



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 19, 2026 – 06:17 PM EDT

PDB ID : 11IZ / pdb_000011iz
Title : Crystal structure of HSC-HSC-AMS bound DesD, the desferrioxamine synthetase from the Streptomyces griseoflavus ferrimycin biosynthetic pathway
Authors : Patel, K.D.; Gulick, A.M.
Deposited on : 2026-02-26
Resolution : 2.47 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	:	9.0.015 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.50

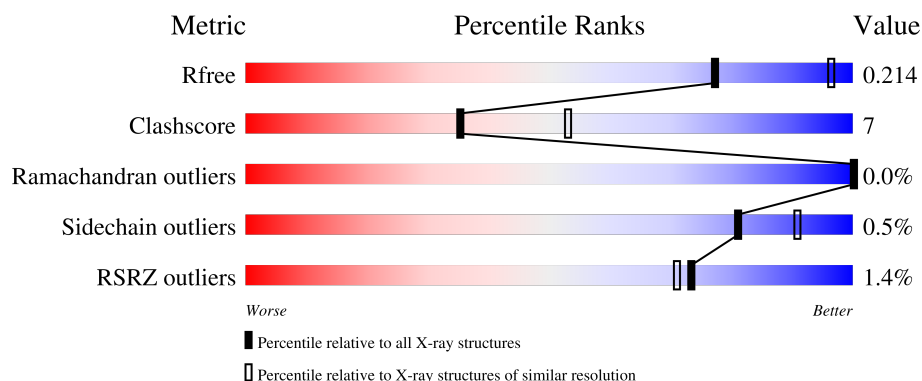
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.47 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	7589 (2.50-2.46)
Clashscore	190562	8295 (2.50-2.46)
Ramachandran outliers	187476	8164 (2.50-2.46)
Sidechain outliers	187428	8166 (2.50-2.46)
RSRZ outliers	180081	7593 (2.50-2.46)

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	612	83% 13% .
1	B	612	80% 17% .
1	C	612	2% 79% 17% ..
1	D	612	83% 14% .
1	E	612	2% 84% 12% .

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	GOL	B	801	-	X	-	-
2	GOL	B	808	-	-	X	-
2	GOL	D	801	-	X	-	-
2	GOL	D	806	-	-	X	-

2 Entry composition [i](#)

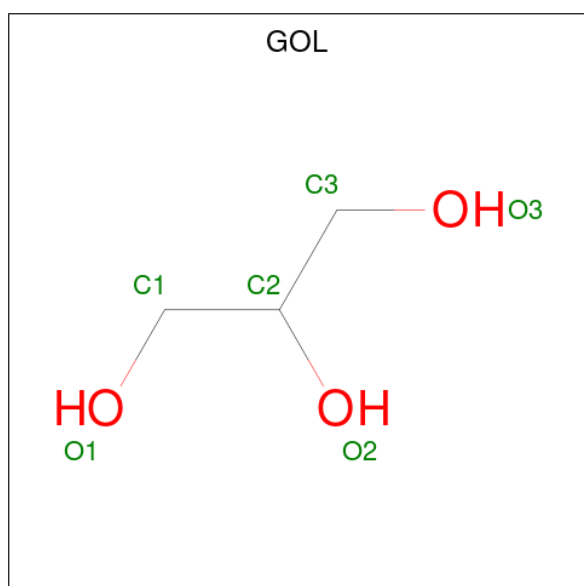
There are 7 unique types of molecules in this entry. The entry contains 25170 atoms, of which 256 are hydrogens and 0 are deuteriums.

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 DesD.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	592	Total	C	N	O	S	0	1	0
			4693	2985	819	874	15			
1	A	592	Total	C	N	O	S	0	1	0
			4682	2980	816	871	15			
1	D	591	Total	C	N	O	S	0	0	0
			4686	2980	818	873	15			
1	E	592	Total	C	N	O	S	0	1	0
			4678	2978	813	872	15			
1	C	592	Total	C	N	O	S	0	0	0
			4686	2981	815	874	16			

- Molecule 2 is GLYCEROL (CCD ID: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	H	O	0	0
			14	3	8	3		

Continued on next page...

Continued from previous page...

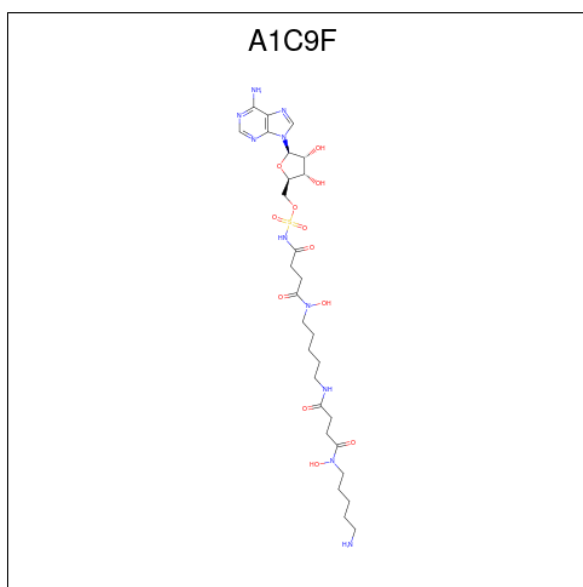
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	B	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	A	1	Total	C	H	O	0	0
			14	3	8	3		

Continued on next page...

Continued from previous page...

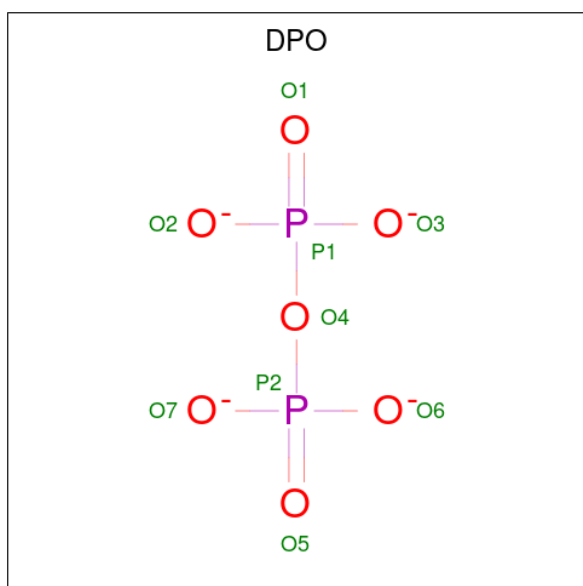
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	H	O	0	0
			14	3	8	3		
2	D	1	Total	C	H	O	0	0
			14	3	8	3		
2	D	1	Total	C	H	O	0	0
			14	3	8	3		
2	D	1	Total	C	H	O	0	0
			14	3	8	3		
2	D	1	Total	C	H	O	0	0
			14	3	8	3		
2	D	1	Total	C	H	O	0	0
			14	3	8	3		
2	E	1	Total	C	H	O	0	0
			14	3	8	3		
2	C	1	Total	C	H	O	0	0
			14	3	8	3		
2	C	1	Total	C	H	O	0	0
			14	3	8	3		

- Molecule 3 is 5'-O-({4-[(5-{4-[(5-aminopentyl)(hydroxy)amino]-4-oxobutanamido}pentyl)(hydroxy)amino]-4-oxobutanoyl}sulfamoyl)adenosine (CCD ID: A1C9F) (formula: C₂₈H₄₆N₁₀O₁₂S) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	C	N	O	S	0	0
			51	28	10	12	1		
3	A	1	Total	C	N	O	S	0	0
			51	28	10	12	1		
3	D	1	Total	C	N	O	S	0	0
			51	28	10	12	1		
3	E	1	Total	C	N	O	S	0	0
			51	28	10	12	1		
3	C	1	Total	C	N	O	S	0	0
			51	28	10	12	1		

- Molecule 4 is DIPHOSPHATE (CCD ID: DPO) (formula: O_7P_2).

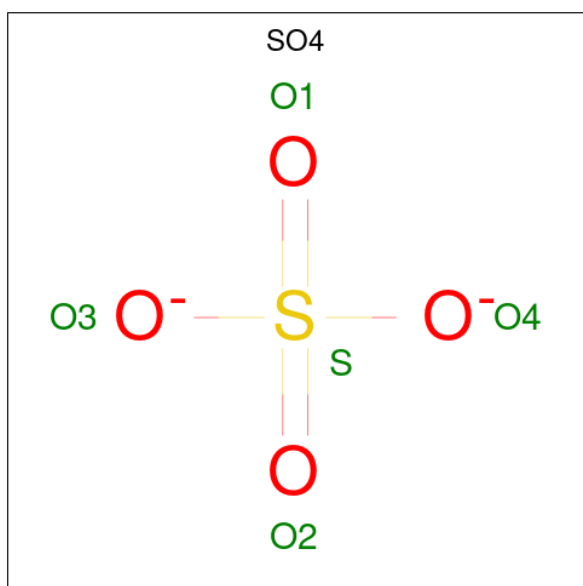


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	O	P	0	0
			9	7	2		
4	A	1	Total	O	P	0	0
			9	7	2		
4	D	1	Total	O	P	0	0
			9	7	2		
4	E	1	Total	O	P	0	0
			9	7	2		
4	C	1	Total	O	P	0	0
			9	7	2		

- Molecule 5 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	2	Total Mg 2 2	0	0
5	A	2	Total Mg 2 2	0	0
5	D	2	Total Mg 2 2	0	0
5	E	2	Total Mg 2 2	0	0
5	C	2	Total Mg 2 2	0	0

- Molecule 6 is SULFATE ION (CCD ID: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	B	1	Total O S 5 4 1	0	0
6	B	1	Total O S 5 4 1	0	0
6	B	1	Total O S 5 4 1	0	0
6	B	1	Total O S 5 4 1	0	0
6	A	1	Total O S 5 4 1	0	0
6	A	1	Total O S 5 4 1	0	0
6	A	1	Total O S 5 4 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	D	1	Total	O	S	0	0
			5	4	1		
6	D	1	Total	O	S	0	0
			5	4	1		
6	D	1	Total	O	S	0	0
			5	4	1		
6	D	1	Total	O	S	0	0
			5	4	1		
6	D	1	Total	O	S	0	0
			5	4	1		
6	C	1	Total	O	S	0	0
			5	4	1		
6	C	1	Total	O	S	0	0
			5	4	1		
6	C	1	Total	O	S	0	0
			5	4	1		
6	C	1	Total	O	S	0	0
			5	4	1		

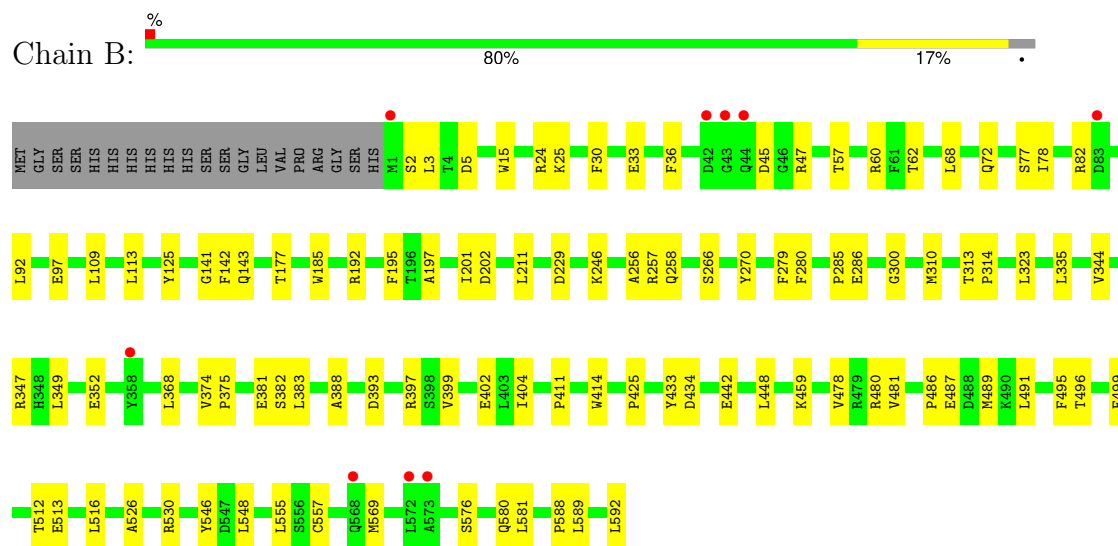
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	B	235	Total	O	0	0
			235	235		
7	A	225	Total	O	0	0
			225	225		
7	D	198	Total	O	0	0
			198	198		
7	E	131	Total	O	0	0
			131	131		
7	C	113	Total	O	0	0
			113	113		

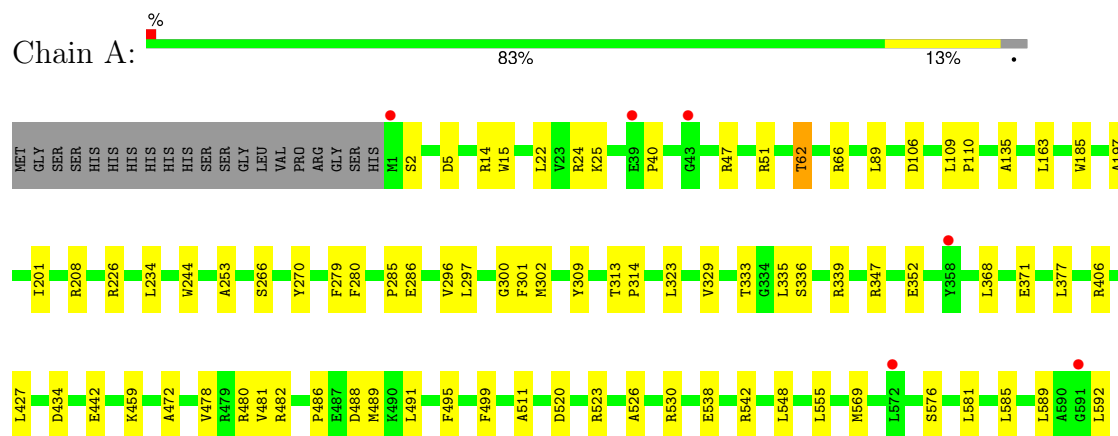
3 Residue-property plots [i](#)

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.

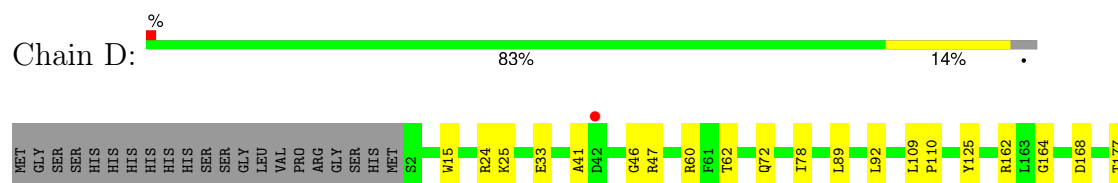
• Molecule 1: DesD

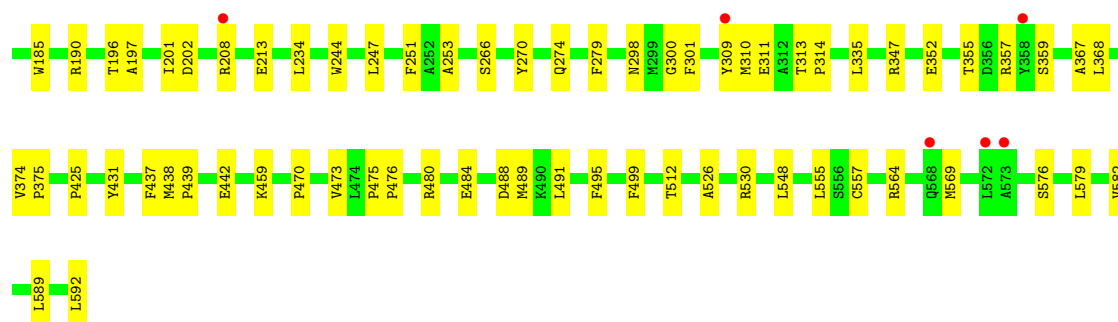


• Molecule 1: DesD

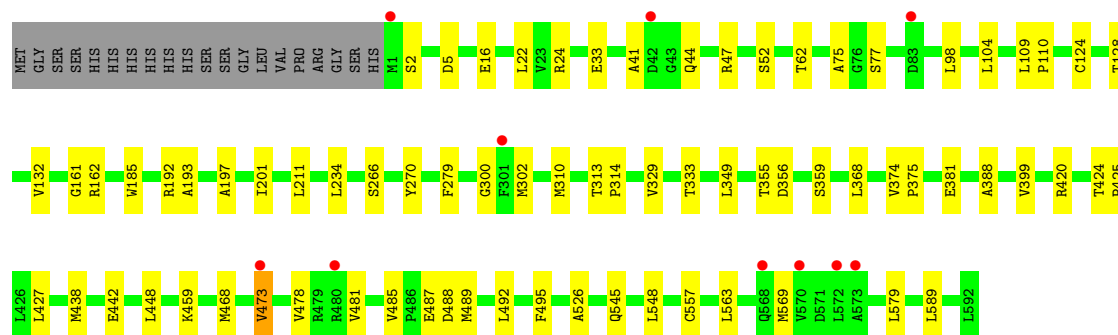
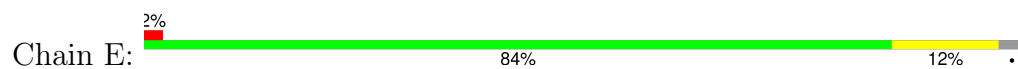


• Molecule 1: DesD

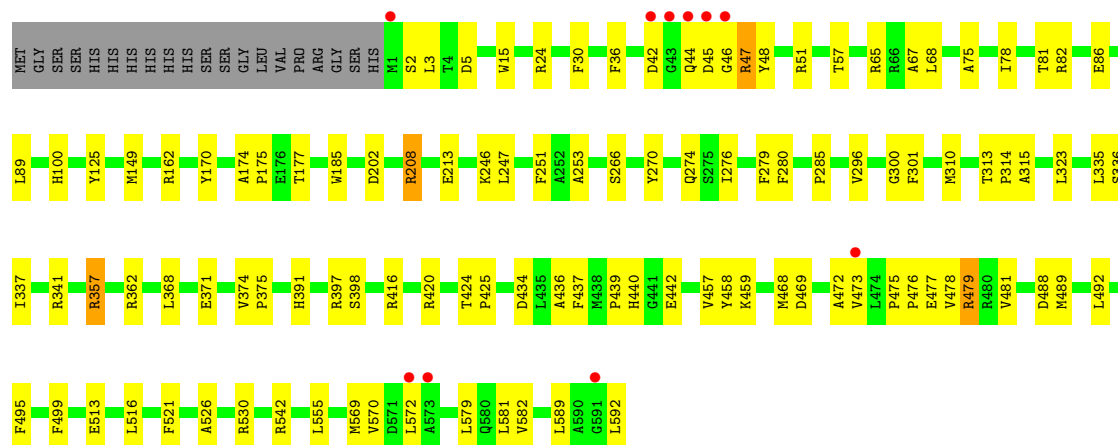
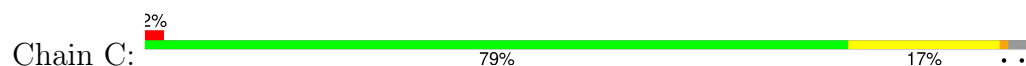




• Molecule 1: DesD



• Molecule 1: DesD



4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	128.64Å 236.82Å 331.10Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.45 – 2.47 44.45 – 2.48	Depositor EDS
% Data completeness (in resolution range)	100.0 (44.45-2.47) 94.6 (44.45-2.48)	Depositor EDS
R_{merge}	0.27	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.58 (at 2.48Å)	Xtriage
Refinement program	PHENIX 1.13_2998	Depositor
R, R_{free}	0.175 , 0.213 0.176 , 0.214	Depositor DCC
R_{free} test set	9044 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	39.0	Xtriage
Anisotropy	0.052	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 50.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	25170	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.15% 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: GOL, MG, DPO, A1C9F, 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	0.49	0/4799	0.65	0/6535
1	B	0.51	0/4810	0.67	0/6547
1	C	0.46	1/4800 (0.0%)	0.64	5/6535 (0.1%)
1	D	0.50	0/4800	0.65	0/6533
1	E	0.45	1/4795 (0.0%)	0.62	2/6529 (0.0%)
All	All	0.48	2/24004 (0.0%)	0.65	7/32679 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	E	420	ARG	NE-CZ	9.02	1.43	1.33
1	C	479	ARG	NE-CZ	7.44	1.41	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	479	ARG	CA-CB-CG	-9.74	94.61	114.10
1	C	479	ARG	NH1-CZ-NH2	8.12	129.85	119.30
1	E	420	ARG	NE-CZ-NH1	-7.29	114.21	121.50
1	E	420	ARG	NH1-CZ-NH2	6.50	127.75	119.30
1	C	479	ARG	NE-CZ-NH2	-5.61	114.15	119.20
1	C	479	ARG	NE-CZ-NH1	-5.53	115.97	121.50
1	C	479	ARG	CB-CG-CD	-5.11	99.56	111.30

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	4682	0	4564	67	0
1	B	4693	0	4579	89	0
1	C	4686	0	4569	88	0
1	D	4686	0	4572	66	0
1	E	4678	0	4555	49	0
2	A	90	120	118	13	0
2	B	48	64	63	15	0
2	C	12	16	16	2	0
2	D	36	48	48	6	0
2	E	6	8	8	0	0
3	A	51	0	0	0	0
3	B	51	0	0	2	0
3	C	51	0	0	0	0
3	D	51	0	0	1	0
3	E	51	0	0	0	0
4	A	9	0	0	0	0
4	B	9	0	0	0	0
4	C	9	0	0	1	0
4	D	9	0	0	0	0
4	E	9	0	0	0	0
5	A	2	0	0	0	0
5	B	2	0	0	0	0
5	C	2	0	0	0	0
5	D	2	0	0	0	0
5	E	2	0	0	0	0
6	A	15	0	0	0	0
6	B	20	0	0	0	0
6	C	25	0	0	1	0
6	D	25	0	0	1	0
7	A	225	0	0	1	0
7	B	235	0	0	1	0
7	C	113	0	0	4	0
7	D	198	0	0	3	0
7	E	131	0	0	1	0
All	All	24914	256	23092	349	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 (349) 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)
3:D:807:A1C9F:C39	3:D:807:A1C9F:O38	1.63	1.23
3:B:809:A1C9F:C39	3:B:809:A1C9F:O38	1.64	1.10
1:B:82:ARG:NH2	1:B:97:GLU:OE2	1.98	0.95
1:D:491:LEU:HD11	1:D:548:LEU:HD11	1.52	0.92
1:D:491:LEU:HD21	1:D:548:LEU:HD12	1.53	0.89
1:C:310:MET:HA	1:C:310:MET:HE2	1.56	0.87
1:A:489:MET:HE1	1:A:576:SER:HB2	1.58	0.86
1:B:141:GLY:HA2	2:B:808:GOL:H11	1.56	0.86
1:B:486:PRO:HG2	1:B:489:MET:HE2	1.56	0.85
1:A:106:ASP:H	2:A:604:GOL:H31	1.43	0.84
1:B:530:ARG:NH2	1:B:592:LEU:OXT	2.11	0.81
1:A:486:PRO:HD2	1:A:489:MET:HE2	1.62	0.79
1:C:208:ARG:HG3	1:C:213:GLU:HG2	1.64	0.79
1:B:489:MET:HE1	1:B:576:SER:HB2	1.66	0.77
1:D:431:TYR:OH	1:D:548:LEU:HD13	1.84	0.77
1:C:477:GLU:OE1	1:C:477:GLU:N	2.13	0.76
1:B:47:ARG:HH11	1:B:62:THR:HG23	1.49	0.75
1:A:185:TRP:HE1	1:A:266:SER:HB3	1.51	0.75
1:C:47:ARG:HG2	1:C:47:ARG:HH11	1.52	0.75
1:B:57:THR:OG1	1:B:82:ARG:NH2	2.19	0.74
1:C:420:ARG:HD2	7:C:1061:HOH:O	1.87	0.74
1:E:300:GLY:HA3	1:E:569:MET:HG3	1.69	0.74
1:D:185:TRP:HE1	1:D:266:SER:HB3	1.53	0.73
1:D:473:VAL:HG22	7:D:1023:HOH:O	1.88	0.73
1:C:300:GLY:HA3	1:C:569:MET:HG3	1.70	0.72
1:D:300:GLY:HA3	1:D:569:MET:HG3	1.72	0.72
1:C:489:MET:HE3	1:C:581:LEU:HD11	1.70	0.72
1:D:489:MET:HE1	1:D:576:SER:HB2	1.73	0.71
1:B:185:TRP:HE1	1:B:266:SER:HB3	1.57	0.70
1:C:436:ALA:HB2	1:C:468:MET:HE2	1.72	0.70
1:B:300:GLY:HA3	1:B:569:MET:HG3	1.74	0.70
1:C:44:GLN:O	1:C:46:GLY:N	2.25	0.69
1:D:197:ALA:HB1	1:D:201:ILE:HB	1.75	0.68
1:E:62:THR:HG22	1:E:77:SER:CB	2.23	0.68
1:C:274:GLN:HG2	2:C:901:GOL:H12	1.73	0.68
1:A:486:PRO:CD	1:A:489:MET:HE2	2.21	0.68
1:A:486:PRO:CG	1:A:489:MET:HE2	2.23	0.68
1:E:192:ARG:NE	1:E:349:LEU:HD23	2.08	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:478:VAL:O	1:E:481:VAL:HG22	1.93	0.68
1:B:383:LEU:H	2:B:808:GOL:C3	2.07	0.68
1:A:478:VAL:O	1:A:481:VAL:HG22	1.94	0.68
1:C:416:ARG:HD3	1:C:420:ARG:NH2	2.08	0.67
1:B:489:MET:CE	1:B:576:SER:HB2	2.25	0.67
1:C:495:PHE:O	1:C:499:PHE:HB2	1.95	0.66
1:C:516:LEU:CD2	1:C:521:PHE:HB2	2.24	0.66
1:A:300:GLY:HA3	1:A:569:MET:HG3	1.76	0.66
1:C:516:LEU:HD21	1:C:521:PHE:N	2.10	0.66
1:D:530:ARG:NH2	1:D:592:LEU:OXT	2.21	0.66
1:D:47:ARG:HH11	1:D:62:THR:HG23	1.60	0.65
1:C:475:PRO:O	1:C:479:ARG:HG3	1.96	0.65
1:A:486:PRO:HG2	1:A:489:MET:HE2	1.79	0.65
1:D:310:MET:HE3	1:D:367:ALA:O	1.97	0.64
1:E:270:TYR:HB3	1:E:279:PHE:HB3	1.79	0.64
1:A:24:ARG:HG3	1:A:25:LYS:N	2.12	0.64
1:A:313:THR:HB	1:A:314:PRO:HD3	1.80	0.64
1:D:491:LEU:HD11	1:D:548:LEU:CD1	2.25	0.64
1:E:185:TRP:HE1	1:E:266:SER:HB3	1.63	0.64
1:B:383:LEU:H	2:B:808:GOL:H31	1.63	0.64
1:C:530:ARG:HH12	1:C:592:LEU:C	2.05	0.64
1:D:300:GLY:CA	1:D:569:MET:HG3	2.28	0.63
1:E:197:ALA:HB1	1:E:201:ILE:HB	1.79	0.63
1:B:141:GLY:CA	2:B:808:GOL:H11	2.26	0.62
1:B:33:GLU:OE1	1:B:557:CYS:HB3	2.00	0.62
1:C:310:MET:HE2	1:C:310:MET:CA	2.29	0.62
1:D:24:ARG:HG3	1:D:25:LYS:N	2.15	0.62
1:E:368:LEU:C	1:E:368:LEU:HD12	2.25	0.62
1:A:185:TRP:NE1	1:A:266:SER:HB3	2.15	0.61
1:A:434:ASP:OD1	1:A:542:ARG:NH2	2.33	0.61
1:A:486:PRO:HD2	1:A:489:MET:CE	2.28	0.61
1:E:468:MET:HE2	1:E:485:VAL:HG21	1.82	0.61
1:B:286:GLU:O	2:B:801:GOL:H2	2.00	0.60
1:D:164:GLY:H	2:D:802:GOL:C3	2.14	0.60
1:C:270:TYR:HB3	1:C:279:PHE:HB3	1.84	0.59
1:D:564:ARG:HB2	2:D:806:GOL:H12	1.83	0.59
1:B:24:ARG:HG3	1:B:25:LYS:N	2.17	0.59
1:A:14:ARG:HH22	2:A:614:GOL:H2	1.66	0.59
1:B:486:PRO:CG	1:B:489:MET:HE2	2.30	0.58
1:D:60:ARG:NH2	6:D:812:SO4:O4	2.35	0.58
1:C:489:MET:HE1	1:C:579:LEU:HD12	1.84	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:323:LEU:HD11	1:B:433:TYR:CE1	2.39	0.58
1:B:192:ARG:HH12	1:B:349:LEU:HB2	1.69	0.58
1:B:580:GLN:NE2	2:B:805:GOL:O1	2.28	0.58
1:D:313:THR:HB	1:D:314:PRO:HD3	1.84	0.58
1:C:125:TYR:CE2	1:C:177:THR:HG22	2.39	0.58
1:E:22:LEU:HD23	1:E:22:LEU:C	2.29	0.58
1:A:526:ALA:HB2	1:A:589:LEU:HD22	1.86	0.57
1:D:33:GLU:OE1	1:D:557:CYS:HB3	2.03	0.57
1:C:185:TRP:HE1	1:C:266:SER:HB3	1.68	0.57
1:A:51[B]:ARG:HG3	1:A:51[B]:ARG:HH11	1.69	0.57
1:B:192:ARG:NH1	1:B:349:LEU:H	2.02	0.57
1:D:442:GLU:O	1:D:459:LYS:HE3	2.05	0.57
1:A:270:TYR:HB3	1:A:279:PHE:HB3	1.87	0.56
1:C:436:ALA:CB	1:C:468:MET:HE2	2.36	0.55
1:B:310:MET:HE2	1:B:310:MET:HA	1.89	0.55
1:B:368:LEU:C	1:B:368:LEU:HD12	2.32	0.55
1:E:300:GLY:CA	1:E:569:MET:HG3	2.36	0.55
1:E:329:VAL:O	1:E:333:THR:HG23	2.06	0.55
1:B:383:LEU:O	2:B:808:GOL:O1	2.24	0.55
1:B:442:GLU:O	1:B:459:LYS:HE3	2.06	0.55
1:A:368:LEU:HD12	1:A:368:LEU:C	2.31	0.55
1:C:175:PRO:HG2	2:C:901:GOL:O2	2.07	0.55
1:A:234:LEU:HD12	1:A:234:LEU:C	2.32	0.54
1:E:313:THR:HB	1:E:314:PRO:HD3	1.88	0.54
1:C:313:THR:HB	1:C:314:PRO:HD3	1.89	0.54
1:B:185:TRP:CZ2	1:B:211:LEU:HD21	2.42	0.54
1:B:300:GLY:CA	1:B:569:MET:HG3	2.37	0.54
1:D:309:TYR:HB3	1:D:480:ARG:NH2	2.22	0.54
1:C:300:GLY:CA	1:C:569:MET:HG3	2.36	0.54
1:B:270:TYR:HB3	1:B:279:PHE:HB3	1.88	0.54
1:D:368:LEU:HD12	1:D:368:LEU:C	2.33	0.53
1:B:72:GLN:NE2	1:B:512:THR:OG1	2.41	0.53
1:B:92:LEU:HG	7:B:1018:HOH:O	2.09	0.53
1:C:434:ASP:OD1	1:C:542:ARG:NH2	2.42	0.53
1:D:489:MET:CE	1:D:576:SER:HB2	2.38	0.53
1:B:335:LEU:HD22	1:B:425:PRO:HB3	1.89	0.53
1:A:106:ASP:OD2	2:A:604:GOL:H11	2.08	0.53
1:D:41:ALA:HB3	1:D:47:ARG:HB3	1.90	0.52
1:B:480:ARG:HH12	1:C:42:ASP:CA	2.22	0.52
1:A:66:ARG:HH12	2:A:609:GOL:H11	1.74	0.52
1:D:495:PHE:O	1:D:499:PHE:HB2	2.08	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:109:LEU:HB3	1:E:110:PRO:HD3	1.90	0.52
1:A:106:ASP:H	2:A:604:GOL:C3	2.17	0.52
1:A:489:MET:CE	1:A:576:SER:HB2	2.33	0.52
1:B:246:LYS:NZ	2:A:611:GOL:H32	2.25	0.52
1:C:337:ILE:HG22	1:C:458:TYR:HB2	1.90	0.52
1:B:388:ALA:O	1:B:399:VAL:HB	2.09	0.52
1:B:143:GLN:H	2:B:804:GOL:H11	1.75	0.52
1:B:143:GLN:H	2:B:804:GOL:C1	2.23	0.52
1:E:438:MET:HA	1:E:438:MET:HE3	1.91	0.52
1:B:15:TRP:CZ2	1:A:253:ALA:HB2	2.45	0.52
1:D:253:ALA:HB2	1:C:15:TRP:CZ2	2.45	0.52
1:A:300:GLY:CA	1:A:569:MET:HG3	2.39	0.51
1:E:22:LEU:HD23	1:E:22:LEU:O	2.09	0.51
1:C:357:ARG:N	6:C:909:SO4:O2	2.44	0.51
1:E:427:LEU:HD22	1:E:548:LEU:HD11	1.92	0.51
1:B:381:GLU:HA	1:B:448:LEU:O	2.11	0.51
1:C:436:ALA:HB2	1:C:468:MET:CE	2.39	0.51
1:B:195:PHE:HD1	1:B:344:VAL:HG13	1.75	0.51
1:D:470:PRO:HG3	1:D:484:GLU:HB2	1.93	0.51
1:A:208:ARG:HH22	2:A:612:GOL:H32	1.75	0.51
1:B:383:LEU:N	2:B:808:GOL:H31	2.26	0.50
1:B:185:TRP:NE1	1:B:266:SER:HB3	2.25	0.50
1:C:368:LEU:C	1:C:368:LEU:HD12	2.37	0.50
1:C:476:PRO:HD3	1:C:479:ARG:NH2	2.26	0.50
1:A:530:ARG:HH21	1:A:592:LEU:C	2.19	0.50
1:B:382:SER:HA	2:B:808:GOL:H31	1.94	0.50
1:B:495:PHE:O	1:B:499:PHE:HB2	2.11	0.50
1:C:440:HIS:CE1	1:C:442:GLU:HB3	2.46	0.50
1:A:495:PHE:O	1:A:499:PHE:HB2	2.11	0.50
1:D:109:LEU:HB3	1:D:110:PRO:HD3	1.93	0.49
1:E:192:ARG:CZ	1:E:349:LEU:HD23	2.42	0.49
1:E:442:GLU:O	1:E:459:LYS:HE3	2.13	0.49
1:B:526:ALA:HB2	1:B:589:LEU:HD22	1.93	0.49
1:D:190:ARG:NH1	1:D:234:LEU:HD21	2.27	0.49
1:B:47:ARG:HH12	1:B:77:SER:HB2	1.78	0.49
1:B:347:ARG:HD2	1:B:352:GLU:OE2	2.12	0.49
1:C:247:LEU:O	1:C:251:PHE:HB2	2.13	0.49
1:A:339:ARG:NH2	1:A:371:GLU:OE2	2.29	0.49
1:A:538:GLU:OE1	1:A:538:GLU:N	2.33	0.49
1:B:323:LEU:C	1:B:323:LEU:HD23	2.38	0.49
1:B:411:PRO:HB2	1:B:516:LEU:HD13	1.95	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:526:ALA:HB2	1:E:589:LEU:HD22	1.94	0.49
1:A:329:VAL:O	1:A:333:THR:HG23	2.13	0.49
1:B:480:ARG:HH12	1:C:42:ASP:C	2.21	0.48
1:D:564:ARG:HB2	2:D:806:GOL:C1	2.43	0.48
1:E:124:CYS:O	1:E:128:THR:HG23	2.14	0.48
1:B:496:THR:HG21	3:B:809:A1C9F:N19	2.29	0.48
1:D:72:GLN:NE2	1:D:512:THR:OG1	2.37	0.48
1:D:185:TRP:NE1	1:D:266:SER:HB3	2.24	0.48
1:E:185:TRP:CZ2	1:E:211:LEU:HD21	2.49	0.48
1:B:397[B]:ARG:NH1	1:B:513:GLU:OE2	2.47	0.48
1:A:197:ALA:HB1	1:A:201:ILE:HB	1.95	0.48
1:D:15:TRP:CZ2	1:C:253:ALA:HB2	2.47	0.48
1:C:437:PHE:C	1:C:439:PRO:HD3	2.39	0.48
1:A:163:LEU:HB2	1:A:297:LEU:HB3	1.95	0.48
1:B:313:THR:HB	1:B:314:PRO:HD3	1.95	0.48
1:A:335:LEU:HG	1:A:336:SER:N	2.28	0.47
1:C:51:ARG:HD3	7:C:1074:HOH:O	2.14	0.47
1:B:68:LEU:HD21	1:B:588:PRO:HD3	1.96	0.47
1:B:382:SER:HB2	2:B:808:GOL:C1	2.44	0.47
1:B:246:LYS:NZ	2:B:806:GOL:H11	2.29	0.47
1:A:302:MET:HE3	1:A:302:MET:HB3	1.71	0.47
1:B:280:PHE:CZ	1:B:285:PRO:HB3	2.48	0.47
1:C:47:ARG:HG2	1:C:47:ARG:NH1	2.24	0.47
1:A:309:TYR:CE1	1:A:480:ARG:HD2	2.49	0.47
1:E:2:SER:HB3	1:E:5:ASP:HB2	1.97	0.47
1:C:572:LEU:N	1:C:572:LEU:HD12	2.29	0.47
1:B:246:LYS:HZ3	2:A:611:GOL:H32	1.79	0.47
1:B:480:ARG:HH12	1:C:42:ASP:HA	1.79	0.47
1:C:516:LEU:HD21	1:C:521:PHE:CA	2.45	0.47
1:B:192:ARG:NH1	1:B:349:LEU:HB2	2.30	0.46
1:E:62:THR:HG22	1:E:77:SER:OG	2.15	0.46
1:A:520:ASP:OD1	1:A:523:ARG:NH2	2.45	0.46
1:B:57:THR:OG1	1:B:82:ARG:NE	2.47	0.46
1:A:442:GLU:O	1:A:459:LYS:HE3	2.16	0.46
1:D:274:GLN:HG2	2:D:801:GOL:O3	2.16	0.46
1:C:162:ARG:HG3	1:C:276:ILE:HD13	1.98	0.46
1:D:347:ARG:HD2	1:D:352:GLU:OE2	2.16	0.46
1:B:185:TRP:CE2	1:B:211:LEU:HD21	2.51	0.46
1:A:47:ARG:HD2	1:A:62:THR:HG22	1.98	0.46
1:D:196:THR:HG21	1:D:311:GLU:O	2.15	0.46
1:D:438:MET:HE3	1:D:438:MET:HA	1.97	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:14:ARG:HH12	2:A:614:GOL:H2	1.81	0.46
1:E:310:MET:HE2	1:E:310:MET:HA	1.97	0.46
1:C:488:ASP:N	1:C:488:ASP:OD1	2.49	0.46
1:C:30:PHE:HB2	1:C:36:PHE:CZ	2.51	0.46
1:C:459:LYS:NZ	4:C:904:DPO:O5	2.50	0.45
1:C:476:PRO:HA	1:C:479:ARG:CZ	2.46	0.45
1:C:555:LEU:HD23	1:C:582:VAL:O	2.15	0.45
1:D:437:PHE:C	1:D:439:PRO:HD3	2.41	0.45
1:E:488:ASP:OD1	1:E:488:ASP:N	2.50	0.45
1:C:280:PHE:CZ	1:C:285:PRO:HB3	2.51	0.45
1:C:442:GLU:O	1:C:459:LYS:HE3	2.17	0.45
1:A:555:LEU:HB2	1:A:585:LEU:HG	1.99	0.45
1:C:391:HIS:O	1:C:398:SER:HA	2.16	0.45
1:D:92:LEU:HG	7:D:1024:HOH:O	2.17	0.45
1:B:383:LEU:H	2:B:808:GOL:H32	1.79	0.45
1:B:404:ILE:HG12	1:B:414:TRP:CG	2.52	0.45
1:A:226:ARG:NH2	7:A:708:HOH:O	2.50	0.45
1:C:280:PHE:HZ	1:C:285:PRO:HB3	1.81	0.45
1:B:487:GLU:HA	1:B:487:GLU:OE1	2.16	0.44
1:A:286:GLU:O	2:A:606:GOL:H31	2.16	0.44
1:C:2:SER:HB3	1:C:5:ASP:HB2	1.98	0.44
1:A:51[B]:ARG:HG3	1:A:51[B]:ARG:NH1	2.31	0.44
1:A:478:VAL:O	1:A:478:VAL:HG12	2.17	0.44
1:E:355:THR:HB	1:E:359:SER:HB2	1.99	0.44
1:C:489:MET:CE	1:C:579:LEU:HD12	2.46	0.44
1:B:197:ALA:HB1	1:B:201:ILE:HB	2.00	0.44
1:A:323:LEU:C	1:A:323:LEU:HD23	2.43	0.44
1:E:44:GLN:OE1	1:E:47:ARG:HD3	2.18	0.44
1:E:193:ALA:HB1	1:E:234:LEU:HD11	1.99	0.44
1:B:47:ARG:HH21	1:B:60:ARG:CB	2.30	0.44
1:A:135:ALA:HB1	1:A:406:ARG:HH21	1.82	0.44
1:C:57:THR:OG1	1:C:82:ARG:HD2	2.17	0.44
1:C:100:HIS:HD2	7:C:1110:HOH:O	2.00	0.44
1:C:336:SER:O	1:C:457:VAL:HA	2.17	0.44
1:A:109:LEU:HB3	1:A:110:PRO:HD3	2.00	0.44
1:D:47:ARG:HD2	1:D:62:THR:HG22	1.99	0.44
1:E:381:GLU:HA	1:E:448:LEU:O	2.18	0.44
1:D:473:VAL:HG23	7:D:902:HOH:O	2.17	0.44
1:B:142:PHE:HB3	2:B:804:GOL:H2	1.98	0.44
1:E:16:GLU:HG2	7:E:751:HOH:O	2.17	0.44
1:E:52:SER:HA	1:E:98:LEU:CD1	2.48	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:489:MET:HE1	1:E:579:LEU:HD12	1.98	0.44
1:C:526:ALA:HB2	1:C:589:LEU:HD22	2.00	0.44
1:A:511:ALA:HB1	2:A:609:GOL:H31	1.99	0.44
1:D:555:LEU:HD23	1:D:582:VAL:O	2.18	0.44
1:C:78:ILE:HG22	1:C:89:LEU:HD21	1.98	0.44
1:B:47:ARG:NH1	1:B:77:SER:HB2	2.32	0.44
1:D:301:PHE:CE2	1:D:569:MET:CE	3.01	0.44
1:E:424:THR:HB	1:E:425:PRO:HD3	2.00	0.44
1:E:33:GLU:OE2	1:E:557:CYS:HB3	2.18	0.43
1:E:41:ALA:HB3	1:E:47:ARG:HB3	2.00	0.43
1:C:149:MET:HE2	1:C:149:MET:HA	2.00	0.43
1:B:480:ARG:NH1	1:C:42:ASP:HA	2.33	0.43
1:A:280:PHE:CZ	1:A:285:PRO:HB3	2.53	0.43
1:A:301:PHE:CE2	1:A:569:MET:HE3	2.53	0.43
1:E:302:MET:HE3	1:E:302:MET:HB3	1.88	0.43
1:C:473:VAL:HG23	1:C:473:VAL:O	2.18	0.43
1:A:472:ALA:O	1:A:482:ARG:NH1	2.48	0.43
1:C:24:ARG:HD3	1:C:75:ALA:HB2	2.00	0.43
1:B:280:PHE:HZ	1:B:285:PRO:HB3	1.82	0.43
1:C:301:PHE:HZ	1:C:570:VAL:HG22	1.84	0.43
1:C:357:ARG:HH11	1:C:362:ARG:HH12	1.65	0.43
1:B:2:SER:HB3	1:B:5:ASP:HB2	2.01	0.43
1:B:229:ASP:C	1:B:229:ASP:OD1	2.61	0.43
1:C:315:ALA:HB1	1:C:477:GLU:HG3	2.01	0.43
1:B:555:LEU:O	1:B:581:LEU:HA	2.18	0.43
1:A:66:ARG:HH22	2:A:609:GOL:H11	1.84	0.43
1:D:208:ARG:HG2	1:D:213:GLU:HG2	2.00	0.43
1:D:526:ALA:HB2	1:D:589:LEU:HD22	2.00	0.43
1:C:341:ARG:CG	1:C:371:GLU:HG3	2.48	0.43
1:A:22:LEU:HD12	1:A:22:LEU:HA	1.70	0.43
1:C:81:THR:CG2	1:C:86:GLU:OE2	2.66	0.43
1:C:424:THR:HB	1:C:425:PRO:HD3	2.00	0.43
1:D:374:VAL:N	1:D:375:PRO:HD2	2.33	0.43
1:E:185:TRP:NE1	1:E:266:SER:HB3	2.32	0.43
1:C:478:VAL:O	1:C:481:VAL:HG22	2.18	0.43
1:C:48:TYR:OH	1:C:65:ARG:HD2	2.19	0.43
1:C:397:ARG:HD2	1:C:513:GLU:OE2	2.19	0.43
1:E:487:GLU:OE2	1:E:545:GLN:NE2	2.52	0.42
1:C:516:LEU:HD22	1:C:521:PHE:HB2	2.00	0.42
1:B:47:ARG:CD	1:B:62:THR:HG22	2.49	0.42
1:D:270:TYR:HB3	1:D:279:PHE:HB3	2.00	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:109:LEU:O	1:B:113:LEU:HG	2.19	0.42
1:C:492:LEU:HD23	1:C:492:LEU:HA	1.81	0.42
1:D:247:LEU:O	1:D:251:PHE:HB2	2.19	0.42
1:D:335:LEU:HD22	1:D:425:PRO:HB3	2.02	0.42
1:C:492:LEU:HA	1:C:495:PHE:HB2	2.01	0.42
1:B:491:LEU:HD22	1:B:546:TYR:HB3	2.00	0.42
1:A:555:LEU:O	1:A:581:LEU:HA	2.20	0.42
1:D:162:ARG:HD2	1:D:298:ASN:OD1	2.20	0.42
1:B:256:ALA:HB1	1:A:15:TRP:HB2	2.01	0.42
1:D:162:ARG:HD2	1:D:162:ARG:N	2.34	0.42
1:C:516:LEU:HD21	1:C:521:PHE:HB2	1.98	0.42
1:B:125:TYR:CE2	1:B:177:THR:HG22	2.55	0.42
1:D:168:ASP:OD1	1:D:168:ASP:N	2.53	0.42
1:C:323:LEU:HD23	1:C:323:LEU:C	2.45	0.42
1:B:24:ARG:CB	1:B:78:ILE:HD11	2.49	0.42
1:A:89:LEU:HD23	1:A:89:LEU:HA	1.83	0.42
1:E:104:LEU:HD21	1:E:563:LEU:CD2	2.50	0.42
1:E:492:LEU:HA	1:E:495:PHE:HB2	2.01	0.42
1:D:253:ALA:HB2	1:C:15:TRP:HZ2	1.84	0.42
1:D:489:MET:CE	1:D:579:LEU:HD12	2.50	0.42
1:C:67:ALA:O	1:C:68:LEU:HB2	2.19	0.42
1:E:374:VAL:N	1:E:375:PRO:HD2	2.35	0.41
1:E:356:ASP:C	1:E:356:ASP:OD1	2.62	0.41
1:C:170:TYR:CD1	1:C:170:TYR:C	2.98	0.41
1:A:163:LEU:O	1:A:296:VAL:HG13	2.20	0.41
1:C:335:LEU:HD22	1:C:425:PRO:HB3	2.02	0.41
1:C:473:VAL:HG12	7:C:1107:HOH:O	2.19	0.41
1:B:433:TYR:O	1:B:434:ASP:HB2	2.20	0.41
1:D:489:MET:HE3	1:D:579:LEU:HD12	2.03	0.41
1:B:3:LEU:HD23	1:A:244:TRP:CZ2	2.54	0.41
1:B:478:VAL:O	1:B:481:VAL:HG22	2.20	0.41
1:E:185:TRP:CE2	1:E:211:LEU:HD21	2.55	0.41
1:C:469:ASP:HB3	1:C:472:ALA:HB2	2.03	0.41
1:B:257:ARG:O	1:B:258:GLN:HB2	2.21	0.41
1:A:347:ARG:HD2	1:A:352:GLU:OE2	2.20	0.41
1:D:125:TYR:CE2	1:D:177:THR:HG22	2.55	0.41
1:E:310:MET:HE2	1:E:310:MET:CA	2.51	0.41
1:B:30:PHE:HB2	1:B:36:PHE:CZ	2.55	0.41
1:A:488:ASP:OD1	1:A:488:ASP:N	2.53	0.41
1:E:24:ARG:HD3	1:E:75:ALA:HB2	2.01	0.41
1:B:548:LEU:HA	1:B:548:LEU:HD23	1.78	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2:SER:HB3	1:A:5:ASP:HB2	2.03	0.41
1:D:244:TRP:CZ2	1:C:3:LEU:HD23	2.55	0.41
1:C:174:ALA:HB3	1:C:177:THR:HG23	2.03	0.41
1:B:310:MET:HE2	1:B:310:MET:CA	2.49	0.41
1:A:40:PRO:HD2	1:D:357:ARG:NH1	2.35	0.41
1:A:377:LEU:HD11	2:A:602:GOL:H12	2.02	0.41
1:A:491:LEU:HD12	1:A:491:LEU:HA	1.82	0.41
1:D:78:ILE:HG22	1:D:89:LEU:HD21	2.03	0.41
1:D:355:THR:HB	1:D:359:SER:HB2	2.02	0.41
1:D:564:ARG:HE	2:D:806:GOL:H11	1.84	0.41
1:E:388:ALA:O	1:E:399:VAL:HB	2.21	0.41
1:E:473:VAL:O	1:E:473:VAL:CG2	2.69	0.41
1:D:197:ALA:HB1	1:D:201:ILE:CB	2.48	0.41
1:B:374:VAL:N	1:B:375:PRO:HD2	2.35	0.40
1:D:564:ARG:NH2	2:D:806:GOL:H31	2.36	0.40
1:E:161:GLY:O	1:E:162:ARG:C	2.62	0.40
1:B:397[A]:ARG:NH2	1:B:402:GLU:OE2	2.54	0.40
1:D:475:PRO:O	1:D:476:PRO:C	2.65	0.40
1:C:374:VAL:N	1:C:375:PRO:HD2	2.36	0.40
1:C:246:LYS:HD3	1:C:246:LYS:HA	1.92	0.40
1:B:393:ASP:OD1	1:B:393:ASP:C	2.65	0.40
1:D:46:GLY:O	1:D:62:THR:HA	2.21	0.40
1:A:427:LEU:HD22	1:A:548:LEU:HD11	2.04	0.40
1:D:488:ASP:OD1	1:D:488:ASP:N	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	591/612 (97%)	575 (97%)	16 (3%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	591/612 (97%)	577 (98%)	14 (2%)	0	100	100
1	C	590/612 (96%)	572 (97%)	17 (3%)	1 (0%)	43	61
1	D	589/612 (96%)	573 (97%)	16 (3%)	0	100	100
1	E	591/612 (97%)	574 (97%)	17 (3%)	0	100	100
All	All	2952/3060 (96%)	2871 (97%)	80 (3%)	1 (0%)	100	100

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	45	ASP

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	483/504 (96%)	482 (100%)	1 (0%)	87	94
1	B	485/504 (96%)	483 (100%)	2 (0%)	84	92
1	C	485/504 (96%)	480 (99%)	5 (1%)	68	84
1	D	485/504 (96%)	484 (100%)	1 (0%)	87	94
1	E	482/504 (96%)	480 (100%)	2 (0%)	84	92
All	All	2420/2520 (96%)	2409 (100%)	11 (0%)	81	91

All (11) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	45	ASP
1	B	202	ASP
1	A	62	THR
1	D	202	ASP
1	E	132	VAL
1	E	473	VAL
1	C	47	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	202	ASP
1	C	208	ARG
1	C	296	VAL
1	C	357	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	160	ASN
1	B	580	GLN
1	A	100	HIS
1	A	160	ASN
1	A	274	GLN
1	A	454	GLN
1	D	160	ASN
1	D	454	GLN
1	E	391	HIS
1	C	72	GLN
1	C	160	ASN
1	C	454	GLN
1	C	580	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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 69 ligands modelled in this entry, 10 are monoatomic - leaving 59 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$
6	SO4	D	813	-	4,4,4	0.26	0	6,6,6	0.20	0
6	SO4	D	815	-	4,4,4	0.30	0	6,6,6	0.21	0
2	GOL	B	803	-	5,5,5	0.90	0	5,5,5	0.62	0
2	GOL	A	615	-	5,5,5	0.69	0	5,5,5	1.13	0
6	SO4	C	908	-	4,4,4	0.25	0	6,6,6	0.11	0
6	SO4	A	622	-	4,4,4	0.26	0	6,6,6	0.17	0
6	SO4	C	911	-	4,4,4	0.23	0	6,6,6	0.25	0
4	DPO	B	810	5	6,8,8	0.75	0	12,13,13	1.34	1 (8%)
2	GOL	D	804	-	5,5,5	1.13	0	5,5,5	1.21	1 (20%)
2	GOL	A	610	-	5,5,5	0.75	0	5,5,5	0.80	0
2	GOL	D	805	-	5,5,5	1.43	1 (20%)	5,5,5	1.28	1 (20%)
2	GOL	A	606	-	5,5,5	1.01	0	5,5,5	0.92	0
2	GOL	A	614	-	5,5,5	1.42	1 (20%)	5,5,5	1.58	1 (20%)
6	SO4	A	621	-	4,4,4	0.28	0	6,6,6	0.18	0
2	GOL	A	605	-	5,5,5	0.97	0	5,5,5	1.04	0
6	SO4	D	811	-	4,4,4	0.25	0	6,6,6	0.20	0
6	SO4	D	812	-	4,4,4	0.22	0	6,6,6	0.21	0
2	GOL	A	612	-	5,5,5	1.10	0	5,5,5	1.60	1 (20%)
3	A1C9F	C	903	5	53,53,53	3.62	17 (32%)	60,72,72	2.53	19 (31%)
2	GOL	B	807	-	5,5,5	0.90	0	5,5,5	1.12	0
2	GOL	D	806	-	5,5,5	1.32	0	5,5,5	1.50	1 (20%)
3	A1C9F	E	602	5	53,53,53	3.74	16 (30%)	60,72,72	2.52	16 (26%)
4	DPO	C	904	5	6,8,8	0.68	0	12,13,13	1.21	1 (8%)
6	SO4	A	620	-	4,4,4	0.24	0	6,6,6	0.36	0
6	SO4	D	814	-	4,4,4	0.28	0	6,6,6	0.24	0
4	DPO	A	617	5	6,8,8	0.94	0	12,13,13	0.96	1 (8%)
2	GOL	A	602	-	5,5,5	1.43	1 (20%)	5,5,5	1.56	1 (20%)
2	GOL	B	802	-	5,5,5	1.64	1 (20%)	5,5,5	1.66	1 (20%)
2	GOL	C	902	-	5,5,5	0.80	0	5,5,5	1.21	0
6	SO4	B	813	-	4,4,4	0.23	0	6,6,6	0.12	0
2	GOL	A	613	-	5,5,5	0.81	0	5,5,5	1.11	0
4	DPO	E	603	5	6,8,8	0.56	0	12,13,13	1.47	3 (25%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	SO4	C	909	-	4,4,4	0.22	0	6,6,6	0.19	0
2	GOL	B	804	-	5,5,5	1.05	0	5,5,5	1.30	1 (20%)
2	GOL	B	806	-	5,5,5	0.83	0	5,5,5	0.83	0
2	GOL	D	801	-	5,5,5	1.15	0	5,5,5	1.96	2 (40%)
2	GOL	A	604	-	5,5,5	0.74	0	5,5,5	0.67	0
2	GOL	A	609	-	5,5,5	1.21	1 (20%)	5,5,5	1.20	1 (20%)
4	DPO	D	808	5	6,8,8	0.79	0	12,13,13	1.14	2 (16%)
2	GOL	C	901	-	5,5,5	0.82	0	5,5,5	0.90	0
2	GOL	D	802	-	5,5,5	0.69	0	5,5,5	0.97	0
6	SO4	B	816	-	4,4,4	0.27	0	6,6,6	0.14	0
3	A1C9F	A	616	5	53,53,53	3.67	15 (28%)	60,72,72	2.67	22 (36%)
6	SO4	C	910	-	4,4,4	0.24	0	6,6,6	0.11	0
2	GOL	A	601	-	5,5,5	1.13	0	5,5,5	1.15	1 (20%)
3	A1C9F	B	809	5	53,53,53	3.74	20 (37%)	60,72,72	2.54	14 (23%)
2	GOL	A	611	-	5,5,5	0.98	0	5,5,5	1.17	1 (20%)
6	SO4	B	815	-	4,4,4	0.24	0	6,6,6	0.19	0
3	A1C9F	D	807	5	53,53,53	3.74	17 (32%)	60,72,72	2.65	14 (23%)
2	GOL	E	601	-	5,5,5	1.19	0	5,5,5	1.83	2 (40%)
2	GOL	B	801	-	5,5,5	2.11	2 (40%)	5,5,5	2.50	2 (40%)
2	GOL	A	603	-	5,5,5	1.02	0	5,5,5	0.87	0
2	GOL	A	607	-	5,5,5	1.00	0	5,5,5	0.87	0
2	GOL	B	805	-	5,5,5	0.84	0	5,5,5	1.05	1 (20%)
2	GOL	A	608	-	5,5,5	1.13	0	5,5,5	0.95	0
6	SO4	C	907	-	4,4,4	0.26	0	6,6,6	0.45	0
2	GOL	D	803	-	5,5,5	0.58	0	5,5,5	1.40	1 (20%)
6	SO4	B	814	-	4,4,4	0.25	0	6,6,6	0.28	0
2	GOL	B	808	-	5,5,5	0.88	0	5,5,5	0.63	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
2	GOL	B	803	-	-	2/4/4/4	-
2	GOL	A	615	-	-	4/4/4/4	-
4	DPO	B	810	5	-	0/6/6/6	-
2	GOL	D	804	-	-	4/4/4/4	-
2	GOL	A	610	-	-	0/4/4/4	-

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	GOL	D	805	-	-	3/4/4/4	-
2	GOL	A	606	-	-	1/4/4/4	-
2	GOL	A	614	-	-	2/4/4/4	-
2	GOL	A	605	-	-	1/4/4/4	-
2	GOL	A	612	-	-	0/4/4/4	-
3	A1C9F	C	903	5	-	12/47/64/64	0/3/3/3
2	GOL	B	807	-	-	0/4/4/4	-
2	GOL	D	806	-	-	0/4/4/4	-
3	A1C9F	E	602	5	-	14/47/64/64	0/3/3/3
4	DPO	C	904	5	-	0/6/6/6	-
4	DPO	A	617	5	-	1/6/6/6	-
2	GOL	A	602	-	-	2/4/4/4	-
2	GOL	B	802	-	-	0/4/4/4	-
2	GOL	C	902	-	-	0/4/4/4	-
2	GOL	A	613	-	-	2/4/4/4	-
4	DPO	E	603	5	-	0/6/6/6	-
2	GOL	B	804	-	-	2/4/4/4	-
2	GOL	B	806	-	-	2/4/4/4	-
2	GOL	D	801	-	-	4/4/4/4	-
2	GOL	A	604	-	-	1/4/4/4	-
2	GOL	A	609	-	-	2/4/4/4	-
4	DPO	D	808	5	-	0/6/6/6	-
2	GOL	C	901	-	-	2/4/4/4	-
2	GOL	D	802	-	-	0/4/4/4	-
3	A1C9F	A	616	5	-	17/47/64/64	0/3/3/3
2	GOL	A	601	-	-	4/4/4/4	-
3	A1C9F	B	809	5	-	16/47/64/64	0/3/3/3
2	GOL	A	611	-	-	4/4/4/4	-
3	A1C9F	D	807	5	-	14/47/64/64	0/3/3/3
2	GOL	E	601	-	-	2/4/4/4	-
2	GOL	B	801	-	-	2/4/4/4	-
2	GOL	A	603	-	-	0/4/4/4	-
2	GOL	A	607	-	-	4/4/4/4	-
2	GOL	B	805	-	-	0/4/4/4	-
2	GOL	A	608	-	-	3/4/4/4	-
2	GOL	D	803	-	-	2/4/4/4	-
2	GOL	B	808	-	-	3/4/4/4	-

All (92) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	807	A1C9F	O37-S06	12.60	1.53	1.42
3	B	809	A1C9F	O37-S06	12.47	1.53	1.42
3	A	616	A1C9F	O37-S06	11.98	1.52	1.42
3	E	602	A1C9F	O37-S06	11.68	1.52	1.42
3	E	602	A1C9F	O36-S06	11.18	1.52	1.42
3	C	903	A1C9F	O36-S06	11.03	1.52	1.42
3	D	807	A1C9F	O36-S06	10.94	1.52	1.42
3	A	616	A1C9F	O36-S06	10.82	1.51	1.42
3	C	903	A1C9F	O37-S06	10.49	1.51	1.42
3	B	809	A1C9F	O36-S06	9.71	1.50	1.42
3	B	809	A1C9F	O38-C39	9.66	1.64	1.42
3	D	807	A1C9F	O38-C39	9.46	1.63	1.42
3	A	616	A1C9F	O38-C39	9.03	1.62	1.42
3	E	602	A1C9F	O38-C39	8.92	1.62	1.42
3	C	903	A1C9F	O38-C39	8.91	1.62	1.42
3	B	809	A1C9F	C11-N12	8.45	1.46	1.35
3	E	602	A1C9F	C23-N24	8.44	1.46	1.35
3	A	616	A1C9F	C23-N24	8.05	1.46	1.35
3	C	903	A1C9F	C23-N24	7.97	1.45	1.35
3	C	903	A1C9F	C11-N12	7.60	1.45	1.35
3	A	616	A1C9F	C11-N12	7.51	1.45	1.35
3	D	807	A1C9F	C23-N24	7.49	1.45	1.35
3	E	602	A1C9F	O38-C03	-7.45	1.28	1.45
3	D	807	A1C9F	C11-N12	7.33	1.45	1.35
3	B	809	A1C9F	C23-N24	7.24	1.44	1.35
3	D	807	A1C9F	S06-N07	6.99	1.71	1.59
3	E	602	A1C9F	S06-N07	6.96	1.71	1.59
3	B	809	A1C9F	C50-C39	-6.89	1.31	1.53
3	B	809	A1C9F	O38-C03	-6.89	1.29	1.45
3	E	602	A1C9F	C50-C39	-6.87	1.31	1.53
3	D	807	A1C9F	O38-C03	-6.80	1.29	1.45
3	A	616	A1C9F	O38-C03	-6.78	1.29	1.45
3	C	903	A1C9F	C50-C39	-6.65	1.32	1.53
3	C	903	A1C9F	O38-C03	-6.63	1.30	1.45
3	A	616	A1C9F	C50-C39	-6.62	1.32	1.53
3	B	809	A1C9F	S06-N07	6.45	1.70	1.59
3	D	807	A1C9F	C50-C39	-6.43	1.33	1.53
3	C	903	A1C9F	S06-N07	6.40	1.70	1.59
3	E	602	A1C9F	C11-N12	6.24	1.43	1.35
3	C	903	A1C9F	C20-N19	5.75	1.47	1.33
3	A	616	A1C9F	S06-N07	5.74	1.69	1.59
3	E	602	A1C9F	C20-N19	5.38	1.46	1.33

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	807	A1C9F	C20-N19	5.37	1.46	1.33
3	A	616	A1C9F	C20-N19	5.19	1.45	1.33
3	E	602	A1C9F	C43-N44	4.99	1.47	1.34
3	C	903	A1C9F	C43-N44	4.82	1.46	1.34
3	B	809	A1C9F	C43-N44	4.73	1.46	1.34
3	B	809	A1C9F	C20-N19	4.63	1.44	1.33
3	D	807	A1C9F	C43-N44	4.51	1.45	1.34
3	A	616	A1C9F	C43-N44	4.48	1.45	1.34
3	E	602	A1C9F	O51-C50	3.78	1.52	1.43
3	B	809	A1C9F	O13-N12	3.64	1.42	1.40
3	C	903	A1C9F	O51-C50	3.57	1.51	1.43
3	B	809	A1C9F	O51-C50	3.56	1.51	1.43
2	B	801	GOL	C1-C2	3.56	1.65	1.51
3	E	602	A1C9F	O05-S06	3.54	1.67	1.60
3	D	807	A1C9F	O51-C50	3.46	1.51	1.43
3	A	616	A1C9F	O05-S06	3.21	1.66	1.60
3	A	616	A1C9F	O51-C50	3.15	1.50	1.43
3	D	807	A1C9F	O05-S06	3.02	1.66	1.60
3	B	809	A1C9F	O05-S06	2.92	1.65	1.60
3	A	616	A1C9F	O33-C20	-2.87	1.17	1.23
3	C	903	A1C9F	O05-S06	2.84	1.65	1.60
3	A	616	A1C9F	O35-C08	-2.83	1.17	1.23
2	B	802	GOL	C3-C2	2.72	1.62	1.51
2	B	801	GOL	C3-C2	2.68	1.62	1.51
2	A	602	GOL	O2-C2	-2.63	1.35	1.43
3	D	807	A1C9F	O34-C11	-2.63	1.17	1.23
3	B	809	A1C9F	C08-N07	2.60	1.46	1.39
3	A	616	A1C9F	O13-N12	2.59	1.42	1.40
3	D	807	A1C9F	C08-N07	2.58	1.45	1.39
3	C	903	A1C9F	O01-C02	-2.55	1.36	1.43
3	B	809	A1C9F	O25-N24	2.46	1.42	1.40
3	E	602	A1C9F	O33-C20	-2.42	1.18	1.23
3	C	903	A1C9F	C08-N07	2.40	1.45	1.39
3	E	602	A1C9F	C49-N40	-2.34	1.33	1.37
3	B	809	A1C9F	O33-C20	-2.34	1.18	1.23
3	E	602	A1C9F	C08-N07	2.32	1.45	1.39
2	A	614	GOL	C1-C2	2.31	1.60	1.51
2	D	805	GOL	C1-C2	2.29	1.60	1.51
3	B	809	A1C9F	O32-C23	-2.23	1.18	1.23
3	E	602	A1C9F	O34-C11	-2.23	1.18	1.23
3	B	809	A1C9F	C41-N47	2.18	1.38	1.34
2	A	609	GOL	O2-C2	-2.17	1.37	1.43

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	903	A1C9F	O33-C20	-2.13	1.19	1.23
3	C	903	A1C9F	C49-N40	-2.09	1.34	1.37
3	B	809	A1C9F	C04-C03	2.07	1.57	1.51
3	D	807	A1C9F	O32-C23	-2.05	1.18	1.23
3	D	807	A1C9F	C04-C03	2.05	1.57	1.51
3	D	807	A1C9F	O33-C20	-2.02	1.19	1.23
3	C	903	A1C9F	O34-C11	-2.01	1.18	1.23
3	B	809	A1C9F	C49-N40	-2.01	1.34	1.37

All (112) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	807	A1C9F	O37-S06-O36	-13.64	100.43	120.85
3	A	616	A1C9F	O37-S06-O36	-13.20	101.09	120.85
3	E	602	A1C9F	O37-S06-O36	-12.86	101.59	120.85
3	B	809	A1C9F	O37-S06-O36	-12.55	102.05	120.85
3	C	903	A1C9F	O37-S06-O36	-11.65	103.40	120.85
3	C	903	A1C9F	C42-C41-N47	-6.87	117.25	126.72
3	B	809	A1C9F	C42-C41-N47	-6.37	117.94	126.72
3	E	602	A1C9F	C42-C41-N47	-6.19	118.19	126.72
3	D	807	A1C9F	C42-C41-N47	-6.13	118.28	126.72
3	D	807	A1C9F	N47-C46-N45	-5.86	119.71	128.58
3	A	616	A1C9F	C42-C41-N47	-5.82	118.70	126.72
3	C	903	A1C9F	N47-C41-N40	5.16	135.94	127.17
3	B	809	A1C9F	C22-C21-C20	-4.95	102.47	112.67
3	D	807	A1C9F	C46-N47-C41	4.85	123.68	111.83
2	B	801	GOL	C3-C2-C1	-4.82	94.12	111.80
3	B	809	A1C9F	N47-C41-N40	4.56	134.93	127.17
3	A	616	A1C9F	N47-C41-N40	4.52	134.86	127.17
3	D	807	A1C9F	N47-C41-N40	4.44	134.72	127.17
3	E	602	A1C9F	N47-C41-N40	4.15	134.23	127.17
3	A	616	A1C9F	C18-N19-C20	-4.02	115.34	122.82
3	A	616	A1C9F	N47-C46-N45	-4.01	122.51	128.58
3	C	903	A1C9F	N47-C46-N45	-3.95	122.60	128.58
3	C	903	A1C9F	C46-N47-C41	3.92	121.40	111.83
3	E	602	A1C9F	N47-C46-N45	-3.87	122.72	128.58
3	B	809	A1C9F	N47-C46-N45	-3.77	122.87	128.58
3	B	809	A1C9F	O25-N24-C26	3.71	122.45	113.76
3	E	602	A1C9F	C46-N47-C41	3.68	120.83	111.83
3	B	809	A1C9F	C46-N47-C41	3.68	120.82	111.83
3	E	602	A1C9F	O13-N12-C14	3.60	122.19	113.76
3	A	616	A1C9F	O13-N12-C14	3.56	122.10	113.76

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	616	A1C9F	C46-N47-C41	3.55	120.49	111.83
2	D	801	GOL	C3-C2-C1	-3.51	98.92	111.80
3	E	602	A1C9F	C21-C20-N19	3.48	122.68	116.34
3	D	807	A1C9F	O25-N24-C26	3.41	121.75	113.76
3	A	616	A1C9F	C21-C20-N19	3.40	122.54	116.34
3	C	903	A1C9F	C17-C18-N19	3.34	121.55	112.20
3	A	616	A1C9F	O35-C08-N07	-3.29	117.81	122.43
2	E	601	GOL	C3-C2-C1	-3.26	99.85	111.80
3	A	616	A1C9F	N40-C49-N48	-3.26	109.32	113.94
2	B	802	GOL	C3-C2-C1	-3.23	99.96	111.80
3	E	602	A1C9F	N40-C49-N48	-3.20	109.40	113.94
3	D	807	A1C9F	O13-N12-C14	3.19	121.23	113.76
3	C	903	A1C9F	N40-C49-N48	-3.18	109.42	113.94
3	E	602	A1C9F	C41-C42-N48	-3.16	106.97	110.58
3	A	616	A1C9F	C21-C22-C23	3.15	123.02	111.89
3	C	903	A1C9F	C42-N48-C49	3.13	108.36	103.45
3	B	809	A1C9F	C18-N19-C20	-3.12	117.01	122.82
3	D	807	A1C9F	N40-C49-N48	-3.11	109.52	113.94
3	C	903	A1C9F	O13-N12-C14	3.10	121.03	113.76
3	A	616	A1C9F	O25-N24-C26	3.10	121.02	113.76
2	D	806	GOL	C3-C2-C1	-3.07	100.52	111.80
2	A	614	GOL	C3-C2-C1	-3.07	100.54	111.80
3	C	903	A1C9F	O25-N24-C26	3.05	120.91	113.76
3	D	807	A1C9F	O05-S06-O37	3.05	114.69	105.48
4	B	810	DPO	O6-P2-O4	3.03	114.80	104.64
4	C	904	DPO	O2-P1-O4	2.99	114.67	104.64
2	A	612	GOL	C3-C2-C1	-2.98	100.88	111.80
3	C	903	A1C9F	C21-C20-N19	2.97	121.76	116.34
3	B	809	A1C9F	C41-C42-N48	-2.97	107.19	110.58
3	B	809	A1C9F	N40-C49-N48	-2.93	109.77	113.94
3	B	809	A1C9F	C42-N48-C49	2.93	108.06	103.45
3	E	602	A1C9F	C42-N48-C49	2.91	108.02	103.45
4	E	603	DPO	O3-P1-O2	2.90	118.67	107.80
3	B	809	A1C9F	O13-N12-C14	2.84	120.42	113.76
3	C	903	A1C9F	C41-C42-N48	-2.84	107.34	110.58
3	A	616	A1C9F	C17-C18-N19	2.83	120.15	112.20
2	A	602	GOL	C3-C2-C1	-2.83	101.41	111.80
3	A	616	A1C9F	C42-N48-C49	2.80	107.84	103.45
3	B	809	A1C9F	O05-S06-O36	2.77	113.86	105.48
2	D	803	GOL	C3-C2-C1	-2.75	101.71	111.80
3	C	903	A1C9F	C21-C22-C23	2.74	121.57	111.89
3	E	602	A1C9F	C18-N19-C20	-2.71	117.78	122.82

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	602	A1C9F	O25-N24-C26	2.68	120.04	113.76
3	D	807	A1C9F	O33-C20-N19	-2.65	117.83	123.03
2	B	804	GOL	C3-C2-C1	-2.61	102.21	111.80
3	D	807	A1C9F	C15-C14-N12	-2.56	105.84	111.11
3	D	807	A1C9F	C42-N48-C49	2.53	107.42	103.45
3	A	616	A1C9F	C41-N40-C49	2.51	108.38	105.74
3	A	616	A1C9F	O05-S06-O37	2.48	112.97	105.48
3	E	602	A1C9F	O05-S06-O37	2.43	112.83	105.48
3	C	903	A1C9F	O05-S06-O36	2.42	112.79	105.48
3	A	616	A1C9F	C04-C03-C02	-2.41	106.53	115.21
2	A	601	GOL	C3-C2-C1	-2.39	103.02	111.80
2	D	804	GOL	C3-C2-C1	-2.38	103.06	111.80
2	D	805	GOL	C3-C2-C1	-2.38	103.07	111.80
4	E	603	DPO	O7-P2-O4	2.36	112.56	104.64
3	E	602	A1C9F	C10-C09-C08	-2.36	107.80	112.67
3	E	602	A1C9F	O33-C20-C21	-2.35	117.76	122.02
2	A	609	GOL	C3-C2-C1	-2.32	103.31	111.80
4	A	617	DPO	O3-P1-O4	2.30	112.36	104.64
4	E	603	DPO	O2-P1-O1	-2.29	101.92	110.83
2	D	801	GOL	O2-C2-C3	2.28	118.64	109.18
3	C	903	A1C9F	C27-C26-N24	-2.26	106.45	111.11
2	A	611	GOL	C3-C2-C1	-2.26	103.51	111.80
4	D	808	DPO	O3-P1-O2	2.26	116.26	107.80
3	A	616	A1C9F	C41-C42-N48	-2.24	108.02	110.58
3	C	903	A1C9F	C43-C42-C41	2.22	120.22	117.18
3	C	903	A1C9F	C41-N40-C49	2.21	108.06	105.74
3	A	616	A1C9F	C42-C43-N44	-2.20	117.83	123.29
2	E	601	GOL	O2-C2-C3	2.19	118.24	109.18
2	B	801	GOL	O2-C2-C3	2.19	118.23	109.18
3	E	602	A1C9F	C41-N40-C49	2.18	108.03	105.74
3	A	616	A1C9F	O33-C20-N19	-2.18	118.76	123.03
3	D	807	A1C9F	C41-C42-N48	-2.13	108.15	110.58
3	A	616	A1C9F	C16-C17-C18	-2.10	103.84	113.56
4	D	808	DPO	O3-P1-O4	2.09	111.63	104.64
3	A	616	A1C9F	N44-C43-N45	2.08	123.01	118.38
3	D	807	A1C9F	C41-N40-C49	2.07	107.91	105.74
3	C	903	A1C9F	O33-C20-C21	-2.05	118.31	122.02
3	C	903	A1C9F	C04-C03-C02	-2.04	107.86	115.21
2	B	805	GOL	C3-C2-C1	-2.01	104.41	111.80
3	B	809	A1C9F	C41-N40-C49	2.01	107.85	105.74

There are no chirality outliers.

All (132) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	801	GOL	C1-C2-C3-O3
2	B	801	GOL	O2-C2-C3-O3
2	B	803	GOL	C1-C2-C3-O3
2	B	804	GOL	C1-C2-C3-O3
2	B	804	GOL	O2-C2-C3-O3
2	B	808	GOL	O1-C1-C2-C3
2	A	601	GOL	O1-C1-C2-C3
2	A	601	GOL	C1-C2-C3-O3
2	A	602	GOL	C1-C2-C3-O3
2	A	607	GOL	C1-C2-C3-O3
2	A	608	GOL	O1-C1-C2-C3
2	A	611	GOL	O1-C1-C2-C3
2	A	611	GOL	C1-C2-C3-O3
2	A	611	GOL	O2-C2-C3-O3
2	A	613	GOL	O1-C1-C2-O2
2	A	613	GOL	O1-C1-C2-C3
2	A	614	GOL	O1-C1-C2-C3
2	A	615	GOL	O1-C1-C2-C3
2	D	805	GOL	C1-C2-C3-O3
2	D	805	GOL	O2-C2-C3-O3
2	C	901	GOL	O1-C1-C2-C3
3	B	809	A1C9F	C20-C21-C22-C23
3	B	809	A1C9F	C27-C26-N24-C23
3	B	809	A1C9F	C27-C26-N24-O25
3	A	616	A1C9F	N12-C14-C15-C16
3	A	616	A1C9F	C20-C21-C22-C23
3	A	616	A1C9F	N24-C26-C27-C28
3	D	807	A1C9F	C27-C26-N24-O25
3	E	602	A1C9F	N12-C14-C15-C16
3	E	602	A1C9F	C21-C22-C23-N24
3	E	602	A1C9F	N24-C26-C27-C28
3	E	602	A1C9F	C27-C26-N24-C23
3	E	602	A1C9F	C27-C26-N24-O25
3	C	903	A1C9F	N24-C26-C27-C28
3	B	809	A1C9F	C21-C20-N19-C18
3	A	616	A1C9F	C21-C20-N19-C18
3	D	807	A1C9F	C21-C20-N19-C18
3	E	602	A1C9F	C21-C20-N19-C18
3	C	903	A1C9F	C21-C20-N19-C18
3	D	807	A1C9F	C15-C16-C17-C18
3	B	809	A1C9F	C16-C17-C18-N19
3	E	602	A1C9F	C16-C17-C18-N19

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	B	809	A1C9F	O33-C20-N19-C18
3	A	616	A1C9F	O33-C20-N19-C18
3	D	807	A1C9F	O33-C20-N19-C18
3	E	602	A1C9F	O33-C20-N19-C18
3	C	903	A1C9F	O33-C20-N19-C18
3	C	903	A1C9F	C16-C17-C18-N19
2	A	615	GOL	O2-C2-C3-O3
2	D	801	GOL	O1-C1-C2-O2
2	D	804	GOL	O2-C2-C3-O3
3	E	602	A1C9F	C21-C22-C23-O32
3	B	809	A1C9F	C27-C28-C29-C30
2	A	607	GOL	O1-C1-C2-C3
2	A	615	GOL	C1-C2-C3-O3
2	D	801	GOL	O1-C1-C2-C3
2	D	801	GOL	C1-C2-C3-O3
2	D	803	GOL	O1-C1-C2-C3
2	D	804	GOL	C1-C2-C3-O3
2	E	601	GOL	O1-C1-C2-C3
2	B	803	GOL	O2-C2-C3-O3
2	B	808	GOL	O1-C1-C2-O2
2	A	601	GOL	O2-C2-C3-O3
2	A	602	GOL	O2-C2-C3-O3
2	A	607	GOL	O2-C2-C3-O3
2	A	611	GOL	O1-C1-C2-O2
2	A	615	GOL	O1-C1-C2-O2
2	E	601	GOL	O1-C1-C2-O2
2	C	901	GOL	O1-C1-C2-O2
3	E	602	A1C9F	C26-C27-C28-C29
3	B	809	A1C9F	C04-O05-S06-O37
3	A	616	A1C9F	C04-O05-S06-O37
3	D	807	A1C9F	C04-O05-S06-O37
3	E	602	A1C9F	C04-O05-S06-O37
3	C	903	A1C9F	C04-O05-S06-O37
3	D	807	A1C9F	C27-C28-C29-C30
2	A	601	GOL	O1-C1-C2-O2
2	A	608	GOL	O1-C1-C2-O2
2	D	801	GOL	O2-C2-C3-O3
3	D	807	A1C9F	C16-C17-C18-N19
3	B	809	A1C9F	C15-C16-C17-C18
2	B	806	GOL	C1-C2-C3-O3
3	B	809	A1C9F	N12-C14-C15-C16
3	D	807	A1C9F	N12-C14-C15-C16

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	C	903	A1C9F	N12-C14-C15-C16
2	A	609	GOL	O1-C1-C2-O2
2	D	804	GOL	O1-C1-C2-O2
3	C	903	A1C9F	C26-C27-C28-C29
2	B	808	GOL	O2-C2-C3-O3
2	A	605	GOL	O2-C2-C3-O3
2	A	608	GOL	O2-C2-C3-O3
2	A	614	GOL	O1-C1-C2-O2
2	D	803	GOL	O1-C1-C2-O2
3	A	616	A1C9F	C14-C15-C16-C17
2	A	609	GOL	O1-C1-C2-C3
2	D	804	GOL	O1-C1-C2-C3
3	E	602	A1C9F	C14-C15-C16-C17
3	A	616	A1C9F	C21-C22-C23-N24
3	D	807	A1C9F	C14-C15-C16-C17
3	A	616	A1C9F	C21-C22-C23-O32
3	A	616	A1C9F	C02-C03-C04-O05
2	A	606	GOL	O1-C1-C2-C3
3	C	903	A1C9F	C14-C15-C16-C17
2	D	805	GOL	O1-C1-C2-O2
3	A	616	A1C9F	O33-C20-C21-C22
3	B	809	A1C9F	C14-C15-C16-C17
4	A	617	DPO	P1-O4-P2-O5
2	A	604	GOL	C1-C2-C3-O3
3	A	616	A1C9F	C16-C17-C18-N19
3	A	616	A1C9F	N19-C20-C21-C22
2	A	607	GOL	O1-C1-C2-O2
3	B	809	A1C9F	C26-C27-C28-C29
3	D	807	A1C9F	C27-C26-N24-C23
3	D	807	A1C9F	C17-C18-N19-C20
3	C	903	A1C9F	C21-C22-C23-N24
3	A	616	A1C9F	C27-C26-N24-O25
3	A	616	A1C9F	O38-C39-N40-C49
3	C	903	A1C9F	O38-C39-N40-C49
3	B	809	A1C9F	O38-C39-N40-C49
3	D	807	A1C9F	O38-C39-N40-C49
3	B	809	A1C9F	C02-C03-C04-O05
3	B	809	A1C9F	O38-C03-C04-O05
3	B	809	A1C9F	O32-C23-N24-O25
3	A	616	A1C9F	O38-C03-C04-O05
3	A	616	A1C9F	O32-C23-N24-O25
3	D	807	A1C9F	O38-C03-C04-O05

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
3	D	807	A1C9F	O32-C23-N24-O25
3	E	602	A1C9F	O38-C03-C04-O05
3	E	602	A1C9F	O32-C23-N24-O25
3	C	903	A1C9F	O38-C03-C04-O05
3	C	903	A1C9F	O32-C23-N24-O25
2	B	806	GOL	O2-C2-C3-O3

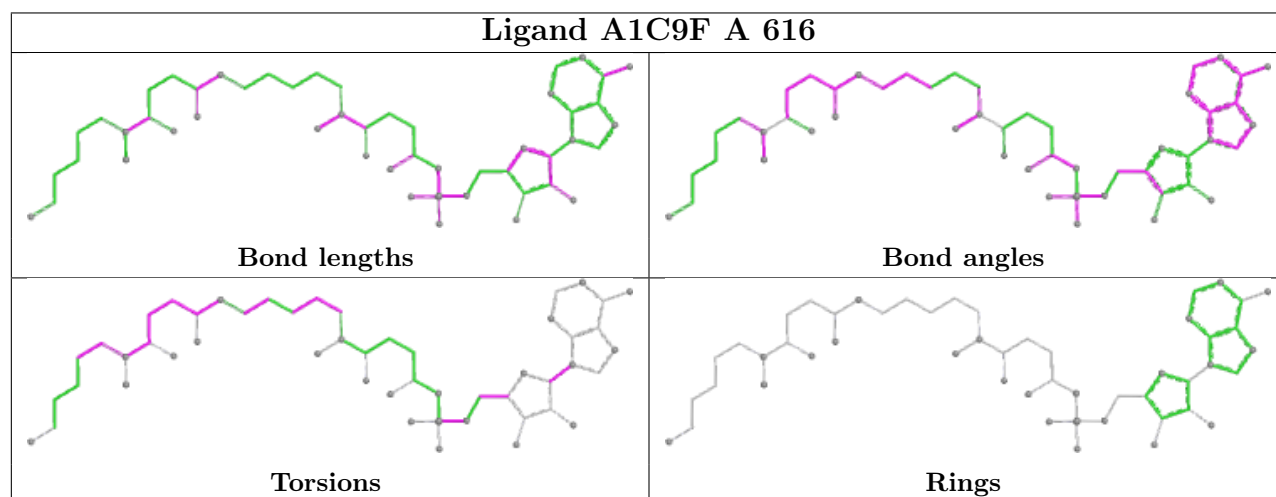
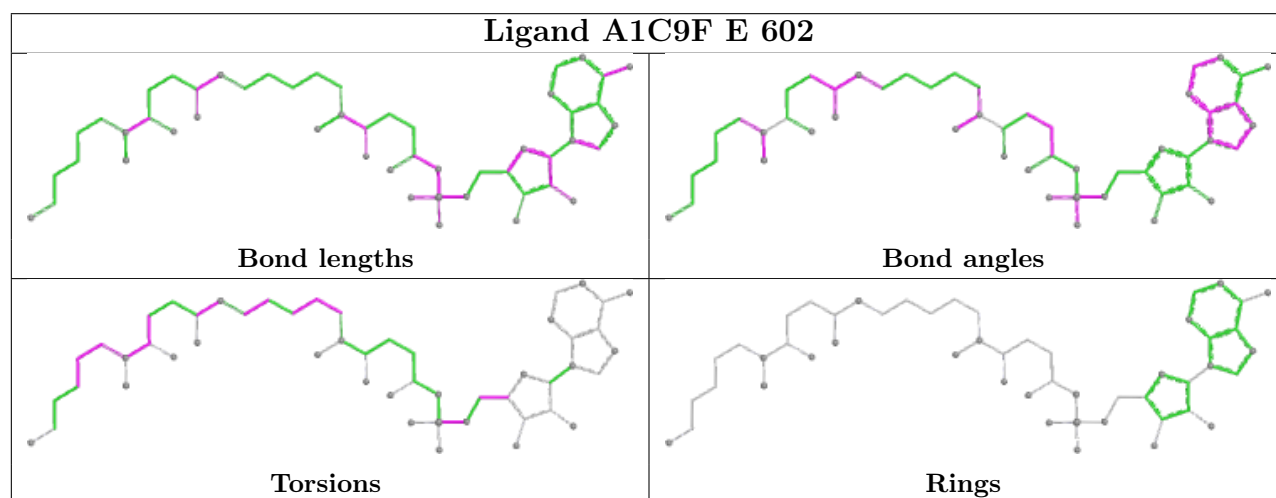
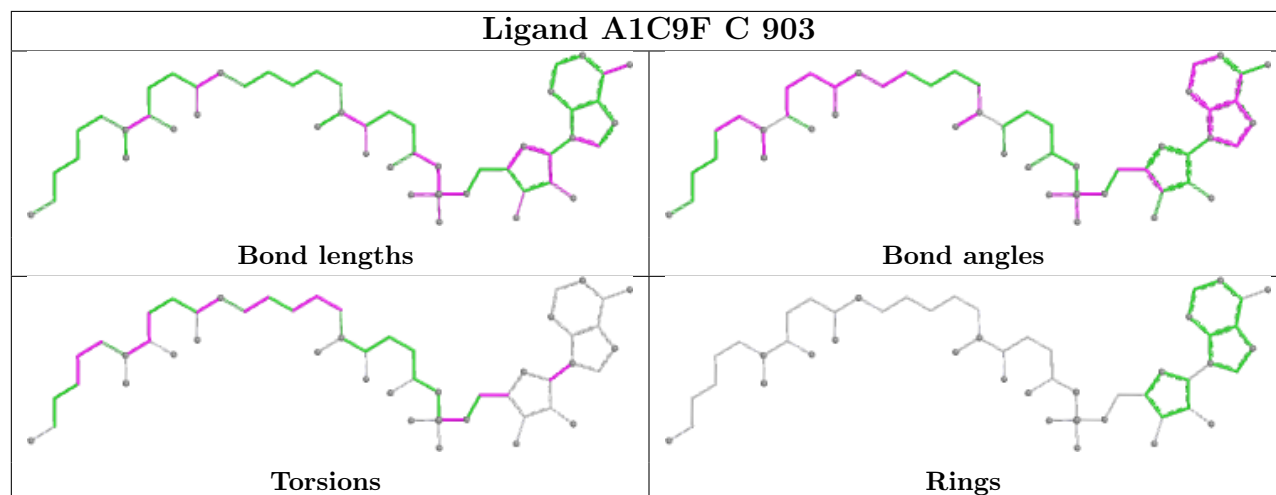
There are no ring outliers.

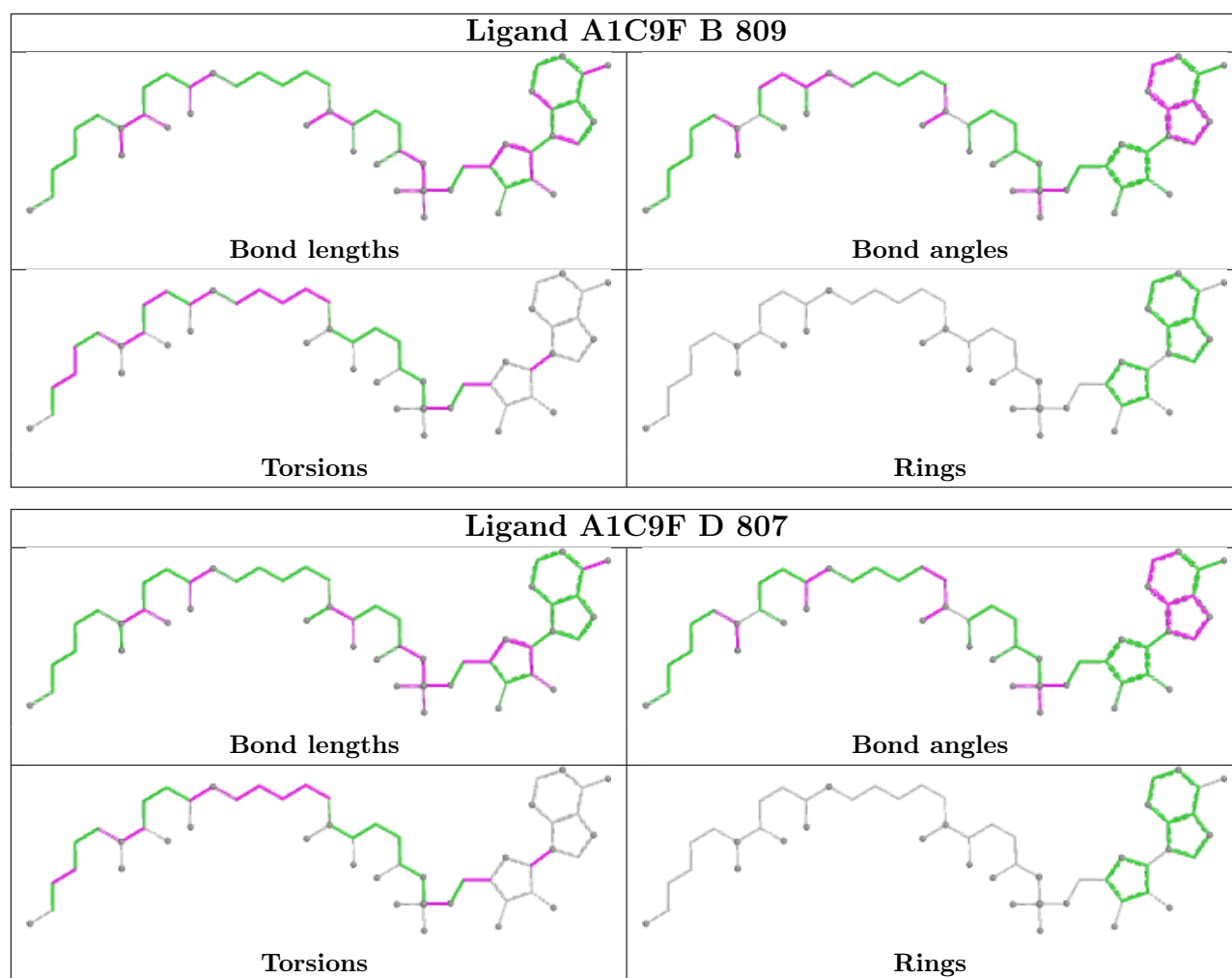
21 monomers are involved in 42 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	606	GOL	1	0
2	A	614	GOL	2	0
6	D	812	SO4	1	0
2	A	612	GOL	1	0
2	D	806	GOL	4	0
4	C	904	DPO	1	0
2	A	602	GOL	1	0
6	C	909	SO4	1	0
2	B	804	GOL	3	0
2	B	806	GOL	1	0
2	D	801	GOL	1	0
2	A	604	GOL	3	0
2	A	609	GOL	3	0
2	C	901	GOL	2	0
2	D	802	GOL	1	0
3	B	809	A1C9F	2	0
2	A	611	GOL	2	0
3	D	807	A1C9F	1	0
2	B	801	GOL	1	0
2	B	805	GOL	1	0
2	B	808	GOL	9	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	592/612 (96%)	-0.49	6 (1%) 79 77	27, 47, 82, 108	1 (0%)
1	B	592/612 (96%)	-0.54	9 (1%) 72 69	26, 44, 75, 132	1 (0%)
1	C	592/612 (96%)	-0.14	10 (1%) 69 66	33, 60, 96, 127	0
1	D	591/612 (96%)	-0.46	7 (1%) 76 74	32, 46, 72, 114	0
1	E	592/612 (96%)	-0.24	10 (1%) 69 66	28, 57, 88, 140	1 (0%)
All	All	2959/3060 (96%)	-0.37	42 (1%) 73 71	26, 50, 87, 140	3 (0%)

All (42) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	43	GLY	6.1
1	E	42	ASP	5.2
1	D	572	LEU	5.0
1	B	1	MET	5.0
1	B	42	ASP	4.7
1	E	83	ASP	4.5
1	B	573	ALA	4.1
1	C	44	GLN	4.0
1	C	1	MET	3.9
1	A	358	TYR	3.9
1	A	572	LEU	3.9
1	B	572	LEU	3.9
1	C	572	LEU	3.9
1	A	1	MET	3.8
1	D	573	ALA	3.7
1	C	46	GLY	3.6
1	E	1	MET	3.6
1	E	572	LEU	3.5
1	E	573	ALA	3.5
1	C	43	GLY	3.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	D	42	ASP	3.3
1	D	309	TYR	3.2
1	E	568	GLN	3.2
1	C	573	ALA	3.1
1	C	591	GLY	3.0
1	E	570	VAL	2.6
1	B	43	GLY	2.5
1	A	39	GLU	2.5
1	B	358	TYR	2.5
1	C	42	ASP	2.5
1	B	568	GLN	2.5
1	C	473	VAL	2.4
1	D	568	GLN	2.3
1	E	473	VAL	2.3
1	D	208	ARG	2.2
1	D	358	TYR	2.2
1	B	83	ASP	2.2
1	A	591	GLY	2.2
1	E	301	PHE	2.2
1	E	480	ARG	2.1
1	B	44	GLN	2.1
1	C	45	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
6	SO4	C	911	5/5	0.61	0.13	137,138,139,139	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	SO4	A	622	5/5	0.66	0.12	142,142,142,143	0
2	GOL	A	604	6/6	0.68	0.16	99,119,124,125	0
6	SO4	D	811	5/5	0.70	0.11	133,133,133,133	0
6	SO4	B	813	5/5	0.70	0.14	148,148,149,149	0
6	SO4	C	908	5/5	0.71	0.10	145,146,146,146	0
2	GOL	A	614	6/6	0.73	0.21	84,101,111,112	0
6	SO4	A	620	5/5	0.74	0.28	106,106,107,107	5
6	SO4	B	816	5/5	0.75	0.12	143,143,144,144	0
6	SO4	C	907	5/5	0.75	0.21	117,117,118,118	5
6	SO4	A	621	5/5	0.76	0.22	117,117,117,118	5
6	SO4	C	910	5/5	0.77	0.11	140,140,140,140	0
2	GOL	A	610	6/6	0.79	0.14	86,103,105,105	0
2	GOL	A	609	6/6	0.79	0.15	84,100,104,104	0
2	GOL	B	801	6/6	0.80	0.19	69,83,88,88	0
6	SO4	C	909	5/5	0.80	0.11	147,147,148,148	0
6	SO4	D	815	5/5	0.80	0.15	114,114,115,115	5
6	SO4	B	815	5/5	0.80	0.12	145,145,145,145	0
6	SO4	D	813	5/5	0.81	0.20	78,78,80,80	5
2	GOL	C	901	6/6	0.82	0.20	84,101,108,112	0
2	GOL	A	612	6/6	0.82	0.21	92,110,121,122	0
2	GOL	B	804	6/6	0.82	0.20	55,66,72,79	14
2	GOL	D	805	6/6	0.83	0.20	71,86,101,103	0
2	GOL	A	615	6/6	0.83	0.15	80,96,101,104	0
2	GOL	A	605	6/6	0.84	0.18	88,105,117,118	0
2	GOL	B	805	6/6	0.84	0.14	94,113,116,117	0
2	GOL	A	613	6/6	0.84	0.11	87,105,109,109	0
6	SO4	B	814	5/5	0.85	0.23	105,105,105,105	5
2	GOL	B	803	6/6	0.85	0.15	88,106,109,109	0
2	GOL	D	804	6/6	0.86	0.14	76,92,97,97	0
2	GOL	A	607	6/6	0.86	0.20	92,110,114,114	0
2	GOL	A	606	6/6	0.87	0.15	65,77,89,89	0
2	GOL	A	611	6/6	0.87	0.17	72,86,91,93	0
2	GOL	D	802	6/6	0.88	0.16	78,93,97,97	0
2	GOL	C	902	6/6	0.88	0.14	56,68,73,78	0
6	SO4	D	812	5/5	0.88	0.11	115,116,116,116	5
2	GOL	A	602	6/6	0.88	0.15	71,85,94,95	0
2	GOL	B	808	6/6	0.88	0.29	63,76,84,85	0
2	GOL	D	801	6/6	0.89	0.22	91,110,113,114	0
2	GOL	D	806	6/6	0.89	0.15	81,97,103,104	0
2	GOL	E	601	6/6	0.89	0.15	69,83,90,90	0
2	GOL	A	608	6/6	0.89	0.18	69,83,91,98	0
2	GOL	B	802	6/6	0.89	0.12	50,69,81,85	0

Continued on next page...

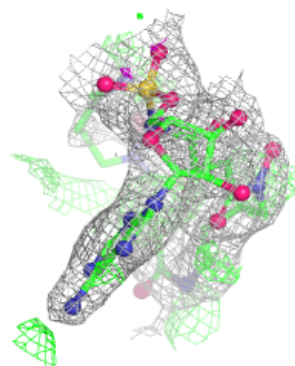
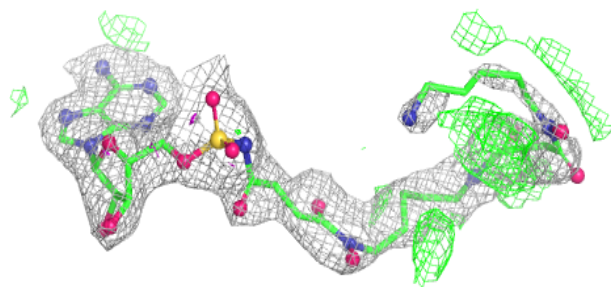
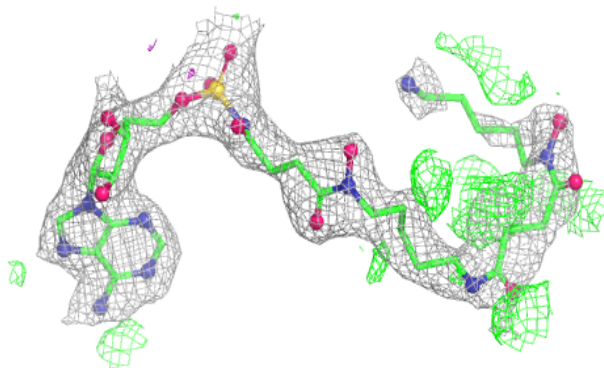
Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
6	SO4	D	814	5/5	0.89	0.12	91,91,91,92	5
3	A1C9F	E	602	51/51	0.90	0.18	47,65,100,101	51
2	GOL	A	601	6/6	0.90	0.13	75,91,101,101	0
2	GOL	B	807	6/6	0.90	0.13	83,100,107,108	0
2	GOL	D	803	6/6	0.92	0.15	63,75,79,81	0
3	A1C9F	C	903	51/51	0.93	0.15	49,55,107,112	0
3	A1C9F	B	809	51/51	0.93	0.15	42,66,105,106	0
2	GOL	B	806	6/6	0.94	0.11	53,64,70,71	0
2	GOL	A	603	6/6	0.94	0.12	48,58,65,66	14
5	MG	E	604	1/1	0.94	0.08	48,48,48,48	0
3	A1C9F	A	616	51/51	0.94	0.13	42,55,98,100	0
3	A1C9F	D	807	51/51	0.94	0.13	49,57,97,98	0
5	MG	A	619	1/1	0.96	0.05	28,28,28,28	0
4	DPO	C	904	9/9	0.97	0.06	44,47,54,58	0
4	DPO	E	603	9/9	0.97	0.06	47,51,58,59	0
5	MG	C	906	1/1	0.98	0.05	36,36,36,36	0
4	DPO	D	808	9/9	0.98	0.07	43,45,57,59	0
5	MG	B	812	1/1	0.98	0.03	32,32,32,32	0
4	DPO	B	810	9/9	0.99	0.05	30,41,54,55	0
5	MG	D	809	1/1	0.99	0.06	42,42,42,42	0
5	MG	D	810	1/1	0.99	0.02	39,39,39,39	0
4	DPO	A	617	9/9	0.99	0.04	35,42,49,62	0
5	MG	E	605	1/1	0.99	0.04	51,51,51,51	0
5	MG	C	905	1/1	0.99	0.02	40,40,40,40	0
5	MG	B	811	1/1	1.00	0.02	37,37,37,37	0
5	MG	A	618	1/1	1.00	0.02	32,32,32,32	0

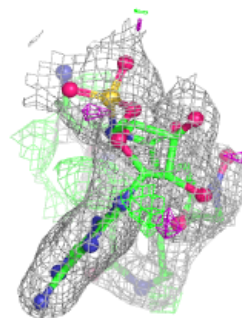
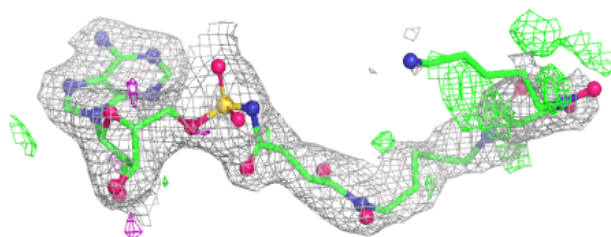
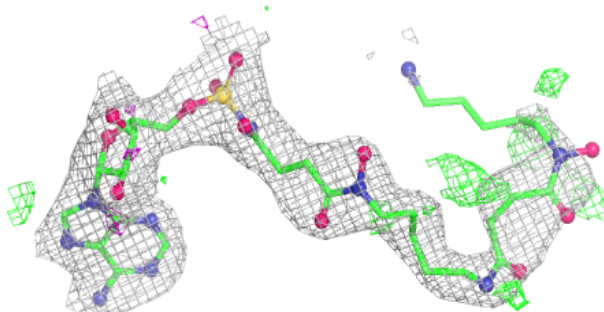
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around A1C9F E 602:

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

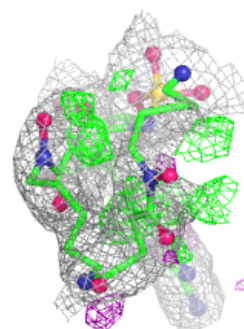
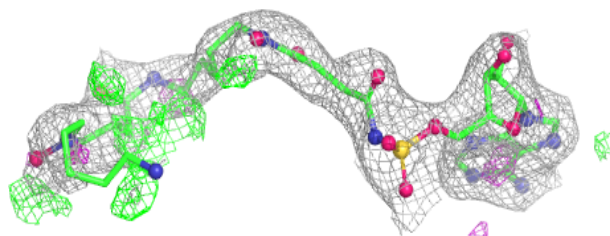
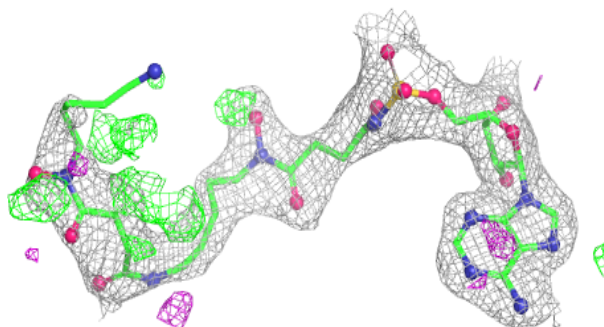
**Electron density around A1C9F C 903:**

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

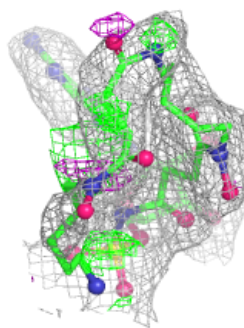
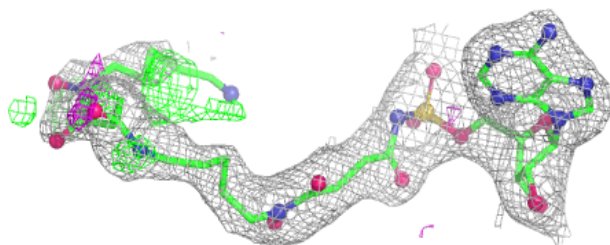
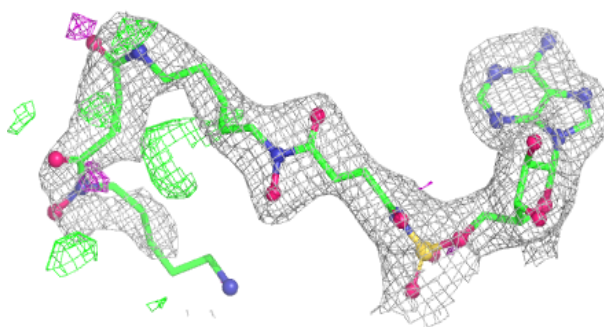


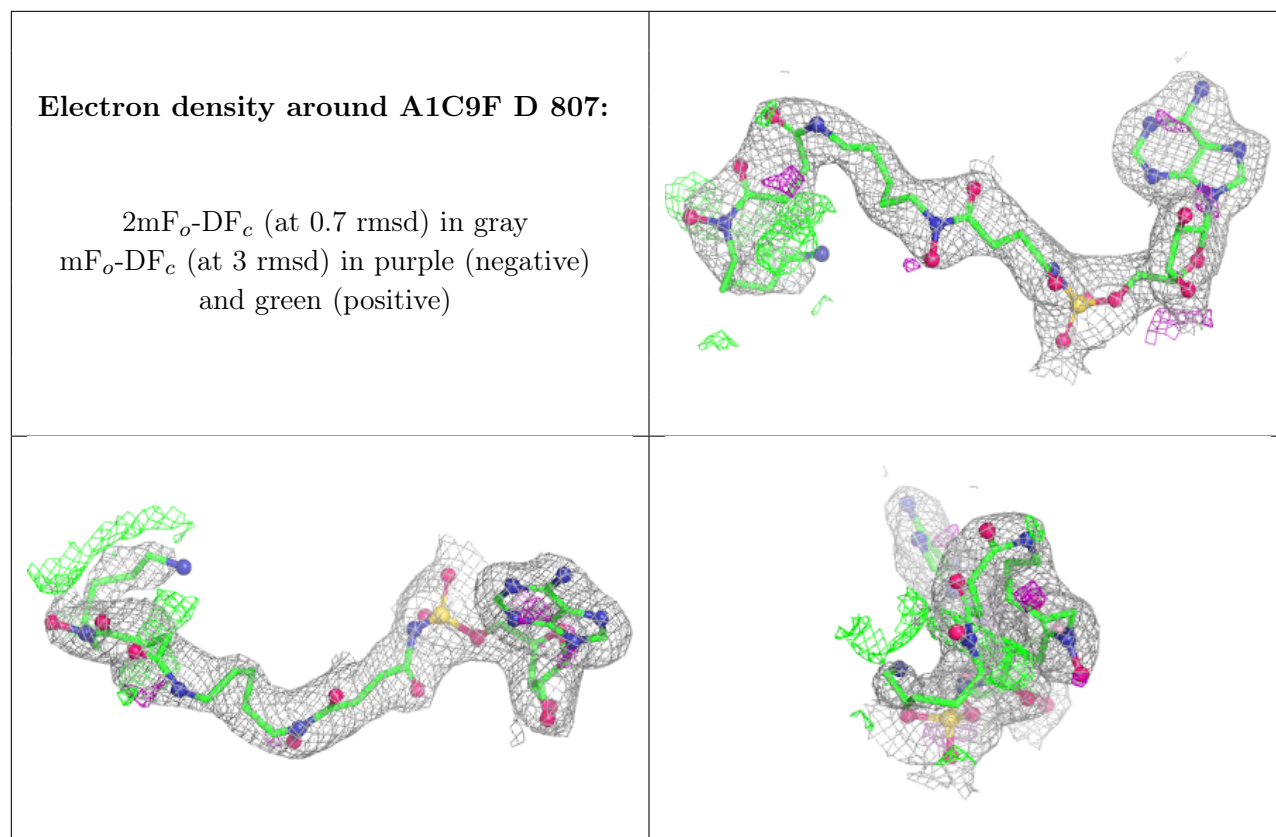
Electron density around A1C9F B 809:

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

**Electron density around A1C9F A 616:**

$2mF_o-DF_c$ (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.