



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 05:21 AM UTC

PDB ID : 6D7V / pdb_00006d7v
Title : Crystal Structure of Rat TRPV6*- in complex with brominated 2-Aminoethoxydiphenyl borate (2-APB-Br)
Authors : Singh, A.K.; Saotome, K.; McGoldrick, L.L.; Sobolevsky, A.I.
Deposited on : 2018-04-25
Resolution : 4.30 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

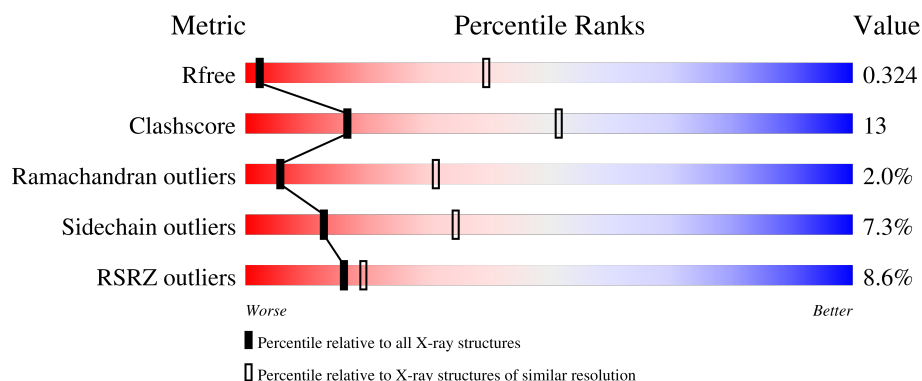
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 4.30 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1052 (4.70-3.90)
Clashscore	190562	1097 (4.70-3.90)
Ramachandran outliers	187476	1001 (4.70-3.90)
Sidechain outliers	187428	1007 (4.72-3.88)
RSRZ outliers	180081	1049 (4.70-3.90)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	672	

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 4744 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

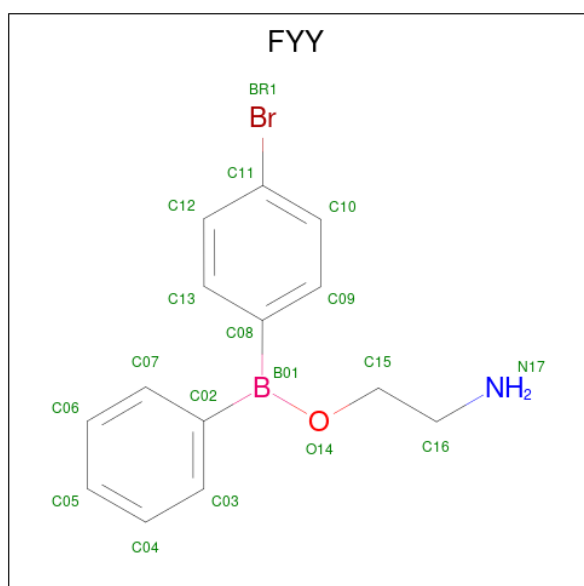
- Molecule 1 is a protein called Transient receptor potential cation channel subfamily V member 6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	592	Total	C	N	O	S	0	0	0
			4725	3059	791	841	34			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	62	TYR	ILE	conflict	UNP Q9R186
A	92	ASN	LEU	conflict	UNP Q9R186
A	96	GLN	MET	conflict	UNP Q9R186
A	670	VAL	-	expression tag	UNP Q9R186
A	671	PRO	-	expression tag	UNP Q9R186
A	672	ARG	-	expression tag	UNP Q9R186

- Molecule 2 is 2-aminoethyl (4-bromophenyl)phenylborinate (CCD ID: FYY) (formula: $C_{14}H_{15}BBrNO$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	B	Br	C	N	O	0	0
			18	1	1	14	1	1		

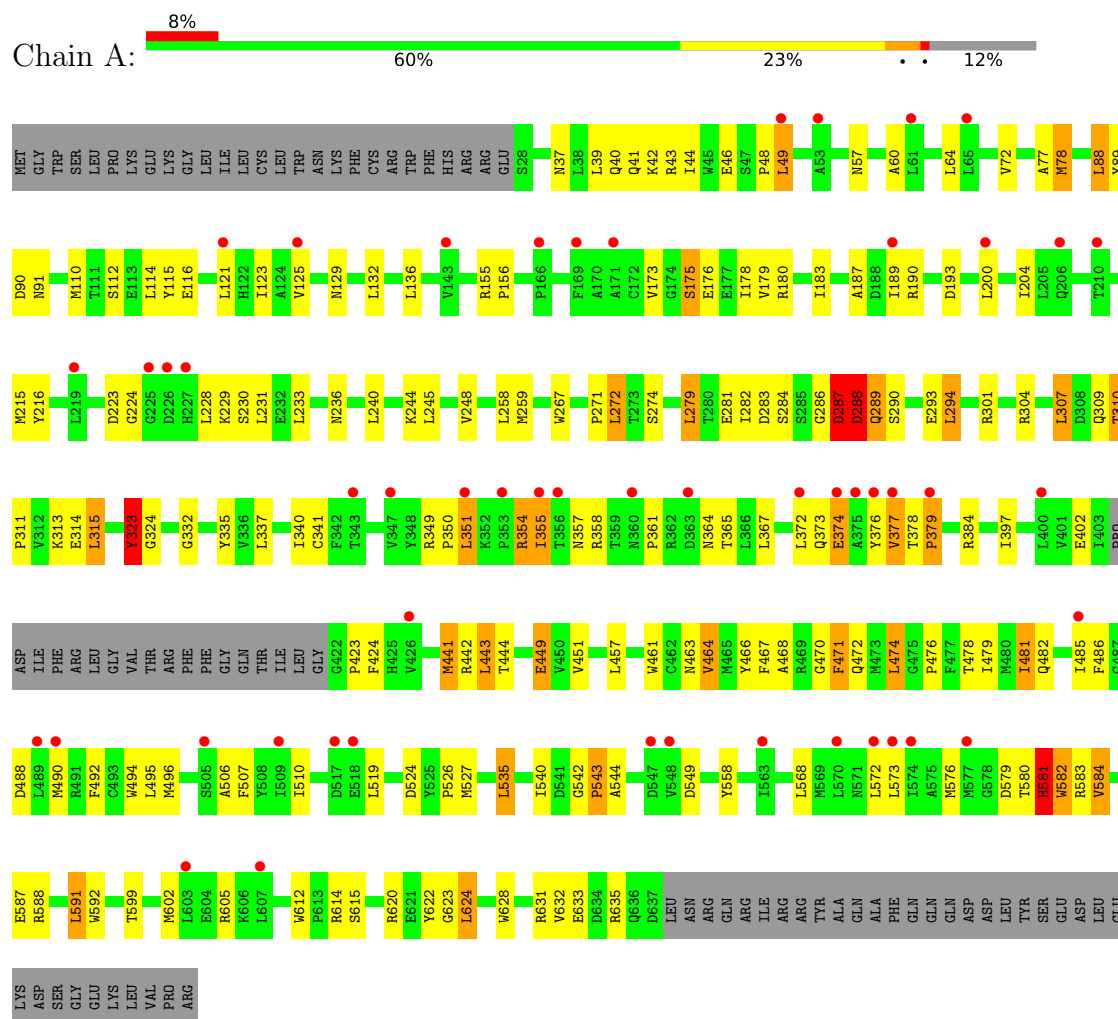
- Molecule 3 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Ca	0	0
			1	1		

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Transient receptor potential cation channel subfamily V member 6



4 Data and refinement statistics

Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α , β , γ	144.35Å 144.35Å 113.37Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.93 – 4.30 37.93 – 4.30	Depositor EDS
% Data completeness (in resolution range)	99.5 (37.93-4.30) 99.7 (37.93-4.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.32 (at 4.28Å)	Xtriage
Refinement program	PHENIX (1.12_2829: ???)	Depositor
R, R_{free}	0.304 , 0.315 0.319 , 0.324	Depositor DCC
R_{free} test set	858 reflections (10.00%)	wwPDB-VP
Wilson B-factor (Å ²)	200.1	Xtriage
Anisotropy	0.479	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.39 , 295.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.40$, $\langle L^2 \rangle = 0.23$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.74	EDS
Total number of atoms	4744	wwPDB-VP
Average B, all atoms (Å ²)	217.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.77% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CA, FYY

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.17	0/4833	0.63	18/6564 (0.3%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	289	GLN	N-CA-CB	21.43	146.72	110.49
1	A	354	ARG	N-CA-C	15.46	129.00	110.91
1	A	582	TRP	N-CA-CB	-11.47	91.70	110.40
1	A	582	TRP	N-CA-C	11.29	126.89	112.89
1	A	471	PHE	N-CA-C	-10.00	93.12	108.31
1	A	581	HIS	N-CA-C	-9.92	89.67	110.80
1	A	358	ARG	N-CA-CB	8.98	125.09	110.55
1	A	323	TYR	CB-CA-C	-8.58	93.35	110.42
1	A	354	ARG	CB-CA-C	-8.36	97.64	112.27
1	A	289	GLN	N-CA-C	-7.79	94.20	110.80
1	A	355	ILE	N-CA-C	7.50	124.93	109.34
1	A	288	ASP	CA-C-N	6.62	134.19	121.54
1	A	288	ASP	C-N-CA	6.62	134.19	121.54
1	A	288	ASP	O-C-N	-5.48	115.31	122.59
1	A	287	ASP	N-CA-C	-5.42	105.38	111.28
1	A	472	GLN	N-CA-C	5.31	122.10	110.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	472	GLN	N-CA-CB	-5.17	101.75	110.49
1	A	324	GLY	N-CA-C	-5.14	100.99	113.18

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	288	ASP	Peptide

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4725	0	4747	121	0
2	A	18	0	0	0	0
3	A	1	0	0	0	0
All	All	4744	0	4747	121	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 13.

All (121) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:288:ASP:OD1	1:A:293:GLU:OE1	1.74	1.05
1:A:354:ARG:O	1:A:354:ARG:HG2	1.62	0.98
1:A:288:ASP:O	1:A:290:SER:N	1.98	0.95
1:A:323:TYR:O	1:A:612:TRP:CZ3	2.21	0.93
1:A:524:ASP:HB3	1:A:526:PRO:HD2	1.63	0.80
1:A:323:TYR:O	1:A:612:TRP:HZ3	1.59	0.80
1:A:580:THR:C	1:A:581:HIS:O	2.14	0.78
1:A:301:ARG:HG3	1:A:304:ARG:HH12	1.56	0.70
1:A:519:LEU:HD21	1:A:543:PRO:HB3	1.75	0.68
1:A:580:THR:O	1:A:581:HIS:O	2.11	0.67
1:A:535:LEU:HD11	1:A:542:GLY:HA2	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:542:GLY:O	1:A:544:ALA:N	2.29	0.65
1:A:230:SER:HB3	1:A:233:LEU:HD23	1.77	0.65
1:A:288:ASP:O	1:A:290:SER:CB	2.46	0.63
1:A:441:MET:HG2	1:A:449:GLU:HA	1.80	0.63
1:A:288:ASP:HA	1:A:293:GLU:OE1	2.00	0.62
1:A:524:ASP:HB2	1:A:527:MET:HG2	1.82	0.61
1:A:286:GLY:O	1:A:287:ASP:C	2.38	0.61
1:A:204:ILE:HD12	1:A:245:LEU:HD23	1.83	0.60
1:A:288:ASP:O	1:A:290:SER:HB3	2.02	0.59
1:A:78:MET:HE1	1:A:114:LEU:HD12	1.86	0.58
1:A:476:PRO:HA	1:A:479:ILE:HG22	1.87	0.57
1:A:315:LEU:HD21	1:A:615:SER:HB3	1.87	0.56
1:A:314:GLU:HG3	1:A:632:VAL:HG11	1.87	0.56
1:A:423:PRO:HG2	1:A:482:GLN:HG3	1.86	0.56
1:A:48:PRO:HB2	1:A:64:LEU:HD21	1.88	0.55
1:A:129:ASN:HB3	1:A:132:LEU:HB3	1.88	0.55
1:A:350:PRO:HB3	1:A:372:LEU:HB2	1.88	0.55
1:A:244:LYS:HE2	1:A:281:GLU:HB3	1.90	0.54
1:A:335:TYR:HD2	1:A:464:VAL:HG23	1.72	0.54
1:A:183:ILE:HD13	1:A:187:ALA:HB3	1.90	0.54
1:A:223:ASP:OD1	1:A:224:GLY:N	2.39	0.53
1:A:89:TYR:O	1:A:91:ASN:N	2.41	0.53
1:A:470:GLY:O	1:A:471:PHE:C	2.51	0.52
1:A:43:ARG:NH1	1:A:46:GLU:OE1	2.43	0.52
1:A:310:THR:HA	1:A:313:LYS:HG2	1.92	0.51
1:A:88:LEU:HA	1:A:123:ILE:HG21	1.93	0.51
1:A:424:PHE:CG	1:A:466:TYR:HB2	2.46	0.51
1:A:155:ARG:HE	1:A:156:PRO:HD2	1.76	0.50
1:A:540:ILE:HG22	1:A:542:GLY:H	1.76	0.50
1:A:354:ARG:O	1:A:354:ARG:CG	2.33	0.50
1:A:506:ALA:O	1:A:510:ILE:HG12	2.12	0.49
1:A:40:GLN:O	1:A:44:ILE:HG12	2.13	0.49
1:A:583:ARG:HH21	1:A:587:GLU:HG3	1.76	0.49
1:A:479:ILE:HD11	1:A:591:LEU:HD22	1.95	0.49
1:A:78:MET:C	1:A:112:SER:HB2	2.36	0.49
1:A:288:ASP:C	1:A:290:SER:N	2.58	0.48
1:A:288:ASP:O	1:A:289:GLN:C	2.57	0.48
1:A:481:ILE:HG12	1:A:485:ILE:HG12	1.95	0.48
1:A:349:ARG:HB2	1:A:350:PRO:HD2	1.96	0.48
1:A:612:TRP:CD1	1:A:612:TRP:O	2.67	0.48
1:A:376:TYR:C	1:A:377:VAL:HG23	2.39	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:478:THR:HA	1:A:481:ILE:HG22	1.96	0.48
1:A:179:VAL:HG21	1:A:215:MET:SD	2.53	0.48
1:A:461:TRP:O	1:A:464:VAL:HG12	2.14	0.47
1:A:259:MET:HE3	1:A:311:PRO:HG3	1.96	0.47
1:A:287:ASP:OD1	1:A:287:ASP:N	2.47	0.47
1:A:293:GLU:OE2	1:A:605:ARG:NH2	2.46	0.47
1:A:176:GLU:HG2	1:A:180:ARG:HH12	1.79	0.47
1:A:350:PRO:HD3	1:A:384:ARG:NH1	2.30	0.47
1:A:442:ARG:C	1:A:444:THR:H	2.22	0.47
1:A:271:PRO:HB2	1:A:635:ARG:HG3	1.97	0.47
1:A:351:LEU:HD22	1:A:372:LEU:HD11	1.97	0.47
1:A:463:ASN:O	1:A:466:TYR:HB3	2.15	0.46
1:A:620:ARG:C	1:A:622:TYR:H	2.22	0.46
1:A:190:ARG:HD2	1:A:231:LEU:HD13	1.97	0.46
1:A:488:ASP:O	1:A:492:PHE:N	2.43	0.46
1:A:57:ASN:HB3	1:A:60:ALA:HB3	1.97	0.46
1:A:492:PHE:CZ	1:A:572:LEU:HG	2.51	0.46
1:A:579:ASP:HB3	1:A:588:ARG:HH21	1.81	0.45
1:A:279:LEU:HD22	1:A:283:ASP:HB2	1.99	0.45
1:A:354:ARG:HD2	1:A:367:LEU:O	2.17	0.45
1:A:423:PRO:HB3	1:A:486:PHE:CE2	2.52	0.45
1:A:471:PHE:HD2	1:A:474:LEU:HD11	1.81	0.45
1:A:284:SER:HA	1:A:290:SER:HB2	1.98	0.44
1:A:288:ASP:O	1:A:290:SER:CA	2.66	0.44
1:A:190:ARG:NH2	1:A:229:LYS:O	2.50	0.44
1:A:490:MET:O	1:A:494:TRP:NE1	2.51	0.44
1:A:110:MET:HB2	1:A:115:TYR:O	2.17	0.44
1:A:307:LEU:H	1:A:307:LEU:HD13	1.83	0.44
1:A:365:THR:HG23	1:A:367:LEU:HD23	1.99	0.44
1:A:279:LEU:HB3	1:A:628:TRP:O	2.17	0.44
1:A:622:TYR:O	1:A:624:LEU:N	2.51	0.43
1:A:583:ARG:O	1:A:587:GLU:N	2.48	0.43
1:A:121:LEU:HA	1:A:136:LEU:HD13	1.99	0.43
1:A:442:ARG:O	1:A:443:LEU:HB2	2.17	0.43
1:A:470:GLY:H	1:A:592:TRP:HE1	1.65	0.43
1:A:492:PHE:CE2	1:A:496:MET:HE3	2.54	0.43
1:A:580:THR:O	1:A:581:HIS:C	2.61	0.43
1:A:612:TRP:O	1:A:612:TRP:HD1	2.02	0.43
1:A:267:TRP:HZ3	1:A:272:LEU:HB3	1.84	0.43
1:A:378:THR:N	1:A:379:PRO:HD2	2.34	0.43
1:A:335:TYR:HB3	1:A:467:PHE:HE2	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:42:LYS:O	1:A:46:GLU:N	2.47	0.42
1:A:495:LEU:C	1:A:496:MET:HE2	2.44	0.42
1:A:373:GLN:H	1:A:373:GLN:CD	2.27	0.42
1:A:614:ARG:HD3	1:A:628:TRP:CE2	2.54	0.42
1:A:476:PRO:HD3	1:A:592:TRP:CG	2.54	0.42
1:A:189:ILE:HD12	1:A:231:LEU:HD22	2.02	0.42
1:A:374:GLU:CD	1:A:374:GLU:H	2.27	0.42
1:A:125:VAL:HG13	1:A:178:ILE:HG21	2.00	0.42
1:A:175:SER:O	1:A:179:VAL:HG23	2.20	0.42
1:A:579:ASP:HA	1:A:584:VAL:HG21	2.02	0.42
1:A:49:LEU:HD11	1:A:72:VAL:HA	2.01	0.41
1:A:173:VAL:HG23	1:A:175:SER:H	1.85	0.41
1:A:248:VAL:HG22	1:A:294:LEU:HB3	2.02	0.41
1:A:332:GLY:HA2	1:A:467:PHE:CE2	2.55	0.41
1:A:37:ASN:O	1:A:41:GLN:HG2	2.19	0.41
1:A:200:LEU:HB3	1:A:216:TYR:HE2	1.86	0.41
1:A:40:GLN:HA	1:A:77:ALA:HB3	2.02	0.41
1:A:193:ASP:OD1	1:A:193:ASP:N	2.53	0.41
1:A:315:LEU:HD23	1:A:315:LEU:HA	1.89	0.41
1:A:599:THR:HG23	1:A:602:MET:HE2	2.03	0.41
1:A:468:ALA:HB1	1:A:474:LEU:HD13	2.03	0.41
1:A:183:ILE:HA	1:A:187:ALA:HB3	2.02	0.41
1:A:274:SER:HA	1:A:633:GLU:HA	2.02	0.41
1:A:507:PHE:HZ	1:A:558:TYR:HA	1.85	0.41
1:A:582:TRP:CD1	1:A:582:TRP:H	2.38	0.41
1:A:309:GLN:HB3	1:A:311:PRO:HD2	2.02	0.40
1:A:337:LEU:HA	1:A:340:ILE:HG22	2.02	0.40
1:A:236:ASN:N	1:A:240:LEU:O	2.45	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	586/672 (87%)	522 (89%)	52 (9%)	12 (2%)	6	31

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	90	ASP
1	A	361	PRO
1	A	377	VAL
1	A	623	GLY
1	A	116	GLU
1	A	323	TYR
1	A	543	PRO
1	A	357	ASN
1	A	581	HIS
1	A	175	SER
1	A	379	PRO
1	A	355	ILE

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	508/584 (87%)	471 (93%)	37 (7%)	13	34

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	LEU
1	A	49	LEU
1	A	78	MET
1	A	88	LEU
1	A	228	LEU
1	A	258	LEU
1	A	272	LEU
1	A	279	LEU
1	A	282	ILE

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Mol	Chain	Res	Type
1	A	287	ASP
1	A	294	LEU
1	A	307	LEU
1	A	310	THR
1	A	315	LEU
1	A	341	CYS
1	A	351	LEU
1	A	364	ASN
1	A	374	GLU
1	A	397	ILE
1	A	402	GLU
1	A	441	MET
1	A	443	LEU
1	A	449	GLU
1	A	451	VAL
1	A	457	LEU
1	A	464	VAL
1	A	474	LEU
1	A	481	ILE
1	A	535	LEU
1	A	549	ASP
1	A	568	LEU
1	A	573	LEU
1	A	576	MET
1	A	584	VAL
1	A	591	LEU
1	A	624	LEU
1	A	631	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	41	GLN
1	A	92	ASN
1	A	129	ASN
1	A	445	ASN
1	A	595	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# $ Z > 2$	Counts	RMSZ	# $ Z > 2$
2	FYY	A	701	-	18,19,19	1.22	3 (16%)	20,24,24	1.13	2 (10%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	FYY	A	701	-	-	7/12/12/12	0/2/2/2

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	701	FYY	B01-C02	2.94	1.62	1.57
2	A	701	FYY	C13-C08	-2.21	1.37	1.40
2	A	701	FYY	BR1-C11	2.16	1.94	1.90

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	701	FYY	C13-C08-C09	2.35	119.56	116.86

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	701	FYY	C07-C02-C03	2.23	119.42	116.86

There are no chirality outliers.

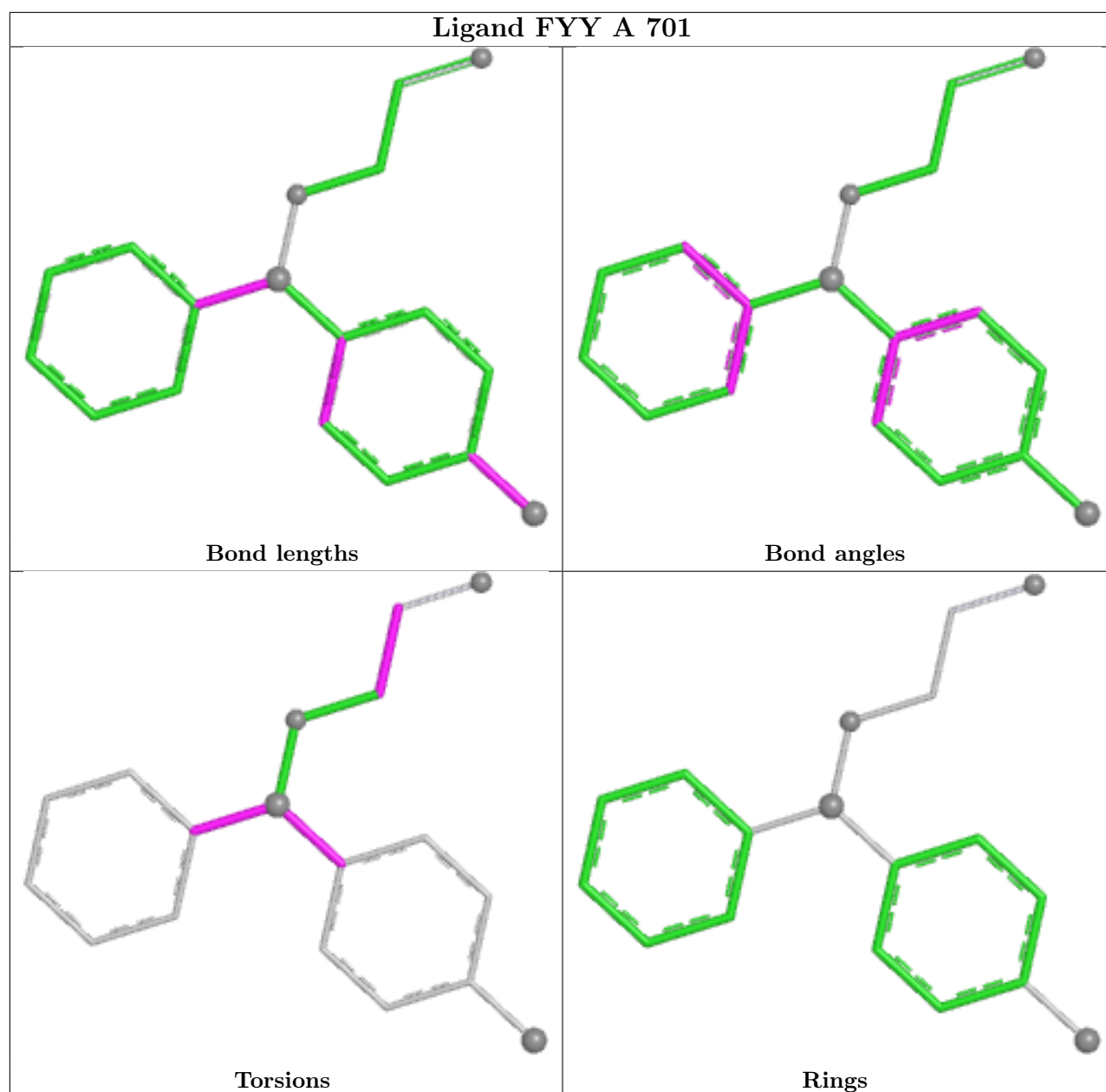
All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	701	FYY	O14-B01-C02-C03
2	A	701	FYY	O14-B01-C02-C07
2	A	701	FYY	O14-B01-C08-C09
2	A	701	FYY	O14-B01-C08-C13
2	A	701	FYY	O14-C15-C16-N17
2	A	701	FYY	C02-B01-C08-C13
2	A	701	FYY	C02-B01-C08-C09

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	592/672 (88%)	0.46	51 (8%) 16 19	153, 216, 268, 323	0

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	573	LEU	7.1
1	A	355	ILE	6.5
1	A	570	LEU	5.6
1	A	572	LEU	5.0
1	A	577	MET	4.6
1	A	374	GLU	4.5
1	A	166	PRO	4.4
1	A	372	LEU	4.3
1	A	353	PRO	4.3
1	A	121	LEU	4.2
1	A	377	VAL	4.2
1	A	169	PHE	4.0
1	A	225	GLY	3.9
1	A	356	THR	3.9
1	A	563	ILE	3.9
1	A	125	VAL	3.7
1	A	548	VAL	3.6
1	A	363	ASP	3.6
1	A	603	LEU	3.6
1	A	607	LEU	3.6
1	A	547	ASP	3.4
1	A	49	LEU	3.4
1	A	518	GLU	3.4
1	A	376	TYR	3.4
1	A	517	ASP	3.4
1	A	489	LEU	3.4
1	A	379	PRO	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	143	VAL	3.2
1	A	189	ILE	3.2
1	A	490	MET	3.1
1	A	485	ILE	3.1
1	A	505	SER	3.0
1	A	53	ALA	3.0
1	A	574	ILE	2.8
1	A	426	VAL	2.8
1	A	360	ASN	2.8
1	A	210	THR	2.6
1	A	227	HIS	2.6
1	A	226	ASP	2.5
1	A	375	ALA	2.3
1	A	347	VAL	2.3
1	A	65	LEU	2.3
1	A	400	LEU	2.3
1	A	206	GLN	2.2
1	A	171	ALA	2.2
1	A	351	LEU	2.2
1	A	343	THR	2.1
1	A	509	ILE	2.1
1	A	61	LEU	2.0
1	A	200	LEU	2.0
1	A	219	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates [i](#)

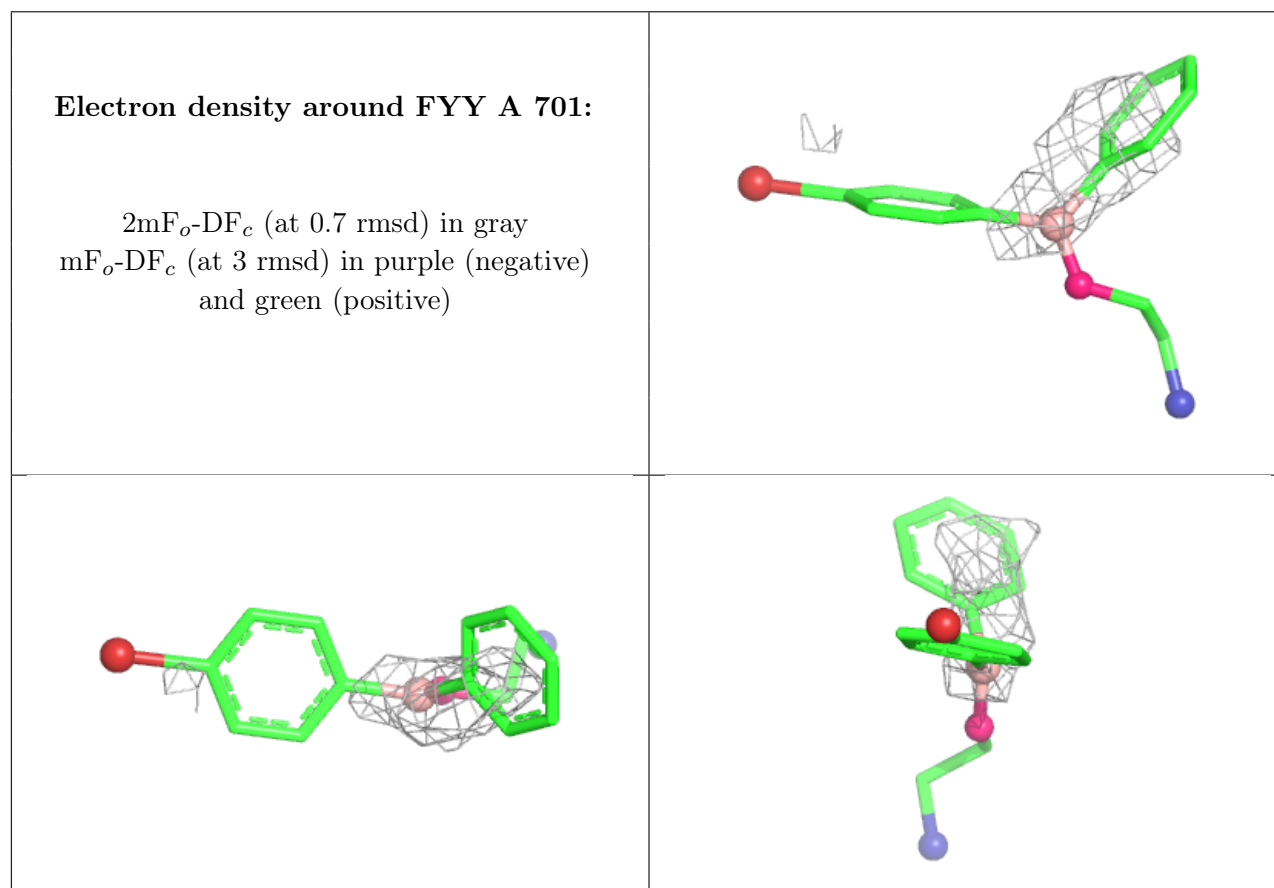
There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	FYY	A	701	18/18	0.67	0.10	197,219,250,324	0
3	CA	A	702	1/1	0.74	0.26	128,128,128,128	1

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.



6.5 Other polymers ⓘ

There are no such residues in this entry.