



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2020 – 09:32 PM BST

PDB ID : 5I74
Title : X-ray structure of the ts3 human serotonin transporter complexed with Br-citalopram at the central site
Authors : Coleman, J.A.; Green, E.M.; Gouaux, E.
Deposited on : 2016-02-16
Resolution : 3.40 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)
Xtriage (Phenix) : 1.13
EDS : 2.13.1
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.13.1

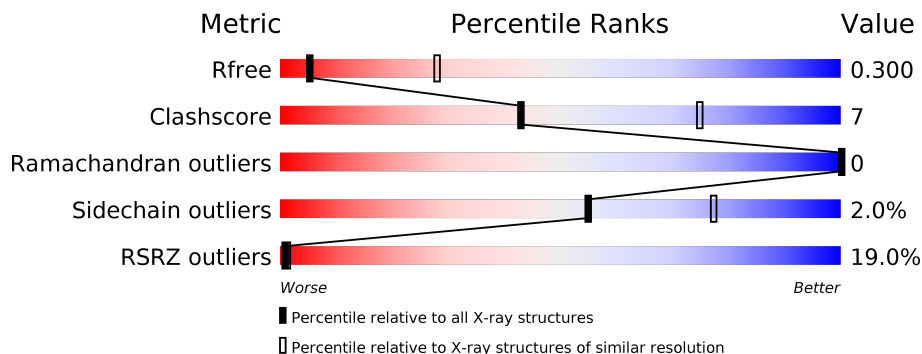
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 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}	130704	1026 (3.48-3.32)
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)
RSRZ outliers	127900	2173 (3.50-3.30)

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 $\leq 5\%$. 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	549	
2	B	221	
3	C	214	

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
6	CLR	A	702	-	-	-	X
7	D12	A	703	-	-	-	X
8	HEX	A	704	-	-	-	X

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 7610 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 Sodium-dependent serotonin transporter.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	542	4207	2809	652	722	24	0	0	0

There are 11 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	74	GLY	-	cloning artifact	UNP P31645
A	75	SER	-	cloning artifact	UNP P31645
A	110	ALA	TYR	engineered mutation	UNP P31645
A	291	ALA	ILE	engineered mutation	UNP P31645
A	439	SER	THR	engineered mutation	UNP P31645
A	554	ALA	CYS	engineered mutation	UNP P31645
A	580	ALA	CYS	engineered mutation	UNP P31645
A	619	LEU	-	cloning artifact	UNP P31645
A	620	VAL	-	cloning artifact	UNP P31645
A	621	PRO	-	cloning artifact	UNP P31645
A	622	ARG	-	cloning artifact	UNP P31645

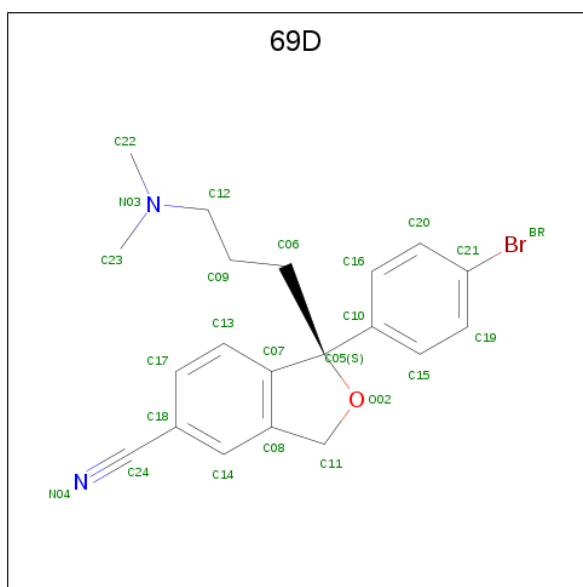
- Molecule 2 is a protein called 8B6 antibody, heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	218	1643	1038	266	331	8	0	0	0

- Molecule 3 is a protein called 8B6 antibody, light chain.

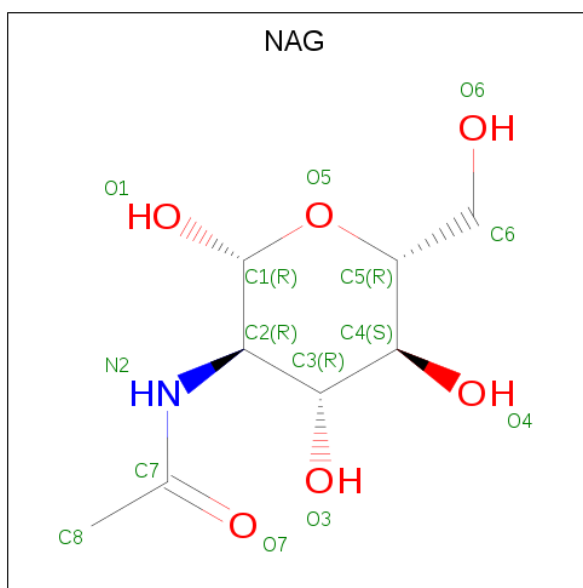
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	214	1662	1037	280	337	8	0	0	0

- Molecule 4 is (1S)-1-(4-bromophenyl)-1-[3-(dimethylamino)propyl]-1,3-dihydro-2-benzofuran-5-carbonitrile (three-letter code: 69D) (formula: C₂₀H₂₁BrN₂O).



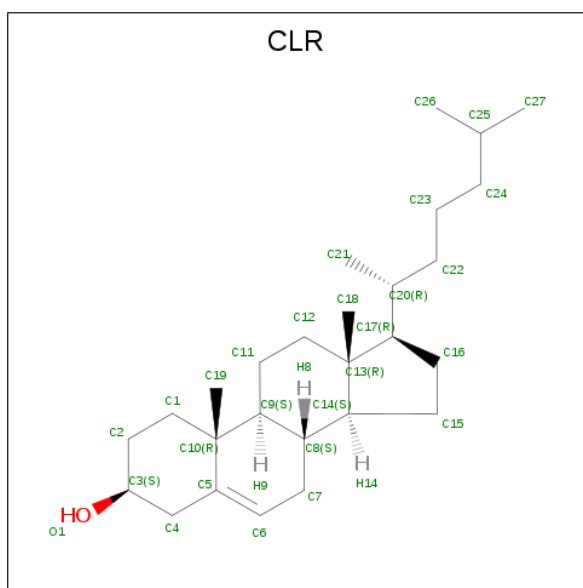
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	Br	C	N	O		
4	A	1	24	1	20	2	1	0	0

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



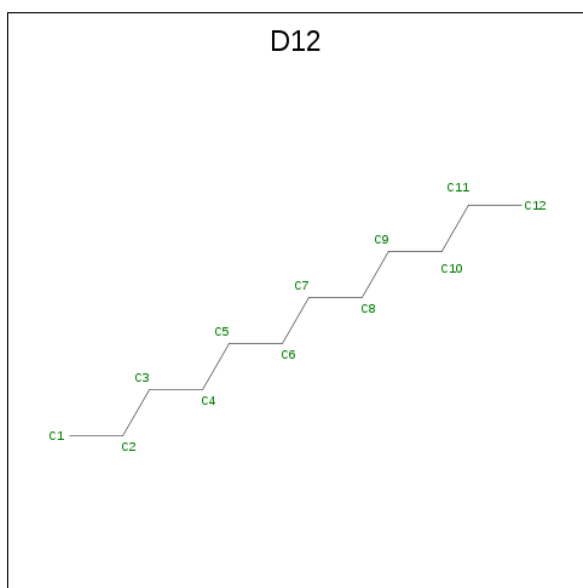
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
5	A	1	14	8	1	5	0	0
5	A	1	14	8	1	5	0	0

- Molecule 6 is CHOLESTEROL (three-letter code: CLR) (formula: $C_{27}H_{46}O$).



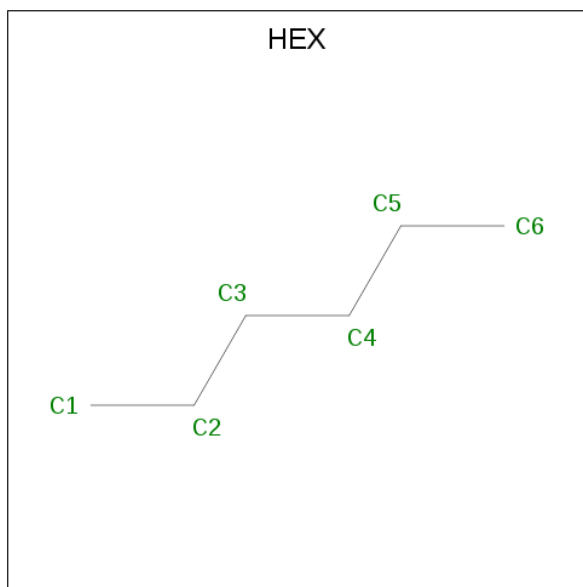
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
6	A	1	Total	C	O	0	0
			28	27	1		

- Molecule 7 is DODECANE (three-letter code: D12) (formula: $C_{12}H_{26}$).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf	
7	A	1	Total	C		0	0
			12	12			

- Molecule 8 is HEXANE (three-letter code: HEX) (formula: C_6H_{14}).

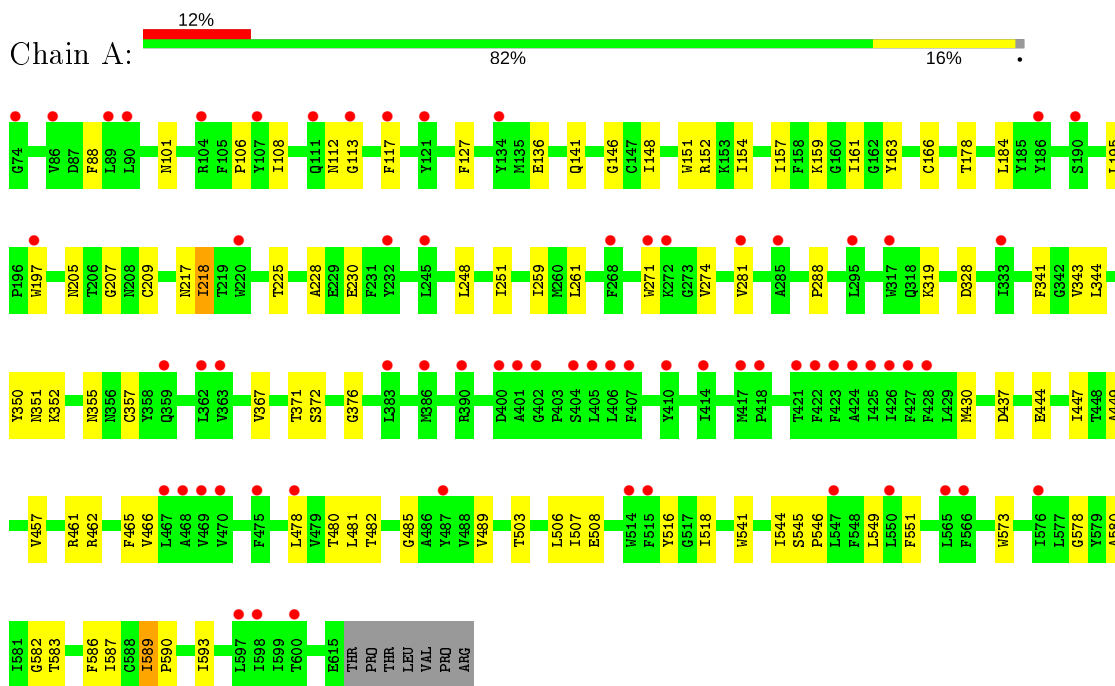


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C 6 6	0	0

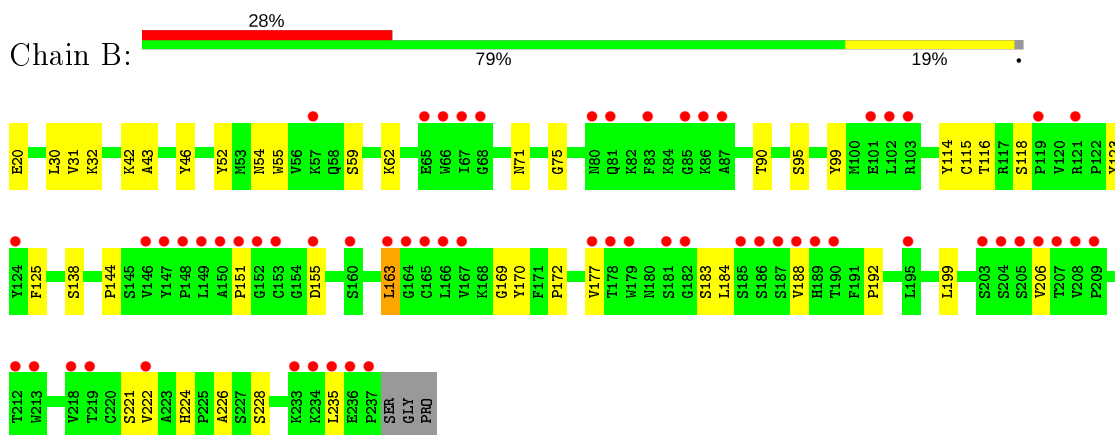
3 Residue-property plots

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 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.

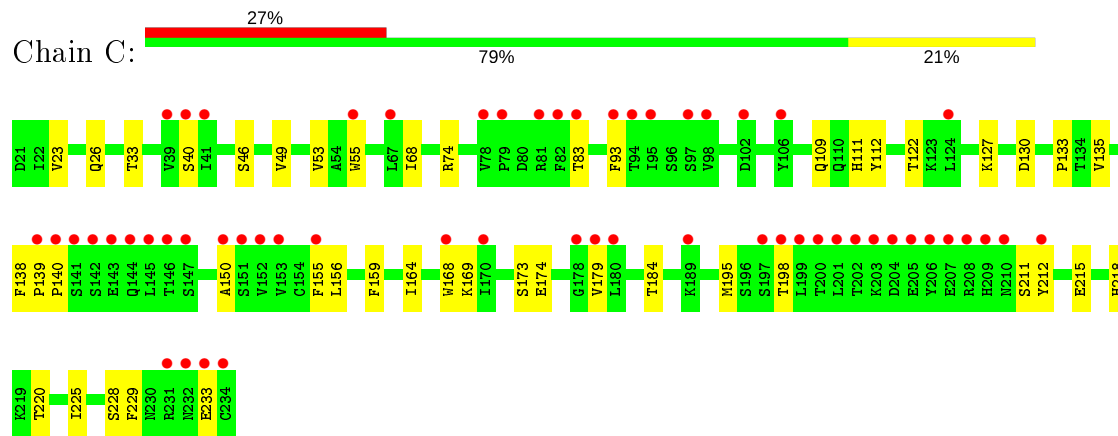
- Molecule 1: Sodium-dependent serotonin transporter



- Molecule 2: 8B6 antibody, heavy chain



- Molecule 3: 8B6 antibody, light chain



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	129.59Å 164.00Å 140.17Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	101.68 – 3.40 101.68 – 3.40	Depositor EDS
% Data completeness (in resolution range)	99.2 (101.68-3.40) 99.4 (101.68-3.40)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.36 (at 3.41Å)	Xtrriage
Refinement program	PHENIX dev_1634	Depositor
R, R_{free}	0.249 , 0.296 0.252 , 0.300	Depositor DCC
R_{free} test set	1043 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	143.5	Xtrriage
Anisotropy	0.161	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 138.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.39$, $\langle L^2 \rangle = 0.22$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.85	EDS
Total number of atoms	7610	wwPDB-VP
Average B, all atoms (Å ²)	209.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.93% 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: 69D, HEX, NAG, D12, CLR

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	0.25	0/4340	0.38	0/5934
2	B	0.24	0/1688	0.45	0/2309
3	C	0.25	0/1700	0.46	0/2307
All	All	0.25	0/7728	0.42	0/10550

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

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	4207	0	4101	50	0
2	B	1643	0	1589	28	0
3	C	1662	0	1585	24	0
4	A	24	0	0	1	0
5	A	28	0	26	2	0
6	A	28	0	46	4	0
7	A	12	0	26	1	0
8	A	6	0	14	0	0
All	All	7610	0	7387	102	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 7.

All (102) 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)
4:A:700:69D:O02	4:A:700:69D:C11	1.69	1.37
2:B:30:LEU:HD22	2:B:172:PRO:HD3	1.68	0.76
1:A:141:GLN:NE2	1:A:357:CYS:SG	2.61	0.74
1:A:205:ASN:ND2	1:A:209:CYS:SG	2.62	0.73
1:A:108:ILE:HD11	1:A:328:ASP:HB3	1.70	0.72
1:A:589:ILE:HG23	1:A:590:PRO:HD3	1.71	0.72
2:B:71:ASN:O	2:B:75:GLY:N	2.26	0.67
1:A:447:ILE:HD13	1:A:466:VAL:HG22	1.76	0.67
2:B:71:ASN:O	2:B:75:GLY:CA	2.42	0.67
2:B:192:PRO:HD3	3:C:184:THR:HG22	1.78	0.66
1:A:152:ARG:HH21	1:A:159:LYS:HZ1	1.47	0.62
1:A:127:PHE:HB3	1:A:544:ILE:HG21	1.81	0.62
3:C:211:SER:HA	3:C:229:PHE:O	2.00	0.61
1:A:352:LYS:HB2	1:A:355:ASN:HB2	1.83	0.61
2:B:71:ASN:O	2:B:75:GLY:HA2	2.00	0.61
1:A:444:GLU:OE1	1:A:462:ARG:NH2	2.34	0.60
2:B:30:LEU:HB2	2:B:172:PRO:HG3	1.83	0.60
3:C:135:VAL:HA	3:C:155:PHE:O	2.01	0.59
1:A:184:LEU:HD21	1:A:261:LEU:HD23	1.85	0.59
2:B:59:SER:HB2	2:B:62:LYS:HB2	1.84	0.59
3:C:49:VAL:HG13	3:C:112:TYR:CE1	2.39	0.58
5:A:701:NAG:HO3	2:B:20:GLU:N	2.02	0.57
1:A:157:ILE:HB	1:A:593:ILE:HG12	1.87	0.57
2:B:54:ASN:ND2	2:B:118:SER:OG	2.36	0.56
3:C:164:ILE:HB	3:C:218:HIS:HD2	1.71	0.56
3:C:55:TRP:HB2	3:C:68:ILE:HB	1.86	0.56
1:A:101:ASN:ND2	1:A:372:SER:OG	2.34	0.55
3:C:215:GLU:HA	3:C:225:ILE:O	2.06	0.55
1:A:148:ILE:HG13	1:A:449:ALA:HB1	1.87	0.55
1:A:207:GLY:HA3	5:A:701:NAG:H82	1.87	0.55
2:B:42:LYS:NZ	2:B:95:SER:O	2.38	0.54
2:B:224:HIS:O	2:B:228:SER:N	2.40	0.53
1:A:113:GLY:H	1:A:319:LYS:HG3	1.73	0.52
1:A:88:PHE:HE2	1:A:350:TYR:HB2	1.74	0.52
2:B:163:LEU:HB3	2:B:235:LEU:HD22	1.91	0.52
1:A:478:LEU:HD23	1:A:481:LEU:HD12	1.92	0.52
3:C:74:ARG:HH21	3:C:83:THR:HG22	1.75	0.52
1:A:580:ALA:HB1	6:A:702:CLR:H241	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:259:ILE:HG21	1:A:481:LEU:HD11	1.93	0.50
1:A:573:TRP:CE3	6:A:702:CLR:H71	2.45	0.50
2:B:177:VAL:HA	2:B:221:SER:O	2.11	0.50
1:A:341:PHE:HD2	1:A:343:VAL:HG23	1.76	0.50
1:A:106:PRO:HG3	1:A:376:GLY:HA2	1.93	0.50
1:A:88:PHE:HZ	1:A:274:VAL:HB	1.77	0.49
3:C:130:ASP:HB3	3:C:220:THR:HG22	1.94	0.49
3:C:140:PRO:HG2	3:C:150:ALA:HB1	1.94	0.49
1:A:151:TRP:HZ2	1:A:508:GLU:HG2	1.78	0.48
2:B:151:PRO:HG3	3:C:138:PHE:HE2	1.77	0.48
3:C:212:TYR:O	3:C:228:SER:HA	2.14	0.48
2:B:116:THR:OG1	2:B:125:PHE:HB3	2.13	0.48
1:A:573:TRP:CZ3	6:A:702:CLR:H71	2.49	0.48
3:C:23:VAL:H	3:C:46:SER:HB3	1.79	0.48
1:A:178:THR:HG21	1:A:480:THR:HB	1.96	0.48
1:A:178:THR:HG22	1:A:259:ILE:HD12	1.95	0.47
1:A:583:THR:HA	1:A:586:PHE:CZ	2.49	0.47
3:C:133:PRO:HB3	3:C:159:PHE:HB3	1.97	0.47
1:A:506:LEU:HD23	1:A:549:LEU:HB2	1.96	0.47
1:A:146:GLY:HA3	1:A:449:ALA:HA	1.95	0.47
1:A:518:ILE:HD11	1:A:541:TRP:CE3	2.49	0.47
1:A:218:ILE:HD13	1:A:218:ILE:H	1.80	0.46
1:A:447:ILE:HA	1:A:465:PHE:HE2	1.80	0.46
1:A:197:TRP:HB2	1:A:228:ALA:HA	1.97	0.46
2:B:144:PRO:HB3	2:B:170:TYR:HB3	1.98	0.45
1:A:288:PRO:HA	1:A:430:MET:HG3	1.98	0.45
2:B:188:VAL:HG22	2:B:206:VAL:HB	1.98	0.44
1:A:251:ILE:HA	1:A:482:THR:HA	1.99	0.44
1:A:583:THR:O	1:A:587:ILE:HG23	2.18	0.43
6:A:702:CLR:H162	6:A:702:CLR:H231	2.00	0.43
1:A:136:GLU:HG2	1:A:344:LEU:HD12	2.00	0.43
1:A:163:TYR:O	1:A:166:CYS:HB2	2.19	0.43
1:A:485:GLY:O	1:A:489:VAL:HG23	2.18	0.43
2:B:32:LYS:HG2	2:B:138:SER:HA	2.00	0.43
3:C:26:GLN:NE2	3:C:122:THR:OG1	2.52	0.43
1:A:195:LEU:H	1:A:195:LEU:HD12	1.82	0.43
2:B:183:SER:HA	2:B:184:LEU:HA	1.50	0.42
2:B:90:THR:OG1	2:B:99:TYR:HB2	2.19	0.42
3:C:179:VAL:HA	3:C:198:THR:O	2.19	0.42
1:A:112:ASN:O	1:A:117:PHE:HB2	2.20	0.42
1:A:154:ILE:HG23	1:A:516:TYR:HB2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:123:TYR:HB3	3:C:111:HIS:HB2	2.01	0.42
2:B:55:TRP:HA	2:B:114:TYR:O	2.19	0.42
3:C:156:LEU:HD13	3:C:195:MET:HG3	2.01	0.42
3:C:169:LYS:HA	3:C:173:SER:O	2.19	0.42
2:B:54:ASN:O	2:B:115:CYS:HA	2.20	0.42
1:A:225:THR:OG1	1:A:230:GLU:OE2	2.28	0.41
1:A:367:VAL:O	1:A:371:THR:OG1	2.30	0.41
1:A:545:SER:HB2	1:A:546:PRO:HD3	2.02	0.41
3:C:33:THR:O	3:C:127:LYS:N	2.39	0.41
1:A:503:THR:O	1:A:507:ILE:HG12	2.21	0.41
1:A:578:GLY:O	1:A:582:GLY:N	2.48	0.41
2:B:224:HIS:CE1	2:B:226:ALA:HB3	2.55	0.41
3:C:40:SER:HA	3:C:93:PHE:O	2.20	0.41
2:B:169:GLY:HA2	2:B:199:LEU:HB3	2.03	0.41
2:B:177:VAL:HG22	2:B:222:VAL:HG22	2.02	0.41
2:B:52:TYR:HE1	2:B:71:ASN:HB2	1.85	0.41
3:C:168:TRP:O	3:C:174:GLU:HA	2.21	0.41
1:A:161:ILE:HD11	1:A:507:ILE:HG22	2.04	0.40
2:B:43:ALA:HB1	2:B:46:TYR:CE1	2.56	0.40
7:A:703:D12:H52	7:A:703:D12:H21	1.93	0.40
3:C:212:TYR:HB2	3:C:229:PHE:CE1	2.55	0.40
3:C:139:PRO:HB3	3:C:229:PHE:CE2	2.56	0.40
1:A:141:GLN:OE1	1:A:351:ASN:ND2	2.55	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	540/549 (98%)	519 (96%)	21 (4%)	0	100	100
2	B	216/221 (98%)	209 (97%)	7 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	212/214 (99%)	199 (94%)	13 (6%)	0	100	100
All	All	968/984 (98%)	927 (96%)	41 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

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	428/462 (93%)	418 (98%)	10 (2%)	50	74
2	B	190/193 (98%)	187 (98%)	3 (2%)	62	81
3	C	189/190 (100%)	186 (98%)	3 (2%)	62	81
All	All	807/845 (96%)	791 (98%)	16 (2%)	55	77

All (16) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	217	ASN
1	A	218	ILE
1	A	248	LEU
1	A	271	TRP
1	A	281	VAL
1	A	437	ASP
1	A	457	VAL
1	A	461	ARG
1	A	551	PHE
1	A	589	ILE
2	B	31	VAL
2	B	155	ASP
2	B	163	LEU
3	C	53	VAL
3	C	109	GLN
3	C	233	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
3	C	26	GLN

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](#)

6 ligands are modelled in this entry.

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	$\# Z > 2$
6	CLR	A	702	-	31,31,31	0.83	0	48,48,48	1.31	4 (8%)
5	NAG	A	705	1	14,14,15	0.24	0	17,19,21	0.38	0
4	69D	A	700	-	25,26,26	6.37	12 (48%)	30,37,37	4.86	10 (33%)
5	NAG	A	701	1	14,14,15	0.22	0	17,19,21	0.51	0
8	HEX	A	704	-	5,5,5	0.15	0	4,4,4	0.56	0
7	D12	A	703	-	11,11,11	0.11	0	10,10,10	0.31	0

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
6	CLR	A	702	-	-	6/10/68/68	0/4/4/4
5	NAG	A	705	1	-	1/6/23/26	0/1/1/1
4	69D	A	700	-	-	8/15/27/27	0/3/3/3
5	NAG	A	701	1	-	2/6/23/26	0/1/1/1
8	HEX	A	704	-	-	0/3/3/3	-
7	D12	A	703	-	-	3/9/9/9	-

All (12) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	700	69D	O02-C11	18.27	1.69	1.43
4	A	700	69D	C05-C07	-14.06	1.32	1.52
4	A	700	69D	C17-C18	-11.73	1.14	1.39
4	A	700	69D	C14-C08	11.58	1.59	1.39
4	A	700	69D	C17-C13	-11.05	1.18	1.38
4	A	700	69D	C11-C08	6.43	1.59	1.50
4	A	700	69D	C18-C24	3.90	1.53	1.44
4	A	700	69D	C14-C18	-3.31	1.34	1.39
4	A	700	69D	C08-C07	-2.68	1.35	1.39
4	A	700	69D	C13-C07	-2.14	1.36	1.39
4	A	700	69D	BR-C21	2.10	1.94	1.90
4	A	700	69D	C05-C10	2.09	1.57	1.53

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	700	69D	C11-C08-C07	-17.83	100.00	108.80
4	A	700	69D	C13-C07-C08	-12.85	108.94	120.71
4	A	700	69D	C13-C17-C18	7.77	130.38	120.35
4	A	700	69D	C11-C08-C14	7.24	142.67	129.29
4	A	700	69D	C13-C07-C05	-5.72	122.59	130.40
4	A	700	69D	C17-C13-C07	4.81	130.24	121.88
4	A	700	69D	C14-C08-C07	-4.34	117.33	120.86
4	A	700	69D	C18-C14-C08	-3.36	116.39	120.70
6	A	702	CLR	C8-C7-C6	-3.06	108.34	112.73
6	A	702	CLR	C9-C10-C5	2.91	114.22	109.65
6	A	702	CLR	C13-C14-C8	-2.62	110.50	114.38
6	A	702	CLR	C4-C5-C10	2.36	119.56	116.42
4	A	700	69D	C17-C18-C14	-2.16	116.71	119.76
4	A	700	69D	C09-C12-N03	-2.13	108.03	113.79

There are no chirality outliers.

All (20) torsion outliers are listed below:

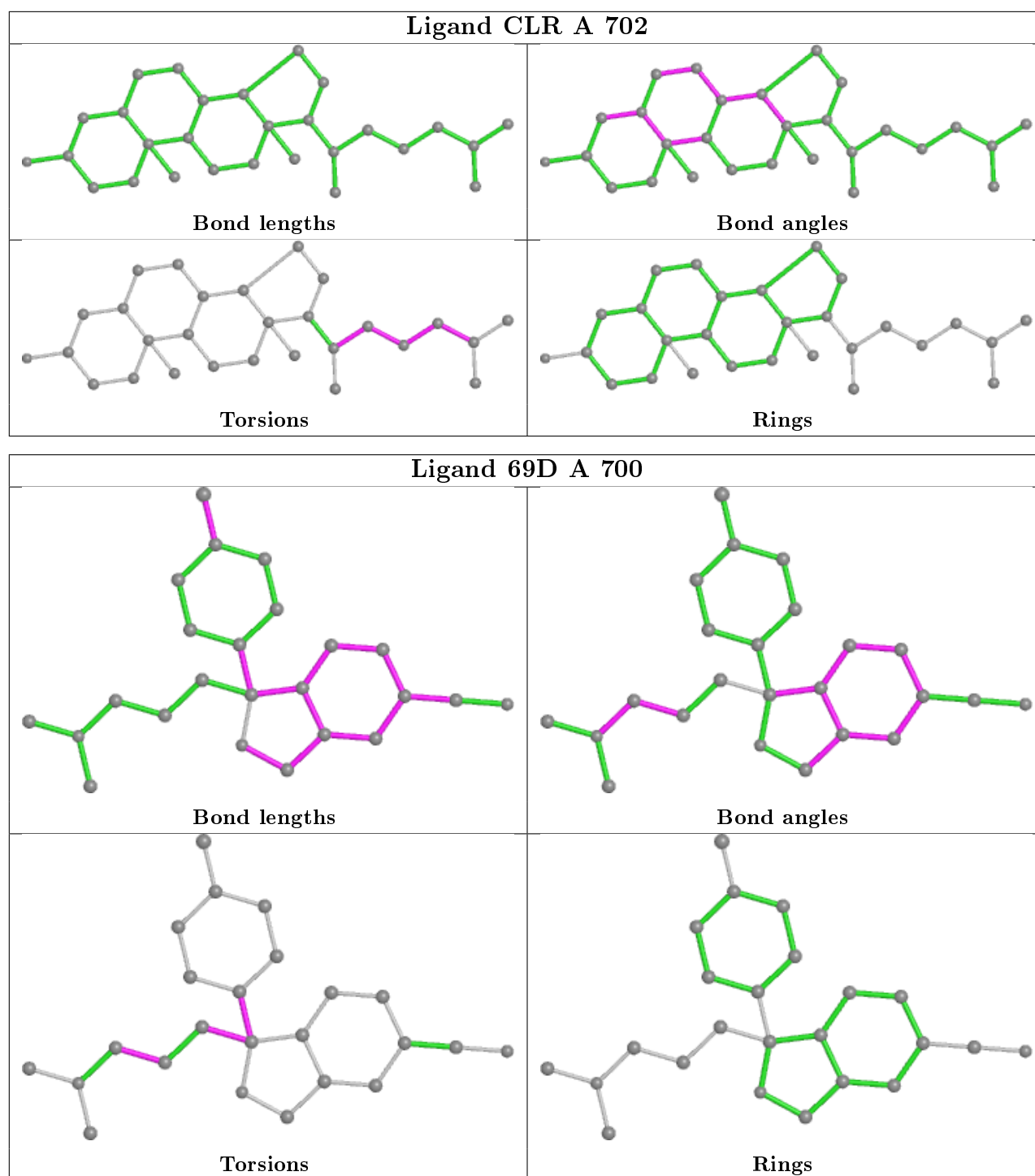
Mol	Chain	Res	Type	Atoms
4	A	700	69D	C07-C05-C06-C09
4	A	700	69D	C10-C05-C06-C09
4	A	700	69D	O02-C05-C06-C09
5	A	701	NAG	O5-C5-C6-O6
5	A	701	NAG	C4-C5-C6-O6
4	A	700	69D	C06-C09-C12-N03
6	A	702	CLR	C17-C20-C22-C23
6	A	702	CLR	C21-C20-C22-C23
4	A	700	69D	C06-C05-C10-C15
7	A	703	D12	C5-C6-C7-C8
4	A	700	69D	C06-C05-C10-C16
5	A	705	NAG	O5-C5-C6-O6
4	A	700	69D	O02-C05-C10-C15
4	A	700	69D	O02-C05-C10-C16
6	A	702	CLR	C20-C22-C23-C24
6	A	702	CLR	C23-C24-C25-C26
7	A	703	D12	C4-C5-C6-C7
6	A	702	CLR	C23-C24-C25-C27
6	A	702	CLR	C22-C23-C24-C25
7	A	703	D12	C9-C10-C11-C12

There are no ring outliers.

4 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	A	702	CLR	4	0
4	A	700	69D	1	0
5	A	701	NAG	2	0
7	A	703	D12	1	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

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	542/549 (98%)	0.61	67 (12%) 4 5	106, 163, 232, 359	0
2	B	218/221 (98%)	1.46	61 (27%) 0 0	110, 221, 445, 538	0
3	C	214/214 (100%)	1.82	57 (26%) 0 0	137, 240, 585, 730	0
All	All	974/984 (98%)	1.06	185 (18%) 1 1	106, 178, 402, 730	0

All (185) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	151	PRO	25.7
3	C	202	THR	21.6
3	C	206	TYR	18.4
2	B	150	ALA	14.9
2	B	188	VAL	13.6
3	C	151	SER	12.8
2	B	237	PRO	12.2
3	C	201	LEU	12.2
3	C	233	GLU	12.1
3	C	152	VAL	11.3
3	C	209	HIS	10.9
3	C	204	ASP	10.7
2	B	152	GLY	10.5
3	C	200	THR	10.3
3	C	205	GLU	10.2
3	C	232	ASN	10.2
2	B	187	SER	10.1
3	C	142	SER	10.0
3	C	141	SER	9.9
2	B	204	SER	9.8
3	C	207	GLU	9.6
2	B	179	TRP	9.0
3	C	143	GLU	8.9

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Mol	Chain	Res	Type	RSRZ
3	C	150	ALA	8.5
3	C	203	LYS	8.3
3	C	199	LEU	7.9
2	B	186	SER	7.7
3	C	231	ARG	7.3
3	C	39	VAL	7.2
2	B	190	THR	7.1
2	B	182	GLY	6.9
2	B	208	VAL	6.8
1	A	401	ALA	6.5
3	C	95	ILE	6.5
1	A	423	PHE	6.5
3	C	208	ARG	6.5
1	A	422	PHE	6.4
3	C	146	THR	6.1
2	B	219	THR	6.1
2	B	185	SER	6.0
2	B	155	ASP	5.9
2	B	163	LEU	5.8
1	A	514	TRP	5.8
3	C	153	VAL	5.8
2	B	149	LEU	5.7
3	C	144	GLN	5.5
3	C	212	TYR	5.5
2	B	153	CYS	5.4
2	B	218	VAL	5.3
3	C	198	THR	5.2
3	C	82	PHE	5.2
2	B	189	HIS	5.1
3	C	94	THR	5.0
2	B	148	PRO	5.0
3	C	170	ILE	5.0
2	B	235	LEU	5.0
1	A	426	ILE	4.9
2	B	102	LEU	4.8
2	B	66	TRP	4.8
1	A	417	MET	4.7
3	C	106	TYR	4.7
2	B	233	LYS	4.6
2	B	236	GLU	4.5
3	C	98	VAL	4.4
3	C	139	PRO	4.4

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Mol	Chain	Res	Type	RSRZ
1	A	418	PRO	4.4
2	B	207	THR	4.3
2	B	166	LEU	4.3
1	A	245	LEU	4.2
3	C	93	PHE	4.1
1	A	113	GLY	4.1
1	A	74	GLY	4.1
2	B	80	ASN	4.0
2	B	209	PRO	3.9
2	B	212	THR	3.9
1	A	317	TRP	3.9
2	B	86	LYS	3.9
1	A	407	PHE	3.8
1	A	414	ILE	3.7
2	B	87	ALA	3.7
3	C	210	ASN	3.6
3	C	124	LEU	3.5
2	B	205	SER	3.5
1	A	598	ILE	3.5
1	A	427	PHE	3.5
3	C	78	VAL	3.5
1	A	425	ILE	3.4
2	B	83	PHE	3.4
3	C	41	ILE	3.4
2	B	65	GLU	3.4
1	A	424	ALA	3.4
2	B	181	SER	3.4
2	B	177	VAL	3.4
2	B	165	CYS	3.3
1	A	547	LEU	3.3
2	B	146	VAL	3.3
1	A	134	TYR	3.2
2	B	167	VAL	3.2
1	A	220	TRP	3.2
1	A	86	VAL	3.2
1	A	405	LEU	3.2
2	B	164	GLY	3.1
2	B	195	LEU	3.1
2	B	206	VAL	3.1
1	A	406	LEU	3.1
1	A	487	TYR	3.1
1	A	359	GLN	3.1

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Mol	Chain	Res	Type	RSRZ
1	A	281	VAL	3.1
2	B	124	TYR	3.0
1	A	190	SER	3.0
3	C	40	SER	3.0
1	A	515	PHE	3.0
3	C	197	SER	2.9
3	C	81	ARG	2.9
1	A	400	ASP	2.9
3	C	145	LEU	2.8
1	A	232	TYR	2.8
3	C	79	PRO	2.8
2	B	103	ARG	2.8
3	C	189	LYS	2.7
1	A	197	TRP	2.7
1	A	402	GLY	2.7
1	A	107	TYR	2.7
1	A	271	TRP	2.7
1	A	469	VAL	2.6
1	A	186	TYR	2.6
2	B	121	ARG	2.6
1	A	295	LEU	2.6
3	C	155	PHE	2.5
1	A	90	LEU	2.5
3	C	140	PRO	2.5
1	A	478	LEU	2.5
1	A	104	ARG	2.5
2	B	147	TYR	2.5
1	A	386	MET	2.5
3	C	179	VAL	2.5
3	C	83	THR	2.5
1	A	468	ALA	2.4
1	A	565	LEU	2.4
1	A	597	LEU	2.4
2	B	178	THR	2.4
3	C	178	GLY	2.4
3	C	55	TRP	2.4
3	C	97	SER	2.4
1	A	576	ILE	2.3
1	A	600	THR	2.3
2	B	81	GLN	2.3
1	A	362	LEU	2.3
1	A	272	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	111	GLN	2.3
1	A	467	LEU	2.3
2	B	160	SER	2.3
1	A	390	ARG	2.3
2	B	68	GLY	2.3
2	B	57	LYS	2.3
1	A	121	TYR	2.3
1	A	410	TYR	2.3
1	A	404	SER	2.3
1	A	383	LEU	2.2
2	B	67	ILE	2.2
3	C	102	ASP	2.2
2	B	119	PRO	2.2
2	B	203	SER	2.2
1	A	566	PHE	2.2
1	A	475	PHE	2.2
1	A	285	ALA	2.2
2	B	85	GLY	2.2
1	A	421	THR	2.2
3	C	168	TRP	2.2
1	A	117	PHE	2.2
1	A	550	LEU	2.1
3	C	147	SER	2.1
3	C	234	CYS	2.1
1	A	89	LEU	2.1
2	B	101	GLU	2.1
1	A	268	PHE	2.1
3	C	67	LEU	2.1
1	A	363	VAL	2.1
1	A	333	ILE	2.1
2	B	234	LYS	2.0
2	B	213	TRP	2.0
1	A	470	VAL	2.0
2	B	222	VAL	2.0
3	C	180	LEU	2.0
1	A	428	PHE	2.0

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

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

6.3 Carbohydrates [i](#)

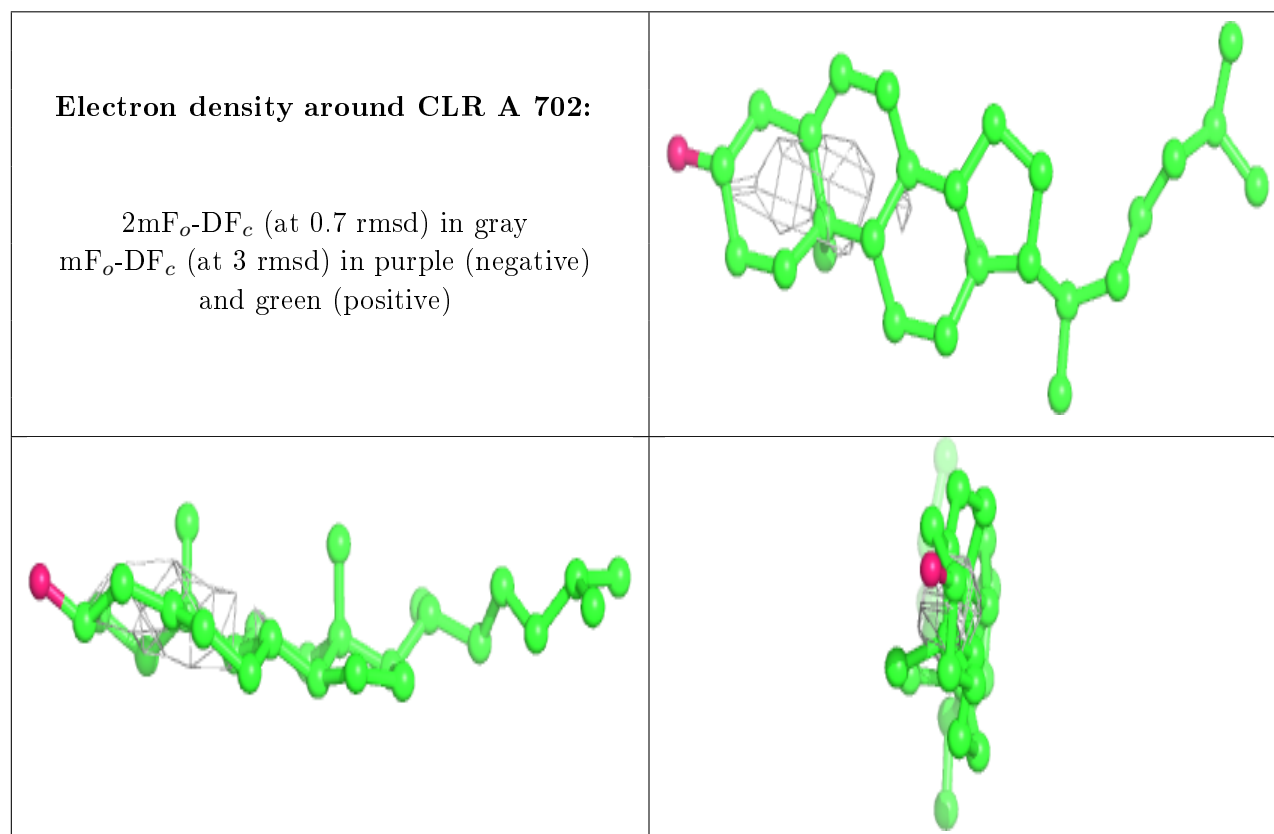
There are no monosaccharides in this entry.

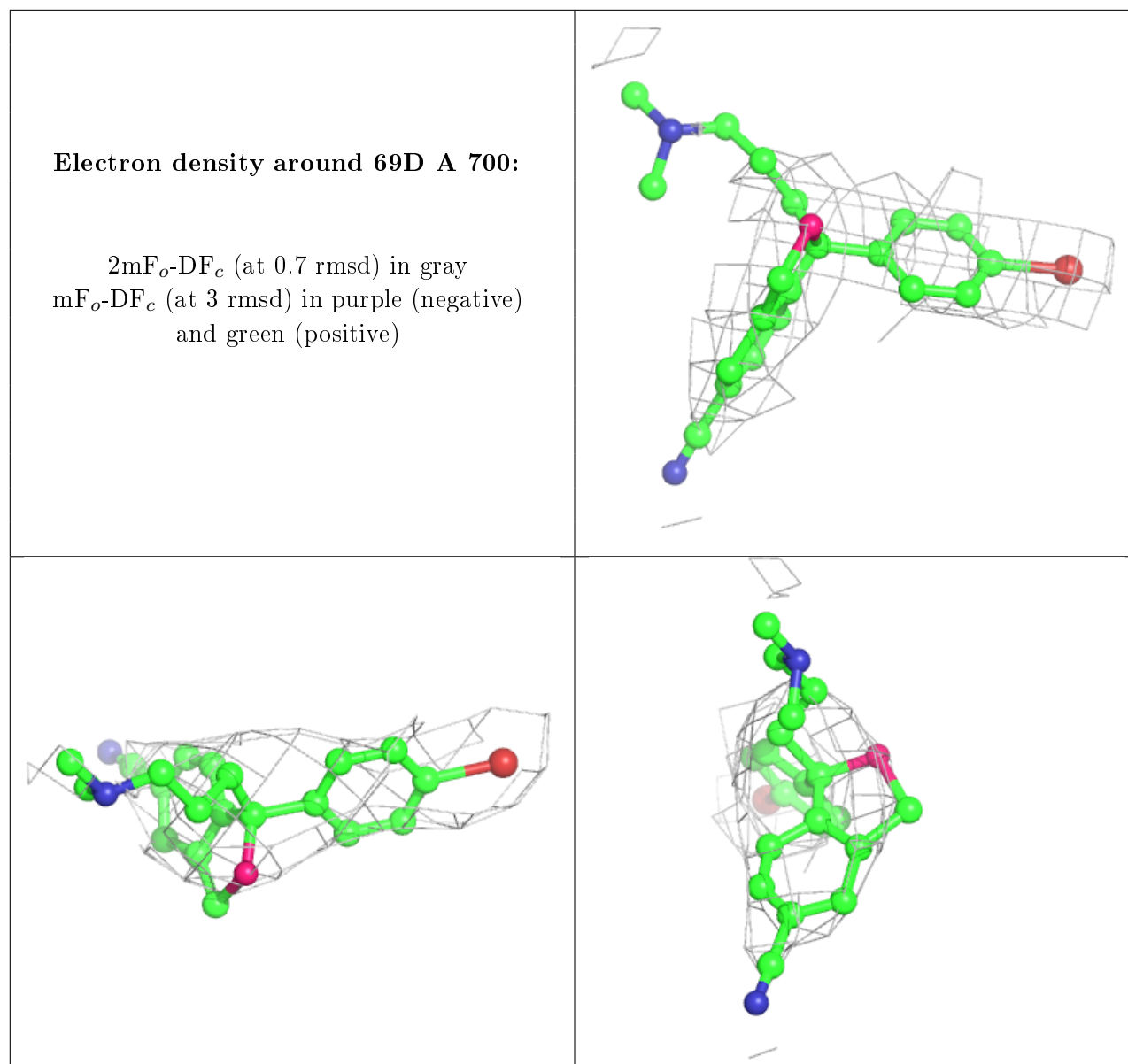
6.4 Ligands [i](#)

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(Å ²)	Q<0.9
6	CLR	A	702	28/28	0.55	1.59	166,215,229,239	0
5	NAG	A	705	14/15	0.67	0.26	341,346,348,350	0
7	D12	A	703	12/12	0.73	0.53	100,111,126,134	0
8	HEX	A	704	6/6	0.80	0.41	77,106,122,136	0
4	69D	A	700	24/24	0.90	0.46	119,155,185,275	0
5	NAG	A	701	14/15	0.92	0.18	99,122,205,206	0

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 [i](#)

There are no such residues in this entry.