



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 13, 2020 – 11:24 AM BST

PDB ID : 3IJO
Title : Crystal structure of the AMPA subunit GluR2 bound to the allosteric modulator, althiazide
Authors : Ptak, C.P.; Ahmed, A.H.; Oswald, R.E.
Deposited on : 2009-08-04
Resolution : 2.00 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.14.4.dev1

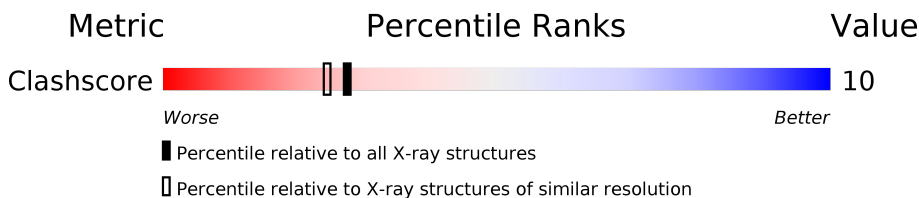
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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))
Clashscore	141614	9178 (2.00-2.00)

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 on 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 $\leq 5\%$

Note EDS failed to run properly.

Mol	Chain	Length	Quality of chain
1	B	258	 86% 14%
1	E	258	 88% 12%
1	H	258	 88% 12%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	B4D	B	401	-	-	X	-
3	B4D	B	800	-	-	X	-

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 6599 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.

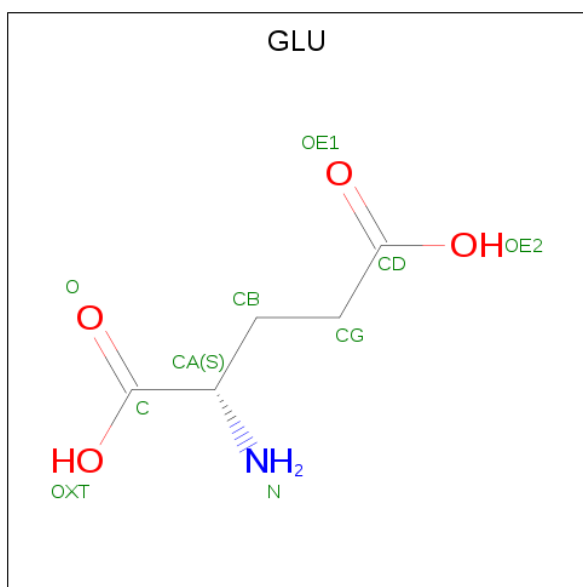
- Molecule 1 is a protein called Glutamate receptor 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	B	258	1954	1247	323	370	14	0	0	0
1	E	258	1960	1251	324	372	13	0	0	0
1	H	258	1960	1251	323	372	14	0	0	0

There are 9 discrepancies between the modelled and reference sequences:

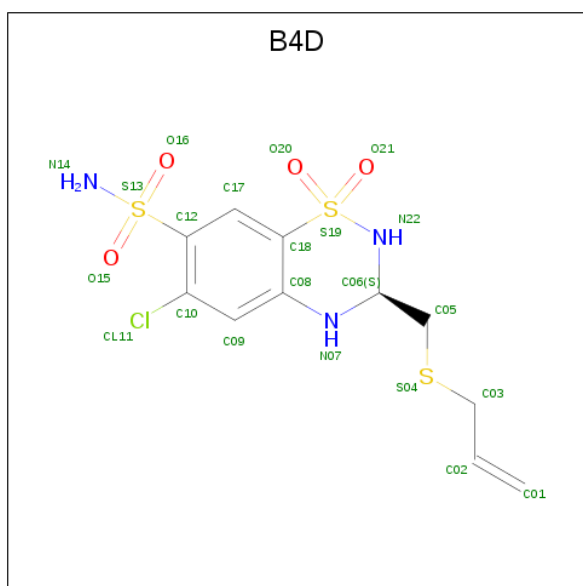
Chain	Residue	Modelled	Actual	Comment	Reference
B	118	GLY	-	LINKER	UNP P19491
B	119	THR	-	LINKER	UNP P19491
B	242	SER	ASN	ENGINEERED	UNP P19491
E	118	GLY	-	LINKER	UNP P19491
E	119	THR	-	LINKER	UNP P19491
E	242	SER	ASN	ENGINEERED	UNP P19491
H	118	GLY	-	LINKER	UNP P19491
H	119	THR	-	LINKER	UNP P19491
H	242	SER	ASN	ENGINEERED	UNP P19491

- Molecule 2 is GLUTAMIC ACID (three-letter code: GLU) (formula: C₅H₉NO₄).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	B	1	10	5	1	4	0	0
2	E	1	10	5	1	4	0	0
2	H	1	10	5	1	4	0	0

- Molecule 3 is (3S)-6-chloro-3-[(prop-2-en-1-ylsulfanyl)methyl]-3,4-dihydro-2H-1,2,4-benzothiadiazine-7-sulfonamide 1,1-dioxide (three-letter code: B4D) (formula: C₁₁H₁₄ClN₃O₄S₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
3	B	1	Total	C	Cl	N	O	S	0	0
			22	11	1	3	4	3		
3	B	1	Total	C	Cl	N	O	S	0	0
			22	11	1	3	4	3		
3	H	1	Total	C	Cl	N	O	S	0	0
			22	11	1	3	4	3		

- Molecule 4 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	H	2	Total	Zn	0	0
			2	2		
4	E	3	Total	Zn	0	0
			3	3		

- Molecule 5 is water.

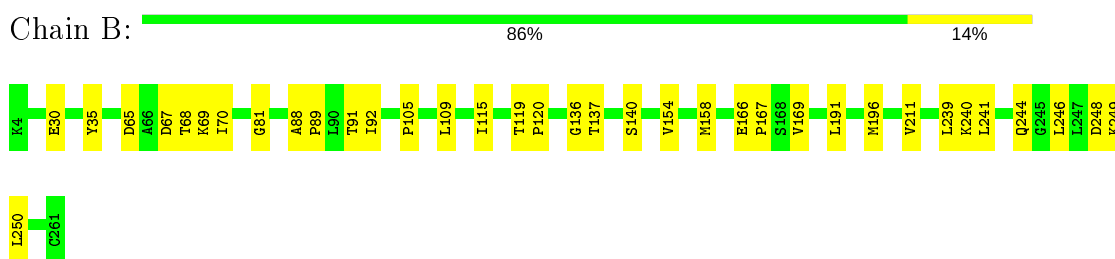
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	186	Total	O	0	0
			186	186		
5	E	193	Total	O	0	0
			193	193		
5	H	245	Total	O	0	0
			245	245		

3 Residue-property plots

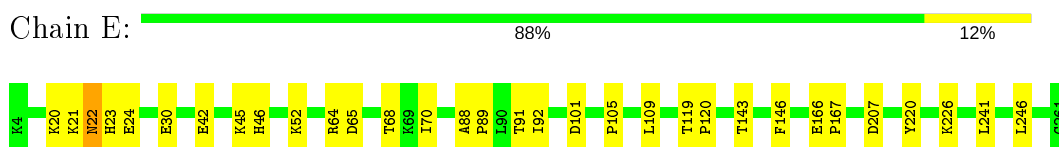
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS failed to run properly.

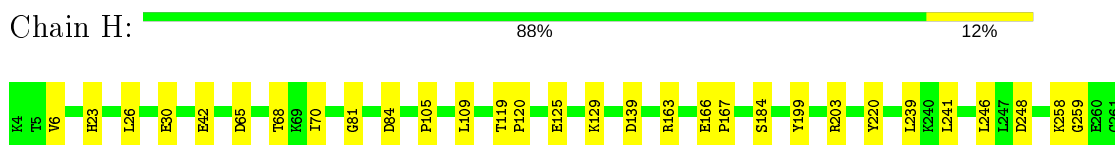
- Molecule 1: Glutamate receptor 2



- Molecule 1: Glutamate receptor 2



- Molecule 1: Glutamate receptor 2



4 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	P 2 21 21	Depositor
Cell constants a, b, c, α , β , γ	47.55Å 114.56Å 164.60Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	21.08 – 2.00	Depositor
% Data completeness (in resolution range)	89.1 (21.08-2.00)	Depositor
R_{merge}	0.16	Depositor
R_{sym}	0.16	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.51 (at 2.01Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, R_{free}	0.196 , 0.234	Depositor
Wilson B-factor (Å ²)	26.8	Xtrriage
Anisotropy	0.174	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	6599	wwPDB-VP
Average B, all atoms (Å ²)	32.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.65% of the height of the origin peak. No significant pseudotranslation is detected.*

¹ Intensities estimated from amplitudes.

² Theoretical 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: B4D, ZN

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	B	0.36	0/1990	0.52	0/2686
1	E	0.34	0/1996	0.52	1/2693 (0.0%)
1	H	0.38	0/1996	0.55	0/2694
All	All	0.36	0/5982	0.53	1/8073 (0.0%)

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	E	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	22	ASN	N-CA-C	-5.02	97.44	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	21	LYS	Mainchain

5.2 Too-close contacts [i](#)

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	B	1954	0	1930	46	0
1	E	1960	0	1943	40	1
1	H	1960	0	1943	29	1
2	B	10	0	5	1	0
2	E	10	0	5	1	0
2	H	10	0	5	0	0
3	B	44	0	28	31	0
3	H	22	0	14	6	0
4	E	3	0	0	0	1
4	H	2	0	0	0	0
5	B	186	0	0	6	0
5	E	193	0	0	10	0
5	H	245	0	0	8	1
All	All	6599	0	5873	118	2

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 10.

All (118) 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:B:92:ILE:CG2	3:B:401:B4D:H01	1.39	1.50
1:B:92:ILE:HG22	3:B:401:B4D:C01	1.49	1.38
3:B:800:B4D:H01A	1:E:92:ILE:CD1	1.61	1.31
3:B:800:B4D:C02	1:E:92:ILE:HG21	1.72	1.17
1:E:20:LYS:O	1:E:23:HIS:HB2	1.45	1.15
3:B:800:B4D:H02	1:E:92:ILE:CG2	1.76	1.14
3:B:800:B4D:C01	1:E:92:ILE:HD13	1.85	1.05
1:E:24:GLU:OE1	1:E:24:GLU:HA	1.65	0.92
1:B:140:SER:HB3	5:B:297:HOH:O	1.73	0.89
3:B:800:B4D:H02	1:E:92:ILE:HG21	0.90	0.88
3:B:800:B4D:H01A	1:E:92:ILE:HD13	0.89	0.88
1:B:92:ILE:O	3:B:401:B4D:C01	2.23	0.85
1:E:22:ASN:O	1:E:24:GLU:N	2.12	0.82
1:E:24:GLU:N	5:E:324:HOH:O	2.10	0.80
1:H:241:LEU:HG	1:H:246:LEU:HD23	1.61	0.80
3:B:800:B4D:C01	1:E:92:ILE:CD1	2.50	0.80
1:B:244:GLN:HG2	5:B:282:HOH:O	1.81	0.79
1:B:68:THR:HG23	1:B:70:ILE:H	1.47	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:92:ILE:C	3:B:401:B4D:C01	2.51	0.79
1:B:92:ILE:CB	3:B:401:B4D:H01	2.13	0.78
1:B:92:ILE:O	3:B:401:B4D:H01A	1.84	0.78
1:B:92:ILE:CG2	3:B:401:B4D:C01	2.29	0.77
3:B:800:B4D:C02	1:E:92:ILE:CG2	2.47	0.77
1:E:65:ASP:HB3	1:E:68:THR:HG22	1.69	0.75
1:H:184:SER:HB2	5:H:347:HOH:O	1.86	0.74
1:E:23:HIS:HB3	5:E:324:HOH:O	1.87	0.74
1:E:30:GLU:HG2	5:E:484:HOH:O	1.87	0.74
1:B:65:ASP:HB3	1:B:68:THR:HG22	1.72	0.71
1:B:239:LEU:CD2	3:B:800:B4D:H03	2.21	0.70
1:H:166:GLU:HA	1:H:167:PRO:C	2.12	0.69
1:B:239:LEU:HD22	3:B:800:B4D:H03A	1.76	0.67
1:H:241:LEU:HG	1:H:246:LEU:CD2	2.25	0.67
1:H:68:THR:HG23	1:H:70:ILE:H	1.62	0.65
1:H:65:ASP:HB3	1:H:68:THR:HG22	1.78	0.65
1:H:239:LEU:HD22	3:H:800:B4D:C01	2.28	0.64
1:B:239:LEU:HD22	3:B:800:B4D:C03	2.29	0.63
1:B:92:ILE:CB	3:B:401:B4D:C01	2.74	0.63
1:B:239:LEU:CD2	3:B:800:B4D:C03	2.77	0.62
1:H:129:LYS:HE2	5:H:576:HOH:O	2.00	0.62
1:H:68:THR:HG21	5:H:407:HOH:O	1.99	0.62
1:B:241:LEU:HG	1:B:246:LEU:HD22	1.81	0.62
1:E:68:THR:HG23	1:E:70:ILE:H	1.65	0.62
1:B:30:GLU:HG2	5:B:406:HOH:O	2.00	0.61
1:B:81:GLY:HA2	5:B:336:HOH:O	2.02	0.58
1:H:81:GLY:HA2	5:H:379:HOH:O	2.03	0.58
1:B:137:THR:HG22	1:B:191:LEU:HB2	1.85	0.58
1:B:105:PRO:HB2	3:B:800:B4D:O21	2.05	0.57
1:B:67:ASP:H	1:B:69:LYS:HE3	1.70	0.56
1:B:249:LYS:HD3	1:H:167:PRO:HD3	1.86	0.56
3:B:800:B4D:H01A	1:E:92:ILE:HD12	1.76	0.56
1:B:196:MET:HG2	5:B:306:HOH:O	2.06	0.55
1:B:92:ILE:HG21	3:B:401:B4D:C03	2.37	0.55
1:H:248:ASP:CB	5:H:478:HOH:O	2.54	0.55
1:E:42:GLU:O	1:E:46:HIS:HD2	1.90	0.55
1:B:136:GLY:HA3	1:B:169:VAL:O	2.08	0.54
1:E:91:THR:HG1	2:E:400:GLU:N	2.05	0.54
1:H:239:LEU:CD2	3:H:800:B4D:H03A	2.39	0.53
1:H:239:LEU:HD22	3:H:800:B4D:C02	2.39	0.53
3:B:800:B4D:O16	3:B:800:B4D:CL11	2.65	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:166:GLU:HA	1:B:167:PRO:C	2.30	0.52
3:H:800:B4D:O16	3:H:800:B4D:CL11	2.65	0.52
1:B:92:ILE:CG2	3:B:401:B4D:C03	2.88	0.52
1:B:65:ASP:HB3	1:B:68:THR:CG2	2.39	0.52
1:E:105:PRO:HA	1:E:220:TYR:O	2.10	0.51
1:B:65:ASP:CB	1:B:68:THR:HG22	2.40	0.51
3:B:401:B4D:O16	3:B:401:B4D:CL11	2.65	0.51
1:E:68:THR:CG2	1:E:70:ILE:H	2.23	0.50
1:E:101:ASP:OD1	1:E:226:LYS:HD2	2.11	0.50
1:E:68:THR:HG23	1:E:70:ILE:HG13	1.93	0.50
1:H:125:GLU:CB	5:H:576:HOH:O	2.59	0.50
1:E:42:GLU:HG3	1:E:246:LEU:HD21	1.92	0.50
1:H:23:HIS:CD2	1:H:26:LEU:HD22	2.47	0.49
1:B:115:ILE:HD11	1:B:211:VAL:HG11	1.93	0.49
1:B:91:THR:HG1	2:B:400:GLU:N	2.09	0.49
1:H:65:ASP:CB	1:H:68:THR:HG22	2.42	0.49
1:E:22:ASN:OD1	1:E:23:HIS:N	2.46	0.48
1:H:65:ASP:HB3	1:H:68:THR:CG2	2.43	0.48
1:E:88:ALA:HB1	1:E:89:PRO:HD2	1.94	0.48
1:B:154:VAL:O	1:B:158:MET:HG3	2.14	0.48
1:E:64:ARG:HD2	5:E:570:HOH:O	2.13	0.47
1:H:163:ARG:CZ	5:H:425:HOH:O	2.62	0.47
1:B:92:ILE:HB	3:B:401:B4D:H03	1.97	0.47
1:E:22:ASN:N	1:E:22:ASN:OD1	2.48	0.46
1:B:35:TYR:CE1	1:B:250:LEU:HB3	2.51	0.46
1:B:35:TYR:CD1	1:B:250:LEU:HB3	2.51	0.46
1:H:139:ASP:HA	5:H:340:HOH:O	2.16	0.45
1:E:109:LEU:C	1:E:109:LEU:HD22	2.37	0.45
1:H:239:LEU:HD22	3:H:800:B4D:H03A	1.99	0.44
1:E:46:HIS:CE1	5:E:286:HOH:O	2.71	0.44
1:B:92:ILE:CG2	3:B:401:B4D:C02	2.92	0.44
1:B:109:LEU:C	1:B:109:LEU:HD22	2.37	0.43
1:E:241:LEU:HG	1:E:246:LEU:CD2	2.48	0.43
1:H:65:ASP:CG	1:H:68:THR:HG22	2.38	0.43
1:E:166:GLU:HA	1:E:167:PRO:C	2.39	0.43
1:H:258:LYS:O	1:H:259:GLY:C	2.57	0.43
1:B:248:ASP:CB	5:E:308:HOH:O	2.67	0.42
1:H:105:PRO:HA	1:H:220:TYR:O	2.19	0.42
1:H:6:VAL:HG13	1:H:84:ASP:HB2	2.02	0.42
3:H:800:B4D:H05A	3:H:800:B4D:H02	1.94	0.42
1:B:92:ILE:HB	3:B:401:B4D:C01	2.48	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:143:THR:O	1:E:146:PHE:HB3	2.20	0.42
1:H:42:GLU:HG3	1:H:246:LEU:HD21	2.02	0.42
1:E:45:LYS:HD2	5:E:578:HOH:O	2.20	0.41
1:E:24:GLU:HB2	5:E:324:HOH:O	2.20	0.41
1:H:109:LEU:C	1:H:109:LEU:HD22	2.41	0.41
1:E:119:THR:HA	1:E:120:PRO:HD3	1.87	0.41
1:H:199:TYR:O	1:H:203:ARG:HG2	2.19	0.41
1:B:88:ALA:HB1	1:B:89:PRO:HD2	2.02	0.41
1:E:52:LYS:HG3	5:E:392:HOH:O	2.21	0.41
1:H:119:THR:HA	1:H:120:PRO:HD3	1.91	0.41
1:B:92:ILE:C	3:B:401:B4D:H01	2.32	0.41
1:B:92:ILE:HG22	3:B:401:B4D:H01	0.55	0.41
1:E:20:LYS:O	1:E:23:HIS:CB	2.39	0.41
1:B:119:THR:HA	1:B:120:PRO:HD3	1.77	0.40
1:E:207:ASP:N	1:E:207:ASP:OD1	2.53	0.40
1:E:68:THR:HG21	5:E:371:HOH:O	2.20	0.40
1:B:68:THR:HG23	1:B:70:ILE:N	2.25	0.40
1:B:240:LYS:HE3	5:B:328:HOH:O	2.21	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:30:GLU:OE2	4:E:701:ZN:ZN[3_544]	1.27	0.93
1:E:24:GLU:CB	5:H:585:HOH:O[3_554]	2.16	0.04

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

5.3.3 RNA [i](#)

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 11 ligands modelled in this entry, 5 are monoatomic - leaving 6 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
3	B4D	H	800	-	21,23,23	5.57	11 (52%)	29,35,35	2.43	5 (17%)
2	GLU	B	400	-	2,9,9	0.18	0	2,11,11	0.20	0
2	GLU	H	400	-	2,9,9	0.29	0	2,11,11	0.18	0
3	B4D	B	800	-	21,23,23	5.56	11 (52%)	29,35,35	2.43	5 (17%)
2	GLU	E	400	-	2,9,9	0.25	0	2,11,11	0.26	0
3	B4D	B	401	-	21,23,23	5.57	11 (52%)	29,35,35	2.43	5 (17%)

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
3	B4D	H	800	-	-	5/11/26/26	0/2/2/2
2	GLU	B	400	-	-	0/3/9/9	-
2	GLU	H	400	-	-	0/3/9/9	-
3	B4D	B	800	-	-	3/11/26/26	0/2/2/2
2	GLU	E	400	-	-	0/3/9/9	-
3	B4D	B	401	-	-	5/11/26/26	0/2/2/2

All (33) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	401	B4D	C12-S13	-18.50	1.54	1.77
3	H	800	B4D	C12-S13	-18.48	1.54	1.77
3	B	800	B4D	C12-S13	-18.45	1.54	1.77
3	H	800	B4D	C18-S19	11.37	1.85	1.75
3	B	401	B4D	C18-S19	11.35	1.85	1.75
3	B	800	B4D	C18-S19	11.35	1.85	1.75
3	B	401	B4D	S13-N14	-7.00	1.46	1.60
3	H	800	B4D	S13-N14	-6.98	1.46	1.60
3	B	800	B4D	S13-N14	-6.96	1.46	1.60
3	B	401	B4D	S19-N22	-6.09	1.54	1.62
3	B	800	B4D	S19-N22	-6.07	1.54	1.62
3	H	800	B4D	S19-N22	-6.02	1.54	1.62
3	B	800	B4D	C08-N07	5.94	1.50	1.39
3	H	800	B4D	C08-N07	5.94	1.50	1.39
3	B	401	B4D	C08-N07	5.93	1.50	1.39
3	B	800	B4D	O21-S19	3.09	1.47	1.43
3	H	800	B4D	O21-S19	3.08	1.47	1.43
3	B	401	B4D	O21-S19	3.05	1.47	1.43
3	H	800	B4D	C17-C18	3.03	1.43	1.39
3	B	401	B4D	C17-C18	3.01	1.43	1.39
3	B	800	B4D	C17-C18	3.00	1.43	1.39
3	B	800	B4D	C09-C08	2.77	1.43	1.39
3	B	401	B4D	C09-C08	2.71	1.43	1.39
3	H	800	B4D	C09-C08	2.70	1.43	1.39
3	B	800	B4D	O20-S19	2.66	1.46	1.43
3	B	401	B4D	O20-S19	2.62	1.46	1.43
3	H	800	B4D	O20-S19	2.61	1.46	1.43
3	B	800	B4D	C06-N22	2.51	1.49	1.46
3	B	401	B4D	C06-N22	2.50	1.49	1.46
3	H	800	B4D	C06-N22	2.47	1.49	1.46
3	B	800	B4D	C10-CL11	2.33	1.79	1.73
3	B	401	B4D	C10-CL11	2.30	1.79	1.73
3	H	800	B4D	C10-CL11	2.30	1.79	1.73

All (15) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	401	B4D	O21-S19-O20	-8.80	109.48	118.46
3	H	800	B4D	O21-S19-O20	-8.79	109.49	118.46
3	B	800	B4D	O21-S19-O20	-8.78	109.50	118.46
3	B	800	B4D	O16-S13-O15	-5.64	109.49	118.76
3	H	800	B4D	O16-S13-O15	-5.63	109.50	118.76
3	B	401	B4D	O16-S13-O15	-5.63	109.50	118.76

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	800	B4D	C18-S19-N22	4.18	108.76	103.43
3	B	401	B4D	C18-S19-N22	4.17	108.75	103.43
3	H	800	B4D	C18-S19-N22	4.14	108.72	103.43
3	H	800	B4D	C10-C12-S13	-2.71	120.05	123.49
3	B	800	B4D	C10-C12-S13	-2.71	120.06	123.49
3	B	401	B4D	C10-C12-S13	-2.69	120.08	123.49
3	B	401	B4D	C02-C03-S04	-2.53	109.47	113.68
3	H	800	B4D	C02-C03-S04	-2.51	109.49	113.68
3	B	800	B4D	C02-C03-S04	-2.50	109.51	113.68

There are no chirality outliers.

All (13) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	H	800	B4D	S04-C05-C06-N22
3	B	800	B4D	S04-C05-C06-N22
3	B	401	B4D	S04-C05-C06-N22
3	H	800	B4D	C02-C03-S04-C05
3	B	401	B4D	C02-C03-S04-C05
3	H	800	B4D	C01-C02-C03-S04
3	B	401	B4D	C01-C02-C03-S04
3	H	800	B4D	C10-C12-S13-O15
3	B	800	B4D	C10-C12-S13-O15
3	B	401	B4D	C10-C12-S13-O15
3	H	800	B4D	C17-C12-S13-O15
3	B	800	B4D	C17-C12-S13-O15
3	B	401	B4D	C17-C12-S13-O15

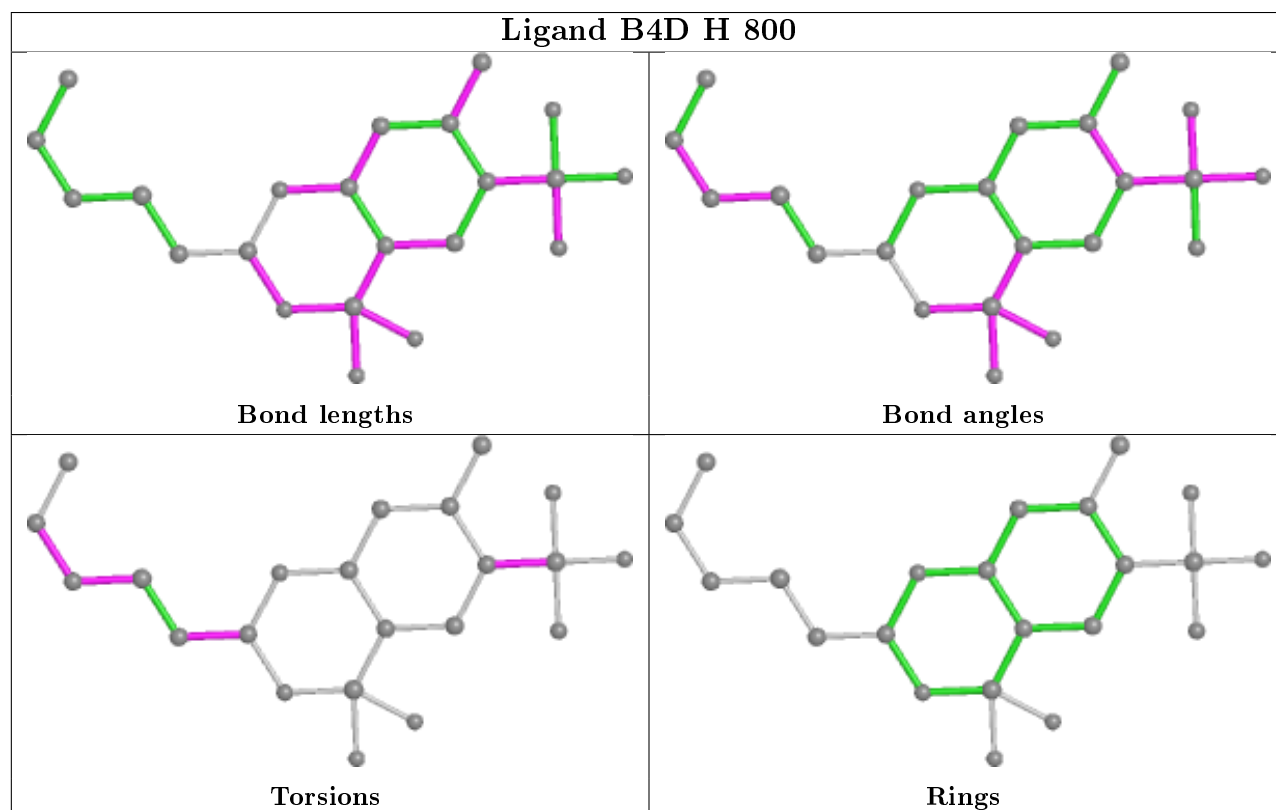
There are no ring outliers.

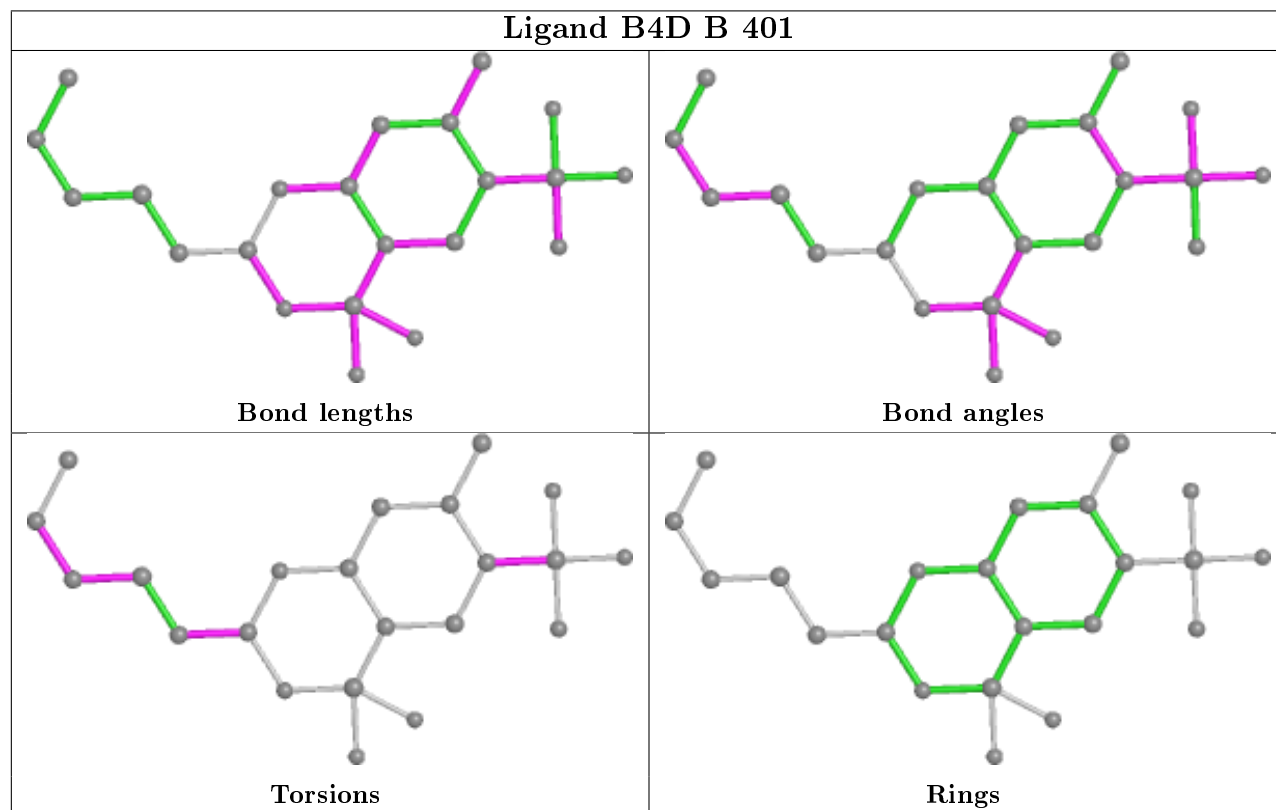
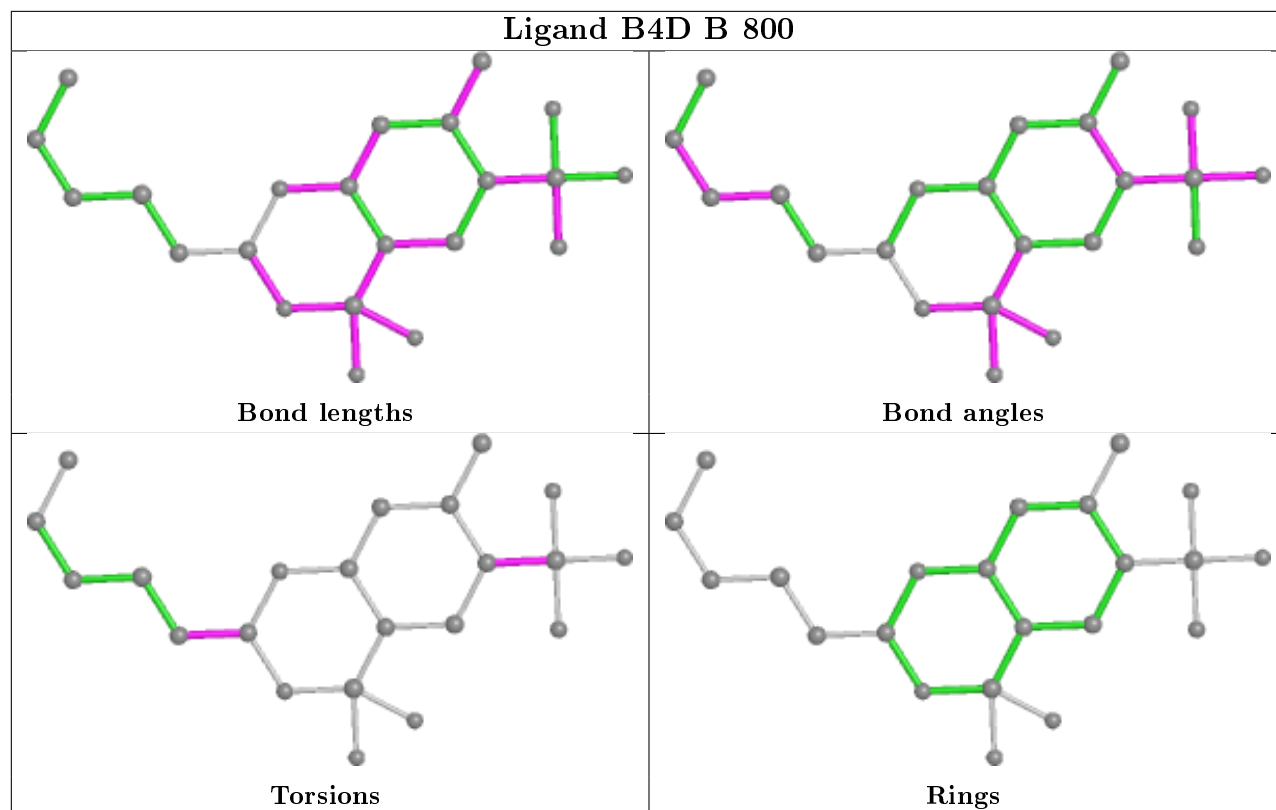
5 monomers are involved in 39 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	H	800	B4D	6	0
2	B	400	GLU	1	0
3	B	800	B4D	15	0
2	E	400	GLU	1	0
3	B	401	B4D	16	0

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

EDS failed to run properly - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

EDS failed to run properly - this section is therefore empty.

6.3 Carbohydrates

EDS failed to run properly - this section is therefore empty.

6.4 Ligands

EDS failed to run properly - this section is therefore empty.

6.5 Other polymers

EDS failed to run properly - this section is therefore empty.