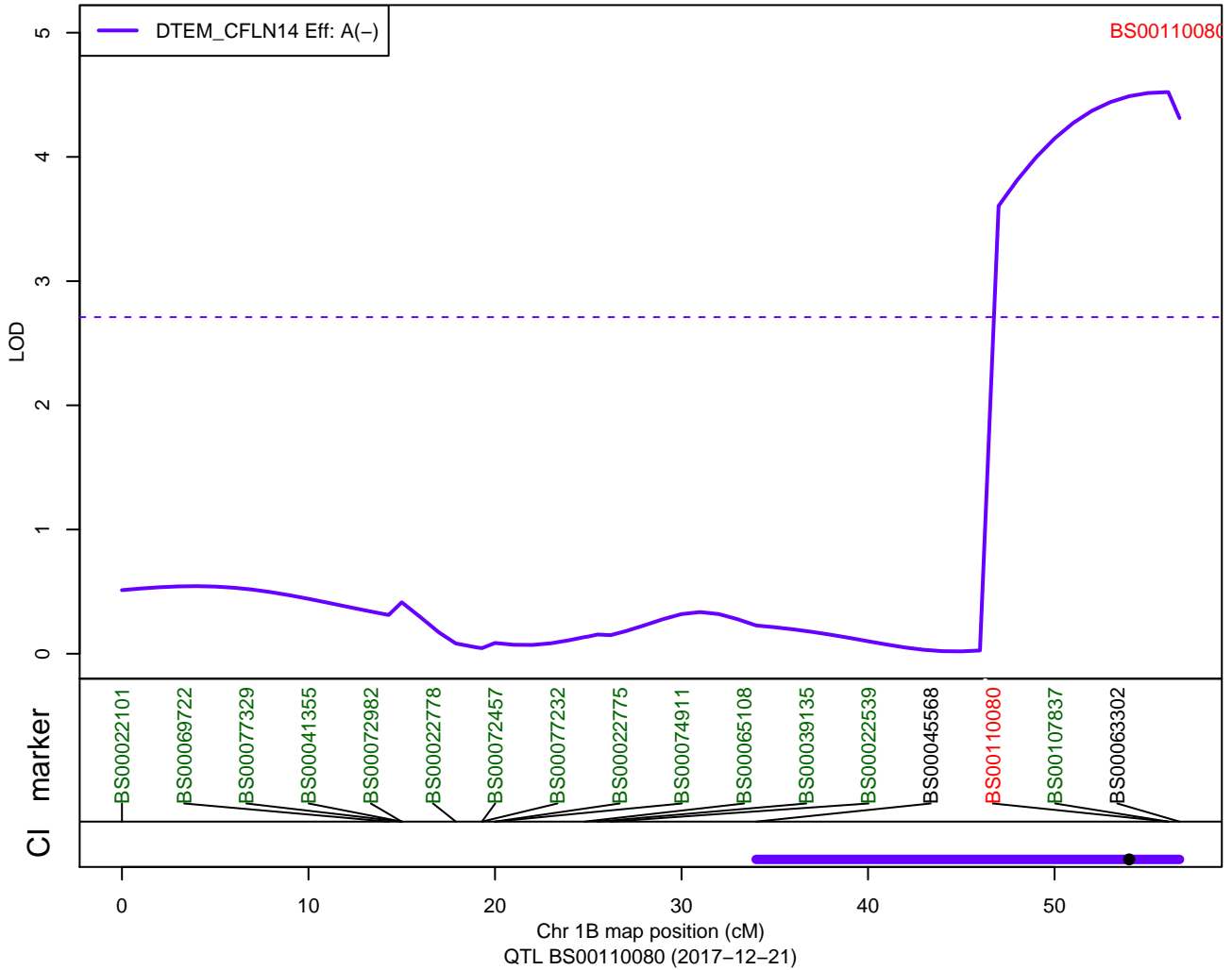
QTLs: ParW231 - TGRWT - 1A



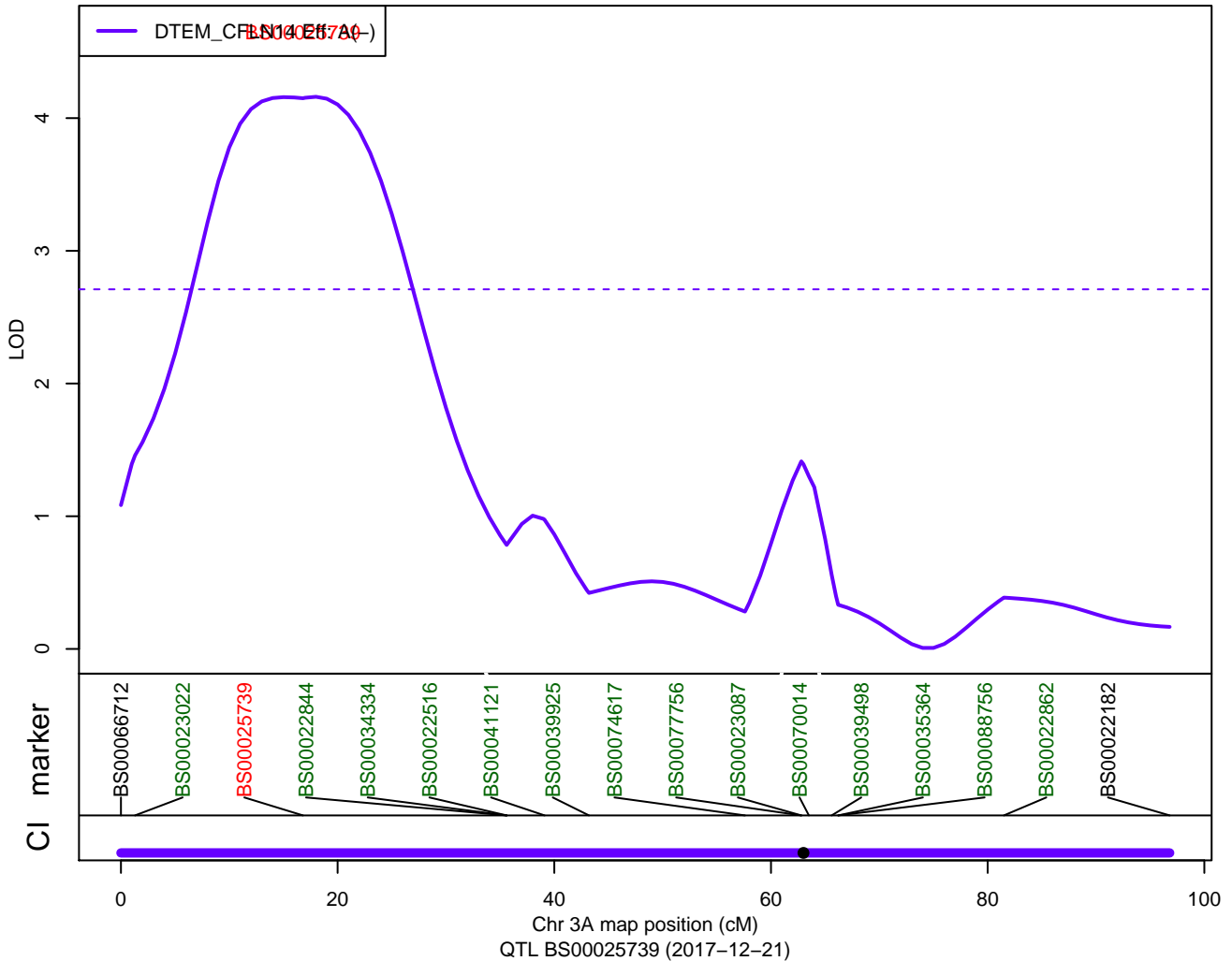
QTLs: ParW239 - Ht - 4B



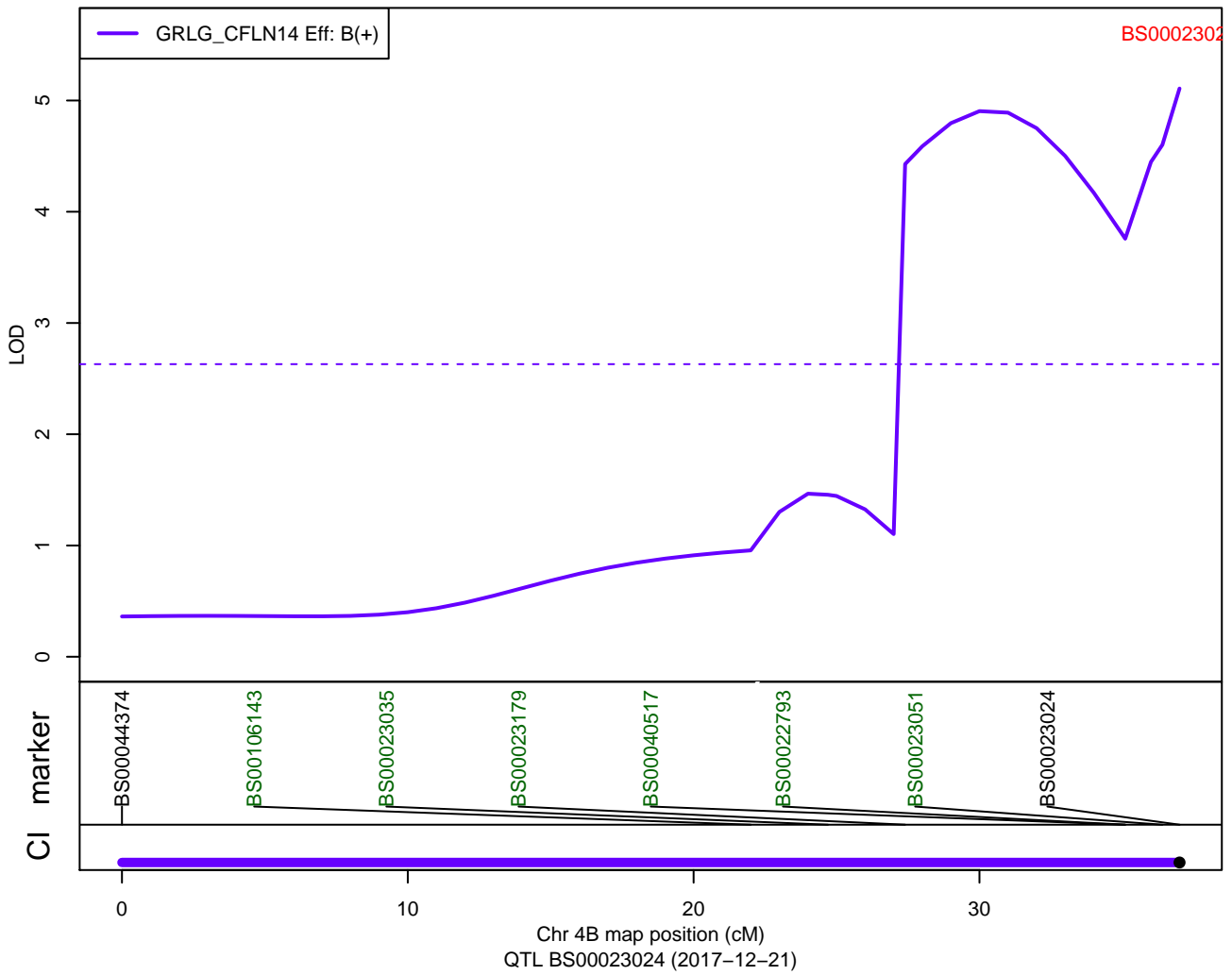
QTLs: ParW239 – DTEM – 1B



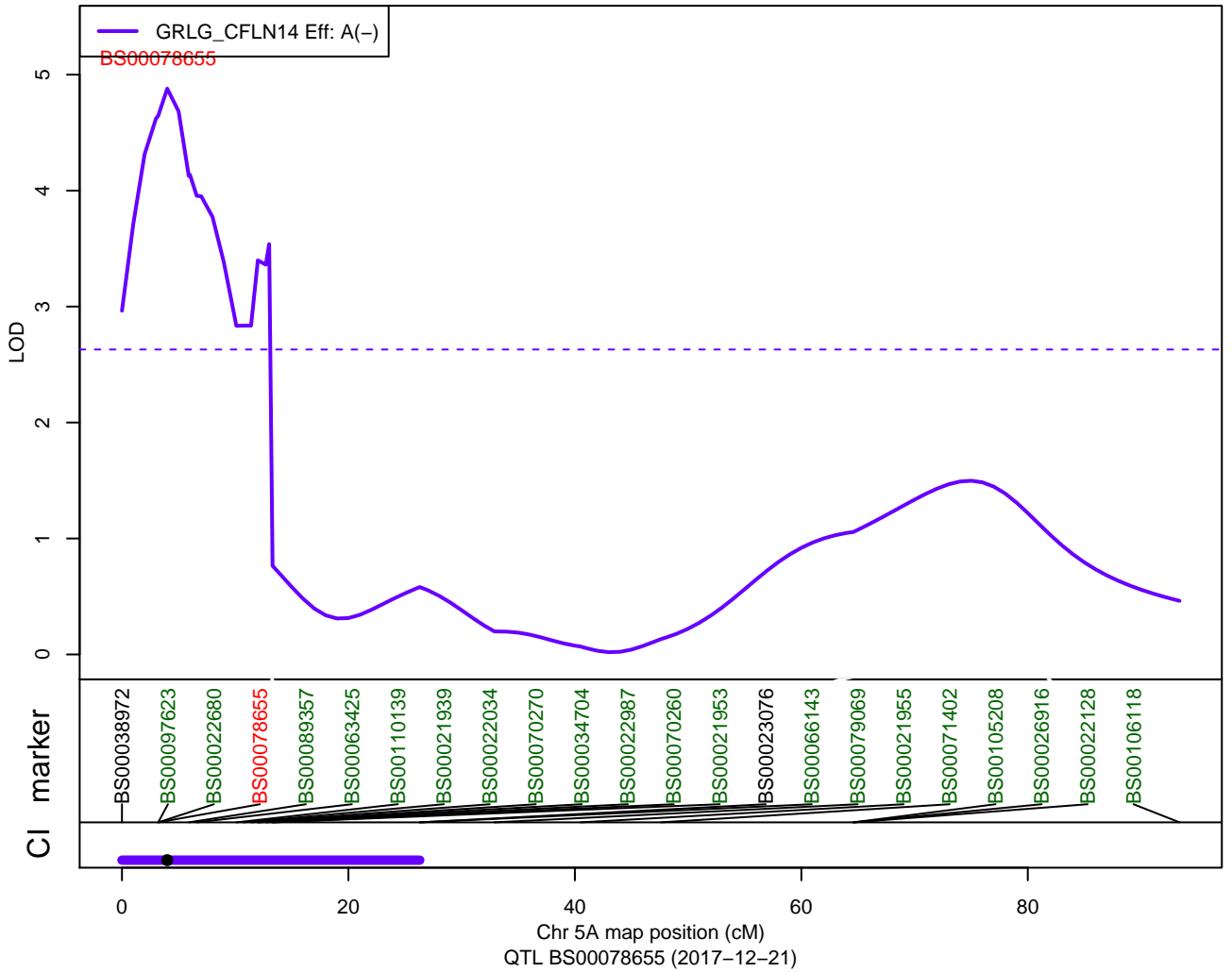
QTLs: ParW239 – DTEM – 3A



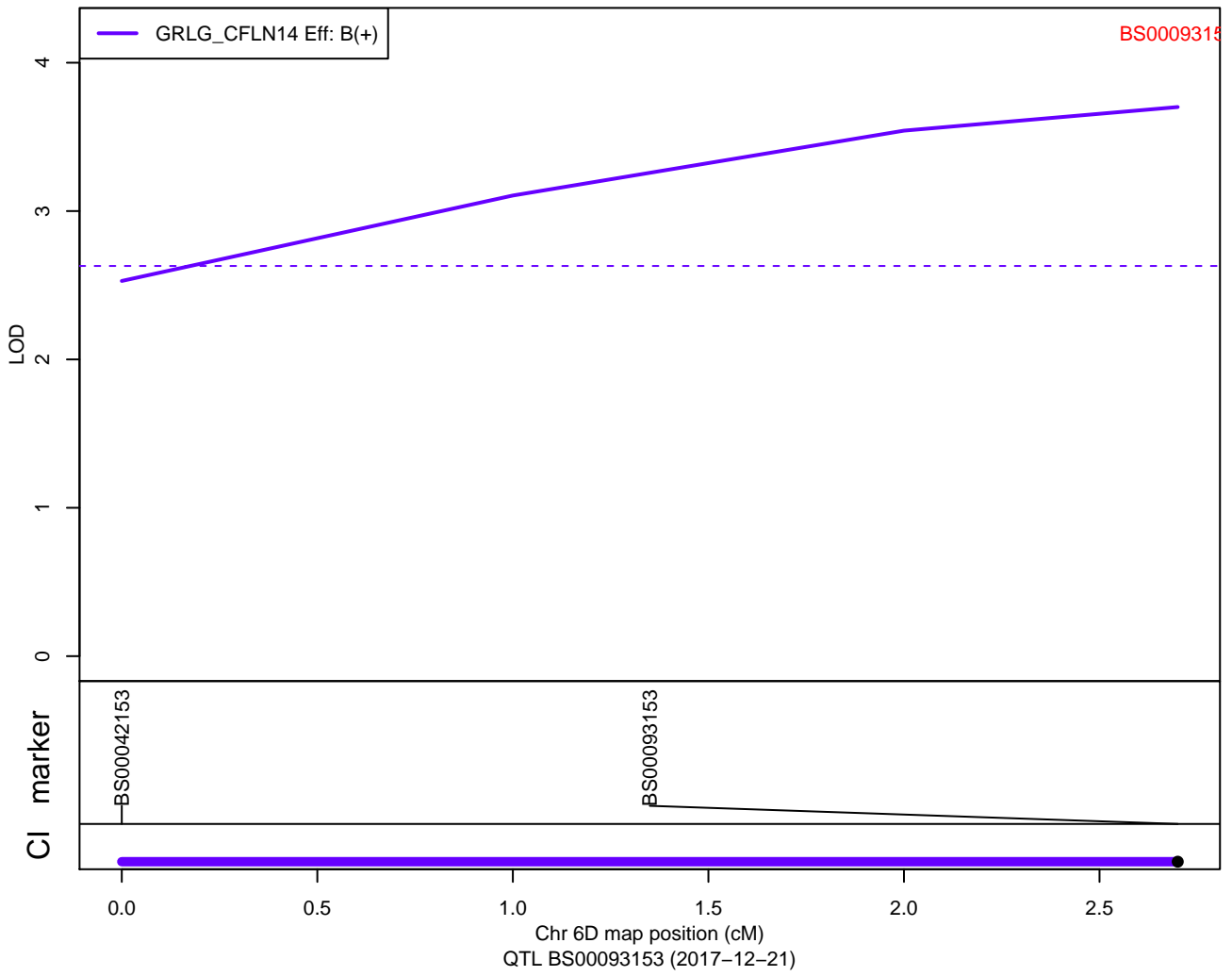
QTLs: ParW239 – GRLG – 4B



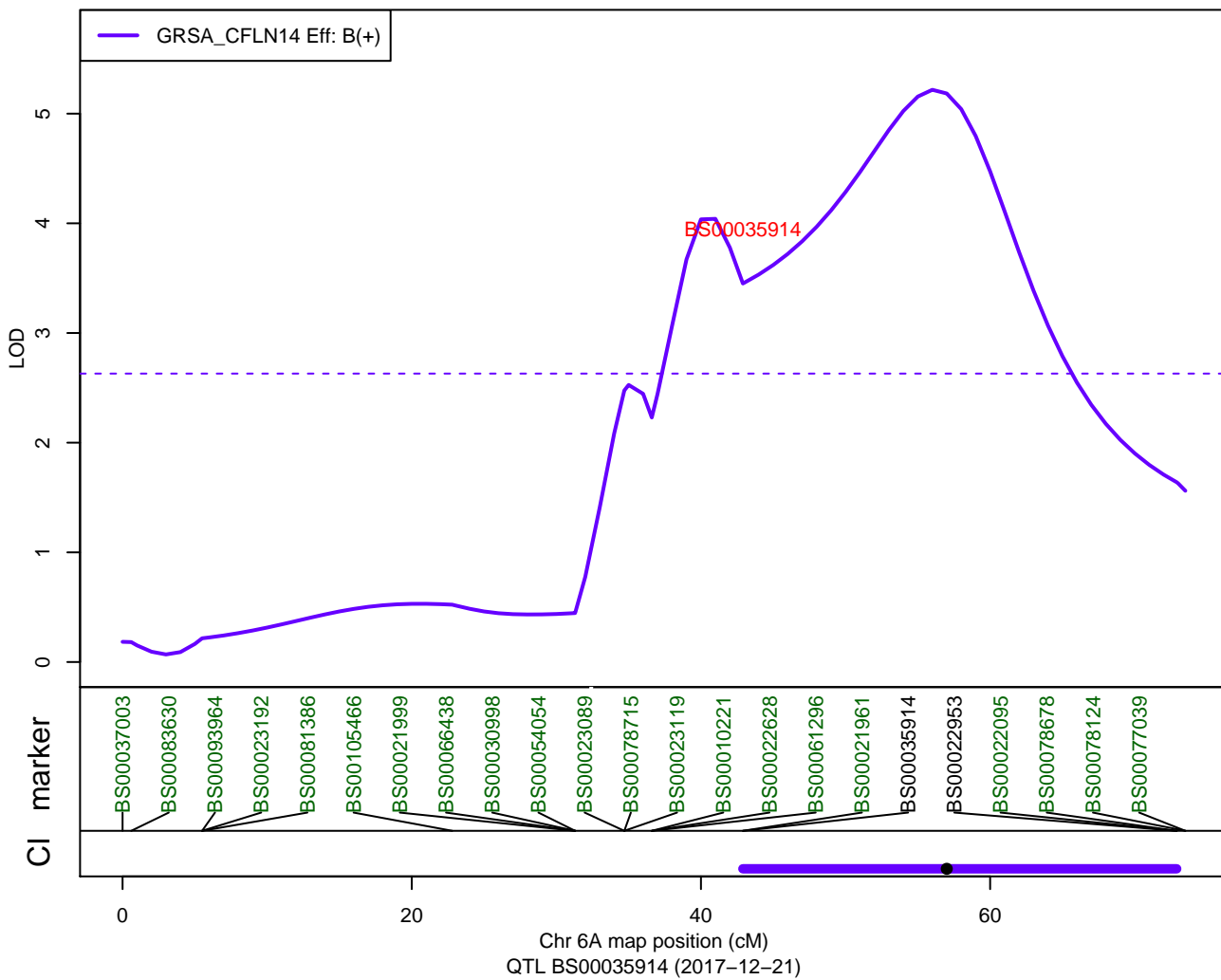
QTLs: ParW239 – GRLG – 5A



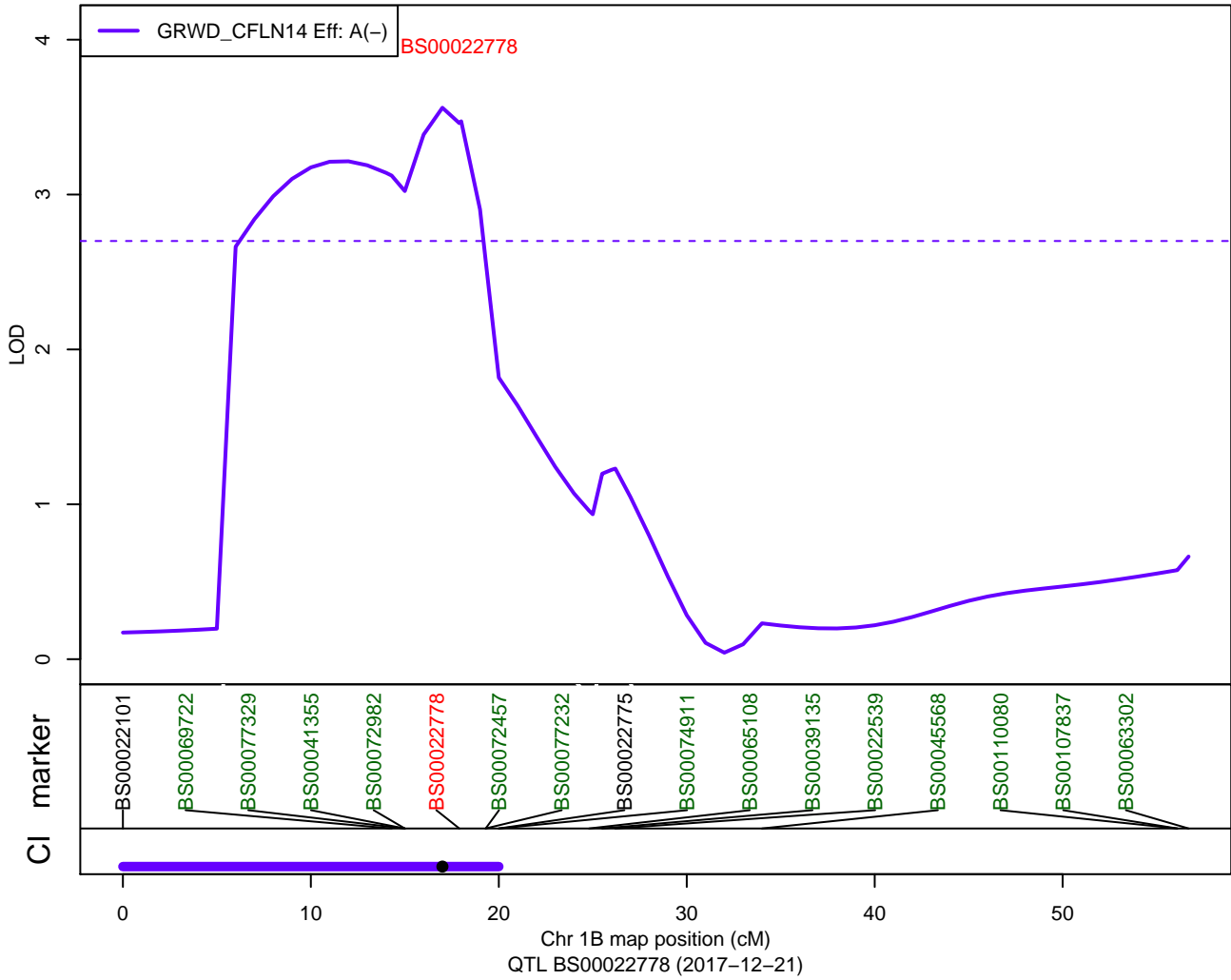
QTLs: ParW239 – GRLG – 6D



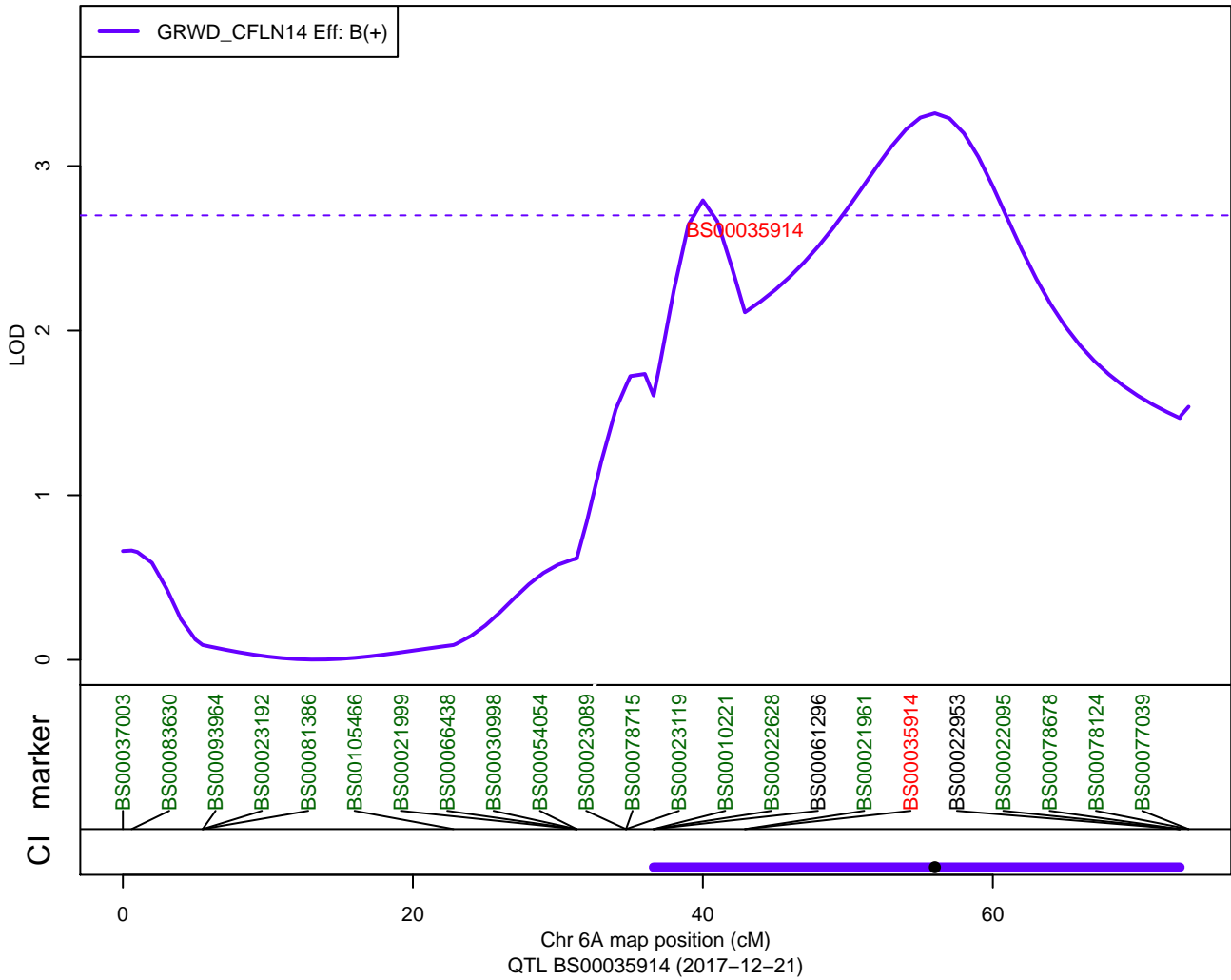
QTLs: ParW239 – GRSA – 6A



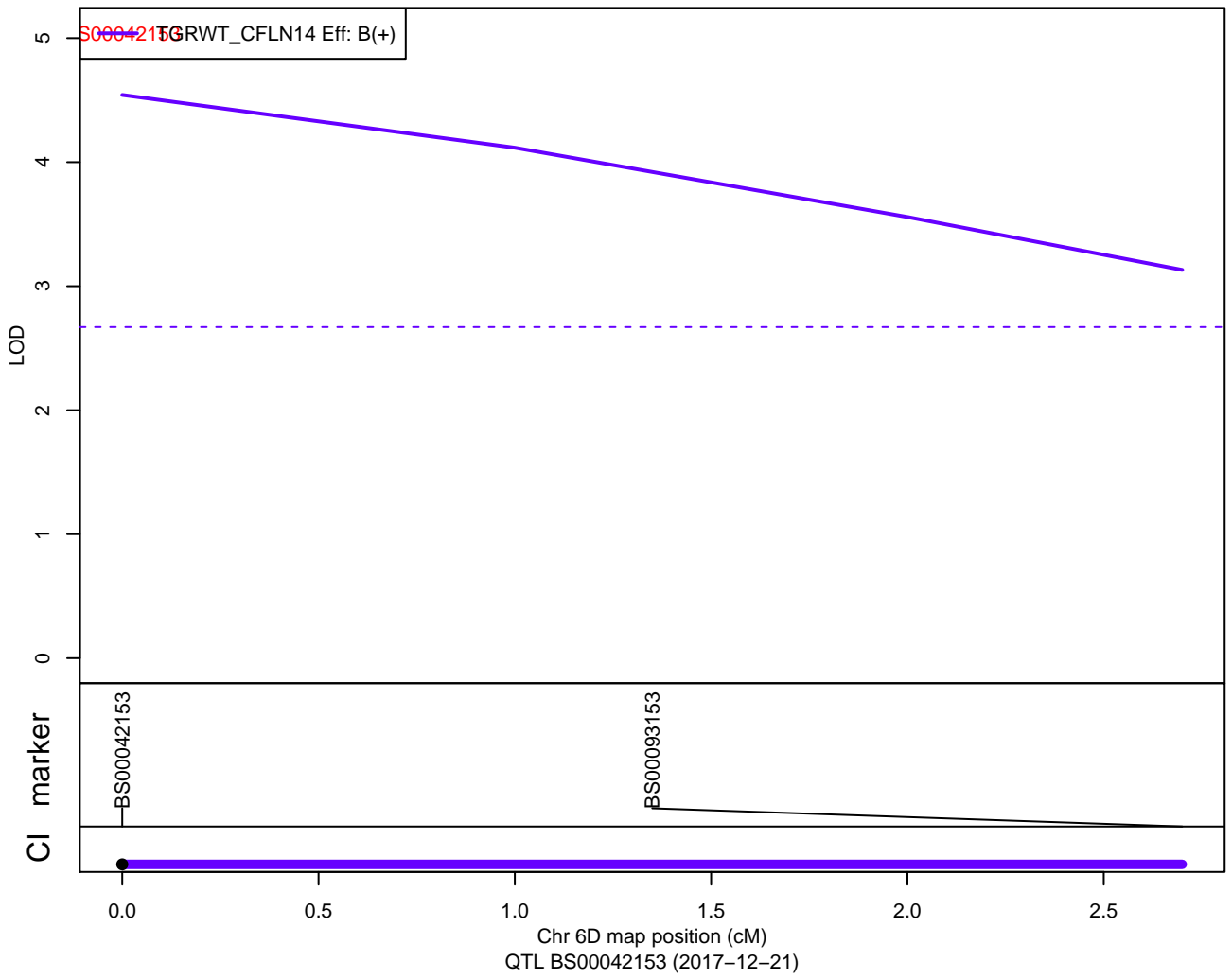
QTLs: ParW239 – GRWD – 1B



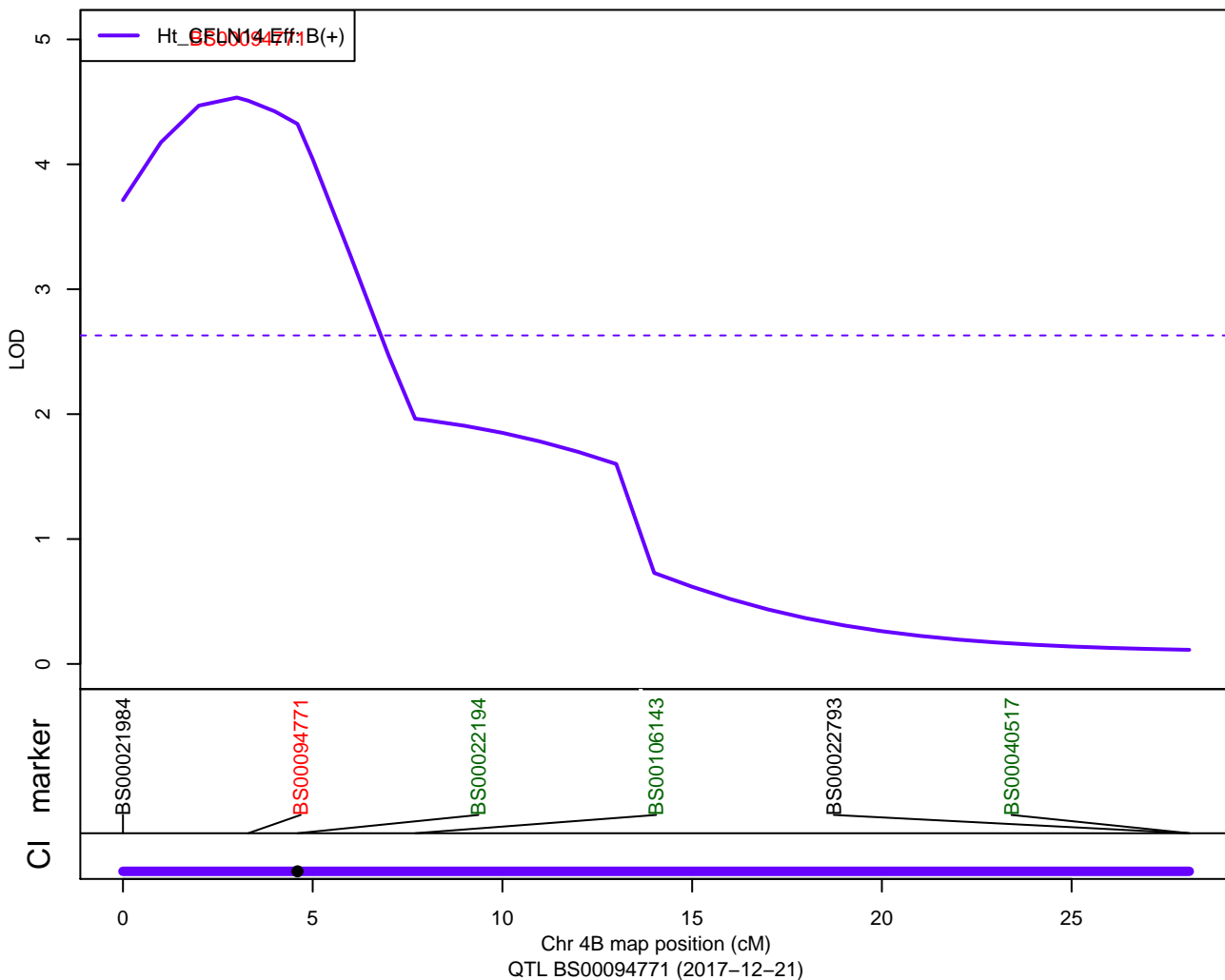
QTLs: ParW239 – GRWD – 6A



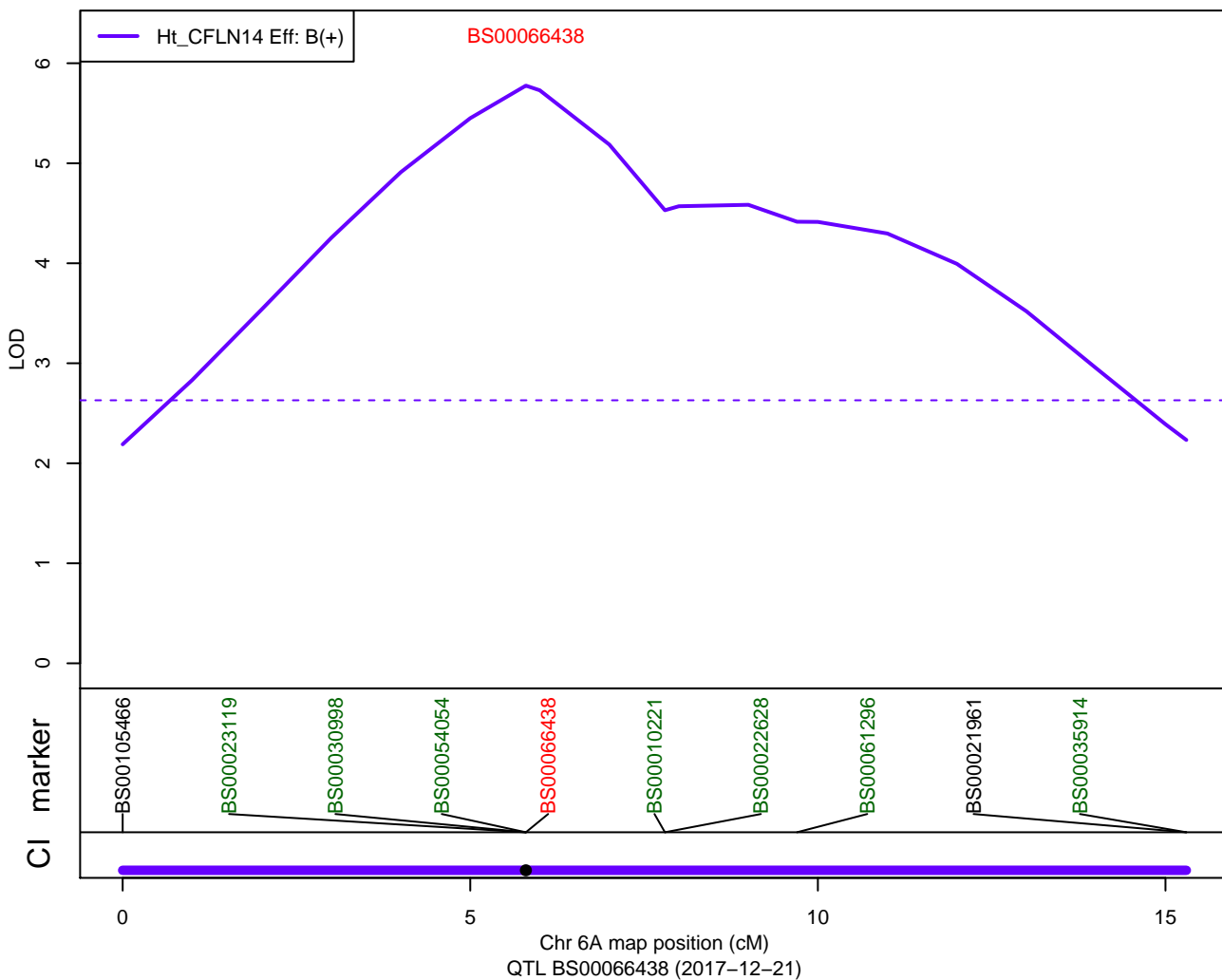
QTLs: ParW239 - TGRWT - 6D



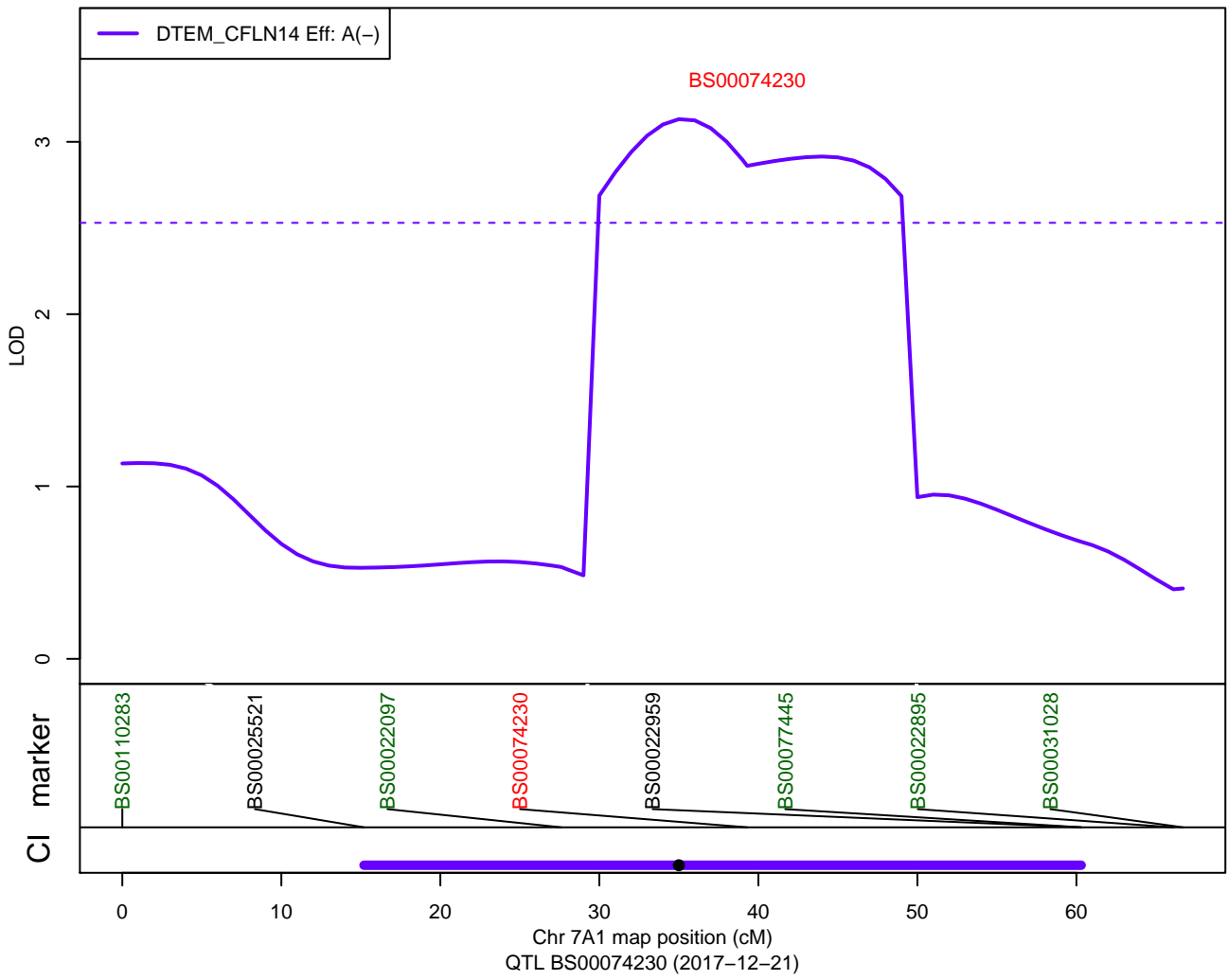
QTLs: ParW254 – Ht – 4B



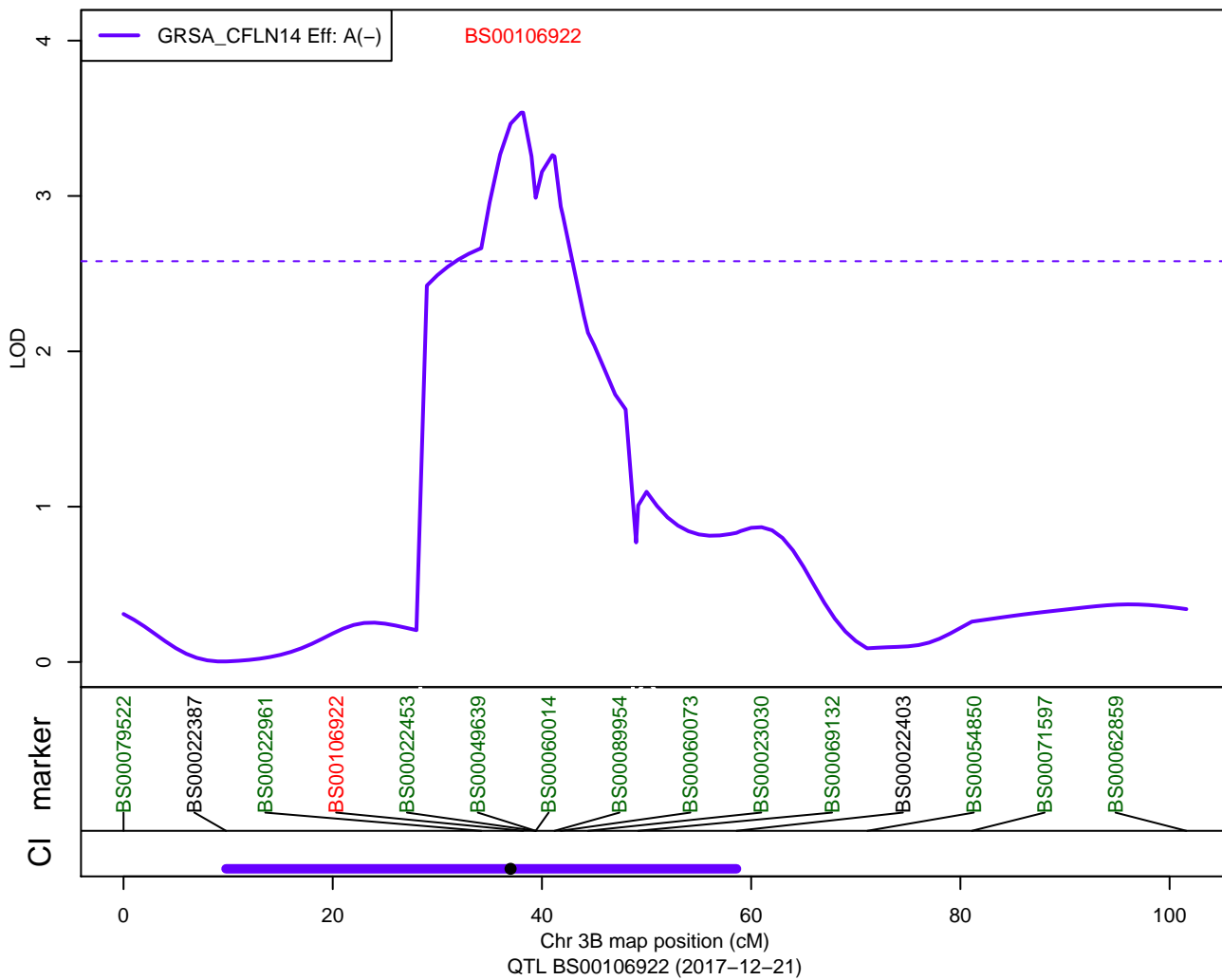
QTLs: ParW254 – Ht – 6A



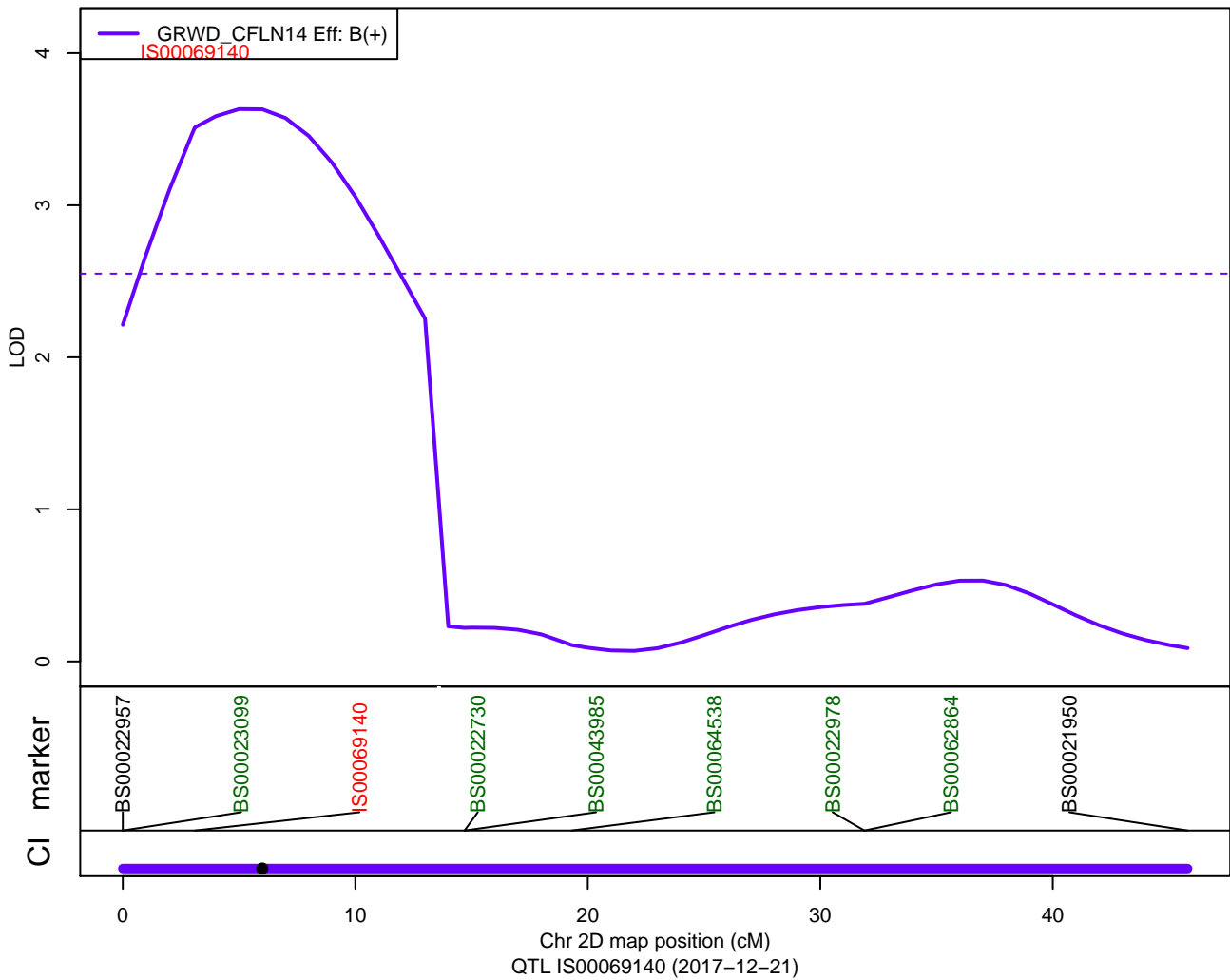
QTLs: ParW254 – DTEM – 7A1



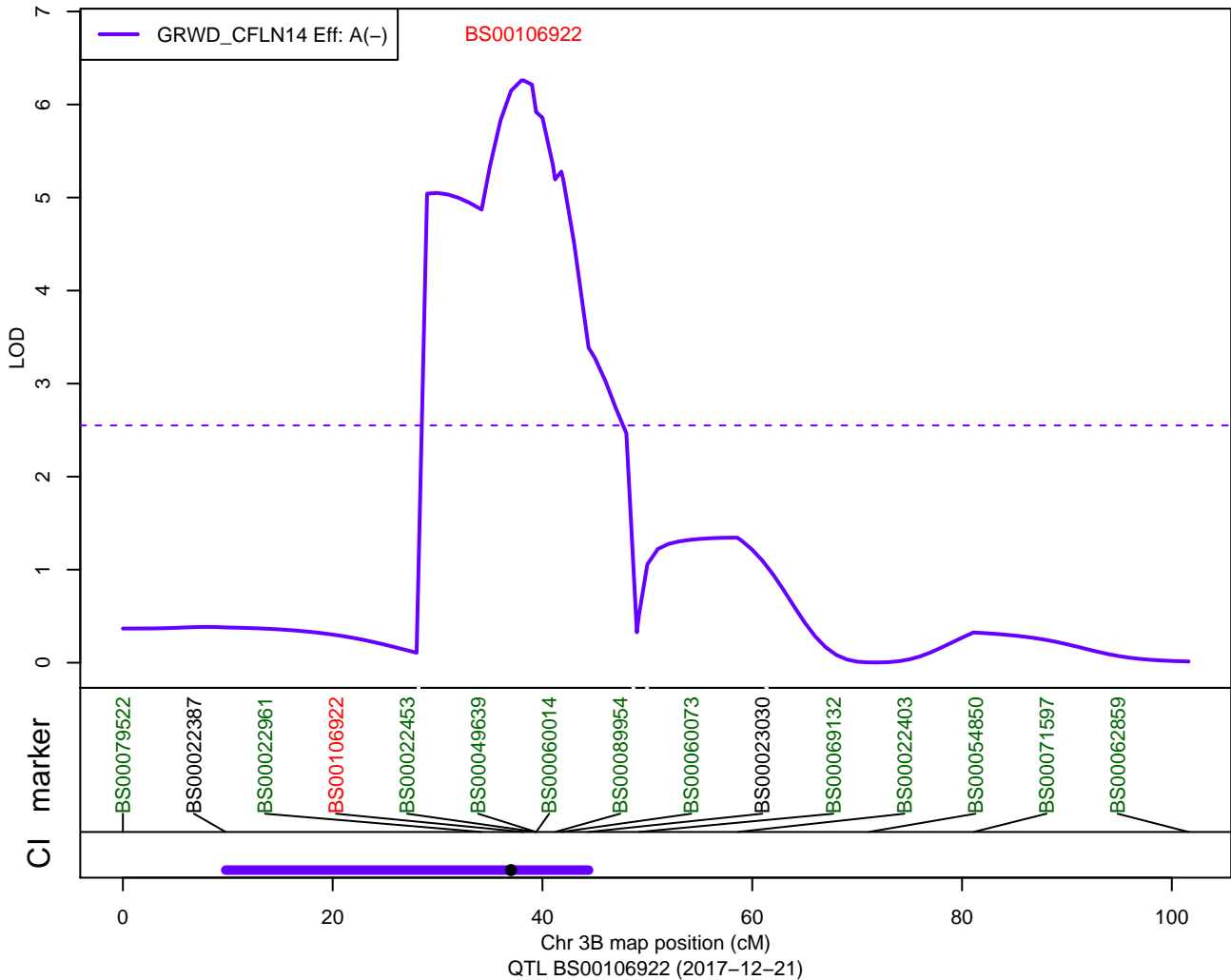
QTLs: ParW254 – GRSA – 3B



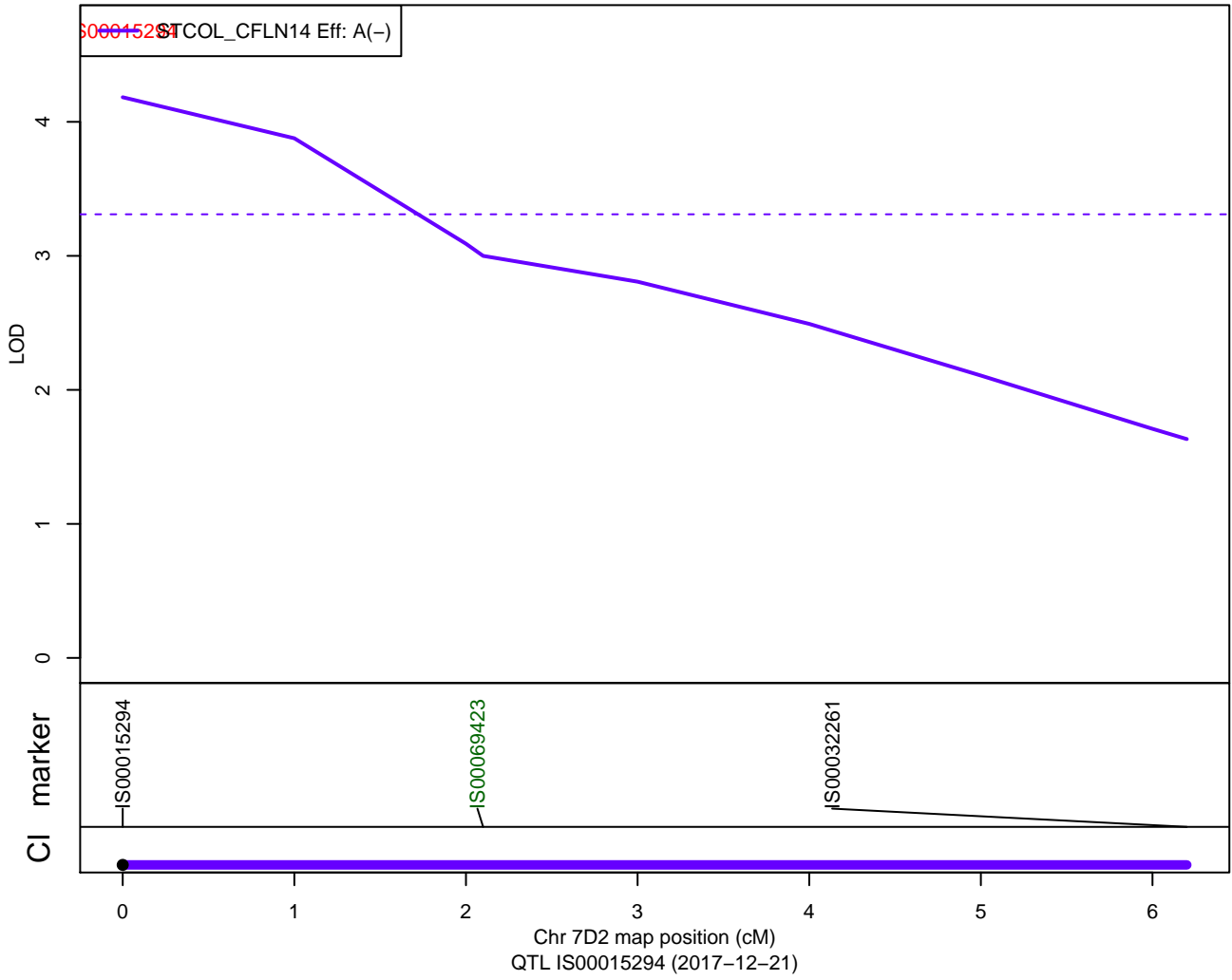
QTLs: ParW254 – GRWD – 2D



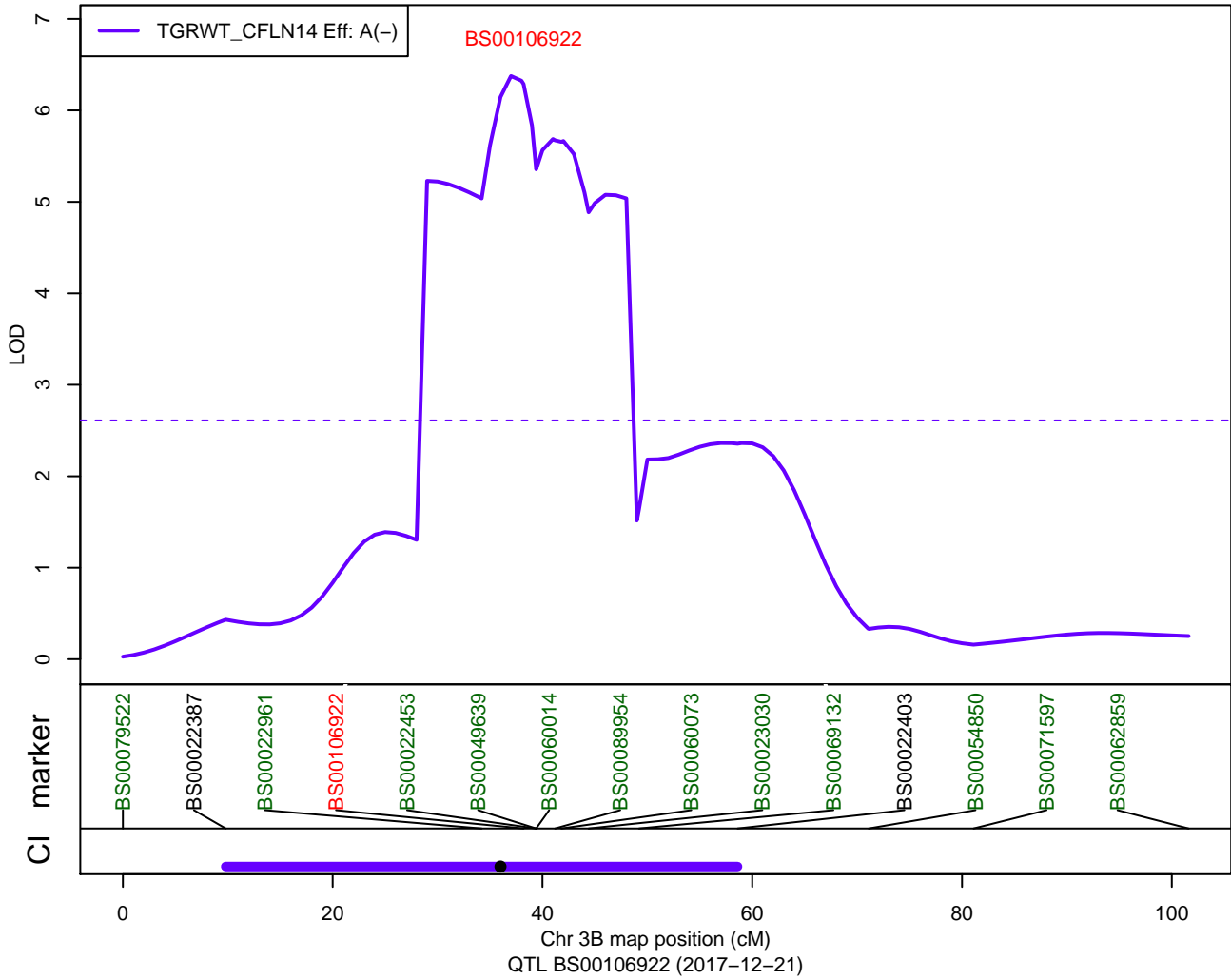
QTLs: ParW254 – GRWD – 3B



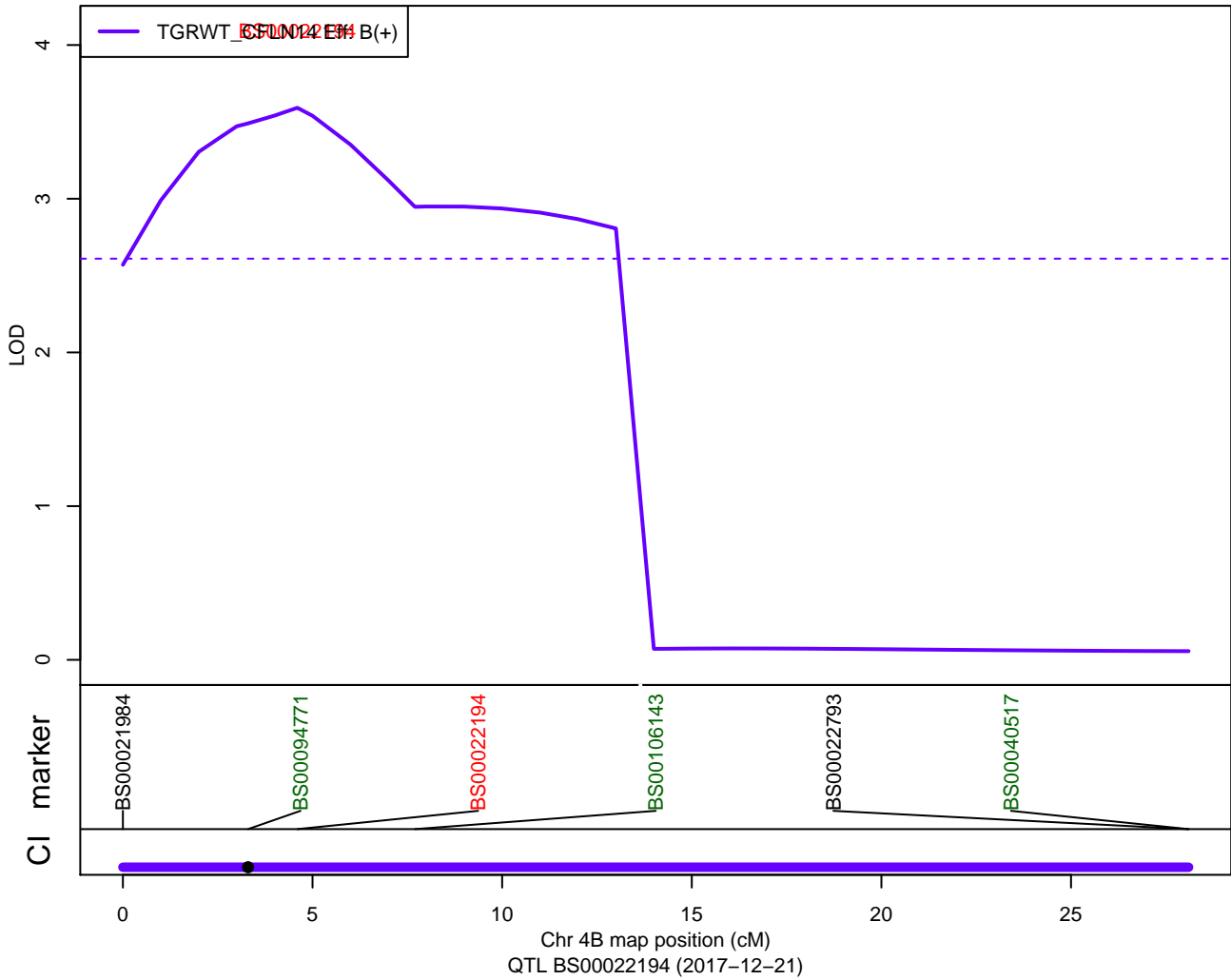
QTLs: ParW254 - STCOL - 7D2



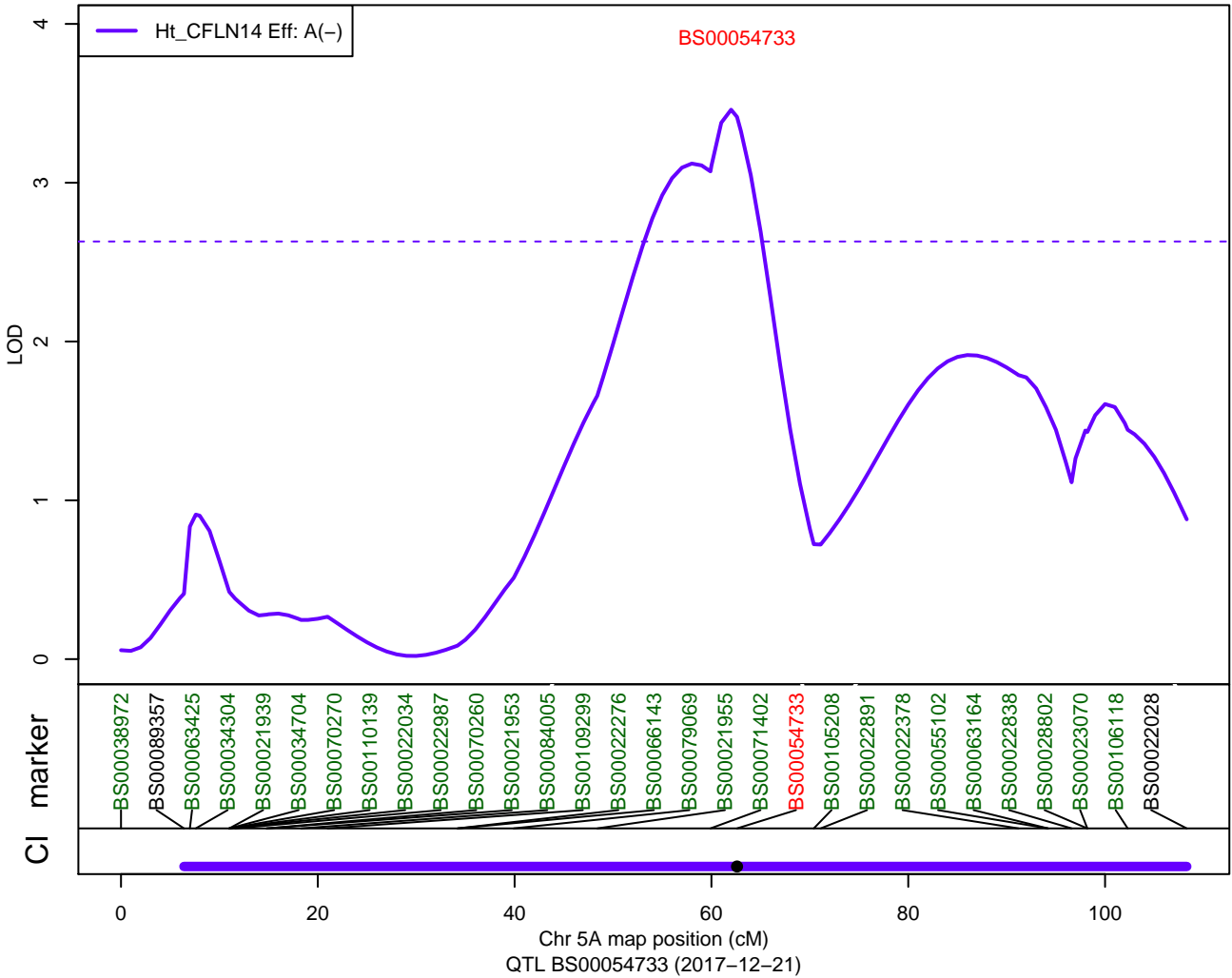
QTLs: ParW254 - TGRWT - 3B



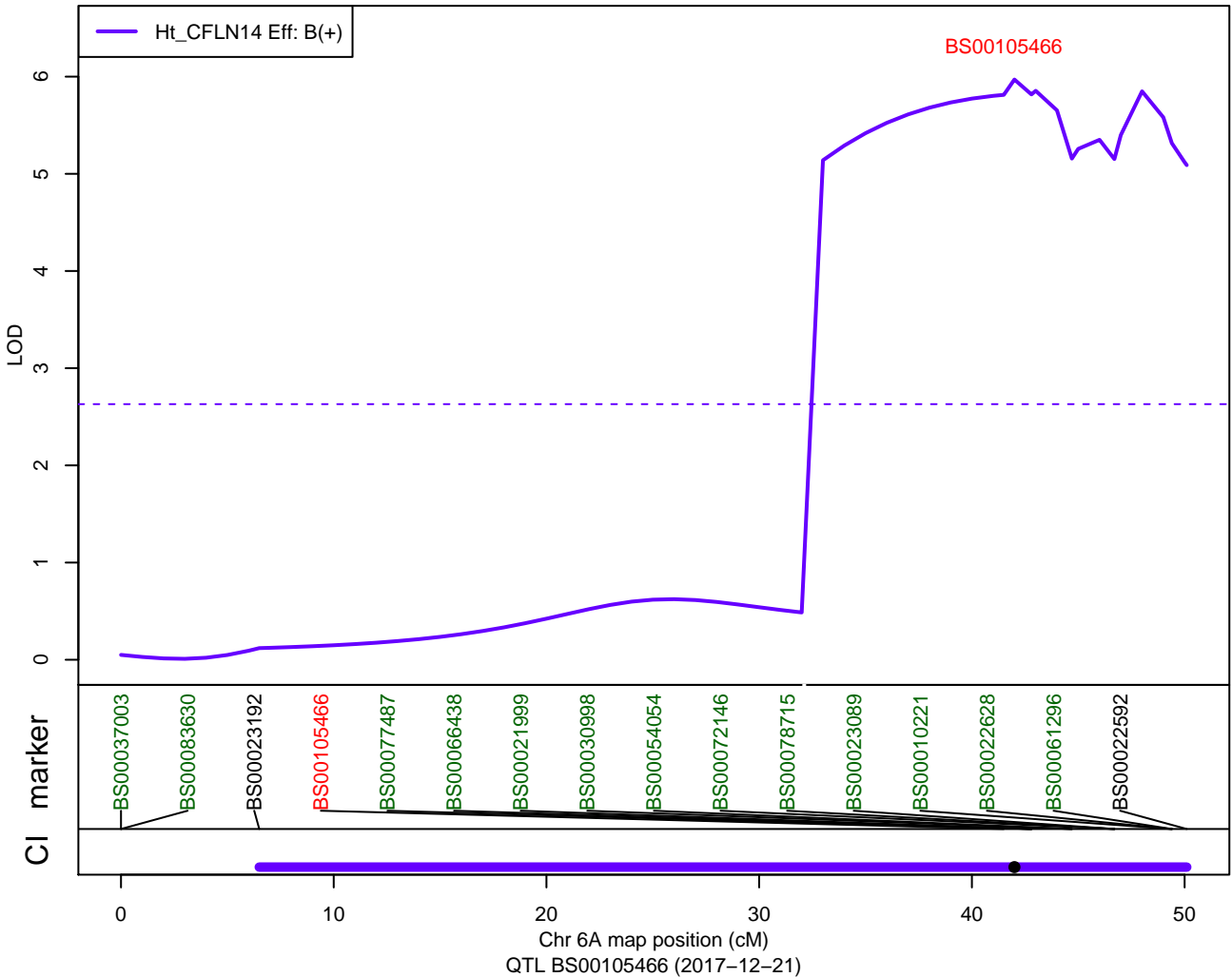
QTLs: ParW254 - TGRWT - 4B



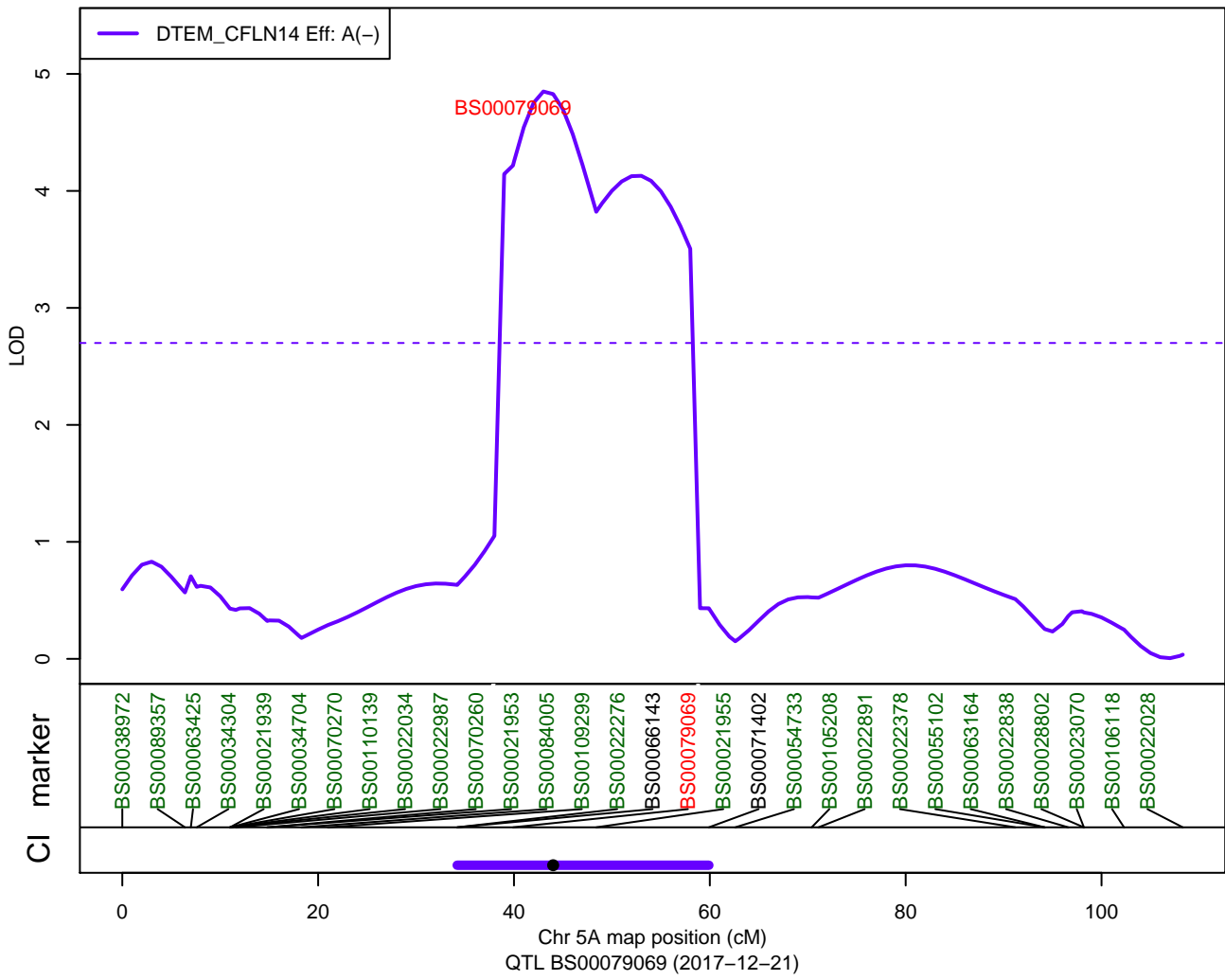
QTLs: ParW291 – Ht – 5A



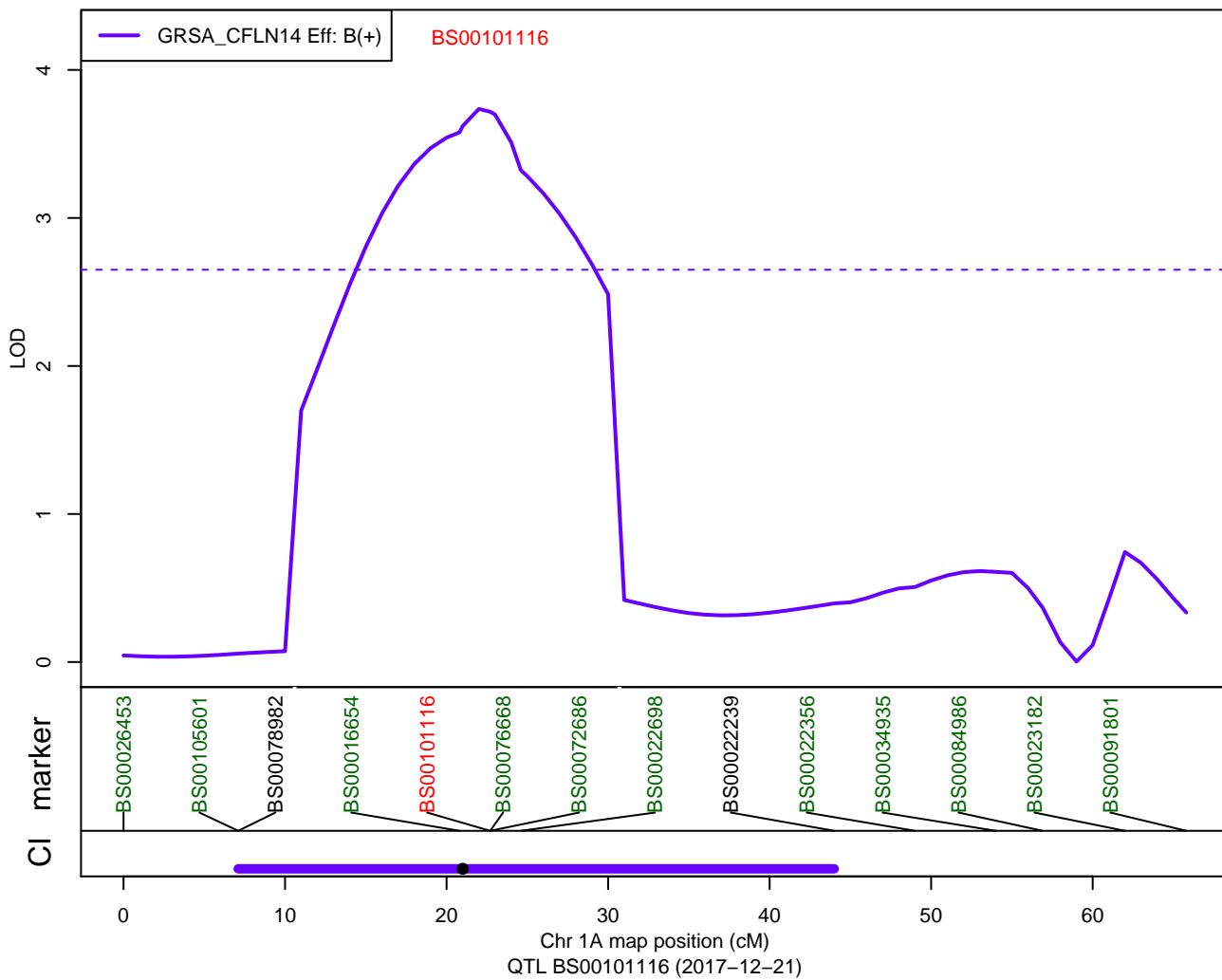
QTLs: ParW291 – Ht – 6A



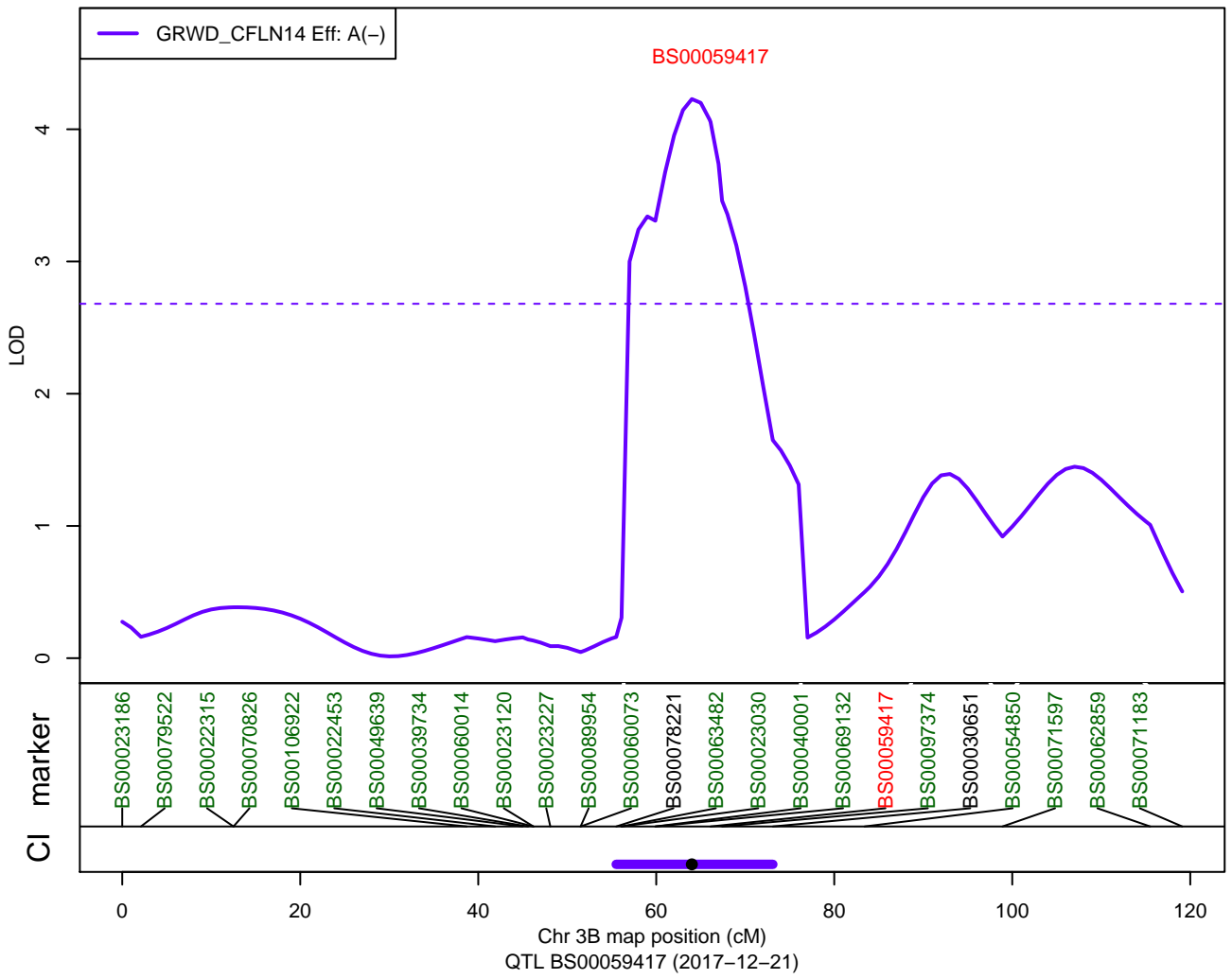
QTLs: ParW291 - DTEM - 5A



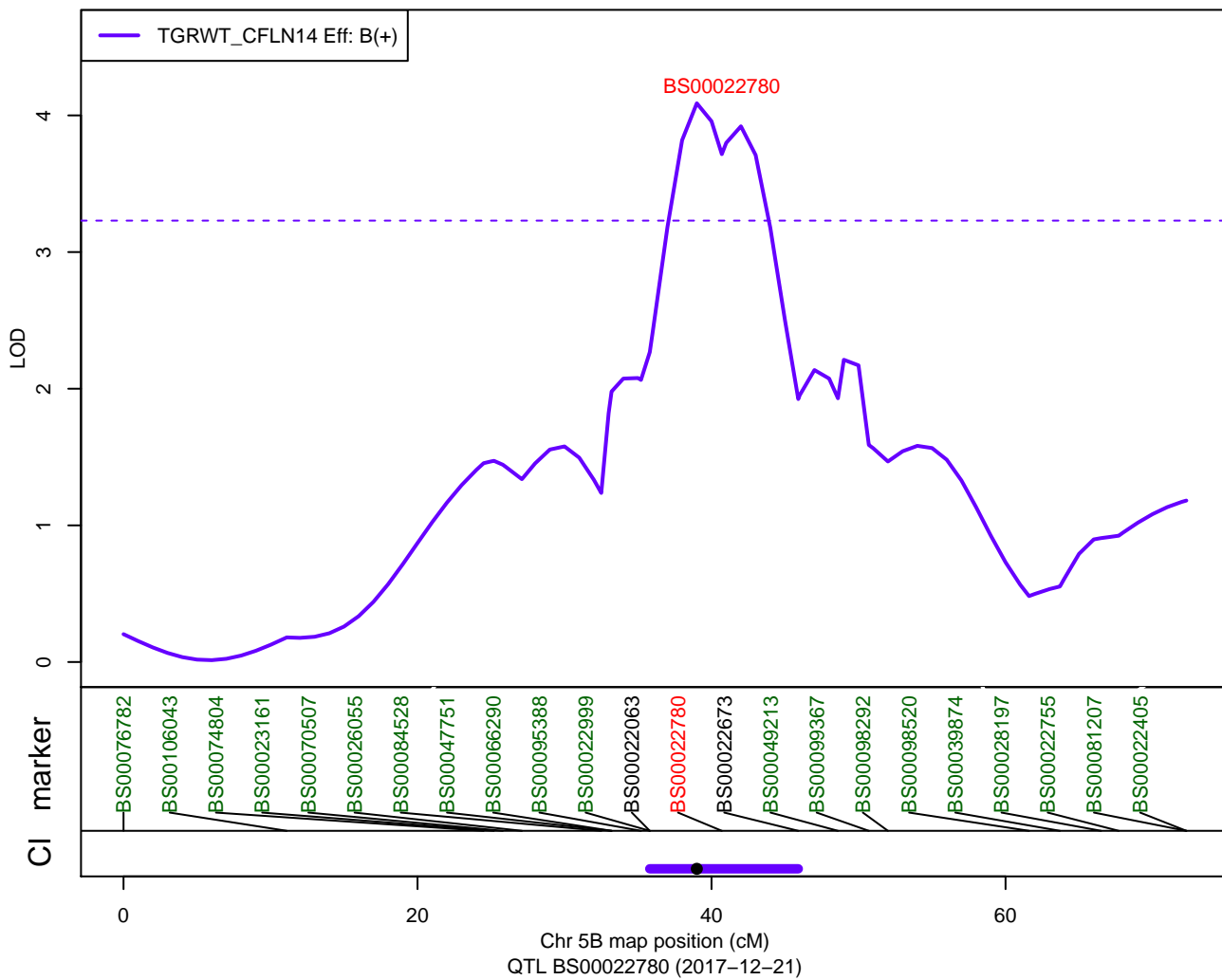
QTLs: ParW291 - GRSA - 1A



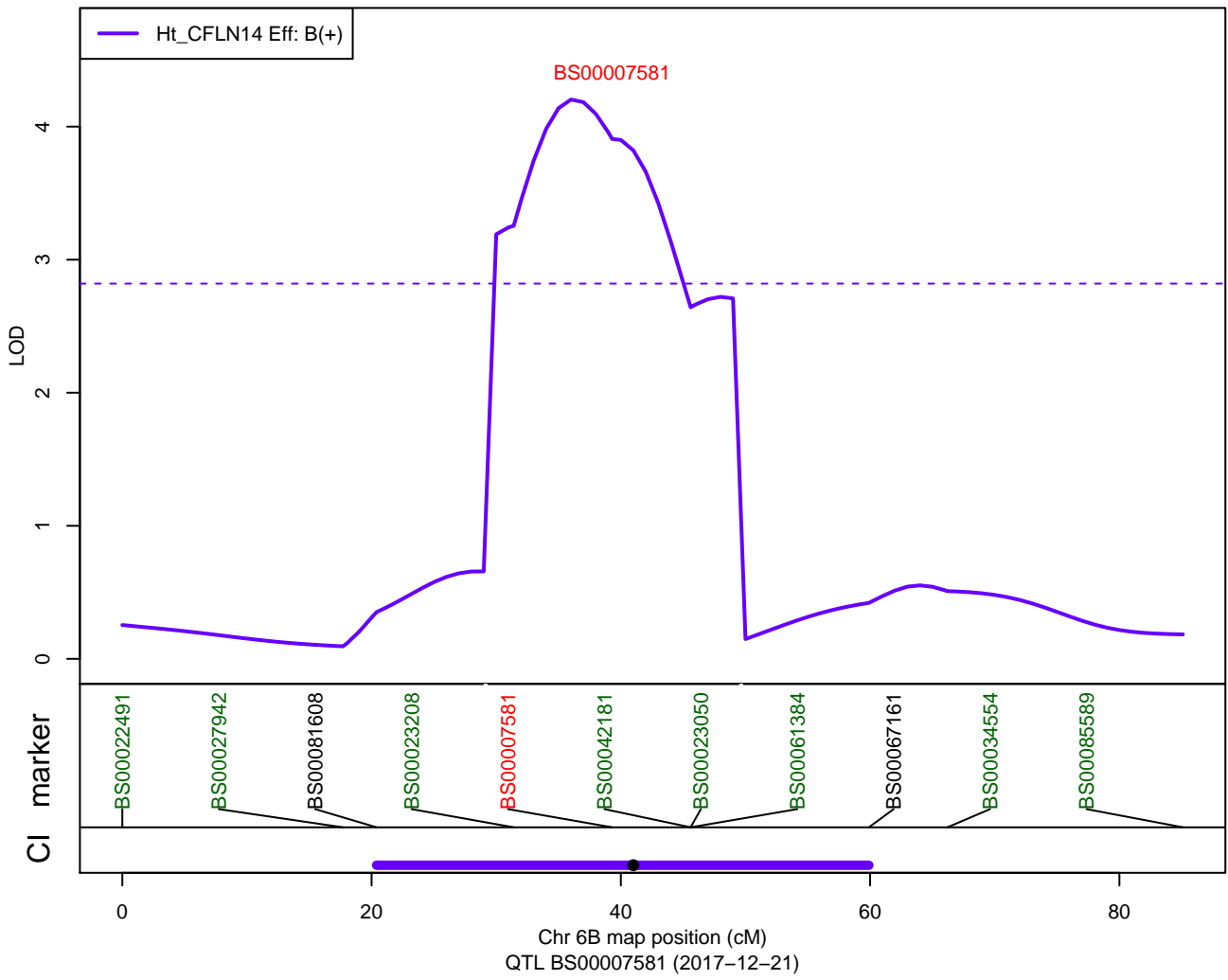
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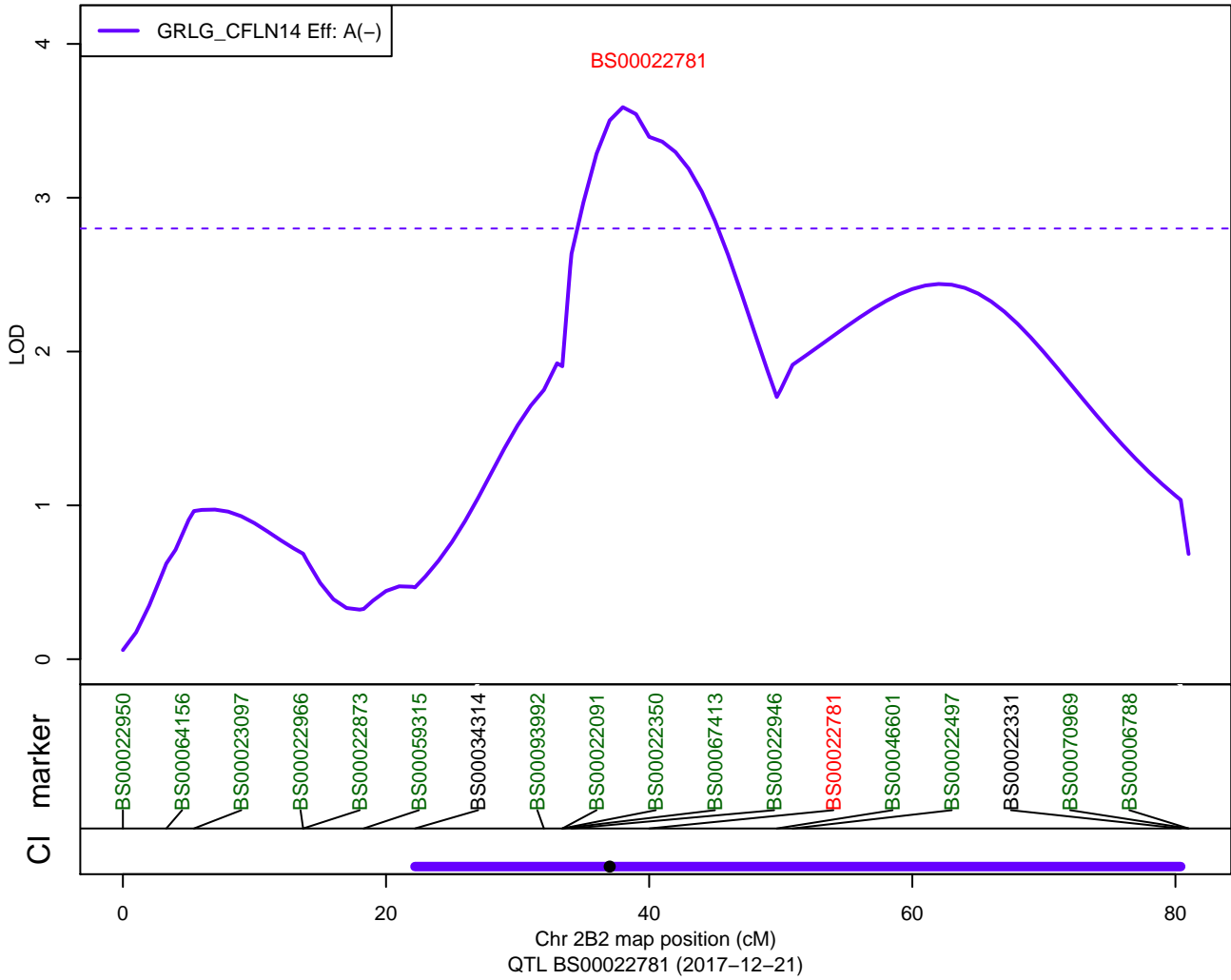
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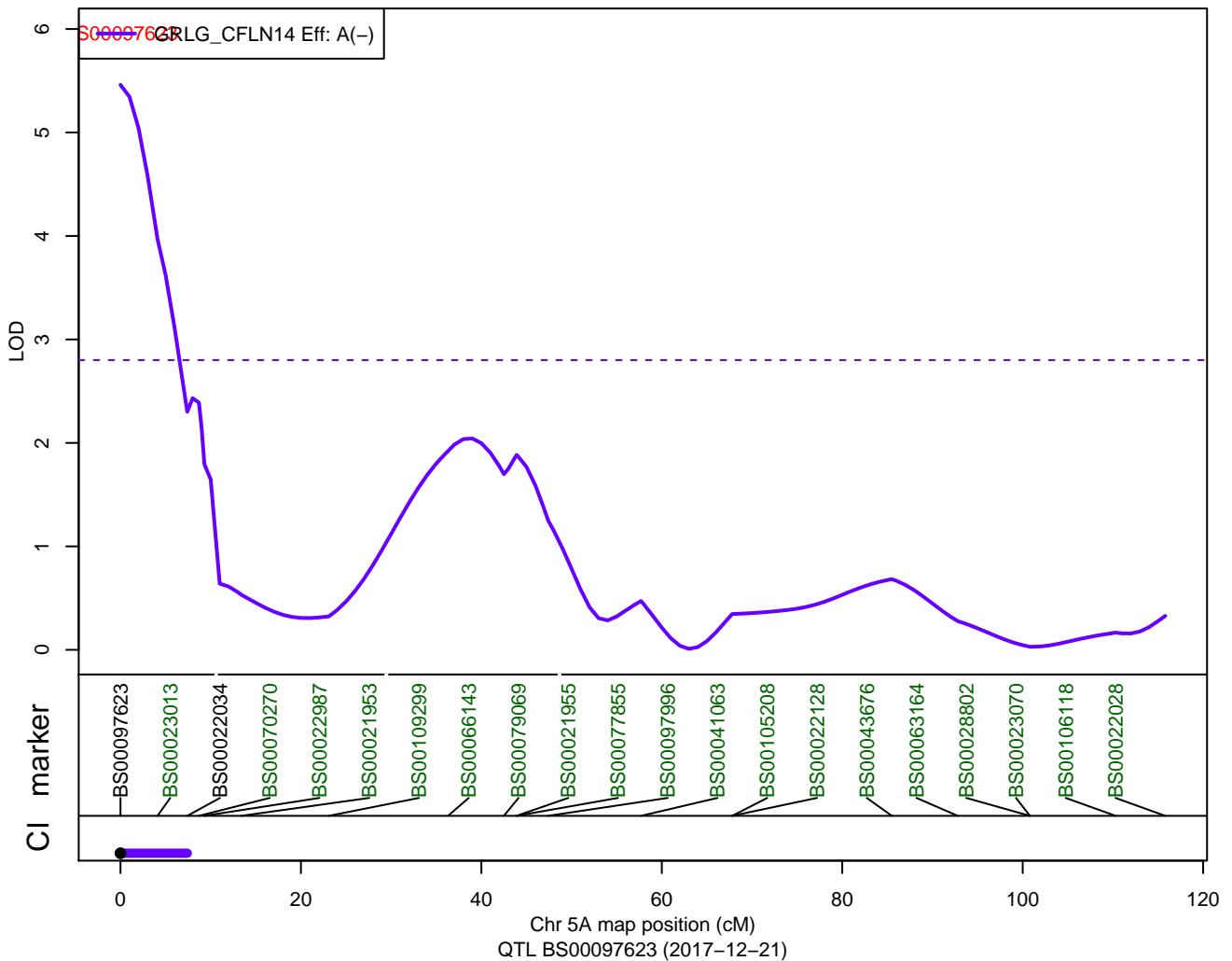
QTLs: ParW299 - Ht - 6B



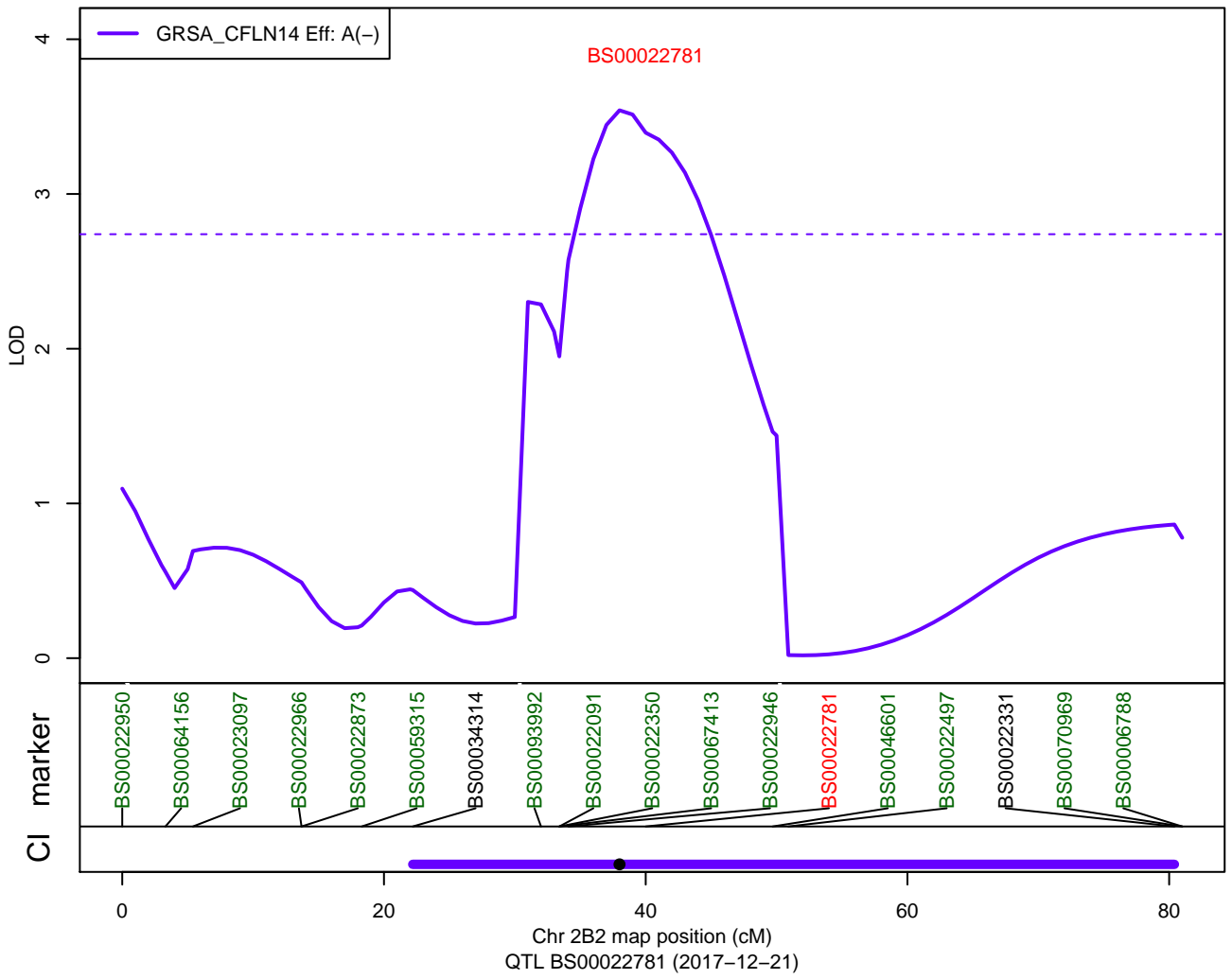
QTLs: ParW299 – GRLG – 2B2



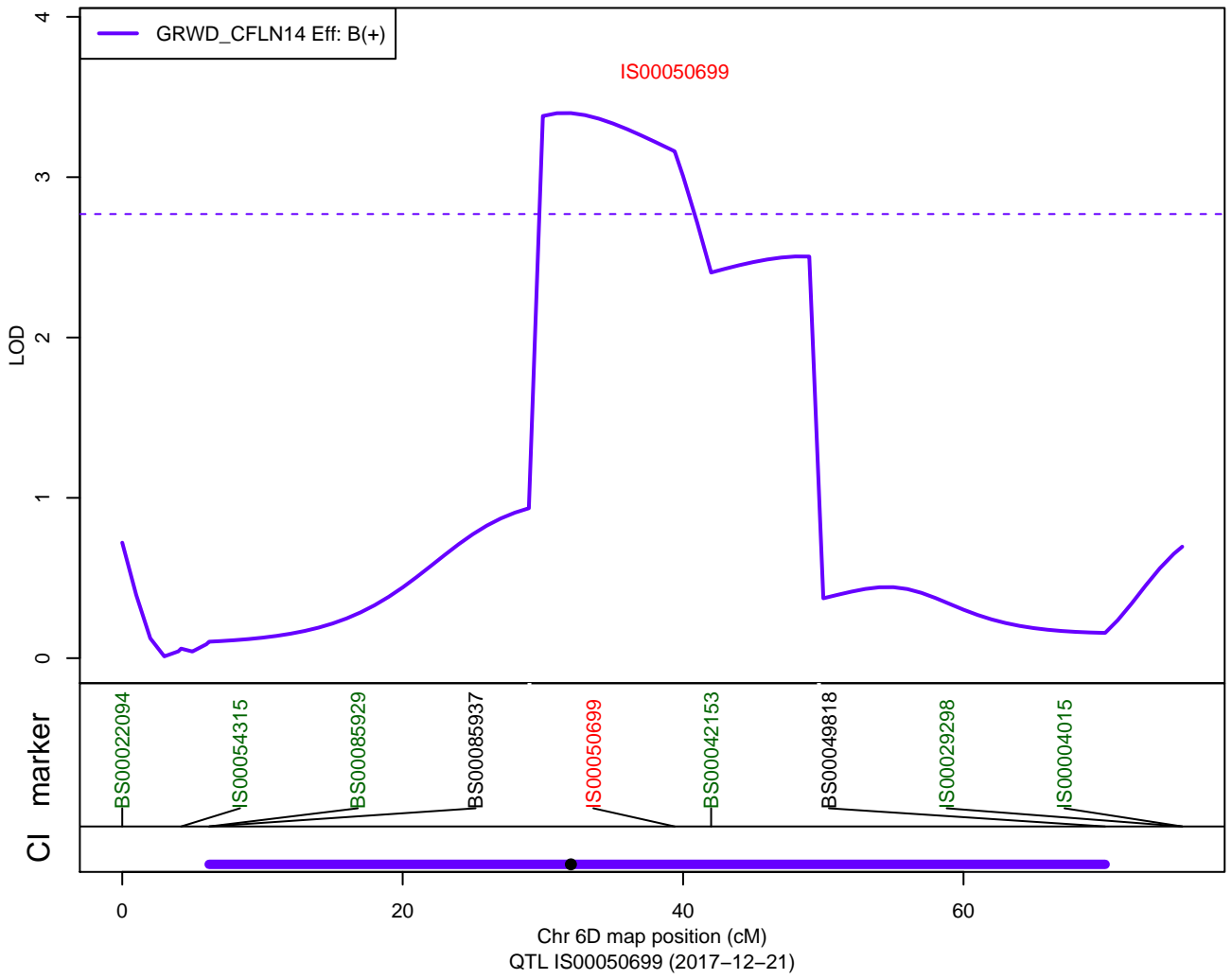
QTLs: ParW299 – GRLG – 5A



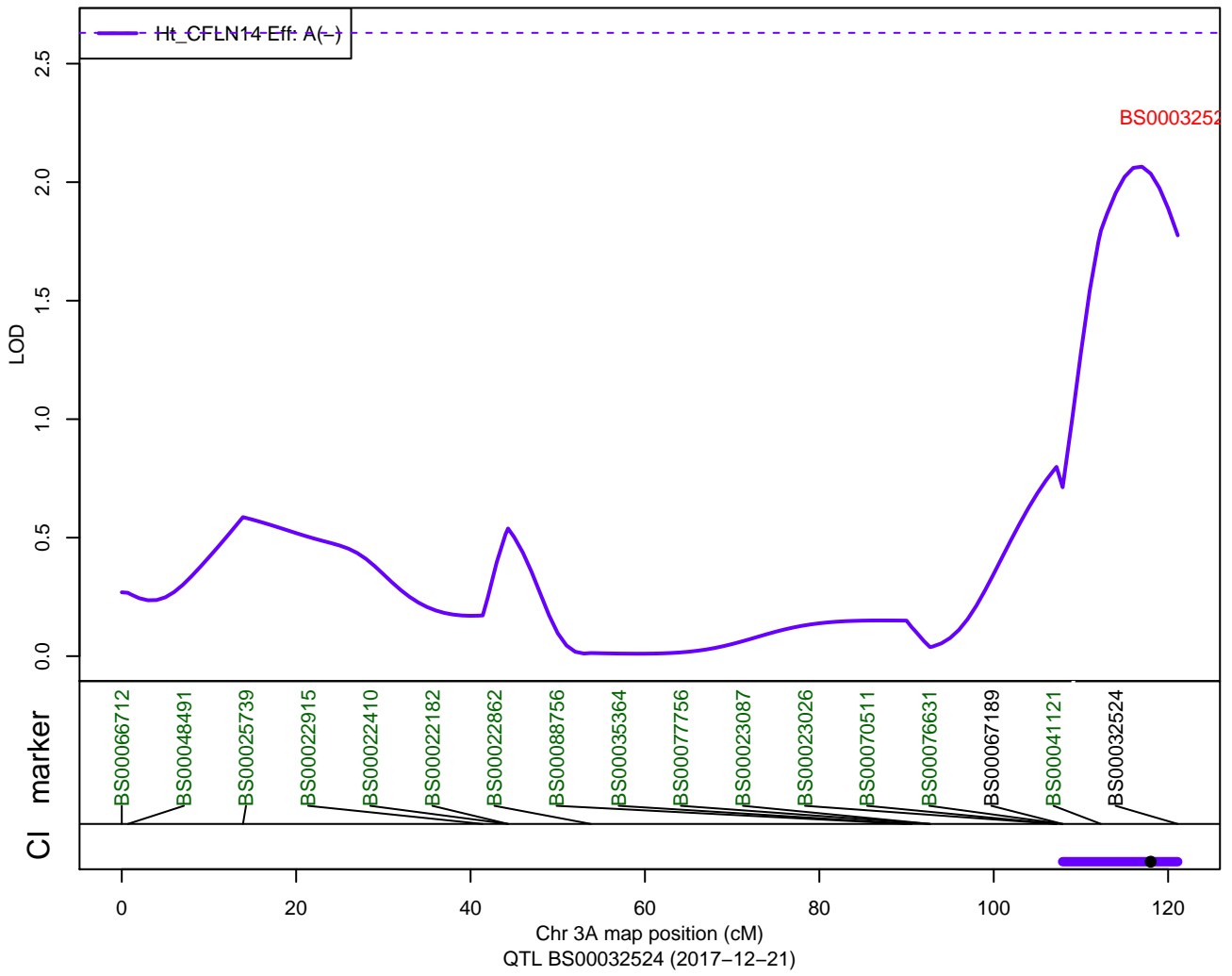
QTLs: ParW299 – GRSA – 2B2



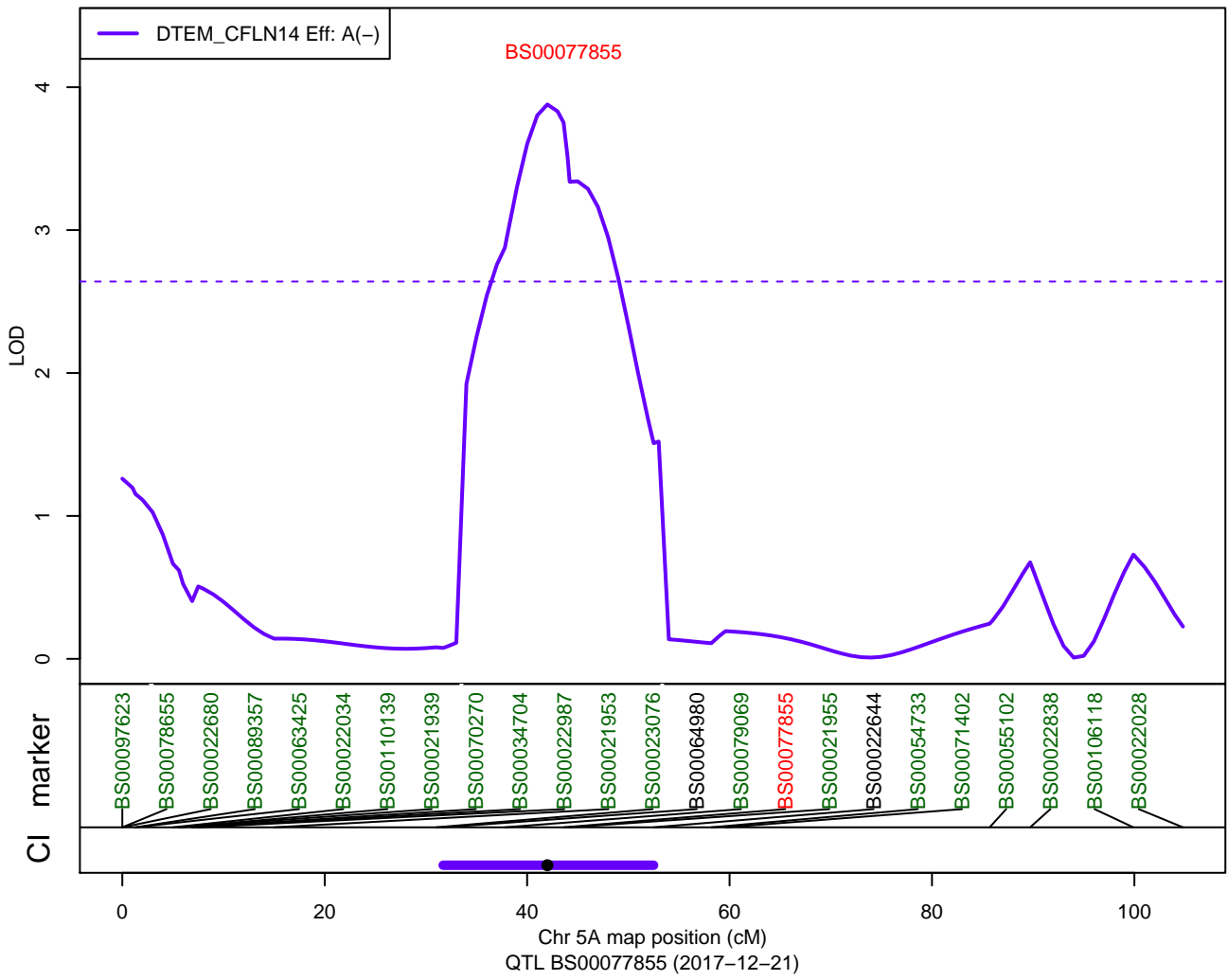
QTLs: ParW299 – GRWD – 6D



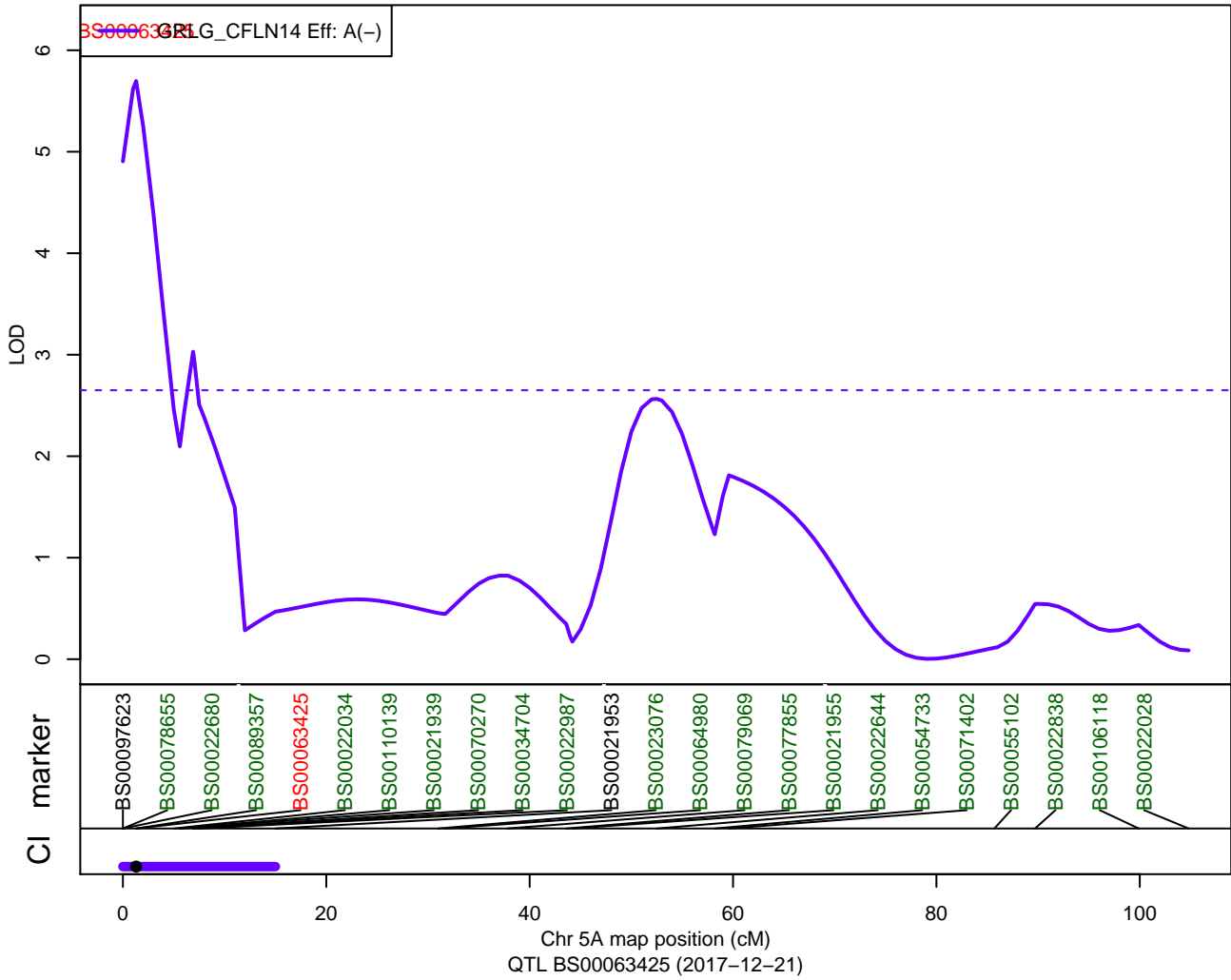
QTLs: ParW349 - Ht - 3A



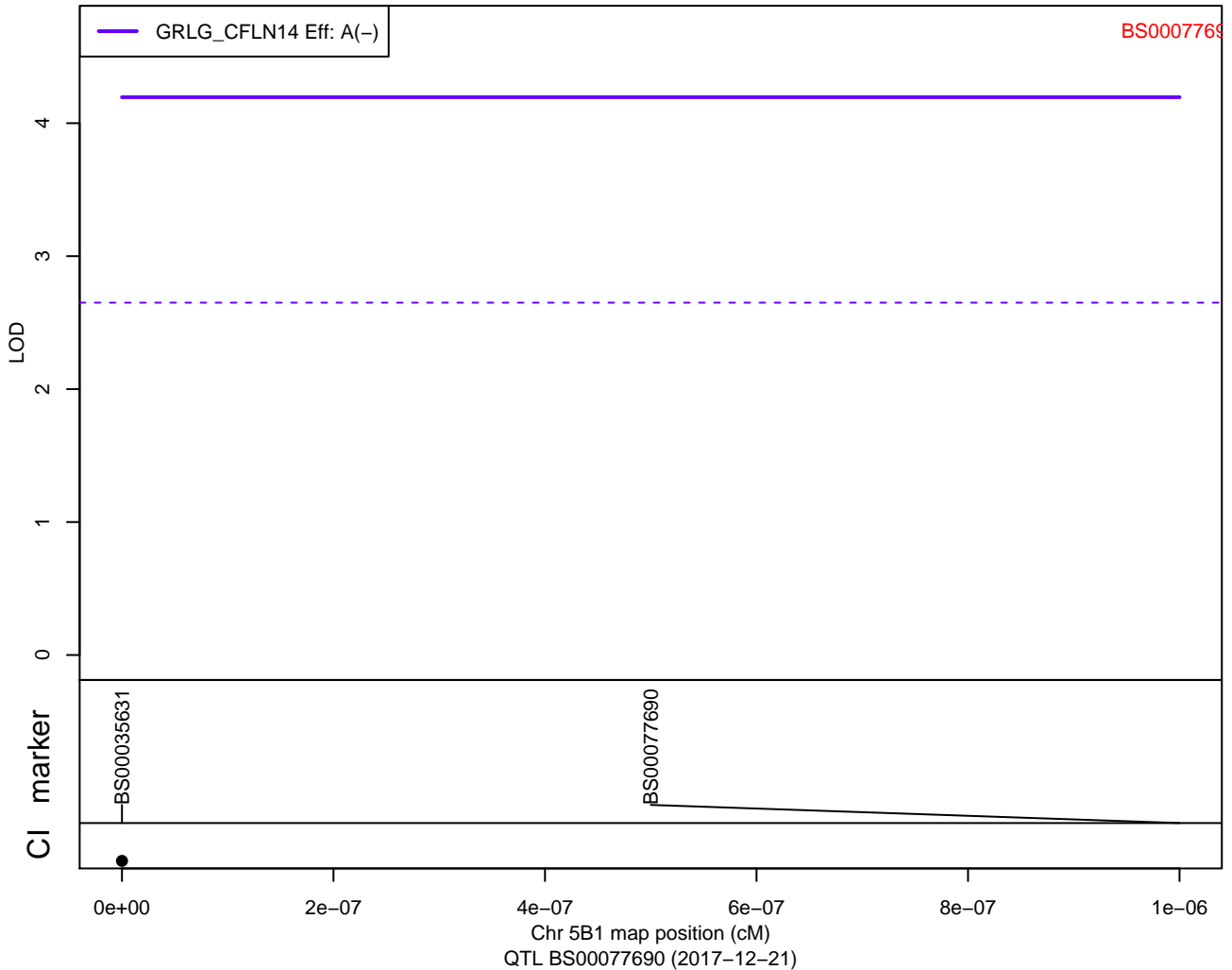
QTLs: ParW349 – DTEM – 5A



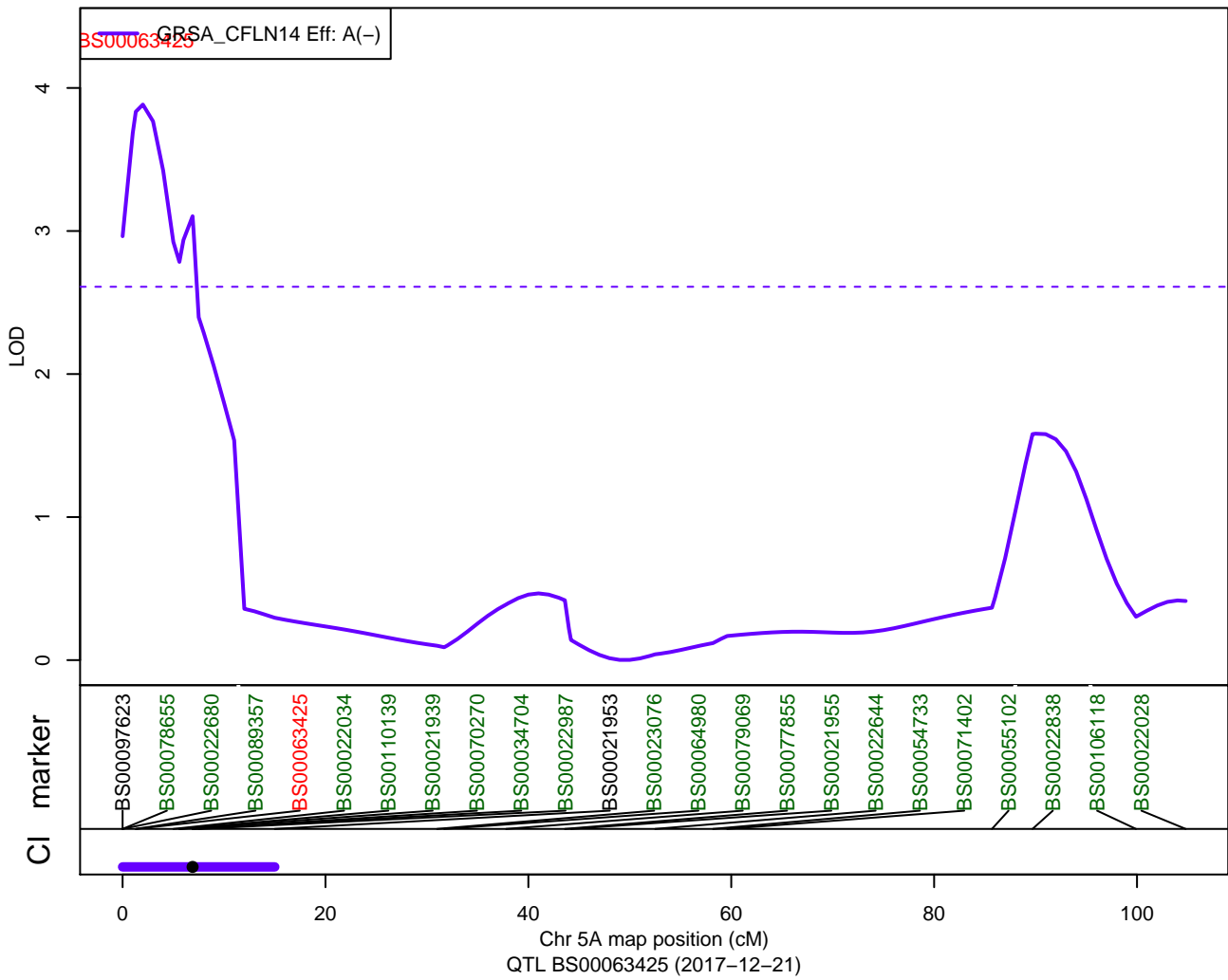
QTLs: ParW349 – GRLG – 5A



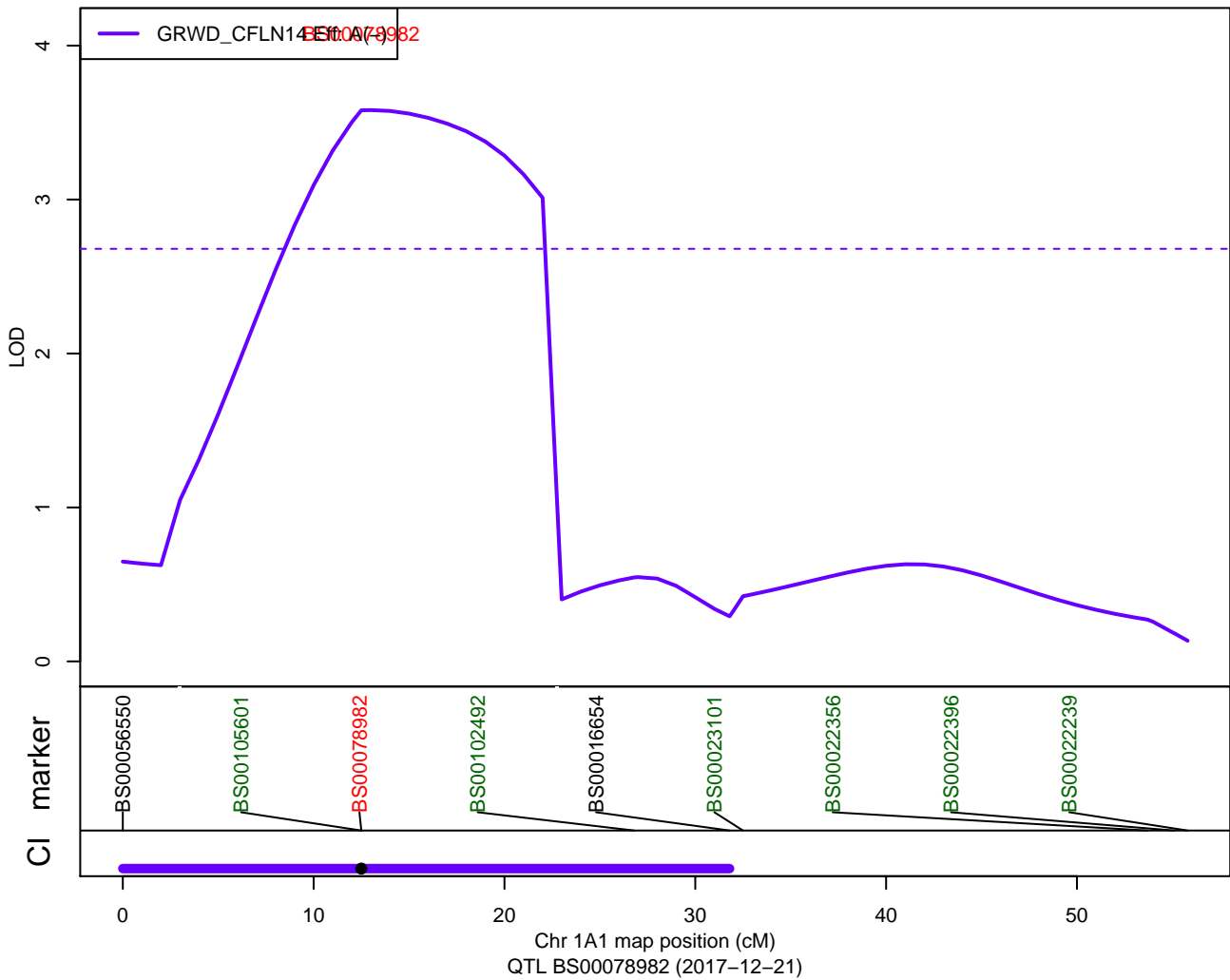
QTLs: ParW349 – GRLG – 5B1



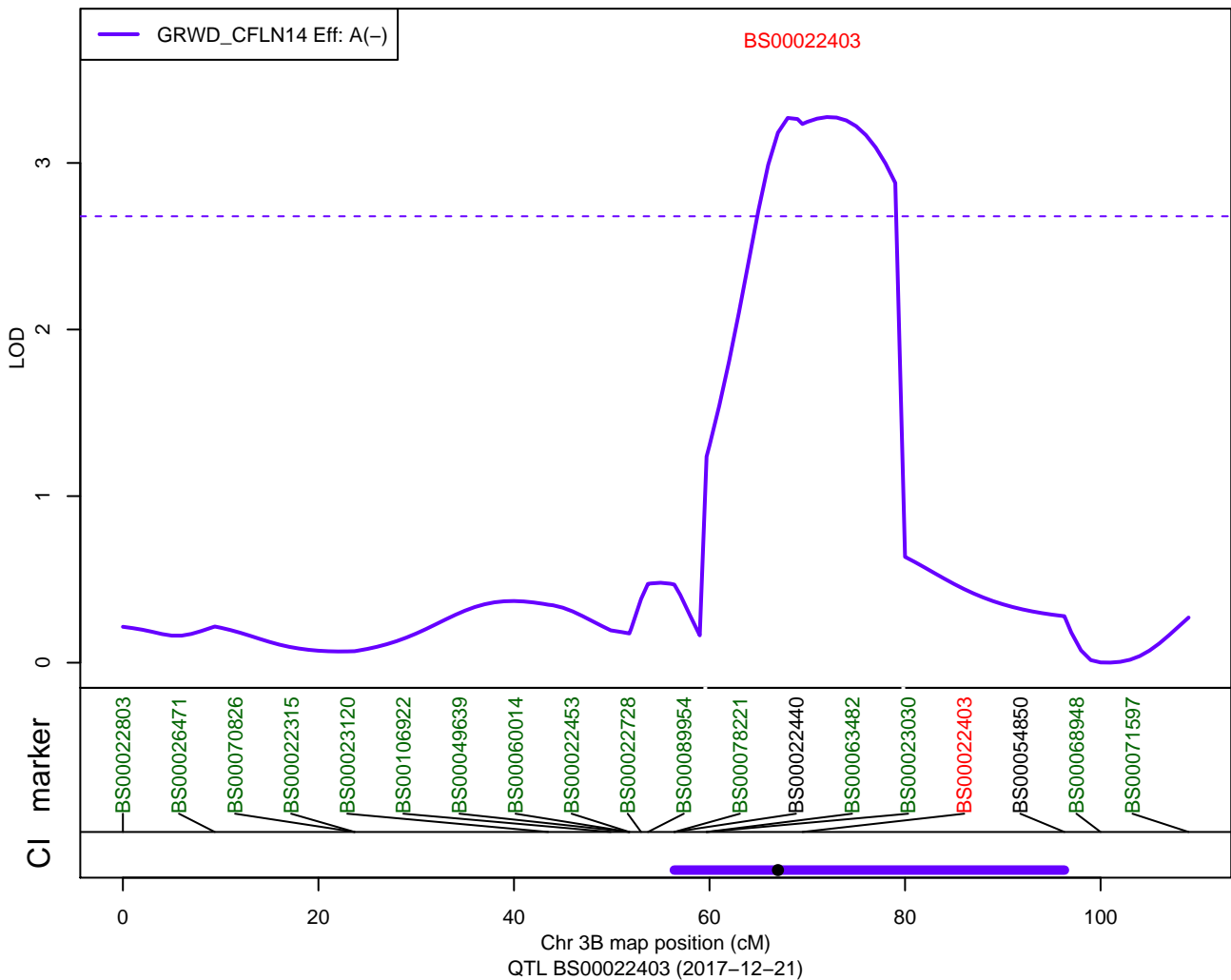
QTLs: ParW349 – GRSA – 5A



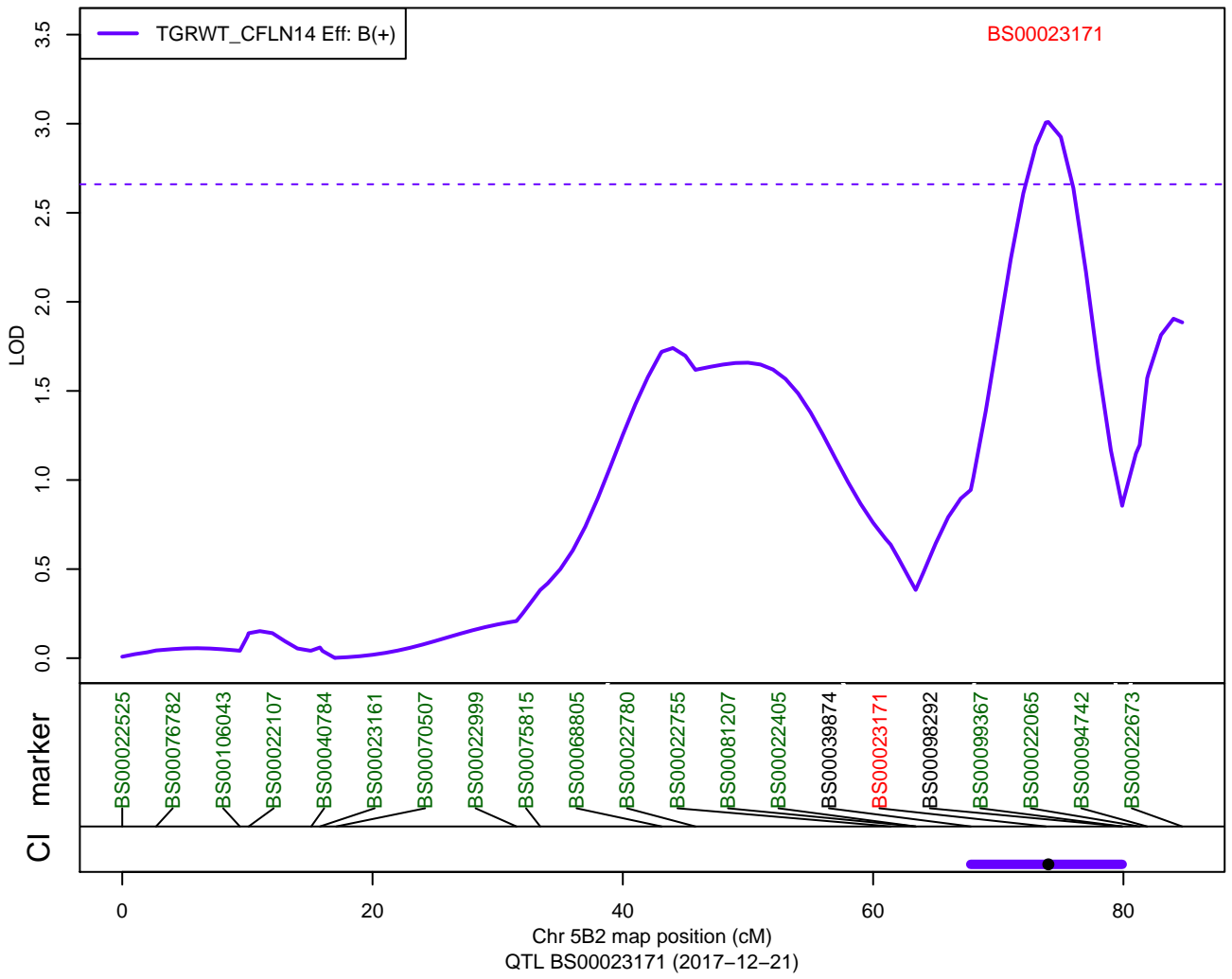
QTLs: ParW349 – GRWD – 1A1



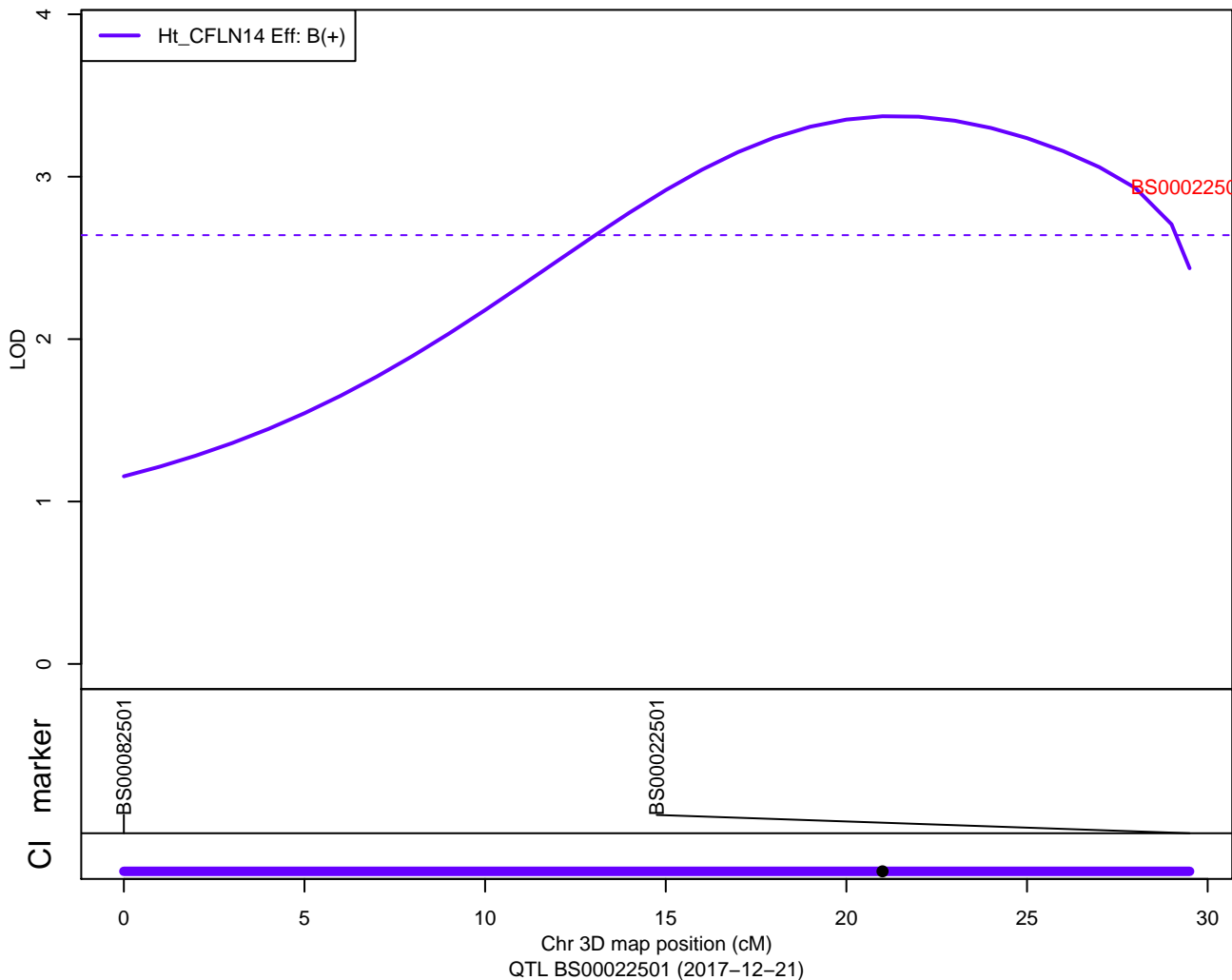
QTLs: ParW349 – GRWD – 3B



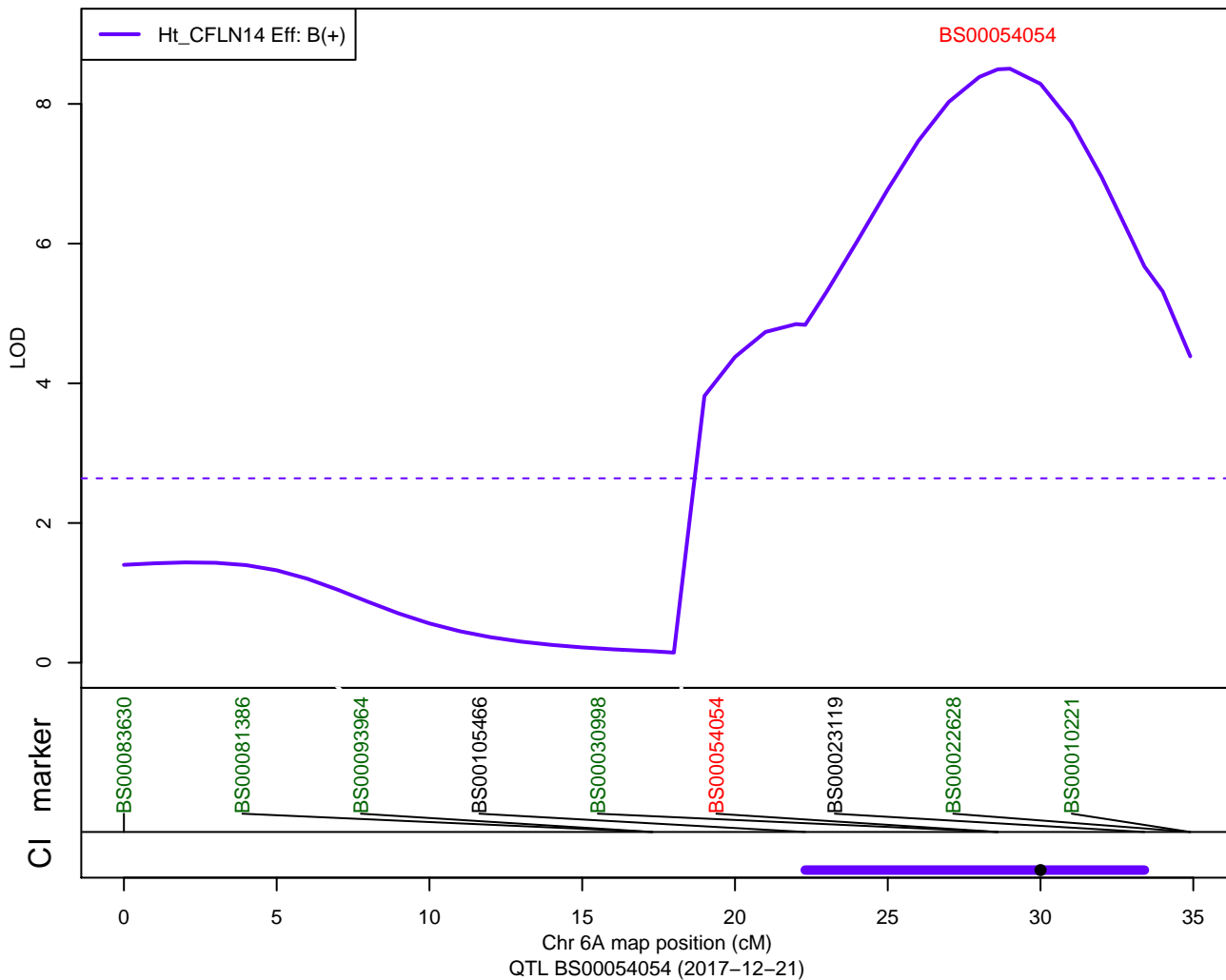
QTLs: ParW349 – TGRWT – 5B2



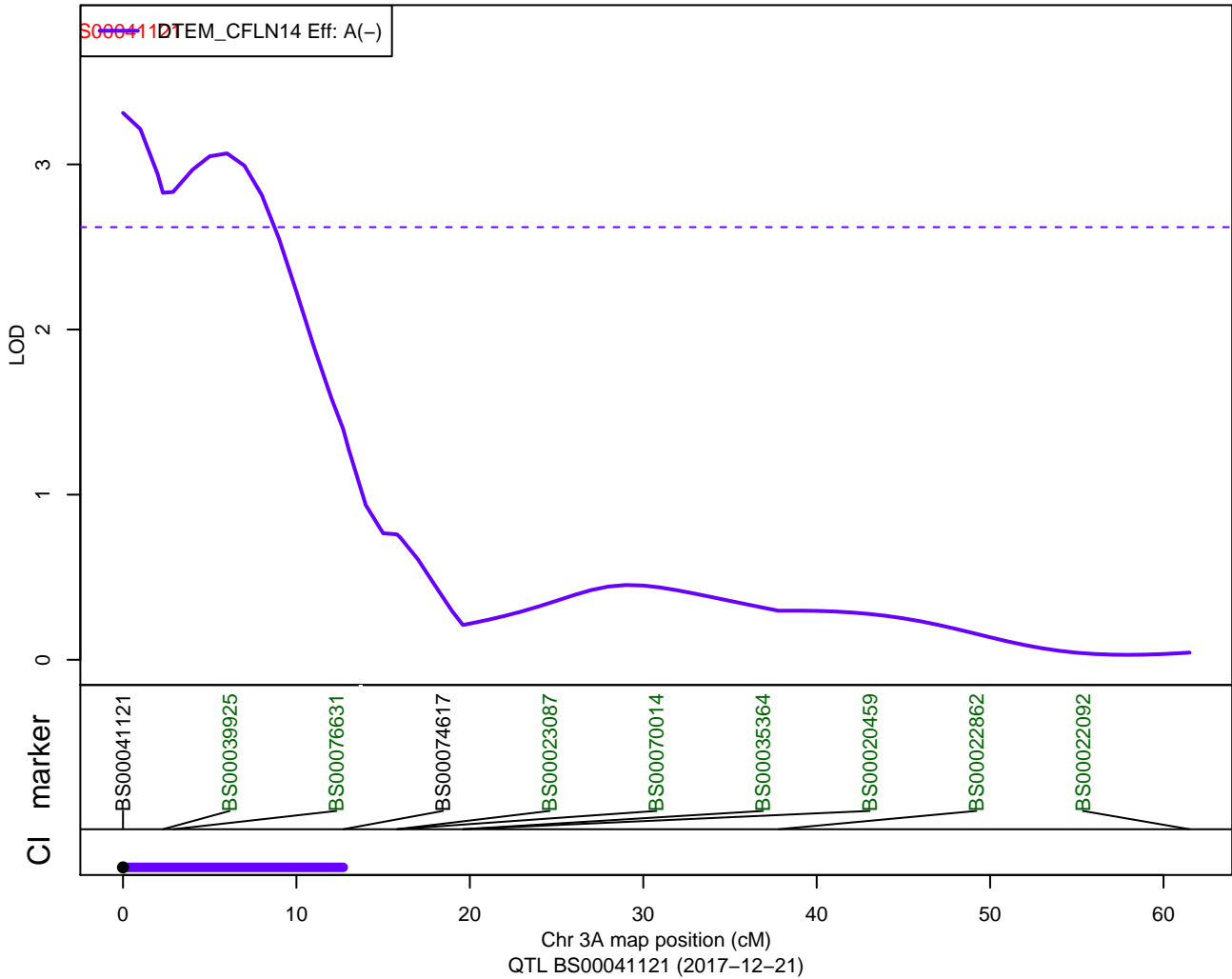
QTLs: ParW387 – Ht – 3D



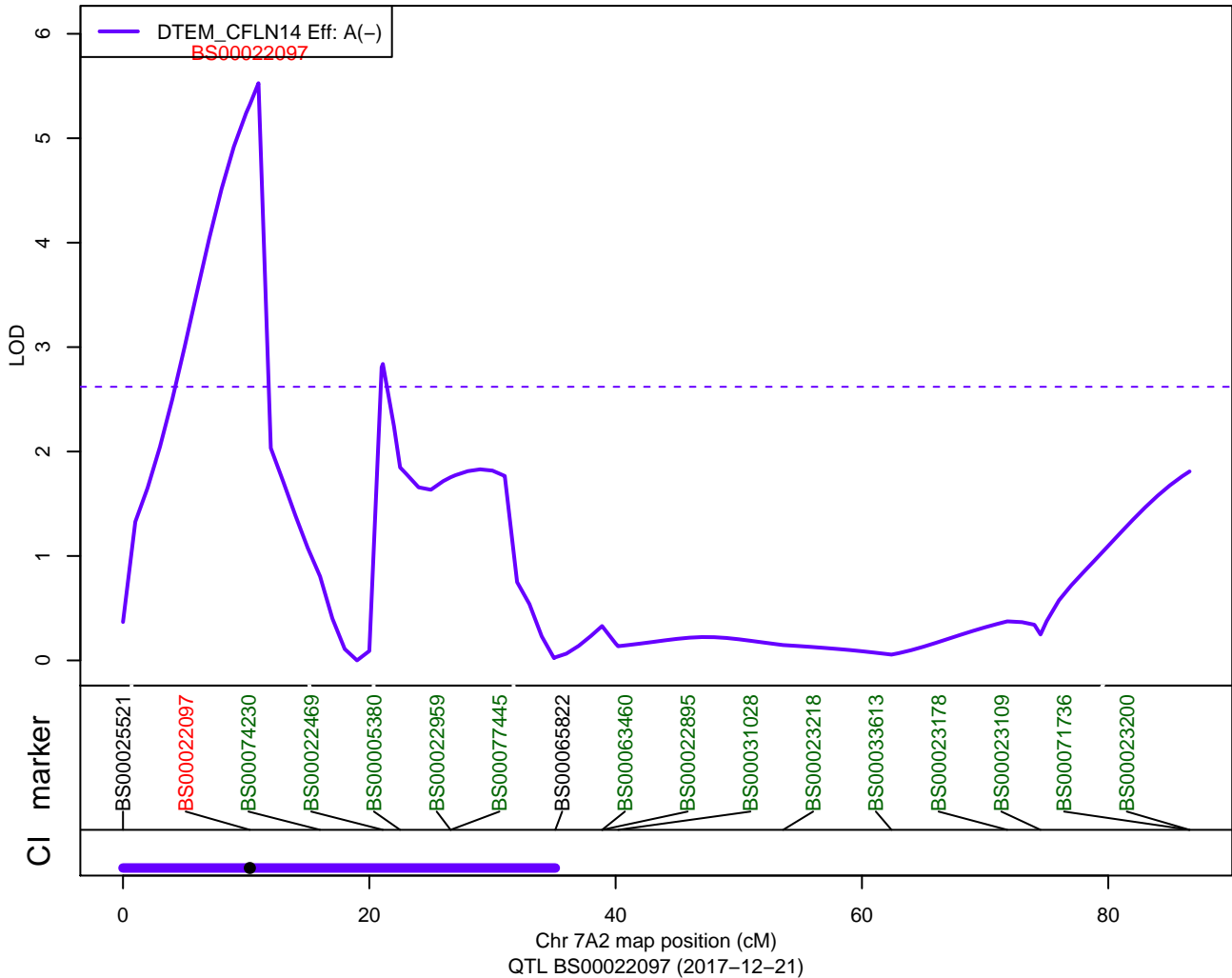
QTLs: ParW387 – Ht – 6A



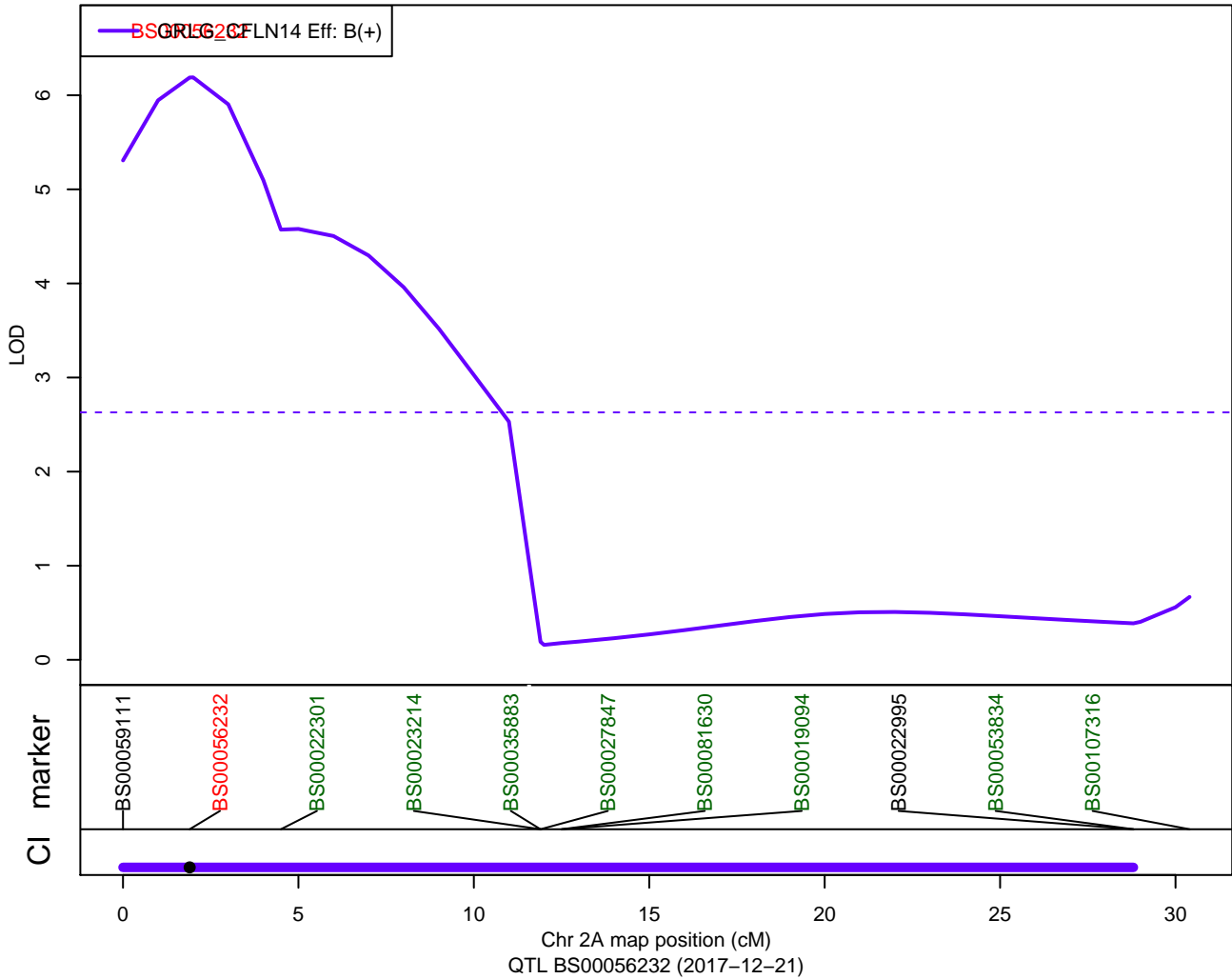
QTLs: ParW387 – DTEM – 3A



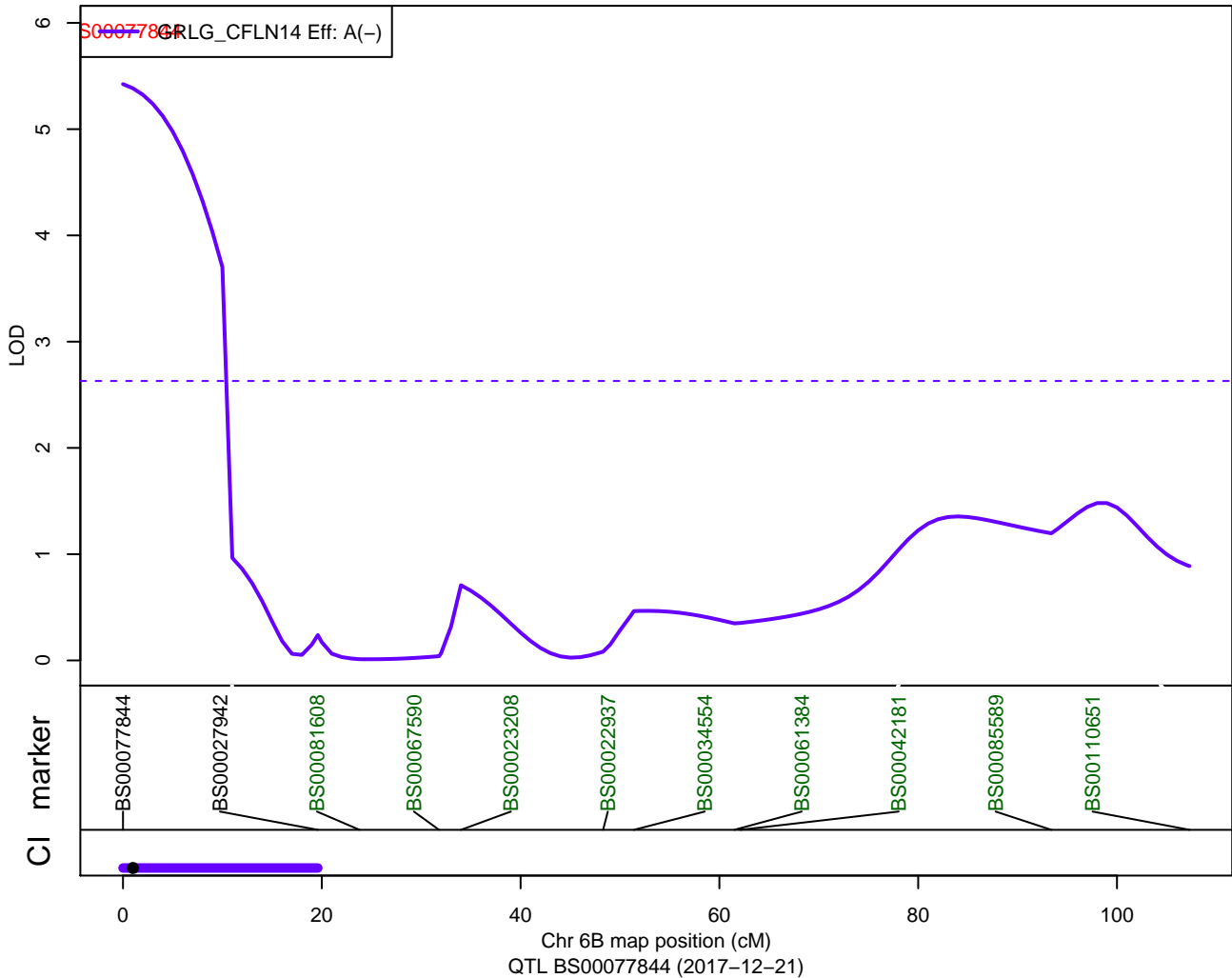
QTLs: ParW387 – DTEM – 7A2



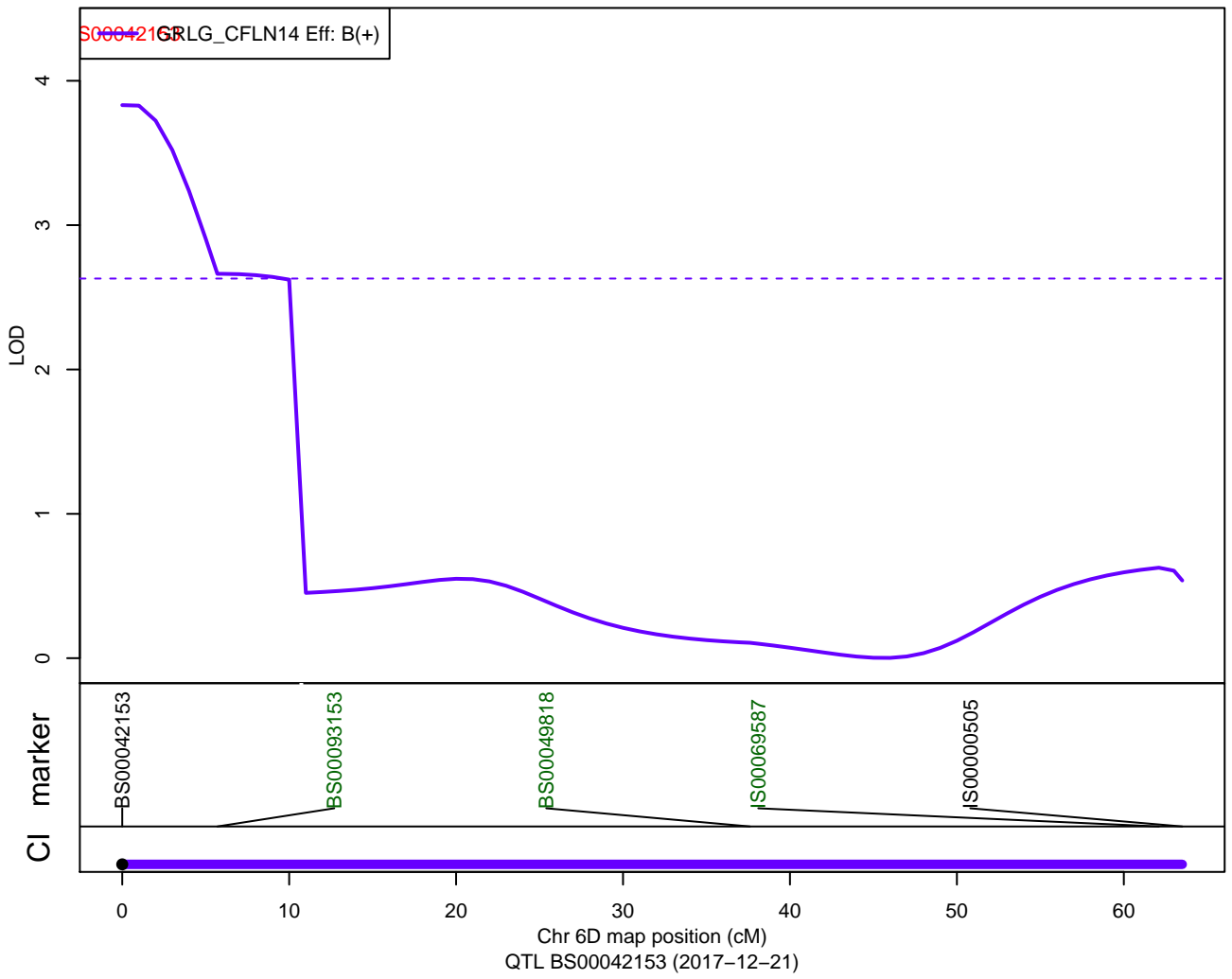
QTLs: ParW387 – GRLG – 2A



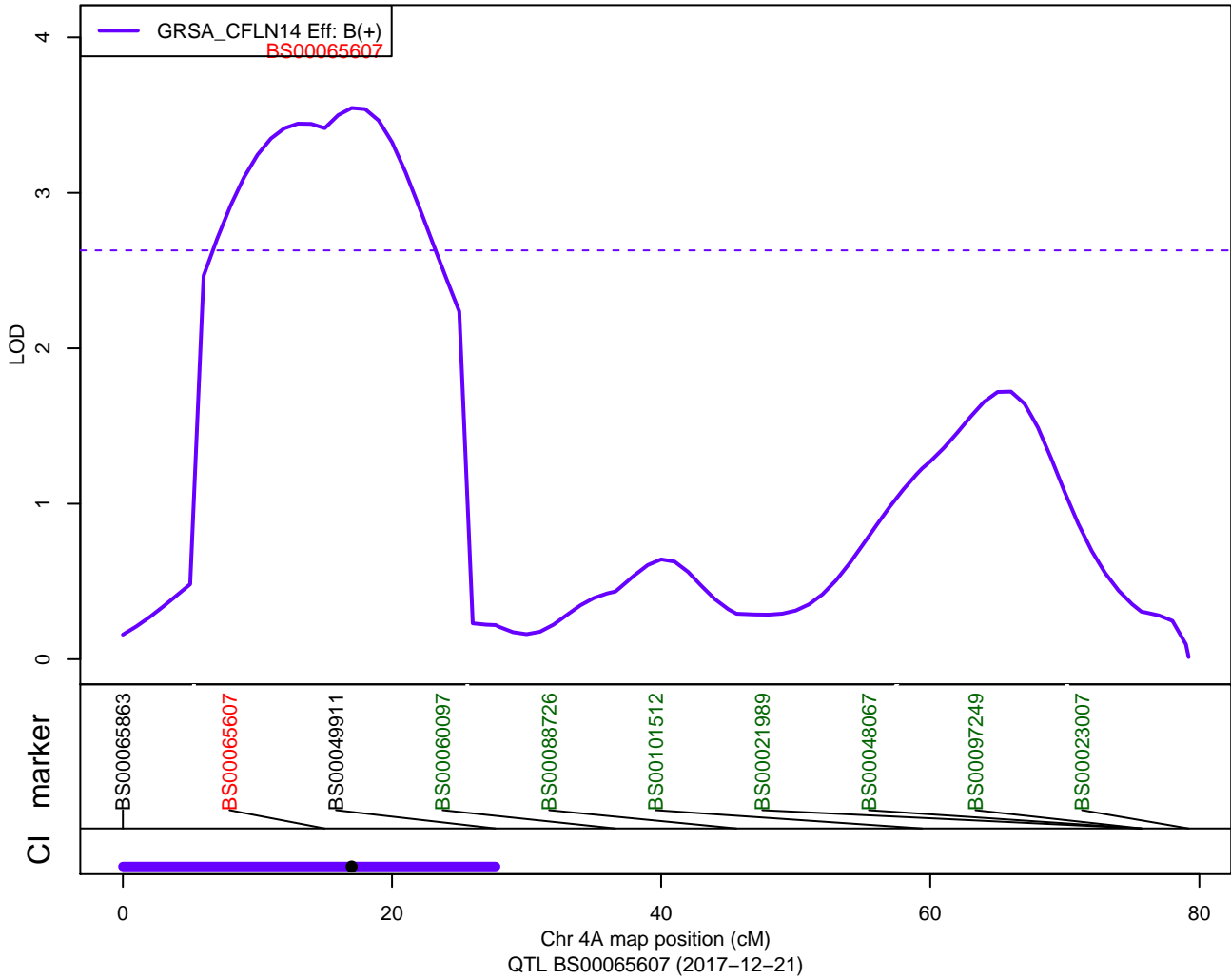
QTLs: ParW387 – GRLG – 6B



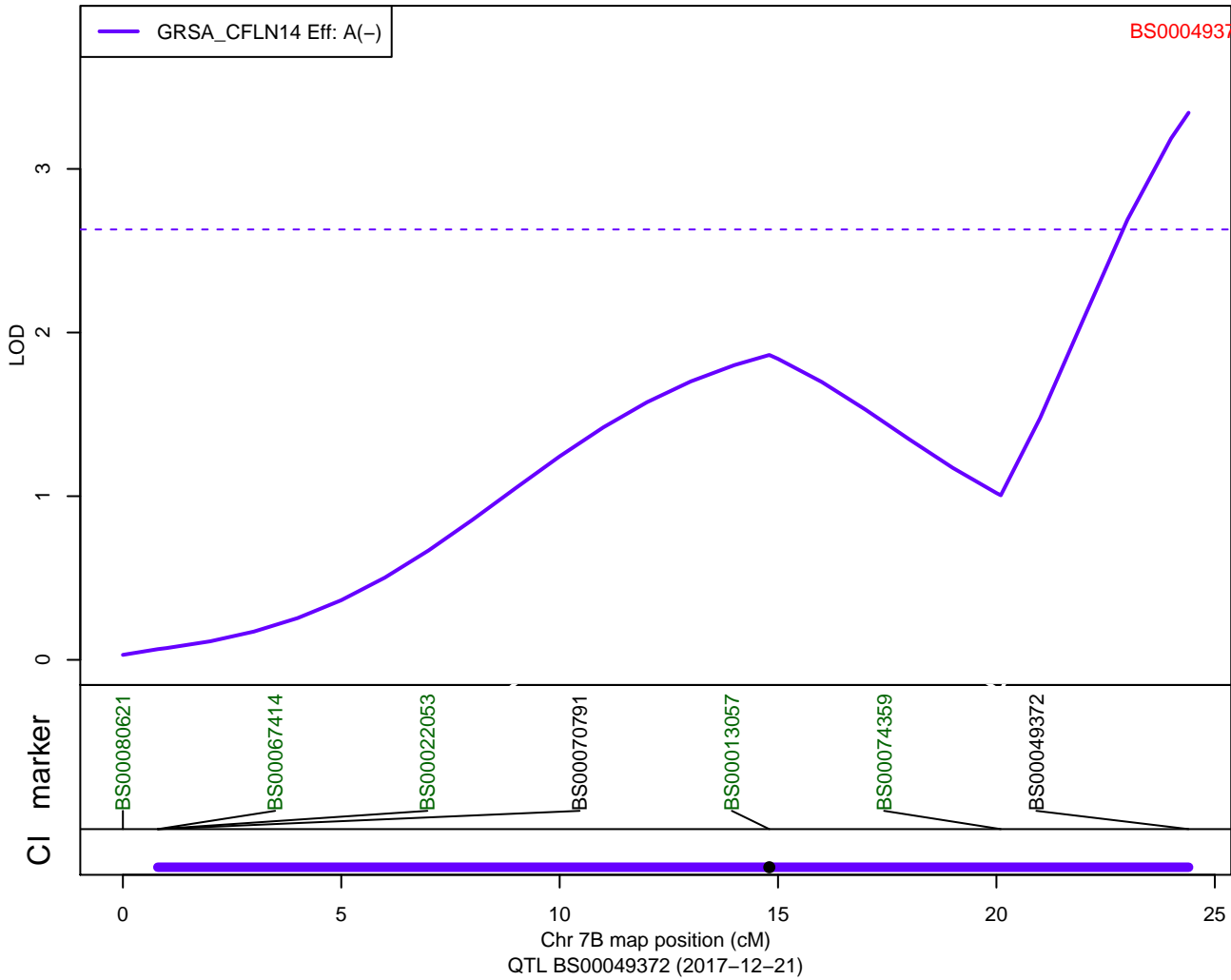
QTLs: ParW387 - GRLG - 6D



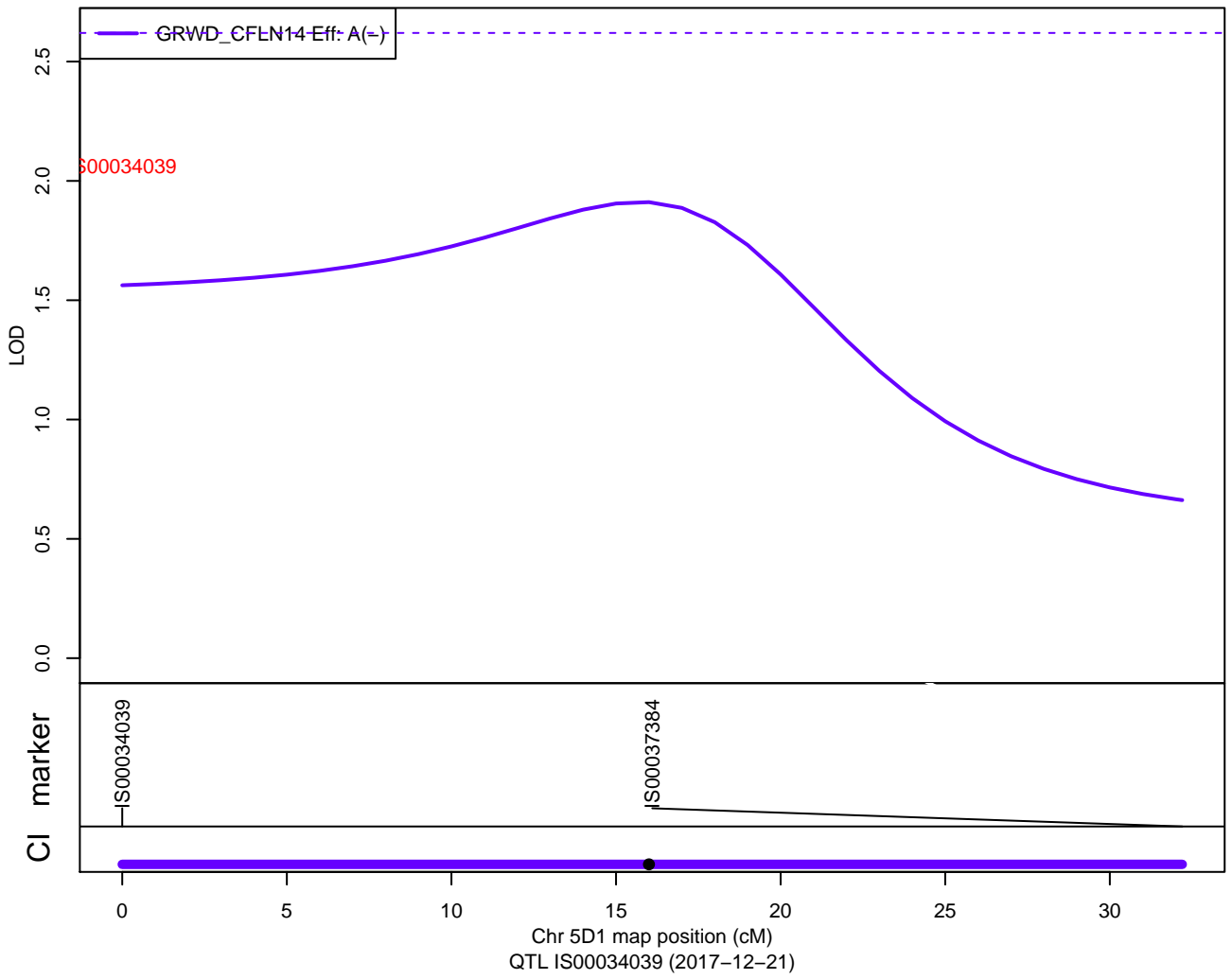
QTLs: ParW387 – GRSA – 4A



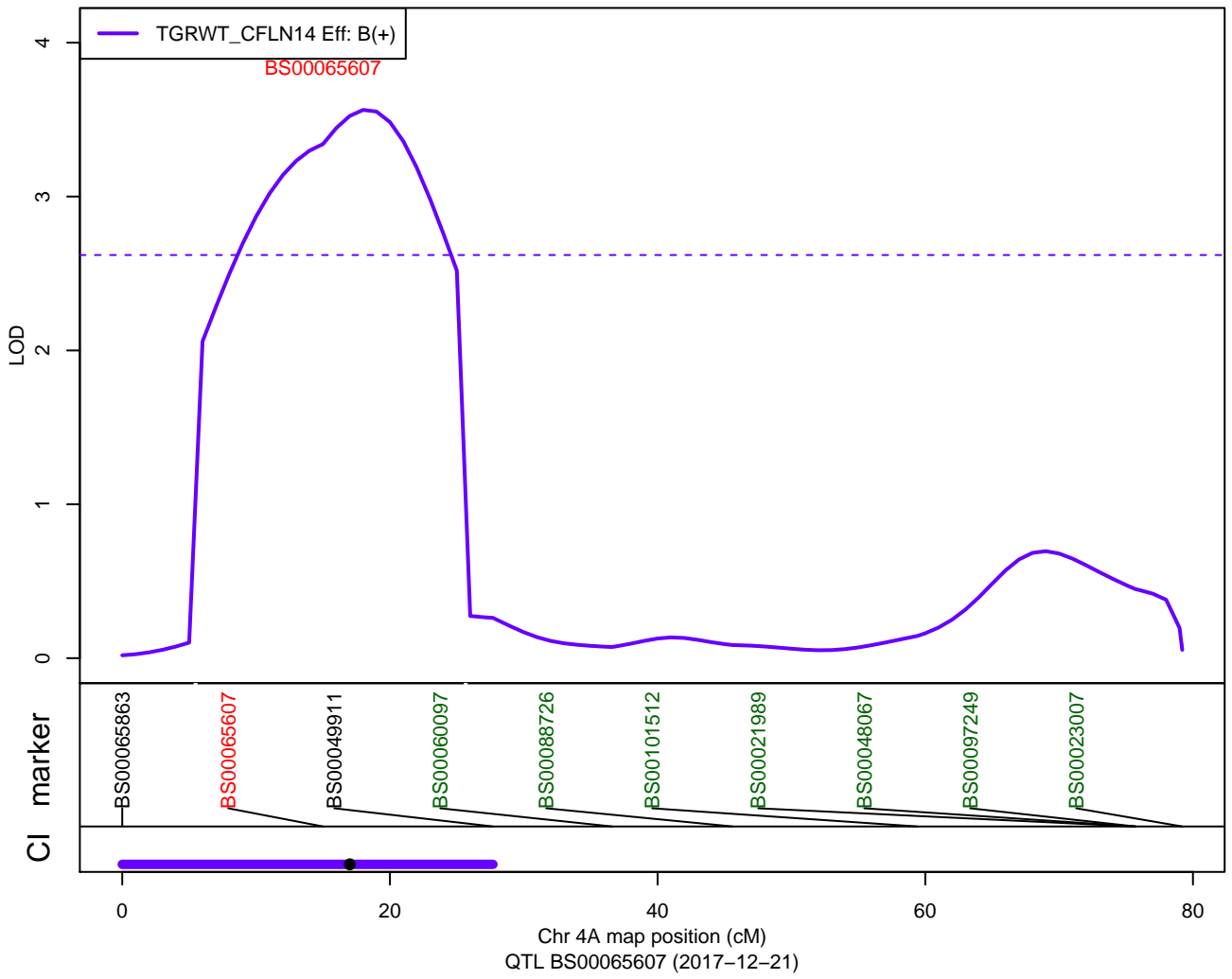
QTLs: ParW387 – GRSA – 7B



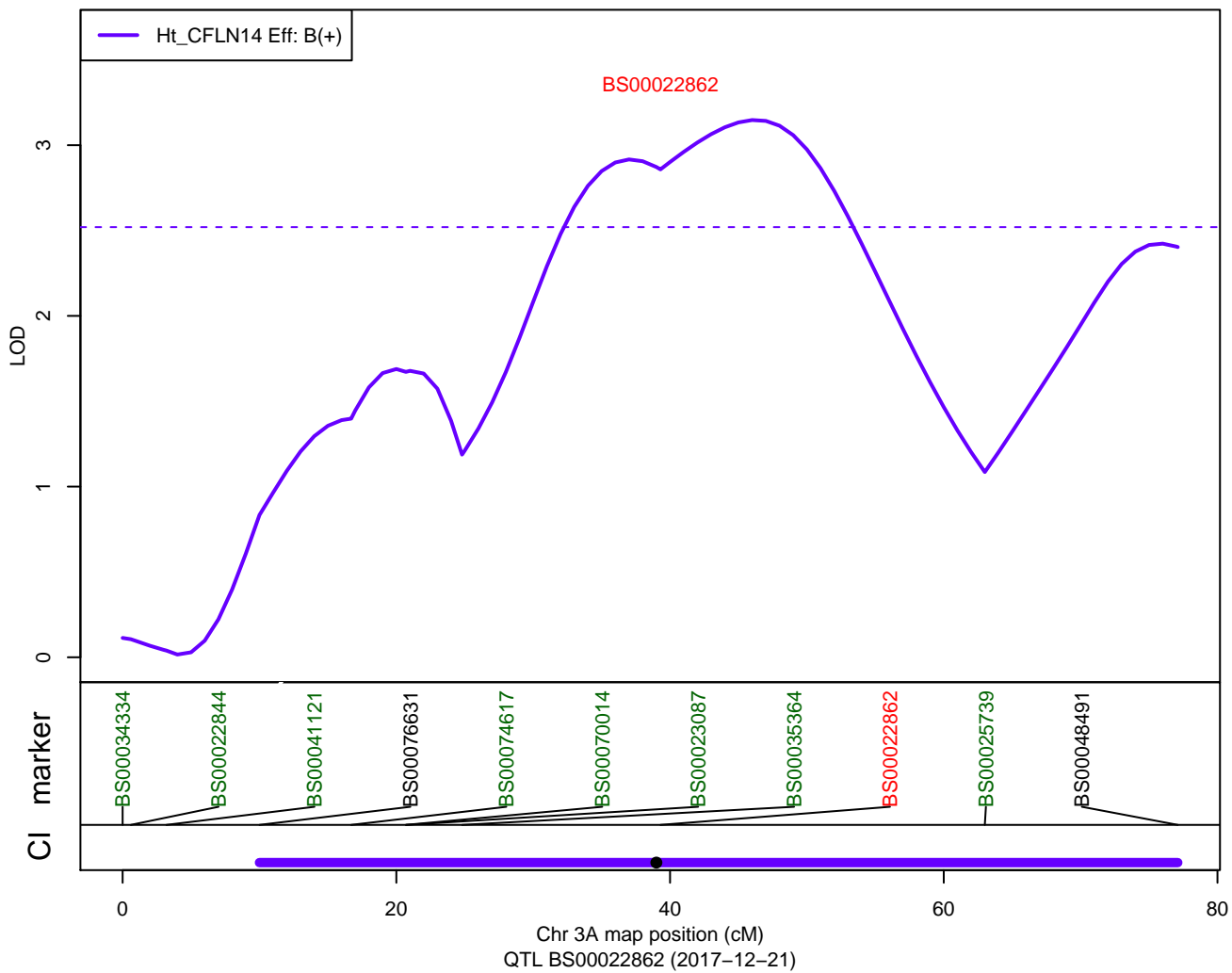
QTLs: ParW387 – GRWD – 5D1



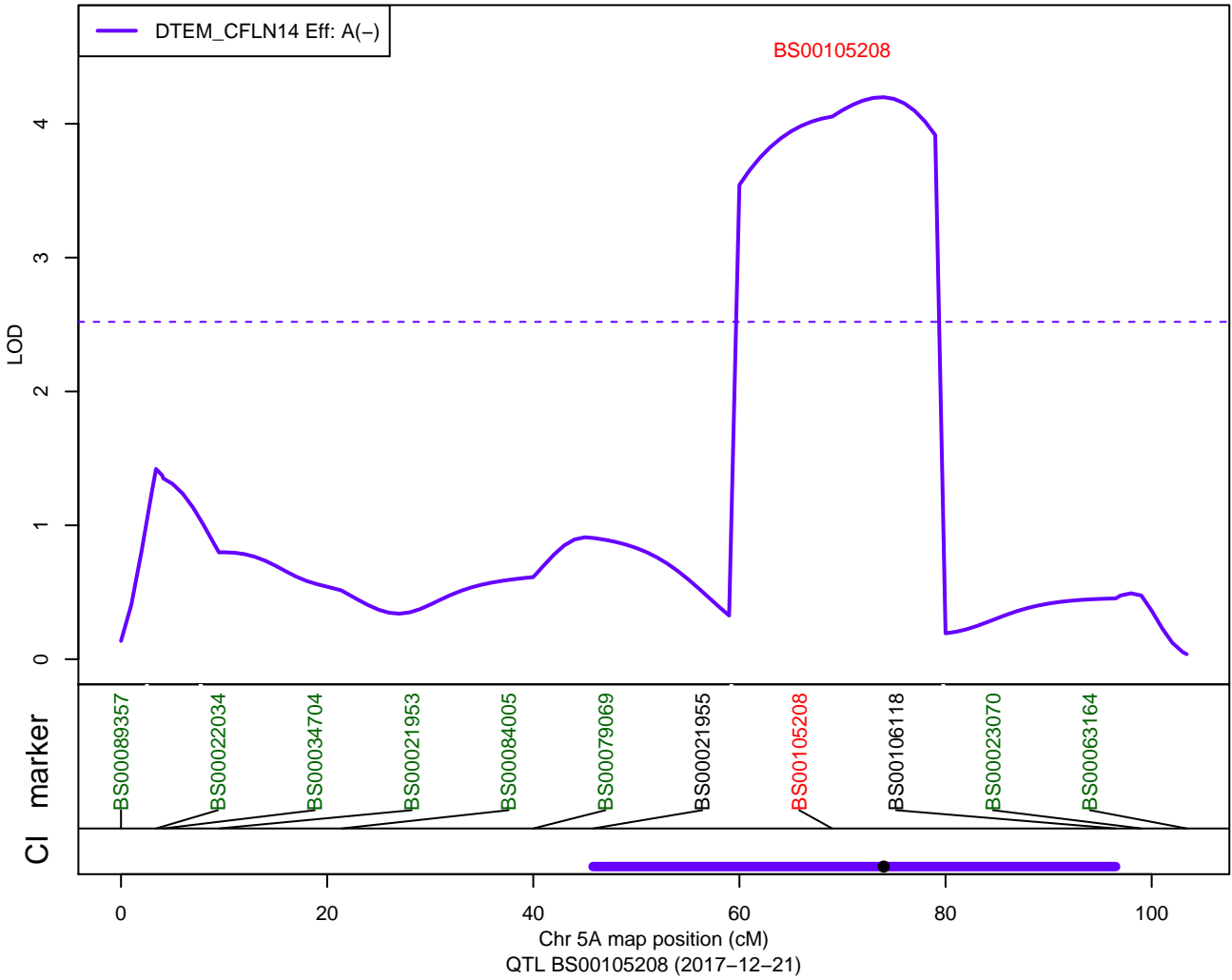
QTLs: ParW387 – TGRWT – 4A



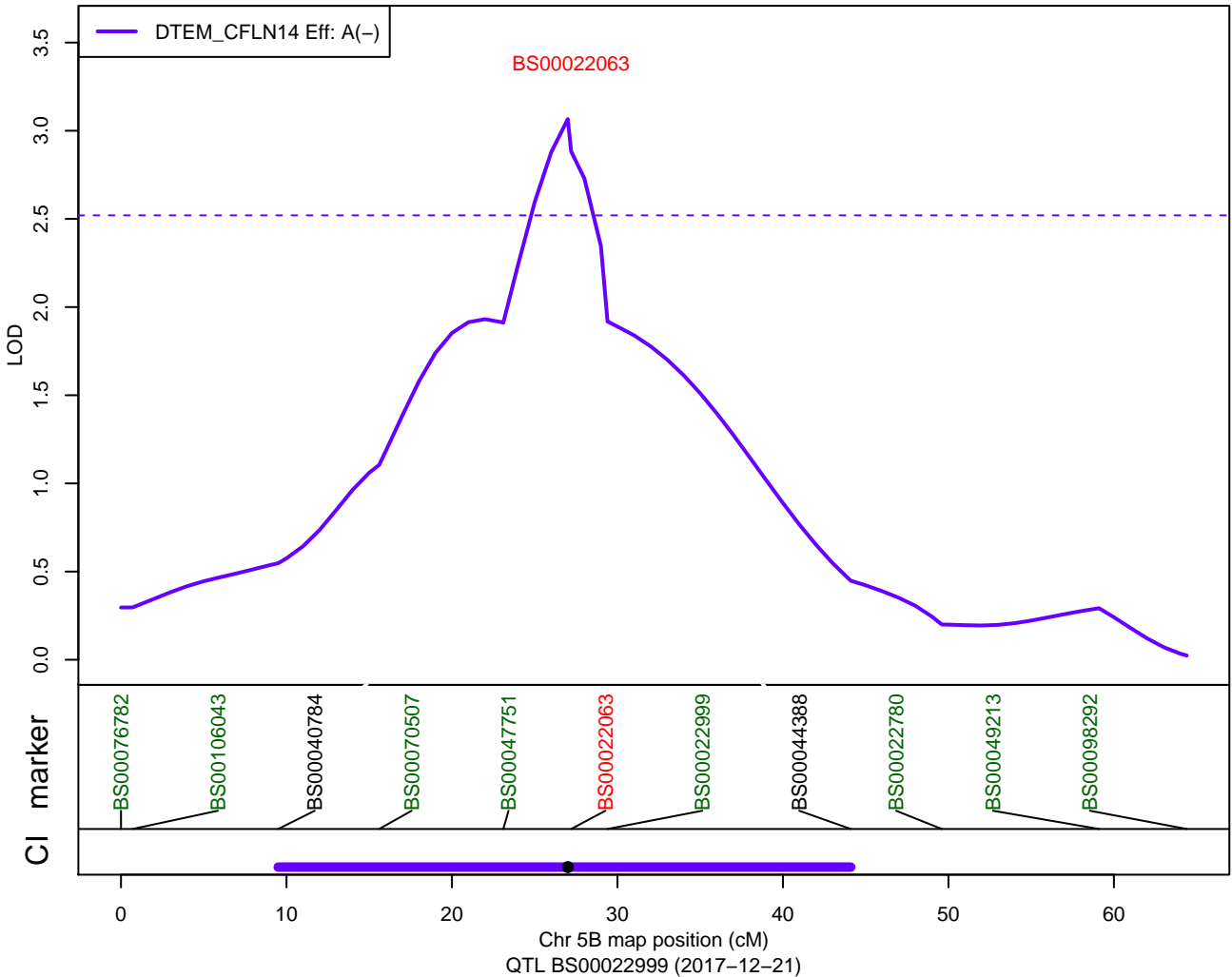
QTLs: ParW396 – Ht – 3A



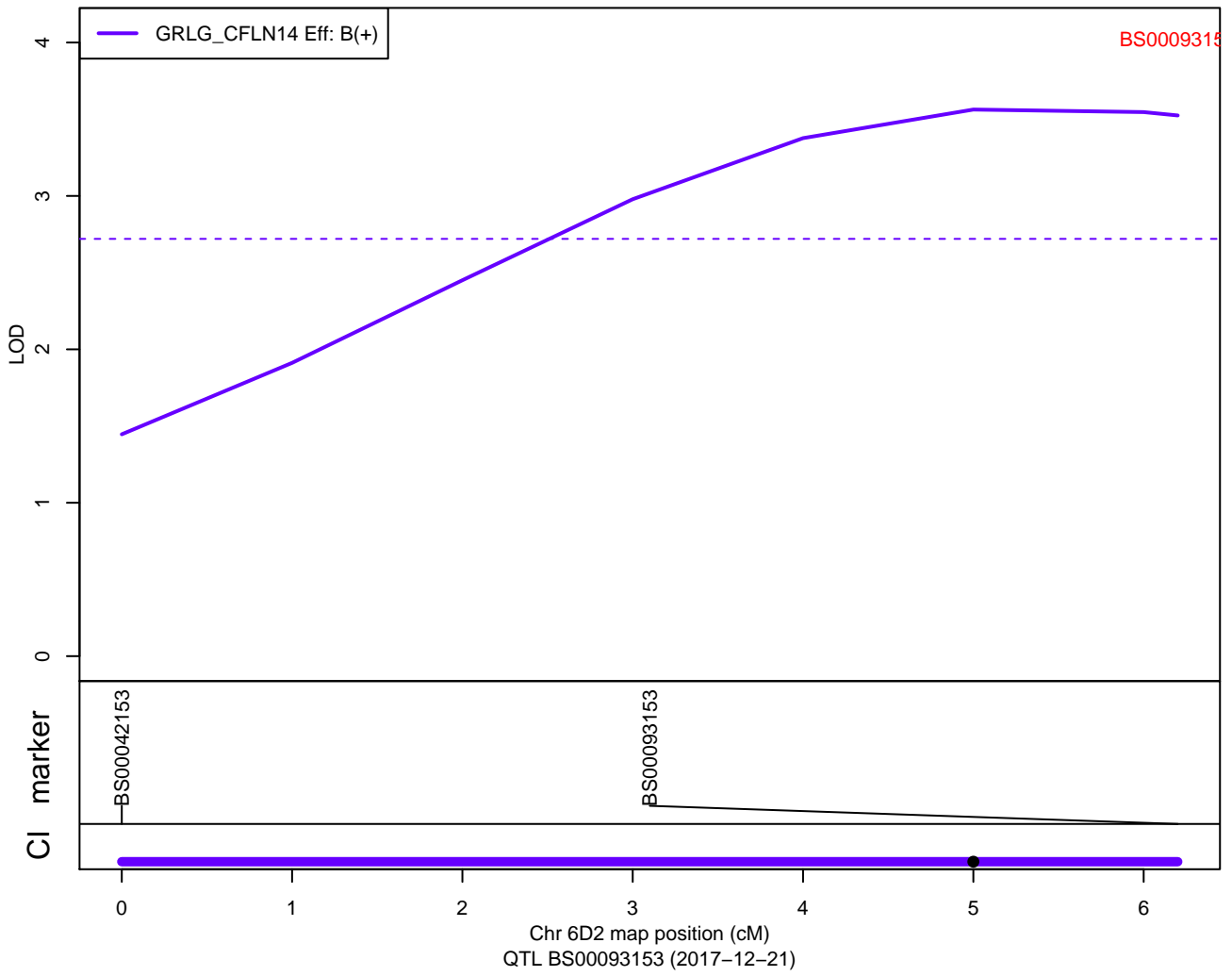
QTLs: ParW396 – DTEM – 5A



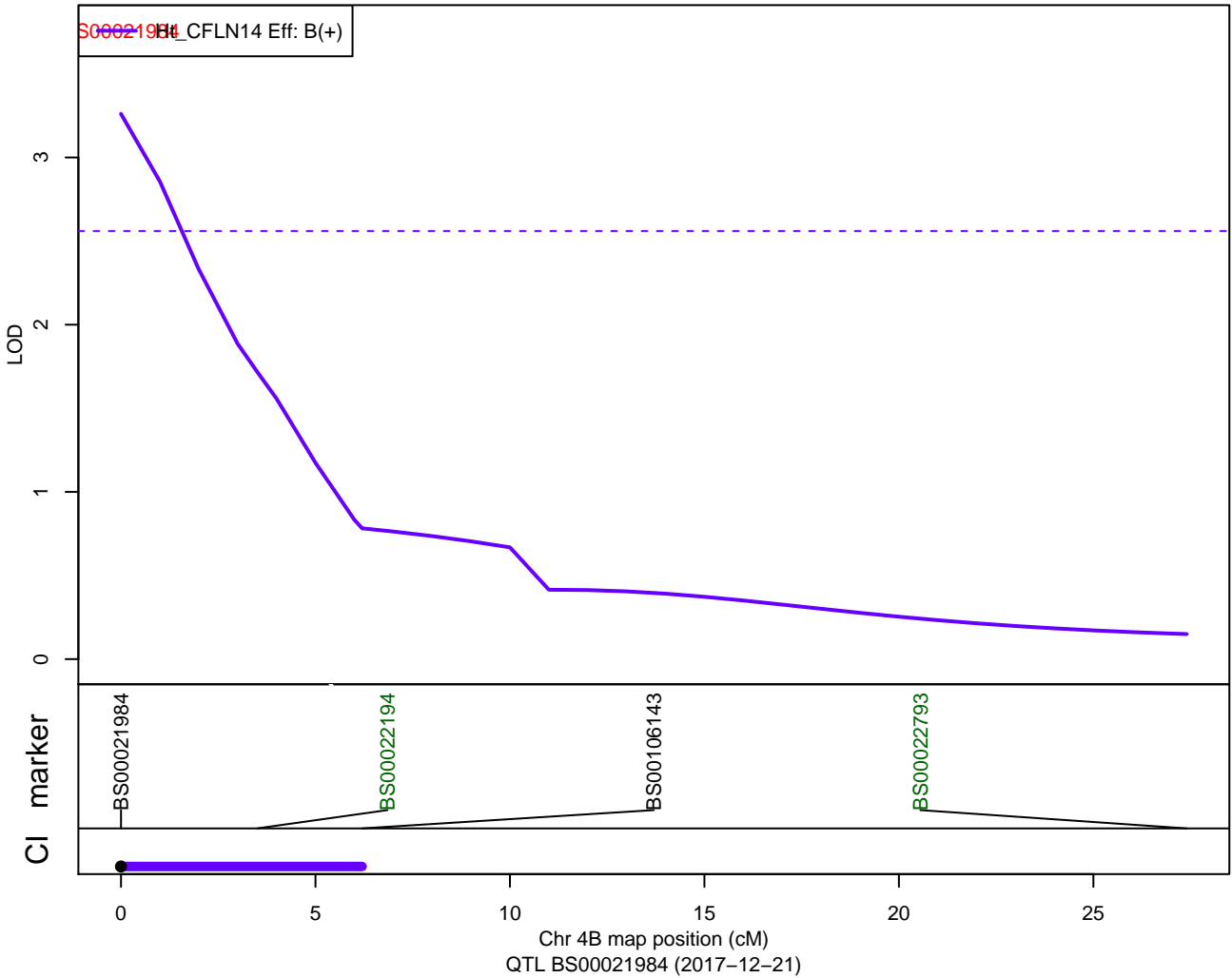
QTLs: ParW396 – DTEM – 5B



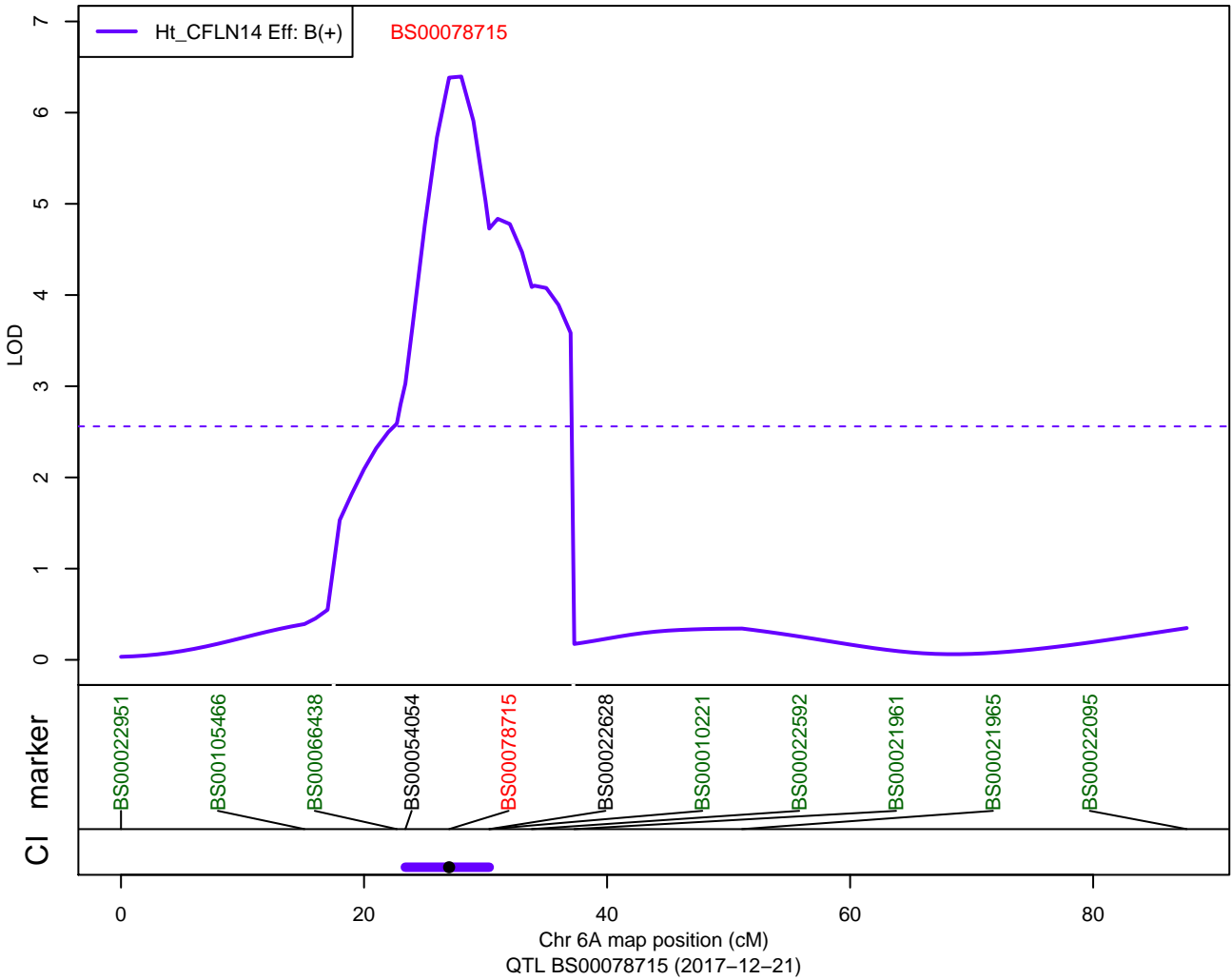
QTLs: ParW396 – GRLG – 6D2



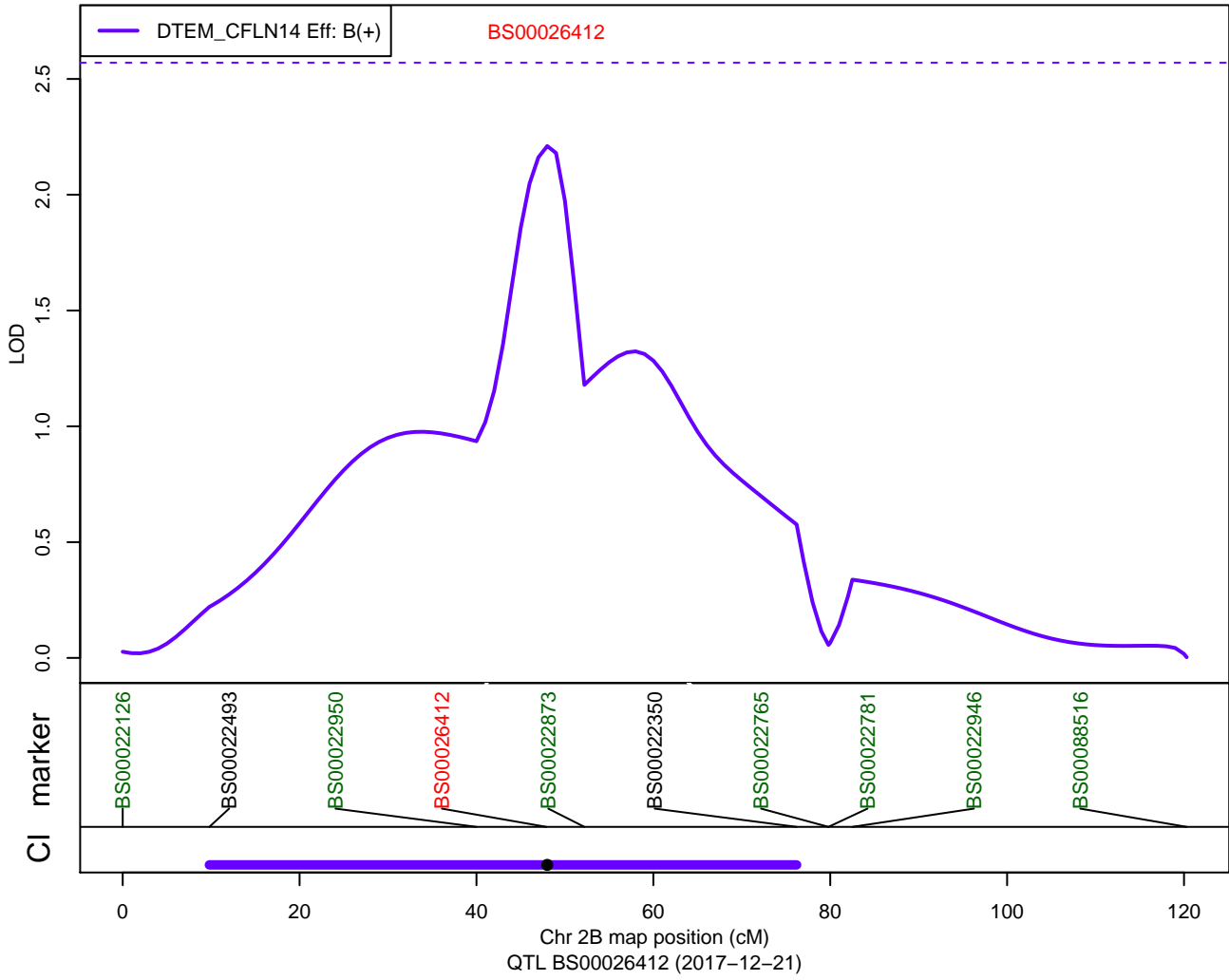
QTLs: ParW397 – Ht – 4B



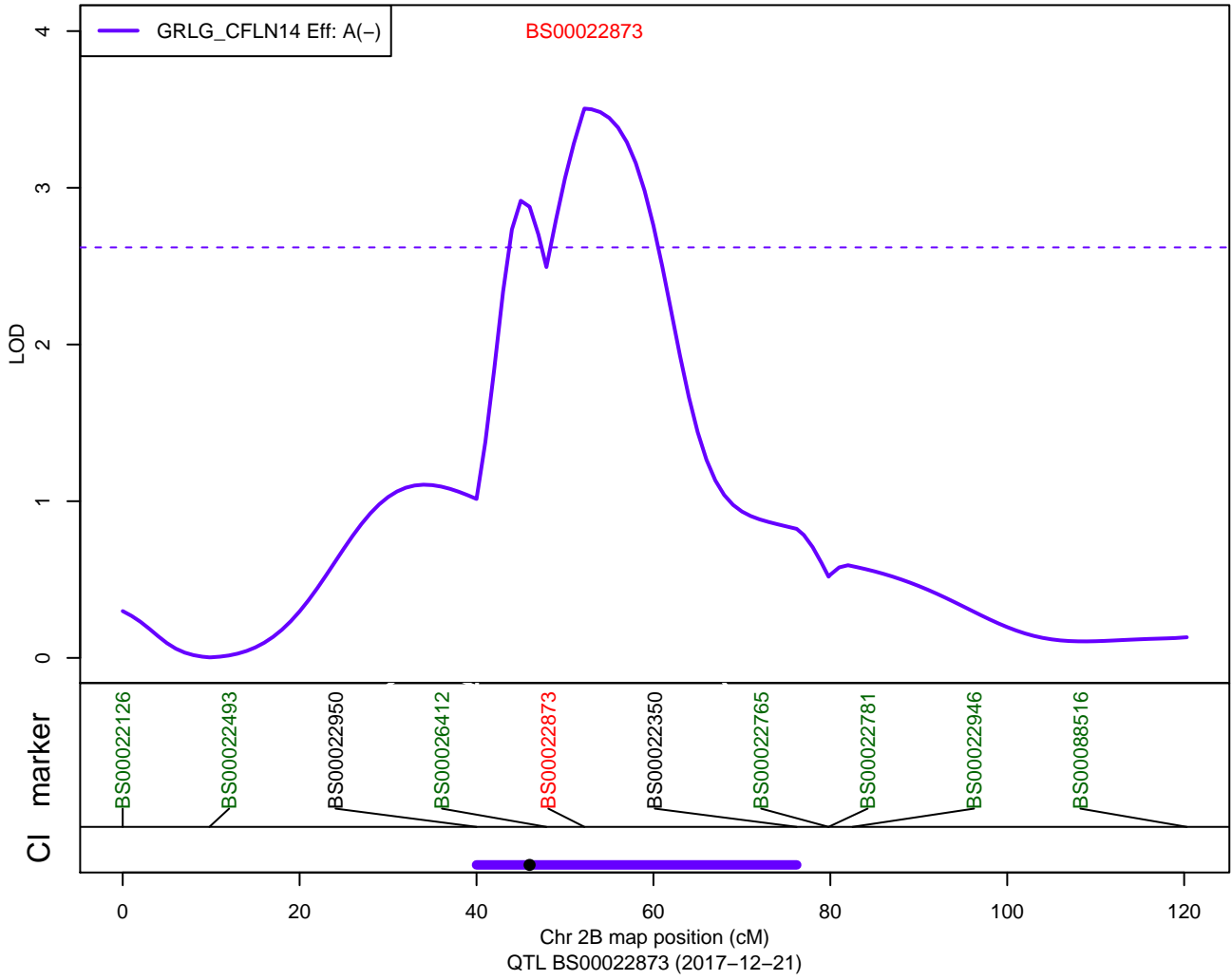
QTLs: ParW397 – Ht – 6A



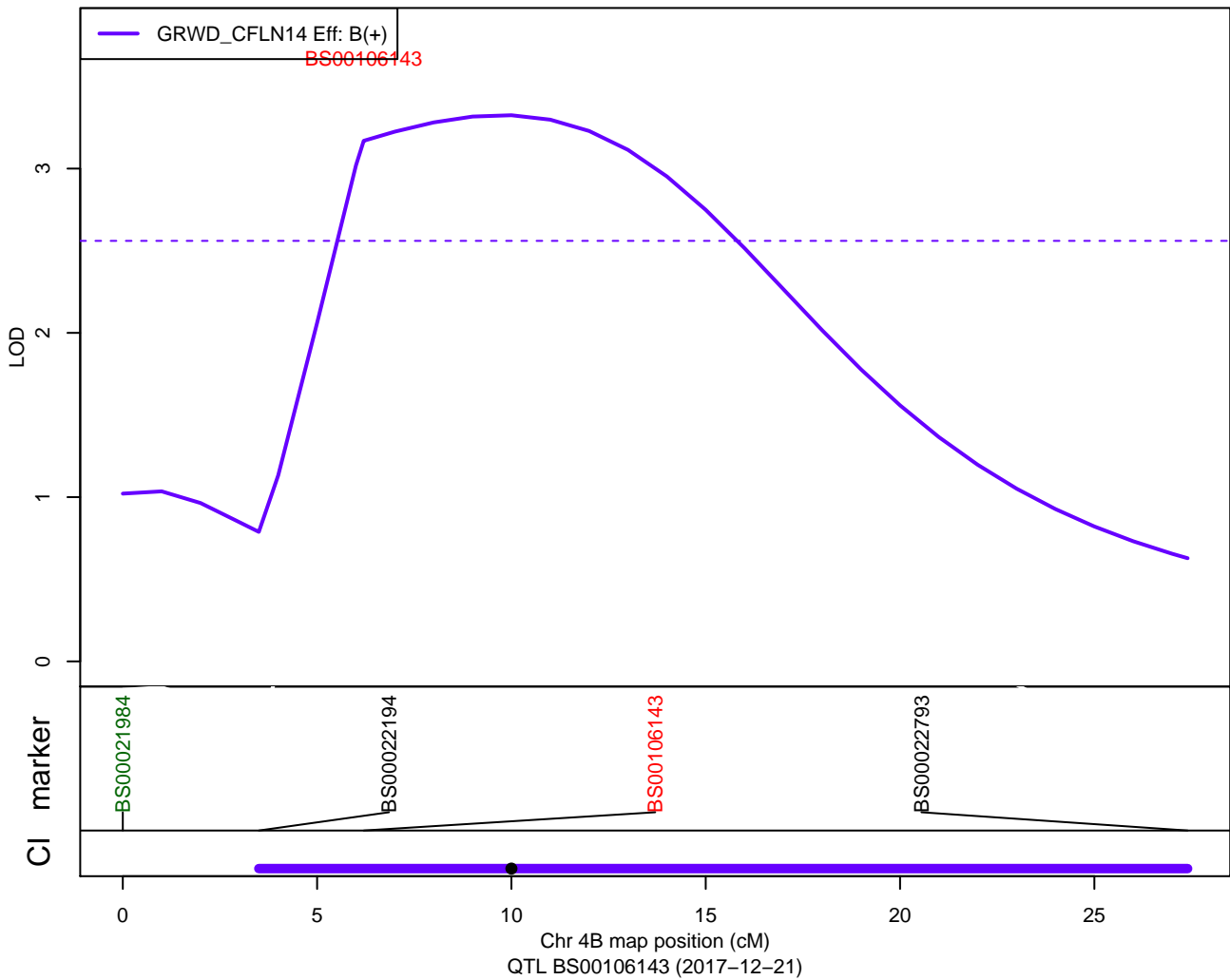
QTLs: ParW397 - DTEM - 2B



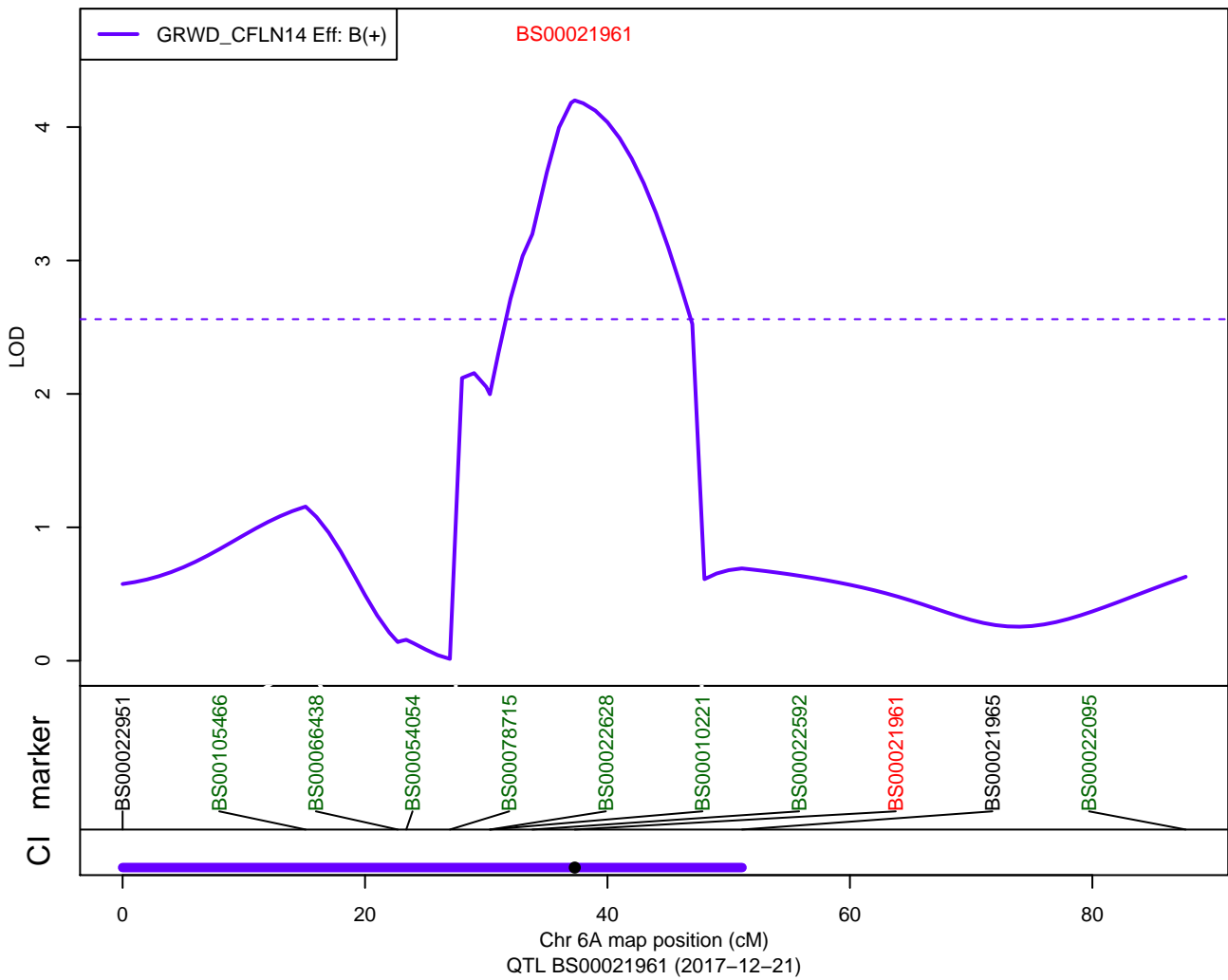
QTLs: ParW397 – GRLG – 2B



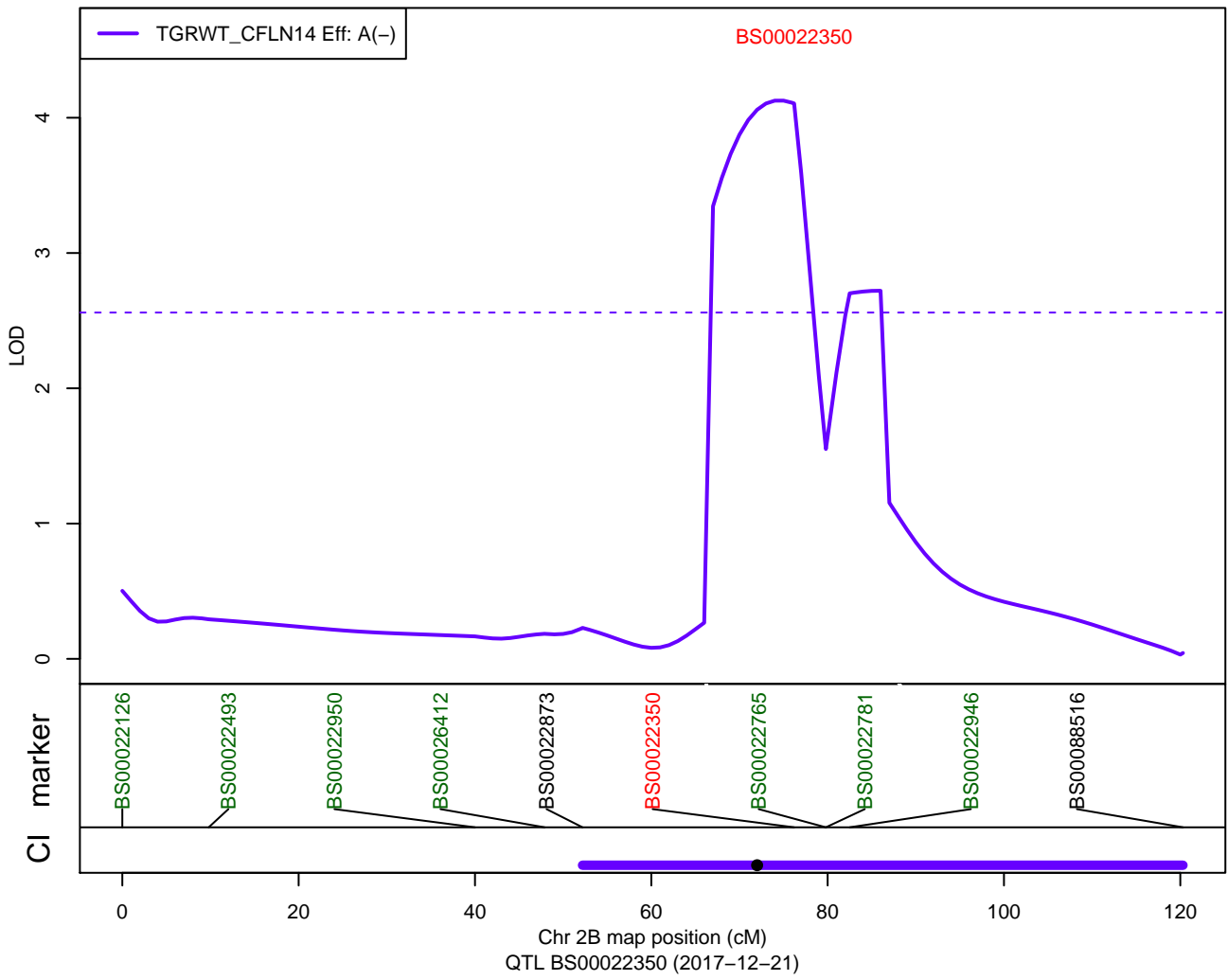
QTLs: ParW397 – GRWD – 4B



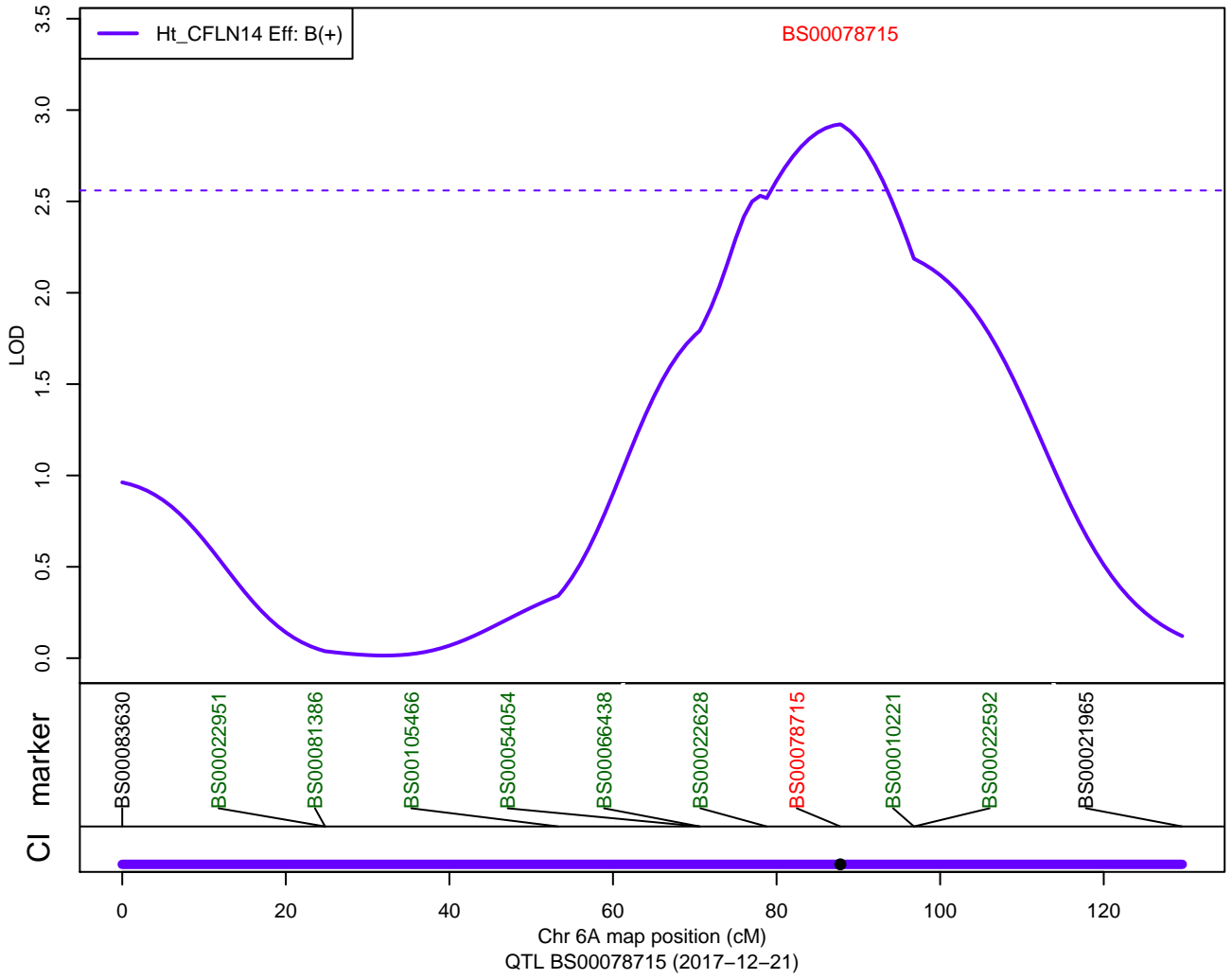
QTLs: ParW397 – GRWD – 6A



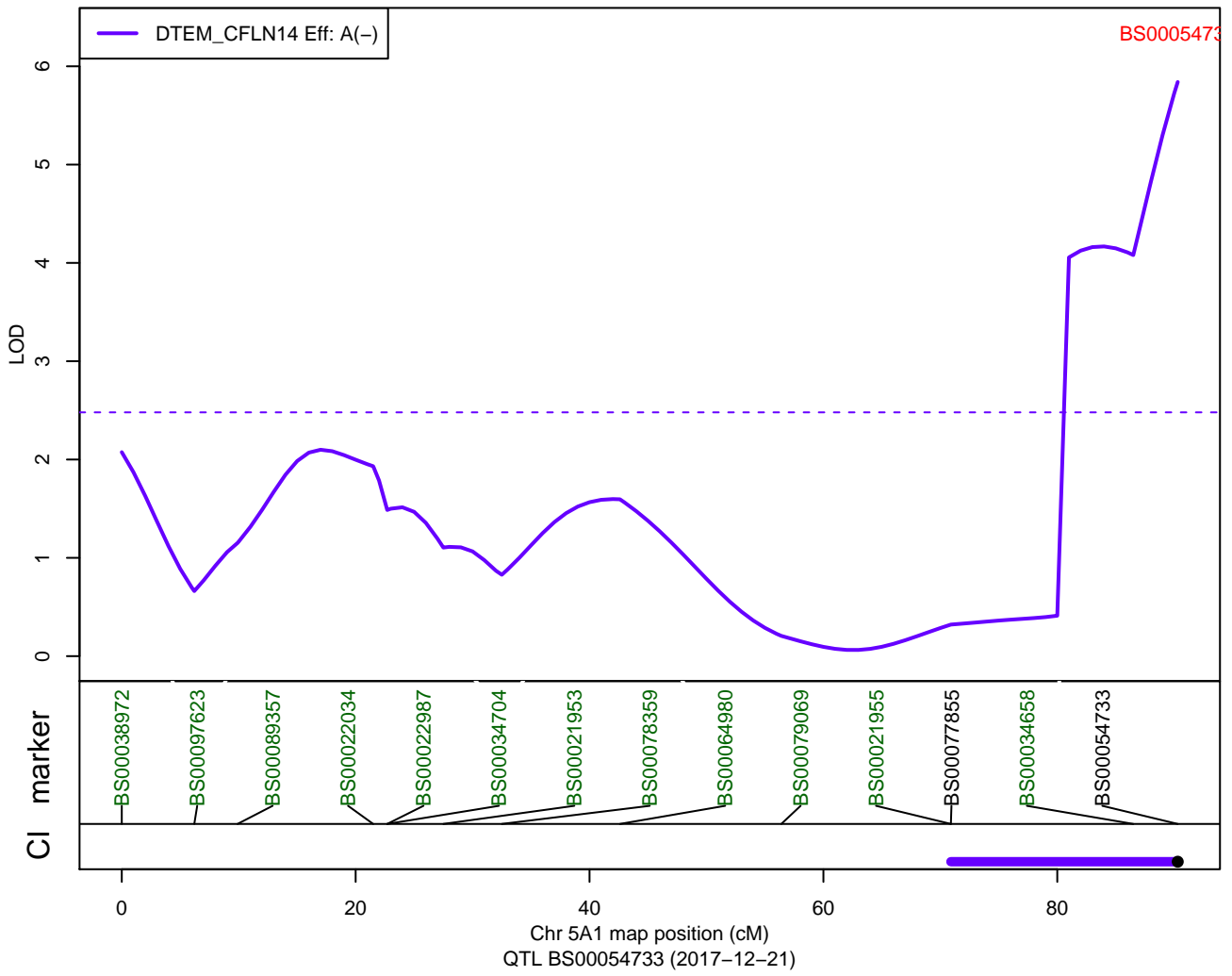
QTLs: ParW397 - TGRWT - 2B



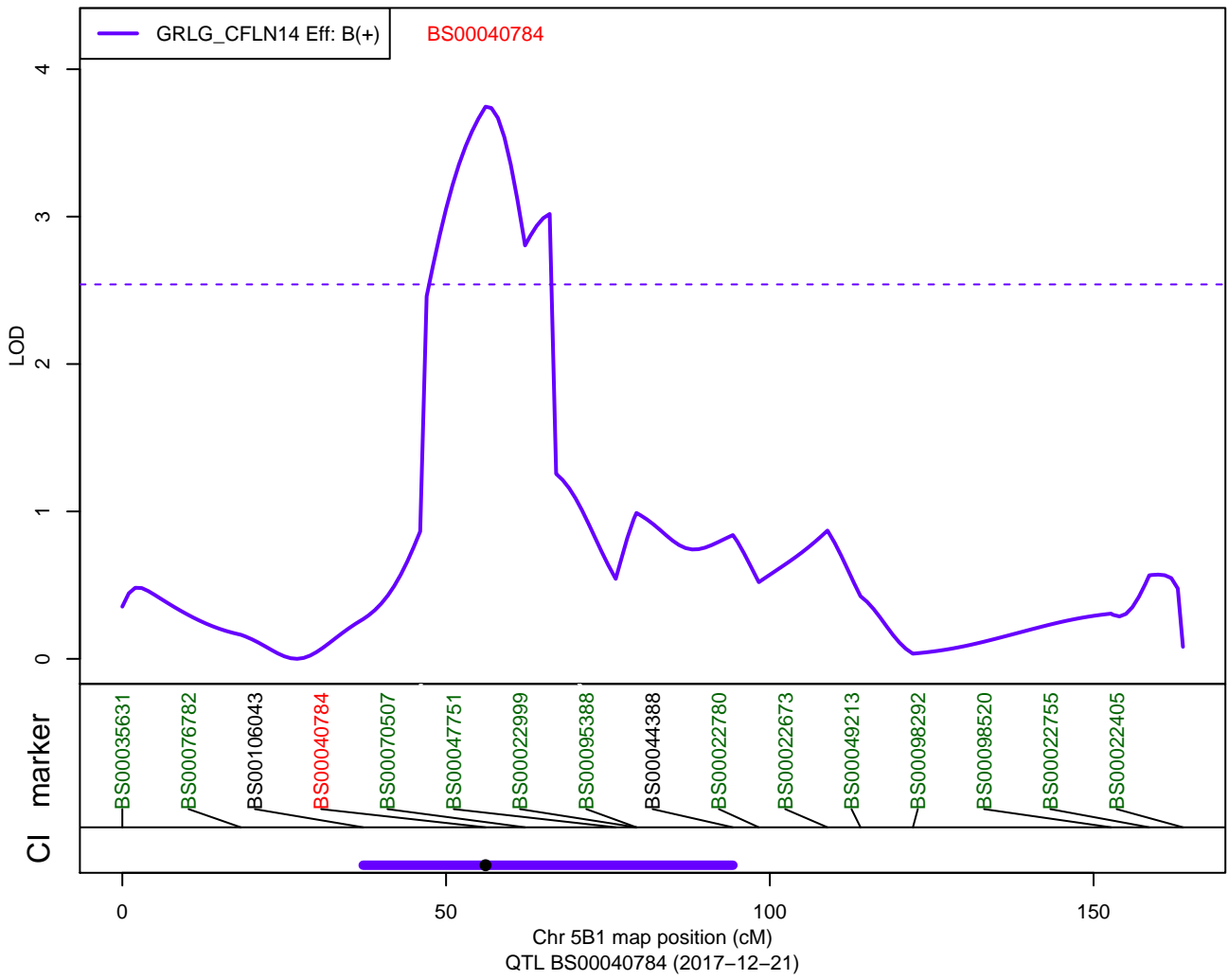
QTLs: ParW420 - Ht - 6A



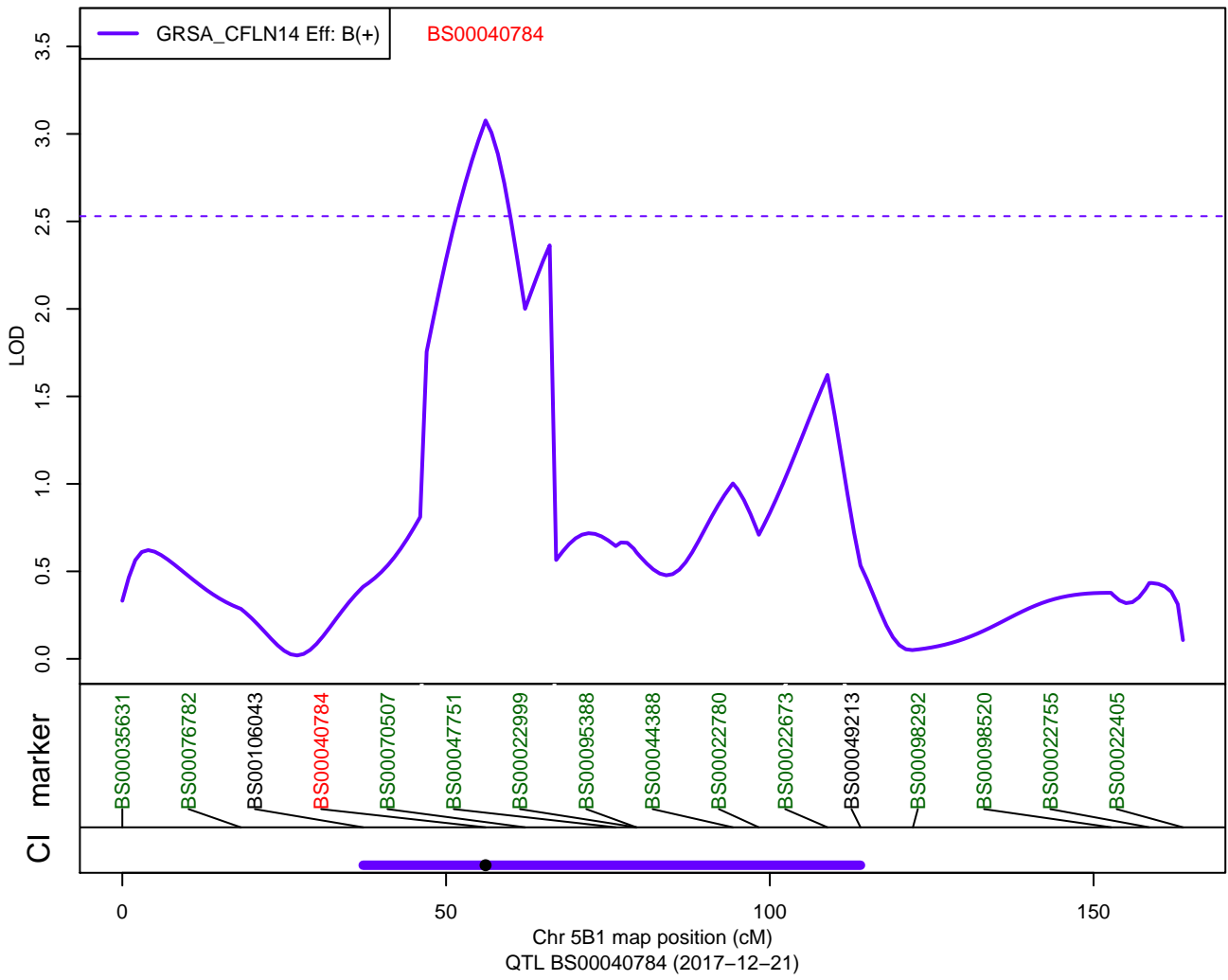
QTLs: ParW420 – DTEM – 5A1



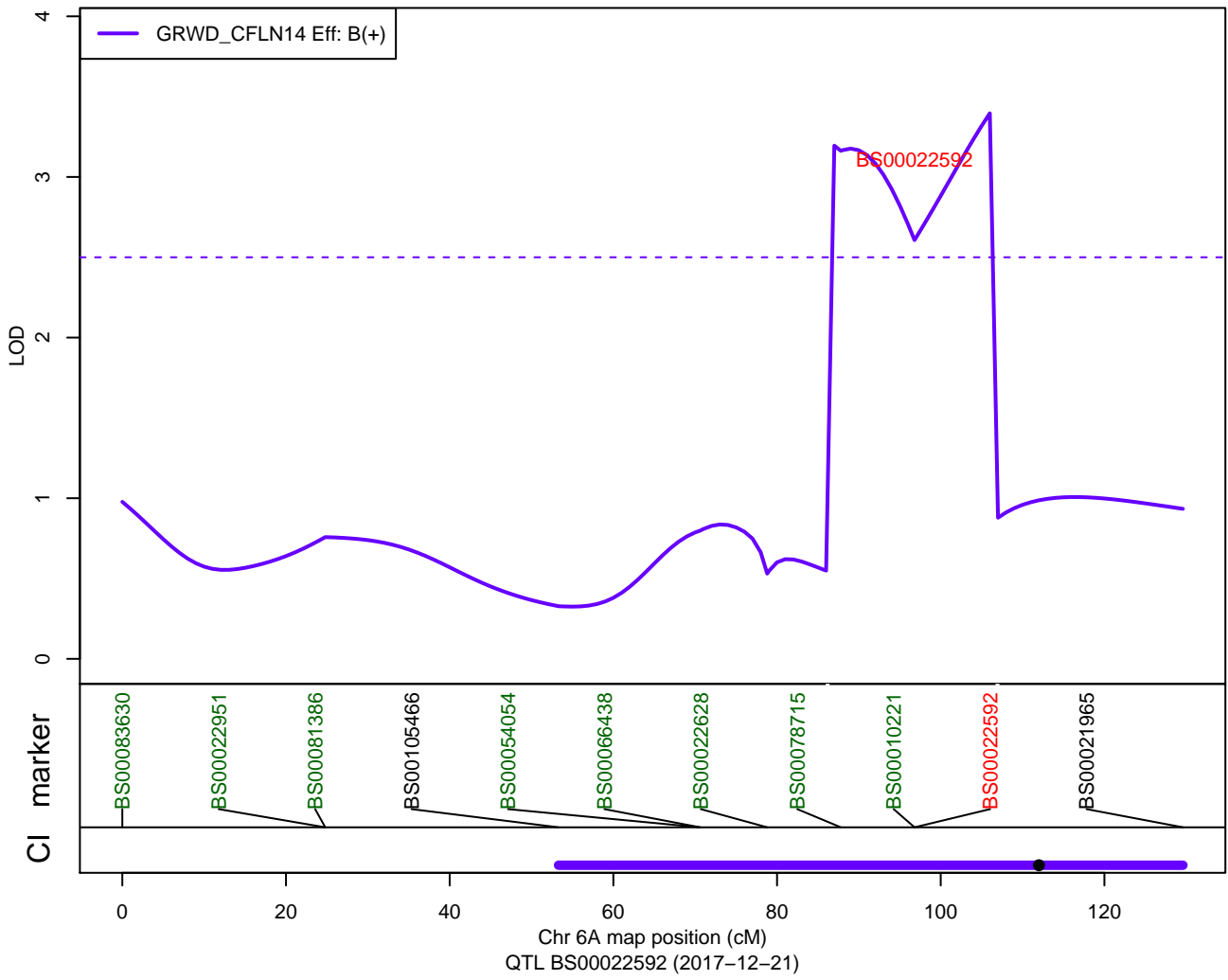
QTLs: ParW420 – GRLG – 5B1



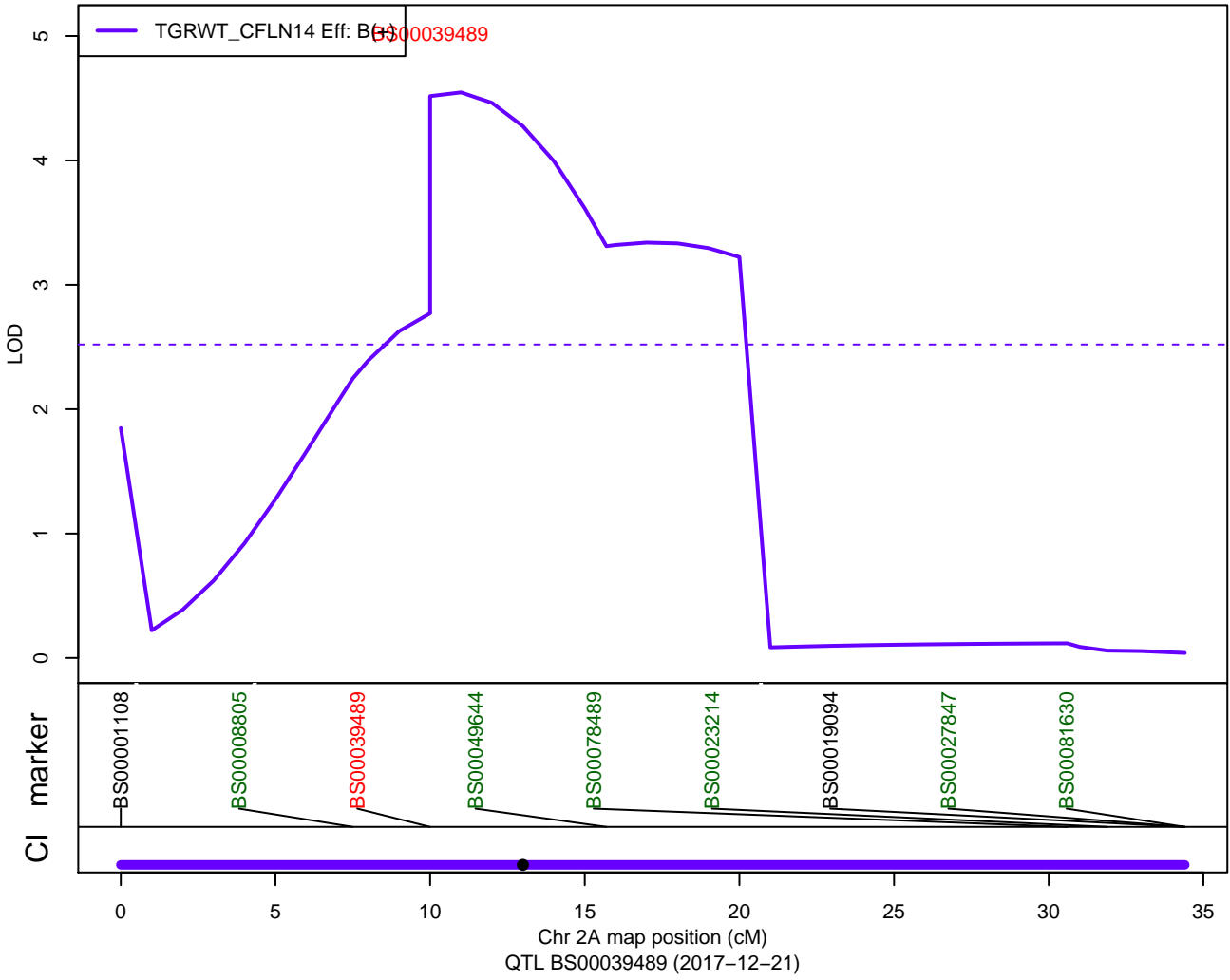
QTLs: ParW420 – GRSA – 5B1



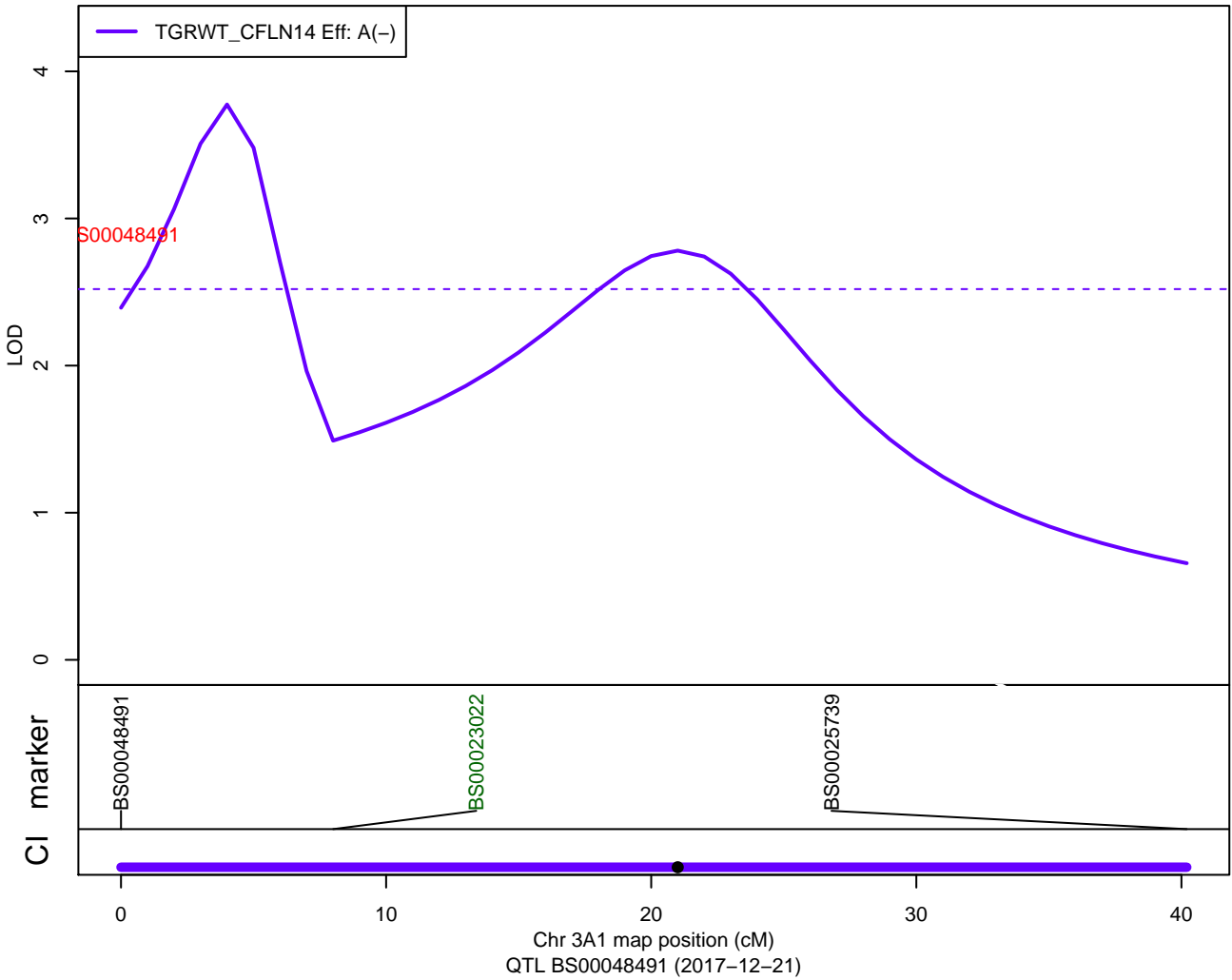
QTLs: ParW420 - GRWD - 6A



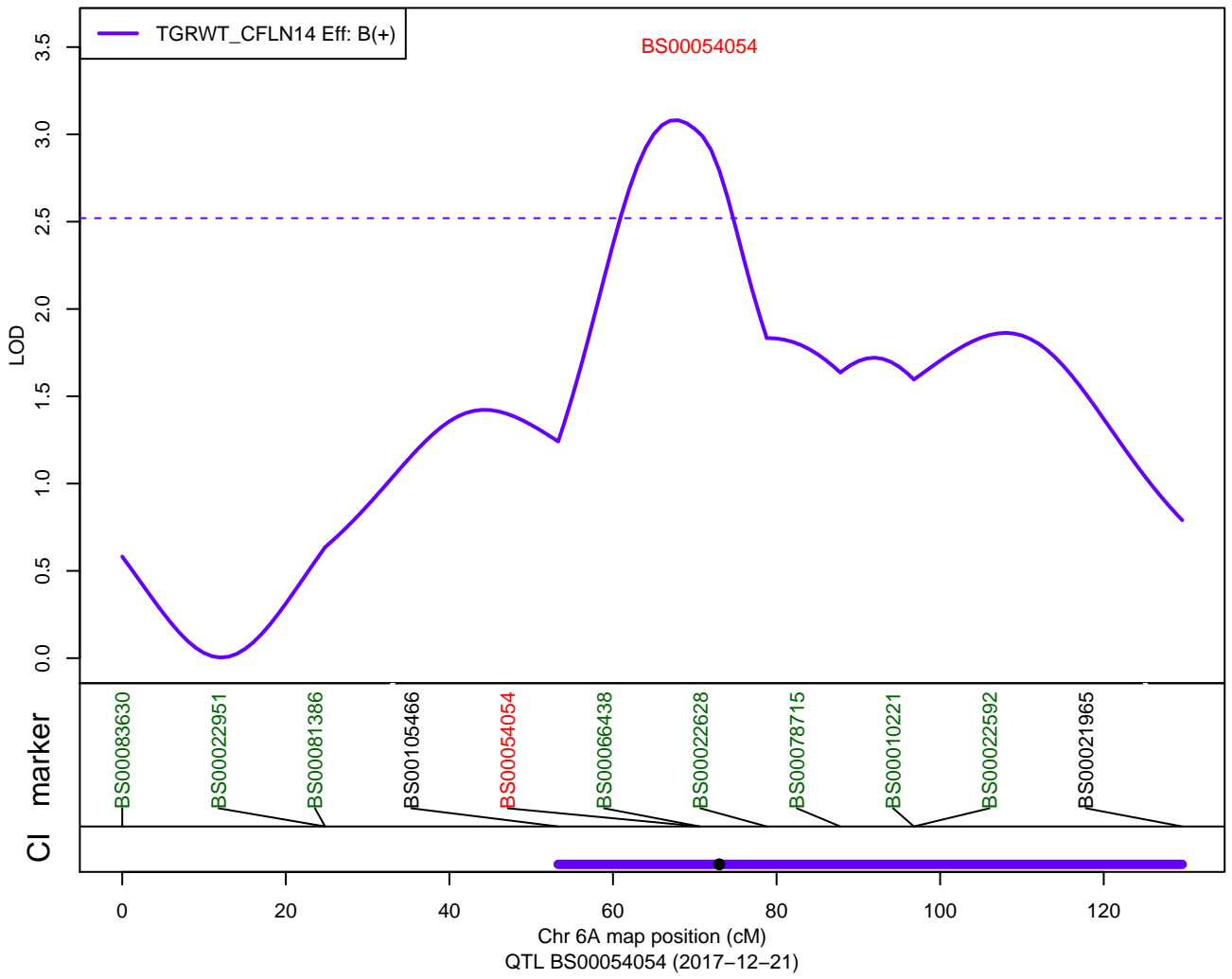
QTLs: ParW420 - TGRWT - 2A



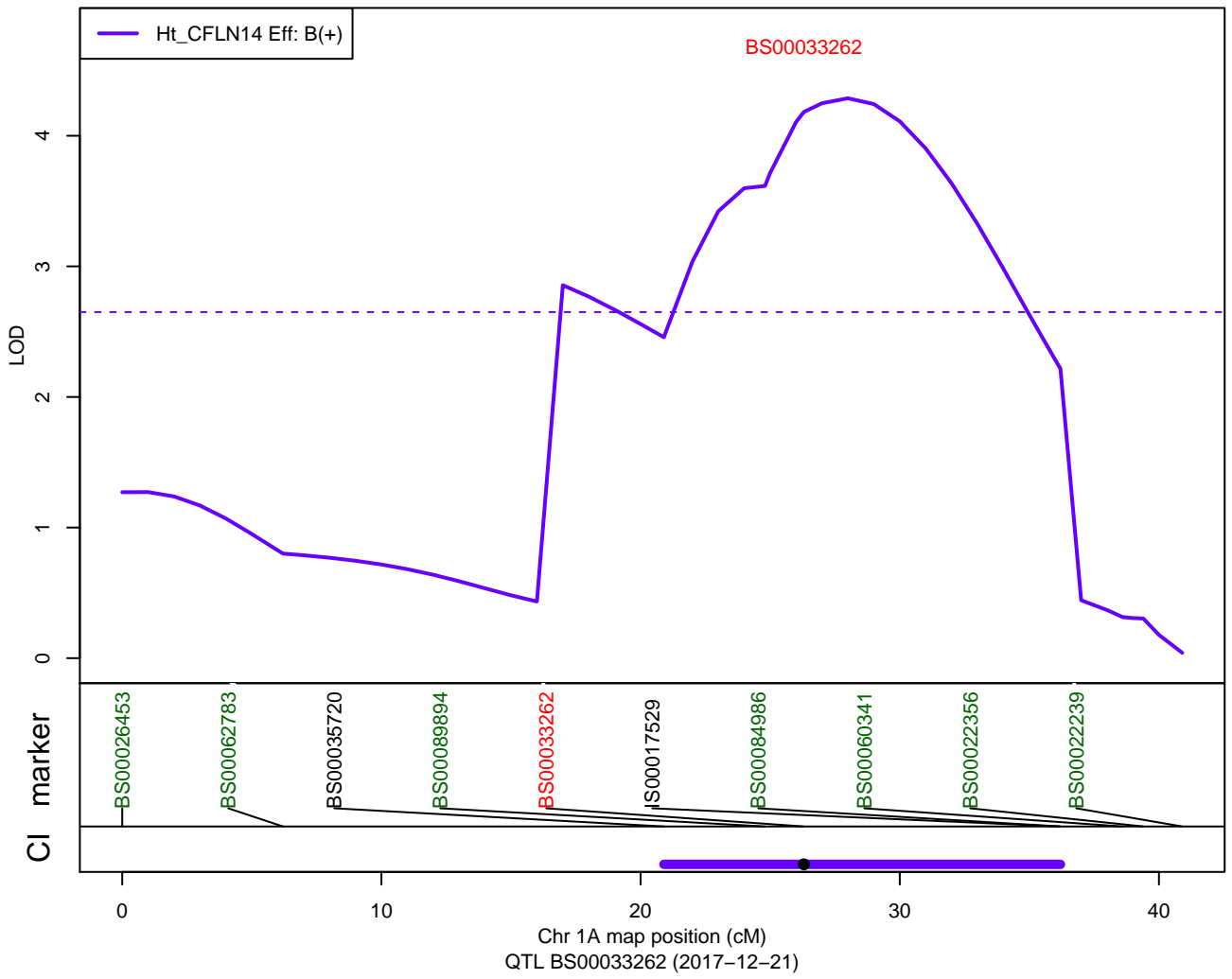
QTLs: ParW420 - TGRWT - 3A1



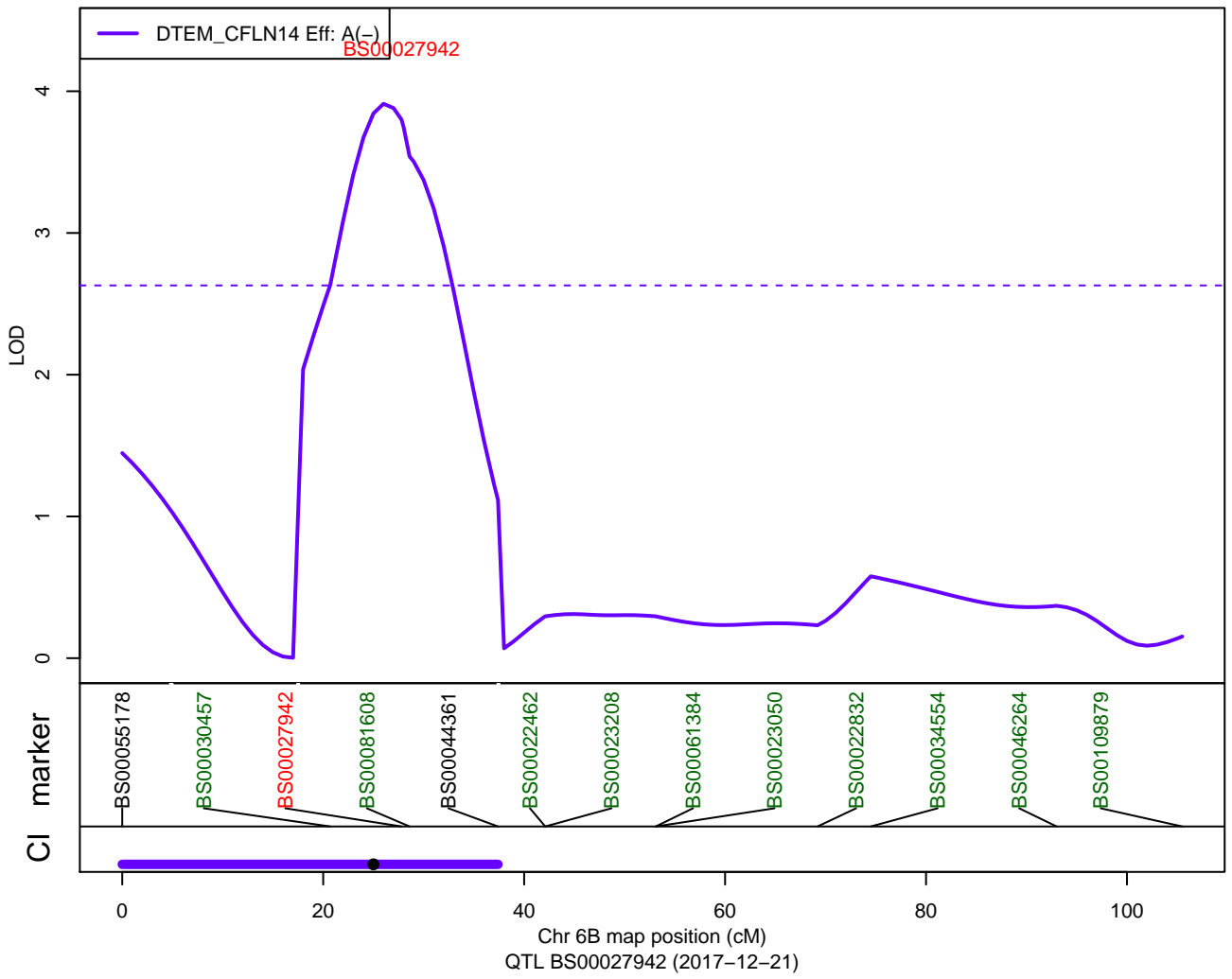
QTLs: ParW420 - TGRWT - 6A



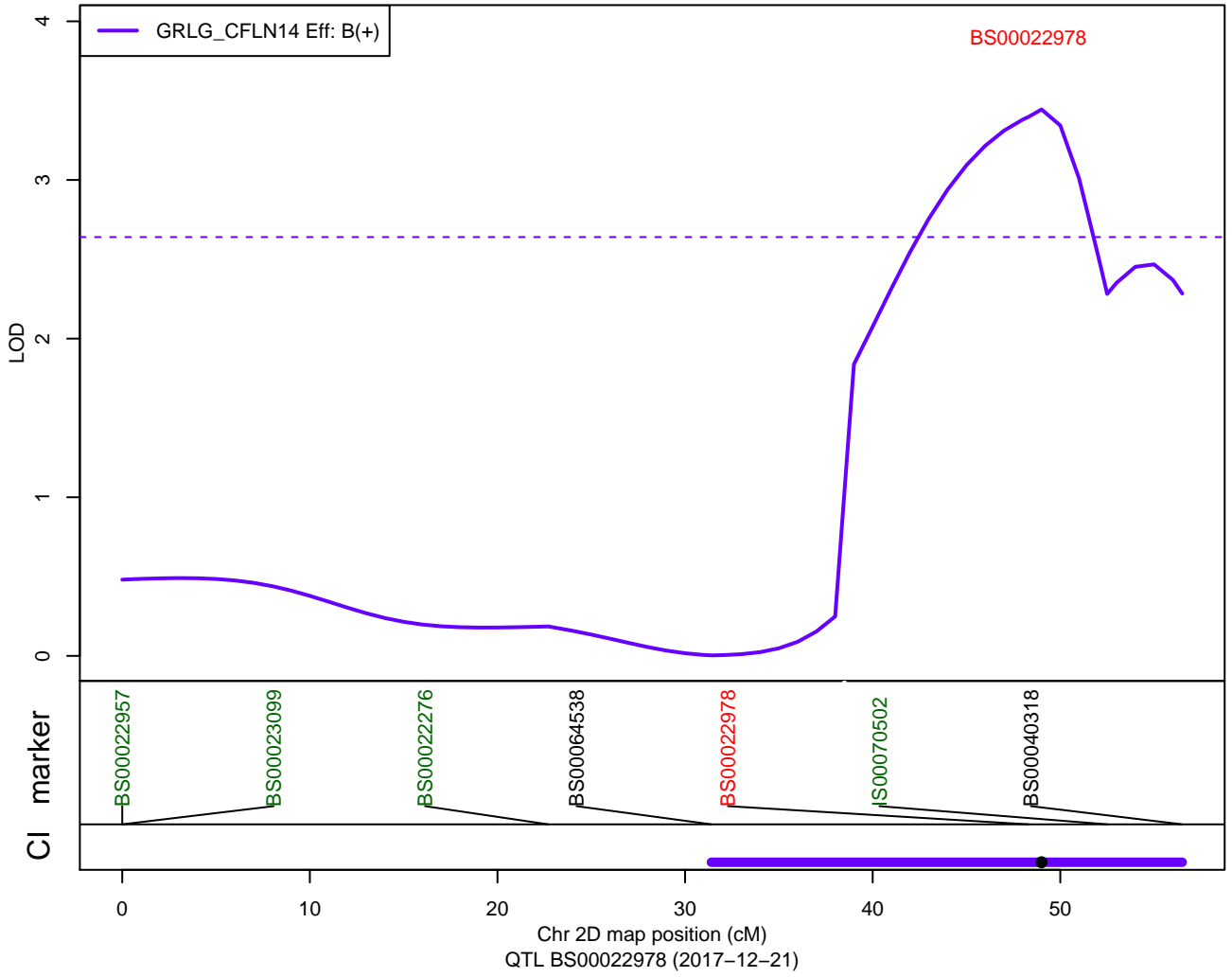
QTLs: ParW475 - Ht - 1A



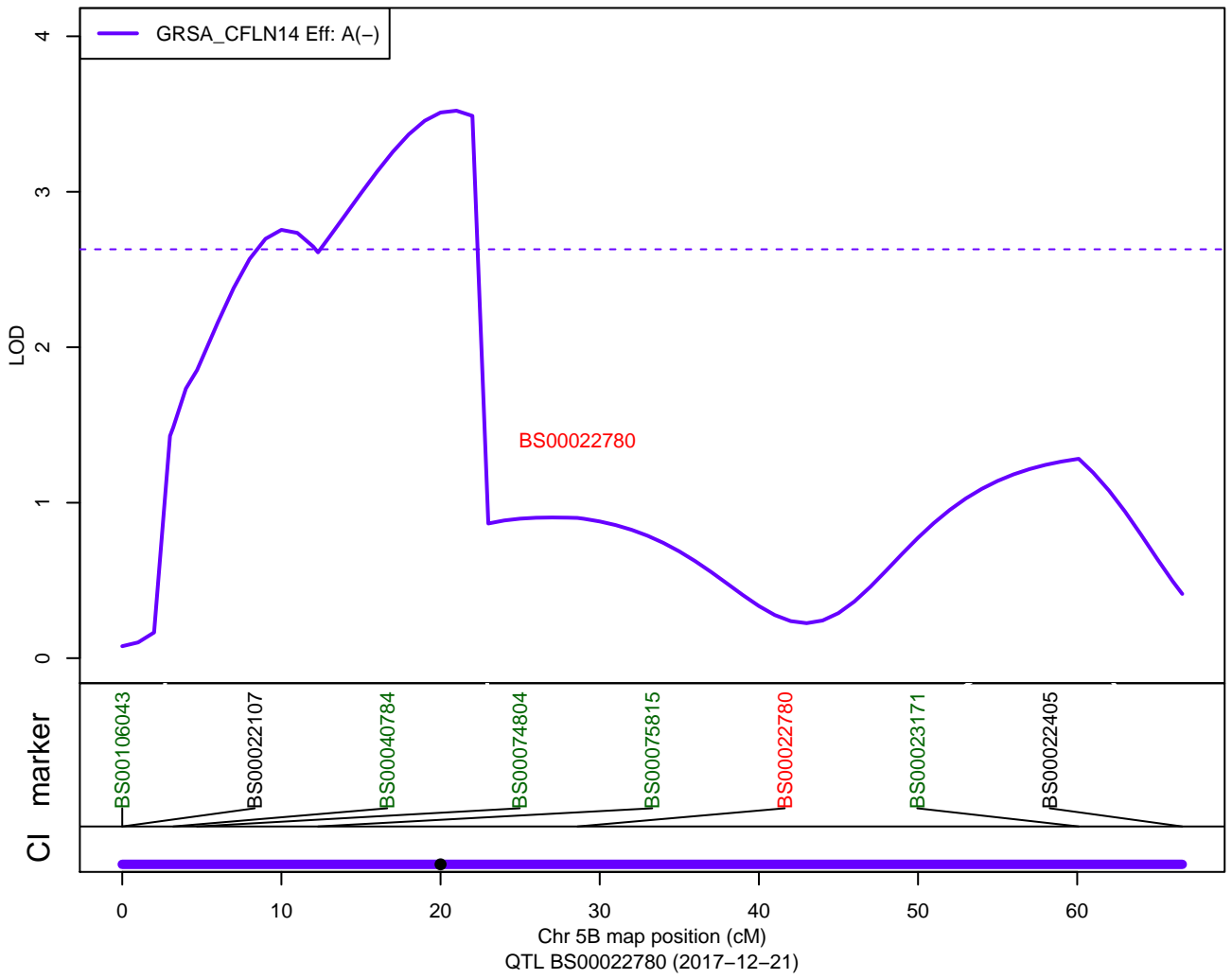
QTLs: ParW475 - DTEM - 6B



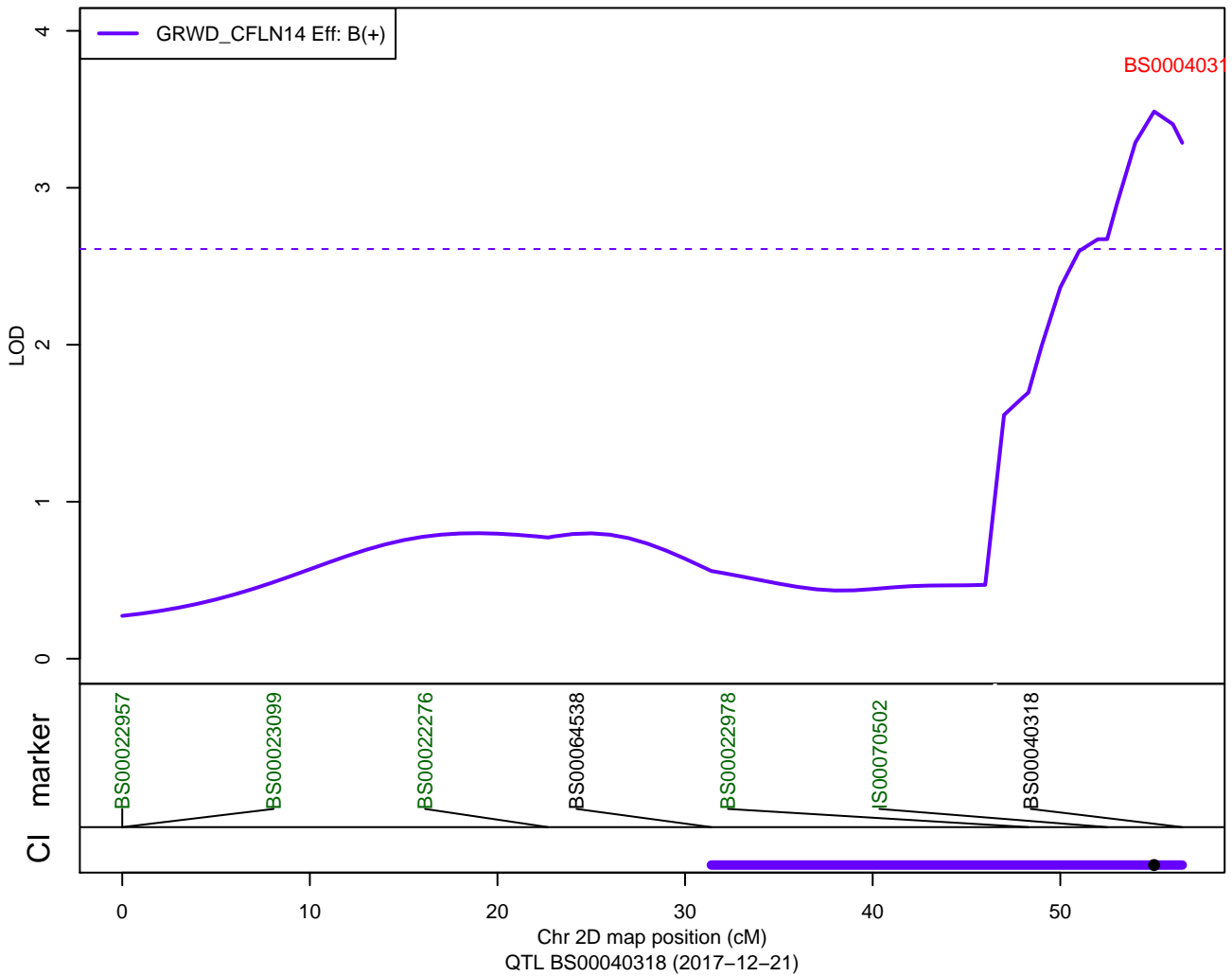
QTLs: ParW475 – GRLG – 2D



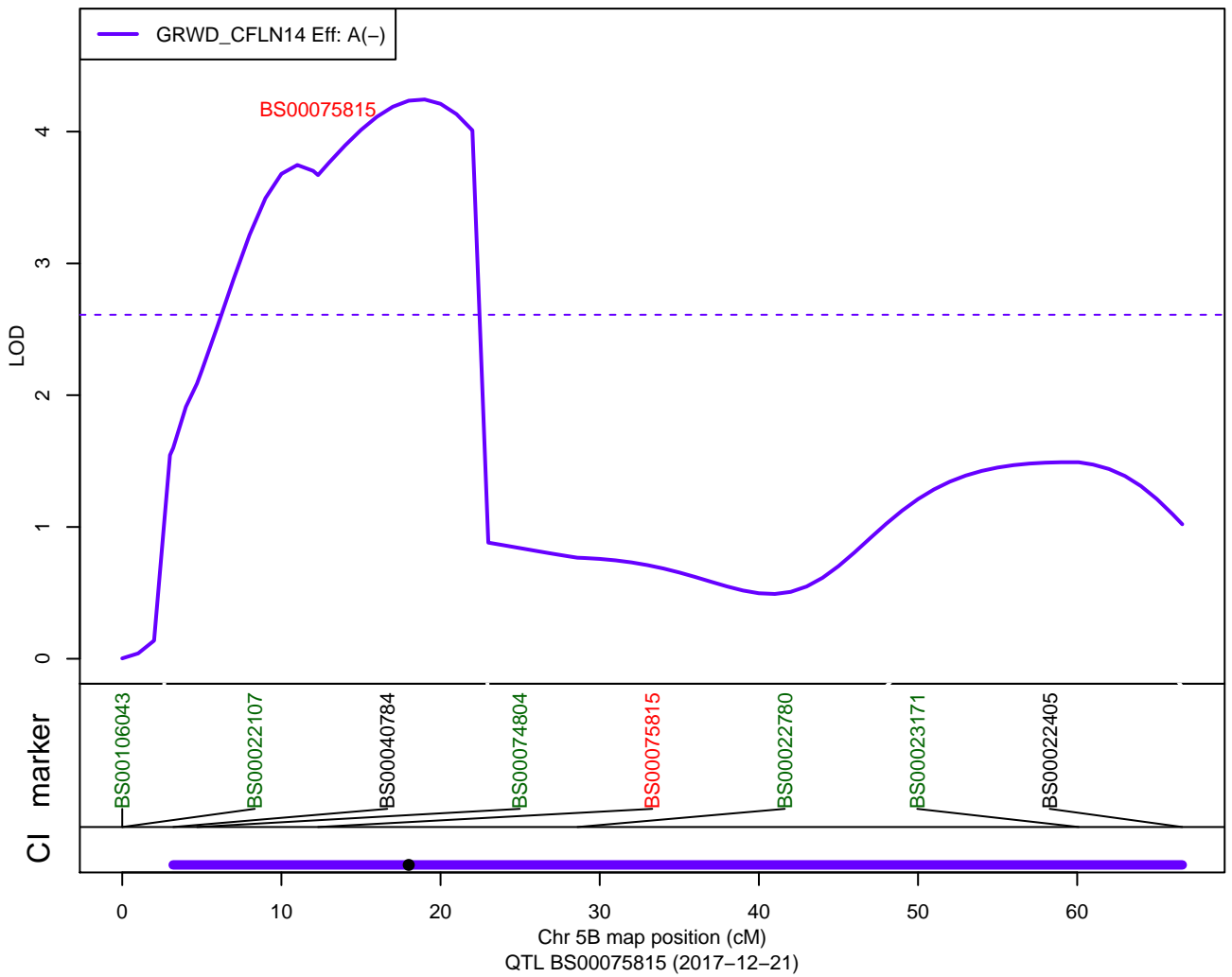
QTLs: ParW475 – GRSA – 5B



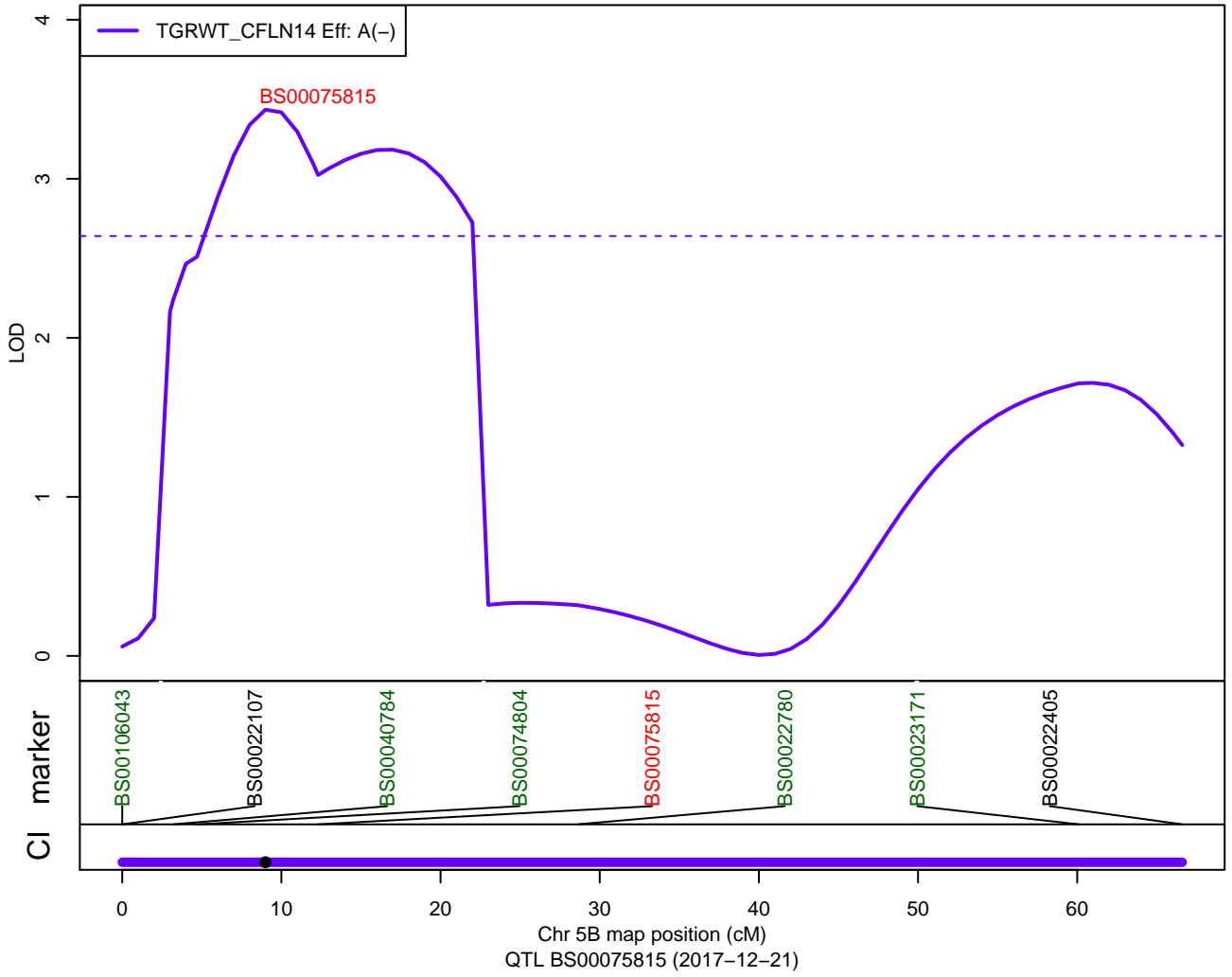
QTLs: ParW475 – GRWD – 2D



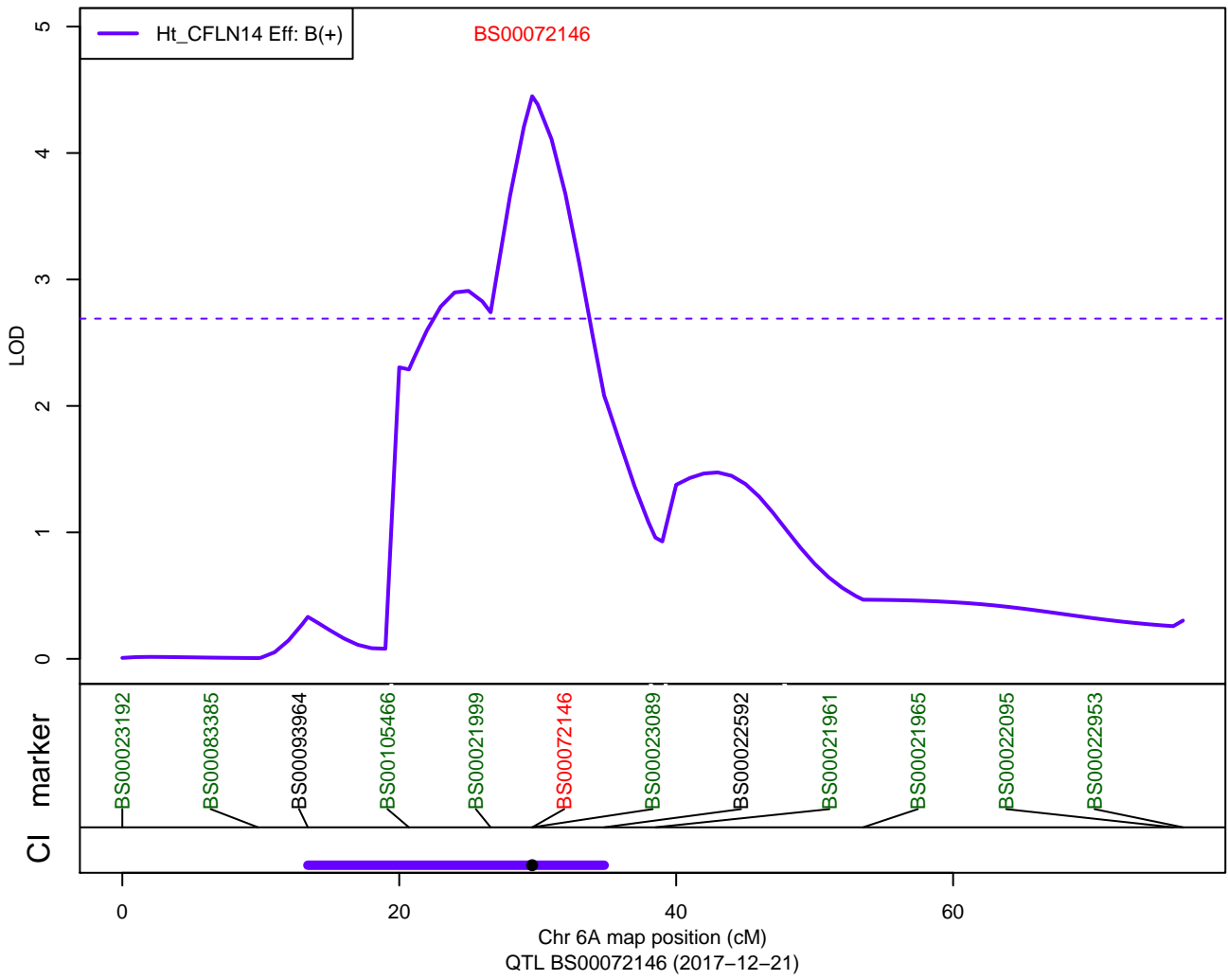
QTLs: ParW475 – GRWD – 5B



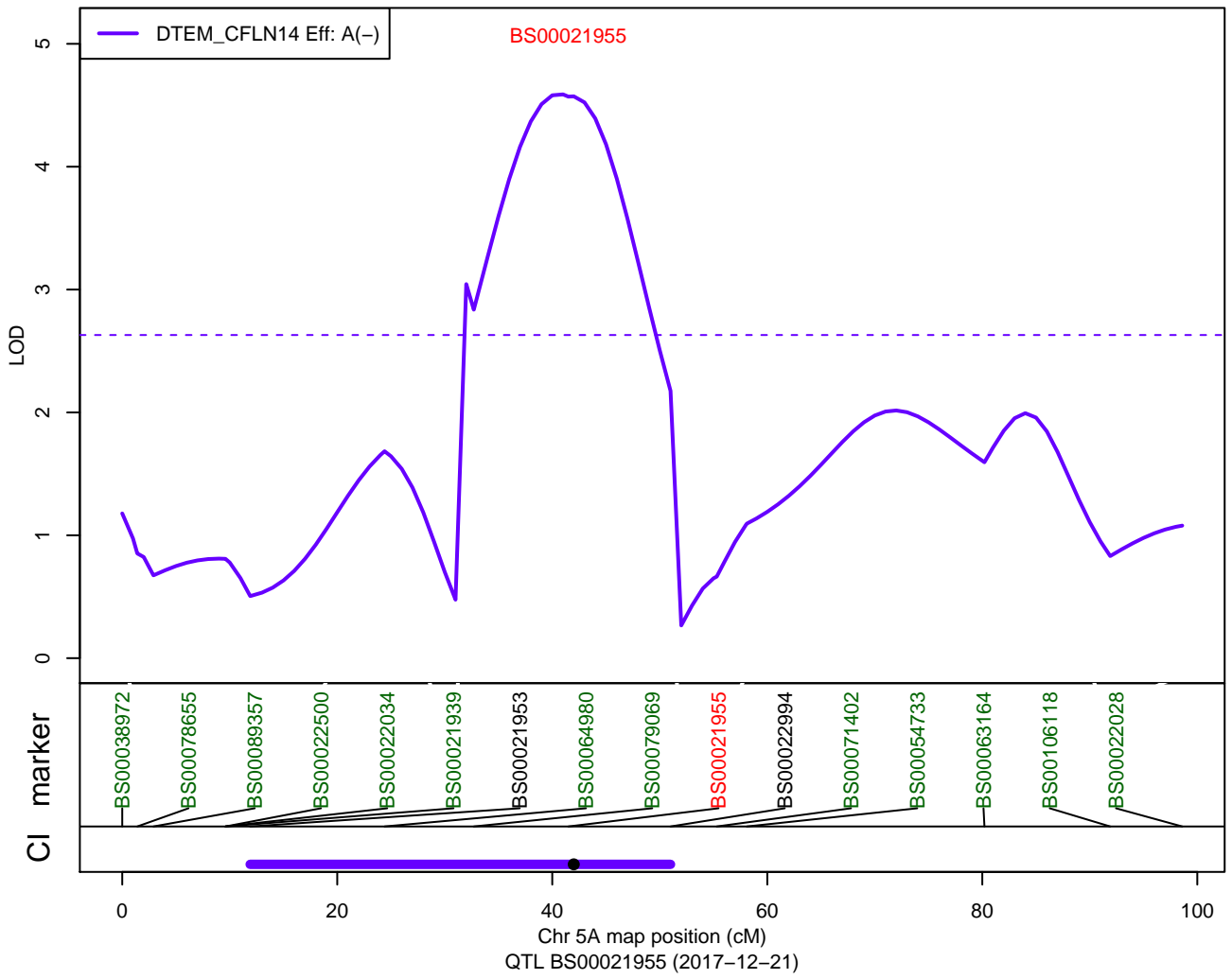
QTLs: ParW475 - TGRWT - 5B



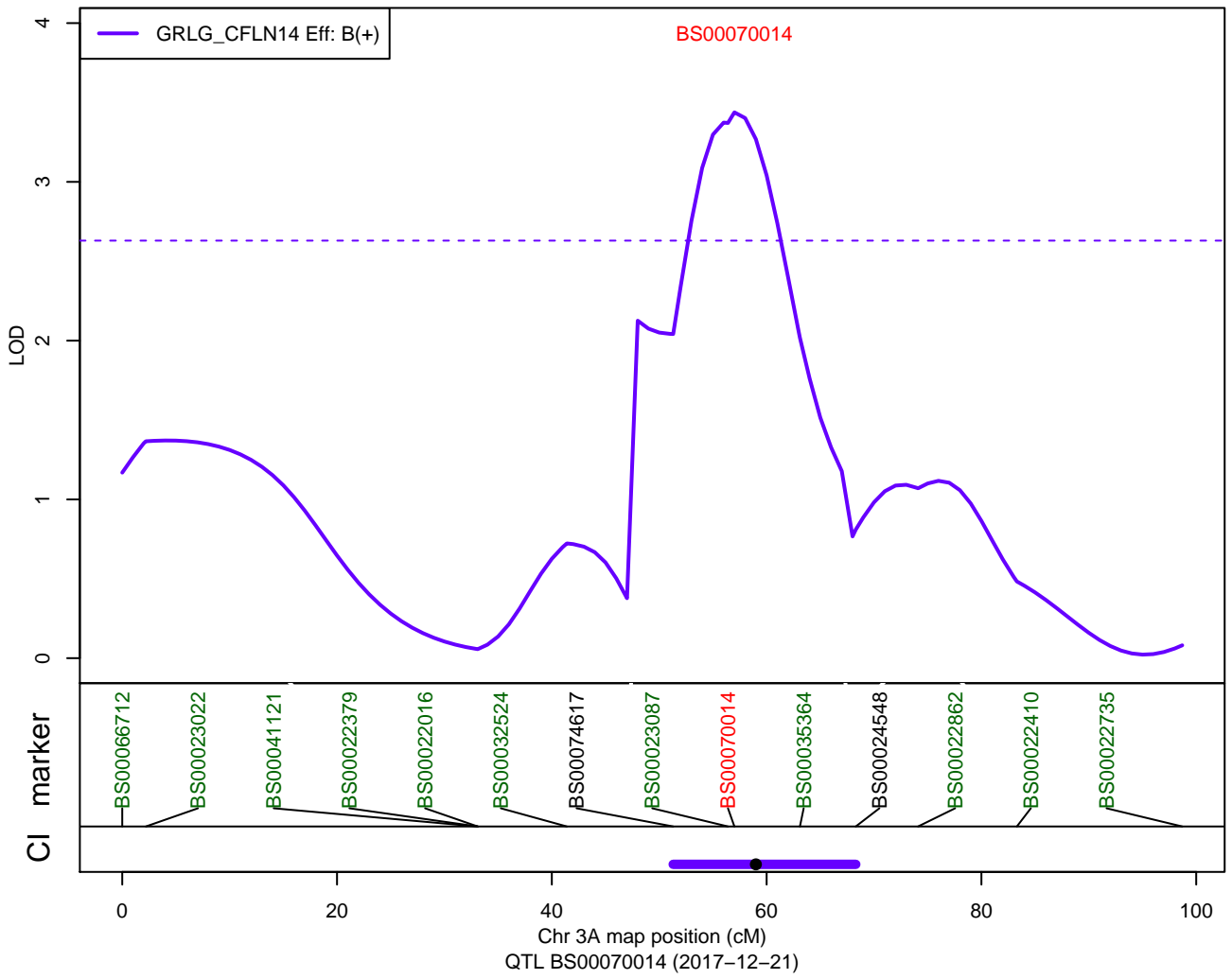
QTLs: ParW566 - Ht - 6A



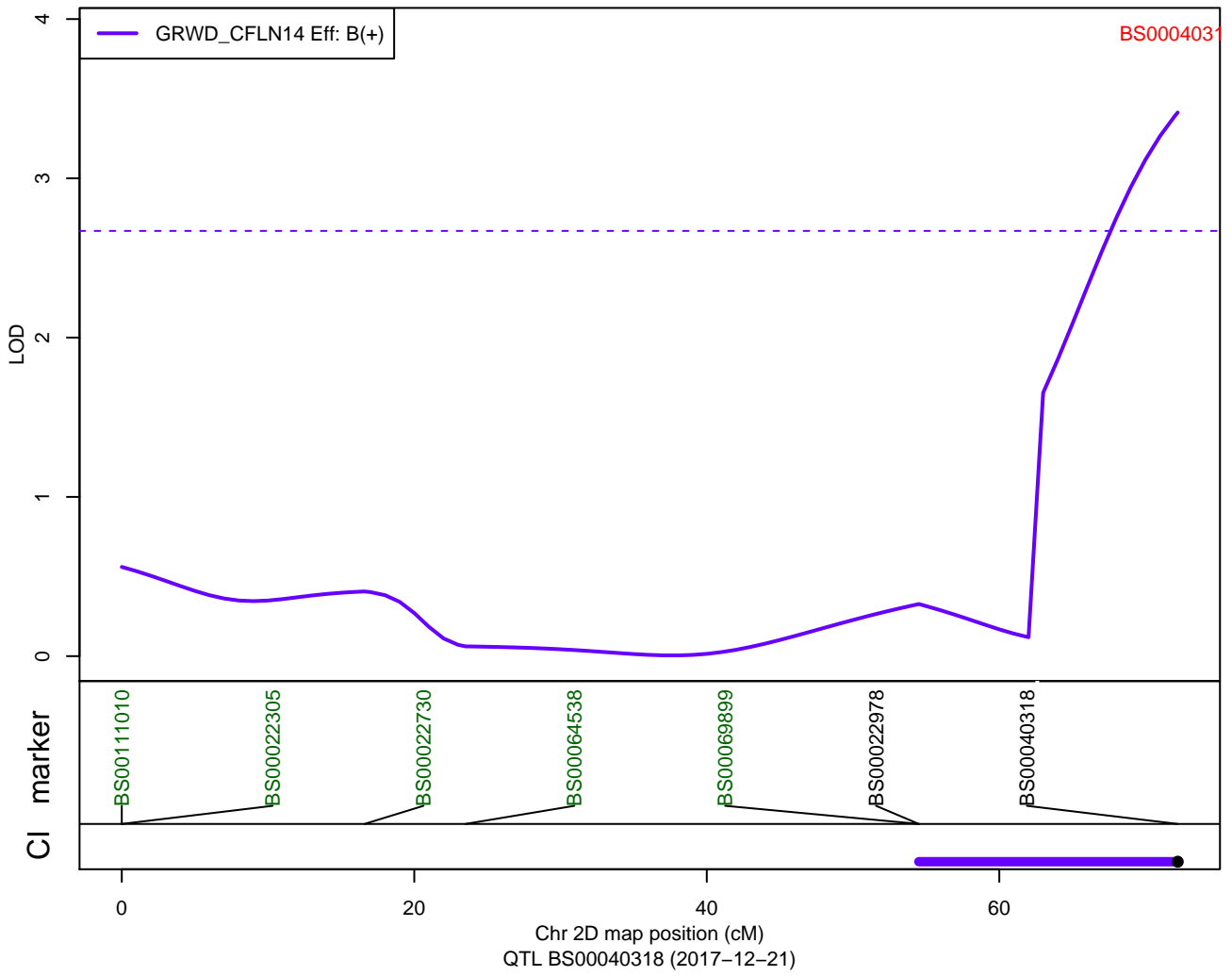
QTLs: ParW566 – DTEM – 5A



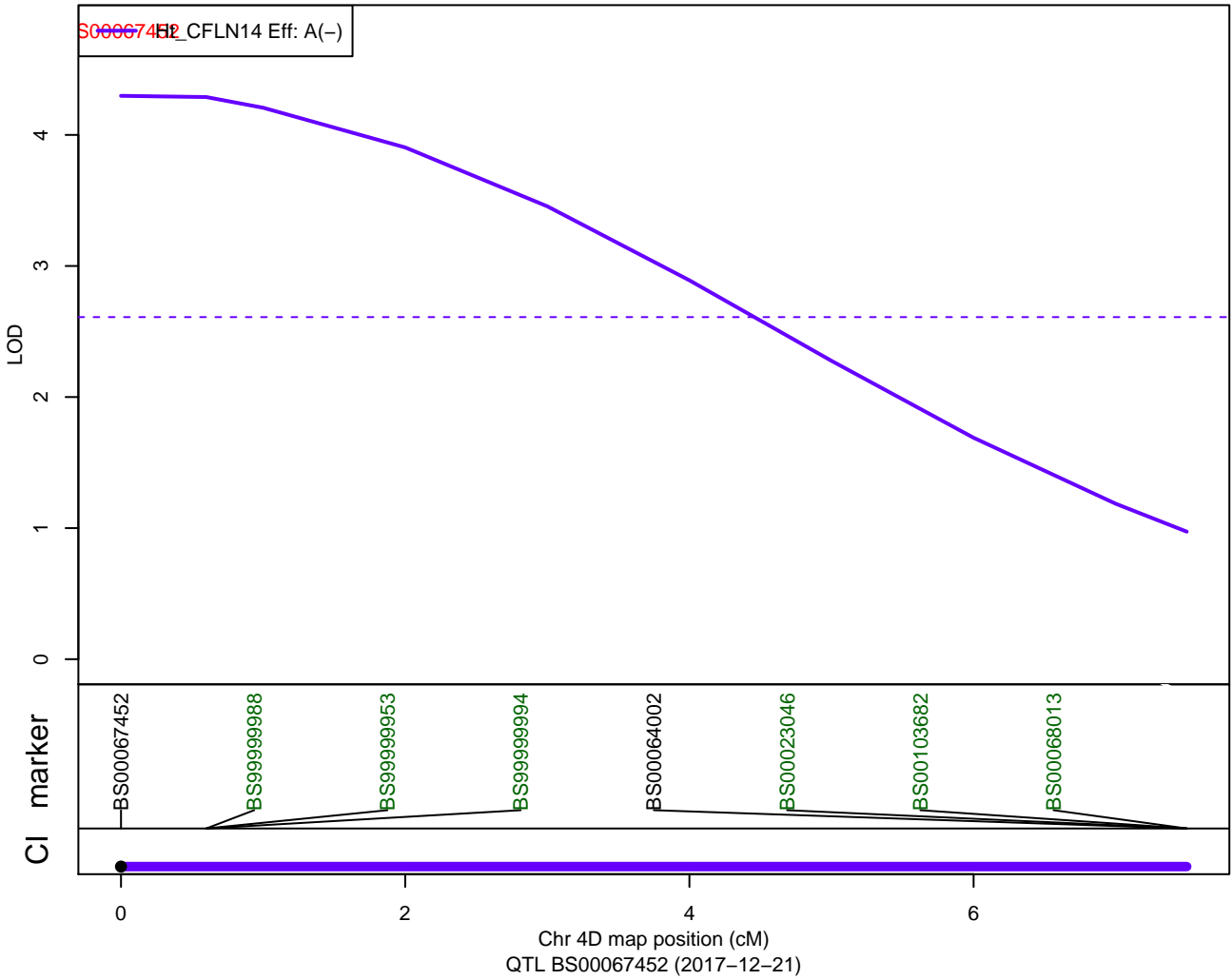
QTLs: ParW566 – GRLG – 3A



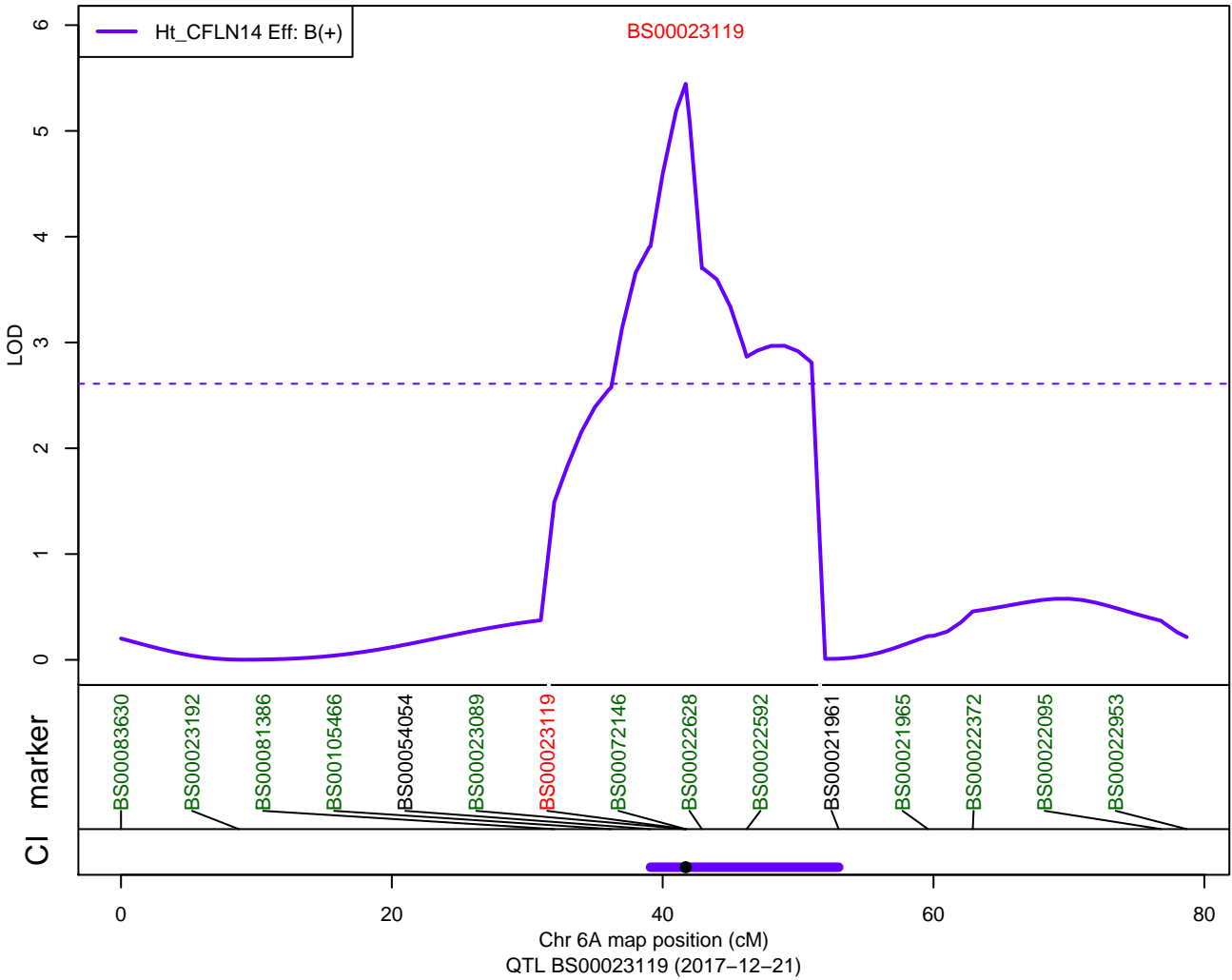
QTLs: ParW566 – GRWD – 2D



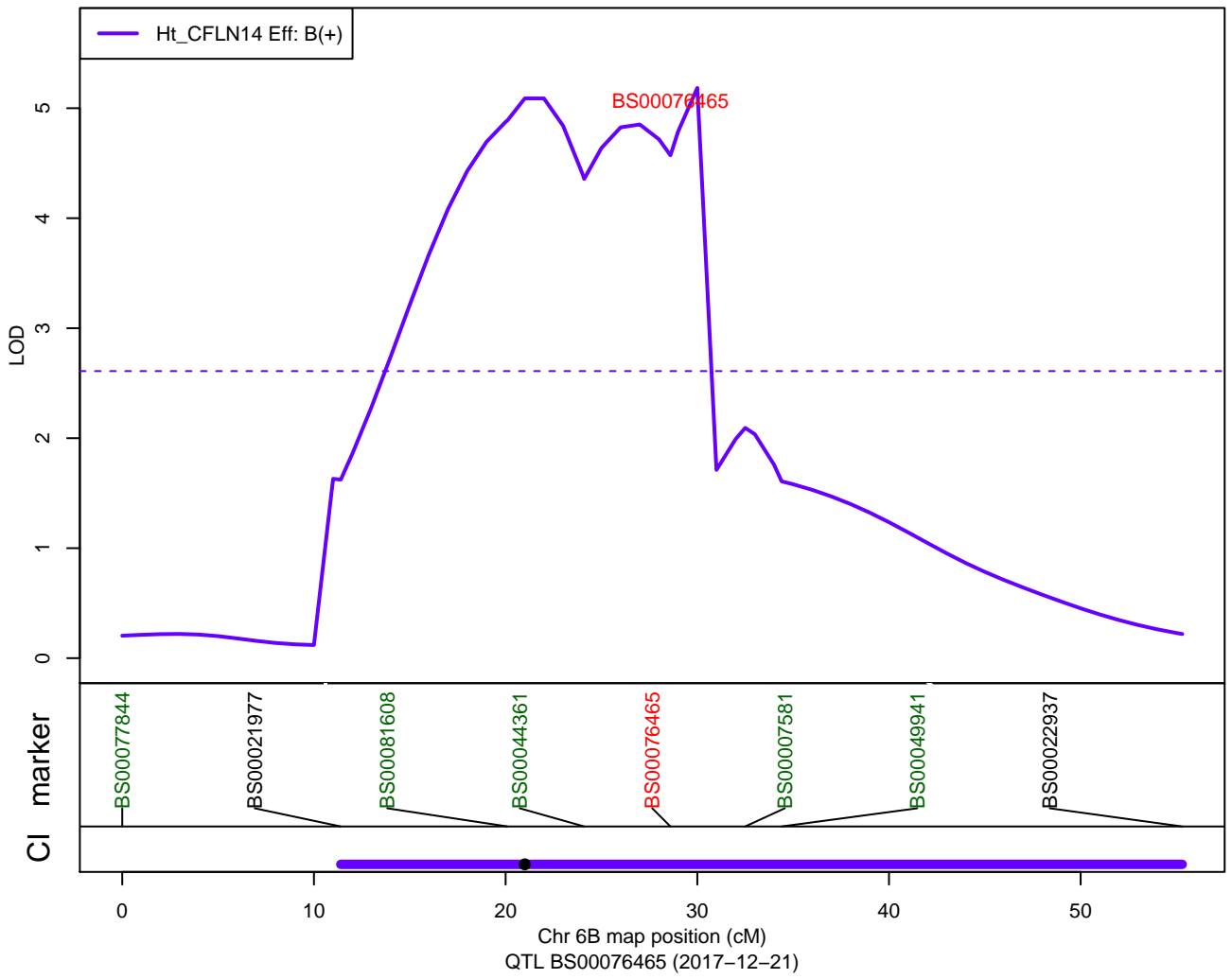
QTLs: ParW629 - Ht - 4D



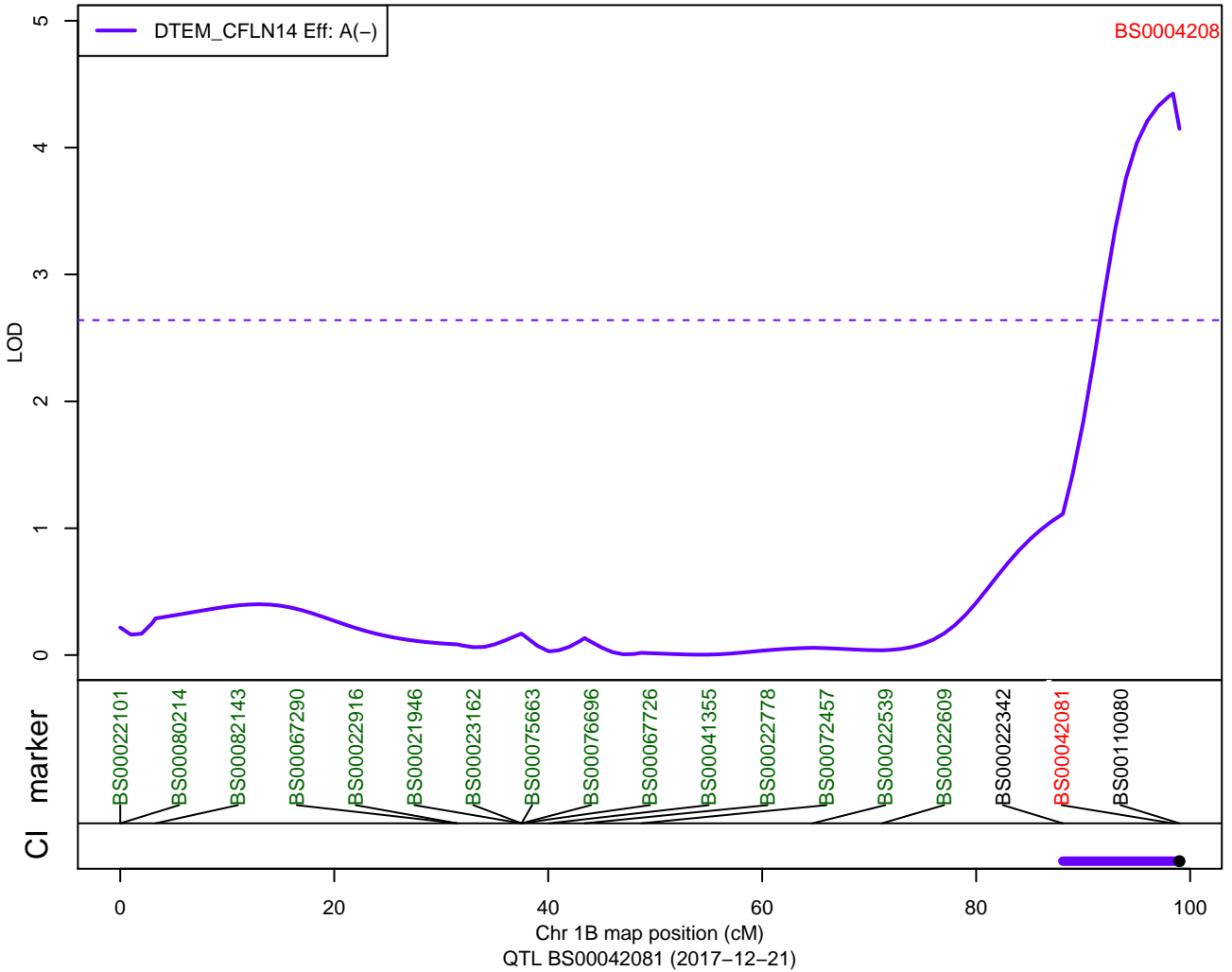
QTLs: ParW629 - Ht - 6A



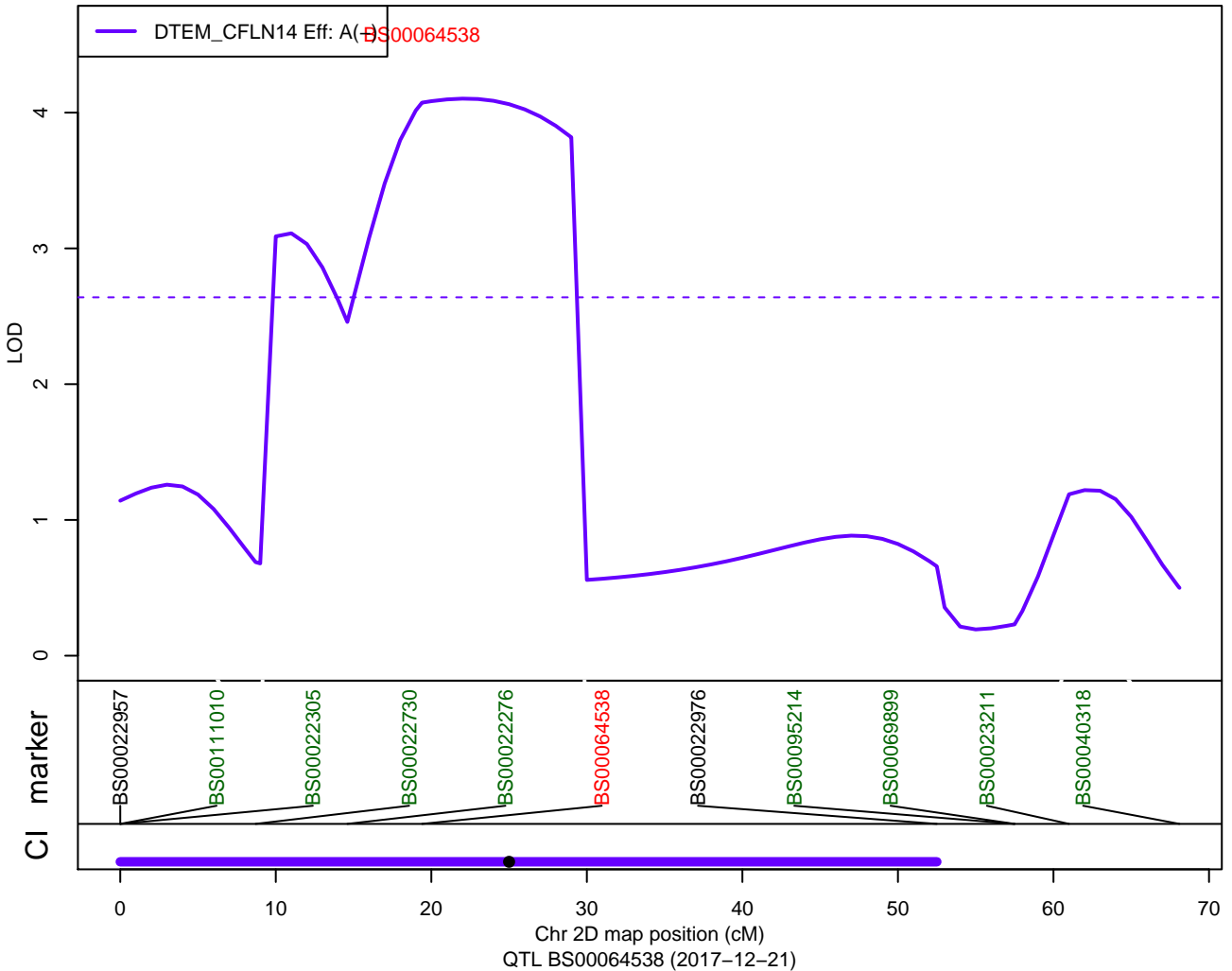
QTLs: ParW629 - Ht - 6B



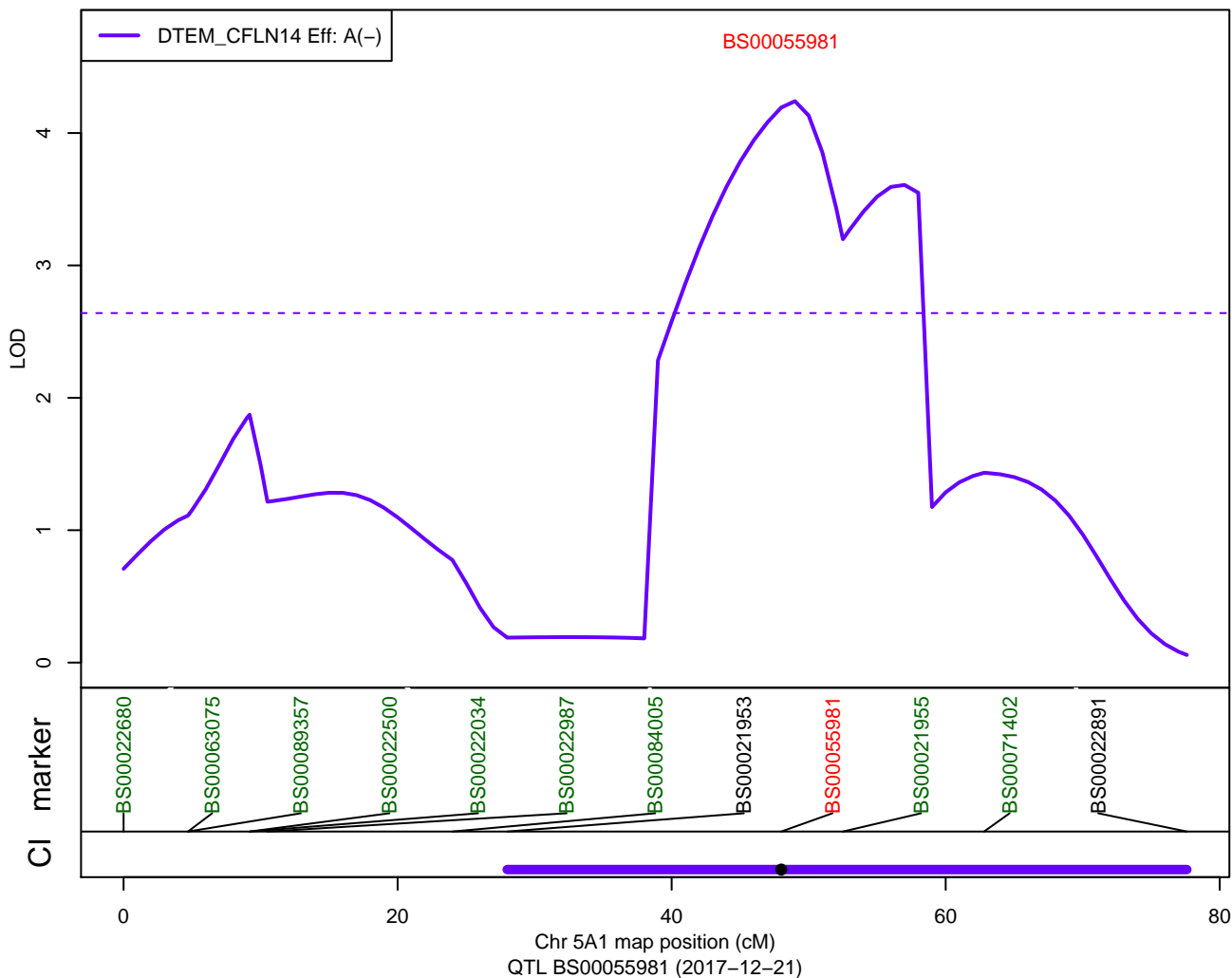
QTLs: ParW629 – DTEM – 1B



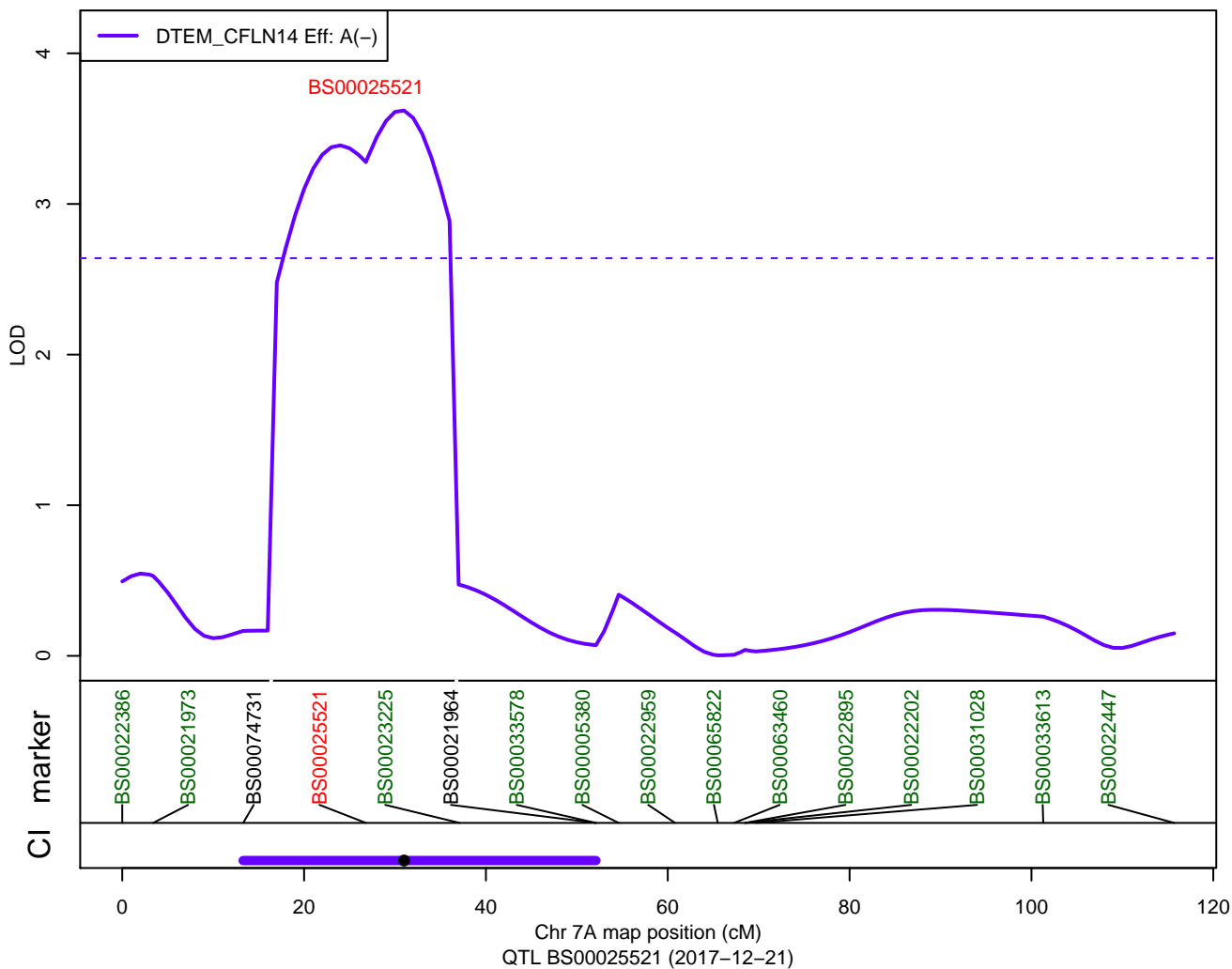
QTLs: ParW629 – DTEM – 2D



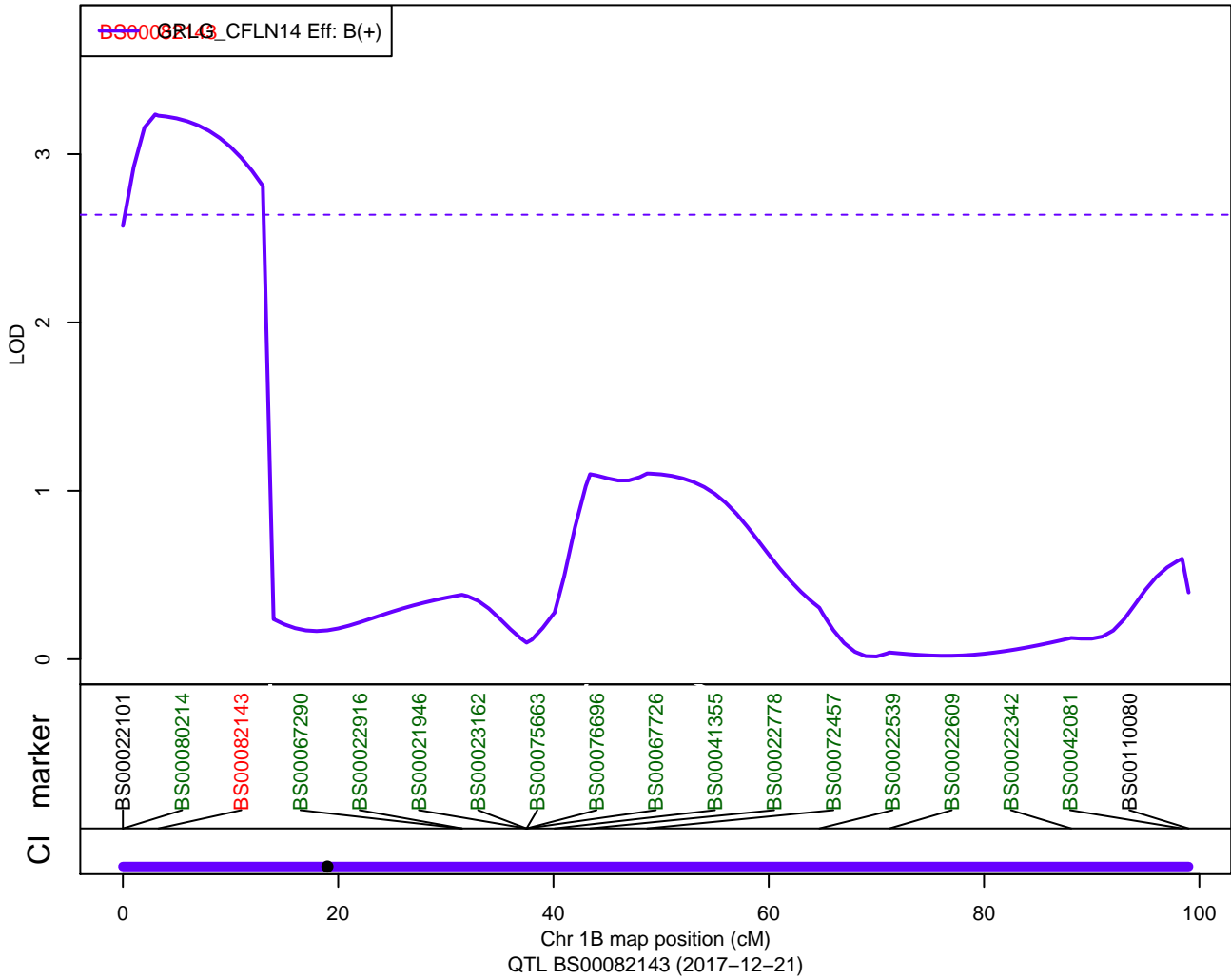
QTLs: ParW629 – DTEM – 5A1



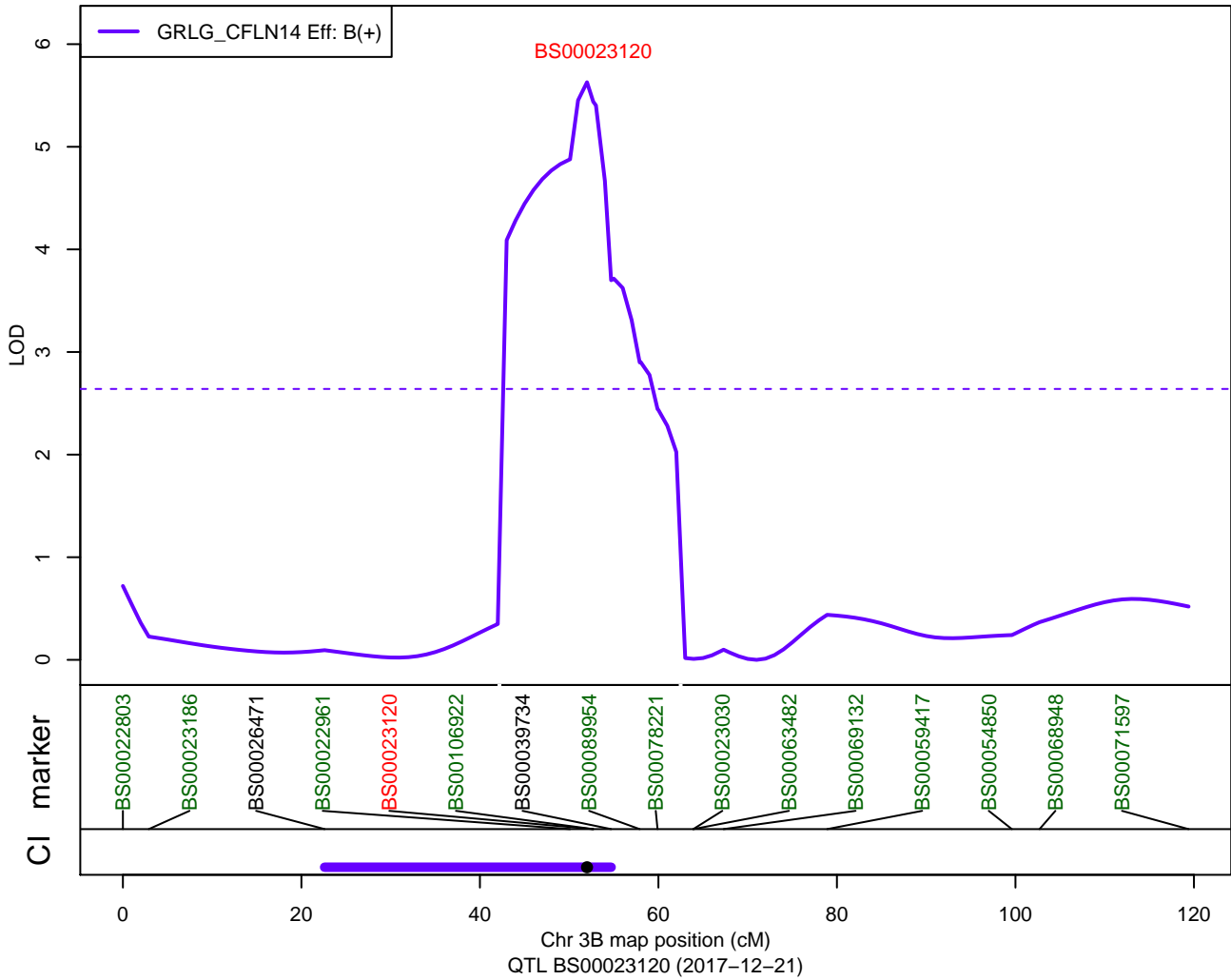
QTLs: ParW629 – DTEM – 7A



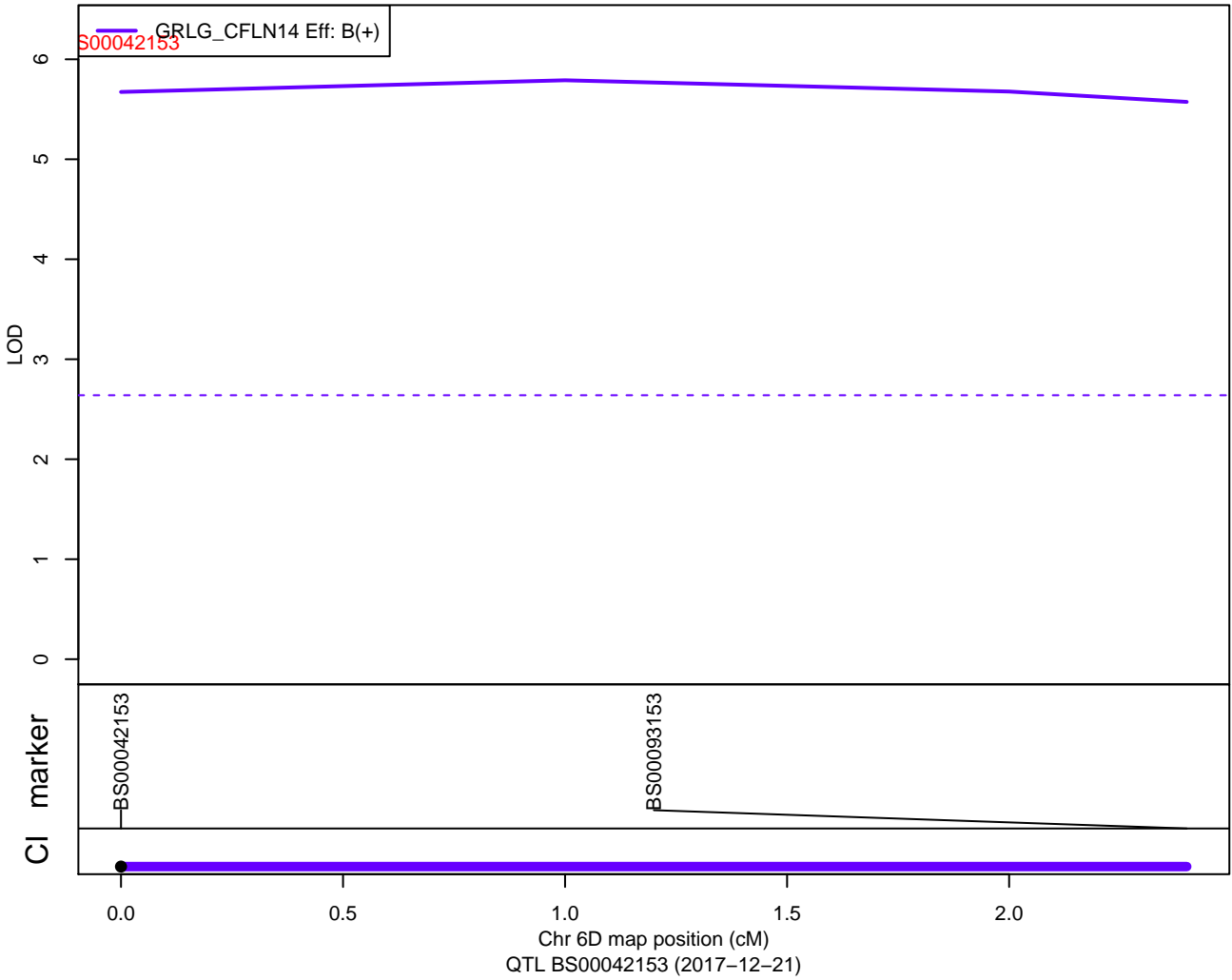
QTLs: ParW629 – GRLG – 1B



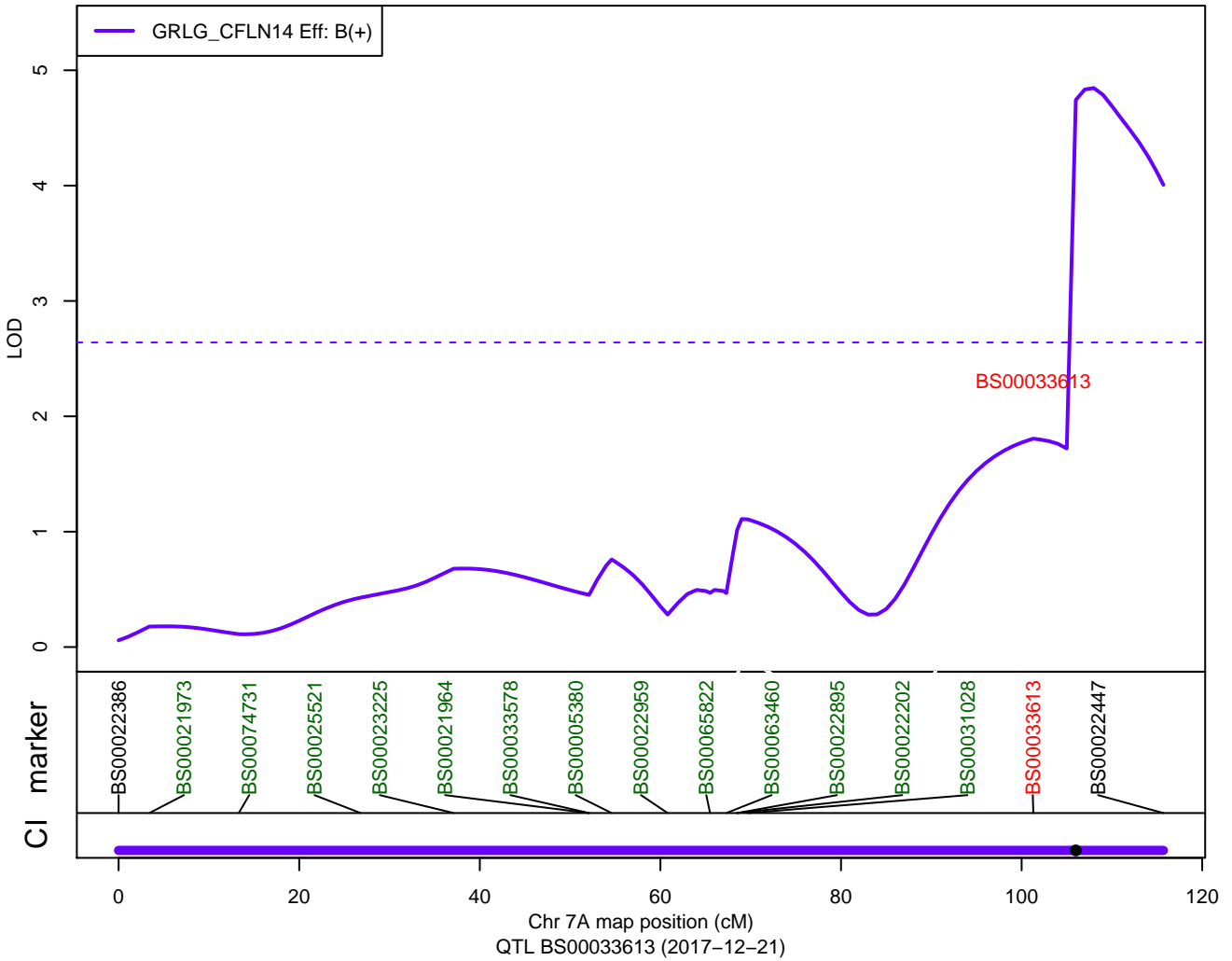
QTLs: ParW629 – GRLG – 3B



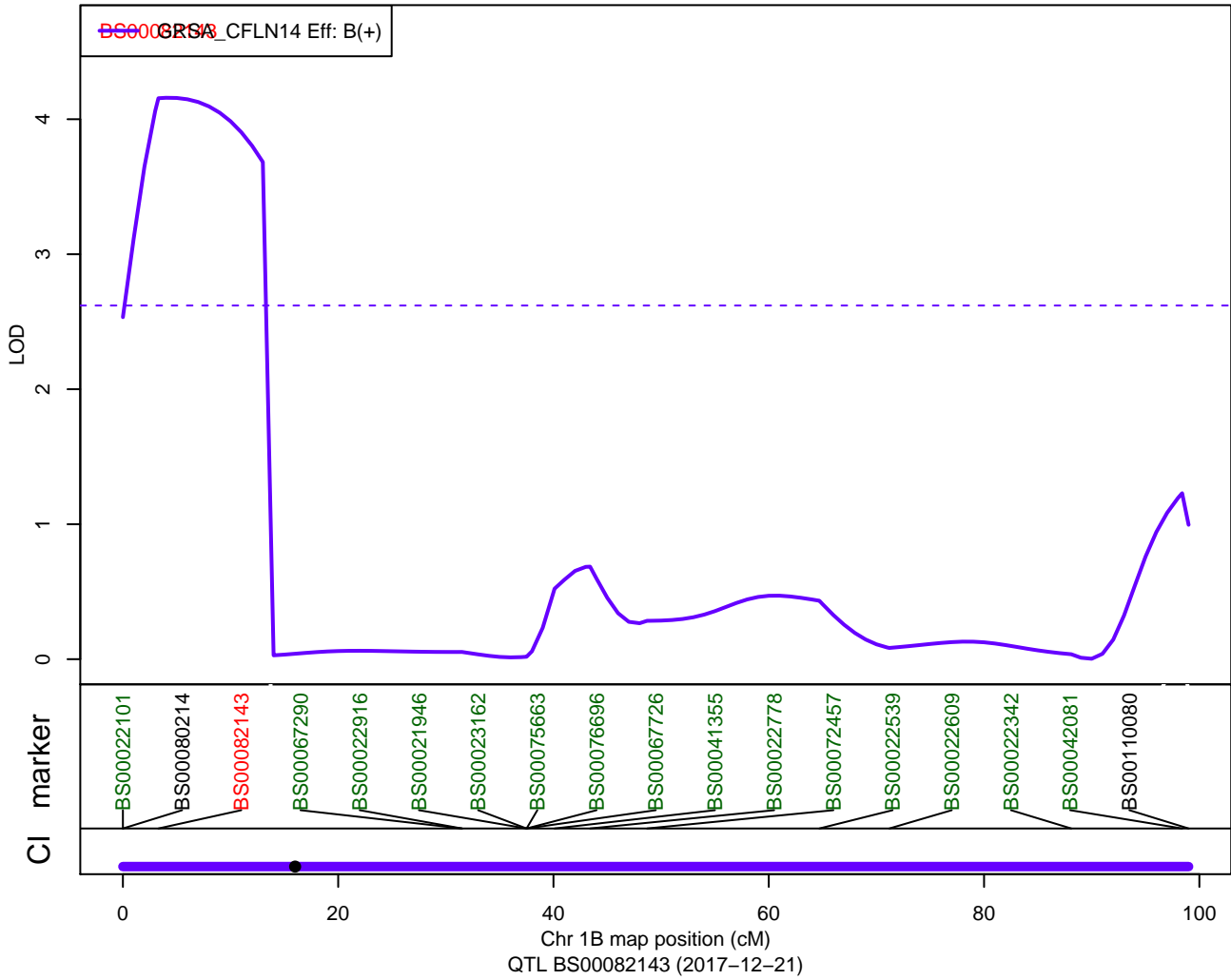
QTLs: ParW629 – GRLG – 6D



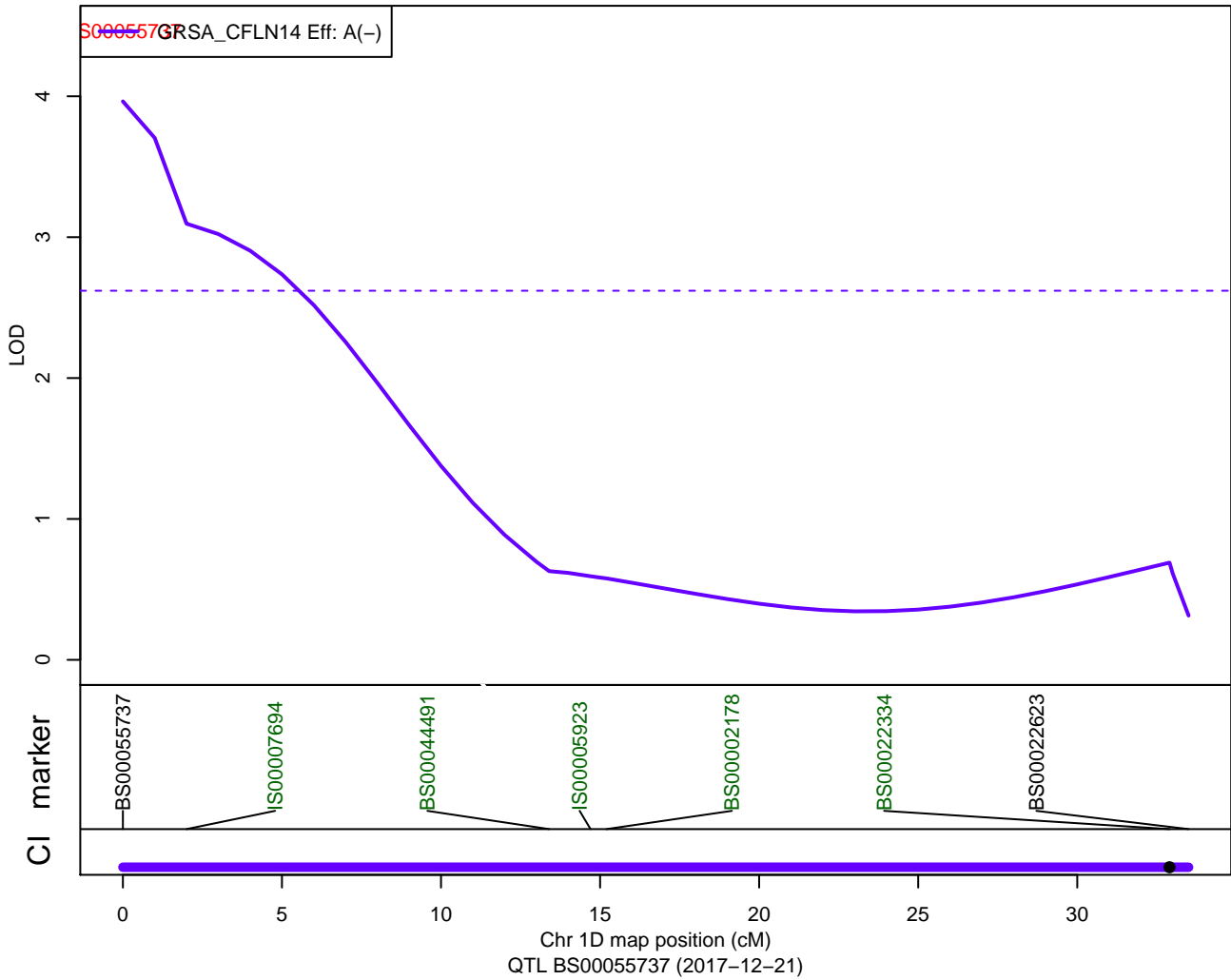
QTLs: ParW629 – GRLG – 7A



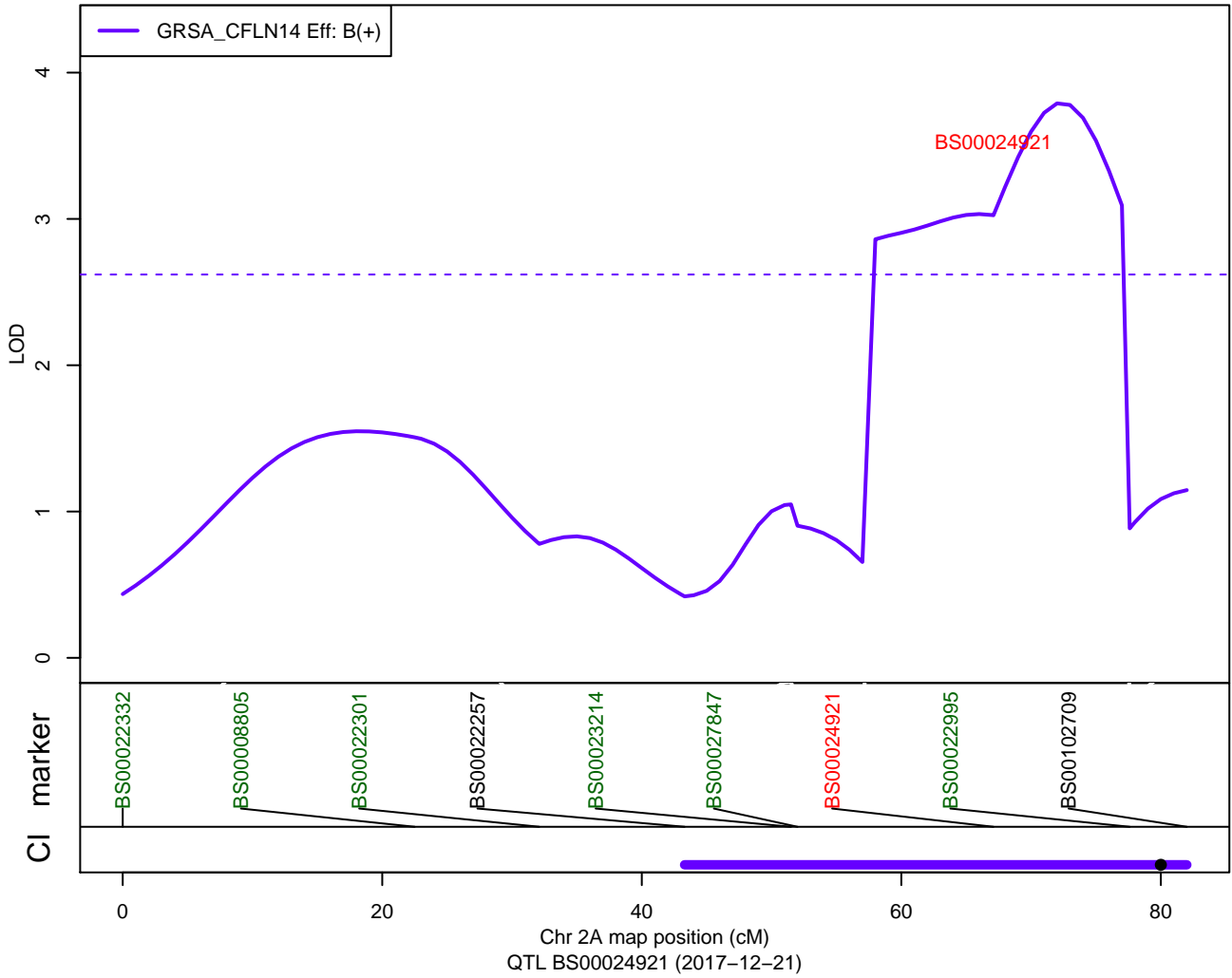
QTLs: ParW629 – GRSA – 1B



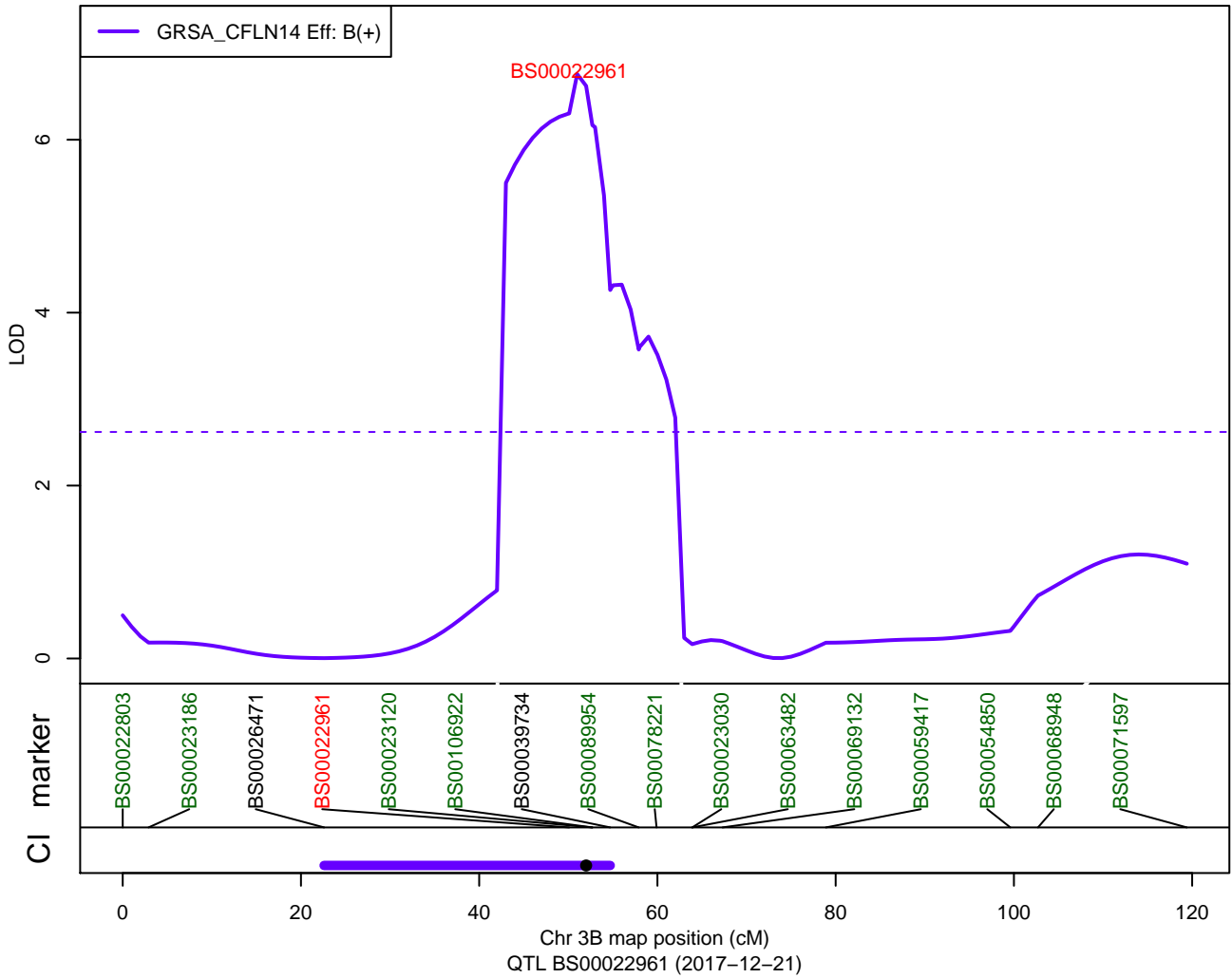
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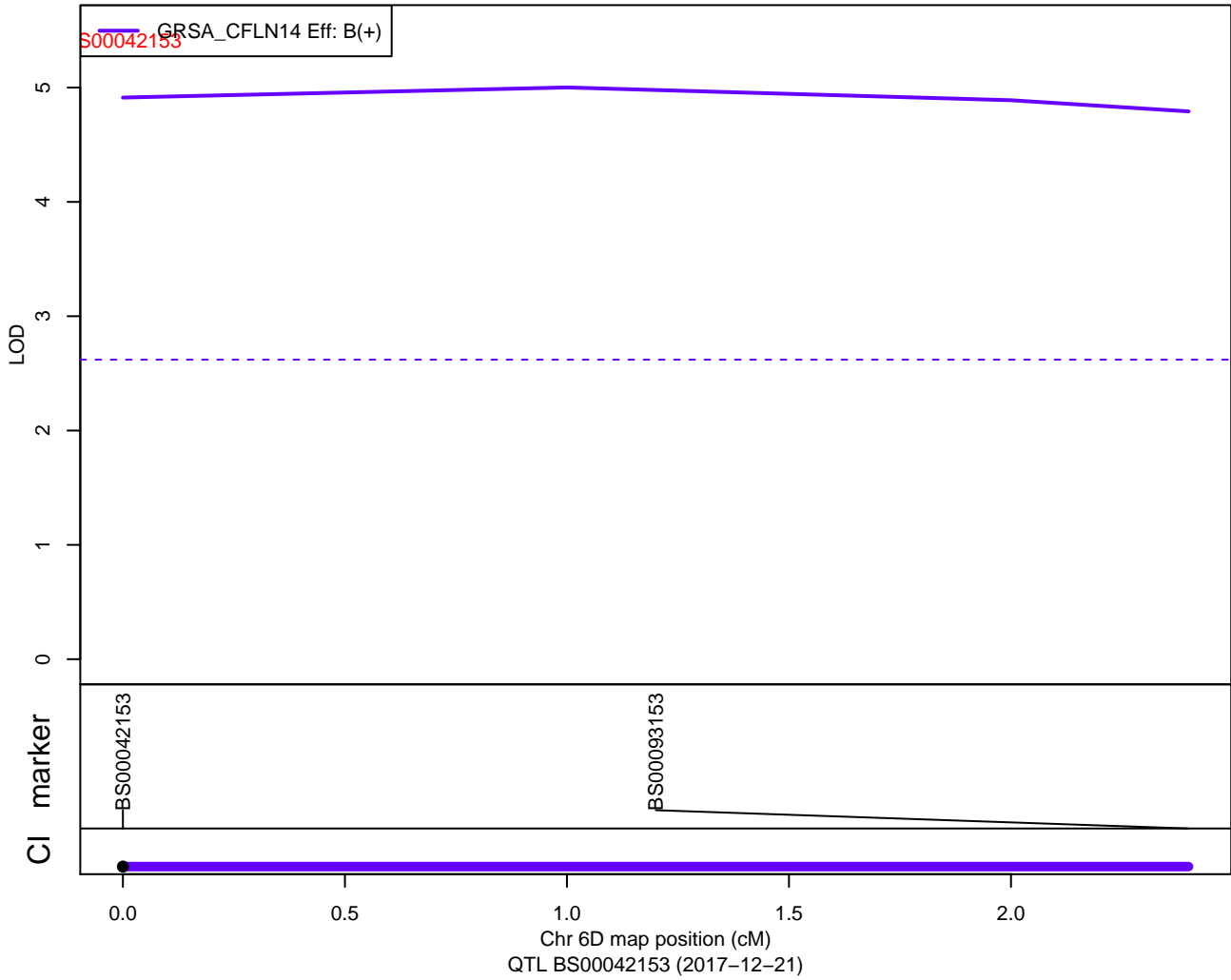
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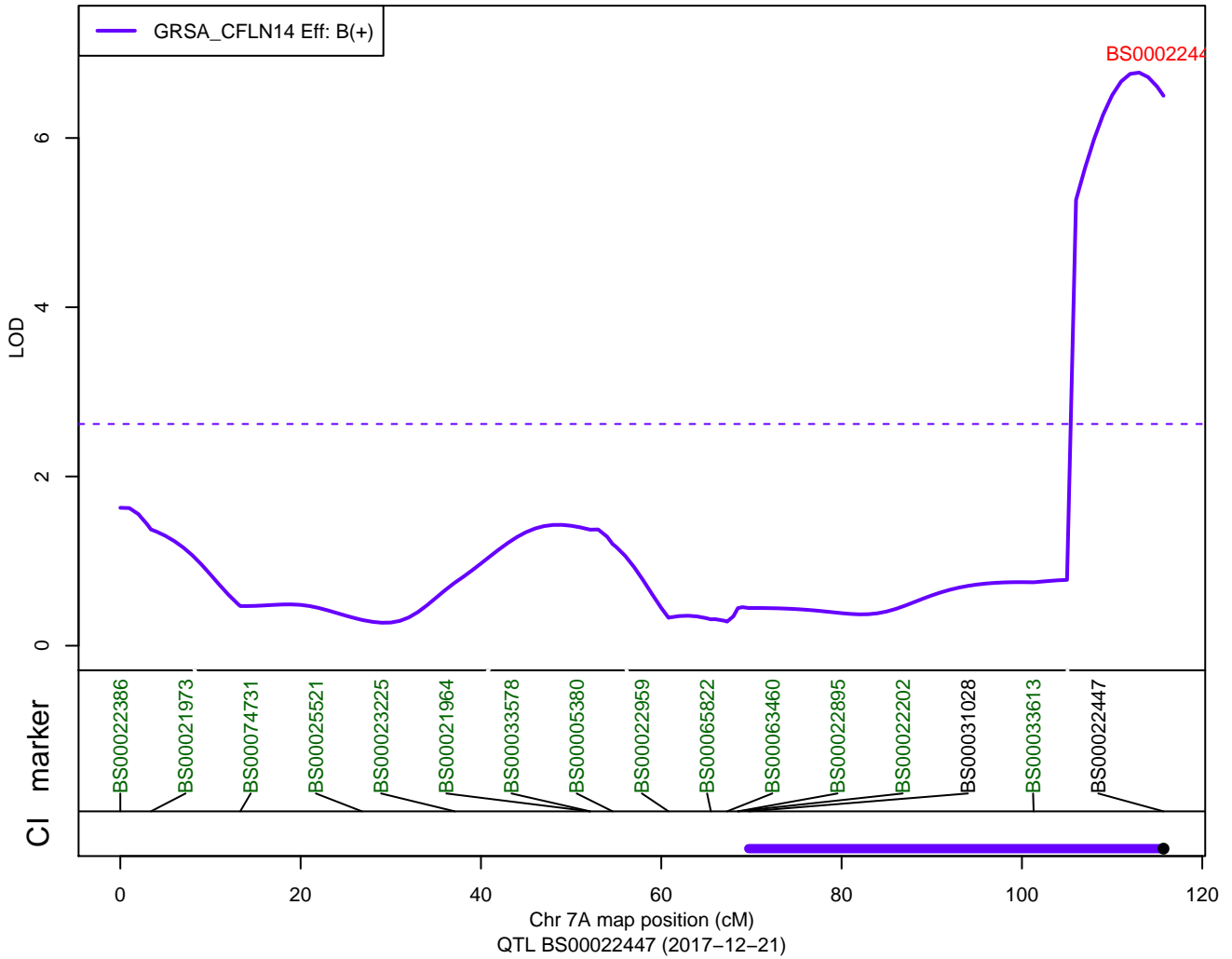
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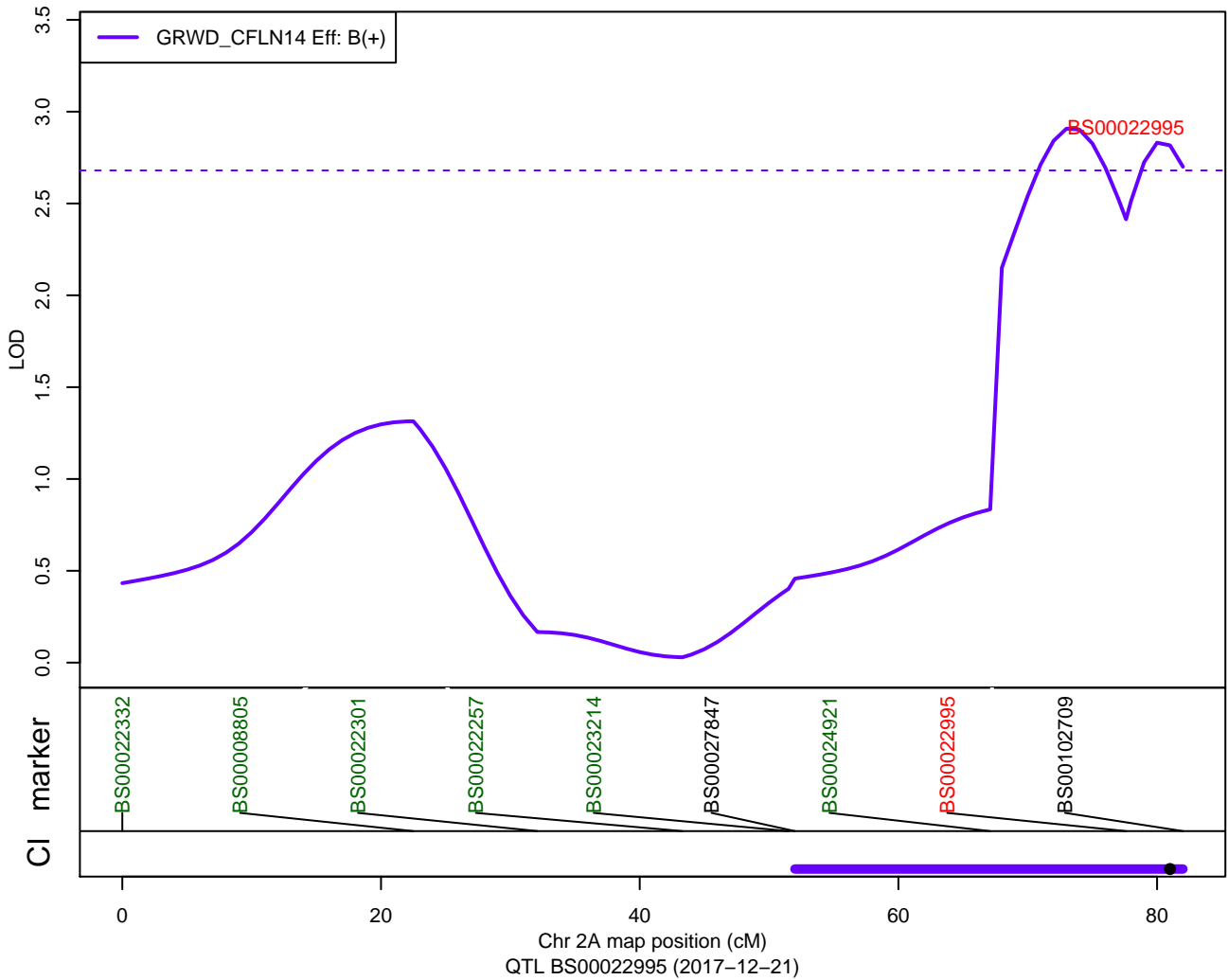
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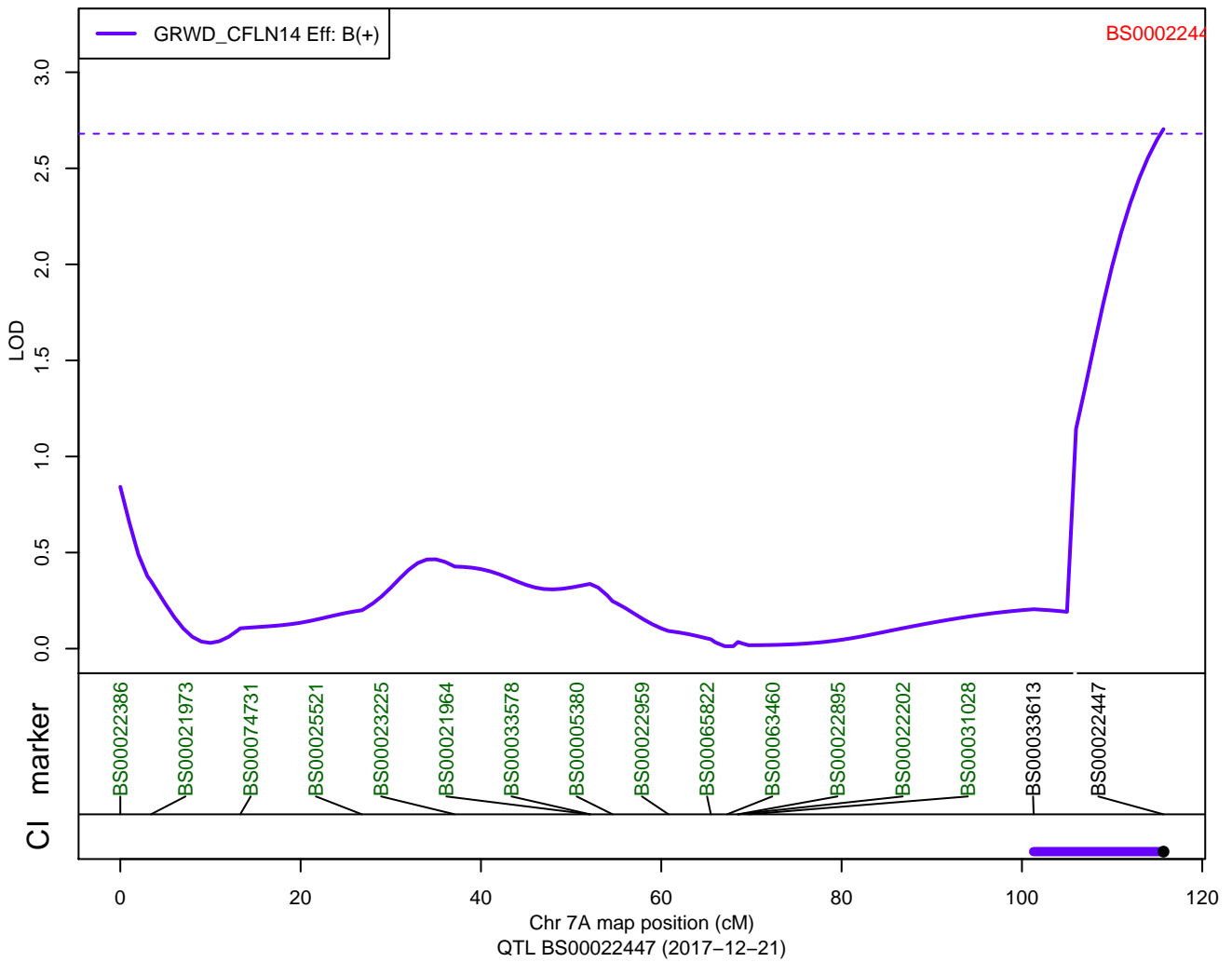
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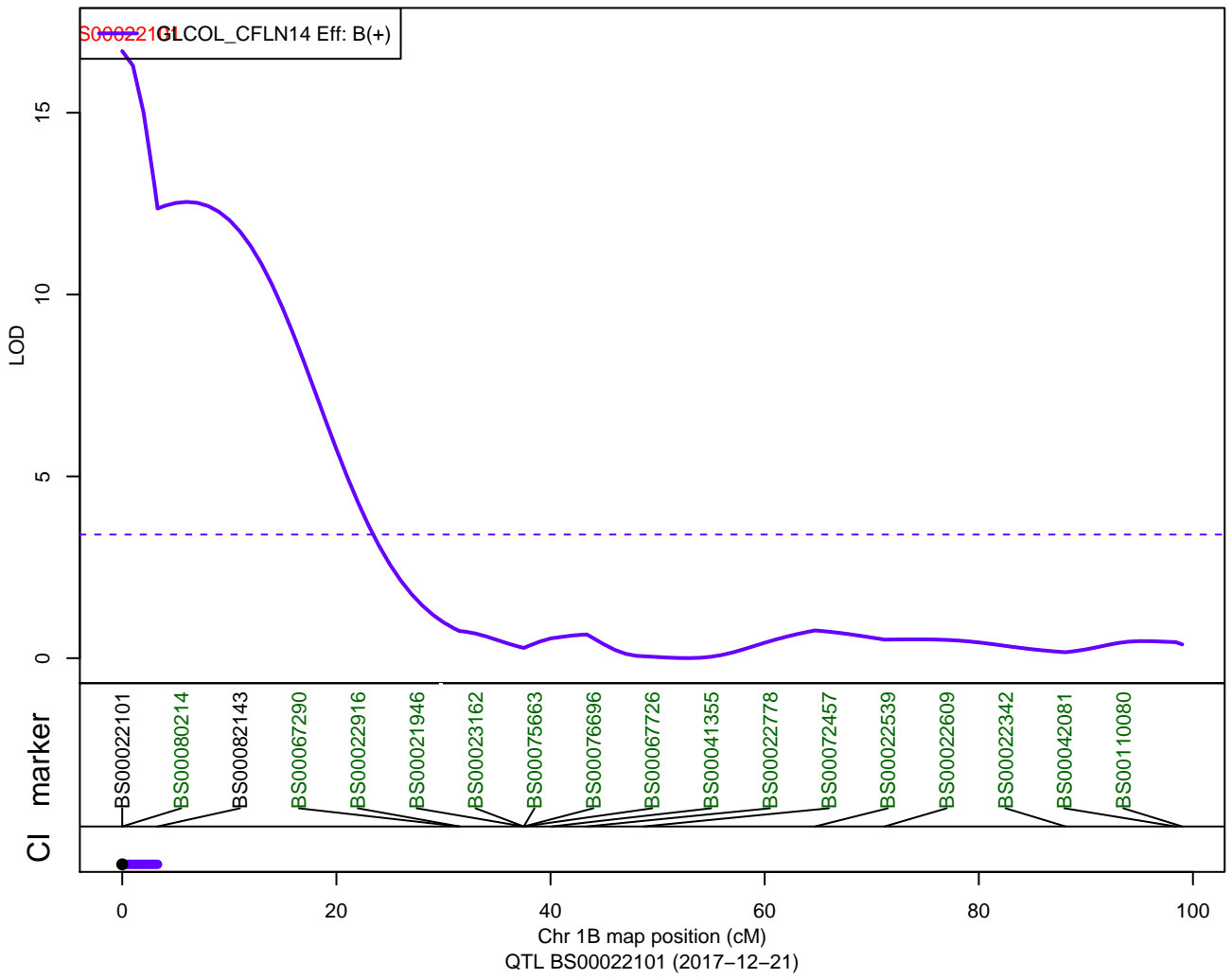
QTLs: ParW629 – GRWD – 2A



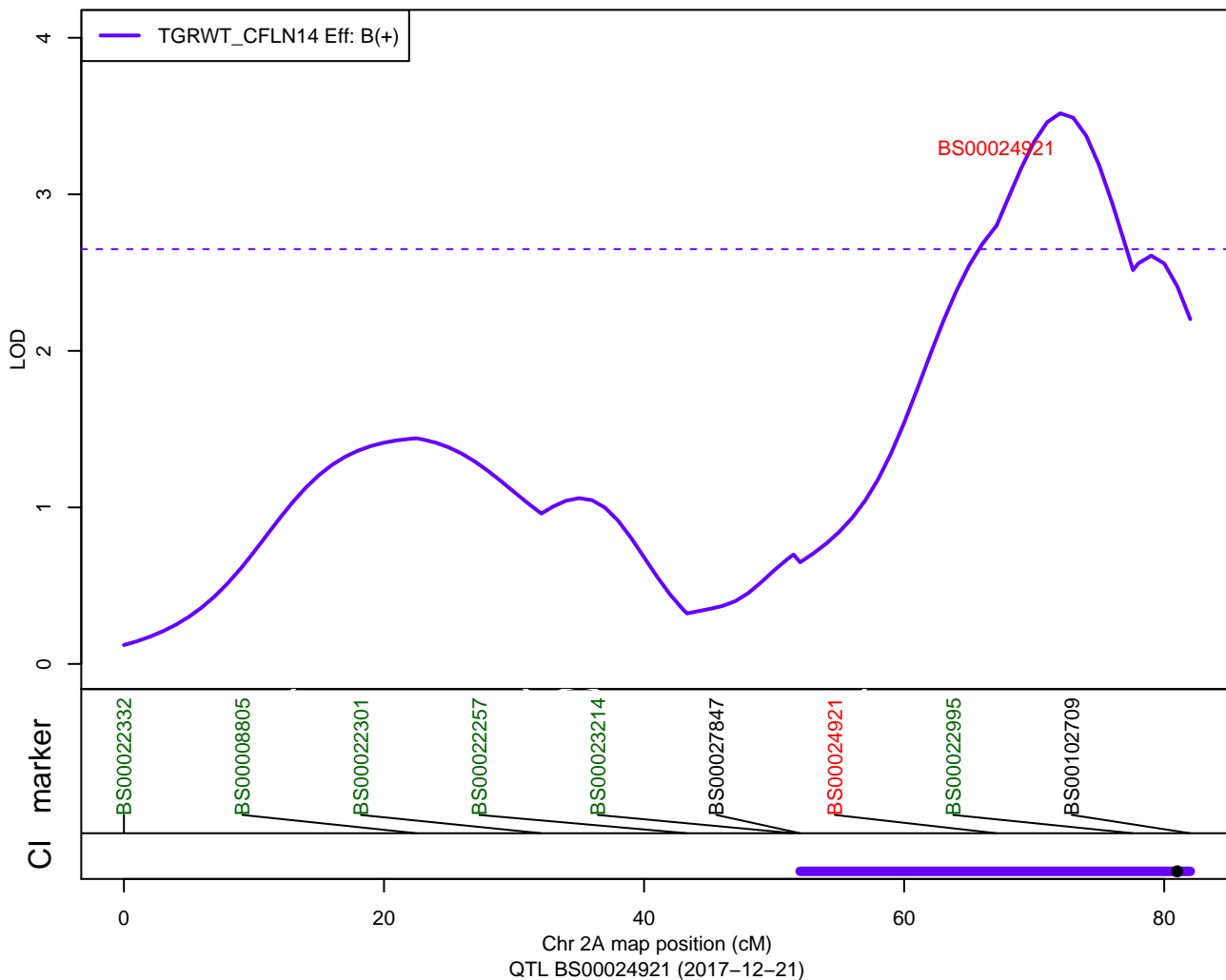
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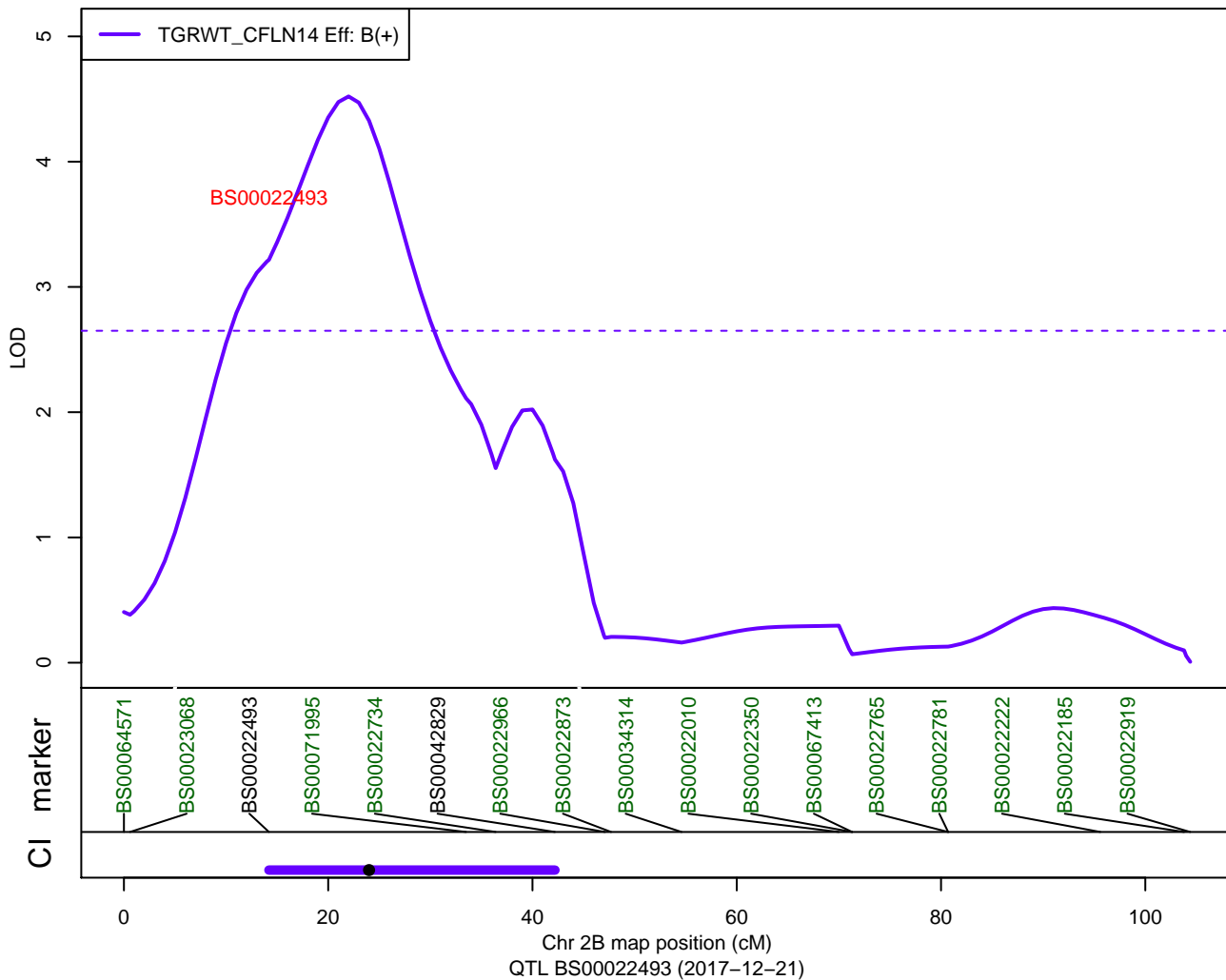
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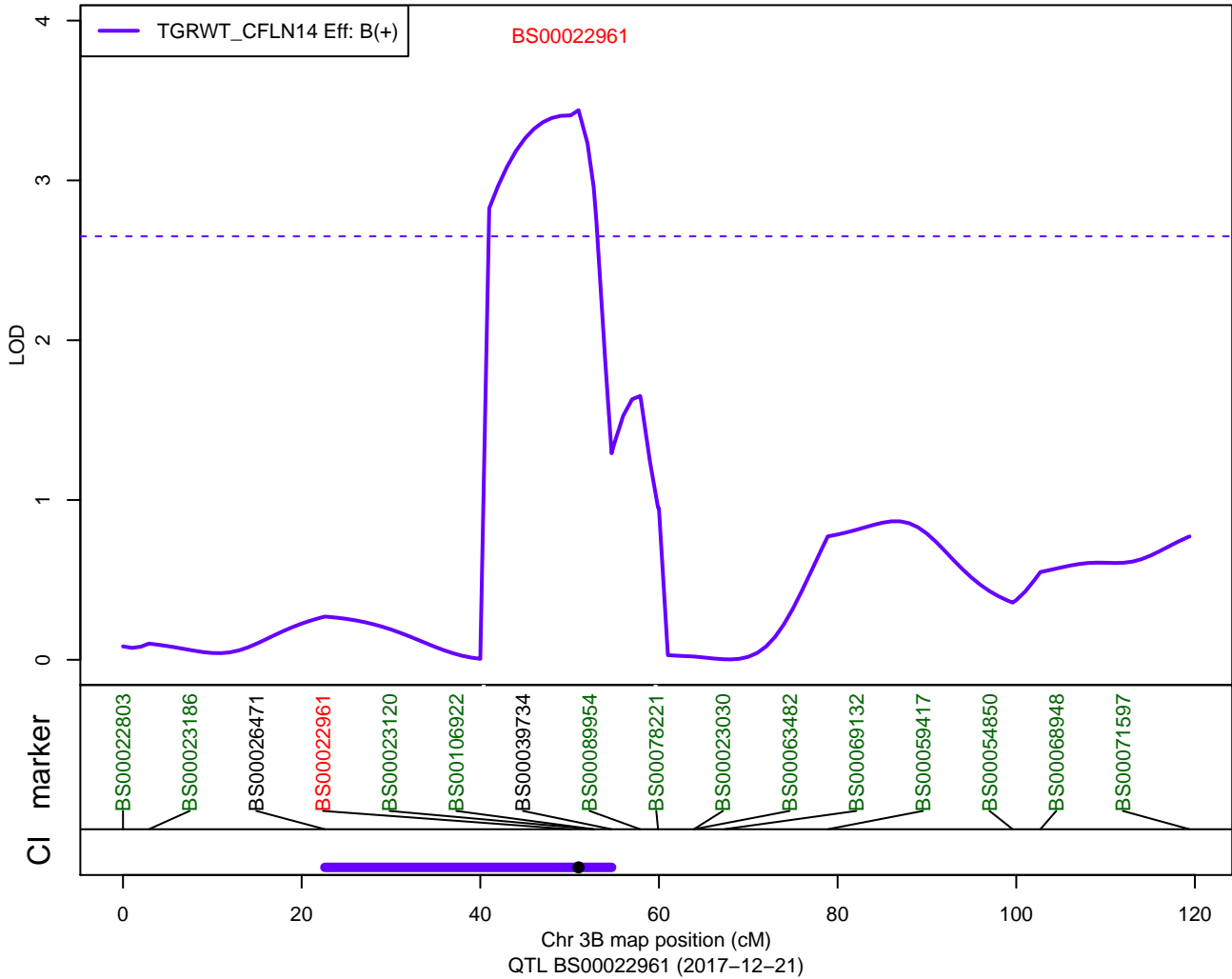
QTLs: ParW629 – TGRWT – 2A



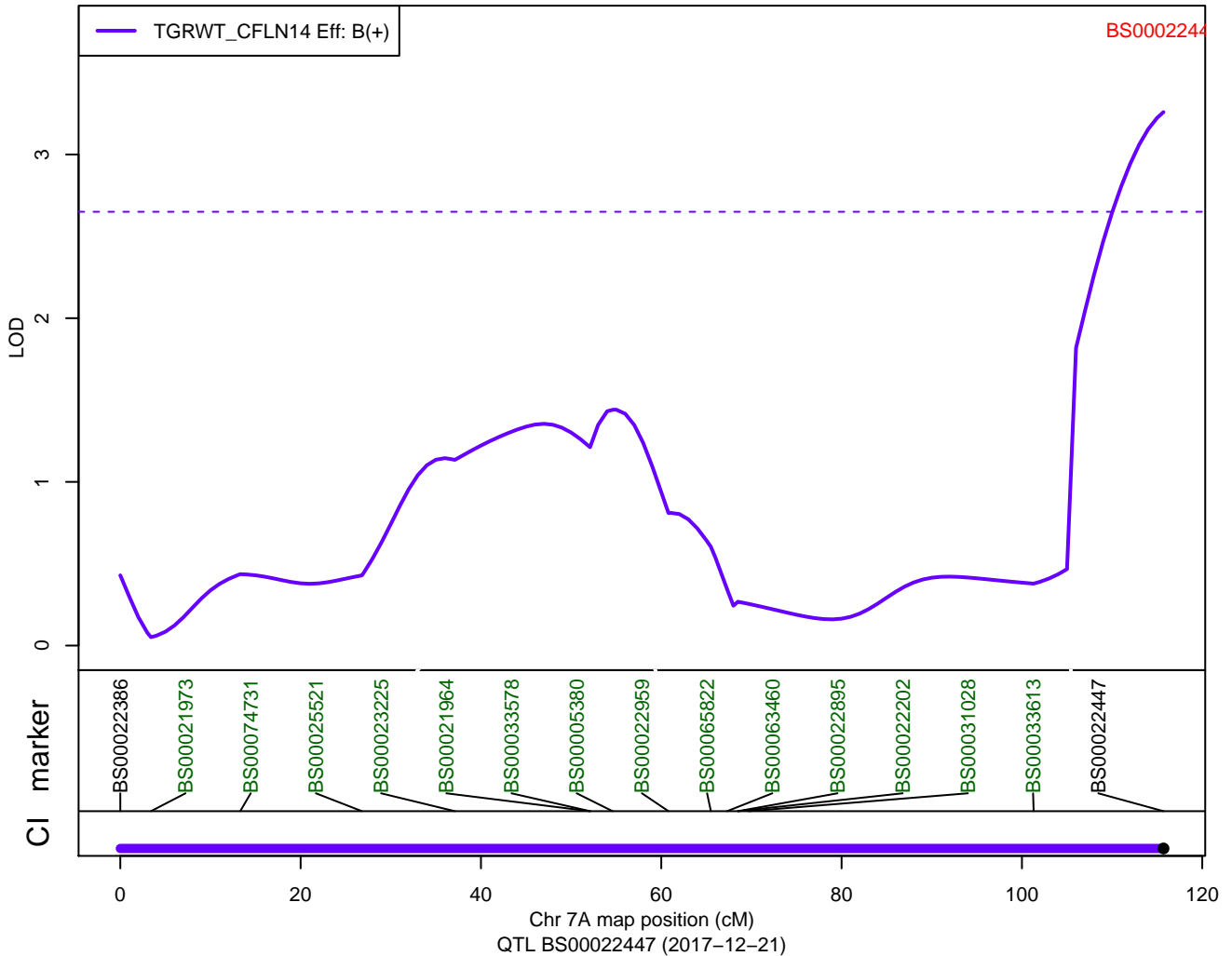
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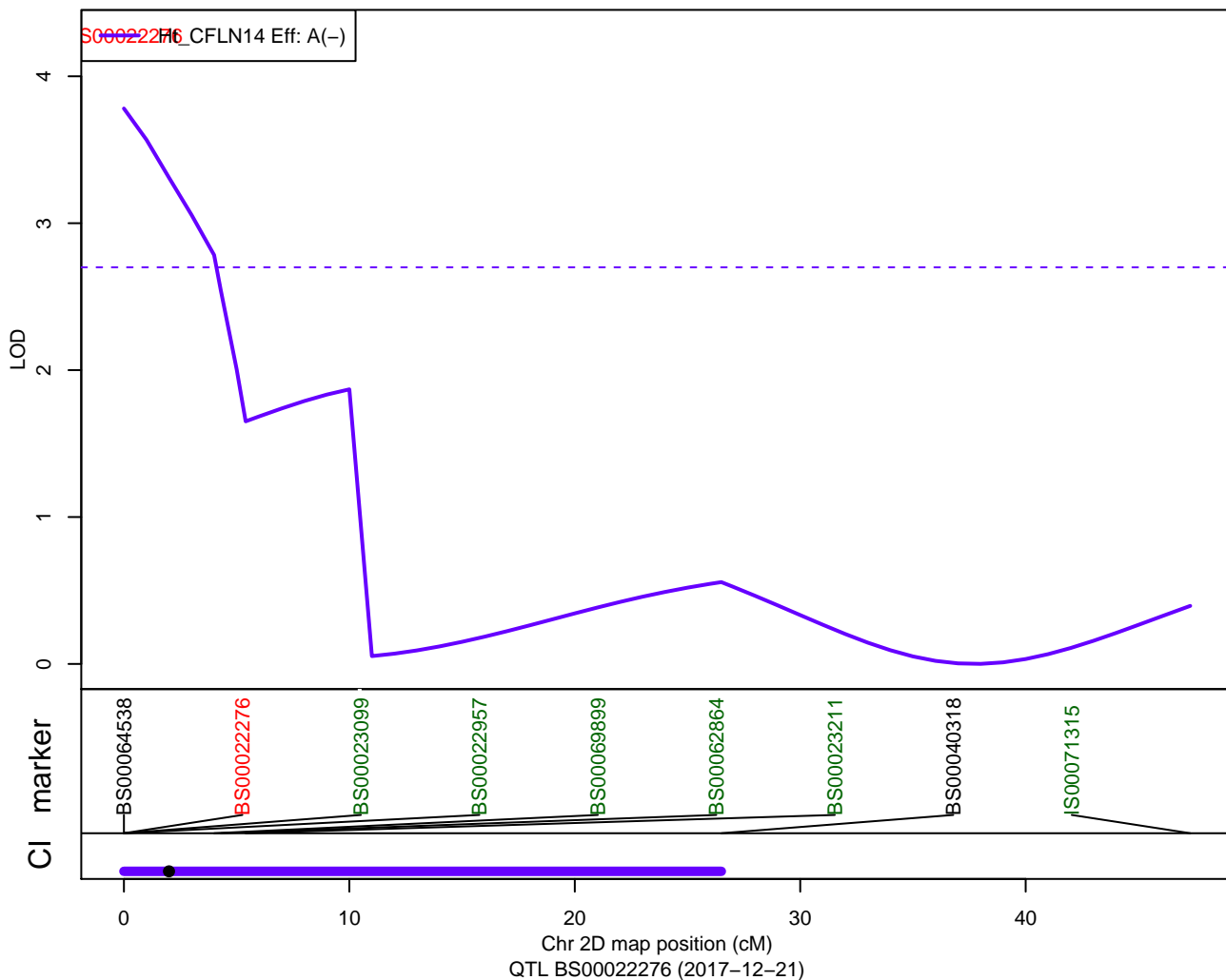
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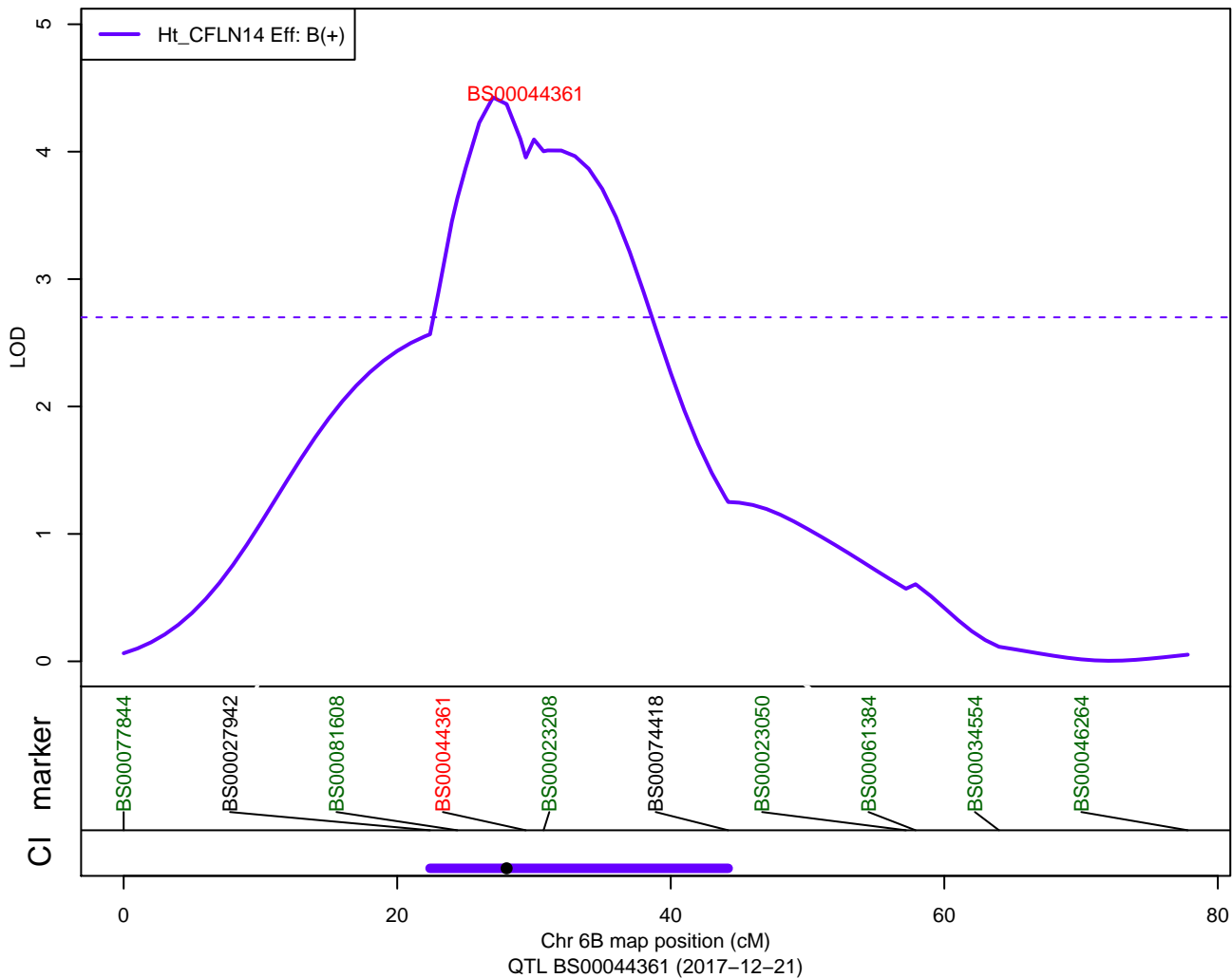
QTLs: ParW629 – TGRWT – 7A



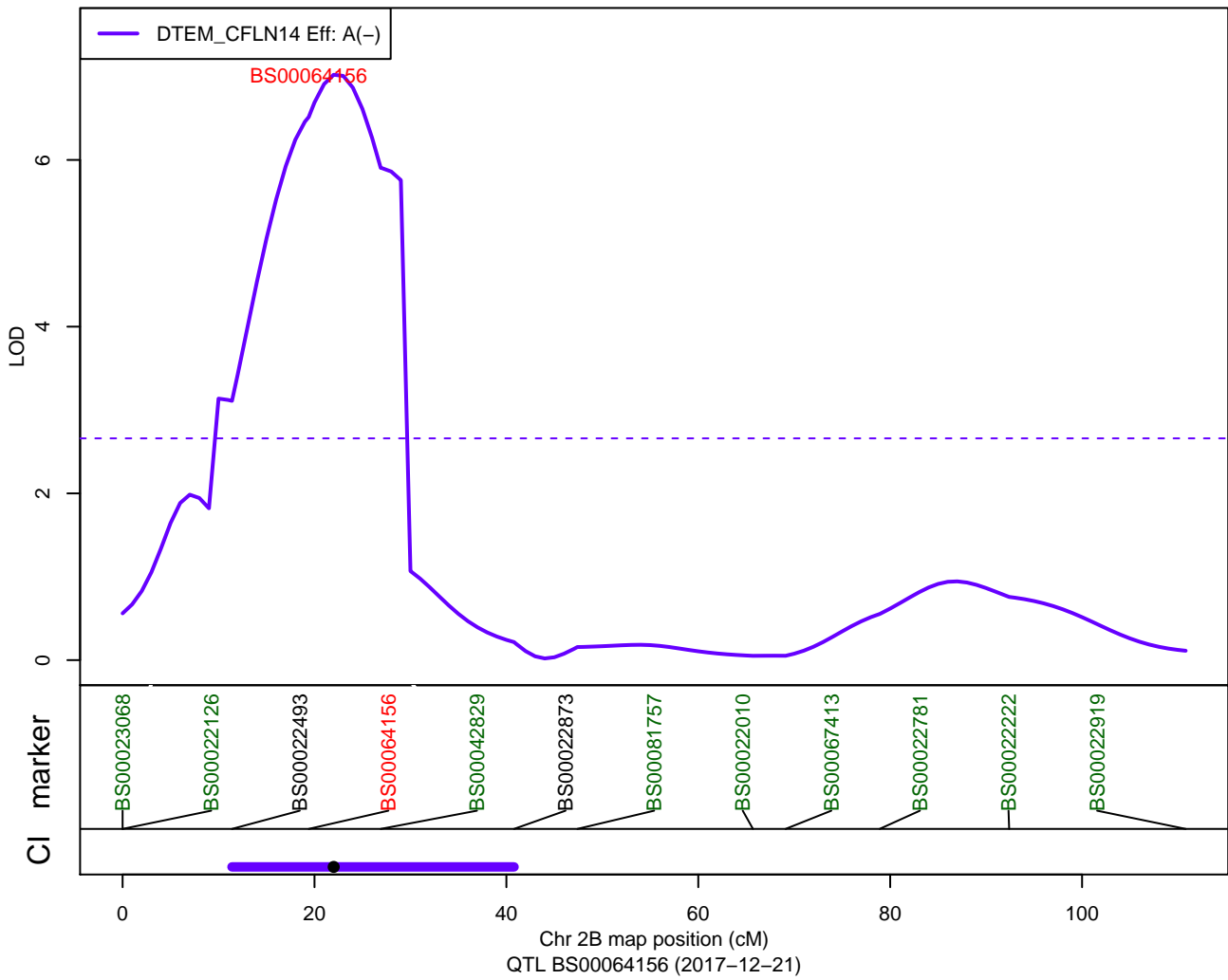
QTLs: ParW731 – Ht – 2D



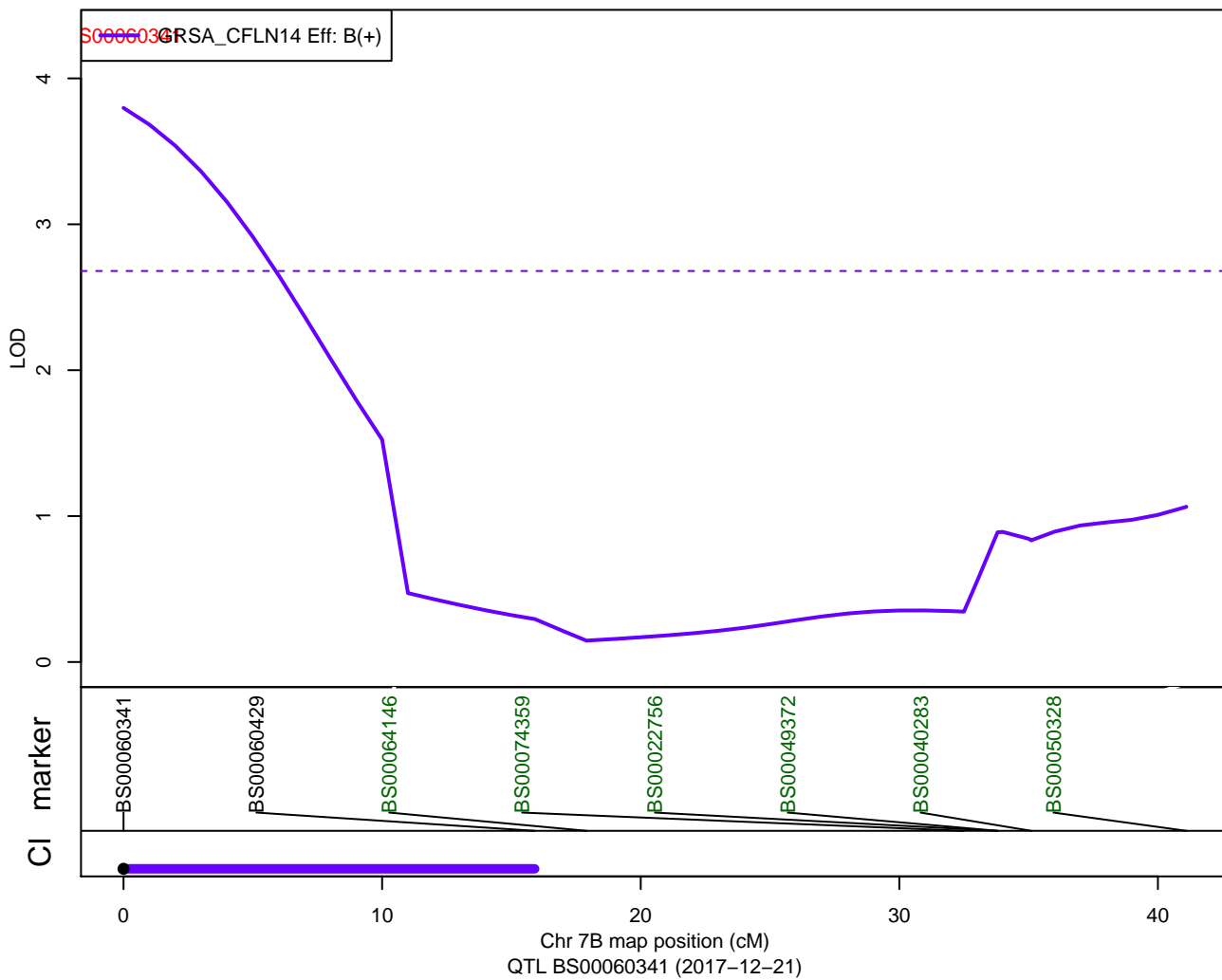
QTLs: ParW731 – Ht – 6B



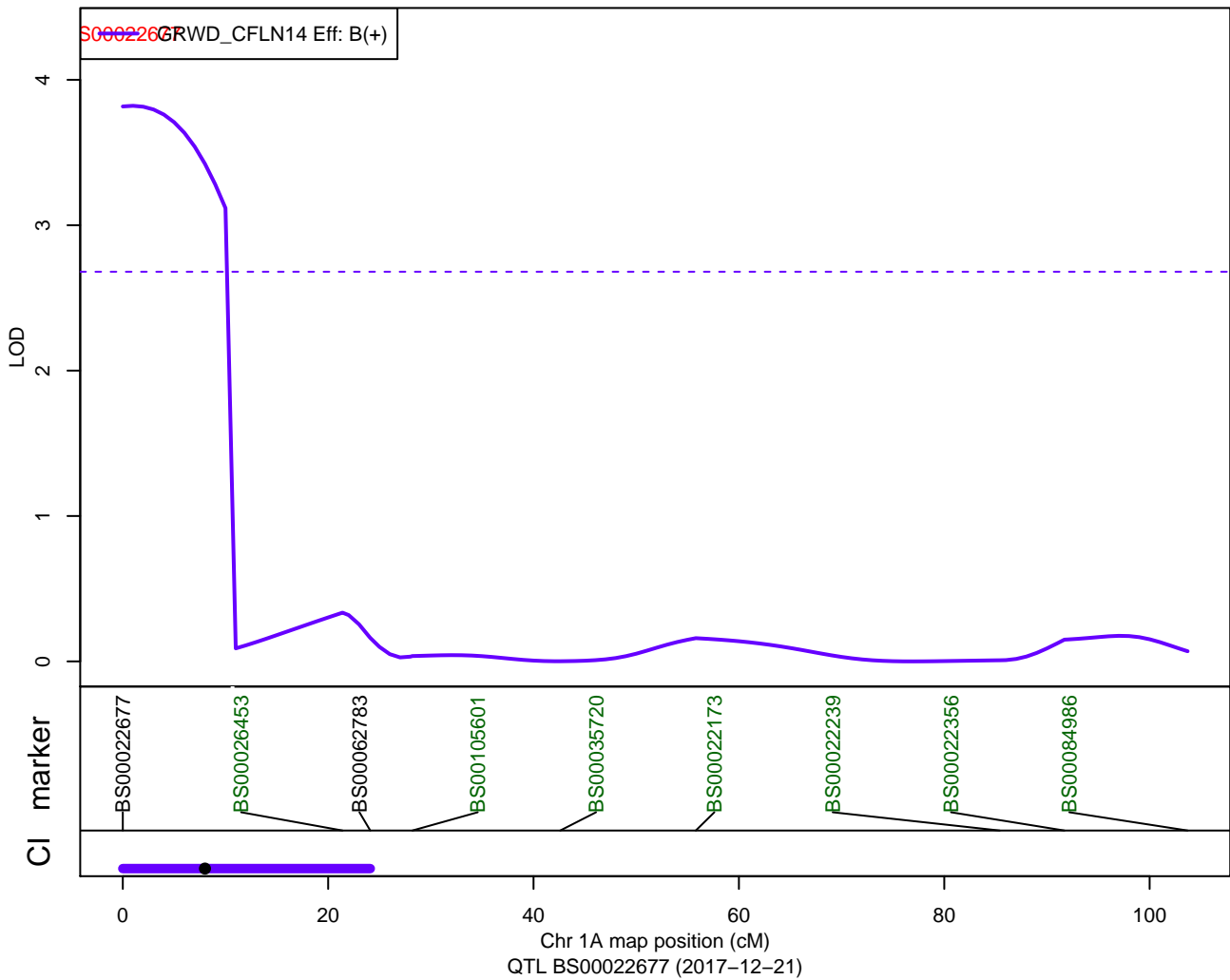
QTLs: ParW731 - DTEM - 2B



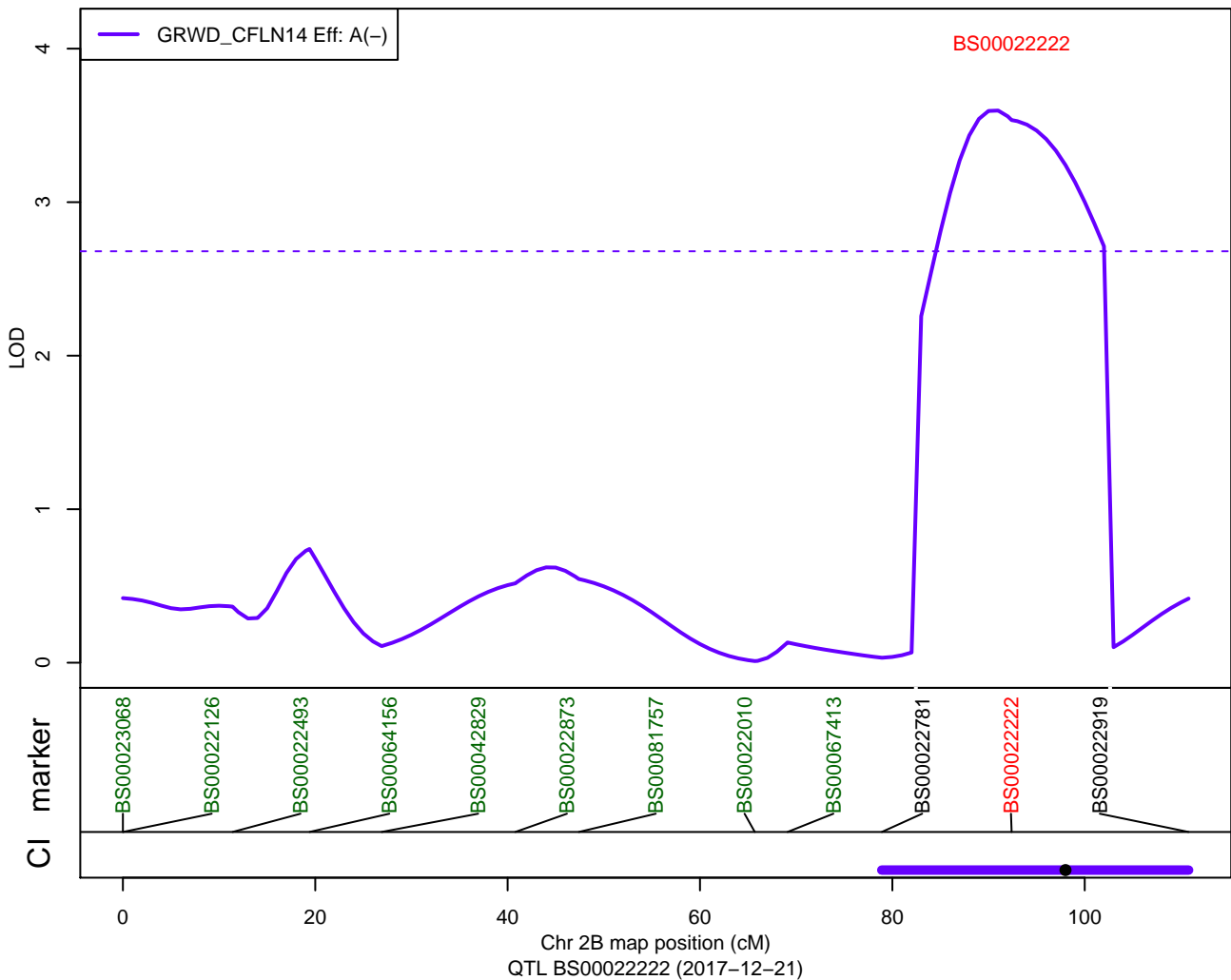
QTLs: ParW731 – GRSA – 7B



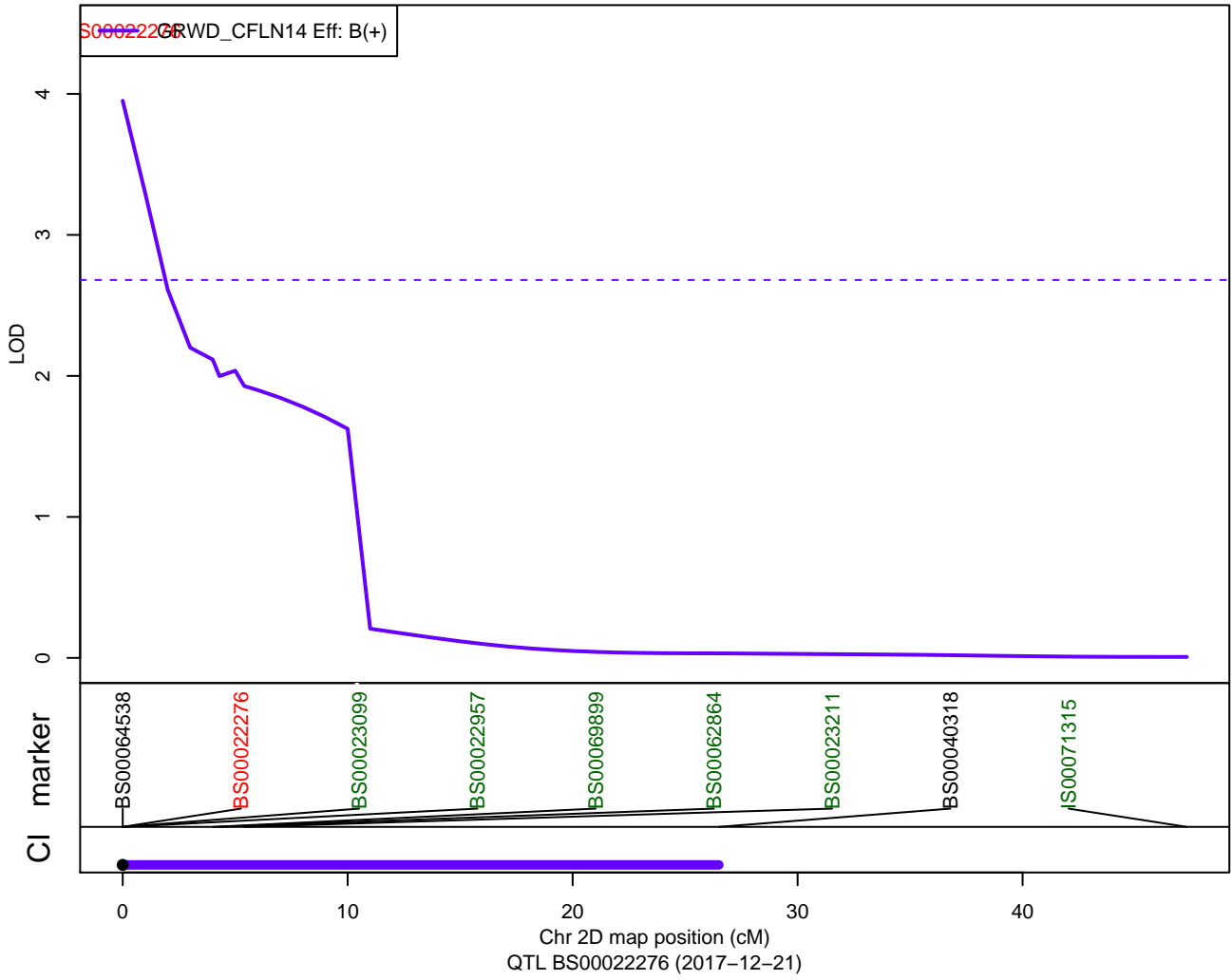
QTLs: ParW731 – GRWD – 1A



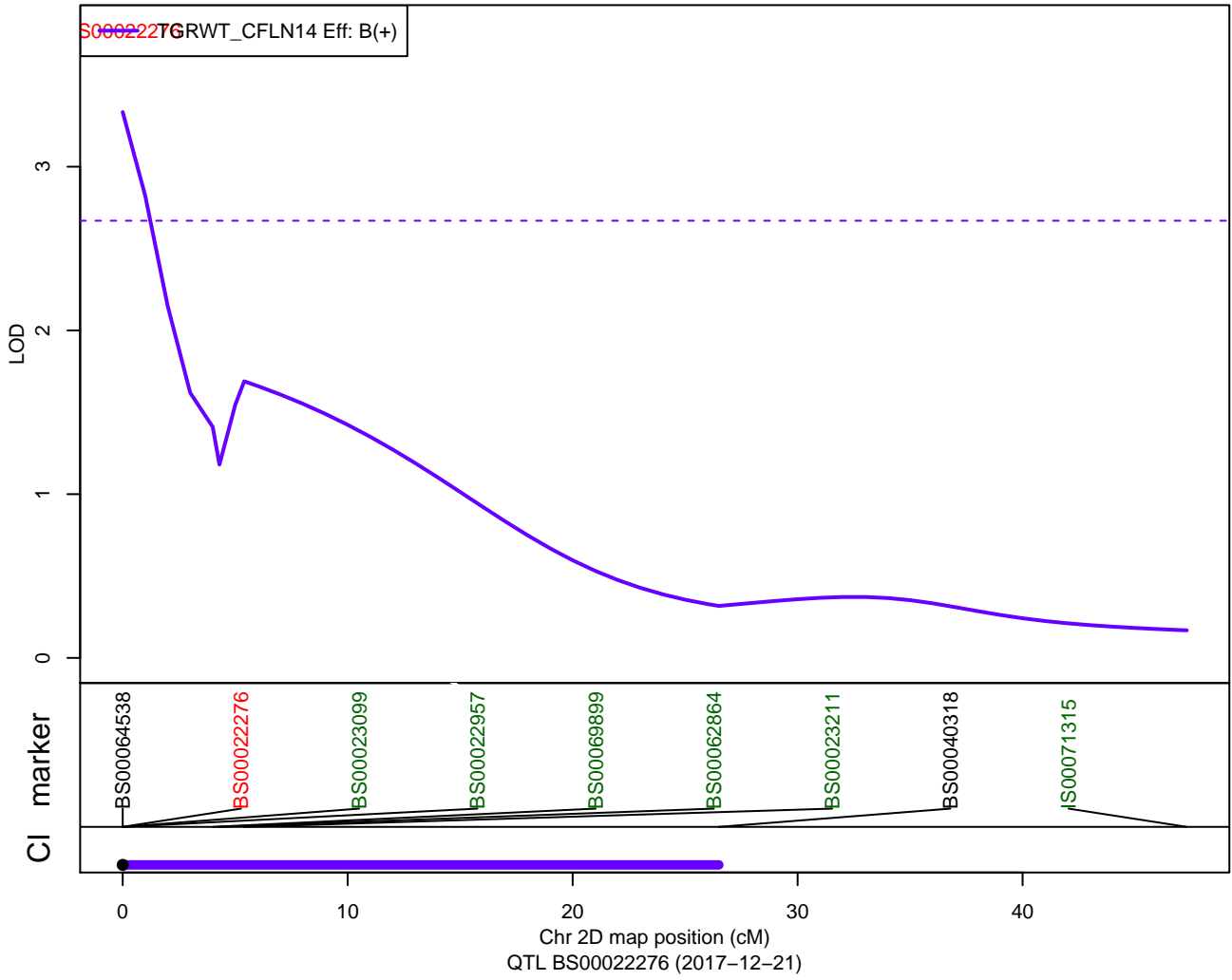
QTLs: ParW731 – GRWD – 2B



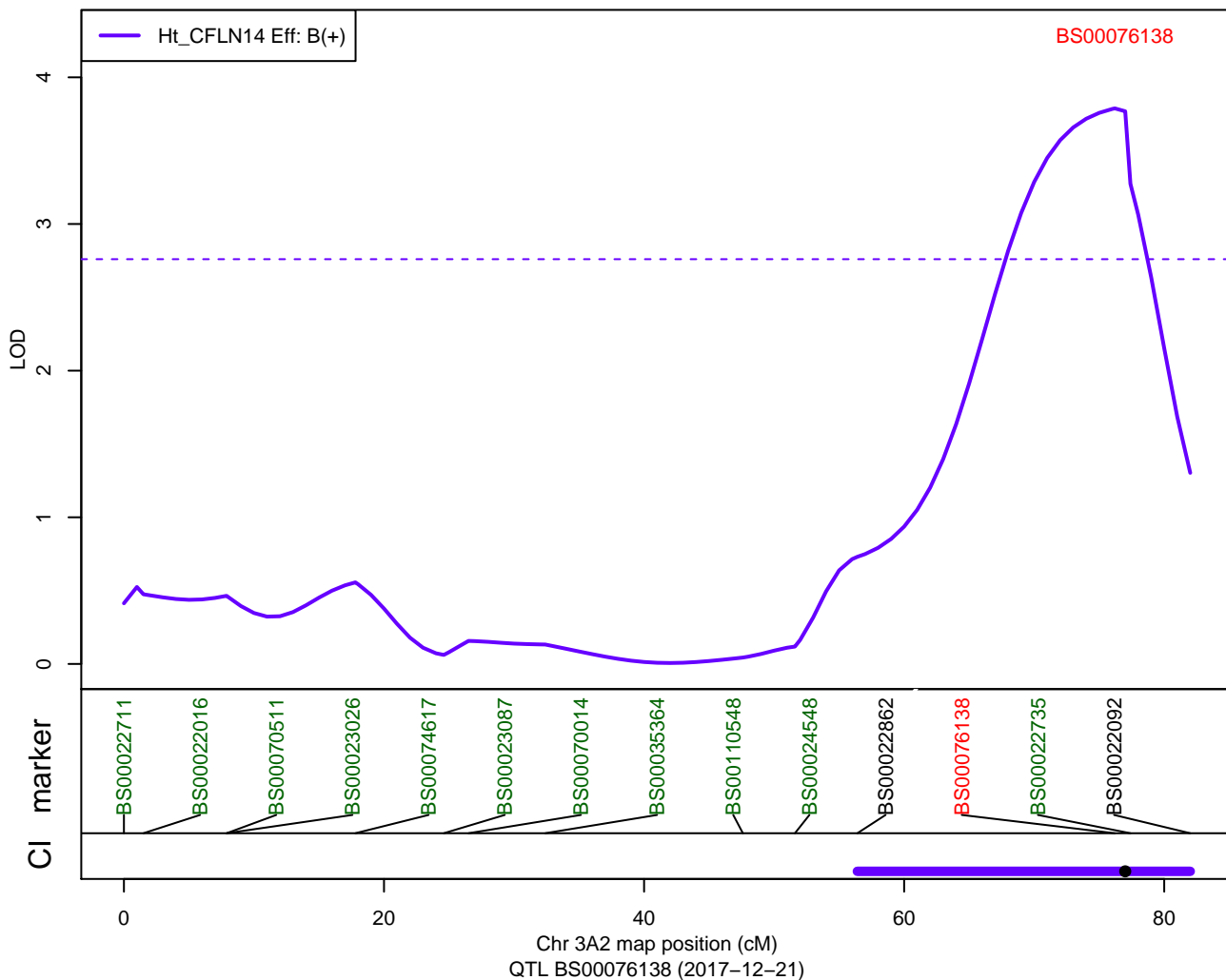
QTLs: ParW731 - GRWD - 2D



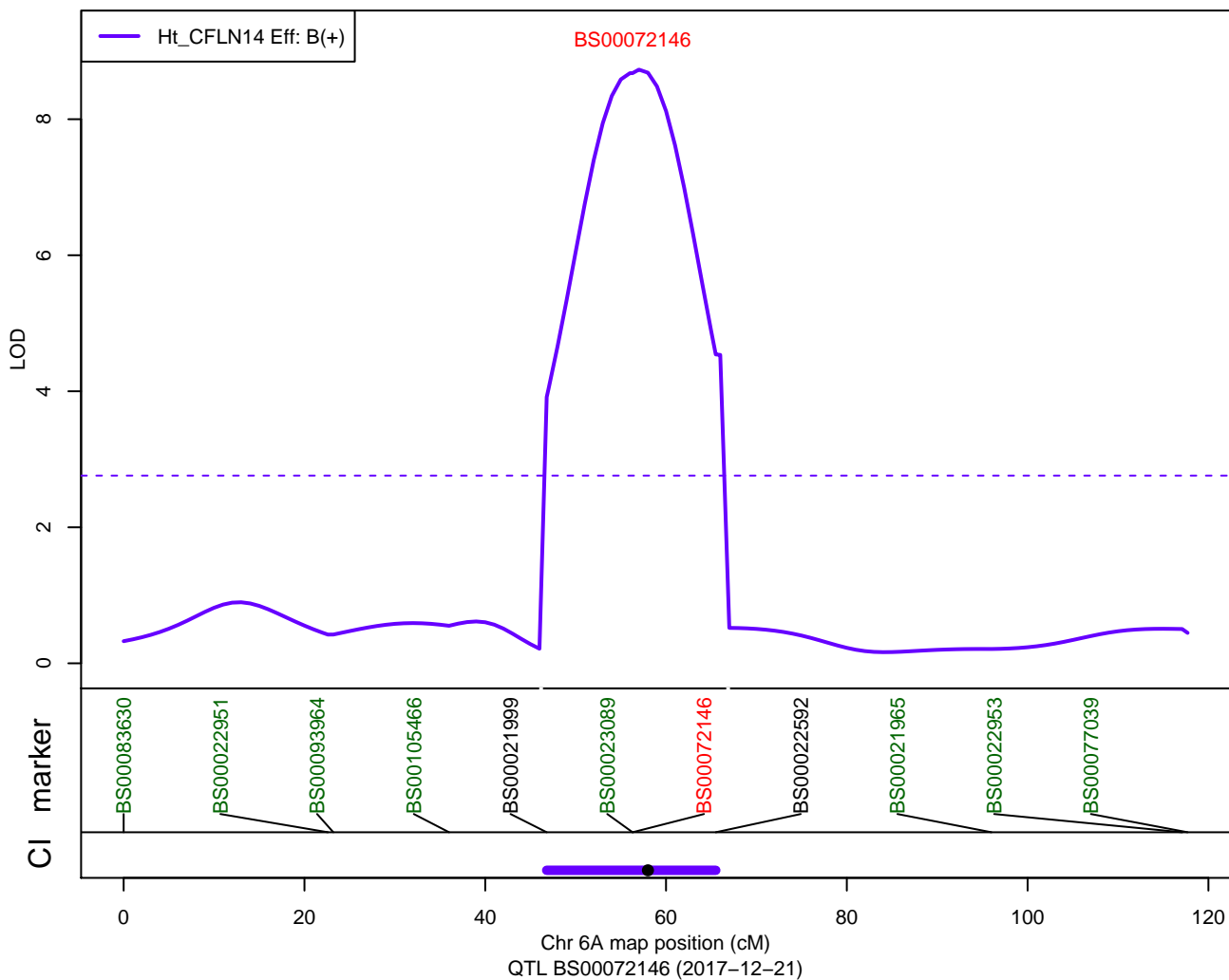
QTLs: ParW731 - TGRWT - 2D



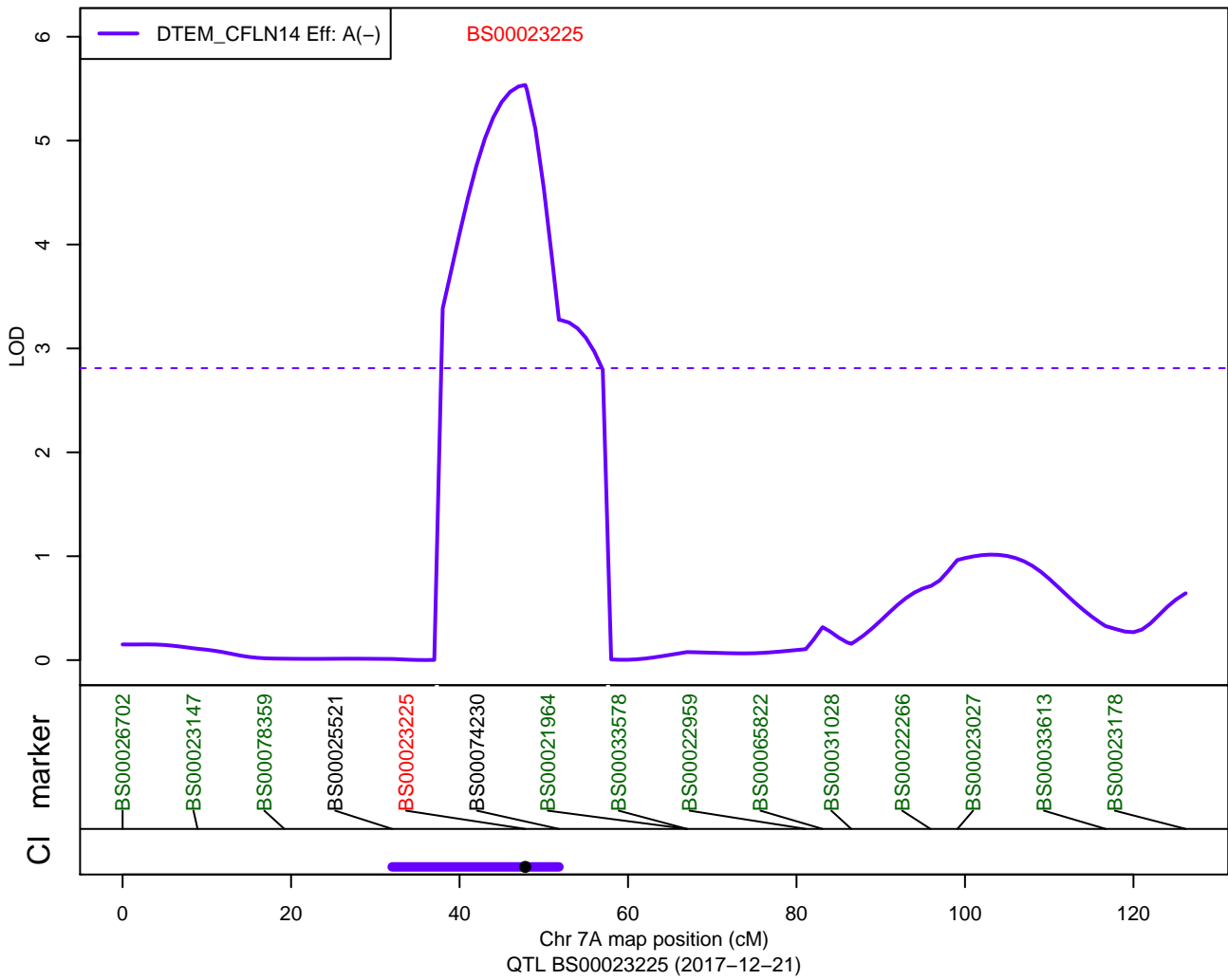
QTLs: ParW777 - Ht - 3A2



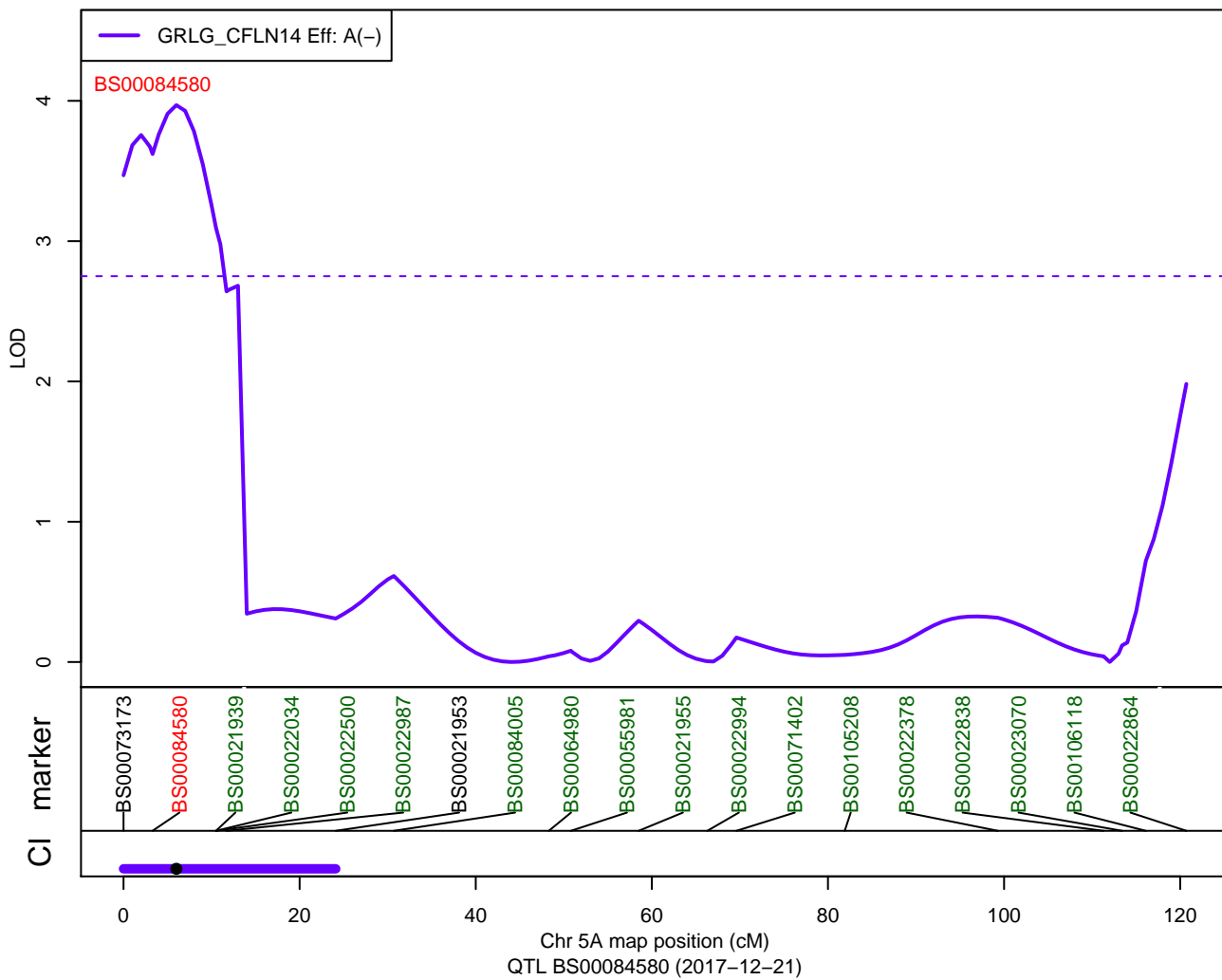
QTLs: ParW777 - Ht - 6A



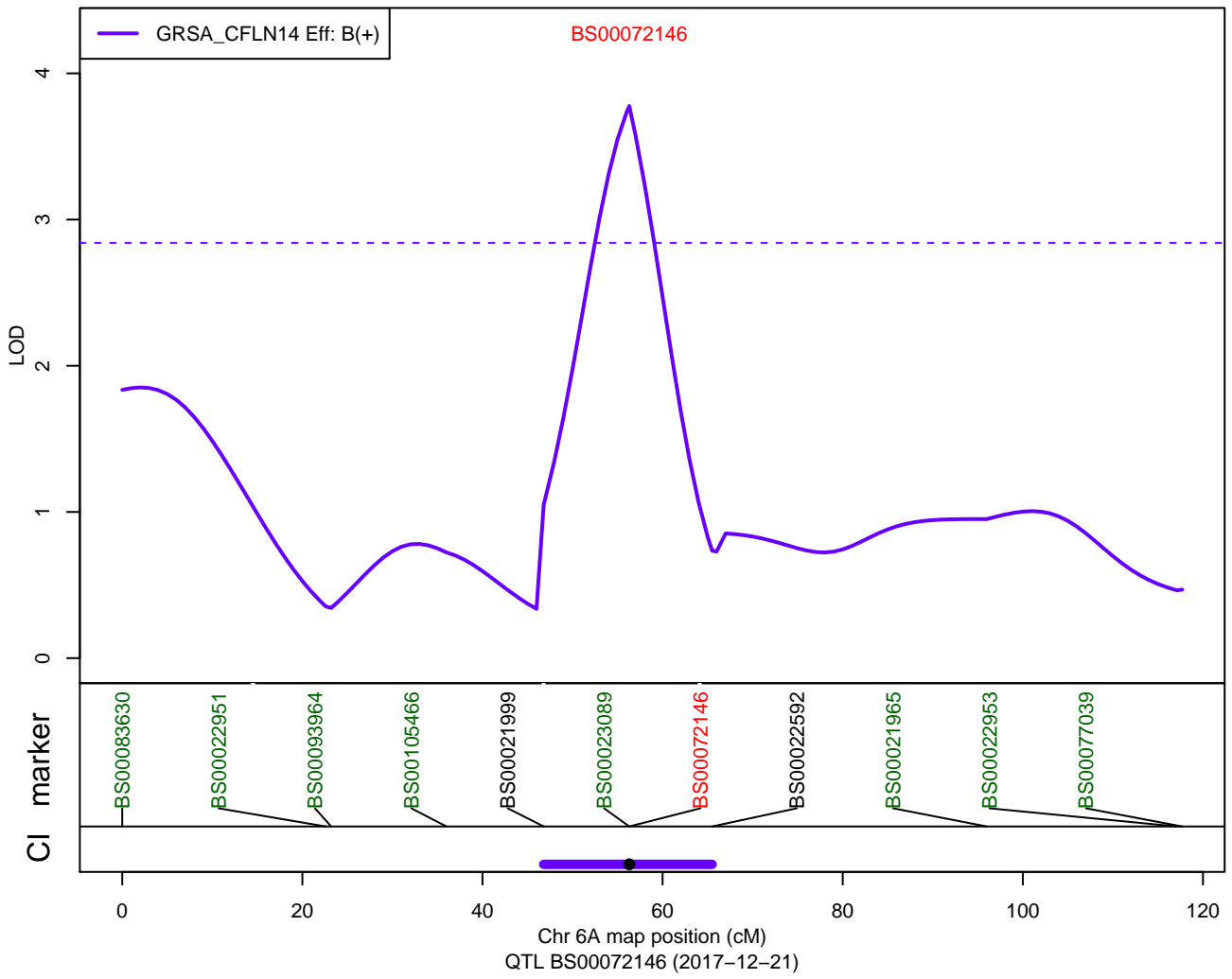
QTLs: ParW777 - DTEM - 7A



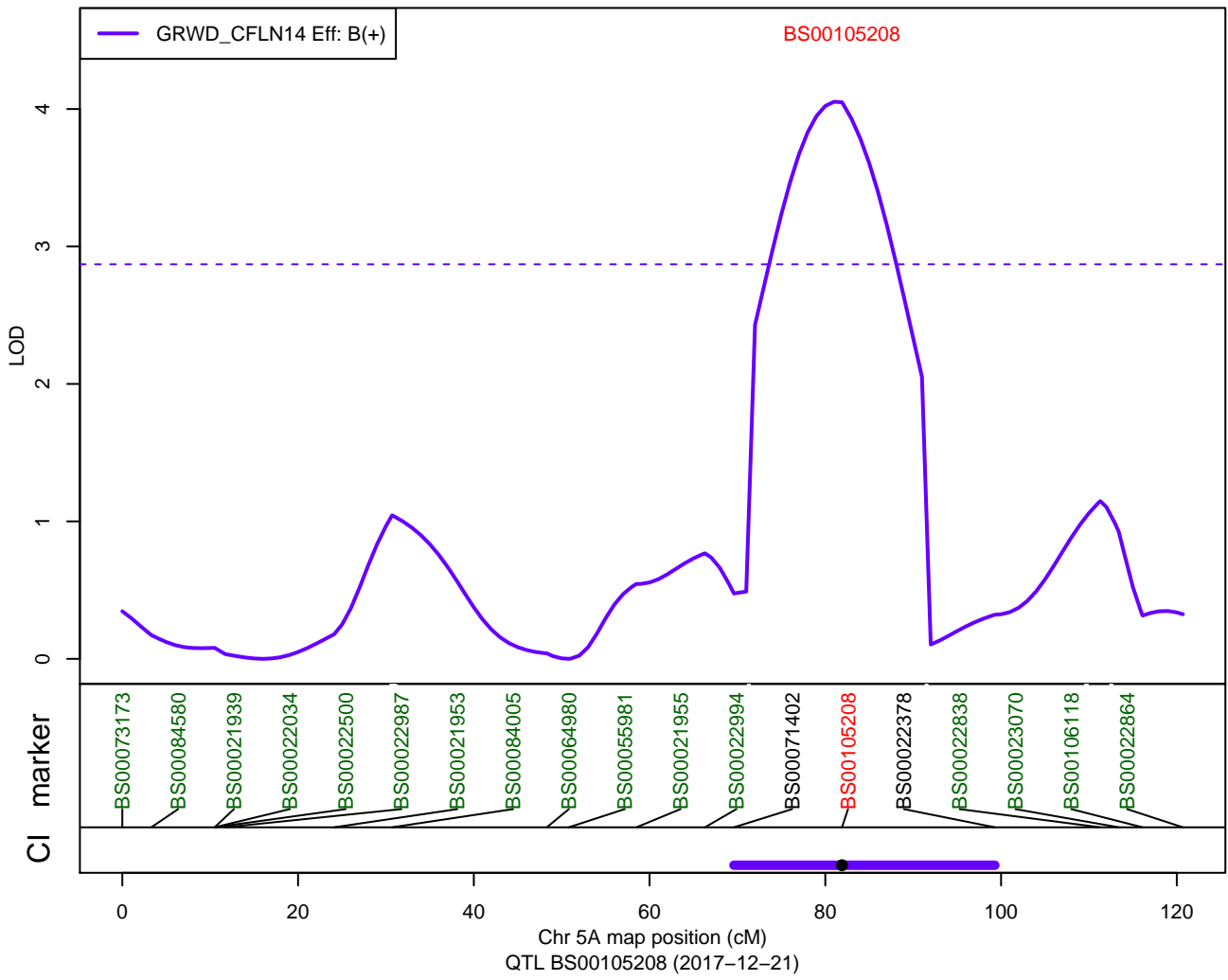
QTLs: ParW777 - GRLG - 5A



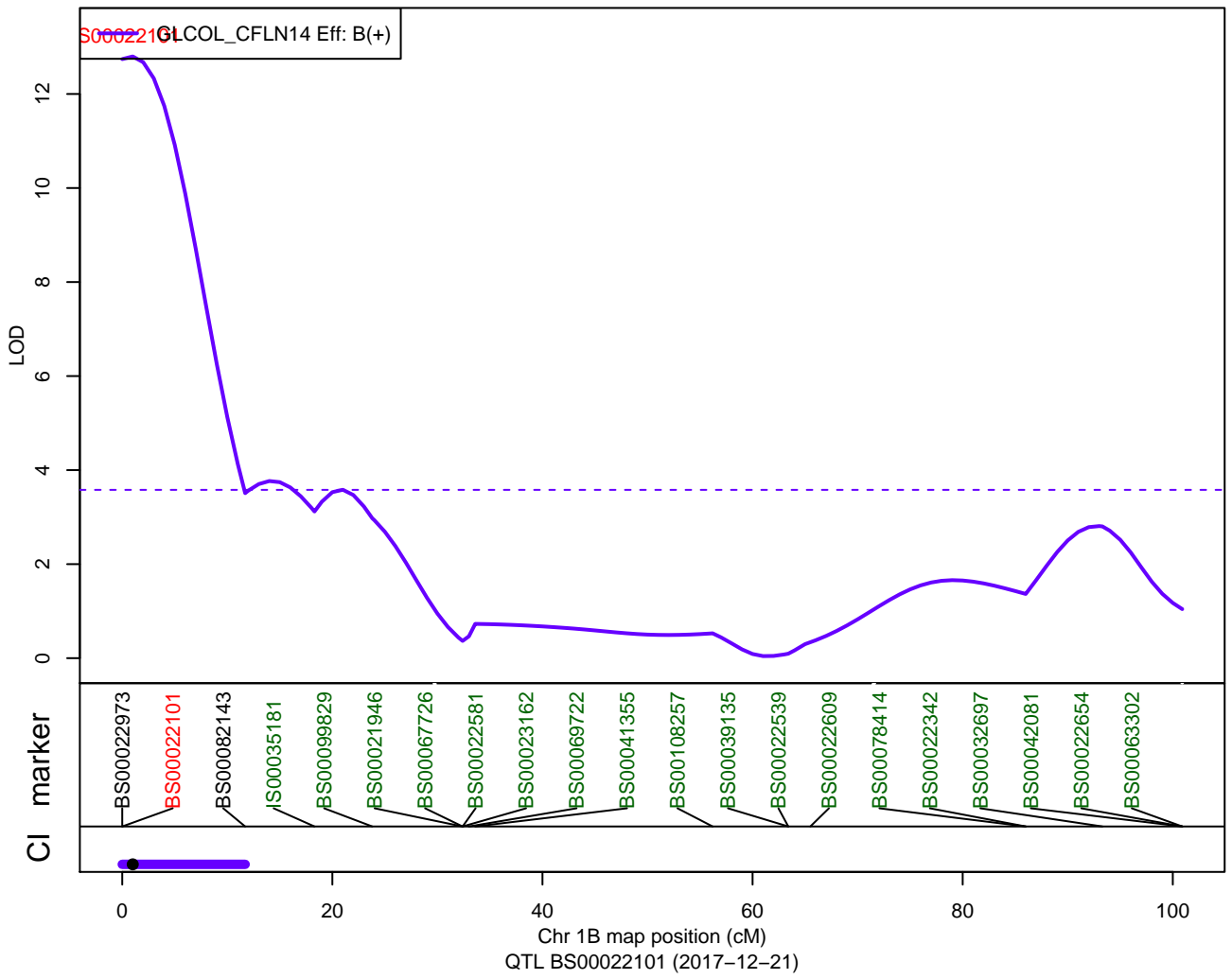
QTLs: ParW777 - GRSA - 6A



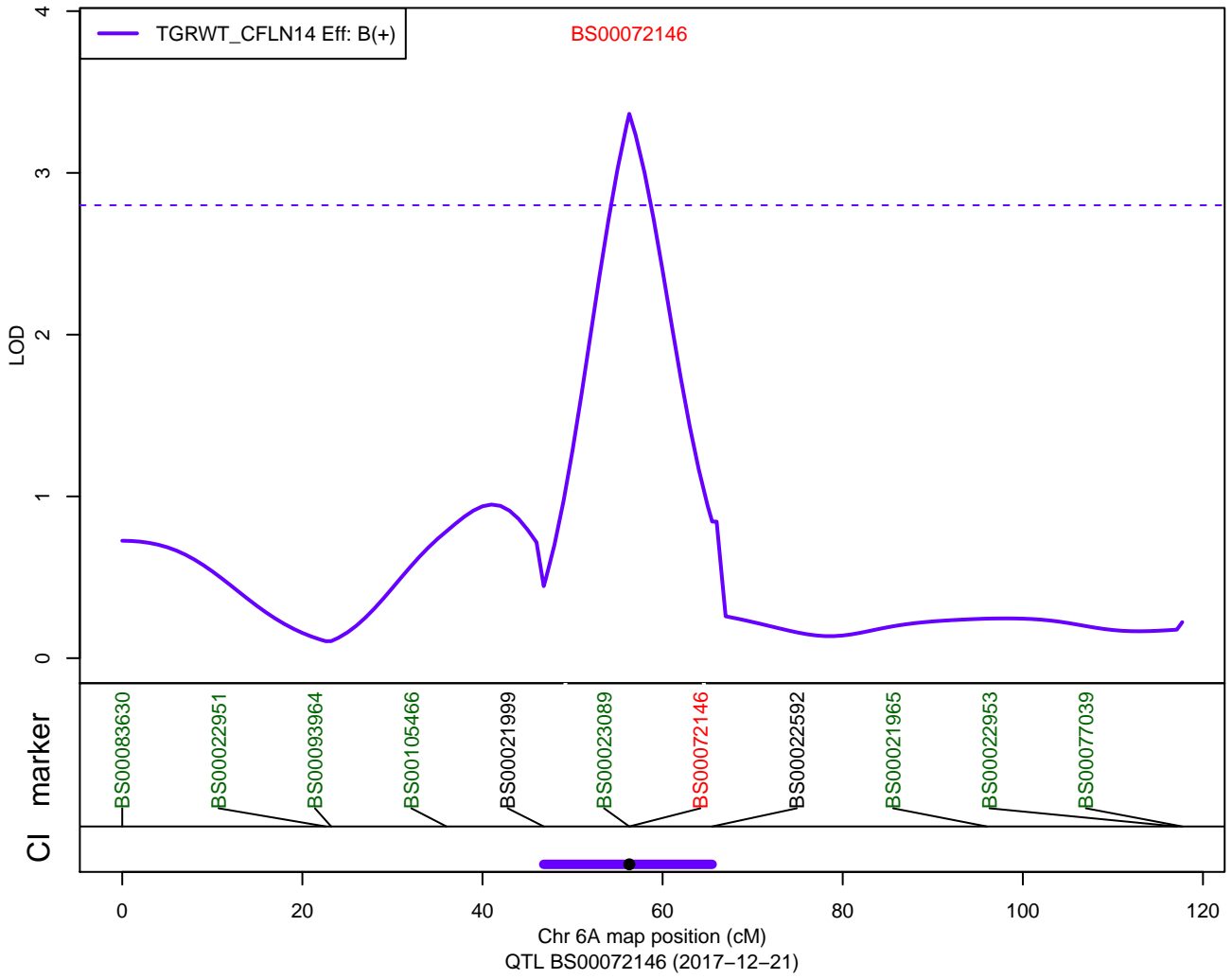
QTLs: ParW777 - GRWD - 5A



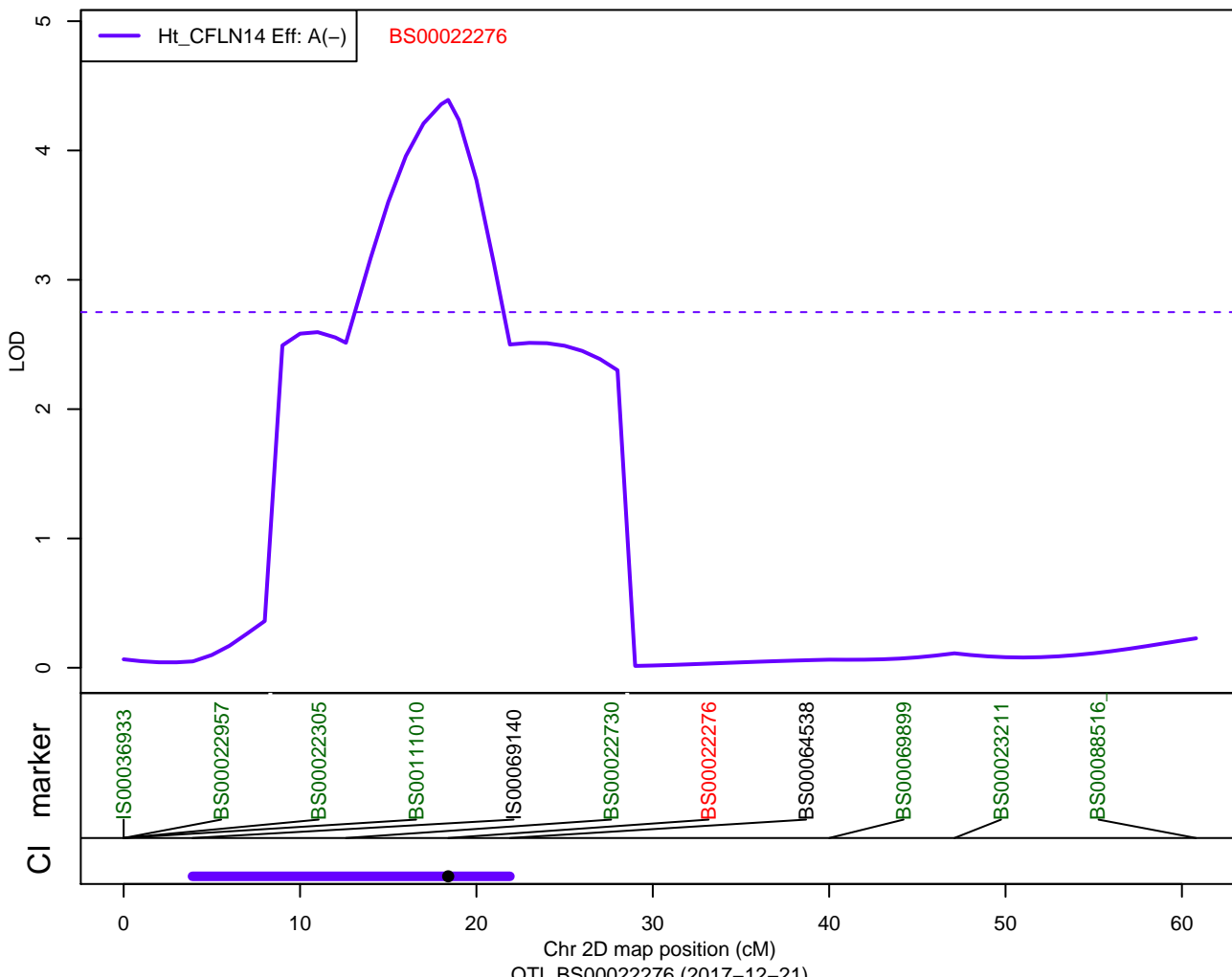
QTLs: ParW777 - GLCOL - 1B



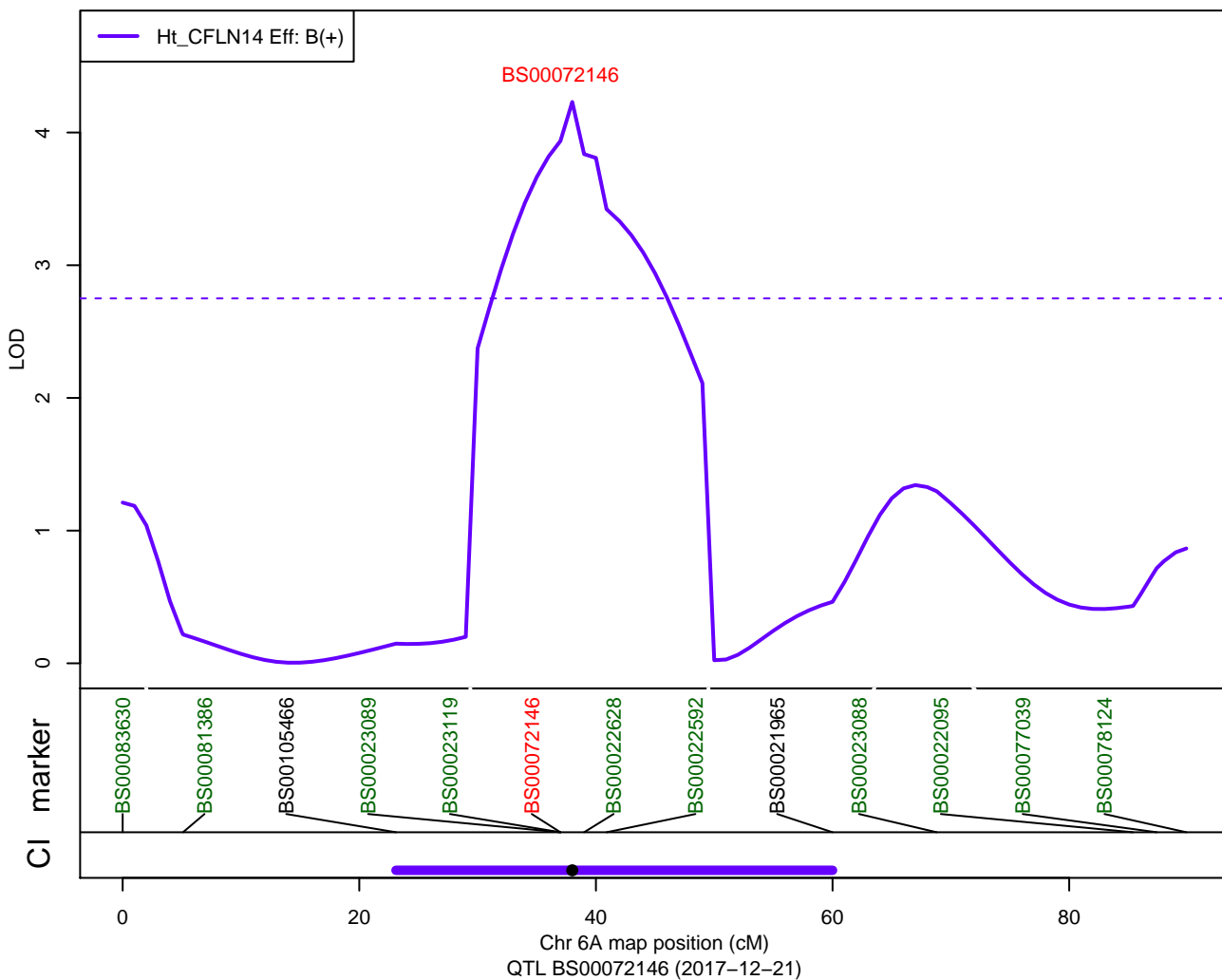
QTLs: ParW777 - TGRWT - 6A



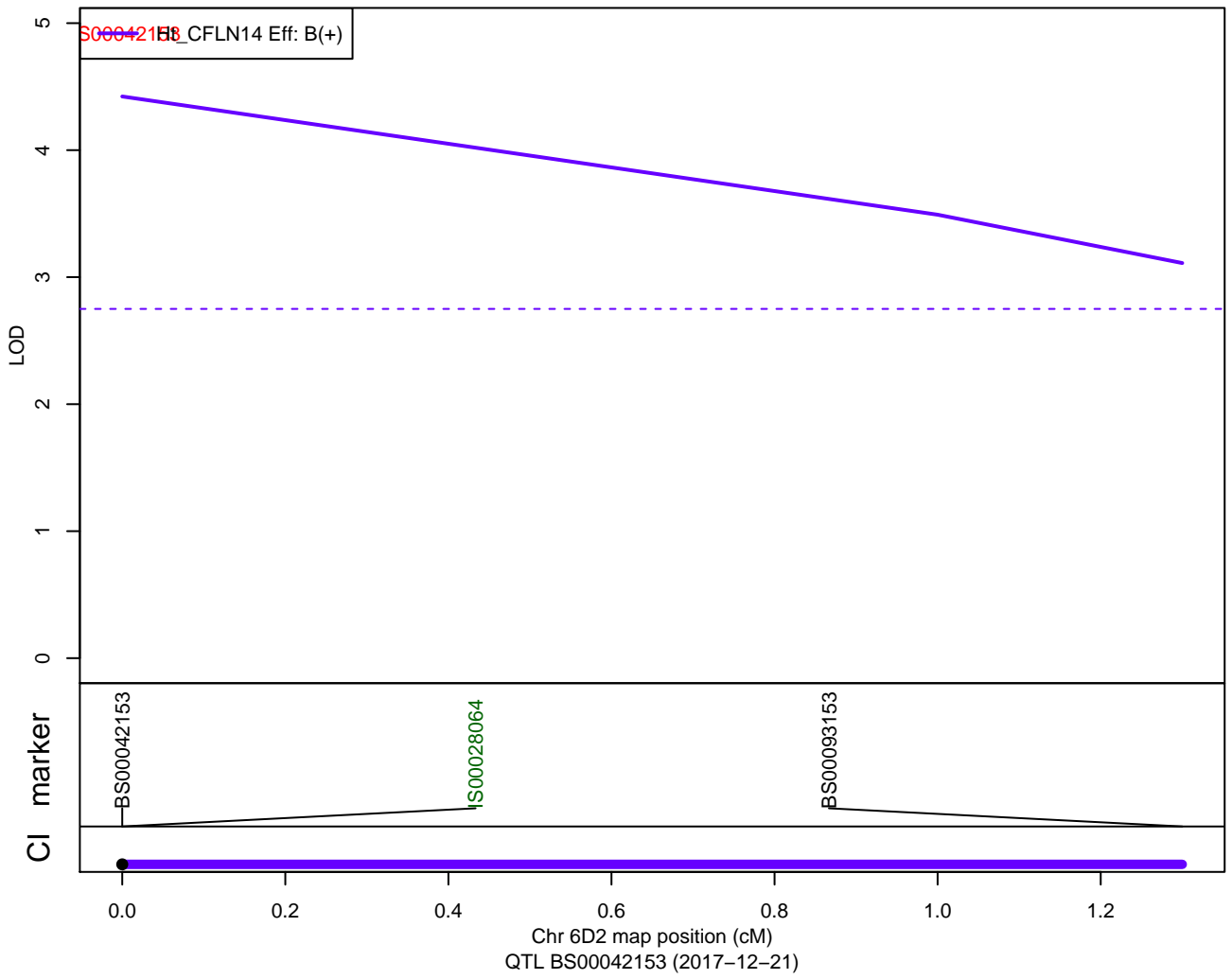
QTLs: ParW811 – Ht – 2D



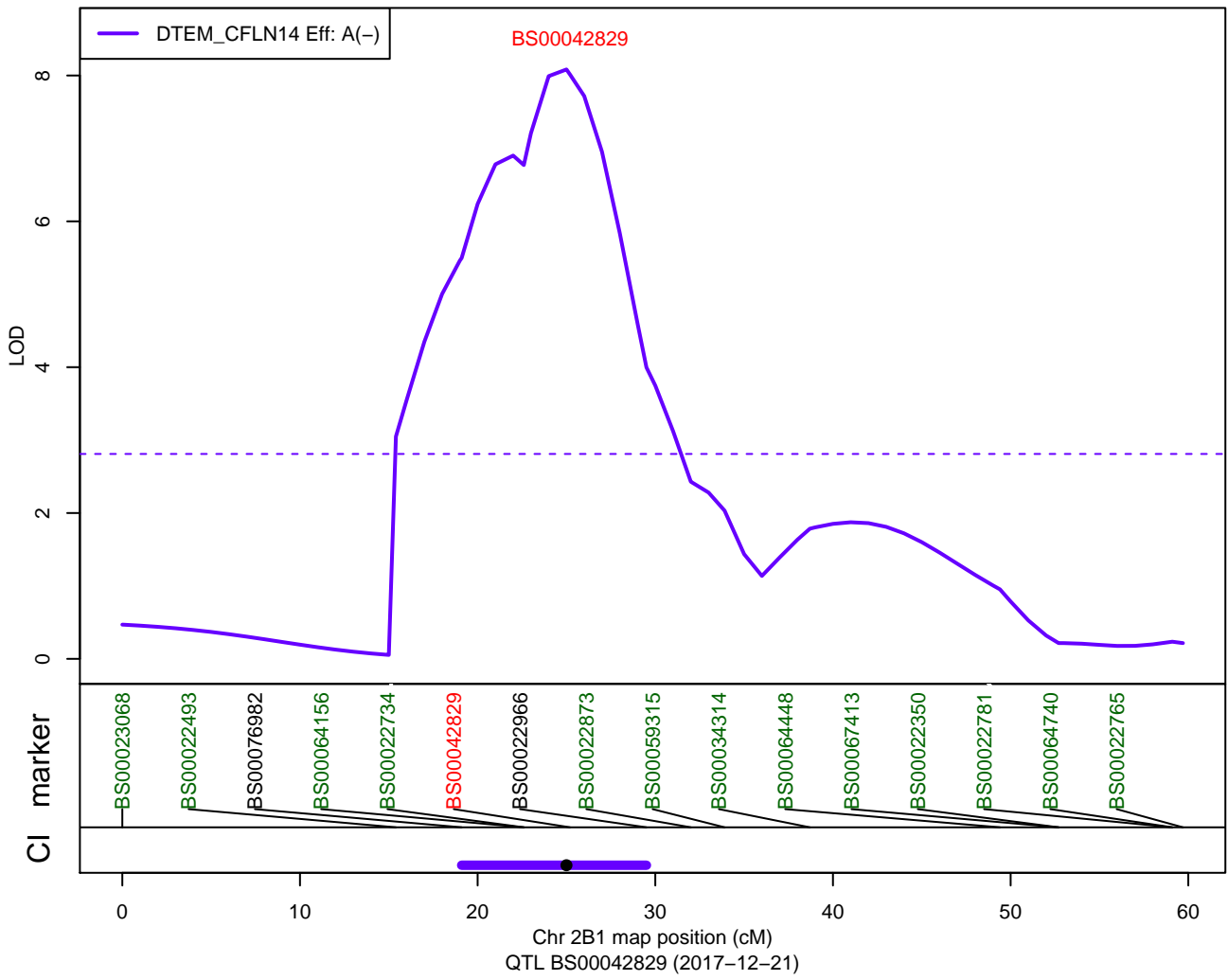
QTLs: ParW811 – Ht – 6A



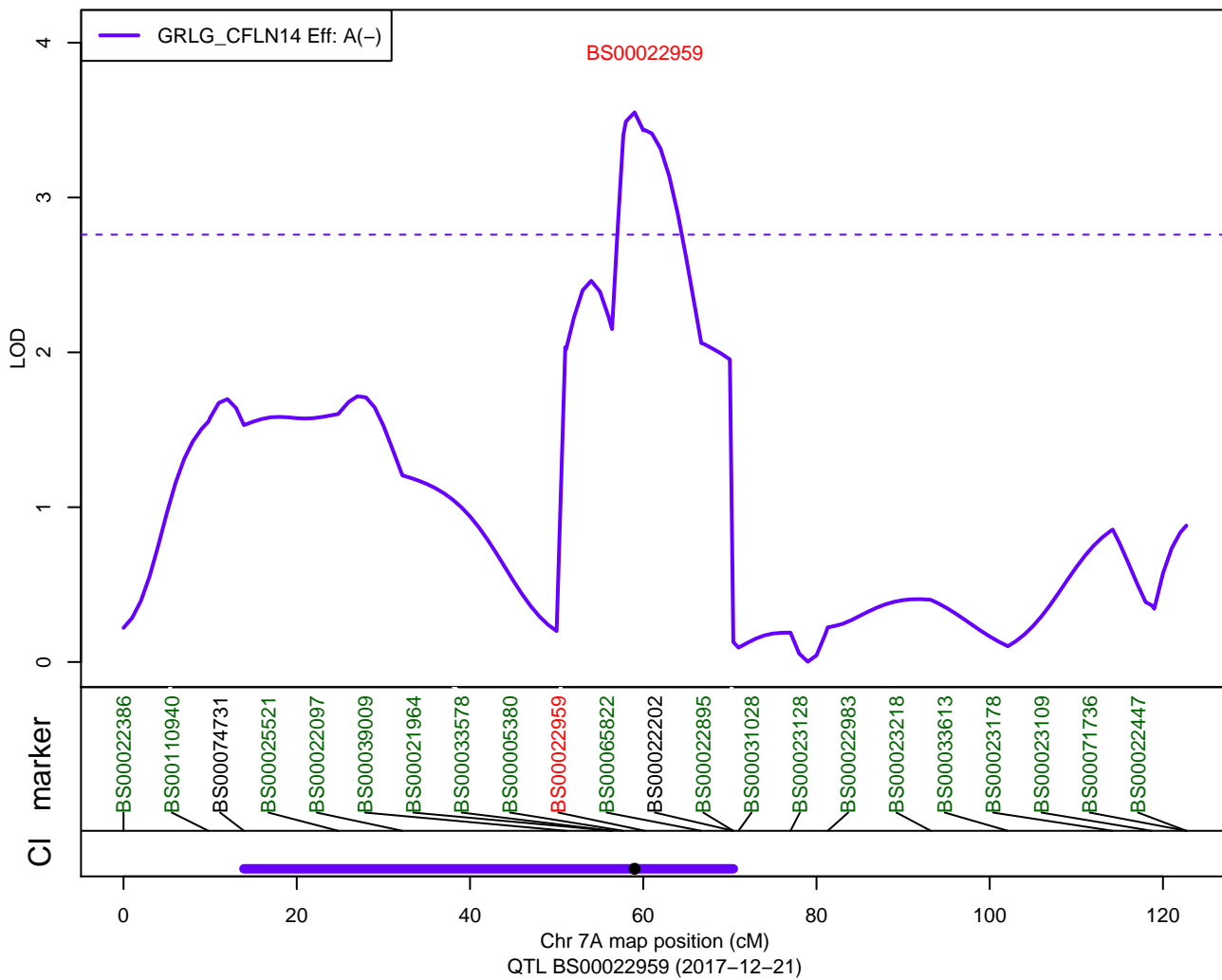
QTLs: ParW811 - Ht - 6D2



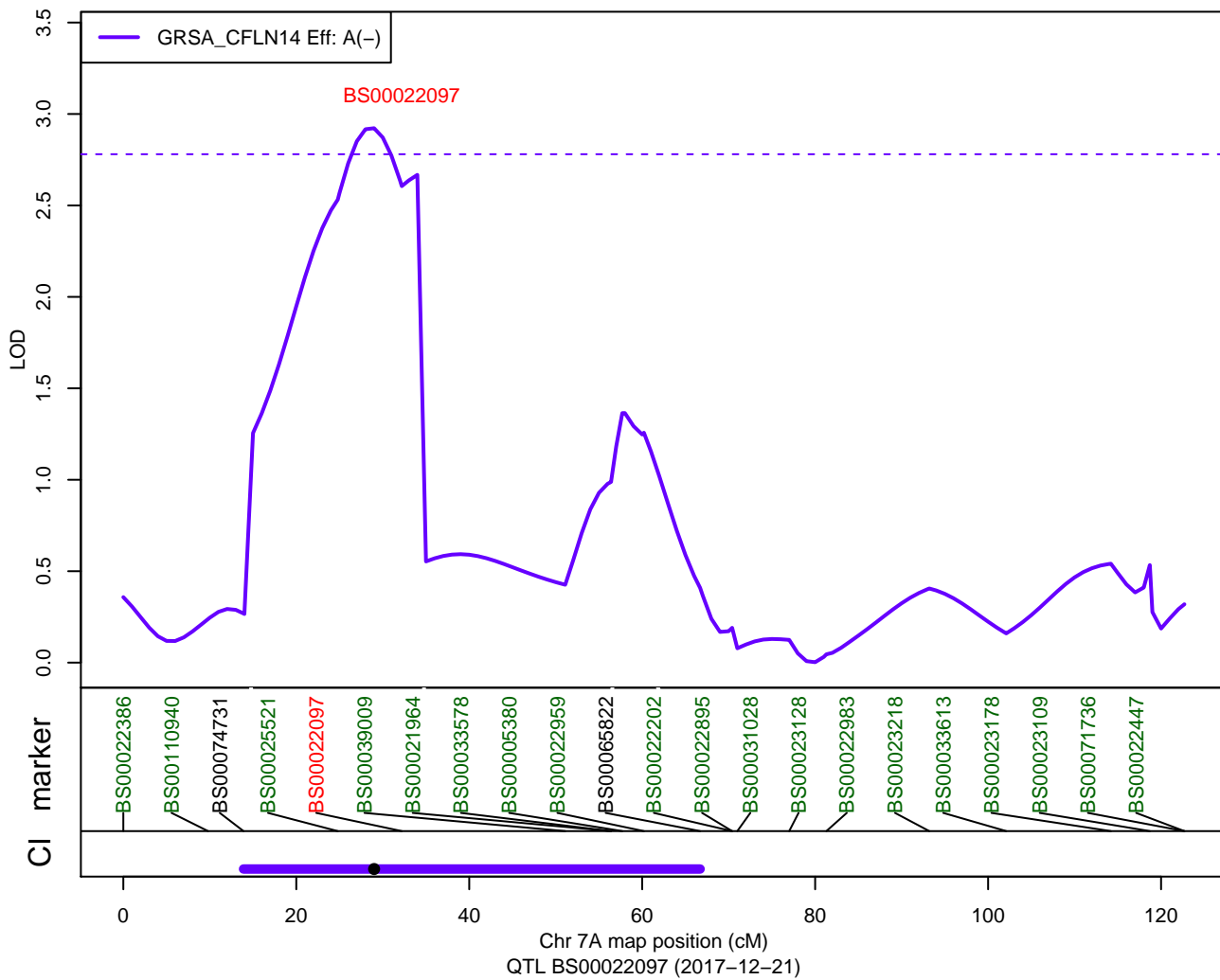
QTLs: ParW811 – DTEM – 2B1



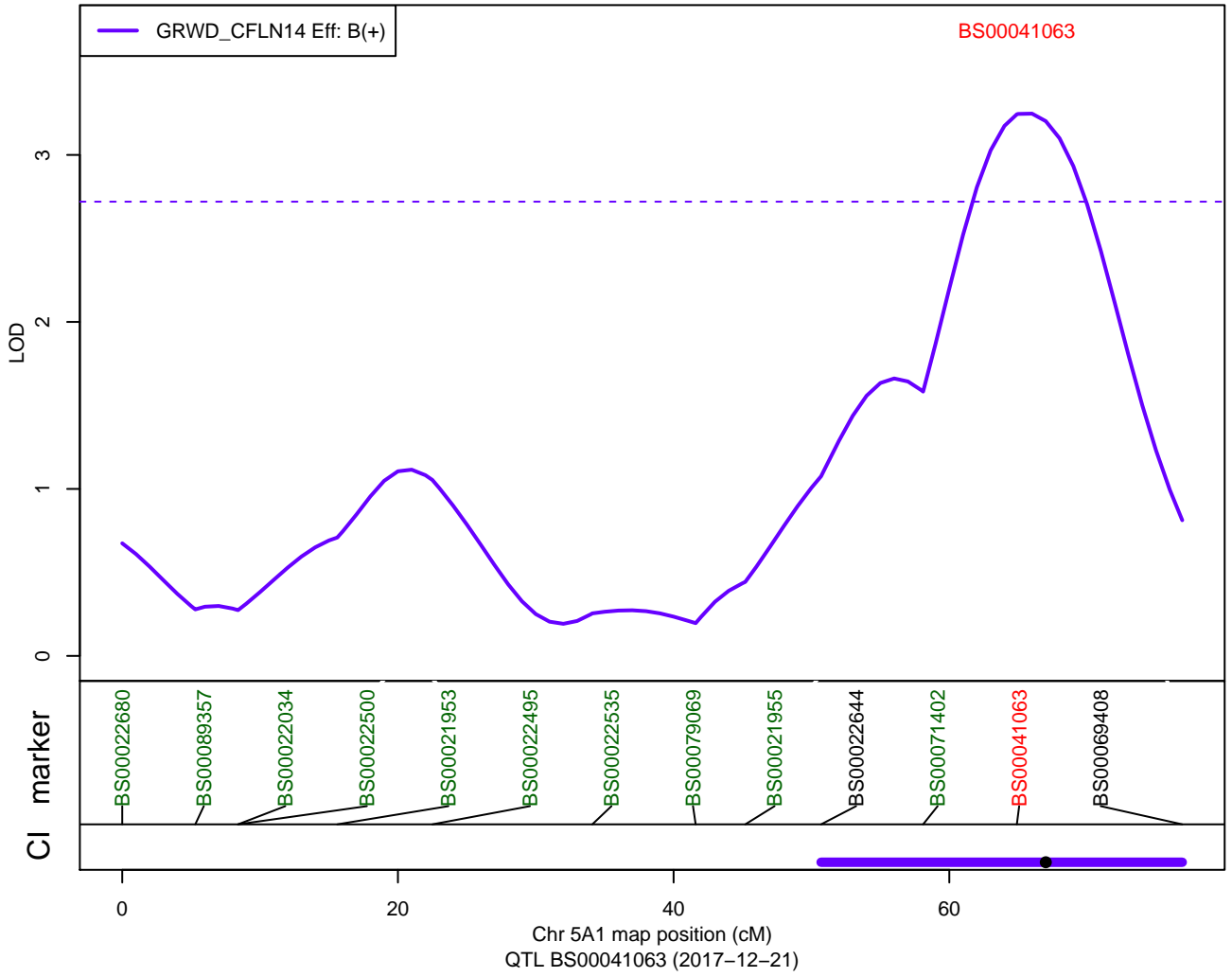
QTLs: ParW811 - GRLG - 7A



QTLs: ParW811 - GRSA - 7A



QTLs: ParW811 – GRWD – 5A1



QTLs: ParW811 - TGRWT - 6A

