



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:14 PM UTC

PDB ID : 4GZ6 / pdb_00004gz6
Title : Crystal structure of human O-GlcNAc Transferase with UDP-5SGlcNAc
Authors : Lazarus, M.B.; Jiang, J.; Gloster, T.M.; Zandberg, W.F.; Vocadlo, D.J.; Walker, S.
Deposited on : 2012-09-06
Resolution : 2.98 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

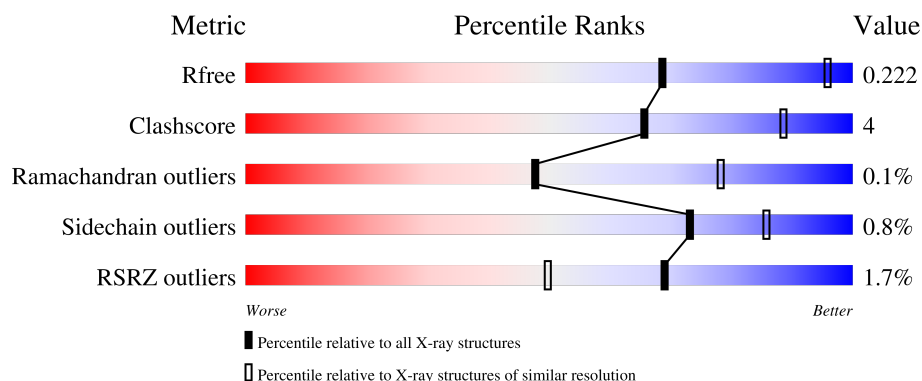
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.98 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	3580 (3.00-2.96)
Clashscore	190562	3904 (3.00-2.96)
Ramachandran outliers	187476	3761 (3.00-2.96)
Sidechain outliers	187428	3764 (3.00-2.96)
RSRZ outliers	180081	3579 (3.00-2.96)

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	723	<div> <div>0%</div> <div>83% 13% .</div> </div>
1	B	723	<div> <div>2%</div> <div>86% 11% .</div> </div>
1	C	723	<div> <div>0%</div> <div>84% 12% .</div> </div>
1	D	723	<div> <div>2%</div> <div>88% 8% .</div> </div>

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 22407 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 UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit.

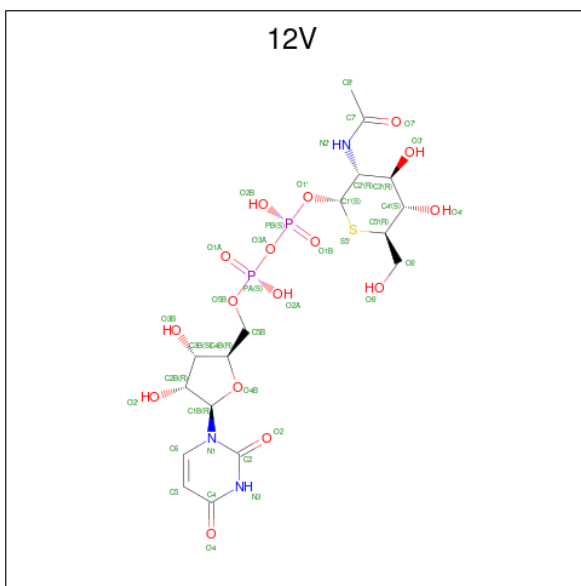
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	700	Total	C	N	O	S	0	0	0
			5528	3508	967	1014	39			
1	B	700	Total	C	N	O	S	0	0	0
			5528	3508	967	1014	39			
1	C	700	Total	C	N	O	S	0	0	0
			5528	3508	967	1014	39			
1	D	700	Total	C	N	O	S	0	0	0
			5528	3508	967	1014	39			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	309	GLY	-	expression tag	UNP O15294
A	310	PRO	-	expression tag	UNP O15294
A	311	GLY	-	expression tag	UNP O15294
A	312	SER	-	expression tag	UNP O15294
B	309	GLY	-	expression tag	UNP O15294
B	310	PRO	-	expression tag	UNP O15294
B	311	GLY	-	expression tag	UNP O15294
B	312	SER	-	expression tag	UNP O15294
C	309	GLY	-	expression tag	UNP O15294
C	310	PRO	-	expression tag	UNP O15294
C	311	GLY	-	expression tag	UNP O15294
C	312	SER	-	expression tag	UNP O15294
D	309	GLY	-	expression tag	UNP O15294
D	310	PRO	-	expression tag	UNP O15294
D	311	GLY	-	expression tag	UNP O15294
D	312	SER	-	expression tag	UNP O15294

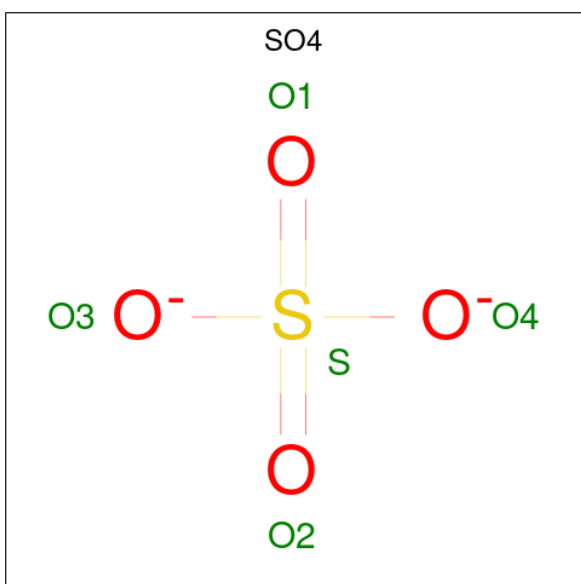
- Molecule 2 is (2S,3R,4R,5S,6R)-3-(acetylamino)-4,5-dihydroxy-6-(hydroxymethyl)tetrahydro-2H-thiopyran-2-yl [(2R,3S,4R,5R)-5-(2,4-dioxo-3,4-dihydropyrimidin-1(2H)-yl)-3,4-dihydroxytetrahydrofuran-2-yl]methyl dihydrogen diphosphate (CCD ID: 12V) (formula:

$C_{17}H_{27}N_3O_{16}P_2S$).



Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	S	0	0
			39	17	3	16	2	1		
2	B	1	Total	C	N	O	P	S	0	0
			39	17	3	16	2	1		
2	C	1	Total	C	N	O	P	S	0	0
			39	17	3	16	2	1		
2	D	1	Total	C	N	O	P	S	0	0
			39	17	3	16	2	1		

- Molecule 3 is SULFATE ION (CCD ID: SO4) (formula: O_4S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	A	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	16	Total O 16 16	0	0
4	B	13	Total O 13 13	0	0
4	C	7	Total O 7 7	0	0

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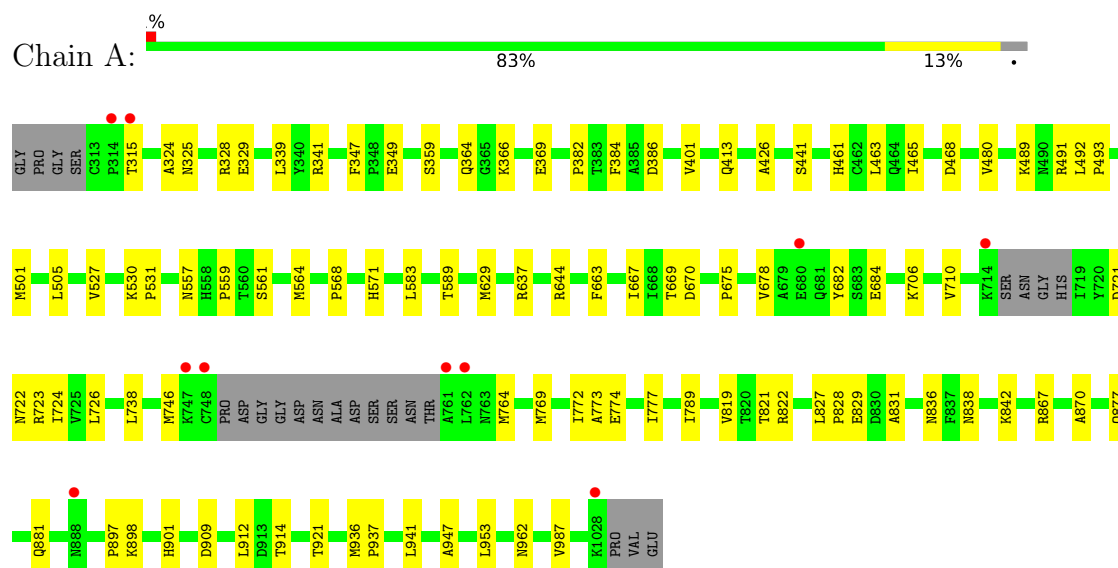
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	D	18	Total	O	0	0
			18	18		

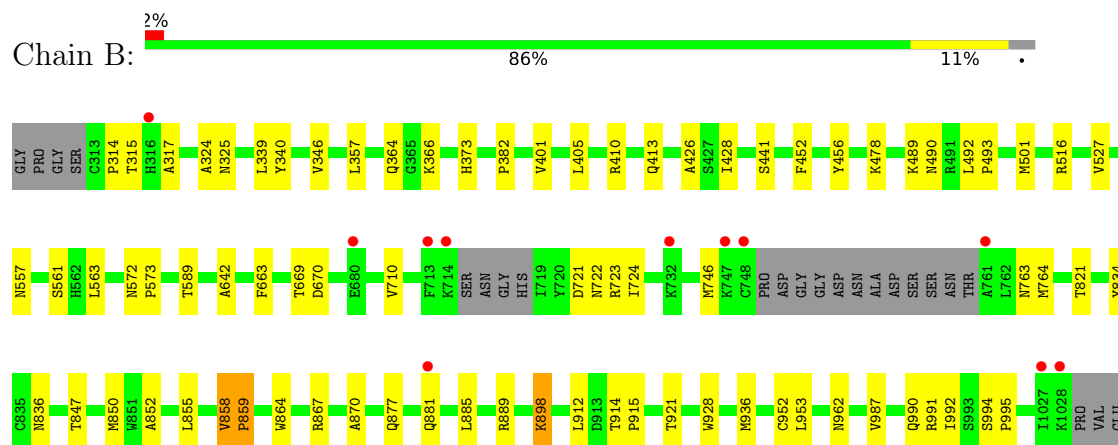
3 Residue-property plots

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.

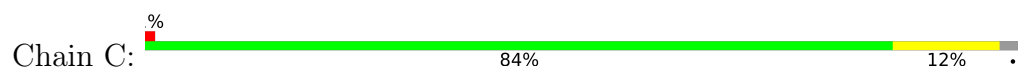
- Molecule 1: UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit

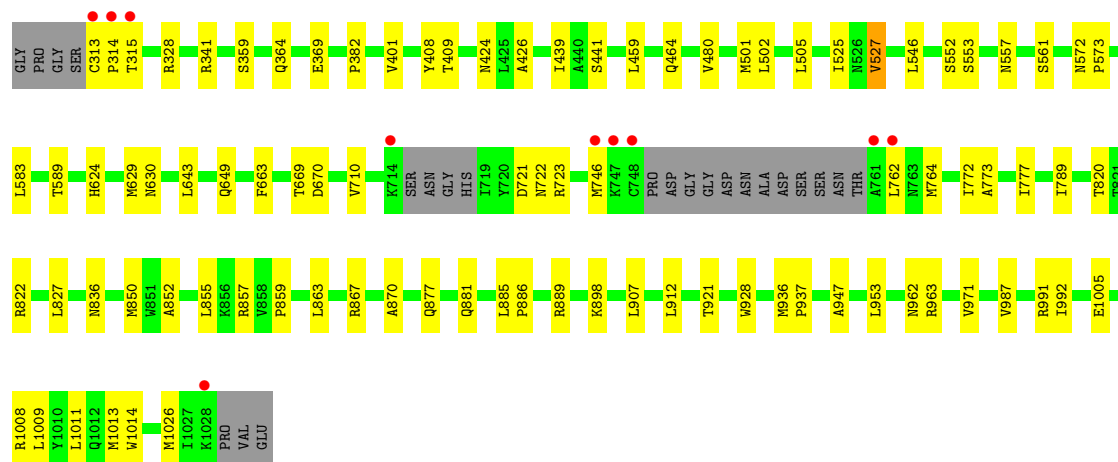


- Molecule 1: UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit

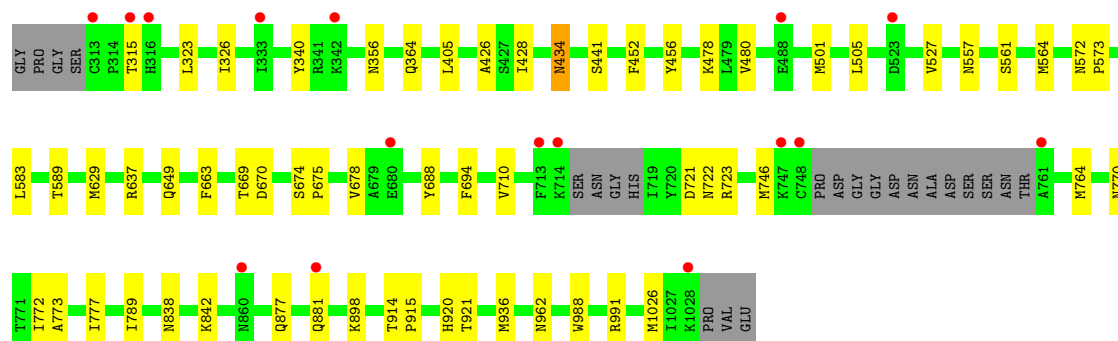
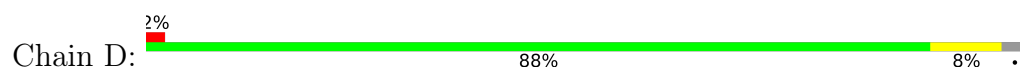


- Molecule 1: UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit





- Molecule 1: UDP-N-acetylglucosamine--peptide N-acetylglucosaminyltransferase 110 kDa subunit



4 Data and refinement statistics

Property	Value	Source
Space group	P 3 2 1	Depositor
Cell constants a, b, c, α , β , γ	272.34Å 272.34Å 143.46Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	39.41 – 2.98 39.41 – 2.98	Depositor EDS
% Data completeness (in resolution range)	98.0 (39.41-2.98) 97.9 (39.41-2.98)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.07 (at 3.01Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.3_928)	Depositor
R, R_{free}	0.197 , 0.223 0.195 , 0.222	Depositor DCC
R_{free} test set	6155 reflections (4.80%)	wwPDB-VP
Wilson B-factor (Å ²)	66.5	Xtriage
Anisotropy	0.359	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 50.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	0.029 for -h,-k,l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	22407	wwPDB-VP
Average B, all atoms (Å ²)	77.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.73% 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: 12V, SO4

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	0.28	0/5655	0.72	0/7668
1	B	0.28	0/5655	0.72	4/7668 (0.1%)
1	C	0.28	0/5655	0.71	0/7668
1	D	0.28	0/5655	0.73	2/7668 (0.0%)
All	All	0.28	0/22620	0.72	6/30672 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	452	PHE	CA-C-N	5.06	124.50	119.24
1	D	452	PHE	C-N-CA	5.06	124.50	119.24
1	B	452	PHE	CA-C-N	5.03	124.47	119.24
1	B	452	PHE	C-N-CA	5.03	124.47	119.24
1	B	858	VAL	CA-C-N	5.00	126.09	119.84
1	B	858	VAL	C-N-CA	5.00	126.09	119.84

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	5528	0	5507	54	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	5528	0	5507	45	0
1	C	5528	0	5507	47	0
1	D	5528	0	5507	29	0
2	A	39	0	25	3	0
2	B	39	0	25	2	0
2	C	39	0	25	3	0
2	D	39	0	25	2	0
3	A	20	0	0	0	0
3	B	25	0	0	1	0
3	C	20	0	0	0	0
3	D	20	0	0	0	0
4	A	16	0	0	1	0
4	B	13	0	0	0	0
4	C	7	0	0	0	0
4	D	18	0	0	0	0
All	All	22407	0	22128	169	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 4.

All (169) 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:746:MET:HE3	1:B:764:MET:HB2	1.76	0.68
1:C:557:ASN:HB2	1:C:589:THR:HG21	1.78	0.66
1:D:722:ASN:OD1	1:D:723:ARG:NH1	2.29	0.65
1:D:557:ASN:HB2	1:D:589:THR:HG21	1.78	0.65
1:A:722:ASN:ND2	1:A:909:ASP:OD1	2.31	0.64
1:C:928:TRP:O	1:C:991:ARG:NH1	2.31	0.63
1:A:583:LEU:HD22	1:A:637:ARG:HD3	1.80	0.63
1:B:850:MET:HE1	1:B:915:PRO:HG2	1.79	0.63
1:B:401:VAL:HG13	1:C:382:PRO:HG2	1.81	0.63
1:A:746:MET:HE3	1:A:764:MET:HB2	1.81	0.62
1:D:564:MET:HE3	1:D:629:MET:HE1	1.82	0.62
1:C:1005:GLU:HG2	1:C:1008:ARG:HH12	1.65	0.61
1:A:772:ILE:HG23	1:A:789:ILE:HD13	1.83	0.61
1:A:426:ALA:HB2	1:A:441:SER:HB2	1.84	0.60
1:C:746:MET:HE3	1:C:764:MET:HB2	1.83	0.60
1:A:364:GLN:HB3	1:A:527:VAL:HG21	1.83	0.59
1:D:746:MET:HE3	1:D:764:MET:HB2	1.84	0.58
1:B:410:ARG:NH1	3:B:1506:SO4:O2	2.36	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:MET:HE1	2:A:1501:12V:H8'	1.87	0.57
1:C:722:ASN:OD1	1:C:723:ARG:NH1	2.37	0.57
1:C:772:ILE:HG23	1:C:789:ILE:HD13	1.85	0.57
1:A:413:GLN:OE1	1:B:413:GLN:NE2	2.38	0.56
1:C:857:ARG:HD2	1:C:971:VAL:HG11	1.88	0.56
1:A:738:LEU:HD22	1:A:772:ILE:HD13	1.87	0.55
1:B:722:ASN:OD1	1:B:723:ARG:NH1	2.39	0.55
1:C:426:ALA:HB2	1:C:441:SER:HB2	1.89	0.55
1:B:953:LEU:HD21	1:B:987:VAL:HG13	1.88	0.55
1:A:877:GLN:O	1:A:881:GLN:HG2	2.07	0.55
1:B:557:ASN:HB2	1:B:589:THR:HG21	1.88	0.55
1:B:852:ALA:HA	1:B:885:LEU:HD11	1.89	0.55
1:D:649:GLN:NE2	1:D:663:PHE:O	2.40	0.54
1:A:723:ARG:NE	1:A:829:GLU:O	2.34	0.54
1:A:669:THR:OG1	1:A:670:ASP:N	2.41	0.54
1:A:710:VAL:HG11	1:A:721:ASP:HA	1.89	0.54
1:D:501:MET:HE1	2:D:1501:12V:H8'	1.88	0.54
1:A:953:LEU:HD21	1:A:987:VAL:HG13	1.90	0.54
1:C:552:SER:HB2	1:C:629:MET:HB2	1.88	0.54
1:D:583:LEU:HD22	1:D:637:ARG:HD3	1.91	0.53
1:B:364:GLN:HB3	1:B:527:VAL:HG21	1.91	0.53
1:C:669:THR:OG1	1:C:670:ASP:N	2.41	0.53
1:B:847:THR:HA	1:B:850:MET:HE3	1.90	0.53
1:C:649:GLN:NE2	1:C:663:PHE:O	2.42	0.53
1:C:850:MET:HE2	1:C:963:ARG:HE	1.74	0.53
1:D:669:THR:OG1	1:D:670:ASP:N	2.42	0.52
1:B:836:ASN:HD21	1:B:914:THR:HG23	1.74	0.52
1:C:553:SER:HB3	1:C:583:LEU:HB2	1.92	0.51
1:A:480:VAL:HG22	1:A:505:LEU:HD23	1.91	0.51
1:A:382:PRO:HG2	1:C:401:VAL:HG13	1.93	0.51
1:D:710:VAL:HG11	1:D:721:ASP:HA	1.93	0.51
1:B:325:ASN:OD1	1:B:340:TYR:OH	2.27	0.51
1:B:836:ASN:ND2	1:B:912:LEU:O	2.44	0.51
1:D:988:TRP:O	1:D:991:ARG:NH1	2.42	0.50
1:A:564:MET:HE3	1:A:629:MET:HE1	1.94	0.50
1:B:426:ALA:HB2	1:B:441:SER:HB2	1.94	0.50
1:B:405:LEU:HD13	1:B:428:ILE:HG21	1.92	0.49
1:B:324:ALA:HB2	1:B:339:LEU:HB2	1.95	0.49
1:C:501:MET:HE1	2:C:1501:12V:H8'	1.94	0.49
1:D:405:LEU:HD13	1:D:428:ILE:HG21	1.95	0.49
1:A:836:ASN:HD21	1:A:914:THR:HG23	1.77	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:710:VAL:HG11	1:B:721:ASP:HA	1.94	0.49
1:C:364:GLN:HB3	1:C:527:VAL:HG21	1.95	0.49
1:B:877:GLN:O	1:B:881:GLN:HG2	2.13	0.48
1:C:464:GLN:HG2	1:C:502:LEU:HD13	1.95	0.48
1:C:822:ARG:HB3	1:C:827:LEU:HB2	1.94	0.48
1:A:328:ARG:HH22	1:A:359:SER:HB3	1.79	0.48
1:A:726:LEU:HD22	1:A:819:VAL:HG22	1.96	0.48
1:A:828:PRO:HG2	1:A:831:ALA:HB3	1.95	0.48
1:B:669:THR:OG1	1:B:670:ASP:N	2.46	0.48
1:A:557:ASN:HB2	1:A:589:THR:HG21	1.95	0.48
1:D:838:ASN:HB3	1:D:842:LYS:HD2	1.96	0.47
1:C:480:VAL:HG22	1:C:505:LEU:HD23	1.96	0.47
1:A:341:ARG:NH2	1:A:369:GLU:OE2	2.44	0.47
1:A:644:ARG:HH11	1:A:663:PHE:HA	1.79	0.47
1:A:489:LYS:HD3	1:A:491:ARG:HH22	1.79	0.47
1:B:855:LEU:O	1:B:889:ARG:NH2	2.42	0.47
1:C:836:ASN:ND2	1:C:912:LEU:O	2.46	0.47
1:C:328:ARG:HH22	1:C:359:SER:HB3	1.80	0.47
1:C:936:MET:HE3	1:C:962:ASN:HA	1.97	0.47
1:C:886:PRO:HD2	1:C:889:ARG:HG3	1.96	0.47
1:D:773:ALA:O	1:D:777:ILE:HG12	2.15	0.47
1:A:867:ARG:HB3	1:A:870:ALA:HA	1.98	0.46
1:C:341:ARG:NH2	1:C:369:GLU:OE2	2.45	0.46
1:A:401:VAL:HG13	1:B:382:PRO:HG2	1.98	0.46
1:B:928:TRP:O	1:B:991:ARG:NH1	2.48	0.46
1:C:867:ARG:HB3	1:C:870:ALA:HA	1.97	0.46
1:B:990:GLN:O	1:B:994:SER:OG	2.25	0.46
1:C:937:PRO:HG3	1:C:947:ALA:HB2	1.97	0.46
1:D:921:THR:N	2:D:1501:12V:O2B	2.48	0.46
1:A:413:GLN:NE2	1:C:409:THR:O	2.48	0.46
1:B:724:ILE:HG23	1:B:821:THR:HG22	1.97	0.46
1:C:852:ALA:HA	1:C:885:LEU:HD11	1.99	0.45
1:D:877:GLN:O	1:D:881:GLN:HG2	2.16	0.45
1:C:1009:LEU:HG	1:C:1013:MET:HE3	1.97	0.45
1:C:898:LYS:NZ	2:C:1501:12V:O2'	2.50	0.45
1:A:384:PHE:CE1	1:A:386:ASP:HB3	2.52	0.45
1:D:434:ASN:N	1:D:434:ASN:OD1	2.49	0.45
1:C:991:ARG:HG3	1:C:992:ILE:HG12	1.98	0.45
1:D:456:TYR:CZ	1:D:478:LYS:HD3	2.50	0.45
1:A:936:MET:HE3	1:A:962:ASN:HA	1.99	0.44
1:B:563:LEU:HD21	1:B:921:THR:HG23	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:724:ILE:HG23	1:A:821:THR:HG22	1.99	0.44
1:A:921:THR:N	2:A:1501:12V:O2B	2.49	0.44
1:B:401:VAL:HG23	1:B:428:ILE:HD12	1.99	0.44
1:C:546:LEU:HD22	1:C:1011:LEU:HD23	1.98	0.44
1:A:822:ARG:HB3	1:A:827:LEU:HB2	1.99	0.44
1:C:855:LEU:HD11	1:C:863:LEU:HB2	1.99	0.44
1:B:492:LEU:HD12	1:B:493:PRO:HD2	2.00	0.44
1:B:501:MET:HE1	2:B:1501:12V:H8'	1.99	0.44
1:A:324:ALA:HB2	1:A:339:LEU:HB2	1.99	0.44
1:A:325:ASN:O	1:A:329:GLU:HG2	2.18	0.44
1:D:426:ALA:HB2	1:D:441:SER:HB2	1.99	0.44
1:A:773:ALA:O	1:A:777:ILE:HG12	2.18	0.44
1:A:897:PRO:HD3	1:B:314:PRO:HG2	1.99	0.44
1:C:710:VAL:HG11	1:C:721:ASP:HA	1.99	0.44
1:B:366:LYS:HD2	1:B:527:VAL:HG11	1.99	0.43
1:B:867:ARG:HB3	1:B:870:ALA:HA	1.98	0.43
1:D:480:VAL:HG22	1:D:505:LEU:HD23	2.00	0.43
1:A:682:TYR:HE1	1:A:941:LEU:HD12	1.83	0.43
1:C:525:ILE:HB	1:C:643:LEU:HD21	2.00	0.43
1:A:667:ILE:HG22	1:A:684:GLU:HB2	2.00	0.43
1:B:490:ASN:HA	1:B:516:ARG:HH21	1.83	0.43
1:D:340:TYR:CZ	1:D:356:ASN:HB3	2.54	0.43
1:D:772:ILE:HG23	1:D:789:ILE:HD13	2.01	0.43
1:A:706:LYS:HE3	1:A:706:LYS:HB2	1.83	0.43
1:D:936:MET:HE3	1:D:962:ASN:HA	2.01	0.43
1:A:769:MET:HE3	1:A:774:GLU:HG2	2.00	0.43
1:B:317:ALA:HB2	1:B:346:VAL:HB	2.01	0.43
1:D:694:PHE:CZ	1:D:920:HIS:HB3	2.54	0.43
1:C:857:ARG:HD2	1:C:971:VAL:HG21	2.00	0.42
1:C:953:LEU:HD21	1:C:987:VAL:HG13	2.01	0.42
1:A:530:LYS:HA	1:A:531:PRO:HD3	1.88	0.42
1:D:674:SER:O	1:D:688:TYR:OH	2.31	0.42
1:C:313:CYS:HA	1:C:314:PRO:HD3	1.86	0.42
1:C:820:THR:HG22	1:C:907:LEU:HD11	2.01	0.42
1:C:921:THR:N	2:C:1501:12V:O2B	2.49	0.42
1:A:675:PRO:HG2	1:A:678:VAL:HG22	2.02	0.42
1:A:463:LEU:HB3	1:A:468:ASP:HB3	2.01	0.42
1:B:357:LEU:HD23	1:B:373:HIS:CD2	2.54	0.42
1:A:836:ASN:ND2	1:A:912:LEU:O	2.53	0.42
1:A:838:ASN:HB3	1:A:842:LYS:HD2	2.01	0.42
1:B:572:ASN:HA	1:B:573:PRO:HD3	1.88	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:858:VAL:HA	1:B:859:PRO:HD2	1.83	0.42
1:C:572:ASN:HA	1:C:573:PRO:HD3	1.89	0.42
1:D:914:THR:HA	1:D:915:PRO:HD3	1.86	0.42
1:A:937:PRO:HG3	1:A:947:ALA:HB2	2.00	0.42
1:B:456:TYR:CZ	1:B:478:LYS:HD3	2.54	0.42
1:C:773:ALA:O	1:C:777:ILE:HG12	2.20	0.42
1:B:936:MET:HE3	1:B:962:ASN:HA	2.01	0.41
1:B:642:ALA:HA	1:B:663:PHE:CG	2.55	0.41
1:B:991:ARG:HG3	1:B:992:ILE:HG12	2.02	0.41
1:C:877:GLN:O	1:C:881:GLN:HG2	2.19	0.41
1:A:366:LYS:HE3	1:A:527:VAL:HG11	2.02	0.41
1:C:408:TYR:CZ	1:C:424:ASN:HB3	2.56	0.41
1:C:439:ILE:HG23	1:C:459:LEU:HD11	2.01	0.41
1:A:559:PRO:HG3	2:A:1501:12V:H4B	2.03	0.41
1:A:901:HIS:HD2	4:A:1603:HOH:O	2.03	0.41
1:D:364:GLN:HB3	1:D:527:VAL:HG21	2.03	0.41
1:A:347:PHE:CE1	1:A:349:GLU:HB2	2.56	0.41
1:B:834:TYR:O	1:B:864:TRP:N	2.49	0.41
1:A:492:LEU:HA	1:A:493:PRO:HD3	1.95	0.41
1:B:898:LYS:NZ	2:B:1501:12V:O2'	2.43	0.41
1:D:323:LEU:HD23	1:D:326:ILE:HD12	2.02	0.41
1:A:461:HIS:O	1:A:465:ILE:HG13	2.21	0.40
1:A:568:PRO:HA	1:A:571:HIS:HD2	1.85	0.40
1:D:572:ASN:HA	1:D:573:PRO:HD3	1.88	0.40
1:B:914:THR:HA	1:B:915:PRO:HD3	1.89	0.40
1:B:952:CYS:SG	1:B:995:PRO:HG2	2.61	0.40
1:D:675:PRO:HG2	1:D:678:VAL:HG22	2.03	0.40
1:C:624:HIS:HD2	1:C:1014:TRP:CH2	2.40	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	694/723 (96%)	671 (97%)	23 (3%)	0	100	100
1	B	694/723 (96%)	667 (96%)	26 (4%)	1 (0%)	48	78
1	C	694/723 (96%)	670 (96%)	23 (3%)	1 (0%)	48	78
1	D	694/723 (96%)	670 (96%)	24 (4%)	0	100	100
All	All	2776/2892 (96%)	2678 (96%)	96 (4%)	2 (0%)	48	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	859	PRO
1	B	859	PRO

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	601/618 (97%)	598 (100%)	3 (0%)	81	89
1	B	601/618 (97%)	596 (99%)	5 (1%)	73	86
1	C	601/618 (97%)	595 (99%)	6 (1%)	68	83
1	D	601/618 (97%)	595 (99%)	6 (1%)	68	83
All	All	2404/2472 (97%)	2384 (99%)	20 (1%)	73	86

All (20) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	315	THR
1	A	561	SER
1	A	898	LYS
1	B	315	THR
1	B	489	LYS
1	B	561	SER
1	B	763	ASN
1	B	898	LYS
1	C	315	THR

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Mol	Chain	Res	Type
1	C	527	VAL
1	C	561	SER
1	C	630	ASN
1	C	762	LEU
1	C	1026	MET
1	D	315	THR
1	D	434	ASN
1	D	561	SER
1	D	770	ASN
1	D	898	LYS
1	D	1026	MET

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (30) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	415	ASN
1	A	424	ASN
1	A	517	HIS
1	A	681	GLN
1	A	691	HIS
1	A	824	GLN
1	A	918	ASN
1	A	990	GLN
1	B	322	ASN
1	B	402	GLN
1	B	422	HIS
1	B	424	ASN
1	B	571	HIS
1	B	849	GLN
1	B	918	ASN
1	B	990	GLN
1	B	1016	HIS
1	B	1021	ASN
1	C	422	HIS
1	C	434	ASN
1	C	517	HIS
1	C	529	HIS
1	C	671	GLN
1	D	368	GLN
1	D	422	HIS
1	D	424	ASN
1	D	849	GLN

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Mol	Chain	Res	Type
1	D	881	GLN
1	D	918	ASN
1	D	1016	HIS

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

21 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	$\# Z > 2$
3	SO4	D	1504	-	4,4,4	0.24	0	6,6,6	0.08	0
3	SO4	C	1505	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	C	1502	-	4,4,4	0.24	0	6,6,6	0.07	0
3	SO4	D	1503	-	4,4,4	0.24	0	6,6,6	0.07	0
2	12V	A	1501	-	38,41,41	2.16	8 (21%)	52,62,62	2.43	15 (28%)
3	SO4	B	1502	-	4,4,4	0.23	0	6,6,6	0.08	0
2	12V	B	1501	-	38,41,41	2.21	8 (21%)	52,62,62	2.41	14 (26%)
3	SO4	A	1505	-	4,4,4	0.23	0	6,6,6	0.07	0
3	SO4	C	1504	-	4,4,4	0.23	0	6,6,6	0.07	0
3	SO4	A	1502	-	4,4,4	0.24	0	6,6,6	0.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	SO4	B	1503	-	4,4,4	0.24	0	6,6,6	0.07	0
3	SO4	A	1504	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	B	1506	-	4,4,4	0.23	0	6,6,6	0.05	0
2	12V	D	1501	-	38,41,41	2.17	8 (21%)	52,62,62	2.43	14 (26%)
3	SO4	C	1503	-	4,4,4	0.24	0	6,6,6	0.07	0
3	SO4	B	1505	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	B	1504	-	4,4,4	0.23	0	6,6,6	0.08	0
3	SO4	D	1505	-	4,4,4	0.24	0	6,6,6	0.09	0
3	SO4	D	1502	-	4,4,4	0.24	0	6,6,6	0.08	0
3	SO4	A	1503	-	4,4,4	0.23	0	6,6,6	0.08	0
2	12V	C	1501	-	38,41,41	2.18	7 (18%)	52,62,62	2.41	13 (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	12V	C	1501	-	-	3/25/63/63	0/3/3/3
2	12V	B	1501	-	-	2/25/63/63	0/3/3/3
2	12V	A	1501	-	-	6/25/63/63	0/3/3/3
2	12V	D	1501	-	-	3/25/63/63	0/3/3/3

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1501	12V	PB-O1'	7.87	1.83	1.59
2	D	1501	12V	PB-O1'	7.59	1.82	1.59
2	A	1501	12V	PB-O1'	7.50	1.82	1.59
2	C	1501	12V	PB-O1'	7.17	1.81	1.59
2	A	1501	12V	O4-C4	6.26	1.36	1.24
2	C	1501	12V	O4-C4	6.24	1.36	1.24
2	B	1501	12V	O4-C4	6.20	1.36	1.24
2	D	1501	12V	O4-C4	6.19	1.36	1.24
2	C	1501	12V	PA-O5B	4.12	1.75	1.59
2	D	1501	12V	PA-O5B	3.93	1.74	1.59
2	C	1501	12V	C2-N1	3.80	1.44	1.38
2	A	1501	12V	PA-O5B	3.75	1.74	1.59
2	B	1501	12V	C4-N3	-3.74	1.32	1.38
2	C	1501	12V	C4-N3	-3.70	1.32	1.38
2	A	1501	12V	C4-N3	-3.68	1.32	1.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1501	12V	C4-N3	-3.67	1.32	1.38
2	A	1501	12V	C2-N1	3.66	1.44	1.38
2	B	1501	12V	PA-O5B	3.62	1.73	1.59
2	B	1501	12V	C2-N1	3.56	1.44	1.38
2	D	1501	12V	C2-N1	3.40	1.43	1.38
2	B	1501	12V	PB-O3A	-2.73	1.56	1.59
2	C	1501	12V	PB-O3A	-2.60	1.56	1.59
2	C	1501	12V	C2-N3	2.26	1.41	1.38
2	A	1501	12V	C3'-C2'	2.25	1.57	1.53
2	D	1501	12V	C2-N3	2.23	1.41	1.38
2	D	1501	12V	PB-O3A	-2.22	1.57	1.59
2	B	1501	12V	O5B-C5B	-2.20	1.36	1.44
2	A	1501	12V	O5B-C5B	-2.17	1.36	1.44
2	A	1501	12V	C2-N3	2.16	1.41	1.38
2	B	1501	12V	C2-N3	2.16	1.41	1.38
2	D	1501	12V	C3'-C2'	2.03	1.56	1.53

All (56) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1501	12V	C5-C4-N3	8.58	126.82	114.80
2	C	1501	12V	C5-C4-N3	8.52	126.74	114.80
2	D	1501	12V	C5-C4-N3	8.46	126.65	114.80
2	B	1501	12V	C5-C4-N3	8.45	126.64	114.80
2	D	1501	12V	C4-N3-C2	-7.77	116.96	126.61
2	A	1501	12V	C4-N3-C2	-7.77	116.97	126.61
2	B	1501	12V	C4-N3-C2	-7.76	116.98	126.61
2	C	1501	12V	C4-N3-C2	-7.72	117.02	126.61
2	A	1501	12V	O1'-C1'-C2'	5.56	115.97	107.52
2	D	1501	12V	O1'-C1'-C2'	5.50	115.88	107.52
2	C	1501	12V	O4-C4-C5	-5.38	115.88	125.16
2	D	1501	12V	O4-C4-C5	-5.38	115.89	125.16
2	B	1501	12V	O4-C4-C5	-5.35	115.94	125.16
2	A	1501	12V	O4-C4-C5	-5.34	115.96	125.16
2	B	1501	12V	O1'-C1'-C2'	5.32	115.61	107.52
2	C	1501	12V	O1'-C1'-C2'	5.28	115.54	107.52
2	B	1501	12V	O2A-PA-O1A	3.60	129.20	112.44
2	C	1501	12V	O2A-PA-O1A	3.57	129.05	112.44
2	A	1501	12V	O2A-PA-O1A	3.55	128.97	112.44
2	D	1501	12V	O2A-PA-O1A	3.53	128.87	112.44
2	D	1501	12V	C4'-C3'-C2'	3.51	115.52	110.40
2	B	1501	12V	C4'-C3'-C2'	3.45	115.42	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1501	12V	C4'-C3'-C2'	3.44	115.42	110.40
2	D	1501	12V	O3A-PB-O1B	-3.32	100.70	110.70
2	C	1501	12V	O3A-PB-O1B	-3.26	100.91	110.70
2	C	1501	12V	O2B-PB-O1B	3.18	127.22	112.44
2	B	1501	12V	O3A-PB-O1B	-3.17	101.16	110.70
2	D	1501	12V	O2B-PB-O3A	3.15	115.79	107.27
2	A	1501	12V	O3A-PB-O1B	-3.14	101.26	110.70
2	D	1501	12V	O2B-PB-O1B	3.13	127.02	112.44
2	A	1501	12V	O2B-PB-O1B	3.13	127.00	112.44
2	B	1501	12V	O2B-PB-O1B	3.11	126.92	112.44
2	C	1501	12V	O2B-PB-O3A	3.09	115.64	107.27
2	A	1501	12V	O2B-PB-O3A	3.03	115.47	107.27
2	D	1501	12V	N3-C2-N1	3.03	118.83	114.89
2	B	1501	12V	N3-C2-N1	3.00	118.80	114.89
2	C	1501	12V	C4'-C3'-C2'	2.98	114.75	110.40
2	C	1501	12V	N3-C2-N1	2.93	118.71	114.89
2	A	1501	12V	N3-C2-N1	2.93	118.70	114.89
2	A	1501	12V	C6-C5-C4	-2.92	115.80	119.53
2	D	1501	12V	C6-C5-C4	-2.89	115.85	119.53
2	C	1501	12V	C6-C5-C4	-2.87	115.86	119.53
2	B	1501	12V	O2B-PB-O3A	2.87	115.03	107.27
2	B	1501	12V	C6-C5-C4	-2.87	115.87	119.53
2	C	1501	12V	O3'-C3'-C4'	-2.79	103.79	110.38
2	B	1501	12V	O3'-C3'-C4'	-2.78	103.83	110.38
2	D	1501	12V	O3'-C3'-C4'	-2.64	104.16	110.38
2	A	1501	12V	O3'-C3'-C4'	-2.57	104.33	110.38
2	C	1501	12V	O3B-C3B-C2B	-2.22	104.70	111.82
2	A	1501	12V	O3B-C3B-C2B	-2.22	104.71	111.82
2	D	1501	12V	O2-C2-N1	-2.20	119.94	122.80
2	D	1501	12V	O3B-C3B-C2B	-2.19	104.81	111.82
2	B	1501	12V	O3B-C3B-C2B	-2.09	105.12	111.82
2	B	1501	12V	O2-C2-N1	-2.07	120.11	122.80
2	A	1501	12V	O4B-C1B-N1	2.05	113.00	108.36
2	A	1501	12V	O2-C2-N1	-2.04	120.14	122.80

There are no chirality outliers.

All (14) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1501	12V	C5B-O5B-PA-O1A
2	A	1501	12V	C5B-O5B-PA-O2A
2	C	1501	12V	O4B-C4B-C5B-O5B

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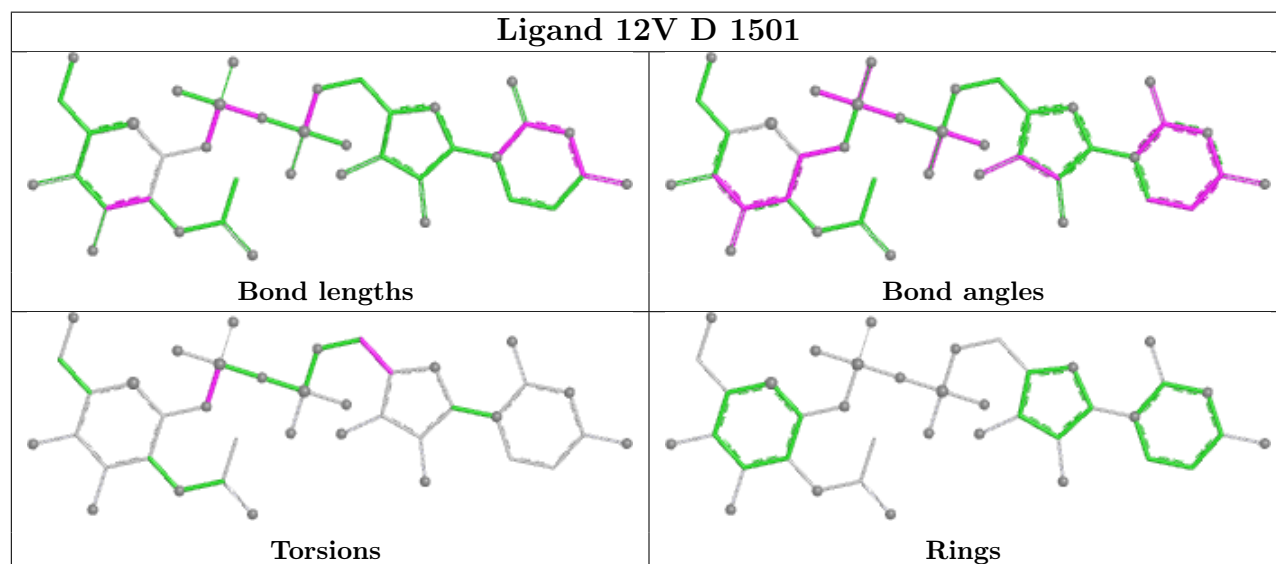
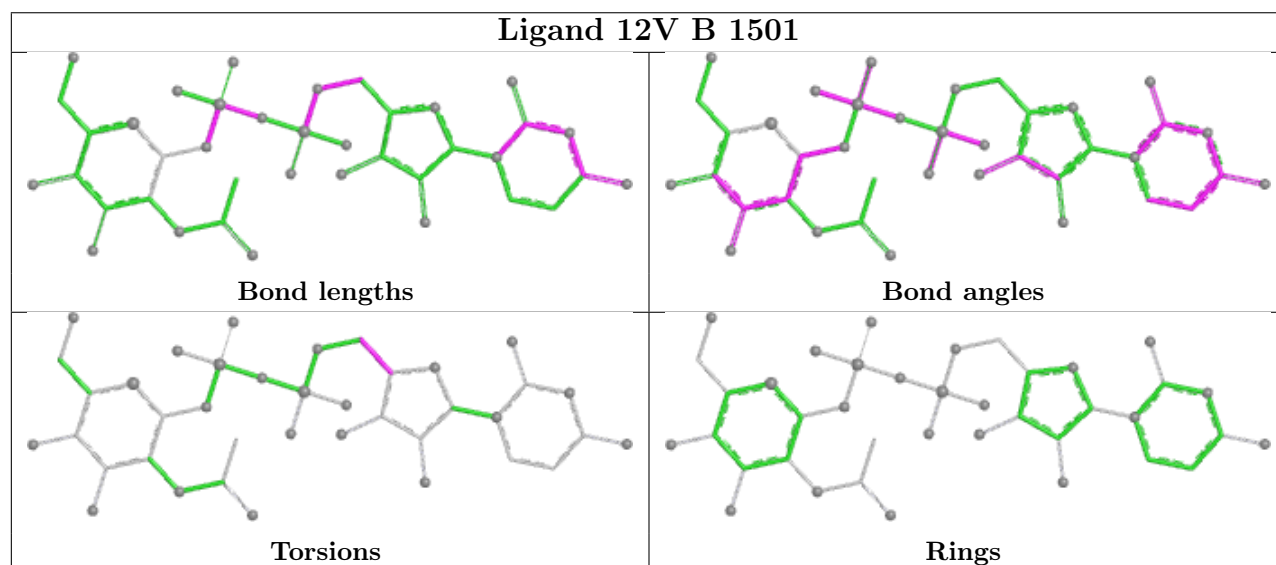
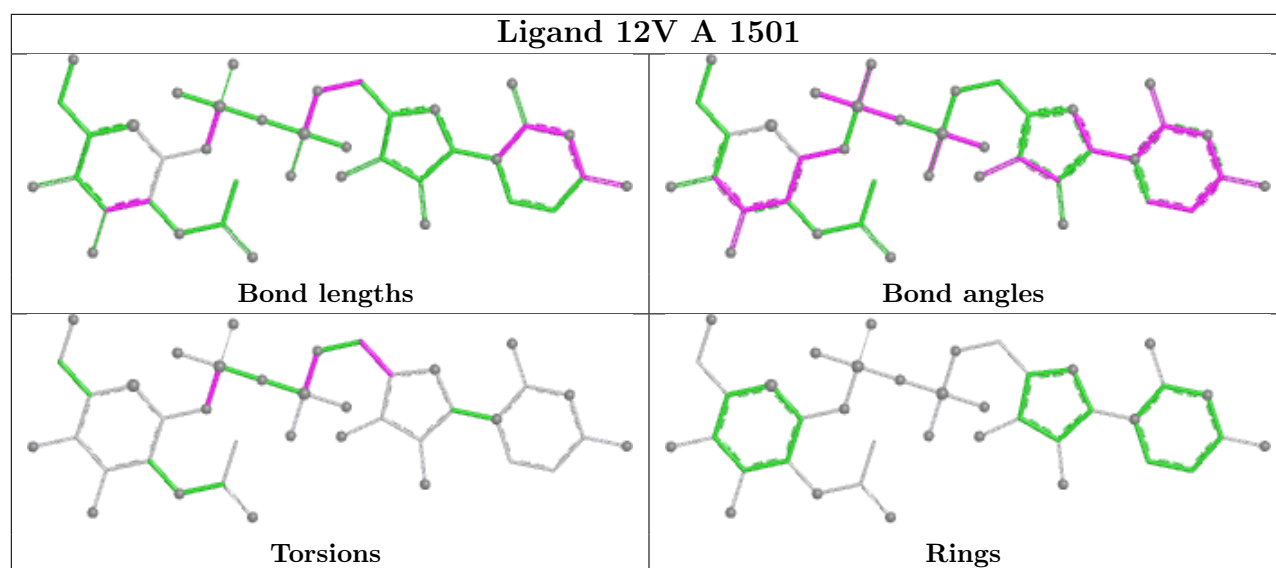
Mol	Chain	Res	Type	Atoms
2	A	1501	12V	C3B-C4B-C5B-O5B
2	B	1501	12V	O4B-C4B-C5B-O5B
2	C	1501	12V	C3B-C4B-C5B-O5B
2	D	1501	12V	C3B-C4B-C5B-O5B
2	D	1501	12V	O4B-C4B-C5B-O5B
2	B	1501	12V	C3B-C4B-C5B-O5B
2	A	1501	12V	O4B-C4B-C5B-O5B
2	A	1501	12V	C5B-O5B-PA-O3A
2	A	1501	12V	C1'-O1'-PB-O2B
2	C	1501	12V	C1'-O1'-PB-O2B
2	D	1501	12V	C1'-O1'-PB-O2B

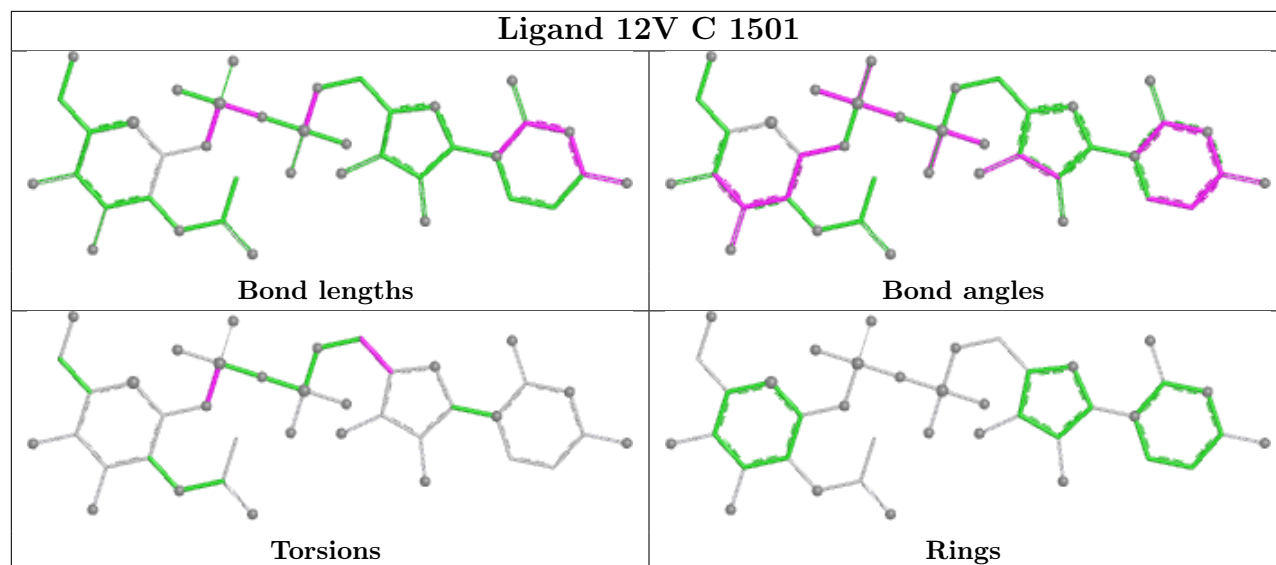
There are no ring outliers.

5 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1501	12V	3	0
2	B	1501	12V	2	0
3	B	1506	SO4	1	0
2	D	1501	12V	2	0
2	C	1501	12V	3	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	700/723 (96%)	-0.09	10 (1%) 73 55	51, 69, 108, 144	0
1	B	700/723 (96%)	-0.06	11 (1%) 70 51	49, 72, 109, 130	0
1	C	700/723 (96%)	0.11	10 (1%) 73 55	58, 86, 118, 142	0
1	D	700/723 (96%)	-0.05	16 (2%) 61 42	47, 67, 108, 154	0
All	All	2800/2892 (96%)	-0.02	47 (1%) 69 50	47, 73, 113, 154	0

All (47) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	1028	LYS	5.6
1	D	747	LYS	3.9
1	A	315	THR	3.8
1	C	1028	LYS	3.8
1	D	714	LYS	3.8
1	A	761	ALA	3.7
1	A	714	LYS	3.4
1	D	860	ASN	3.3
1	B	714	LYS	3.3
1	B	1028	LYS	3.3
1	A	1028	LYS	3.2
1	C	714	LYS	3.1
1	B	747	LYS	3.1
1	A	888	ASN	3.1
1	A	748	CYS	3.1
1	A	747	LYS	2.9
1	D	316	HIS	2.9
1	C	761	ALA	2.9
1	B	1027	ILE	2.9
1	A	680	GLU	2.8
1	B	732	LYS	2.8

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Mol	Chain	Res	Type	RSRZ
1	D	315	THR	2.8
1	D	333	ILE	2.7
1	D	881	GLN	2.7
1	C	315	THR	2.7
1	A	762	LEU	2.7
1	D	713	PHE	2.6
1	B	761	ALA	2.5
1	D	761	ALA	2.5
1	C	762	LEU	2.4
1	C	747	LYS	2.4
1	C	748	CYS	2.4
1	C	313	CYS	2.4
1	D	523	ASP	2.4
1	B	881	GLN	2.4
1	C	746	MET	2.3
1	D	342	LYS	2.3
1	D	748	CYS	2.2
1	D	313	CYS	2.2
1	B	316	HIS	2.2
1	A	314	PRO	2.2
1	C	314	PRO	2.1
1	D	680	GLU	2.1
1	B	680	GLU	2.1
1	B	748	CYS	2.0
1	B	713	PHE	2.0
1	D	488	GLU	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](#)

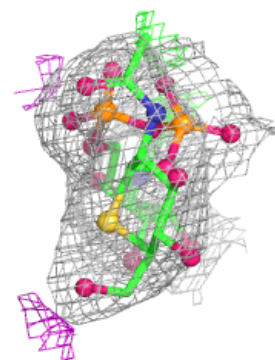
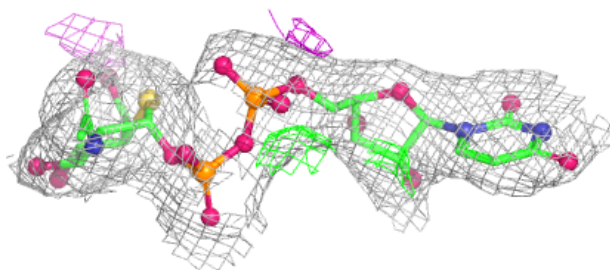
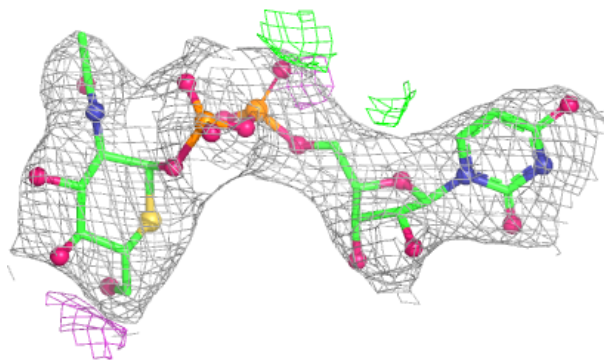
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
3	SO4	C	1504	5/5	0.66	0.11	154,154,154,154	0
3	SO4	D	1502	5/5	0.71	0.24	131,131,131,131	0
3	SO4	B	1504	5/5	0.73	0.11	126,127,127,127	0
3	SO4	A	1502	5/5	0.75	0.22	121,121,121,121	0
3	SO4	C	1503	5/5	0.78	0.17	128,128,129,129	0
3	SO4	A	1504	5/5	0.80	0.17	120,120,120,120	0
3	SO4	B	1503	5/5	0.80	0.14	128,128,128,129	0
3	SO4	C	1505	5/5	0.81	0.12	142,142,142,142	0
3	SO4	C	1502	5/5	0.81	0.17	115,115,116,116	0
3	SO4	B	1506	5/5	0.82	0.17	122,122,122,123	0
3	SO4	D	1505	5/5	0.82	0.10	141,141,141,141	0
3	SO4	B	1505	5/5	0.83	0.12	125,125,125,125	0
3	SO4	A	1505	5/5	0.84	0.13	121,121,122,122	0
3	SO4	B	1502	5/5	0.84	0.19	113,113,113,113	0
3	SO4	A	1503	5/5	0.85	0.13	114,115,115,115	0
3	SO4	D	1503	5/5	0.87	0.16	107,107,107,108	0
3	SO4	D	1504	5/5	0.88	0.11	113,114,114,114	0
2	12V	C	1501	39/39	0.96	0.08	58,71,84,84	0
2	12V	A	1501	39/39	0.96	0.09	38,59,71,72	0
2	12V	B	1501	39/39	0.96	0.09	41,58,73,74	0
2	12V	D	1501	39/39	0.97	0.07	41,50,62,69	0

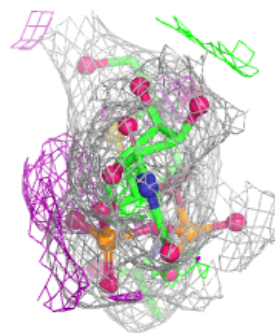
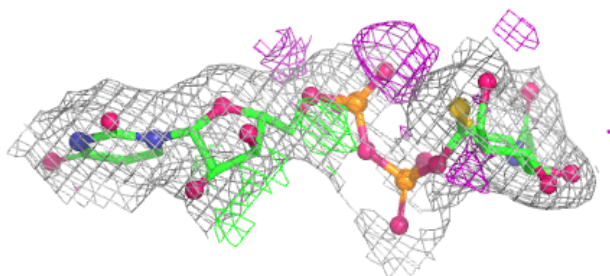
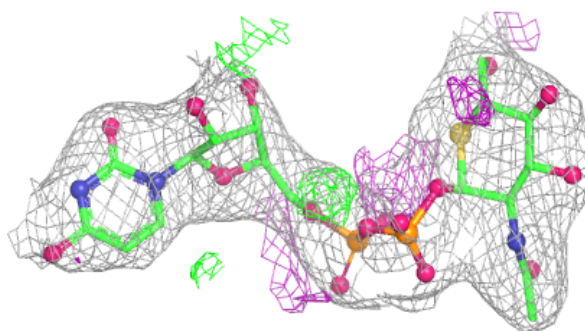
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around 12V C 1501:

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

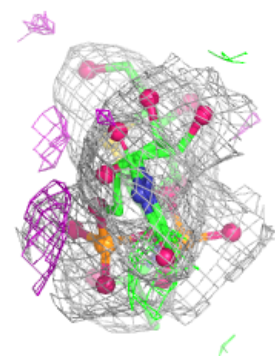
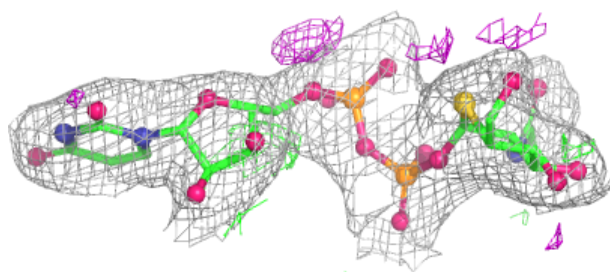
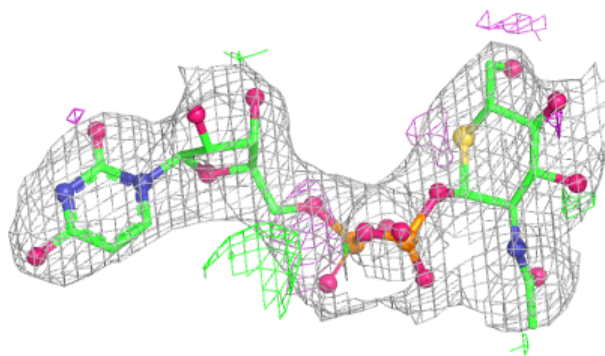
**Electron density around 12V A 1501:**

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

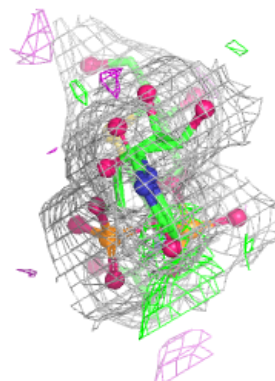
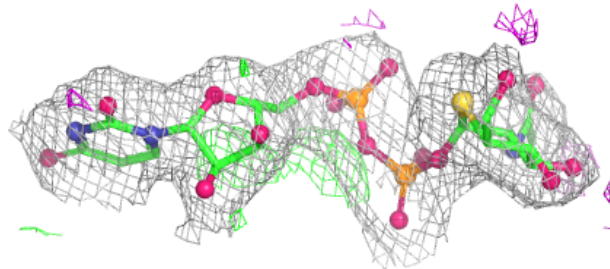
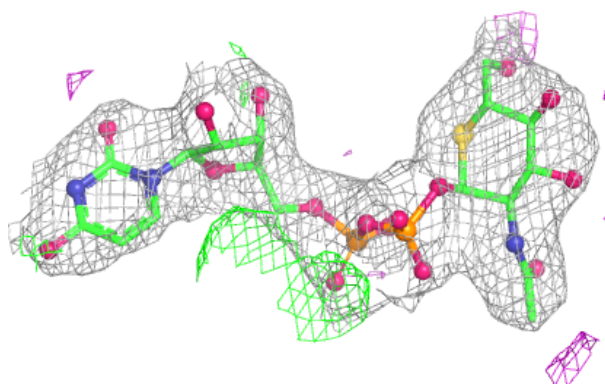


Electron density around 12V B 1501:

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

**Electron density around 12V D 1501:**

$2mF_o - DF_c$ (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.