Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2025 – 05:49 PM EDT

PDB ID	:	3QQM
Title	:	Crystal structure of a Putative amino-acid aminotransferase (NP_104211.1) from Mesorhizobium loti at 2.30 A resolution
Authors	:	Joint Center for Structural Genomics (JCSG)
Deposited on	:	2011-02-15
Resolution	:	2.30 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:

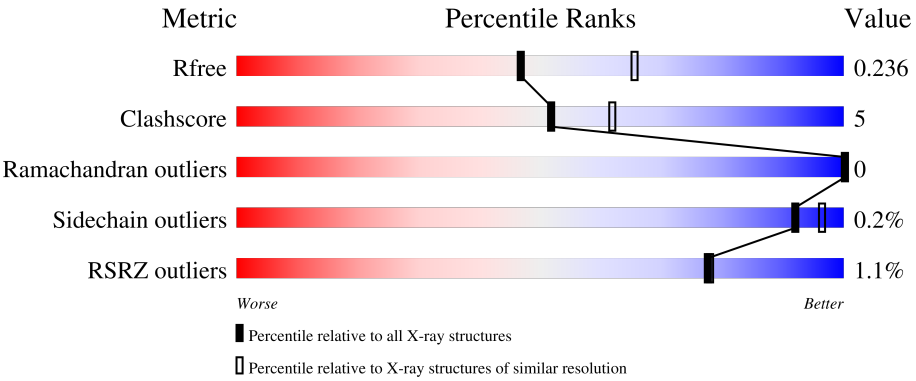
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.21
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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}	164625	5963 (2.30-2.30)
Clashscore	180529	6698 (2.30-2.30)
Ramachandran outliers	177936	6640 (2.30-2.30)
Sidechain outliers	177891	6640 (2.30-2.30)
RSRZ outliers	164620	5963 (2.30-2.30)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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 <=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	221	3% 87% 10% .
1	B	221	84% 10% 6%
1	C	221	% 84% 10% 5%
1	D	221	% 86% 10% 5%
1	E	221	86% 7% 6%

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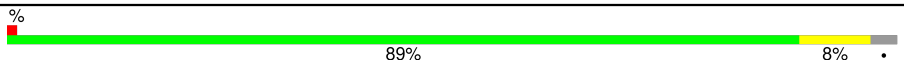
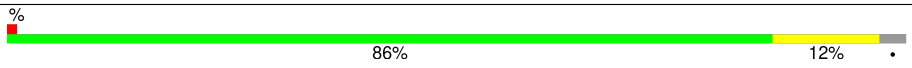
Mol	Chain	Length	Quality of chain
1	F	221	
1	G	221	
1	H	221	

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	IOD	A	234	-	-	X	-
2	IOD	B	242	-	-	X	-
2	IOD	C	233	-	-	X	-
2	IOD	F	237	-	-	X	-
3	CL	E	256	-	-	X	-

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 14246 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 Mlr3007 protein.

Mol	Chain	Residues	Atoms							ZeroOcc	AltConf	Trace
1	A	215	Total	C	N	O	P	S	Se	0	4	0
			1704	1066	309	323	1	3	2			
1	B	207	Total	C	N	O	P	S	Se	0	2	0
			1618	1015	290	307	1	3	2			
1	C	209	Total	C	N	O	P	S	Se	0	1	0
			1631	1019	293	313	1	3	2			
1	D	211	Total	C	N	O	P	S	Se	0	2	0
			1657	1034	297	320	1	3	2			
1	E	207	Total	C	N	O	P	S	Se	0	0	0
			1620	1014	290	310	1	3	2			
1	F	215	Total	C	N	O	P	S	Se	0	1	0
			1667	1043	296	322	1	3	2			
1	G	215	Total	C	N	O	P	S	Se	0	4	0
			1695	1063	307	319	1	3	2			
1	H	207	Total	C	N	O	P	S	Se	0	1	0
			1627	1017	296	308	1	3	2			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP Q98H69
B	0	GLY	-	expression tag	UNP Q98H69
C	0	GLY	-	expression tag	UNP Q98H69
D	0	GLY	-	expression tag	UNP Q98H69
E	0	GLY	-	expression tag	UNP Q98H69
F	0	GLY	-	expression tag	UNP Q98H69
G	0	GLY	-	expression tag	UNP Q98H69
H	0	GLY	-	expression tag	UNP Q98H69

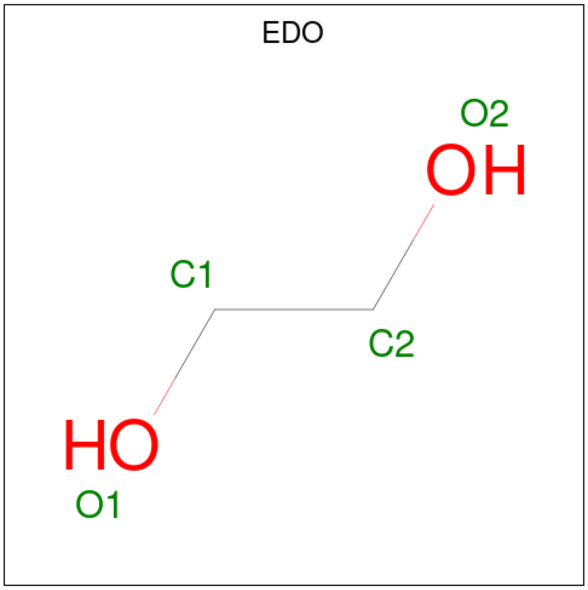
- Molecule 2 is IODIDE ION (three-letter code: IOD) (formula: I).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	3	Total I 4 4	0	1
2	B	4	Total I 4 4	0	0
2	C	4	Total I 5 5	0	1
2	D	3	Total I 4 4	0	1
2	E	2	Total I 3 3	0	1
2	F	3	Total I 4 4	0	1
2	G	3	Total I 4 4	0	1
2	H	4	Total I 5 5	0	1

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	5	Total Cl 5 5	0	0
3	D	2	Total Cl 2 2	0	0
3	E	3	Total Cl 3 3	0	0
3	G	1	Total Cl 1 1	0	0
3	H	3	Total Cl 3 3	0	0

- Molecule 4 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	A	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0
4	B	1	Total C O 4 2 2	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	C	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	D	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0

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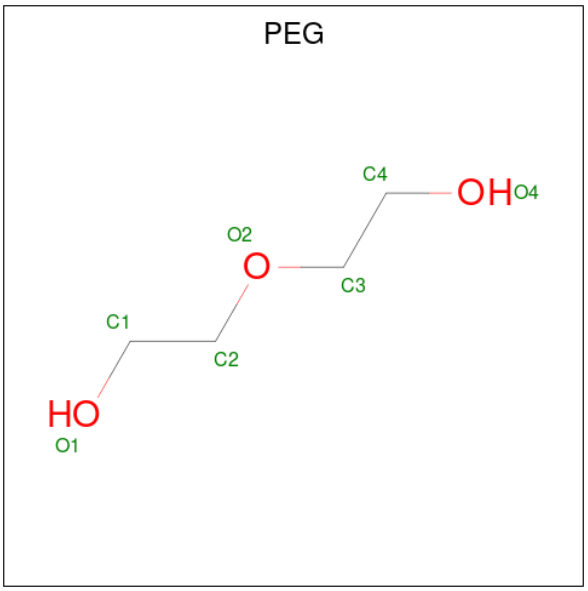
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	E	1	Total C O 4 2 2	0	0
4	F	1	Total C O 4 2 2	0	0
4	F	1	Total C O 4 2 2	0	0
4	G	1	Total C O 4 2 2	0	0
4	G	1	Total C O 4 2 2	0	0
4	G	1	Total C O 4 2 2	0	0
4	H	1	Total C O 4 2 2	0	0
4	H	1	Total C O 4 2 2	0	0
4	H	1	Total C O 4 2 2	0	0

- Molecule 5 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total C O 7 4 3	0	0

- Molecule 6 is water.

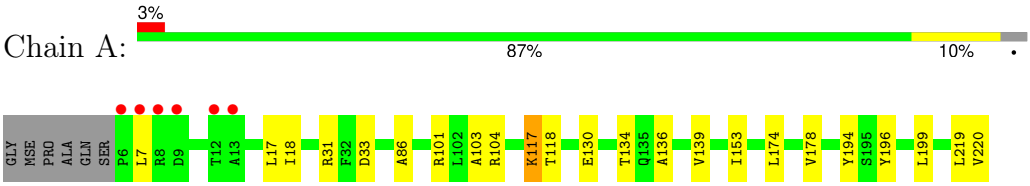
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	105	Total O 105 105	0	0
6	B	96	Total O 96 96	0	0
6	C	112	Total O 112 112	0	0
6	D	111	Total O 111 111	0	0
6	E	106	Total O 106 106	0	0
6	F	61	Total O 61 61	0	0
6	G	73	Total O 73 73	0	0
6	H	109	Total O 109 109	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

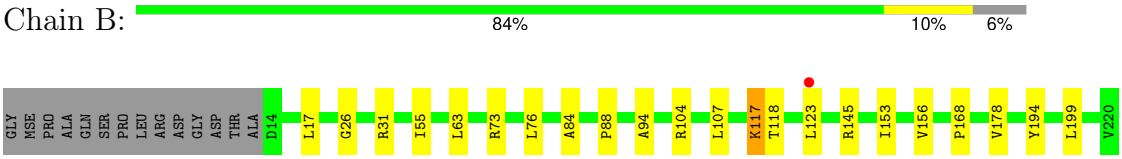
- Molecule 1: Mlr3007 protein

Chain A:



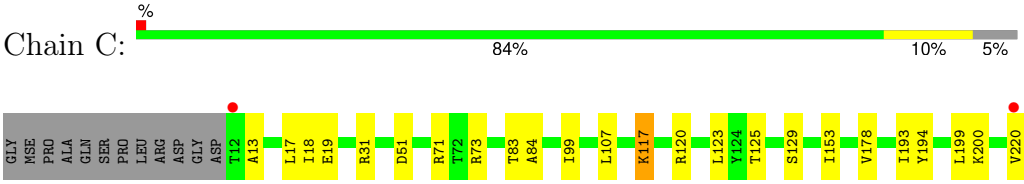
- Molecule 1: Mlr3007 protein

Chain B:



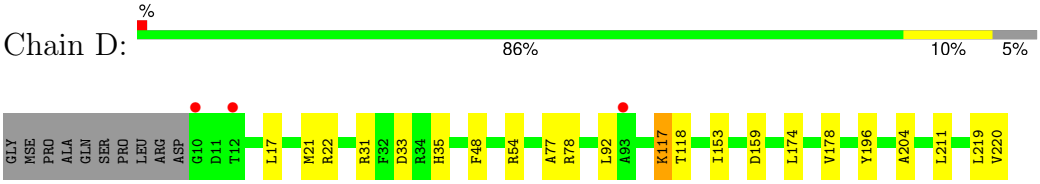
- Molecule 1: Mlr3007 protein

Chain C:



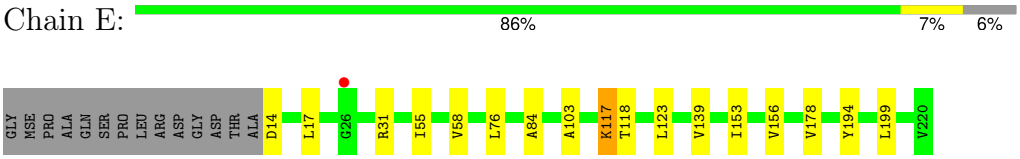
- Molecule 1: Mlr3007 protein

Chain D:



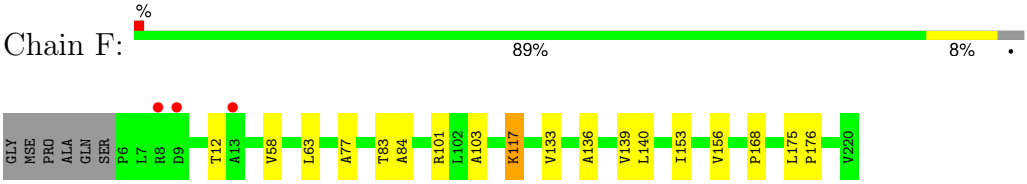
- Molecule 1: Mlr3007 protein

Chain E:



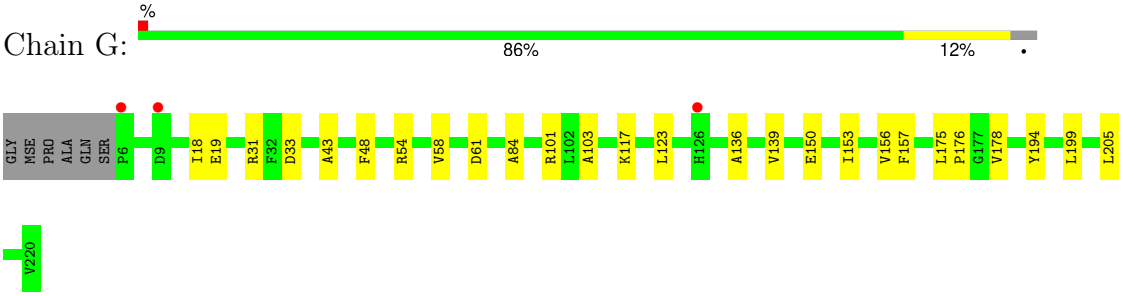
- Molecule 1: Mlr3007 protein

Chain F:



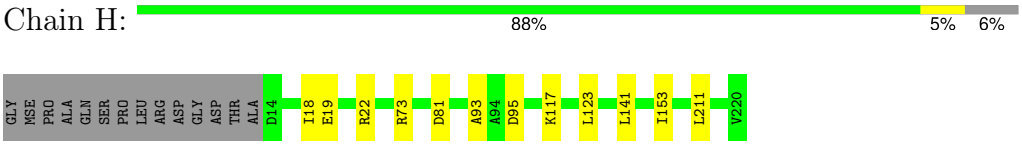
• Molecule 1: Mlr3007 protein

Chain G:



• Molecule 1: Mlr3007 protein

Chain H:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	116.18Å 215.57Å 81.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.68 – 2.30 29.68 – 2.30	Depositor EDS
% Data completeness (in resolution range)	99.6 (29.68-2.30) 99.6 (29.68-2.30)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.57 (at 2.31Å)	Xtriage
Refinement program	REFMAC 5.5.0110	Depositor
R, R_{free}	0.193 , 0.241 0.191 , 0.236	Depositor DCC
R_{free} test set	4592 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	26.3	Xtriage
Anisotropy	0.231	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 30.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	14246	wwPDB-VP
Average B, all atoms (Å^2)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 16.91% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: LLP, IOD, PEG, CL, EDO

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	0.70	0/1716	0.71	0/2318
1	B	0.63	0/1624	0.72	0/2197
1	C	0.68	0/1633	0.75	0/2208
1	D	0.68	0/1662	0.71	0/2247
1	E	0.68	0/1619	0.74	0/2189
1	F	0.63	0/1670	0.68	0/2260
1	G	0.60	0/1708	0.68	0/2309
1	H	0.69	0/1629	0.72	0/2202
All	All	0.66	0/13261	0.71	0/17930

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1704	0	1698	18	0
1	B	1618	0	1591	21	0
1	C	1631	0	1602	22	0
1	D	1657	0	1628	16	0
1	E	1620	0	1597	12	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	1667	0	1630	16	0
1	G	1695	0	1686	26	0
1	H	1627	0	1611	10	0
2	A	4	0	0	2	0
2	B	4	0	0	3	0
2	C	5	0	0	3	0
2	D	4	0	0	1	0
2	E	3	0	0	1	0
2	F	4	0	0	2	0
2	G	4	0	0	1	0
2	H	5	0	0	2	0
3	A	5	0	0	1	0
3	D	2	0	0	1	0
3	E	3	0	0	2	0
3	G	1	0	0	1	0
3	H	3	0	0	0	0
4	A	32	0	48	0	0
4	B	24	0	36	0	0
4	C	28	0	42	0	0
4	D	48	0	72	4	0
4	E	36	0	54	4	0
4	F	8	0	12	0	0
4	G	12	0	18	1	0
4	H	12	0	18	0	0
5	B	7	0	10	1	0
6	A	105	0	0	1	0
6	B	96	0	0	2	0
6	C	112	0	0	4	0
6	D	111	0	0	0	0
6	E	106	0	0	1	0
6	F	61	0	0	1	0
6	G	73	0	0	0	0
6	H	109	0	0	1	0
All	All	14246	0	13353	134	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 5.

All (134) 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)
2:A:234:IOD:I	6:A:1082:HOH:O	2.41	1.07
1:G:54[B]:ARG:HH11	1:G:54[B]:ARG:HG3	1.20	1.06
1:F:153:ILE:HD12	2:F:237:IOD:I	2.35	0.95
1:G:54[B]:ARG:HH11	1:G:54[B]:ARG:CG	1.83	0.91
1:G:101:ARG:HG2	1:G:136:ALA:HB2	1.53	0.91
1:B:107:LEU:HD23	1:B:123:LEU:HD22	1.55	0.89
1:B:123:LEU:HD13	2:B:242:IOD:I	2.46	0.85
1:B:107:LEU:HD23	1:B:123:LEU:CD2	2.08	0.84
1:A:153:ILE:HD12	2:A:234:IOD:I	2.48	0.83
1:C:123:LEU:HD13	2:C:233:IOD:I	2.50	0.82
1:D:153:ILE:HD12	2:D:232:IOD:I	2.51	0.81
1:G:101:ARG:CG	1:G:136:ALA:HB2	2.10	0.80
1:B:107:LEU:CD2	1:B:123:LEU:HD22	2.11	0.79
1:A:196:TYR:CE1	1:A:219:LEU:HD11	2.18	0.78
1:B:104:ARG:HD2	6:B:396:HOH:O	1.84	0.77
1:C:125:THR:HG22	1:F:12:THR:HG21	1.68	0.76
1:D:33:ASP:OD1	3:D:259:CL:CL	2.42	0.75
1:G:54[B]:ARG:HG3	1:G:54[B]:ARG:NH1	2.01	0.74
1:H:93:ALA:HB1	1:H:95:ASP:OD1	1.88	0.73
1:G:153:ILE:HD12	2:G:238:IOD:I	2.58	0.73
1:G:58:VAL:HG22	1:G:84:ALA:HB3	1.71	0.70
1:G:54[B]:ARG:CG	1:G:54[B]:ARG:NH1	2.53	0.68
1:B:26:GLY:H	5:B:261:PEG:H31	1.62	0.64
1:B:94:ALA:CB	1:C:51:ASP:HB2	2.27	0.64
1:C:13:ALA:O	1:C:120:ARG:NH2	2.31	0.63
1:B:153:ILE:HD12	2:B:236:IOD:I	2.70	0.62
1:E:153:ILE:HD12	2:E:231[A]:IOD:I	2.69	0.62
1:E:58:VAL:HG12	1:E:84:ALA:HB2	1.82	0.61
1:C:123:LEU:CD1	2:C:233:IOD:I	3.19	0.60
1:C:107:LEU:HD23	1:C:123:LEU:HD22	1.82	0.60
1:A:220:VAL:HG12	1:A:220:VAL:OXT	2.00	0.60
1:E:58:VAL:HG12	1:E:84:ALA:CB	2.32	0.59
1:D:77:ALA:HB2	4:D:263:EDO:H21	1.84	0.59
1:G:61:ASP:OD2	1:H:73[A]:ARG:NH1	2.35	0.59
1:G:54[B]:ARG:NH1	1:G:54[B]:ARG:HB2	2.18	0.59
1:A:104[B]:ARG:HG2	1:A:130:GLU:OE1	2.02	0.59
4:E:276:EDO:H21	1:F:83:THR:HG23	1.85	0.57
1:A:7:LEU:CD2	1:A:18:ILE:HD11	2.36	0.56
1:C:107:LEU:CD2	1:C:123:LEU:HD22	2.35	0.56
1:C:31:ARG:HD2	1:C:178:VAL:HG12	1.88	0.56
1:H:153:ILE:HD12	2:H:235:IOD:I	2.76	0.55
1:B:123:LEU:CD1	2:B:242:IOD:I	3.22	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:14:ASP:N	6:E:950:HOH:O	2.40	0.54
1:F:156[A]:VAL:HG13	1:F:168:PRO:HD3	1.90	0.53
1:B:107:LEU:HD23	1:B:123:LEU:HD21	1.90	0.53
1:G:31:ARG:HD2	1:G:178:VAL:HG12	1.91	0.53
1:D:196:TYR:CE1	1:D:219:LEU:HD11	2.44	0.53
4:E:276:EDO:H12	1:F:77:ALA:HB2	1.91	0.53
3:E:256:CL:CL	4:E:273:EDO:O1	2.65	0.52
1:F:133:VAL:HG23	6:F:720:HOH:O	2.09	0.52
1:G:101:ARG:HG3	1:G:136:ALA:HB2	1.91	0.52
1:H:22:ARG:HB2	1:H:211:LEU:HD12	1.92	0.51
1:G:54[B]:ARG:HH11	1:G:54[B]:ARG:CB	2.23	0.51
1:H:123:LEU:HD22	2:H:243:IOD:I	2.80	0.51
1:A:7:LEU:HD21	1:A:18:ILE:HD11	1.93	0.51
1:D:92:LEU:HD22	4:D:291:EDO:H21	1.93	0.50
1:F:101:ARG:HD2	1:F:136:ALA:HB2	1.94	0.50
1:D:153:ILE:HD13	4:D:287:EDO:H21	1.93	0.50
1:E:103:ALA:HB2	1:E:139:VAL:CG1	2.42	0.49
1:G:150:GLU:HA	1:G:156[B]:VAL:HG23	1.94	0.49
1:A:33:ASP:OD1	3:A:258:CL:CL	2.67	0.49
1:B:117:LLP:O3	1:B:117:LLP:NZ	2.45	0.49
1:G:58:VAL:HG22	1:G:84:ALA:CB	2.41	0.48
1:G:54[B]:ARG:NH1	1:G:54[B]:ARG:CB	2.76	0.48
1:A:220:VAL:OXT	1:A:220:VAL:CG1	2.61	0.48
1:C:153:ILE:HD12	2:C:239:IOD:I	2.84	0.48
1:D:153:ILE:CD1	4:D:287:EDO:H21	2.44	0.48
1:C:117:LLP:O3	1:C:117:LLP:NZ	2.47	0.47
1:A:101:ARG:HG2	1:A:136:ALA:HB2	1.94	0.47
1:F:153:ILE:CD1	2:F:237:IOD:I	3.21	0.47
1:C:129:SER:HB3	1:F:12:THR:HG23	1.96	0.47
1:G:123:LEU:HD12	3:G:255:CL:CL	2.52	0.47
1:A:134:THR:HG21	1:C:193:ILE:HD12	1.97	0.46
1:B:194:TYR:HE1	1:B:199:LEU:HD21	1.79	0.46
1:G:43:ALA:HA	1:G:48:PHE:HB2	1.97	0.46
1:B:107:LEU:CD2	1:B:123:LEU:CD2	2.80	0.46
1:A:101:ARG:CG	1:A:136:ALA:HB2	2.45	0.46
1:B:156[B]:VAL:HG13	1:B:168:PRO:CD	2.46	0.46
1:D:17:LEU:HD23	1:D:118:THR:HG22	1.97	0.46
1:D:22:ARG:HB2	1:D:211:LEU:HD12	1.97	0.46
1:E:123:LEU:HD12	3:E:256:CL:CL	2.53	0.46
1:A:31:ARG:HD2	1:A:178:VAL:HG12	1.98	0.46
1:B:17:LEU:HD23	1:B:118:THR:HG22	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:194:TYR:CE1	1:G:199:LEU:HD13	2.51	0.45
1:C:200:LYS:HB2	6:C:890:HOH:O	2.16	0.45
1:F:63:LEU:HD22	1:F:63:LEU:N	2.31	0.45
1:D:196:TYR:OH	1:D:220:VAL:O	2.23	0.45
1:G:54[A]:ARG:NH1	1:H:81:ASP:HB3	2.32	0.45
1:G:175:LEU:HD12	1:G:176:PRO:HD2	1.99	0.45
1:G:157:PHE:O	1:G:205:LEU:HD12	2.17	0.45
1:H:93:ALA:CB	1:H:95:ASP:OD1	2.61	0.45
1:D:31:ARG:HD2	1:D:178:VAL:HG12	1.99	0.44
1:A:17:LEU:HD23	1:A:118:THR:HG22	1.98	0.44
1:H:73[A]:ARG:HD3	6:H:841:HOH:O	2.16	0.44
1:C:194:TYR:HE1	1:C:199:LEU:HD21	1.82	0.44
1:F:103:ALA:HB2	1:F:139:VAL:CG1	2.48	0.44
1:D:159:ASP:HB3	1:D:204:ALA:HB3	1.99	0.44
1:E:31:ARG:HD2	1:E:178:VAL:HG12	2.00	0.44
1:C:99:ILE:HD13	6:C:453:HOH:O	2.17	0.43
1:D:48:PHE:CD2	1:D:78:ARG:HA	2.53	0.43
1:G:33:ASP:HB2	4:G:300:EDO:O1	2.19	0.43
1:C:71:ARG:NH1	6:C:838:HOH:O	2.51	0.43
1:G:101:ARG:HG2	1:G:136:ALA:CB	2.38	0.43
1:B:73:ARG:O	1:B:84:ALA:HA	2.19	0.43
1:G:18:ILE:HG22	1:G:19:GLU:N	2.33	0.43
1:G:103:ALA:HB2	1:G:139:VAL:CG1	2.49	0.43
1:H:141:LEU:HD12	1:H:141:LEU:N	2.34	0.43
1:B:63:LEU:HD22	1:B:63:LEU:N	2.33	0.43
1:E:194:TYR:CE1	1:E:199:LEU:HD13	2.52	0.43
1:F:117:LLP:O3	1:F:117:LLP:NZ	2.52	0.43
1:A:134:THR:HG21	1:C:193:ILE:CD1	2.48	0.42
1:A:103:ALA:HB2	1:A:139:VAL:CG1	2.49	0.42
1:A:86:ALA:O	1:B:88:PRO:HD3	2.20	0.42
1:A:194:TYR:CE1	1:A:199:LEU:HD21	2.54	0.42
1:C:73:ARG:O	1:C:84:ALA:HA	2.19	0.42
1:C:83:THR:HG21	1:D:54:ARG:HG3	2.02	0.42
1:B:55:ILE:HD11	1:B:76:LEU:HD13	2.01	0.42
1:B:145:ARG:NH2	6:B:809:HOH:O	2.51	0.42
1:C:18:ILE:HG22	1:C:19:GLU:N	2.34	0.42
1:A:117:LLP:O3	1:A:117:LLP:NZ	2.53	0.42
1:E:55:ILE:HD11	1:E:76:LEU:HD13	2.02	0.42
1:F:175:LEU:HD12	1:F:176:PRO:HD2	2.02	0.41
1:B:31:ARG:HD2	1:B:178:VAL:HG12	2.03	0.41
1:D:117:LLP:O3	1:D:117:LLP:NZ	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:17:LEU:HD23	1:E:118:THR:HG22	2.02	0.41
1:E:117:LLP:O3	1:E:117:LLP:NZ	2.53	0.41
1:F:140:LEU:HD22	1:F:156[B]:VAL:HG21	2.03	0.41
1:C:17:LEU:HD23	1:C:17:LEU:HA	1.96	0.41
1:D:21:MSE:HG2	1:D:35:HIS:CD2	2.56	0.41
1:F:58:VAL:HG22	1:F:84:ALA:HB3	2.03	0.41
1:F:140:LEU:HD22	1:F:156[B]:VAL:CG2	2.50	0.41
1:C:220:VAL:HA	6:C:349:HOH:O	2.20	0.41
1:E:153:ILE:HD11	4:E:268:EDO:H22	2.01	0.40
1:H:18:ILE:HG22	1:H:19:GLU:N	2.37	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	216/221 (98%)	212 (98%)	4 (2%)	0	100	100
1	B	206/221 (93%)	200 (97%)	6 (3%)	0	100	100
1	C	207/221 (94%)	202 (98%)	5 (2%)	0	100	100
1	D	210/221 (95%)	205 (98%)	5 (2%)	0	100	100
1	E	204/221 (92%)	200 (98%)	4 (2%)	0	100	100
1	F	213/221 (96%)	207 (97%)	6 (3%)	0	100	100
1	G	216/221 (98%)	212 (98%)	4 (2%)	0	100	100
1	H	205/221 (93%)	200 (98%)	5 (2%)	0	100	100
All	All	1677/1768 (95%)	1638 (98%)	39 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	172/172 (100%)	171 (99%)	1 (1%)	84 92
1	B	160/172 (93%)	160 (100%)	0	100 100
1	C	162/172 (94%)	162 (100%)	0	100 100
1	D	166/172 (96%)	165 (99%)	1 (1%)	84 92
1	E	162/172 (94%)	161 (99%)	1 (1%)	84 92
1	F	165/172 (96%)	165 (100%)	0	100 100
1	G	170/172 (99%)	170 (100%)	0	100 100
1	H	163/172 (95%)	163 (100%)	0	100 100
All	All	1320/1376 (96%)	1317 (100%)	3 (0%)	92 96

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	174	LEU
1	D	174	LEU
1	E	156	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	24	GLN
1	D	126	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)

8 non-standard protein/DNA/RNA residues 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	$\#\|Z\| > 2$
1	LLP	B	117	1	23,24,25	1.69	5 (21%)	25,32,34	1.50	3 (12%)
1	LLP	F	117	1	23,24,25	1.68	4 (17%)	25,32,34	1.52	5 (20%)
1	LLP	D	117	1	23,24,25	1.73	6 (26%)	25,32,34	1.32	2 (8%)
1	LLP	C	117	1	23,24,25	1.79	5 (21%)	25,32,34	1.53	3 (12%)
1	LLP	H	117	1	23,24,25	1.64	5 (21%)	25,32,34	1.38	4 (16%)
1	LLP	G	117	1	23,24,25	1.81	5 (21%)	25,32,34	1.38	3 (12%)
1	LLP	E	117	1	23,24,25	1.64	4 (17%)	25,32,34	1.59	4 (16%)
1	LLP	A	117	1	23,24,25	1.69	5 (21%)	25,32,34	1.63	5 (20%)

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
1	LLP	B	117	1	-	2/16/17/19	0/1/1/1
1	LLP	F	117	1	-	2/16/17/19	0/1/1/1
1	LLP	D	117	1	-	2/16/17/19	0/1/1/1
1	LLP	C	117	1	-	2/16/17/19	0/1/1/1
1	LLP	H	117	1	-	2/16/17/19	0/1/1/1
1	LLP	G	117	1	-	2/16/17/19	0/1/1/1
1	LLP	E	117	1	-	2/16/17/19	0/1/1/1
1	LLP	A	117	1	-	2/16/17/19	0/1/1/1

All (39) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	117	LLP	O3-C3	-5.35	1.24	1.36
1	H	117	LLP	O3-C3	-5.00	1.25	1.36
1	E	117	LLP	O3-C3	-4.97	1.25	1.36
1	B	117	LLP	O3-C3	-4.92	1.25	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	117	LLP	O3-C3	-4.89	1.25	1.36
1	A	117	LLP	O3-C3	-4.82	1.25	1.36
1	D	117	LLP	O3-C3	-4.55	1.26	1.36
1	G	117	LLP	O3-C3	-4.53	1.26	1.36
1	G	117	LLP	C4-C4'	3.68	1.54	1.46
1	D	117	LLP	C4-C4'	3.25	1.53	1.46
1	C	117	LLP	C4-C4'	3.24	1.53	1.46
1	F	117	LLP	C2-N1	3.10	1.39	1.33
1	D	117	LLP	CE-NZ	3.01	1.53	1.46
1	H	117	LLP	C4-C4'	2.97	1.53	1.46
1	C	117	LLP	C4'-NZ	2.89	1.36	1.27
1	G	117	LLP	C2-N1	2.87	1.39	1.33
1	F	117	LLP	C4-C4'	2.87	1.52	1.46
1	G	117	LLP	C4'-NZ	2.84	1.36	1.27
1	D	117	LLP	C4-C5	-2.67	1.38	1.42
1	F	117	LLP	C4'-NZ	2.64	1.36	1.27
1	H	117	LLP	C4'-NZ	2.63	1.36	1.27
1	C	117	LLP	C2-N1	2.62	1.38	1.33
1	B	117	LLP	C4'-NZ	2.59	1.35	1.27
1	B	117	LLP	CE-NZ	2.58	1.52	1.46
1	E	117	LLP	C4'-NZ	2.55	1.35	1.27
1	A	117	LLP	C4'-NZ	2.37	1.35	1.27
1	D	117	LLP	C2-N1	2.36	1.38	1.33
1	A	117	LLP	C2-N1	2.36	1.38	1.33
1	B	117	LLP	C2-N1	2.36	1.38	1.33
1	A	117	LLP	C4-C4'	2.35	1.51	1.46
1	A	117	LLP	P-OP3	-2.33	1.46	1.54
1	G	117	LLP	C6-N1	2.29	1.39	1.34
1	E	117	LLP	C2-N1	2.28	1.37	1.33
1	E	117	LLP	C4-C4'	2.17	1.51	1.46
1	B	117	LLP	C6-N1	2.13	1.38	1.34
1	D	117	LLP	C4'-NZ	2.12	1.34	1.27
1	H	117	LLP	C4-C5	-2.07	1.39	1.42
1	H	117	LLP	C2-N1	2.03	1.37	1.33
1	C	117	LLP	C6-N1	2.01	1.38	1.34

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	E	117	LLP	OP4-C5'-C5	4.87	118.48	109.36
1	A	117	LLP	OP4-C5'-C5	4.71	118.19	109.36
1	C	117	LLP	OP4-C5'-C5	4.54	117.87	109.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	117	LLP	OP4-C5'-C5	4.50	117.79	109.36
1	F	117	LLP	OP4-C5'-C5	4.11	117.07	109.36
1	H	117	LLP	OP4-C5'-C5	3.40	115.73	109.36
1	G	117	LLP	OP4-C5'-C5	3.08	115.12	109.36
1	E	117	LLP	OP2-P-OP4	-3.00	98.84	106.67
1	F	117	LLP	OP2-P-OP4	-2.97	98.91	106.67
1	D	117	LLP	OP4-C5'-C5	2.94	114.86	109.36
1	A	117	LLP	OP4-P-OP1	-2.87	98.69	106.44
1	D	117	LLP	C4-C4'-NZ	-2.82	111.04	124.04
1	A	117	LLP	C4-C4'-NZ	-2.76	111.29	124.04
1	C	117	LLP	OP4-P-OP1	-2.47	99.76	106.44
1	G	117	LLP	C4-C4'-NZ	-2.43	112.83	124.04
1	B	117	LLP	C4-C4'-NZ	-2.39	113.02	124.04
1	C	117	LLP	C4-C4'-NZ	-2.38	113.06	124.04
1	F	117	LLP	CE-NZ-C4'	-2.37	111.12	118.72
1	F	117	LLP	C4-C4'-NZ	-2.33	113.27	124.04
1	H	117	LLP	C4-C4'-NZ	-2.29	113.49	124.04
1	A	117	LLP	C5-C4-C4'	-2.21	118.06	121.47
1	H	117	LLP	C5-C6-N1	-2.15	120.33	123.83
1	E	117	LLP	CE-NZ-C4'	-2.11	111.97	118.72
1	E	117	LLP	OP3-P-OP2	2.11	115.70	107.80
1	A	117	LLP	C5-C6-N1	-2.10	120.42	123.83
1	G	117	LLP	C5-C6-N1	-2.09	120.43	123.83
1	F	117	LLP	C5-C6-N1	-2.06	120.48	123.83
1	B	117	LLP	OP4-P-OP1	-2.05	100.90	106.44
1	H	117	LLP	C5-C4-C4'	-2.04	118.33	121.47

There are no chirality outliers.

All (16) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	117	LLP	O-C-CA-CB
1	B	117	LLP	O-C-CA-CB
1	C	117	LLP	O-C-CA-CB
1	D	117	LLP	O-C-CA-CB
1	E	117	LLP	O-C-CA-CB
1	F	117	LLP	O-C-CA-CB
1	G	117	LLP	O-C-CA-CB
1	H	117	LLP	O-C-CA-CB
1	A	117	LLP	C4-C4'-NZ-CE
1	D	117	LLP	C4-C4'-NZ-CE
1	E	117	LLP	C4-C4'-NZ-CE

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Mol	Chain	Res	Type	Atoms
1	H	117	LLP	C4-C4'-NZ-CE
1	C	117	LLP	C4-C4'-NZ-CE
1	G	117	LLP	C4-C4'-NZ-CE
1	F	117	LLP	C4-C4'-NZ-CE
1	B	117	LLP	C4-C4'-NZ-CE

There are no ring outliers.

6 monomers are involved in 6 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	117	LLP	1	0
1	F	117	LLP	1	0
1	D	117	LLP	1	0
1	C	117	LLP	1	0
1	E	117	LLP	1	0
1	A	117	LLP	1	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 98 ligands modelled in this entry, 47 are monoatomic - leaving 51 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	$\#\|Z\| > 2$
4	EDO	H	311	-	3,3,3	0.73	0	2,2,2	0.17	0
4	EDO	D	271	-	3,3,3	0.49	0	2,2,2	0.41	0
4	EDO	C	278	-	3,3,3	0.68	0	2,2,2	0.04	0
4	EDO	A	272	-	3,3,3	0.56	0	2,2,2	0.18	0
4	EDO	F	301	-	3,3,3	0.43	0	2,2,2	0.37	0
4	EDO	G	262	-	3,3,3	0.56	0	2,2,2	0.33	0
4	EDO	D	282	-	3,3,3	0.44	0	2,2,2	0.34	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	EDO	D	264	-	3,3,3	0.34	0	2,2,2	0.56	0
4	EDO	C	295	-	3,3,3	0.62	0	2,2,2	0.09	0
4	EDO	A	265	-	3,3,3	0.45	0	2,2,2	0.14	0
4	EDO	D	289	-	3,3,3	0.43	0	2,2,2	0.17	0
4	EDO	B	280	-	3,3,3	0.23	0	2,2,2	0.55	0
4	EDO	A	279	-	3,3,3	0.32	0	2,2,2	0.34	0
4	EDO	E	288	-	3,3,3	0.39	0	2,2,2	0.45	0
5	PEG	B	261	-	6,6,6	0.72	0	5,5,5	0.25	0
4	EDO	B	293	-	3,3,3	0.61	0	2,2,2	0.32	0
4	EDO	D	263	-	3,3,3	0.31	0	2,2,2	0.08	0
4	EDO	H	281	-	3,3,3	0.50	0	2,2,2	0.21	0
4	EDO	D	310	-	3,3,3	0.58	0	2,2,2	0.16	0
4	EDO	B	285	-	3,3,3	0.64	0	2,2,2	0.04	0
4	EDO	A	303	-	3,3,3	0.51	0	2,2,2	0.19	0
4	EDO	B	294	-	3,3,3	0.40	0	2,2,2	0.35	0
4	EDO	D	290	-	3,3,3	0.59	0	2,2,2	0.17	0
4	EDO	A	309	-	3,3,3	0.41	0	2,2,2	0.37	0
4	EDO	C	286	-	3,3,3	0.56	0	2,2,2	0.17	0
4	EDO	D	291	-	3,3,3	0.35	0	2,2,2	0.36	0
4	EDO	E	305	-	3,3,3	0.36	0	2,2,2	0.31	0
4	EDO	E	273	-	3,3,3	0.35	0	2,2,2	0.42	0
4	EDO	C	269	-	3,3,3	0.43	0	2,2,2	0.35	0
4	EDO	E	266	-	3,3,3	0.38	0	2,2,2	0.60	0
4	EDO	A	275	-	3,3,3	0.42	0	2,2,2	0.28	0
4	EDO	E	268	-	3,3,3	0.58	0	2,2,2	0.18	0
4	EDO	E	283	-	3,3,3	0.41	0	2,2,2	0.31	0
4	EDO	G	308	-	3,3,3	0.44	0	2,2,2	0.24	0
4	EDO	C	307	-	3,3,3	0.69	0	2,2,2	0.05	0
4	EDO	B	292	-	3,3,3	0.54	0	2,2,2	0.23	0
4	EDO	E	267	-	3,3,3	0.51	0	2,2,2	0.26	0
4	EDO	E	298	-	3,3,3	0.30	0	2,2,2	0.53	0
4	EDO	A	270	-	3,3,3	0.40	0	2,2,2	0.21	0
4	EDO	A	306	-	3,3,3	0.50	0	2,2,2	0.18	0
4	EDO	D	296	-	3,3,3	0.43	0	2,2,2	0.31	0
4	EDO	C	302	-	3,3,3	0.45	0	2,2,2	0.33	0
4	EDO	D	277	-	3,3,3	0.56	0	2,2,2	0.22	0
4	EDO	C	304	-	3,3,3	0.50	0	2,2,2	0.11	0
4	EDO	F	297	-	3,3,3	0.16	0	2,2,2	0.81	0
4	EDO	B	299	-	3,3,3	0.54	0	2,2,2	0.36	0
4	EDO	D	284	-	3,3,3	0.37	0	2,2,2	0.50	0
4	EDO	E	276	-	3,3,3	0.43	0	2,2,2	0.04	0
4	EDO	G	300	-	3,3,3	0.45	0	2,2,2	0.31	0
4	EDO	D	287	-	3,3,3	0.40	0	2,2,2	0.17	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	EDO	H	274	-	3,3,3	0.53	0	2,2,2	0.36	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
4	EDO	H	311	-	-	1/1/1/1	-
4	EDO	D	271	-	-	0/1/1/1	-
4	EDO	C	278	-	-	0/1/1/1	-
4	EDO	A	272	-	-	1/1/1/1	-
4	EDO	F	301	-	-	1/1/1/1	-
4	EDO	G	262	-	-	1/1/1/1	-
4	EDO	D	282	-	-	1/1/1/1	-
4	EDO	D	264	-	-	0/1/1/1	-
4	EDO	C	295	-	-	0/1/1/1	-
4	EDO	A	265	-	-	1/1/1/1	-
4	EDO	D	289	-	-	0/1/1/1	-
4	EDO	B	280	-	-	1/1/1/1	-
4	EDO	A	279	-	-	1/1/1/1	-
4	EDO	E	288	-	-	1/1/1/1	-
5	PEG	B	261	-	-	2/4/4/4	-
4	EDO	B	293	-	-	0/1/1/1	-
4	EDO	D	263	-	-	1/1/1/1	-
4	EDO	H	281	-	-	1/1/1/1	-
4	EDO	D	310	-	-	1/1/1/1	-
4	EDO	B	285	-	-	0/1/1/1	-
4	EDO	A	303	-	-	0/1/1/1	-
4	EDO	B	294	-	-	1/1/1/1	-
4	EDO	D	290	-	-	1/1/1/1	-
4	EDO	A	309	-	-	0/1/1/1	-
4	EDO	C	286	-	-	0/1/1/1	-
4	EDO	D	291	-	-	1/1/1/1	-
4	EDO	E	305	-	-	0/1/1/1	-
4	EDO	E	273	-	-	1/1/1/1	-
4	EDO	C	269	-	-	0/1/1/1	-
4	EDO	E	266	-	-	0/1/1/1	-
4	EDO	A	275	-	-	1/1/1/1	-
4	EDO	E	268	-	-	0/1/1/1	-
4	EDO	E	283	-	-	1/1/1/1	-
4	EDO	G	308	-	-	1/1/1/1	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	EDO	C	307	-	-	1/1/1/1	-
4	EDO	B	292	-	-	1/1/1/1	-
4	EDO	E	267	-	-	1/1/1/1	-
4	EDO	E	298	-	-	1/1/1/1	-
4	EDO	A	270	-	-	1/1/1/1	-
4	EDO	A	306	-	-	0/1/1/1	-
4	EDO	D	296	-	-	1/1/1/1	-
4	EDO	C	302	-	-	0/1/1/1	-
4	EDO	D	277	-	-	0/1/1/1	-
4	EDO	C	304	-	-	0/1/1/1	-
4	EDO	F	297	-	-	1/1/1/1	-
4	EDO	B	299	-	-	0/1/1/1	-
4	EDO	D	284	-	-	1/1/1/1	-
4	EDO	E	276	-	-	0/1/1/1	-
4	EDO	G	300	-	-	1/1/1/1	-
4	EDO	D	287	-	-	0/1/1/1	-
4	EDO	H	274	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	B	292	EDO	O1-C1-C2-O2
5	B	261	PEG	O2-C3-C4-O4
4	D	310	EDO	O1-C1-C2-O2
4	A	272	EDO	O1-C1-C2-O2
4	B	280	EDO	O1-C1-C2-O2
4	D	282	EDO	O1-C1-C2-O2
4	D	290	EDO	O1-C1-C2-O2
4	D	296	EDO	O1-C1-C2-O2
4	E	267	EDO	O1-C1-C2-O2
4	E	288	EDO	O1-C1-C2-O2
4	H	311	EDO	O1-C1-C2-O2
5	B	261	PEG	O1-C1-C2-O2
4	E	283	EDO	O1-C1-C2-O2
4	G	308	EDO	O1-C1-C2-O2
4	D	284	EDO	O1-C1-C2-O2
4	E	273	EDO	O1-C1-C2-O2
4	F	297	EDO	O1-C1-C2-O2

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Mol	Chain	Res	Type	Atoms
4	H	274	EDO	O1-C1-C2-O2
4	A	275	EDO	O1-C1-C2-O2
4	A	279	EDO	O1-C1-C2-O2
4	C	307	EDO	O1-C1-C2-O2
4	D	291	EDO	O1-C1-C2-O2
4	F	301	EDO	O1-C1-C2-O2
4	G	300	EDO	O1-C1-C2-O2
4	A	265	EDO	O1-C1-C2-O2
4	A	270	EDO	O1-C1-C2-O2
4	B	294	EDO	O1-C1-C2-O2
4	E	298	EDO	O1-C1-C2-O2
4	G	262	EDO	O1-C1-C2-O2
4	D	263	EDO	O1-C1-C2-O2
4	H	281	EDO	O1-C1-C2-O2

There are no ring outliers.

8 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	261	PEG	1	0
4	D	263	EDO	1	0
4	D	291	EDO	1	0
4	E	273	EDO	1	0
4	E	268	EDO	1	0
4	E	276	EDO	2	0
4	G	300	EDO	1	0
4	D	287	EDO	2	0

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, 95^{th} 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	212/221 (95%)	-0.39	6 (2%) 55 56	12, 19, 30, 50	4 (1%)
1	B	204/221 (92%)	-0.42	1 (0%) 87 88	10, 22, 32, 37	2 (0%)
1	C	206/221 (93%)	-0.45	2 (0%) 79 79	14, 21, 29, 34	1 (0%)
1	D	208/221 (94%)	-0.54	3 (1%) 73 74	13, 19, 29, 36	2 (0%)
1	E	204/221 (92%)	-0.52	1 (0%) 87 88	13, 20, 28, 32	0
1	F	212/221 (95%)	-0.25	3 (1%) 73 74	14, 27, 42, 50	1 (0%)
1	G	212/221 (95%)	-0.20	3 (1%) 73 74	13, 27, 39, 52	4 (1%)
1	H	204/221 (92%)	-0.48	0 100 100	13, 22, 30, 34	1 (0%)
All	All	1662/1768 (94%)	-0.40	19 (1%) 77 78	10, 22, 35, 52	15 (0%)

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	220	VAL	4.5
1	A	13	ALA	3.9
1	A	12	THR	3.5
1	A	9	ASP	3.3
1	D	12	THR	3.2
1	A	6	PRO	3.1
1	D	93	ALA	2.9
1	C	12	THR	2.8
1	D	10	GLY	2.8
1	A	7	LEU	2.6
1	A	8	ARG	2.6
1	G	9	ASP	2.4
1	G	126[A]	HIS	2.4
1	B	123	LEU	2.3
1	F	13	ALA	2.3
1	G	6	PRO	2.3

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Mol	Chain	Res	Type	RSRZ
1	F	8	ARG	2.2
1	F	9	ASP	2.2
1	E	26	GLY	2.2

6.2 Non-standard residues in protein, DNA, RNA chains (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, 95^{th} 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
1	LLP	G	117	24/25	0.96	0.08	17,20,22,23	0
1	LLP	F	117	24/25	0.97	0.06	17,19,20,21	0
1	LLP	C	117	24/25	0.98	0.05	11,14,16,16	0
1	LLP	D	117	24/25	0.98	0.05	9,12,15,15	0
1	LLP	E	117	24/25	0.98	0.05	12,14,16,16	0
1	LLP	A	117	24/25	0.98	0.06	9,13,15,15	0
1	LLP	B	117	24/25	0.98	0.06	12,15,19,19	0
1	LLP	H	117	24/25	0.98	0.05	11,14,16,17	0

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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
4	EDO	A	306	4/4	0.74	0.22	59,60,60,60	0
4	EDO	D	296	4/4	0.74	0.21	40,40,41,42	0
4	EDO	B	292	4/4	0.77	0.21	51,51,51,52	0
4	EDO	B	285	4/4	0.77	0.23	47,48,48,49	0
4	EDO	C	286	4/4	0.78	0.18	46,47,47,48	0
4	EDO	F	301	4/4	0.78	0.19	55,55,55,55	0
4	EDO	H	311	4/4	0.78	0.18	16,19,21,23	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
5	PEG	B	261	7/7	0.79	0.17	40,40,41,42	0
4	EDO	C	307	4/4	0.80	0.14	44,45,45,46	0
4	EDO	B	293	4/4	0.81	0.19	42,42,42,43	0
4	EDO	D	282	4/4	0.81	0.14	46,47,47,47	0
4	EDO	C	302	4/4	0.81	0.16	44,44,45,46	0
4	EDO	E	298	4/4	0.82	0.16	31,31,32,34	0
4	EDO	D	277	4/4	0.82	0.17	28,29,32,33	0
4	EDO	G	300	4/4	0.84	0.16	43,44,45,45	0
4	EDO	D	290	4/4	0.84	0.15	35,36,36,37	0
4	EDO	E	288	4/4	0.84	0.11	33,34,34,34	0
4	EDO	C	278	4/4	0.86	0.18	38,40,40,40	0
4	EDO	B	294	4/4	0.87	0.18	49,50,51,51	0
4	EDO	A	272	4/4	0.87	0.10	32,33,33,34	0
4	EDO	A	303	4/4	0.87	0.14	45,46,46,46	0
4	EDO	C	295	4/4	0.87	0.16	41,41,42,42	0
4	EDO	A	309	4/4	0.88	0.14	44,45,45,46	0
4	EDO	E	273	4/4	0.88	0.13	39,39,39,39	0
4	EDO	G	308	4/4	0.89	0.13	35,36,36,36	0
4	EDO	E	267	4/4	0.89	0.10	37,38,39,40	0
2	IOD	B	246	1/1	0.89	0.14	55,55,55,55	1
4	EDO	G	262	4/4	0.90	0.10	26,26,27,28	0
4	EDO	D	310	4/4	0.90	0.11	39,40,40,41	0
4	EDO	D	291	4/4	0.90	0.10	33,34,34,35	0
4	EDO	F	297	4/4	0.90	0.09	22,22,22,24	0
4	EDO	A	279	4/4	0.90	0.09	33,33,33,34	0
3	CL	H	249	1/1	0.91	0.07	33,33,33,33	0
2	IOD	C	245	1/1	0.91	0.07	34,34,34,34	1
4	EDO	B	280	4/4	0.92	0.11	32,33,33,34	0
4	EDO	E	268	4/4	0.92	0.09	29,31,32,33	0
3	CL	A	252	1/1	0.92	0.12	52,52,52,52	0
4	EDO	D	271	4/4	0.92	0.08	25,25,26,26	0
3	CL	A	260	1/1	0.93	0.12	55,55,55,55	0
4	EDO	A	275	4/4	0.93	0.08	24,27,28,28	0
3	CL	A	248	1/1	0.93	0.06	36,36,36,36	0
4	EDO	C	304	4/4	0.93	0.12	32,33,33,33	0
4	EDO	H	281	4/4	0.94	0.08	29,30,30,31	0
4	EDO	E	305	4/4	0.94	0.11	35,36,37,37	0
4	EDO	E	266	4/4	0.94	0.07	24,24,25,25	0
4	EDO	A	270	4/4	0.95	0.09	26,27,27,27	0
3	CL	E	247	1/1	0.95	0.08	48,48,48,48	0
3	CL	G	255	1/1	0.95	0.09	38,38,38,38	0
3	CL	A	250	1/1	0.95	0.09	41,41,41,41	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	CL	H	253	1/1	0.95	0.10	51,51,51,51	0
4	EDO	E	276	4/4	0.96	0.06	23,23,24,24	0
4	EDO	D	284	4/4	0.96	0.07	31,31,31,32	0
4	EDO	D	287	4/4	0.96	0.07	27,29,29,29	0
4	EDO	H	274	4/4	0.96	0.06	22,24,25,25	0
2	IOD	H	244	1/1	0.96	0.06	44,44,44,44	1
4	EDO	C	269	4/4	0.96	0.07	33,34,34,34	0
4	EDO	D	264	4/4	0.96	0.06	16,17,18,18	0
2	IOD	B	242	1/1	0.97	0.04	30,30,30,30	1
2	IOD	G	238	1/1	0.97	0.04	46,46,46,46	1
4	EDO	A	265	4/4	0.97	0.06	17,17,17,18	0
4	EDO	D	289	4/4	0.97	0.06	28,28,28,29	0
4	EDO	B	299	4/4	0.97	0.06	31,31,31,31	0
4	EDO	E	283	4/4	0.97	0.06	31,32,32,33	0
3	CL	E	251	1/1	0.97	0.09	45,45,45,45	0
3	CL	E	256	1/1	0.97	0.07	27,27,27,27	0
2	IOD	B	236	1/1	0.97	0.06	42,42,42,42	1
2	IOD	B	240	1/1	0.98	0.03	30,30,30,30	1
2	IOD	H	243	1/1	0.98	0.04	30,30,30,30	1
2	IOD	D	232	1/1	0.98	0.04	32,32,32,32	1
2	IOD	F	228[A]	1/1	0.98	0.04	44,44,44,44	1
2	IOD	F	228[B]	1/1	0.98	0.04	35,35,35,35	1
2	IOD	G	229[A]	1/1	0.98	0.03	38,38,38,38	1
4	EDO	D	263	4/4	0.98	0.06	17,18,19,19	0
3	CL	H	254	1/1	0.98	0.05	17,17,17,17	0
3	CL	A	258	1/1	0.98	0.03	20,20,20,20	0
2	IOD	G	229[B]	1/1	0.98	0.03	28,28,28,28	1
3	CL	D	257	1/1	0.98	0.03	28,28,28,28	0
3	CL	D	259	1/1	0.98	0.03	26,26,26,26	0
2	IOD	C	226[B]	1/1	0.99	0.04	32,32,32,32	1
2	IOD	C	233	1/1	0.99	0.03	34,34,34,34	1
2	IOD	H	230[A]	1/1	0.99	0.04	32,32,32,32	1
2	IOD	H	230[B]	1/1	0.99	0.04	36,36,36,36	1
2	IOD	H	235	1/1	0.99	0.04	38,38,38,38	1
2	IOD	C	239	1/1	0.99	0.03	27,27,27,27	1
2	IOD	A	221	1/1	0.99	0.07	28,28,28,28	0
2	IOD	D	227[A]	1/1	0.99	0.02	26,26,26,26	1
2	IOD	D	227[B]	1/1	0.99	0.02	23,23,23,23	1
2	IOD	A	225[A]	1/1	0.99	0.03	27,27,27,27	1
2	IOD	E	231[A]	1/1	0.99	0.05	36,36,36,36	1
2	IOD	E	231[B]	1/1	0.99	0.05	45,45,45,45	1
2	IOD	E	241	1/1	0.99	0.04	27,27,27,27	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	IOD	A	225[B]	1/1	0.99	0.03	33,33,33,33	1
2	IOD	A	234	1/1	0.99	0.07	35,35,35,35	1
2	IOD	F	237	1/1	0.99	0.04	44,44,44,44	1
2	IOD	G	224	1/1	0.99	0.06	32,32,32,32	0
2	IOD	C	226[A]	1/1	0.99	0.04	38,38,38,38	1
2	IOD	F	223	1/1	1.00	0.04	31,31,31,31	0
2	IOD	D	222	1/1	1.00	0.04	22,22,22,22	0

6.5 Other polymers (i)

There are no such residues in this entry.