



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 22, 2024 – 02:48 PM EDT

PDB ID : 6O64
Title : Crystal Structure of Arabidopsis thaliana Spermidine Synthase isoform 2 (At-SPDS2)
Authors : Sekula, B.; Dauter, Z.
Deposited on : 2019-03-05
Resolution : 2.00 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) : 1.20.1
EDS : 2.37.1
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.37.1

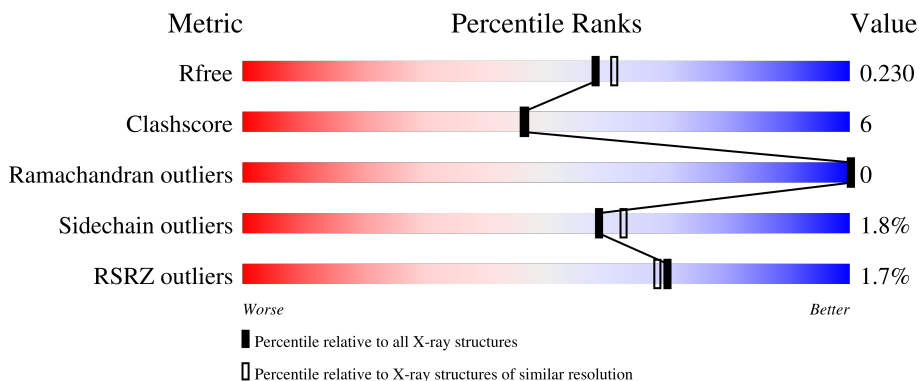
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.






Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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	305	 82% 11% 7%
1	B	305	 83% 12% 5%
1	C	305	 80% 10% 9%
1	D	305	 71% 18% 10%
1	E	305	 75% 17% 8%

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Mol	Chain	Length	Quality of chain
1	F	305	 82% 12% 6%
1	G	305	 2% 83% 11% 6%
1	H	305	 % 80% 12% 8%

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

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	EDO	E	402	-	-	X	-

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 18590 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 Spermidine synthase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	284	2202	1415	354	418	15	0	1	0
1	B	290	2238	1436	362	425	15	0	0	0
1	C	277	2145	1378	346	408	13	0	0	0
1	D	275	2131	1371	344	403	13	0	0	0
1	E	281	2183	1407	350	411	15	0	3	0
1	F	287	2223	1430	358	419	16	0	2	0
1	G	288	2220	1426	357	422	15	0	0	0
1	H	281	2178	1401	352	411	14	0	1	0

There are 24 discrepancies between the modelled and reference sequences:

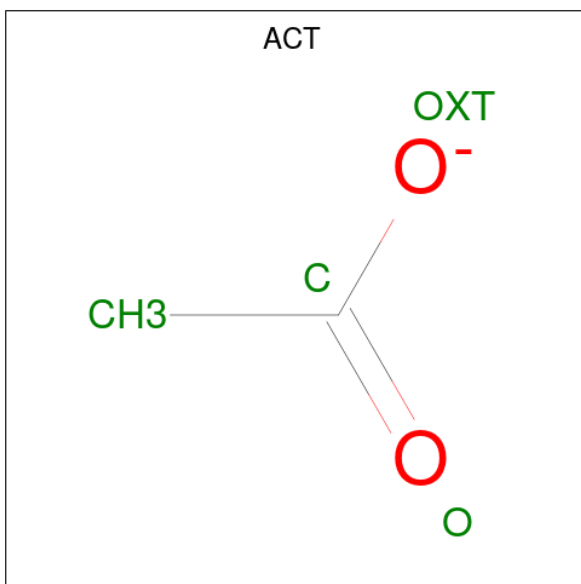
Chain	Residue	Modelled	Actual	Comment	Reference
A	36	SER	-	expression tag	UNP O48661
A	37	ASN	-	expression tag	UNP O48661
A	38	ALA	-	expression tag	UNP O48661
B	36	SER	-	expression tag	UNP O48661
B	37	ASN	-	expression tag	UNP O48661
B	38	ALA	-	expression tag	UNP O48661
C	36	SER	-	expression tag	UNP O48661
C	37	ASN	-	expression tag	UNP O48661
C	38	ALA	-	expression tag	UNP O48661
D	36	SER	-	expression tag	UNP O48661
D	37	ASN	-	expression tag	UNP O48661
D	38	ALA	-	expression tag	UNP O48661
E	36	SER	-	expression tag	UNP O48661

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Chain	Residue	Modelled	Actual	Comment	Reference
E	37	ASN	-	expression tag	UNP O48661
E	38	ALA	-	expression tag	UNP O48661
F	36	SER	-	expression tag	UNP O48661
F	37	ASN	-	expression tag	UNP O48661
F	38	ALA	-	expression tag	UNP O48661
G	36	SER	-	expression tag	UNP O48661
G	37	ASN	-	expression tag	UNP O48661
G	38	ALA	-	expression tag	UNP O48661
H	36	SER	-	expression tag	UNP O48661
H	37	ASN	-	expression tag	UNP O48661
H	38	ALA	-	expression tag	UNP O48661

- Molecule 2 is ACETATE ION (three-letter code: ACT) (formula: C₂H₃O₂).



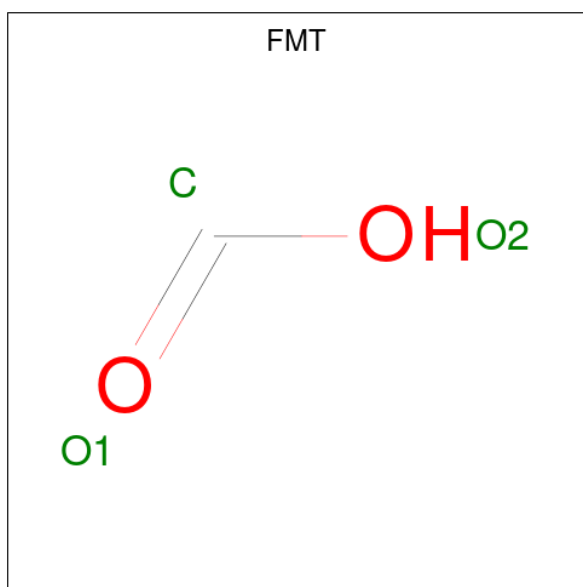
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 4 2 2	0	0
2	F	1	Total C O 4 2 2	0	0
2	H	1	Total C O 4 2 2	0	0
2	H	1	Total C O 4 2 2	0	0
2	H	1	Total C O 4 2 2	0	0

- Molecule 3 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: C₄H₁₀O₃).



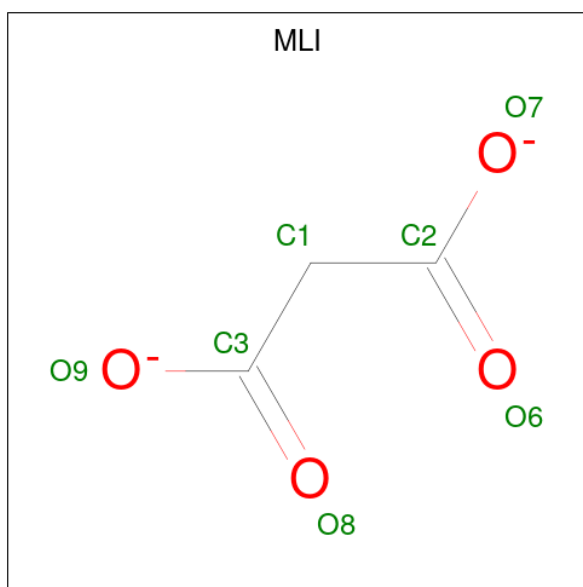
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C O 7 4 3	0	0
3	B	1	Total C O 7 4 3	0	0
3	C	1	Total C O 7 4 3	0	0
3	D	1	Total C O 7 4 3	0	0
3	D	1	Total C O 7 4 3	0	0
3	D	1	Total C O 7 4 3	0	0
3	E	1	Total C O 7 4 3	0	0
3	F	1	Total C O 7 4 3	0	0
3	F	1	Total C O 7 4 3	0	0
3	G	1	Total C O 7 4 3	0	0

- Molecule 4 is FORMIC ACID (three-letter code: FMT) (formula: CH₂O₂).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total C O 3 1 2	0	0
4	E	1	Total C O 3 1 2	0	0
4	E	1	Total C O 6 2 4	0	1

- Molecule 5 is MALONATE ION (three-letter code: MLI) (formula: $C_3H_2O_4$).



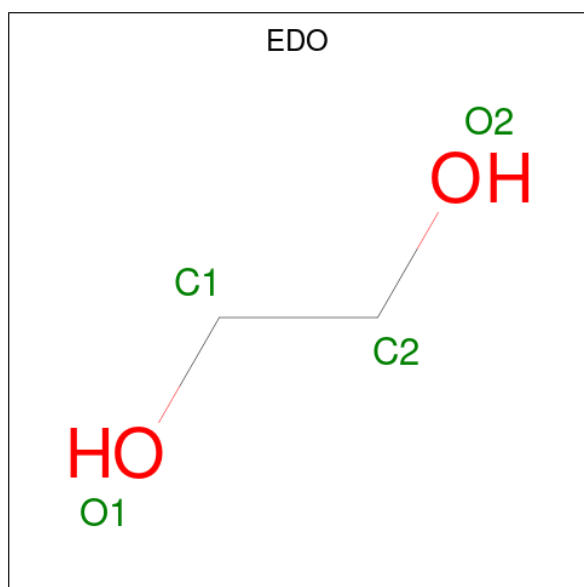
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	D	1	Total C O 7 3 4	0	0

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

- Molecule 6 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



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

- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	A	79	Total	O	0	0
			79	79		
7	B	99	Total	O	0	0
			99	99		
7	C	84	Total	O	0	0
			84	84		
7	D	67	Total	O	0	0
			67	67		
7	E	186	Total	O	0	0
			186	186		

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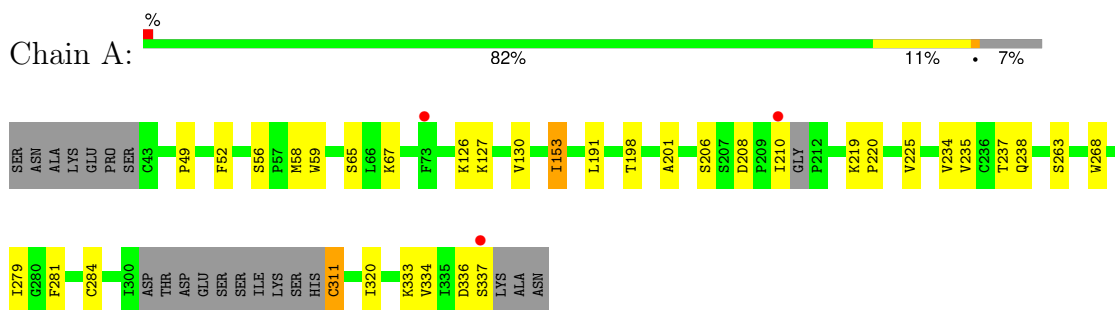
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	F	162	Total 162	O 162	0	0
7	G	143	Total 143	O 143	0	0
7	H	116	Total 116	O 116	0	0

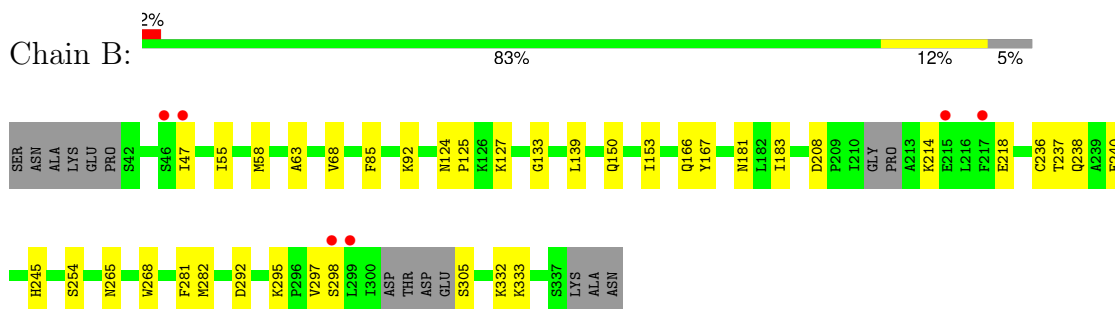
3 Residue-property plots [i](#)

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.

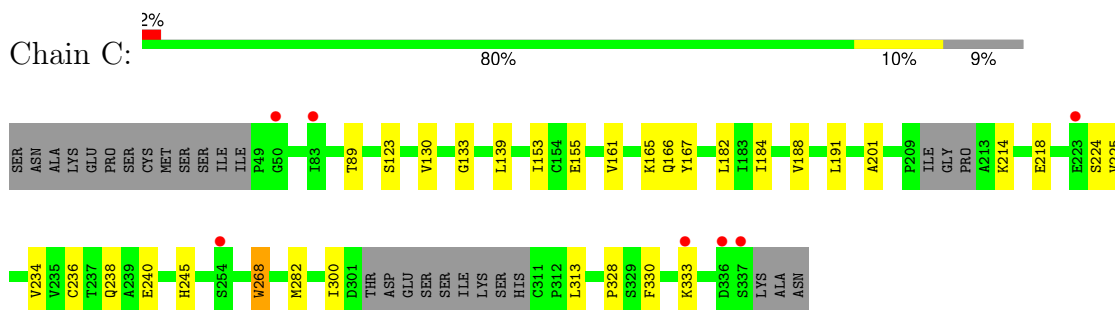
- Molecule 1: Spermidine synthase 2



- Molecule 1: Spermidine synthase 2

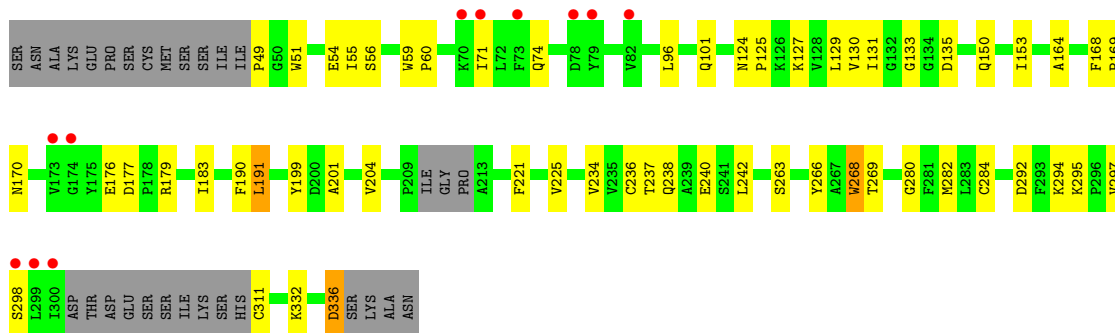


- Molecule 1: Spermidine synthase 2



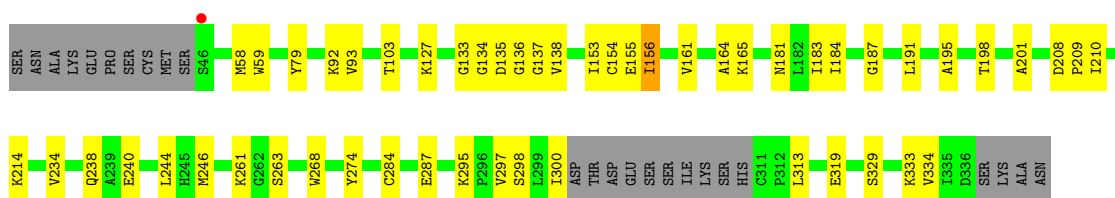
- Molecule 1: Spermidine synthase 2





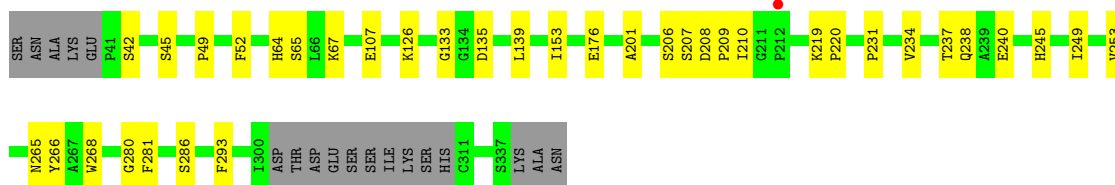
- Molecule 1: Spermidine synthase 2

Chain E: 75% 17% 8%



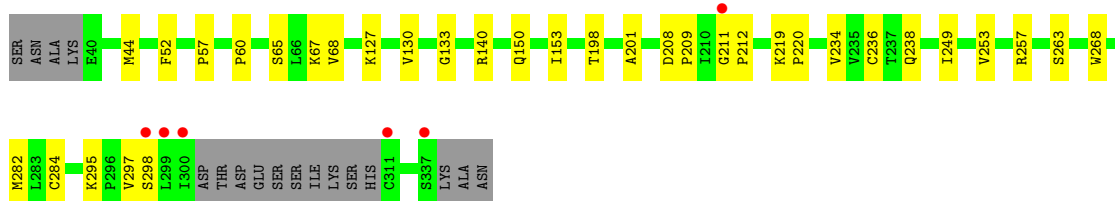
- Molecule 1: Spermidine synthase 2

Chain F: 82% 12% 6%



- Molecule 1: Spermidine synthase 2

Chain G: 2% 83% 11% 6%



- Molecule 1: Spermidine synthase 2

Chain H: 80% 12% 8%





4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	75.65Å 162.70Å 97.49Å 90.00° 100.21° 90.00°	Depositor
Resolution (Å)	42.54 – 2.00 42.51 – 2.00	Depositor EDS
% Data completeness (in resolution range)	80.2 (42.54-2.00) 80.2 (42.51-2.00)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.21 (at 2.00Å)	Xtrriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.176 , 0.231 0.185 , 0.230	Depositor DCC
R_{free} test set	1234 reflections (0.99%)	wwPDB-VP
Wilson B-factor (Å ²)	24.6	Xtrriage
Anisotropy	0.159	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 43.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	18590	wwPDB-VP
Average B, all atoms (Å ²)	37.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.38% 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: MLI, EDO, FMT, PEG, ACT

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	0.78	0/2252	0.90	0/3056
1	B	0.83	0/2288	0.94	0/3103
1	C	0.80	0/2194	0.92	0/2977
1	D	0.80	0/2180	0.90	0/2958
1	E	0.92	0/2243	1.02	0/3046
1	F	0.95	0/2282	1.00	0/3098
1	G	0.89	0/2272	0.98	0/3086
1	H	0.92	0/2233	1.01	0/3032
All	All	0.86	0/17944	0.96	0/24356

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 [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2202	0	2180	21	0
1	B	2238	0	2220	22	0
1	C	2145	0	2117	19	0
1	D	2131	0	2108	36	0
1	E	2183	0	2175	51	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	F	2223	0	2209	24	0
1	G	2220	0	2198	22	0
1	H	2178	0	2157	33	0
2	A	4	0	3	0	0
2	F	4	0	3	0	0
2	H	12	0	9	0	0
3	A	7	0	10	1	0
3	B	7	0	10	0	0
3	C	7	0	10	0	0
3	D	21	0	30	0	0
3	E	7	0	10	1	0
3	F	14	0	20	2	0
3	G	7	0	10	1	0
4	B	3	0	1	0	0
4	E	9	0	3	0	0
5	D	7	0	2	0	0
5	E	14	0	4	0	0
5	H	7	0	2	0	0
6	E	4	0	6	17	0
7	A	79	0	0	2	0
7	B	99	0	0	2	0
7	C	84	0	0	1	0
7	D	67	0	0	1	0
7	E	186	0	0	2	0
7	F	162	0	0	7	0
7	G	143	0	0	0	0
7	H	116	0	0	5	0
All	All	18590	0	17497	220	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 6.

All (220) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:58[A]:MET:SD	1:E:210:ILE:HG12	2.10	0.91
1:E:138:VAL:H	6:E:402:EDO:C2	1.86	0.87
1:E:138:VAL:H	6:E:402:EDO:H22	1.40	0.87
1:G:127:LYS:HE3	1:G:150:GLN:NE2	1.93	0.82
1:F:126:LYS:HG3	3:F:403:PEG:H12	1.63	0.80
1:A:58:MET:HE2	1:A:208:ASP:HB3	1.63	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:134:GLY:HA3	6:E:402:EDO:H12	1.65	0.77
1:E:137:GLY:N	6:E:402:EDO:H22	2.00	0.77
1:E:135:ASP:N	6:E:402:EDO:H11	2.01	0.76
1:H:126:LYS:HD3	1:H:149:GLU:HG3	1.67	0.76
1:H:133:GLY:HA2	1:H:153:ILE:HD11	1.66	0.76
1:B:127:LYS:HE3	1:B:150:GLN:NE2	2.01	0.75
1:F:133:GLY:HA2	1:F:153:ILE:HD11	1.70	0.74
1:D:71:ILE:HG21	1:D:74:GLN:HE21	1.53	0.73
1:E:136:GLY:H	6:E:402:EDO:H11	1.52	0.72
7:B:552:HOH:O	1:E:92:LYS:HE2	1.89	0.72
1:H:249:ILE:HD12	1:H:331:ALA:HB1	1.72	0.71
1:A:333:LYS:HG3	1:A:334:VAL:H	1.57	0.69
1:E:134:GLY:HA3	6:E:402:EDO:C1	2.23	0.69
1:H:245:HIS:HB2	1:H:248:ILE:HG13	1.76	0.68
1:H:245:HIS:HB2	1:H:248:ILE:CG1	2.24	0.67
1:D:133:GLY:HA2	1:D:153:ILE:HD11	1.78	0.66
1:C:133:GLY:HA2	1:C:153:ILE:HD11	1.77	0.65
1:D:332:LYS:O	1:D:336:ASP:HB2	1.96	0.65
1:H:139:LEU:HD11	1:H:153:ILE:HD13	1.79	0.64
1:B:214:LYS:HE2	1:B:218:GLU:OE2	1.98	0.64
1:B:133:GLY:HA2	1:B:153:ILE:HD11	1.79	0.63
1:H:126:LYS:HD3	1:H:149:GLU:CG	2.28	0.63
1:F:207:SER:HB2	7:F:617:HOH:O	1.98	0.62
1:B:240:GLU:HB3	1:B:245:HIS:ND1	2.14	0.62
1:D:71:ILE:HG21	1:D:74:GLN:NE2	2.15	0.62
1:F:139:LEU:HD11	1:F:153:ILE:HD13	1.82	0.62
1:A:311:CYS:O	1:A:311:CYS:SG	2.58	0.61
1:G:133:GLY:HA2	1:G:153:ILE:HD11	1.81	0.61
1:E:138:VAL:H	6:E:402:EDO:H21	1.64	0.61
1:H:212:PRO:HG3	1:H:248:ILE:HD12	1.82	0.61
1:B:297:VAL:HG23	1:B:298:SER:HB3	1.83	0.61
1:E:127:LYS:HE2	1:E:198:THR:HG22	1.82	0.61
1:C:300:ILE:HG23	1:C:313:LEU:HD11	1.82	0.60
1:D:170:ASN:ND2	1:H:250:GLU:OE2	2.34	0.60
1:E:138:VAL:N	6:E:402:EDO:H22	2.13	0.60
1:H:139:LEU:HD21	1:H:153:ILE:HD12	1.83	0.59
1:B:68:VAL:HG22	1:B:85:PHE:CD1	2.37	0.59
1:A:219:LYS:HB2	1:A:220:PRO:HD3	1.85	0.58
1:E:135:ASP:H	6:E:402:EDO:C1	2.16	0.58
1:H:238:GLN:HB2	7:H:554:HOH:O	2.02	0.58
1:G:127:LYS:HE3	1:G:150:GLN:CD	2.24	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:135:ASP:H	6:E:402:EDO:H11	1.68	0.56
1:H:186:ASP:OD2	1:H:188:VAL:HB	2.04	0.56
1:D:129:LEU:HB2	1:D:199:TYR:CE1	2.39	0.56
1:A:130:VAL:O	1:A:153:ILE:HA	2.05	0.56
1:D:240:GLU:O	1:D:280:GLY:N	2.38	0.56
1:E:136:GLY:N	6:E:402:EDO:H11	2.19	0.56
1:C:161:VAL:HG12	1:C:165:LYS:HE2	1.88	0.56
1:F:206:SER:O	3:F:402:PEG:H12	2.06	0.56
1:H:139:LEU:HD11	1:H:153:ILE:CD1	2.36	0.55
1:D:49:PRO:O	1:D:51:TRP:HD1	1.89	0.55
1:E:300:ILE:CD1	1:E:313:LEU:HD11	2.36	0.55
1:F:201:ALA:HA	1:F:234:VAL:O	2.07	0.55
1:E:127:LYS:HZ3	1:E:198:THR:HG23	1.70	0.55
1:E:300:ILE:HD13	1:E:313:LEU:HD11	1.89	0.55
1:C:166:GLN:HG2	1:C:167:TYR:CE2	2.41	0.54
1:A:191:LEU:HD21	1:A:225:VAL:HG22	1.89	0.54
1:E:135:ASP:N	6:E:402:EDO:C1	2.71	0.54
1:B:297:VAL:HG23	1:B:298:SER:N	2.22	0.54
1:D:191:LEU:HD21	1:D:225:VAL:HG22	1.90	0.54
1:D:131:ILE:HD11	1:D:191:LEU:HD22	1.90	0.54
1:A:333:LYS:HG3	1:A:334:VAL:N	2.24	0.53
1:F:266:TYR:OH	1:F:280:GLY:HA3	2.08	0.53
1:E:201:ALA:HA	1:E:234:VAL:O	2.09	0.53
1:F:45:SER:HB3	1:F:49:PRO:HA	1.91	0.53
1:H:248:ILE:O	1:H:252:ILE:HG13	2.09	0.53
1:D:96:LEU:HG	1:D:101:GLN:HG3	1.91	0.52
1:F:240:GLU:HB3	1:F:245[A]:HIS:ND1	2.25	0.52
1:E:138:VAL:N	6:E:402:EDO:C2	2.67	0.52
1:G:52:PHE:O	1:G:65:SER:HA	2.10	0.52
1:H:245:HIS:HB2	1:H:248:ILE:HG12	1.91	0.52
1:C:89:THR:HG21	1:D:60:PRO:O	2.09	0.52
1:H:245:HIS:CB	1:H:248:ILE:HG12	2.40	0.51
1:A:206:SER:O	3:A:402:PEG:H12	2.11	0.51
1:B:181:ASN:ND2	1:B:183:ILE:HD11	2.25	0.51
1:A:237:THR:O	1:A:281:PHE:HA	2.10	0.51
1:G:297:VAL:HG23	1:G:298:SER:HB3	1.93	0.51
1:C:201:ALA:HA	1:C:234:VAL:O	2.11	0.51
1:F:64:HIS:HB3	7:F:640:HOH:O	2.10	0.51
1:E:209:PRO:O	1:E:214:LYS:HB2	2.11	0.50
1:E:127:LYS:HE2	1:E:198:THR:CG2	2.42	0.50
1:G:127:LYS:HE2	1:G:198:THR:CG2	2.41	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:107:GLU:OE1	1:F:135:ASP:OD2	2.30	0.50
1:C:130:VAL:O	1:C:153:ILE:HA	2.12	0.50
1:H:238:GLN:HG3	1:H:279:ILE:HG12	1.93	0.49
1:D:191:LEU:HD23	1:D:221:PHE:CE1	2.48	0.49
1:G:249:ILE:O	1:G:253:VAL:HG23	2.11	0.49
1:H:245:HIS:CB	1:H:248:ILE:CG1	2.88	0.49
1:F:231:PRO:HA	7:F:510:HOH:O	2.11	0.49
1:G:236:CYS:HA	1:G:282:MET:O	2.11	0.49
1:B:297:VAL:CG2	1:B:298:SER:N	2.76	0.49
1:D:201:ALA:HA	1:D:234:VAL:O	2.12	0.49
1:H:257:ARG:HD2	7:H:602:HOH:O	2.12	0.49
1:C:191:LEU:HD21	1:C:225:VAL:HG22	1.94	0.49
1:E:59:TRP:HB3	1:E:244:LEU:HD13	1.96	0.48
1:G:263:SER:O	1:G:284:CYS:HA	2.13	0.48
1:D:242:LEU:HD12	1:D:268:TRP:CE3	2.49	0.48
1:B:139:LEU:HD11	1:B:153:ILE:HD13	1.96	0.48
1:D:294:LYS:NZ	7:D:508:HOH:O	2.47	0.48
1:A:56:SER:HB3	1:A:59:TRP:CE2	2.48	0.48
1:A:126:LYS:NZ	7:A:505:HOH:O	2.45	0.48
1:D:183:ILE:HD13	1:D:190:PHE:CE1	2.49	0.48
1:G:140:ARG:HG3	1:G:140:ARG:HH11	1.79	0.47
1:F:52:PHE:O	1:F:65:SER:HA	2.14	0.47
1:D:130:VAL:O	1:D:153:ILE:HA	2.14	0.47
1:H:96:LEU:HD12	1:H:101:GLN:HG2	1.95	0.47
1:C:330:PHE:HA	1:C:333:LYS:HE3	1.97	0.47
1:C:330:PHE:O	1:C:333:LYS:HE3	2.15	0.47
1:B:292:ASP:OD2	1:D:292:ASP:OD2	2.32	0.47
1:D:127:LYS:HE3	1:D:150:GLN:OE1	2.14	0.47
1:D:236:CYS:HA	1:D:282:MET:O	2.13	0.47
1:E:319:GLU:HG3	7:E:620:HOH:O	2.15	0.47
1:G:208:ASP:OD1	3:G:401:PEG:H11	2.15	0.47
1:B:265:ASN:ND2	7:B:510:HOH:O	2.47	0.47
1:D:297:VAL:HG23	1:D:298:SER:HB3	1.96	0.47
1:E:138:VAL:HB	6:E:402:EDO:H21	1.96	0.46
1:E:329:SER:O	1:E:333:LYS:HG3	2.15	0.46
1:F:67:LYS:NZ	7:F:512:HOH:O	2.47	0.46
1:H:142:VAL:O	1:H:145:HIS:HB2	2.15	0.46
1:B:124:ASN:N	1:B:125:PRO:CD	2.78	0.46
1:E:208:ASP:OD1	1:E:240:GLU:OE2	2.32	0.46
7:E:586:HOH:O	1:H:295:LYS:HE3	2.14	0.46
1:H:126:LYS:HD3	1:H:149:GLU:CD	2.35	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:246:MET:HE2	1:E:334:VAL:HG11	1.98	0.46
1:F:176:GLU:HA	1:F:176:GLU:OE1	2.16	0.46
1:G:57:PRO:O	1:G:60:PRO:HD3	2.16	0.46
1:A:201:ALA:HA	1:A:234:VAL:O	2.15	0.46
1:D:135:ASP:HA	1:D:164:ALA:HB1	1.96	0.46
1:E:274:TYR:OH	3:E:404:PEG:H42	2.15	0.46
1:E:127:LYS:NZ	1:E:198:THR:CG2	2.79	0.46
1:H:249:ILE:HD13	1:H:327:LEU:HD13	1.97	0.46
1:E:297:VAL:HG12	1:G:295:LYS:HE2	1.97	0.45
1:B:236:CYS:HA	1:B:282:MET:O	2.17	0.45
1:E:181:ASN:ND2	1:E:183:ILE:HD11	2.32	0.45
1:E:246:MET:CE	1:E:334:VAL:HG11	2.46	0.45
1:G:219:LYS:HB2	1:G:220:PRO:HD3	1.97	0.45
1:H:259:ILE:HD13	1:H:259:ILE:N	2.31	0.45
1:D:177:ASP:OD1	1:D:179:ARG:HB2	2.16	0.45
1:G:130:VAL:O	1:G:153:ILE:HA	2.16	0.45
1:D:237:THR:OG1	1:D:282:MET:HB2	2.17	0.45
1:E:133:GLY:HA2	1:E:153:ILE:HD11	1.97	0.45
1:H:82:VAL:HG11	1:H:163:VAL:HG21	1.99	0.45
1:A:49:PRO:HD3	1:B:47:ILE:HD13	1.98	0.45
1:H:214:LYS:HE3	7:H:606:HOH:O	2.17	0.44
1:C:139:LEU:HD11	1:C:153:ILE:HD13	1.99	0.44
1:E:58[A]:MET:SD	1:E:210:ILE:CG1	2.95	0.44
1:G:201:ALA:HA	1:G:234:VAL:O	2.18	0.44
1:C:155:GLU:O	1:C:184:ILE:HA	2.18	0.44
1:D:124:ASN:N	1:D:125:PRO:CD	2.81	0.44
1:E:195:ALA:O	1:E:198:THR:OG1	2.26	0.44
1:E:295:LYS:HE2	1:G:297:VAL:HG12	1.99	0.44
1:E:297:VAL:HG23	1:E:298:SER:HB3	1.99	0.43
1:C:182:LEU:HD21	1:C:184:ILE:HD11	1.99	0.43
1:E:135:ASP:HA	1:E:164:ALA:HB1	1.99	0.43
1:G:211:GLY:HA3	1:G:212:PRO:HD3	1.92	0.43
1:A:208:ASP:O	1:A:210:ILE:N	2.50	0.43
1:C:240:GLU:HB3	1:C:245:HIS:ND1	2.34	0.43
1:B:332:LYS:O	1:B:333:LYS:C	2.56	0.43
1:C:236:CYS:HA	1:C:282:MET:O	2.19	0.43
1:A:263:SER:O	1:A:284:CYS:HA	2.18	0.43
1:E:138:VAL:CB	6:E:402:EDO:H21	2.49	0.43
1:F:237:THR:O	1:F:281:PHE:HA	2.18	0.43
1:E:79:TYR:CE1	1:E:156:ILE:HD13	2.54	0.43
1:H:263:SER:O	1:H:284:CYS:HA	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:55:ILE:HD13	1:B:63:ALA:HB2	2.01	0.42
1:C:188:VAL:HB	7:C:501:HOH:O	2.19	0.42
1:D:176:GLU:O	1:D:177:ASP:C	2.57	0.42
1:D:242:LEU:HD21	1:D:266:TYR:CE1	2.53	0.42
1:D:133:GLY:CA	1:D:153:ILE:HD11	2.47	0.42
1:A:127:LYS:HE3	1:A:198:THR:CG2	2.49	0.42
1:A:235:VAL:CG1	1:A:284:CYS:HB2	2.48	0.42
1:E:261:LYS:HB2	1:E:287:GLU:HB2	2.02	0.42
1:H:238:GLN:HG3	1:H:279:ILE:CG1	2.50	0.42
1:D:56:SER:HB3	1:D:59:TRP:CE2	2.55	0.42
1:F:265:ASN:HD22	1:F:293:PHE:HD2	1.67	0.42
1:F:219:LYS:N	1:F:220:PRO:CD	2.83	0.42
1:F:265:ASN:ND2	7:F:514:HOH:O	2.53	0.42
1:G:44:MET:HE1	1:G:68:VAL:HG21	2.02	0.42
1:H:201:ALA:HA	1:H:234:VAL:O	2.20	0.42
1:A:336:ASP:O	1:A:337:SER:CB	2.67	0.42
1:B:237:THR:O	1:B:281:PHE:HA	2.20	0.42
1:G:208:ASP:HB3	1:G:209:PRO:HD2	2.02	0.42
1:B:58:MET:SD	1:B:208:ASP:HB3	2.60	0.42
1:A:67:LYS:HE3	7:A:572:HOH:O	2.20	0.42
1:B:92:LYS:NZ	1:B:167:TYR:O	2.40	0.42
1:C:161:VAL:HG12	1:C:165:LYS:CE	2.49	0.41
1:D:204:VAL:CG2	1:D:237:THR:HG22	2.50	0.41
1:E:93:VAL:HG22	1:E:103:THR:HG22	2.01	0.41
1:E:138:VAL:HG23	6:E:402:EDO:H21	2.01	0.41
1:E:155:GLU:O	1:E:184:ILE:HA	2.19	0.41
1:F:210:ILE:HG22	7:F:516:HOH:O	2.21	0.41
1:C:214:LYS:NZ	1:C:218:GLU:OE2	2.54	0.41
1:G:127:LYS:HE3	1:G:150:GLN:HE22	1.76	0.41
1:F:249:ILE:O	1:F:253:VAL:HG23	2.20	0.41
1:A:153:ILE:C	1:A:153:ILE:HD13	2.41	0.41
1:E:127:LYS:HZ3	1:E:198:THR:CG2	2.33	0.41
1:H:227:ARG:NE	7:H:520:HOH:O	2.54	0.41
1:C:268:TRP:CZ2	1:C:328:PRO:HD3	2.56	0.41
1:D:263:SER:O	1:D:284:CYS:HA	2.21	0.41
1:D:168:PHE:N	1:D:169:PRO:CD	2.84	0.41
1:H:73:PHE:HB2	1:H:167:TYR:CZ	2.56	0.41
1:H:174:GLY:HA2	7:H:609:HOH:O	2.21	0.41
1:B:295:LYS:HE2	1:D:297:VAL:HG12	2.02	0.41
1:E:154[B]:CYS:SG	1:E:187:GLY:HA2	2.61	0.41
1:F:286:SER:HA	7:F:502:HOH:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:52:PHE:O	1:A:65:SER:HA	2.21	0.40
1:B:297:VAL:HG12	1:D:295:LYS:HE2	2.02	0.40
1:E:263:SER:O	1:E:284:CYS:HA	2.21	0.40
1:G:253:VAL:O	1:G:257:ARG:HG3	2.20	0.40
1:D:54:GLU:C	1:D:55:ILE:HD12	2.42	0.40
1:F:266:TYR:CZ	1:F:280:GLY:HA3	2.56	0.40
1:E:161:VAL:HG12	1:E:165:LYS:HD2	2.02	0.40
1:F:208:ASP:HB3	1:F:209:PRO:HD2	2.04	0.40
1:E:127:LYS:NZ	1:E:198:THR:HG23	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	279/305 (92%)	254 (91%)	25 (9%)	0	100	100
1	B	284/305 (93%)	270 (95%)	14 (5%)	0	100	100
1	C	271/305 (89%)	259 (96%)	12 (4%)	0	100	100
1	D	269/305 (88%)	257 (96%)	12 (4%)	0	100	100
1	E	280/305 (92%)	273 (98%)	7 (2%)	0	100	100
1	F	285/305 (93%)	270 (95%)	15 (5%)	0	100	100
1	G	284/305 (93%)	270 (95%)	14 (5%)	0	100	100
1	H	278/305 (91%)	266 (96%)	12 (4%)	0	100	100
All	All	2230/2440 (91%)	2119 (95%)	111 (5%)	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	247/264 (94%)	241 (98%)	6 (2%)	49	51
1	B	252/264 (96%)	247 (98%)	5 (2%)	55	58
1	C	239/264 (90%)	235 (98%)	4 (2%)	60	65
1	D	237/264 (90%)	231 (98%)	6 (2%)	47	49
1	E	245/264 (93%)	241 (98%)	4 (2%)	62	67
1	F	250/264 (95%)	247 (99%)	3 (1%)	71	76
1	G	249/264 (94%)	246 (99%)	3 (1%)	71	76
1	H	243/264 (92%)	239 (98%)	4 (2%)	62	67
All	All	1962/2112 (93%)	1927 (98%)	35 (2%)	59	63

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	153	ILE
1	A	238	GLN
1	A	268	TRP
1	A	279	ILE
1	A	311	CYS
1	A	320	ILE
1	B	166	GLN
1	B	238	GLN
1	B	254	SER
1	B	268	TRP
1	B	305	SER
1	C	123	SER
1	C	224	SER
1	C	238	GLN
1	C	268	TRP
1	D	191	LEU
1	D	238	GLN
1	D	268	TRP
1	D	269	THR

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Mol	Chain	Res	Type
1	D	311	CYS
1	D	336	ASP
1	E	156	ILE
1	E	191	LEU
1	E	238	GLN
1	E	268	TRP
1	F	42	SER
1	F	238	GLN
1	F	268	TRP
1	G	67	LYS
1	G	238	GLN
1	G	268	TRP
1	H	78	ASP
1	H	101	GLN
1	H	207	SER
1	H	269	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	226	ASN
1	B	150	GLN
1	B	170	ASN
1	B	181	ASN
1	C	170	ASN
1	C	265	ASN
1	D	74	GLN
1	D	265	ASN
1	E	265	ASN
1	F	86	GLN
1	F	170	ASN
1	F	265	ASN
1	G	170	ASN
1	G	265	ASN
1	H	170	ASN
1	H	265	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

24 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	MLI	D	401	-	6,6,6	1.77	2 (33%)	7,7,7	1.11	0
3	PEG	A	402	-	6,6,6	0.14	0	5,5,5	0.13	0
3	PEG	E	404	-	6,6,6	0.47	0	5,5,5	0.40	0
3	PEG	D	404	-	6,6,6	0.22	0	5,5,5	0.15	0
3	PEG	B	401	-	6,6,6	0.23	0	5,5,5	0.12	0
3	PEG	D	403	-	6,6,6	0.26	0	5,5,5	0.18	0
4	FMT	E	406[B]	-	2,2,2	0.05	0	1,1,1	0.15	0
4	FMT	E	406[A]	-	2,2,2	0.57	0	1,1,1	0.14	0
2	ACT	H	404	-	3,3,3	1.00	0	3,3,3	0.80	0
3	PEG	F	402	-	6,6,6	0.24	0	5,5,5	0.18	0
2	ACT	H	402	-	3,3,3	1.07	0	3,3,3	0.75	0
2	ACT	F	401	-	3,3,3	1.06	0	3,3,3	0.79	0
4	FMT	E	405	-	2,2,2	0.19	0	1,1,1	0.20	0
5	MLI	H	401	-	6,6,6	1.10	0	7,7,7	1.34	1 (14%)
6	EDO	E	402	-	3,3,3	0.08	0	2,2,2	0.20	0
3	PEG	C	401	-	6,6,6	0.31	0	5,5,5	0.21	0
5	MLI	E	403	-	6,6,6	1.50	0	7,7,7	1.14	0
4	FMT	B	402	-	2,2,2	0.28	0	1,1,1	0.21	0
3	PEG	D	402	-	6,6,6	0.21	0	5,5,5	0.18	0
3	PEG	F	403	-	6,6,6	0.21	0	5,5,5	0.30	0
2	ACT	H	403	-	3,3,3	1.03	0	3,3,3	0.82	0
5	MLI	E	401	-	6,6,6	1.87	2 (33%)	7,7,7	1.31	1 (14%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	PEG	G	401	-	6,6,6	0.45	0	5,5,5	0.29	0
2	ACT	A	401	-	3,3,3	0.99	0	3,3,3	0.84	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
5	MLI	D	401	-	-	4/4/4/4	-
3	PEG	A	402	-	-	2/4/4/4	-
5	MLI	H	401	-	-	4/4/4/4	-
3	PEG	E	404	-	-	0/4/4/4	-
3	PEG	D	402	-	-	3/4/4/4	-
3	PEG	F	403	-	-	1/4/4/4	-
3	PEG	D	404	-	-	3/4/4/4	-
5	MLI	E	401	-	-	2/4/4/4	-
3	PEG	B	401	-	-	2/4/4/4	-
3	PEG	G	401	-	-	0/4/4/4	-
6	EDO	E	402	-	-	0/1/1/1	-
3	PEG	D	403	-	-	3/4/4/4	-
3	PEG	C	401	-	-	2/4/4/4	-
3	PEG	F	402	-	-	1/4/4/4	-
5	MLI	E	403	-	-	4/4/4/4	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	E	401	MLI	O6-C2	3.69	1.34	1.22
5	D	401	MLI	O6-C2	3.11	1.32	1.22
5	D	401	MLI	O9-C3	-2.83	1.21	1.30
5	E	401	MLI	O8-C3	2.05	1.28	1.22

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	401	MLI	C3-C1-C2	2.50	121.77	112.95
5	H	401	MLI	O6-C2-C1	-2.14	116.02	122.11

There are no chirality outliers.

All (31) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	402	PEG	O1-C1-C2-O2
3	C	401	PEG	O2-C3-C4-O4
3	F	403	PEG	O1-C1-C2-O2
3	B	401	PEG	O2-C3-C4-O4
3	D	403	PEG	O1-C1-C2-O2
3	A	402	PEG	O1-C1-C2-O2
3	D	404	PEG	O1-C1-C2-O2
5	D	401	MLI	C2-C1-C3-O9
5	E	401	MLI	C3-C1-C2-O6
3	B	401	PEG	C4-C3-O2-C2
5	D	401	MLI	C2-C1-C3-O8
3	A	402	PEG	O2-C3-C4-O4
5	E	403	MLI	C3-C1-C2-O6
5	E	403	MLI	C3-C1-C2-O7
3	D	402	PEG	C1-C2-O2-C3
5	E	403	MLI	C2-C1-C3-O8
3	D	404	PEG	C1-C2-O2-C3
5	E	401	MLI	C3-C1-C2-O7
5	H	401	MLI	C2-C1-C3-O8
5	H	401	MLI	C2-C1-C3-O9
3	D	403	PEG	C4-C3-O2-C2
5	E	403	MLI	C2-C1-C3-O9
3	D	404	PEG	C4-C3-O2-C2
3	F	402	PEG	O1-C1-C2-O2
5	H	401	MLI	C3-C1-C2-O7
5	D	401	MLI	C3-C1-C2-O6
3	C	401	PEG	O1-C1-C2-O2
3	D	403	PEG	O2-C3-C4-O4
5	D	401	MLI	C3-C1-C2-O7
5	H	401	MLI	C3-C1-C2-O6
3	D	402	PEG	C4-C3-O2-C2

There are no ring outliers.

6 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	402	PEG	1	0
3	E	404	PEG	1	0
3	F	402	PEG	1	0
6	E	402	EDO	17	0
3	F	403	PEG	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	G	401	PEG	1	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, 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	284/305 (93%)	-0.03	3 (1%) 80 79	24, 42, 64, 90	0
1	B	290/305 (95%)	-0.18	6 (2%) 63 62	21, 38, 64, 82	0
1	C	277/305 (90%)	-0.02	7 (2%) 57 56	21, 42, 71, 87	0
1	D	275/305 (90%)	0.19	11 (4%) 38 37	25, 47, 83, 109	0
1	E	281/305 (92%)	-0.38	1 (0%) 92 92	11, 20, 43, 69	0
1	F	287/305 (94%)	-0.37	1 (0%) 94 93	11, 27, 57, 89	0
1	G	288/305 (94%)	-0.29	6 (2%) 63 62	13, 32, 56, 103	0
1	H	281/305 (92%)	-0.23	4 (1%) 75 74	15, 35, 59, 80	0
All	All	2263/2440 (92%)	-0.17	39 (1%) 70 68	11, 36, 69, 109	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	299	LEU	9.9
1	G	337	SER	5.9
1	A	337	SER	5.8
1	C	337	SER	4.3
1	G	211	GLY	3.8
1	G	299	LEU	3.8
1	D	300	ILE	3.7
1	D	70	LYS	3.6
1	B	46	SER	3.5
1	A	73	PHE	3.1
1	D	79	TYR	3.1
1	H	333	LYS	3.0
1	G	311	CYS	3.0
1	H	44	MET	2.9
1	D	78	ASP	2.9
1	B	47	ILE	2.9

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Mol	Chain	Res	Type	RSRZ
1	D	71	ILE	2.9
1	B	299	LEU	2.8
1	F	212	PRO	2.7
1	D	298	SER	2.7
1	C	50	GLY	2.7
1	G	300	ILE	2.7
1	B	298	SER	2.6
1	C	254	SER	2.5
1	C	223	GLU	2.5
1	D	73	PHE	2.4
1	D	173	VAL	2.4
1	B	215	GLU	2.3
1	D	174	GLY	2.3
1	G	298	SER	2.3
1	C	333	LYS	2.2
1	C	336	ASP	2.2
1	C	83	ILE	2.2
1	H	248	ILE	2.2
1	D	82	VAL	2.1
1	B	217	PHE	2.1
1	E	46	SER	2.0
1	A	210	ILE	2.0
1	H	207	SER	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 monosaccharides in this entry.

6.4 Ligands [i](#)

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

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	ACT	H	402	4/4	0.71	0.21	48,49,52,54	0
5	MLI	D	401	7/7	0.81	0.25	41,42,43,44	7
3	PEG	C	401	7/7	0.82	0.18	50,53,56,57	0
3	PEG	D	403	7/7	0.85	0.12	46,53,56,57	0
4	FMT	B	402	3/3	0.86	0.12	67,67,68,69	0
4	FMT	E	405	3/3	0.87	0.15	49,49,51,54	0
3	PEG	D	402	7/7	0.87	0.16	55,57,61,63	0
3	PEG	A	402	7/7	0.88	0.17	48,56,57,59	0
5	MLI	E	401	7/7	0.89	0.23	26,28,30,32	7
2	ACT	H	404	4/4	0.91	0.12	25,32,33,38	4
6	EDO	E	402	4/4	0.91	0.25	21,21,21,23	4
3	PEG	F	403	7/7	0.92	0.21	36,38,43,46	7
3	PEG	D	404	7/7	0.92	0.10	25,27,37,39	7
2	ACT	F	401	4/4	0.93	0.21	21,24,25,30	4
5	MLI	E	403	7/7	0.93	0.09	27,35,38,39	7
5	MLI	H	401	7/7	0.93	0.20	32,37,40,43	7
3	PEG	F	402	7/7	0.93	0.11	28,30,37,39	0
2	ACT	H	403	4/4	0.94	0.21	26,26,28,32	4
3	PEG	B	401	7/7	0.94	0.13	44,47,51,51	0
2	ACT	A	401	4/4	0.94	0.34	30,30,33,36	4
4	FMT	E	406[B]	3/3	0.95	0.26	13,13,14,15	3
4	FMT	E	406[A]	3/3	0.95	0.26	7,7,7,7	3
3	PEG	G	401	7/7	0.96	0.09	17,23,25,26	0
3	PEG	E	404	7/7	0.98	0.08	12,13,16,17	0

6.5 Other polymers [i](#)

There are no such residues in this entry.