



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 02:16 AM UTC

PDB ID : 4W1O / pdb_00004w1o
Title : PDE4D complexed with inhibitor
Authors : Sorensen, M.D.
Deposited on : 2014-08-14
Resolution : 2.20 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

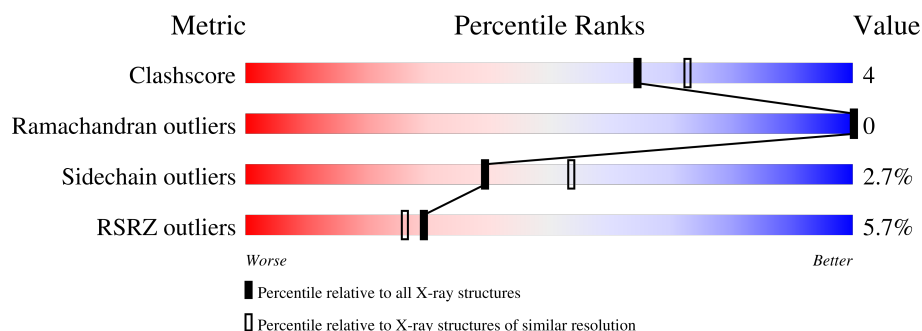
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 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	190562	6851 (2.20-2.20)
Ramachandran outliers	187476	6768 (2.20-2.20)
Sidechain outliers	187428	6769 (2.20-2.20)
RSRZ outliers	180081	6166 (2.20-2.20)

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	359	% 80% 9% 10%
1	B	359	4% 79% 10% 9%
1	C	359	6% 78% 11% 11%
1	D	359	10% 78% 11% 12%

2 Entry composition [i](#)

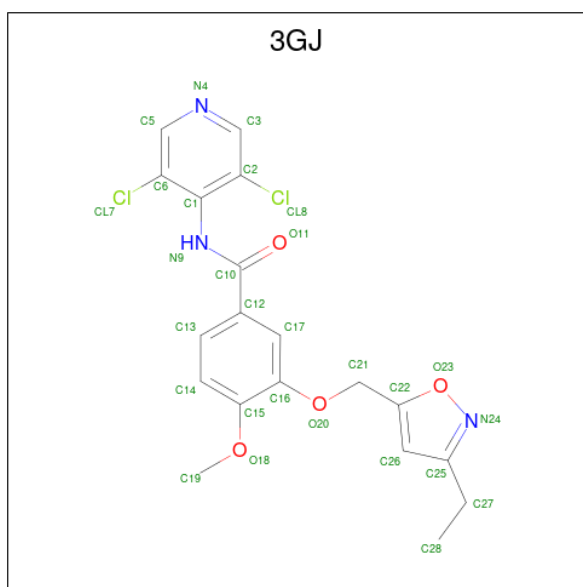
There are 4 unique types of molecules in this entry. The entry contains 11010 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 cAMP-specific 3',5'-cyclic phosphodiesterase 4D.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	322	Total	C	N	O	S	0	0	0
			2604	1649	445	496	14			
1	B	325	Total	C	N	O	S	0	0	0
			2635	1669	450	502	14			
1	C	321	Total	C	N	O	S	0	0	0
			2608	1652	445	497	14			
1	D	317	Total	C	N	O	S	0	0	0
			2570	1630	440	486	14			

- Molecule 2 is N-(3,5-dichloropyridin-4-yl)-3-[(3-ethyl-1,2-oxazol-5-yl)methoxy]-4-methoxybenzamide (CCD ID: 3GJ) (formula: C₁₉H₁₇Cl₂N₃O₄).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	Cl	N O	0	0
			28	19	2	3 4		
2	B	1	Total	C	Cl	N O	0	0
			28	19	2	3 4		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
2	C	1	Total 28	C 19	Cl 2	N 3	O 4	0	0
2	D	1	Total 28	C 19	Cl 2	N 3	O 4	0	0

- Molecule 3 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total 2	Zn 2	0	0
3	B	2	Total 2	Zn 2	0	0
3	C	2	Total 2	Zn 2	0	0
3	D	2	Total 2	Zn 2	0	0

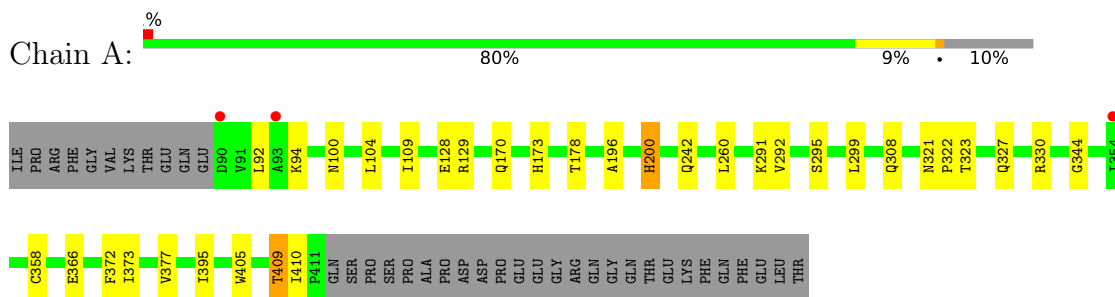
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	144	Total 144	O 144	0	0
4	B	121	Total 121	O 121	0	0
4	C	103	Total 103	O 103	0	0
4	D	105	Total 105	O 105	0	0

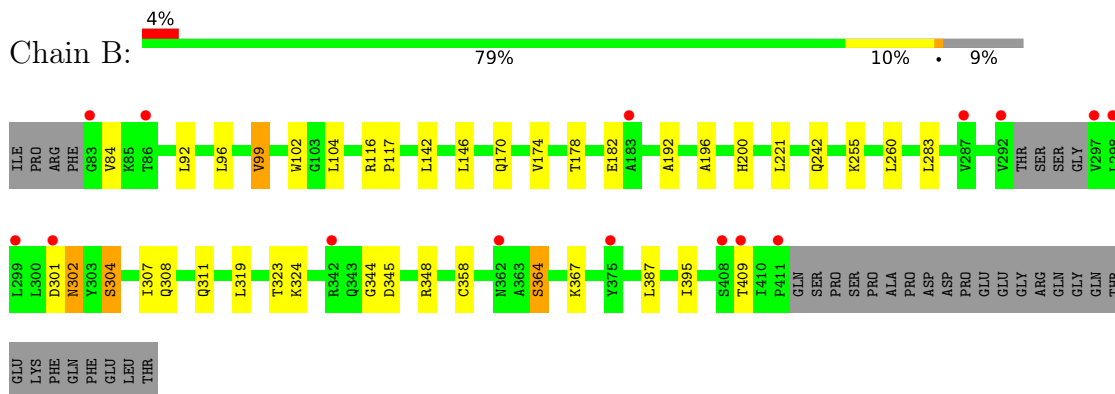
3 Residue-property plots [i](#)

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.

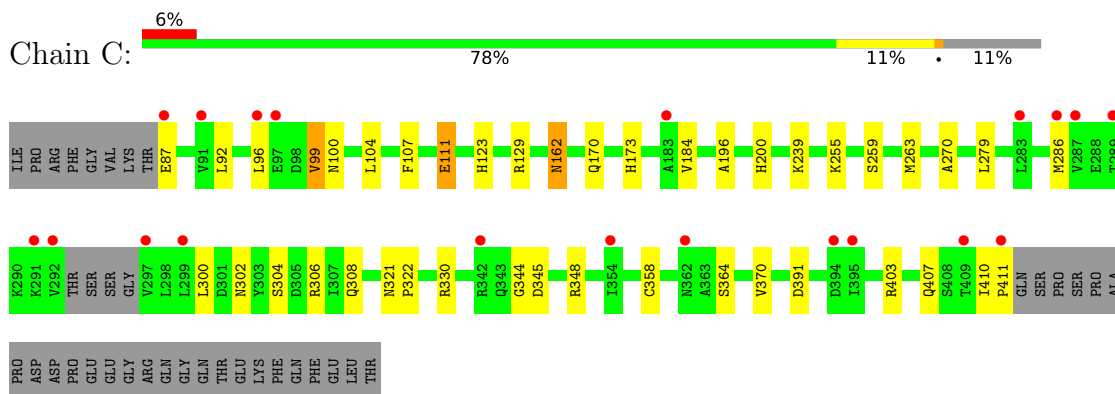
- Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4D



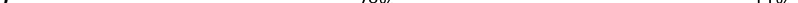
- Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4D

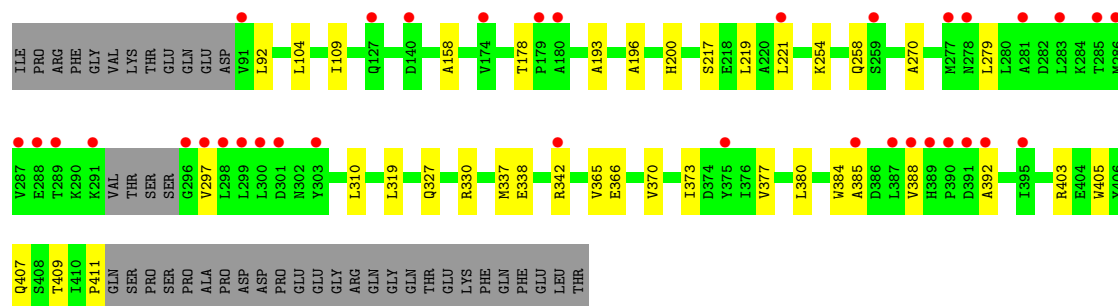


- Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4D



- Molecule 1: cAMP-specific 3',5'-cyclic phosphodiesterase 4D

Chain D: 



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	99.43Å 112.67Å 161.08Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	92.45 – 2.20 92.33 – 2.20	Depositor EDS
% Data completeness (in resolution range)	99.4 (92.45-2.20) 96.0 (92.33-2.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.30 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.237 , 0.281 0.227 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	41.8	Xtriage
Anisotropy	0.209	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 29.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.51$, $\langle L^2 \rangle = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	11010	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.36% 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 [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 3GJ, 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	A	0.74	0/2658	0.97	1/3612 (0.0%)
1	B	0.71	0/2688	0.94	0/3650
1	C	0.64	0/2661	0.94	1/3614 (0.0%)
1	D	0.67	0/2623	0.97	0/3562
All	All	0.69	0/10630	0.95	2/14438 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	391	ASP	N-CA-C	5.87	118.46	111.71
1	A	200	HIS	N-CA-C	5.42	118.99	112.38

There are no chirality outliers.

There are no planarity outliers.

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	A	2604	0	2564	17	1
1	B	2635	0	2595	24	1
1	C	2608	0	2563	25	0
1	D	2570	0	2533	19	0
2	A	28	0	17	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	28	0	17	1	0
2	C	28	0	17	0	0
2	D	28	0	17	0	0
3	A	2	0	0	0	0
3	B	2	0	0	0	0
3	C	2	0	0	0	0
3	D	2	0	0	0	0
4	A	144	0	0	0	0
4	B	121	0	0	1	0
4	C	103	0	0	0	0
4	D	105	0	0	0	0
All	All	11010	0	10323	81	1

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 4.

All (81) 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:366:GLU:HG2	1:A:409:THR:HG23	1.52	0.90
1:A:100:ASN:HD22	1:A:173:HIS:HE1	1.25	0.84
1:A:129:ARG:HE	1:A:173:HIS:HD2	1.27	0.82
1:B:96:LEU:O	1:B:99:VAL:HG22	1.86	0.76
1:A:366:GLU:HG2	1:A:409:THR:CG2	2.15	0.75
1:B:409:THR:HG23	1:D:411:PRO:HB3	1.67	0.74
1:C:302:ASN:O	1:C:306:ARG:HG3	1.90	0.71
1:A:295:SER:HB2	1:B:255:LYS:HG3	1.73	0.70
1:A:100:ASN:ND2	1:A:173:HIS:HE1	1.90	0.69
1:C:129:ARG:HE	1:C:173:HIS:HD1	1.42	0.68
1:C:162:ASN:H	1:C:162:ASN:HD22	1.40	0.67
1:B:307:ILE:O	1:B:311:GLN:HG3	1.96	0.65
1:C:345:ASP:OD1	1:C:348:ARG:NH2	2.29	0.65
1:B:84:VAL:HG11	1:C:123:HIS:CD2	2.31	0.65
1:D:104:LEU:HD11	1:D:109:ILE:HD11	1.79	0.64
1:D:366:GLU:HG2	1:D:409:THR:HG22	1.82	0.62
1:D:330:ARG:HD3	1:D:405:TRP:CH2	2.35	0.62
1:A:129:ARG:HE	1:A:173:HIS:CD2	2.16	0.62
1:D:254:LYS:HE3	1:D:258:GLN:OE1	1.99	0.61
1:B:364:SER:HB2	1:B:367:LYS:HB2	1.82	0.61
1:B:301:ASP:HB3	1:B:302:ASN:HD22	1.65	0.60
1:C:162:ASN:HD22	1:C:162:ASN:N	1.99	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:283:LEU:HD11	1:B:387:LEU:HD22	1.84	0.60
1:C:370:VAL:HG11	1:C:407:GLN:HE21	1.66	0.59
1:C:403:ARG:HH12	1:C:407:GLN:HG3	1.69	0.58
1:A:321:ASN:HB2	1:A:322:PRO:HD3	1.86	0.58
1:B:344:GLY:HA3	1:B:358:CYS:O	2.04	0.57
1:B:304:SER:O	1:B:308:GLN:HB2	2.05	0.55
1:C:100:ASN:ND2	1:C:173:HIS:NE2	2.54	0.55
1:A:196:ALA:O	1:A:200:HIS:HB3	2.08	0.54
1:D:403:ARG:NH1	1:D:407:GLN:HG3	2.24	0.53
1:D:338:GLU:O	1:D:342:ARG:HD2	2.09	0.52
1:B:302:ASN:ND2	1:B:302:ASN:H	2.09	0.51
1:D:193:ALA:HB2	1:D:310:LEU:HD22	1.93	0.51
1:C:96:LEU:O	1:C:99:VAL:HB	2.10	0.51
1:C:344:GLY:HA3	1:C:358:CYS:O	2.11	0.51
1:D:270:ALA:HB1	1:D:279:LEU:HD11	1.93	0.51
1:D:254:LYS:O	1:D:258:GLN:HG3	2.10	0.50
1:C:304:SER:O	1:C:308:GLN:HB2	2.12	0.50
1:D:337:MET:HE2	1:D:365:VAL:HG22	1.94	0.49
1:A:100:ASN:HD22	1:A:173:HIS:CE1	2.17	0.49
1:A:323:THR:HB	1:A:395:ILE:HG23	1.95	0.48
1:D:373:ILE:HA	1:D:377:VAL:HB	1.95	0.48
1:D:158:ALA:H	1:D:342:ARG:HH12	1.62	0.48
1:A:344:GLY:HA3	1:A:358:CYS:O	2.14	0.47
1:B:102:TRP:CE2	1:B:324:LYS:HE2	2.49	0.47
1:C:107:PHE:O	1:C:111:GLU:HG2	2.15	0.47
1:B:192:ALA:HB2	1:B:260:LEU:HD12	1.97	0.47
1:D:385:ALA:HA	1:D:392:ALA:HB3	1.97	0.46
1:B:302:ASN:OD1	1:B:304:SER:HB2	2.16	0.46
1:B:196:ALA:O	1:B:200:HIS:HB3	2.16	0.45
1:B:221:LEU:O	1:B:221:LEU:HD23	2.15	0.45
1:B:323:THR:HB	1:B:395:ILE:HG23	1.98	0.45
1:B:409:THR:HG21	4:B:704:HOH:O	2.16	0.45
1:A:104:LEU:HD22	1:A:170:GLN:HG3	1.98	0.45
1:C:104:LEU:HD22	1:C:170:GLN:HG3	1.99	0.45
1:C:403:ARG:NH1	1:C:407:GLN:HG3	2.32	0.45
1:D:196:ALA:O	1:D:200:HIS:HB3	2.17	0.44
1:B:116:ARG:N	1:B:117:PRO:CD	2.80	0.44
1:C:184:VAL:O	1:C:306:ARG:NH2	2.49	0.44
1:D:217:SER:O	1:D:221:LEU:HG	2.18	0.43
1:B:104:LEU:HD22	1:B:170:GLN:HG3	2.01	0.43
1:C:286:MET:HE2	1:C:308:GLN:OE1	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:345:ASP:OD1	1:B:348:ARG:NH2	2.51	0.43
1:D:370:VAL:HG21	1:D:407:GLN:HG2	2.01	0.43
1:A:410:ILE:O	1:C:330:ARG:NH2	2.51	0.43
1:B:170:GLN:O	1:B:174:VAL:HG23	2.20	0.42
1:C:321:ASN:HB2	1:C:322:PRO:HD3	2.02	0.42
1:A:330:ARG:HD3	1:A:405:TRP:CH2	2.55	0.42
1:C:162:ASN:H	1:C:162:ASN:ND2	2.13	0.42
1:B:319:LEU:CD2	2:B:501:3GJ:CL7	3.05	0.41
1:C:270:ALA:HB1	1:C:279:LEU:HD11	2.02	0.41
1:D:384:TRP:O	1:D:388:VAL:HG22	2.21	0.41
1:A:372:PHE:HB2	2:A:501:3GJ:C26	2.51	0.41
1:C:196:ALA:O	1:C:200:HIS:HB3	2.21	0.41
1:C:300:LEU:HD13	1:C:306:ARG:HA	2.01	0.41
1:D:319:LEU:HD12	1:D:380:LEU:HD22	2.02	0.41
1:A:373:ILE:HA	1:A:377:VAL:HB	2.02	0.40
1:C:259:SER:O	1:C:263:MET:HG3	2.22	0.40
1:B:142:LEU:O	1:B:146:LEU:HG	2.22	0.40
1:C:410:ILE:HA	1:C:411:PRO:HD3	1.90	0.40

All (1) 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:A:242:GLN:NE2	1:B:242:GLN:OE1[4_555]	2.10	0.10

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	320/359 (89%)	313 (98%)	7 (2%)	0	100	100
1	B	321/359 (89%)	317 (99%)	4 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	317/359 (88%)	309 (98%)	8 (2%)	0	100	100
1	D	313/359 (87%)	306 (98%)	7 (2%)	0	100	100
All	All	1271/1436 (88%)	1245 (98%)	26 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	294/327 (90%)	282 (96%)	12 (4%)	27	37
1	B	297/327 (91%)	290 (98%)	7 (2%)	43	58
1	C	294/327 (90%)	286 (97%)	8 (3%)	39	53
1	D	289/327 (88%)	284 (98%)	5 (2%)	53	69
All	All	1174/1308 (90%)	1142 (97%)	32 (3%)	39	53

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	92	LEU
1	A	94	LYS
1	A	109	ILE
1	A	128	GLU
1	A	178	THR
1	A	260	LEU
1	A	291	LYS
1	A	292	VAL
1	A	299	LEU
1	A	308	GLN
1	A	327	GLN
1	A	409	THR
1	B	92	LEU
1	B	99	VAL

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Mol	Chain	Res	Type
1	B	178	THR
1	B	182	GLU
1	B	302	ASN
1	B	304	SER
1	B	364	SER
1	C	87	GLU
1	C	92	LEU
1	C	99	VAL
1	C	111	GLU
1	C	162	ASN
1	C	239	LYS
1	C	255	LYS
1	C	364	SER
1	D	92	LEU
1	D	178	THR
1	D	219	LEU
1	D	297	VAL
1	D	327	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	100	ASN
1	A	173	HIS
1	A	210	GLN
1	A	242	GLN
1	A	278	ASN
1	B	123	HIS
1	B	127	GLN
1	B	302	ASN
1	B	369	GLN
1	C	100	ASN
1	C	123	HIS
1	C	162	ASN
1	C	210	GLN
1	C	250	GLN
1	C	258	GLN
1	C	369	GLN
1	C	389	HIS
1	C	407	GLN
1	D	123	HIS
1	D	245	ASN

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Mol	Chain	Res	Type
1	D	308	GLN
1	D	321	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 12 ligands modelled in this entry, 8 are monoatomic - leaving 4 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	3GJ	A	501	-	30,30,30	2.15	7 (23%)	39,41,41	2.40	11 (28%)
2	3GJ	D	501	-	30,30,30	2.19	8 (26%)	39,41,41	2.27	13 (33%)
2	3GJ	C	501	-	30,30,30	2.26	9 (30%)	39,41,41	2.45	12 (30%)
2	3GJ	B	501	-	30,30,30	2.27	8 (26%)	39,41,41	2.42	10 (25%)

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	3GJ	A	501	-	-	3/17/17/17	0/3/3/3
2	3GJ	D	501	-	-	3/17/17/17	0/3/3/3
2	3GJ	C	501	-	-	5/17/17/17	0/3/3/3
2	3GJ	B	501	-	-	5/17/17/17	0/3/3/3

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	501	3GJ	C1-C2	6.31	1.49	1.40
2	D	501	3GJ	C1-C6	6.15	1.49	1.40
2	B	501	3GJ	C1-C6	6.06	1.48	1.40
2	C	501	3GJ	C1-C2	5.94	1.48	1.40
2	A	501	3GJ	C1-C2	5.89	1.48	1.40
2	D	501	3GJ	C1-C2	5.80	1.48	1.40
2	C	501	3GJ	C1-C6	5.76	1.48	1.40
2	A	501	3GJ	C1-C6	5.49	1.48	1.40
2	B	501	3GJ	C15-C16	5.00	1.51	1.40
2	C	501	3GJ	C15-C16	4.79	1.50	1.40
2	A	501	3GJ	C15-C16	4.62	1.50	1.40
2	D	501	3GJ	C15-C16	4.24	1.49	1.40
2	C	501	3GJ	C1-N9	-3.72	1.36	1.43
2	C	501	3GJ	C26-C22	3.61	1.40	1.34
2	D	501	3GJ	C26-C22	3.47	1.40	1.34
2	A	501	3GJ	C26-C22	3.43	1.40	1.34
2	D	501	3GJ	C1-N9	-3.39	1.37	1.43
2	A	501	3GJ	C1-N9	-3.30	1.37	1.43
2	B	501	3GJ	C26-C22	3.29	1.39	1.34
2	B	501	3GJ	C1-N9	-3.27	1.37	1.43
2	D	501	3GJ	C2-CL8	2.57	1.79	1.73
2	B	501	3GJ	C2-CL8	2.53	1.79	1.73
2	C	501	3GJ	C21-C22	2.51	1.52	1.48
2	A	501	3GJ	C25-N24	2.47	1.36	1.29
2	D	501	3GJ	C25-N24	2.42	1.36	1.29
2	C	501	3GJ	C25-N24	2.40	1.36	1.29
2	C	501	3GJ	C6-CL7	2.37	1.79	1.73
2	C	501	3GJ	C2-CL8	2.35	1.79	1.73
2	B	501	3GJ	C25-N24	2.32	1.36	1.29
2	A	501	3GJ	C2-CL8	2.25	1.78	1.73
2	D	501	3GJ	C6-CL7	2.03	1.78	1.73
2	B	501	3GJ	C21-C22	2.01	1.51	1.48

All (46) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	501	3GJ	O23-C22-C21	6.85	128.10	115.95
2	C	501	3GJ	O23-C22-C21	6.82	128.06	115.95
2	A	501	3GJ	O23-C22-C21	6.48	127.45	115.95
2	C	501	3GJ	O23-C22-C26	-6.46	103.73	109.73
2	D	501	3GJ	O23-C22-C21	6.26	127.06	115.95
2	B	501	3GJ	O23-C22-C26	-6.12	104.04	109.73
2	A	501	3GJ	O23-C22-C26	-5.94	104.21	109.73
2	A	501	3GJ	C22-O23-N24	5.62	112.52	108.30
2	C	501	3GJ	C22-O23-N24	5.52	112.45	108.30
2	D	501	3GJ	O23-C22-C26	-5.47	104.65	109.73
2	B	501	3GJ	C22-O23-N24	4.89	111.98	108.30
2	A	501	3GJ	C19-O18-C15	4.87	124.66	117.51
2	D	501	3GJ	C22-O23-N24	4.70	111.83	108.30
2	B	501	3GJ	C19-O18-C15	4.38	123.94	117.51
2	D	501	3GJ	C19-O18-C15	4.19	123.66	117.51
2	C	501	3GJ	O18-C15-C16	4.07	120.92	115.40
2	B	501	3GJ	O18-C15-C16	3.99	120.82	115.40
2	D	501	3GJ	C3-N4-C5	3.80	122.68	117.51
2	B	501	3GJ	C3-N4-C5	3.75	122.60	117.51
2	C	501	3GJ	C3-N4-C5	3.72	122.57	117.51
2	B	501	3GJ	C26-C25-N24	-3.49	108.06	111.41
2	A	501	3GJ	C3-N4-C5	3.43	122.18	117.51
2	C	501	3GJ	C26-C25-N24	-3.23	108.31	111.41
2	A	501	3GJ	O18-C15-C16	3.18	119.72	115.40
2	D	501	3GJ	C26-C25-N24	-3.13	108.41	111.41
2	A	501	3GJ	C21-O20-C16	3.08	124.03	117.60
2	B	501	3GJ	C21-C22-C26	-3.01	127.85	134.22
2	A	501	3GJ	C26-C25-N24	-2.87	108.65	111.41
2	C	501	3GJ	O20-C16-C15	2.87	121.68	115.75
2	D	501	3GJ	O18-C15-C16	2.87	119.30	115.40
2	B	501	3GJ	O20-C16-C15	2.84	121.63	115.75
2	C	501	3GJ	C21-C22-C26	-2.84	128.21	134.22
2	D	501	3GJ	C21-C22-C26	-2.80	128.29	134.22
2	D	501	3GJ	C21-O20-C16	2.78	123.40	117.60
2	A	501	3GJ	C21-C22-C26	-2.78	128.34	134.22
2	D	501	3GJ	C3-C2-CL8	2.70	122.47	118.57
2	C	501	3GJ	C21-O20-C16	2.61	123.05	117.60
2	C	501	3GJ	C19-O18-C15	2.58	121.30	117.51
2	C	501	3GJ	O18-C15-C14	-2.55	120.00	124.30
2	A	501	3GJ	O20-C16-C15	2.42	120.75	115.75
2	C	501	3GJ	C3-C2-CL8	2.34	121.94	118.57
2	D	501	3GJ	C3-C2-C1	-2.33	118.88	120.16
2	D	501	3GJ	C12-C10-N9	2.18	121.19	115.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	501	3GJ	C3-C2-CL8	2.16	121.68	118.57
2	B	501	3GJ	C3-C2-C1	-2.14	118.98	120.16
2	D	501	3GJ	C6-C5-N4	-2.08	120.95	122.80

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	501	3GJ	C26-C25-C27-C28
2	B	501	3GJ	C26-C25-C27-C28
2	C	501	3GJ	C26-C25-C27-C28
2	D	501	3GJ	C26-C25-C27-C28
2	C	501	3GJ	C16-C15-O18-C19
2	C	501	3GJ	C14-C15-O18-C19
2	B	501	3GJ	C16-C15-O18-C19
2	D	501	3GJ	C15-C16-O20-C21
2	B	501	3GJ	C14-C15-O18-C19
2	B	501	3GJ	C15-C16-O20-C21
2	C	501	3GJ	C15-C16-O20-C21
2	A	501	3GJ	C15-C16-O20-C21
2	D	501	3GJ	C17-C16-O20-C21
2	B	501	3GJ	C17-C16-O20-C21
2	C	501	3GJ	C17-C16-O20-C21
2	A	501	3GJ	C17-C16-O20-C21

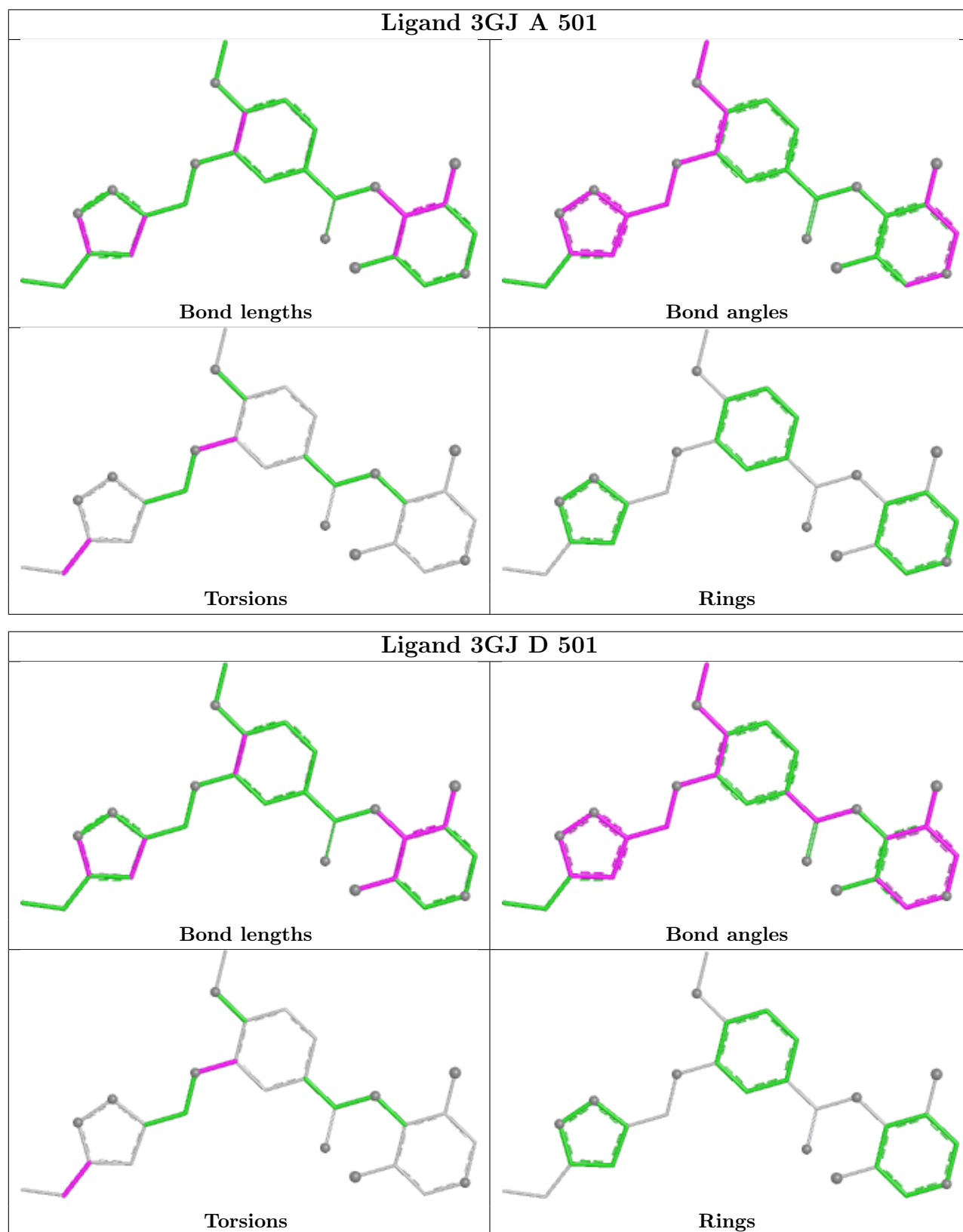
There are no ring outliers.

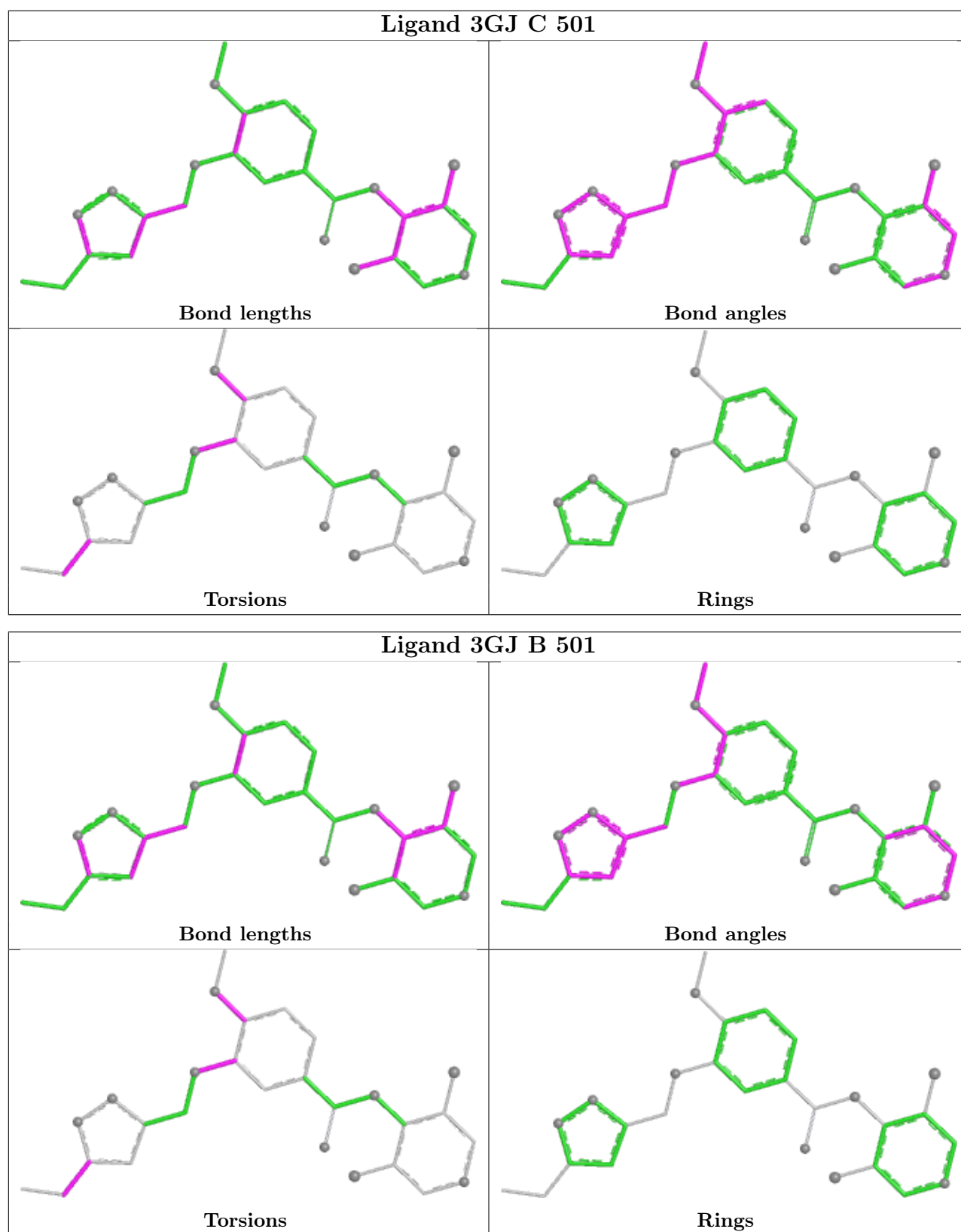
2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	501	3GJ	1	0
2	B	501	3GJ	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 ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

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	322/359 (89%)	0.22	3 (0%) 81 79	24, 35, 50, 62	0
1	B	325/359 (90%)	0.34	15 (4%) 37 34	24, 36, 57, 70	0
1	C	321/359 (89%)	0.66	20 (6%) 26 23	25, 43, 69, 84	0
1	D	317/359 (88%)	0.85	35 (11%) 10 8	28, 45, 64, 71	0
All	All	1285/1436 (89%)	0.52	73 (5%) 29 26	24, 40, 62, 84	0

All (73) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	91	VAL	5.7
1	D	296	GLY	5.5
1	D	287	VAL	4.4
1	B	83	GLY	4.3
1	B	411	PRO	4.2
1	D	388	VAL	4.1
1	D	299	LEU	4.1
1	C	297	VAL	4.1
1	D	286	MET	3.9
1	C	411	PRO	3.6
1	D	297	VAL	3.6
1	D	387	LEU	3.4
1	B	299	LEU	3.4
1	C	87	GLU	3.2
1	C	91	VAL	3.1
1	C	292	VAL	3.1
1	D	291	LYS	3.1
1	D	277	MET	3.1
1	D	288	GLU	3.0
1	D	392	ALA	3.0
1	D	285	THR	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	281	ALA	2.9
1	D	283	LEU	2.9
1	C	299	LEU	2.8
1	B	297	VAL	2.8
1	C	287	VAL	2.8
1	D	179	PRO	2.8
1	D	385	ALA	2.8
1	C	97	GLU	2.8
1	C	409	THR	2.8
1	D	342	ARG	2.7
1	D	221	LEU	2.7
1	D	300	LEU	2.7
1	D	259	SER	2.6
1	C	283	LEU	2.6
1	D	180	ALA	2.6
1	D	390	PRO	2.6
1	D	140	ASP	2.5
1	B	342	ARG	2.5
1	C	289	THR	2.5
1	D	289	THR	2.5
1	D	391	ASP	2.5
1	C	395	ILE	2.5
1	C	183	ALA	2.5
1	C	394	ASP	2.4
1	B	362	ASN	2.4
1	C	362	ASN	2.4
1	A	90	ASP	2.3
1	B	292	VAL	2.3
1	D	389	HIS	2.3
1	B	409	THR	2.3
1	C	342	ARG	2.3
1	B	301	ASP	2.3
1	D	127	GLN	2.3
1	C	354	ILE	2.3
1	D	395	ILE	2.3
1	D	303	TYR	2.3
1	B	287	VAL	2.3
1	B	86	THR	2.2
1	D	174	VAL	2.2
1	B	375	TYR	2.2
1	B	298	LEU	2.2
1	A	354	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	298	LEU	2.1
1	C	291	LYS	2.1
1	C	286	MET	2.1
1	D	278	ASN	2.1
1	D	375	TYR	2.1
1	B	408	SER	2.1
1	C	96	LEU	2.1
1	B	183	ALA	2.0
1	A	93	ALA	2.0
1	D	301	ASP	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](#)

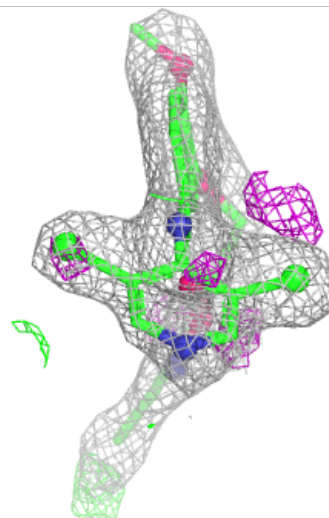
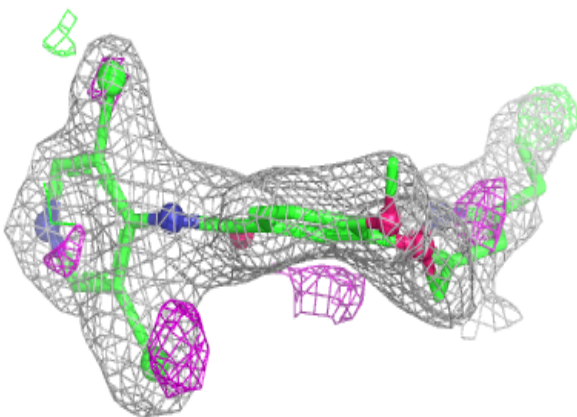
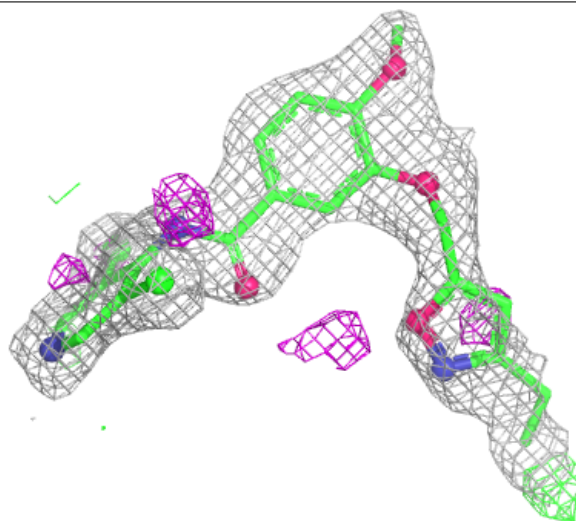
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	3GJ	C	501	28/28	0.81	0.16	58,61,63,64	0
2	3GJ	B	501	28/28	0.83	0.16	54,57,66,67	0
2	3GJ	D	501	28/28	0.84	0.17	59,63,67,68	0
2	3GJ	A	501	28/28	0.86	0.14	50,54,58,59	0
3	ZN	D	503	1/1	0.86	0.13	87,87,87,87	0
3	ZN	B	503	1/1	0.87	0.13	82,82,82,82	0
3	ZN	A	503	1/1	0.87	0.13	75,75,75,75	0
3	ZN	C	503	1/1	0.95	0.13	78,78,78,78	0
3	ZN	D	502	1/1	0.96	0.04	50,50,50,50	0
3	ZN	C	502	1/1	0.97	0.04	49,49,49,49	0
3	ZN	B	502	1/1	0.98	0.04	46,46,46,46	0
3	ZN	A	502	1/1	0.98	0.03	44,44,44,44	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.

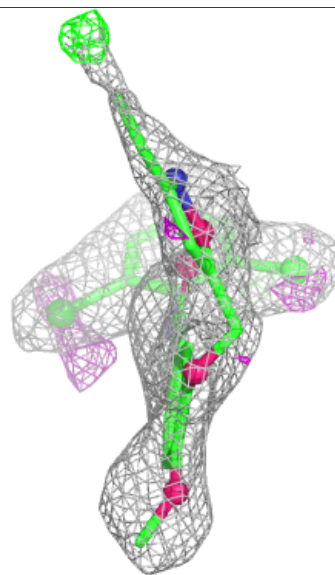
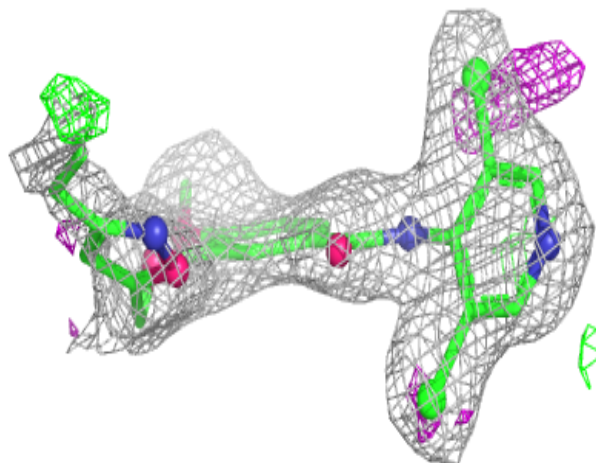
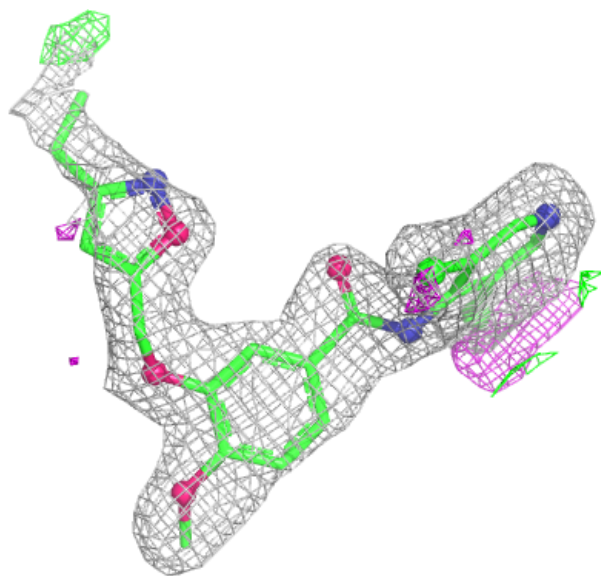
Electron density around 3GJ C 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



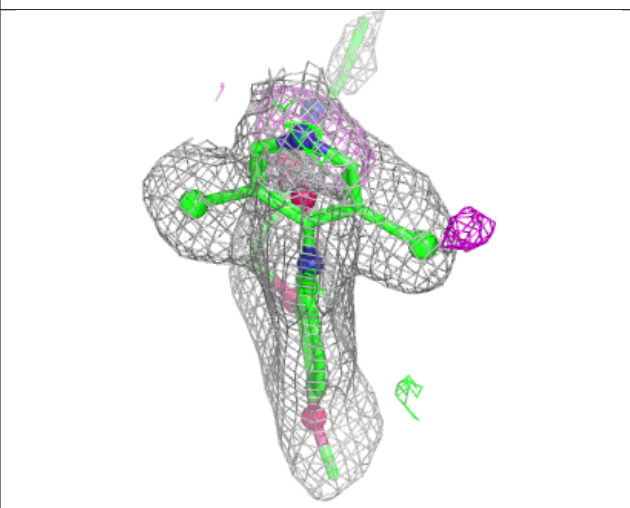
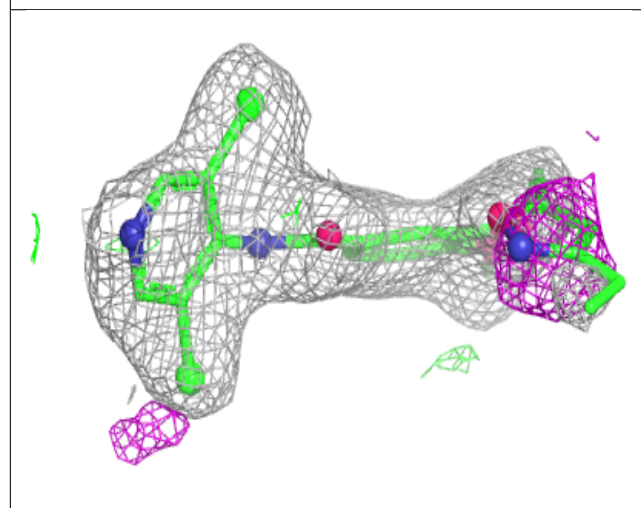
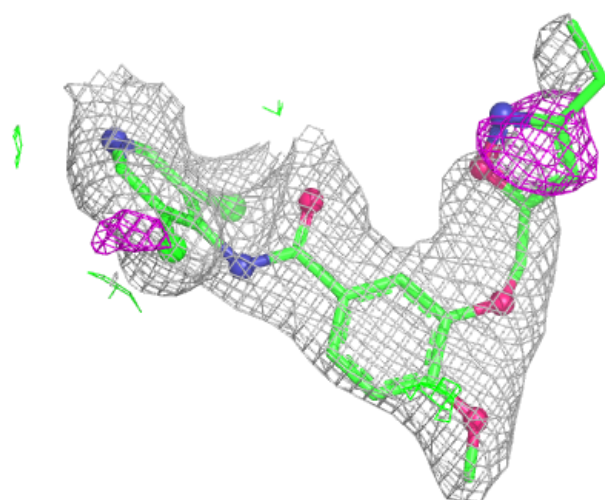
Electron density around 3GJ B 501:

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 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



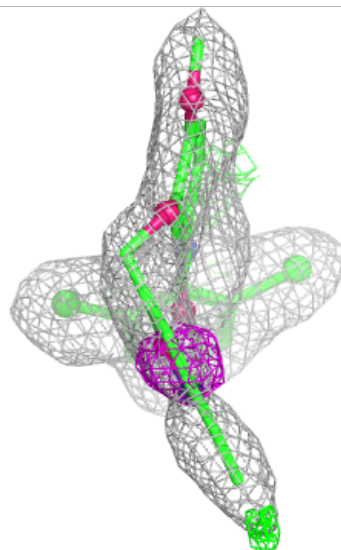
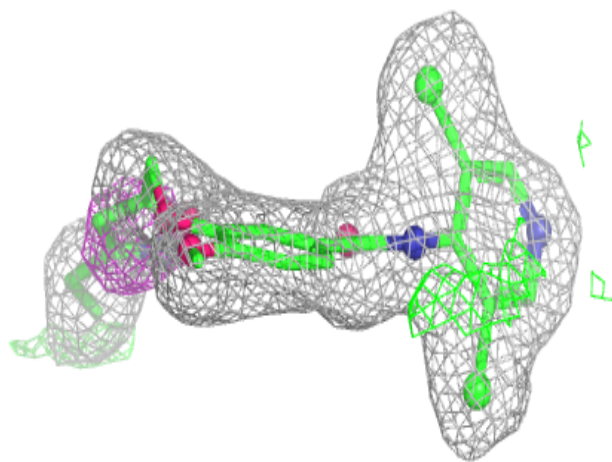
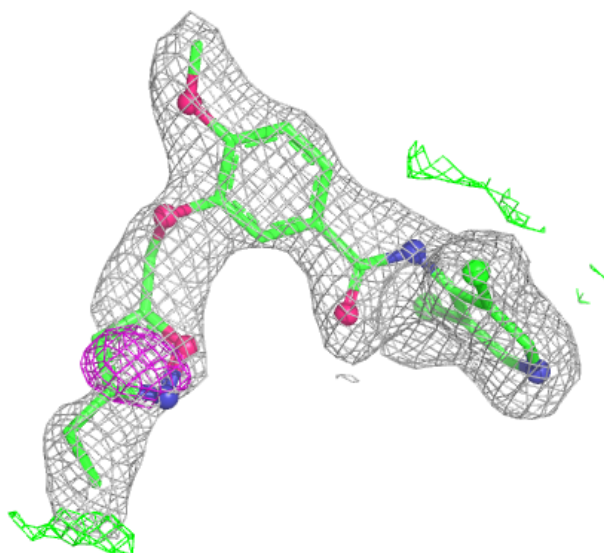
Electron density around 3GJ D 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around 3GJ A 501:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.