



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 02:52 PM EDT

PDB ID : 6MIT
Title : LptBFGC from *Enterobacter cloacae*
Authors : Owens, T.W.; Kahne, D.; Kruse, A.C.
Deposited on : 2018-09-20
Resolution : 3.20 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36.2
buster-report : 1.1.7 (2018)
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) : 2.36.2

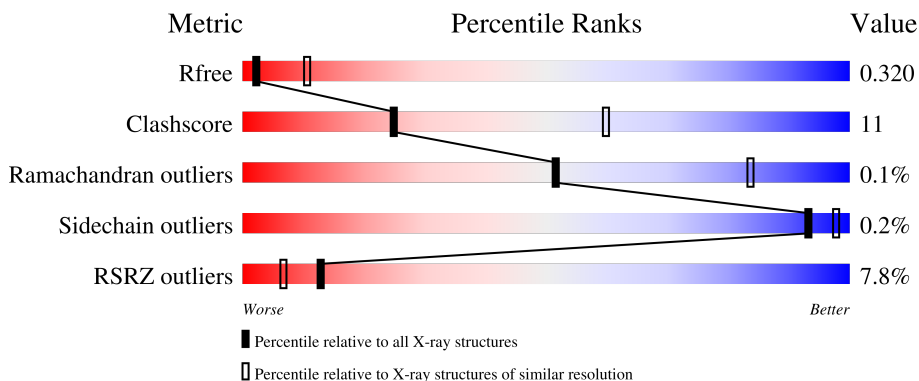
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.20 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1133 (3.20-3.20)
Clashscore	141614	1253 (3.20-3.20)
Ramachandran outliers	138981	1234 (3.20-3.20)
Sidechain outliers	138945	1233 (3.20-3.20)
RSRZ outliers	127900	1095 (3.20-3.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	241	 5% 78% 22%
1	B	241	 8% 76% 24%
1	D	241	 2% 69% 31%
1	E	241	 12% 77% 22% .
2	C	195	 8% 67% 23% 10%

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Mol	Chain	Length	Quality of chain
2	H	195	
3	F	366	
3	I	366	
4	G	360	
4	J	360	

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
5	SO4	G	403	-	-	X	-
6	CL	A	303	-	-	-	X

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 19733 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 Lipopolysaccharide export system ATP-binding protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	240	Total 1802	C 1134	N 323	O 341	S 4	0	0	0
1	B	240	Total 1792	C 1128	N 319	O 341	S 4	0	0	0
1	D	240	Total 1814	C 1144	N 326	O 340	S 4	0	0	0
1	E	238	Total 1736	C 1091	N 304	O 337	S 4	0	0	0

- Molecule 2 is a protein called Lipopolysaccharide export system protein LptC.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	175	Total 1336	C 846	N 224	O 263	S 3	0	0	0
2	H	175	Total 1324	C 839	N 223	O 259	S 3	0	0	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	192	LEU	-	expression tag	UNP A0A0H3CU18
C	193	VAL	-	expression tag	UNP A0A0H3CU18
C	194	PRO	-	expression tag	UNP A0A0H3CU18
C	195	ARG	-	expression tag	UNP A0A0H3CU18
H	192	LEU	-	expression tag	UNP A0A0H3CU18
H	193	VAL	-	expression tag	UNP A0A0H3CU18
H	194	PRO	-	expression tag	UNP A0A0H3CU18
H	195	ARG	-	expression tag	UNP A0A0H3CU18

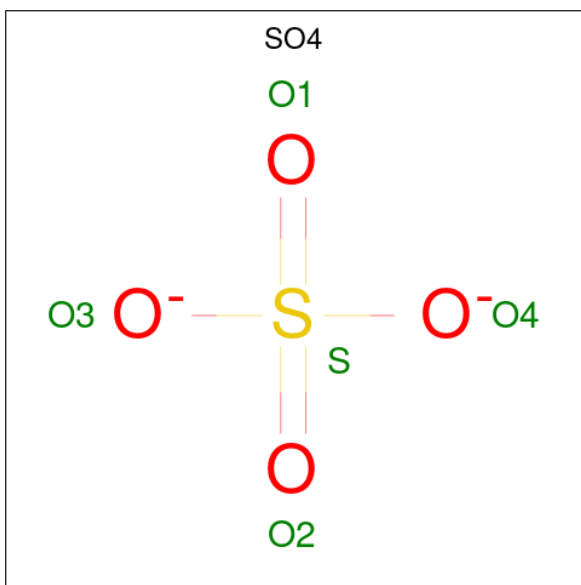
- Molecule 3 is a protein called LPS export ABC transporter permease LptF.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	F	350	Total 2581	C 1679	N 425	O 460	S 17	0	0	0
3	I	335	Total 2435	C 1591	N 394	O 434	S 16	0	0	0

- Molecule 4 is a protein called Lipopolysaccharide export system permease protein LptG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	G	355	Total 2619	C 1708	N 426	O 468	S 17	0	0	0
4	J	309	Total 2186	C 1427	N 355	O 389	S 15	0	0	0

- Molecule 5 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



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

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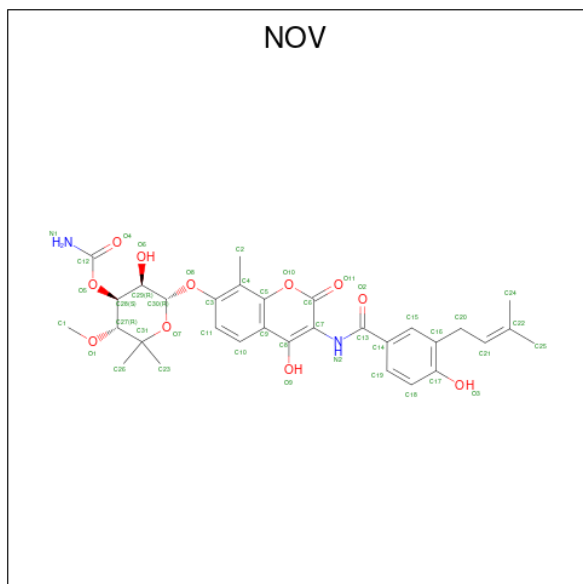
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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	G	1	Total	O	S	0	0
			5	4	1		
5	D	1	Total	O	S	0	0
			5	4	1		
5	E	1	Total	O	S	0	0
			5	4	1		
5	J	1	Total	O	S	0	0
			5	4	1		
5	J	1	Total	O	S	0	0
			5	4	1		

- Molecule 6 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	1	Total	Cl	0	0
			1	1		

- Molecule 7 is NOVOBIOCIN (three-letter code: NOV) (formula: C₃₁H₃₆N₂O₁₁).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	E	1	Total	C	N	O	0	0
			44	31	2	11		

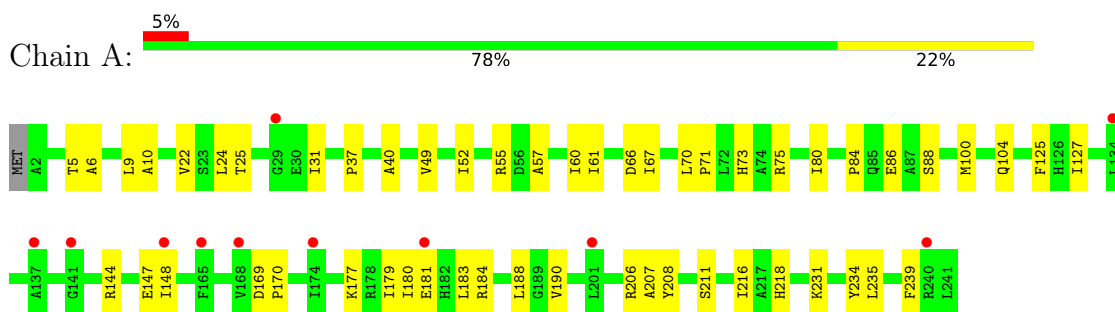
- Molecule 8 is water.

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

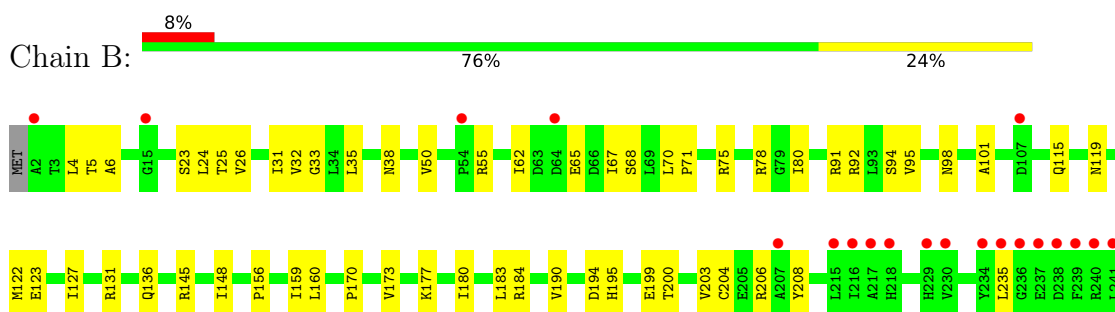
3 Residue-property plots [i](#)

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.

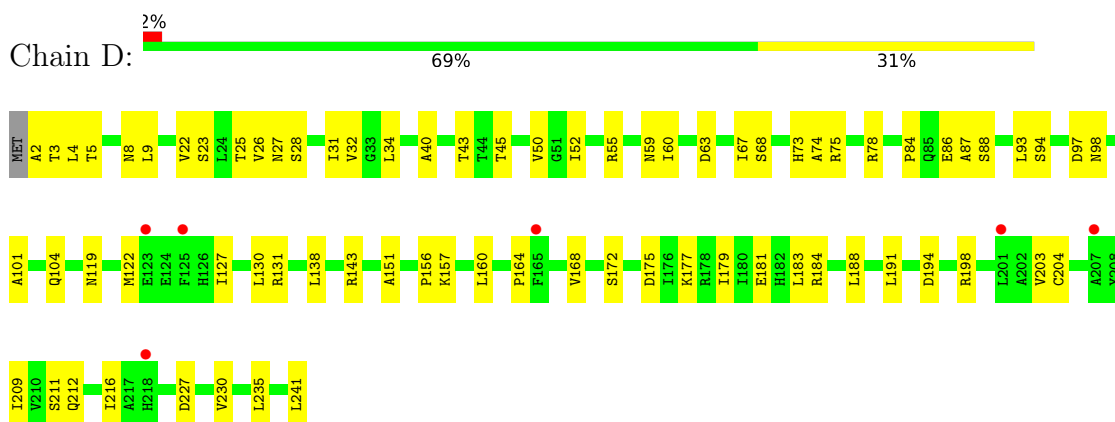
- Molecule 1: Lipopolysaccharide export system ATP-binding protein



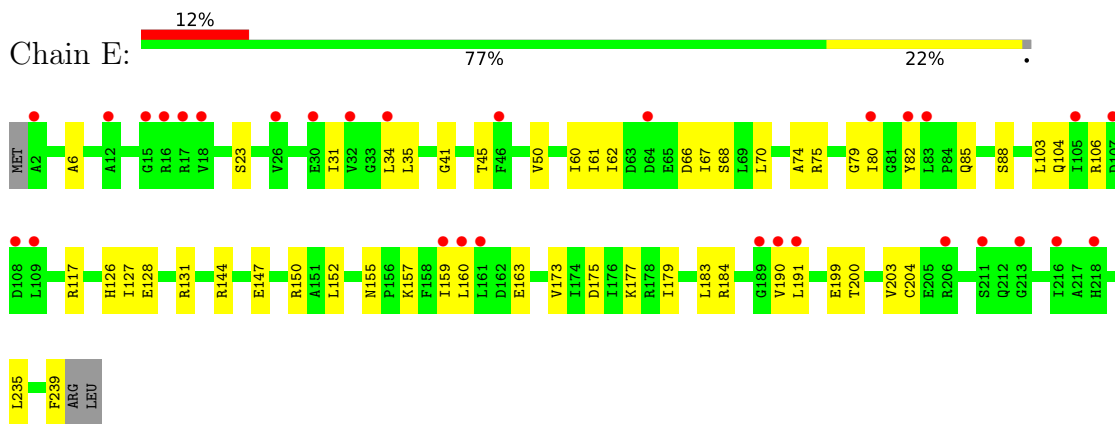
- Molecule 1: Lipopolysaccharide export system ATP-binding protein



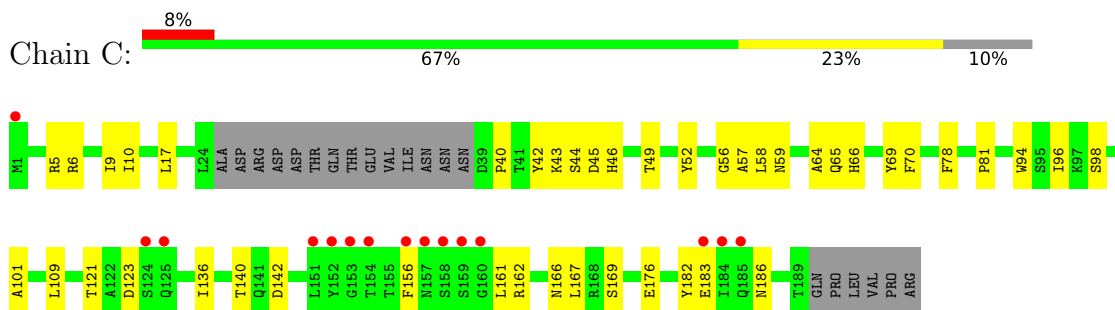
- Molecule 1: Lipopolysaccharide export system ATP-binding protein



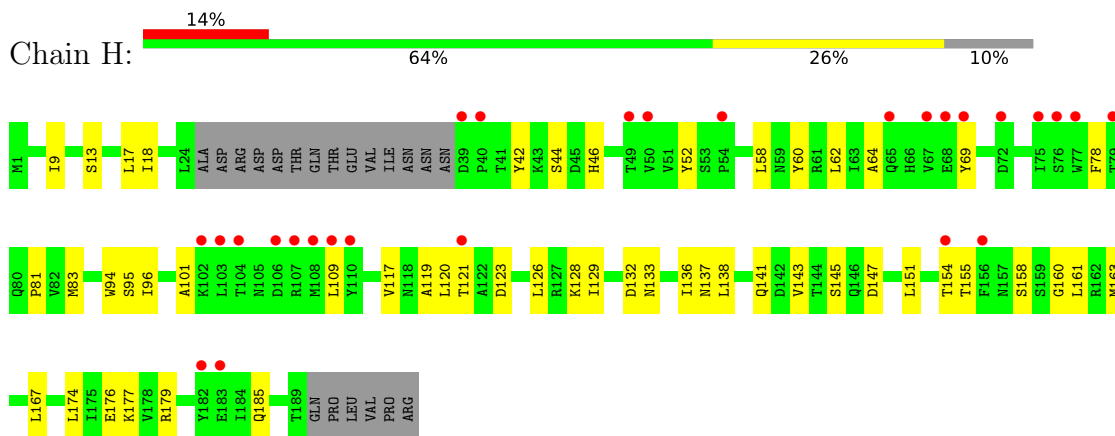
- Molecule 1: Lipopolysaccharide export system ATP-binding protein



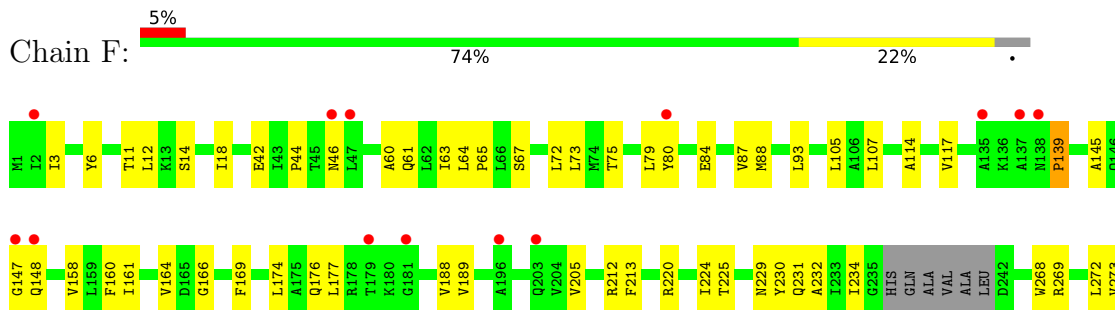
• Molecule 2: Lipopolysaccharide export system protein LptC



• Molecule 2: Lipopolysaccharide export system protein LptC

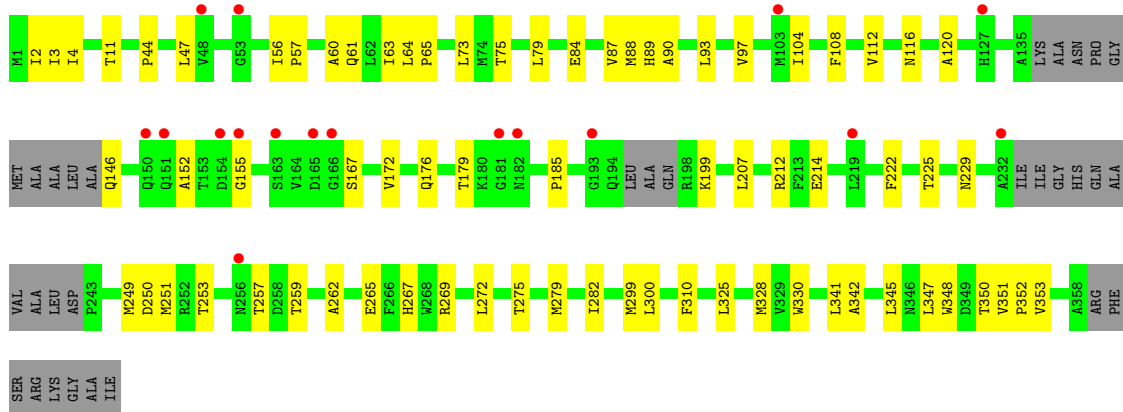


• Molecule 3: LPS export ABC transporter permease LptF

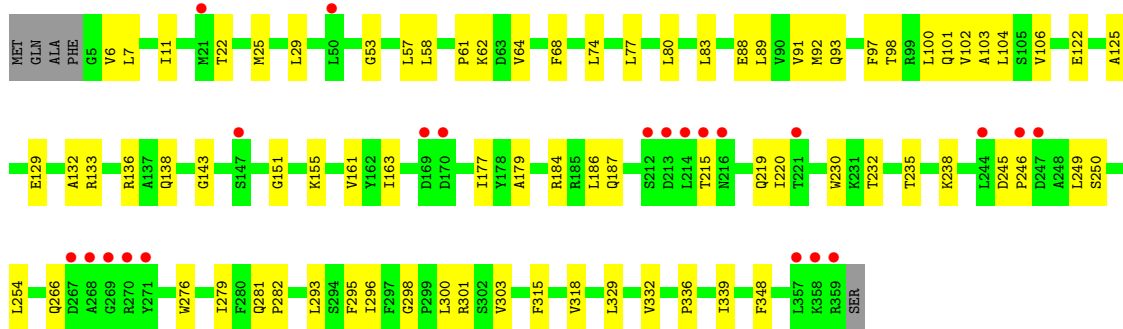
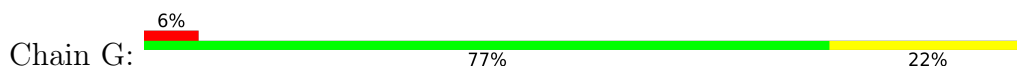




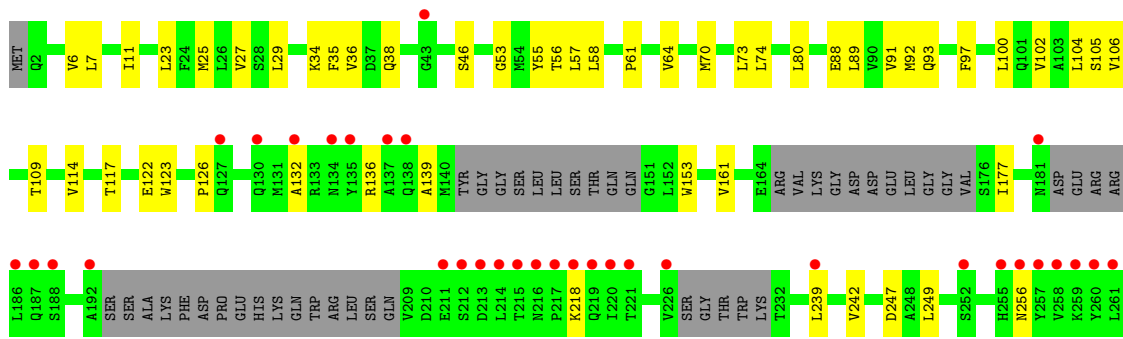
• Molecule 3: LPS export ABC transporter permease LptF

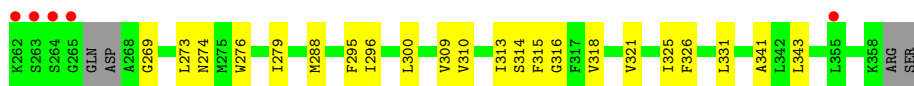


• Molecule 4: Lipopolysaccharide export system permease protein LptG



• Molecule 4: Lipopolysaccharide export system permease protein LptG





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 2 21	Depositor
Cell constants a, b, c, α , β , γ	116.43Å 156.98Å 295.52Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.33 – 3.20 49.33 – 3.20	Depositor EDS
% Data completeness (in resolution range)	99.3 (49.33-3.20) 99.3 (49.33-3.20)	Depositor EDS
R_{merge}	0.48	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.08 (at 3.19Å)	Xtrriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.279 , 0.320 0.279 , 0.320	Depositor DCC
R_{free} test set	1641 reflections (1.83%)	wwPDB-VP
Wilson B-factor (Å ²)	111.8	Xtrriage
Anisotropy	0.322	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 85.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.26$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.88	EDS
Total number of atoms	19733	wwPDB-VP
Average B, all atoms (Å ²)	136.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.67% 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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CL, SO4, NOV

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	0.39	0/1828	0.58	0/2483
1	B	0.38	0/1818	0.61	0/2470
1	D	0.42	0/1840	0.61	0/2496
1	E	0.33	0/1761	0.52	0/2400
2	C	0.45	0/1359	0.65	0/1857
2	H	0.39	0/1346	0.59	0/1841
3	F	0.42	0/2627	0.61	0/3586
3	I	0.36	0/2476	0.56	0/3381
4	G	0.36	0/2675	0.57	0/3642
4	J	0.37	0/2224	0.53	0/3026
All	All	0.38	0/19954	0.58	0/27182

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	1802	0	1771	40	0
1	B	1792	0	1743	42	0
1	D	1814	0	1809	51	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	1736	0	1647	39	0
2	C	1336	0	1269	36	0
2	H	1324	0	1258	37	0
3	F	2581	0	2574	62	0
3	I	2435	0	2409	48	0
4	G	2619	0	2602	59	0
4	J	2186	0	2118	49	0
5	A	10	0	0	0	0
5	B	5	0	0	0	0
5	D	5	0	0	1	0
5	E	5	0	0	0	0
5	F	5	0	0	0	0
5	G	15	0	0	2	0
5	J	10	0	0	1	0
6	A	1	0	0	0	0
7	E	44	0	34	3	0
8	A	3	0	0	0	0
8	B	2	0	0	0	0
8	D	2	0	0	0	0
8	E	1	0	0	0	0
All	All	19733	0	19234	422	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 11.

All (422) 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)
4:G:136:ARG:NH1	5:G:403:SO4:O3	2.06	0.88
2:H:58:LEU:HD23	4:J:218:LYS:HB3	1.52	0.87
1:B:94:SER:O	1:B:98:ASN:ND2	2.13	0.81
2:H:9:ILE:HD13	3:I:300:LEU:HD23	1.63	0.79
1:D:181:GLU:OE1	1:D:184:ARG:NH2	2.19	0.75
2:H:42:TYR:HB3	2:H:69:TYR:HB3	1.68	0.75
4:J:23:LEU:O	4:J:27:VAL:HG23	1.87	0.74
1:B:31:ILE:HG12	1:B:184:ARG:HD3	1.69	0.73
1:E:152:LEU:HD21	1:E:183:LEU:HD11	1.71	0.73
2:C:46:HIS:HA	2:C:64:ALA:O	1.88	0.73
1:D:2:ALA:N	1:D:63:ASP:OD1	2.23	0.71
1:D:67:ILE:HD12	1:D:75:ARG:HG3	1.72	0.71
4:J:122:GLU:HG3	4:J:123:TRP:CD1	2.27	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:138:GLN:HA	4:G:143:GLY:H	1.58	0.69
2:H:78:PHE:HB2	2:H:101:ALA:HB3	1.74	0.69
1:B:91:ARG:HB3	1:B:136:GLN:HB3	1.75	0.69
4:G:161:VAL:HG12	4:G:177:ILE:HG12	1.73	0.69
1:E:150:ARG:HH22	3:I:87:VAL:HG13	1.58	0.69
4:G:249:LEU:HD21	4:G:254:LEU:HD13	1.75	0.68
2:C:45:ASP:HA	2:C:66:HIS:HA	1.75	0.68
4:G:11:ILE:HD13	4:G:102:VAL:HG13	1.75	0.68
3:I:93:LEU:HD21	3:I:97:VAL:HG21	1.76	0.68
3:F:158:VAL:HG23	3:F:177:LEU:HD21	1.76	0.67
1:D:73:HIS:NE2	5:J:402:SO4:O3	2.26	0.67
1:A:144:ARG:NH1	1:A:147:GLU:OE1	2.28	0.66
2:C:140:THR:O	2:C:166:ASN:ND2	2.28	0.66
2:C:42:TYR:CD1	2:C:69:TYR:HB3	2.31	0.66
4:G:133:ARG:NH1	5:G:403:SO4:O1	2.29	0.66
3:I:282:ILE:HG22	3:I:342:ALA:HB2	1.77	0.65
4:J:74:LEU:HD11	4:J:309:VAL:HG23	1.77	0.65
4:G:61:PRO:HB2	4:G:125:ALA:HA	1.78	0.65
1:B:95:VAL:HG11	1:B:127:ILE:HG21	1.79	0.64
1:B:50:VAL:HG22	1:B:160:LEU:HD12	1.78	0.64
4:J:35:PHE:HB2	4:J:56:THR:HG21	1.80	0.64
4:G:80:LEU:HB2	4:G:296:ILE:HD13	1.80	0.64
3:I:172:VAL:HG11	3:I:207:LEU:HD11	1.79	0.64
1:D:104:GLN:HE22	4:J:6:VAL:HG23	1.63	0.64
1:D:88:SER:HB2	4:J:91:VAL:HG21	1.80	0.63
1:A:6:ALA:HB3	1:A:24:LEU:HD23	1.79	0.63
2:C:52:TYR:CD2	4:G:220:ILE:HD11	2.34	0.63
3:I:275:THR:HG21	3:I:310:PHE:CE1	2.34	0.63
1:A:25:THR:O	1:A:206:ARG:NH1	2.31	0.63
1:B:206:ARG:NH2	1:B:208:TYR:OH	2.32	0.63
4:G:98:THR:HG23	4:G:101:GLN:H	1.65	0.62
1:B:70:LEU:CD1	1:B:75:ARG:HG2	2.30	0.62
1:D:55:ARG:HE	1:D:68:SER:HB3	1.65	0.62
1:E:177:LYS:HG2	1:E:203:VAL:HB	1.80	0.61
1:D:94:SER:O	1:D:98:ASN:ND2	2.28	0.61
4:J:70:MET:HG3	4:J:316:GLY:HA3	1.82	0.61
2:H:133:ASN:ND2	2:H:147:ASP:OD2	2.34	0.61
1:E:85:GLN:HB2	1:E:163:GLU:HB2	1.82	0.61
2:H:145:SER:HB3	2:H:163:MET:HG2	1.83	0.60
1:A:100:MET:O	1:A:104:GLN:HG3	2.00	0.60
1:A:231:LYS:HD2	1:A:235:LEU:HD23	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:62:LYS:HD2	4:G:129:GLU:OE1	2.00	0.60
1:D:177:LYS:HG2	1:D:203:VAL:HG11	1.82	0.60
3:I:212:ARG:NH2	3:I:214:GLU:OE2	2.34	0.60
1:A:67:ILE:HD12	1:A:75:ARG:HG3	1.83	0.60
4:J:38:GLN:OE1	4:J:136:ARG:NH1	2.34	0.60
2:C:78:PHE:HB2	2:C:101:ALA:HB3	1.83	0.59
3:F:145:ALA:HB1	3:F:169:PHE:CE1	2.37	0.59
1:A:181:GLU:OE1	1:A:184:ARG:NH2	2.34	0.59
4:G:329:LEU:HD13	4:G:332:VAL:HG21	1.84	0.59
2:C:121:THR:HG22	2:C:123:ASP:H	1.68	0.59
2:C:42:TYR:HD1	2:C:69:TYR:HB3	1.68	0.59
1:E:50:VAL:HG22	1:E:160:LEU:HD12	1.85	0.59
4:J:269:GLY:HA3	4:J:331:LEU:HD11	1.84	0.59
3:F:60:ALA:HA	3:F:63:ILE:HG12	1.84	0.58
1:B:65:GLU:O	1:B:67:ILE:HG13	2.03	0.58
3:F:213:PHE:HD1	3:F:224:ILE:HD12	1.67	0.58
1:E:35:LEU:HD21	1:E:200:THR:HG21	1.84	0.58
2:H:126:LEU:HD21	2:H:129:ILE:HD11	1.84	0.58
2:H:13:SER:O	2:H:17:LEU:HG	2.03	0.58
3:I:249:MET:HB3	3:I:253:THR:HB	1.85	0.58
2:H:60:TYR:CZ	2:H:138:LEU:HD11	2.38	0.58
2:H:95:SER:HB2	2:H:120:LEU:HD11	1.86	0.57
2:C:81:PRO:HG2	2:C:98:SER:HB3	1.86	0.57
1:B:31:ILE:HD11	1:B:184:ARG:HB2	1.85	0.57
1:B:55:ARG:HE	1:B:68:SER:HB3	1.69	0.57
3:I:89:HIS:HA	3:I:93:LEU:O	2.03	0.57
1:B:123:GLU:OE1	1:D:212:GLN:NE2	2.38	0.57
1:A:208:TYR:HD2	1:A:216:ILE:HD12	1.70	0.57
4:G:100:LEU:O	4:G:104:LEU:HG	2.04	0.57
4:J:161:VAL:HG13	4:J:177:ILE:HG13	1.86	0.57
3:I:44:PRO:HD2	3:I:47:LEU:HD23	1.86	0.57
3:F:278:MET:SD	3:F:338:TYR:HB3	2.45	0.56
4:J:80:LEU:HB3	4:J:296:ILE:HG21	1.87	0.56
1:D:87:ALA:HB2	1:D:143:ARG:HH11	1.71	0.56
1:D:60:ILE:N	1:D:68:SER:OG	2.27	0.56
1:D:211:SER:HB3	1:D:216:ILE:HD11	1.86	0.56
4:J:58:LEU:HB2	4:J:132:ALA:HB2	1.87	0.56
2:C:42:TYR:HB3	2:C:69:TYR:HB3	1.87	0.56
2:C:9:ILE:HD13	3:F:300:LEU:HD23	1.85	0.56
1:E:150:ARG:HH22	3:I:87:VAL:CG1	2.18	0.56
2:H:154:THR:HG22	2:H:155:THR:HG23	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:42:GLU:HA	3:F:139:PRO:HB3	1.88	0.56
2:C:81:PRO:HG3	2:C:101:ALA:HB2	1.87	0.55
1:A:88:SER:HB2	4:G:91:VAL:CG2	2.37	0.55
2:H:185:GLN:N	2:H:185:GLN:OE1	2.40	0.55
1:D:5:THR:HG22	1:D:25:THR:HG23	1.88	0.55
1:D:9:LEU:HB2	1:D:22:VAL:O	2.07	0.55
4:J:80:LEU:HB2	4:J:296:ILE:HG13	1.89	0.55
3:F:230:TYR:OH	3:F:232:ALA:HB2	2.06	0.55
3:F:174:LEU:HB2	3:F:188:VAL:HG22	1.88	0.55
3:F:72:LEU:HD11	3:F:105:LEU:HD13	1.90	0.54
3:I:60:ALA:HA	3:I:63:ILE:HG12	1.88	0.54
2:H:161:LEU:HB3	2:H:176:GLU:HB2	1.89	0.54
3:I:152:ALA:HB1	3:I:155:GLY:HA2	1.89	0.54
4:G:295:PHE:HB3	4:G:300:LEU:HD12	1.88	0.54
2:H:81:PRO:HG3	2:H:101:ALA:HB2	1.89	0.54
4:J:239:LEU:HD11	4:J:256:ASN:HB2	1.90	0.54
2:C:56:GLY:HA2	4:G:220:ILE:HB	1.89	0.54
3:F:341:LEU:O	3:F:345:LEU:HG	2.07	0.54
1:E:67:ILE:HA	1:E:70:LEU:HD13	1.88	0.54
2:H:141:GLN:HG2	2:H:167:LEU:HB2	1.90	0.54
4:J:25:MET:O	4:J:29:LEU:HG	2.07	0.54
2:C:5:ARG:NH2	3:F:301:PRO:HG3	2.22	0.54
1:A:88:SER:HB2	4:G:91:VAL:HG21	1.91	0.53
1:B:6:ALA:O	1:B:23:SER:HA	2.09	0.53
4:G:88:GLU:O	4:G:92:MET:HG3	2.08	0.53
4:G:300:LEU:HD22	4:G:303:VAL:HG21	1.91	0.53
3:F:44:PRO:HG2	3:F:46:ASN:OD1	2.09	0.53
3:I:61:GLN:HB3	3:I:272:LEU:HD21	1.89	0.53
3:I:341:LEU:O	3:I:345:LEU:HG	2.07	0.53
4:J:326:PHE:CE2	4:J:343:LEU:HD22	2.43	0.53
1:D:122:MET:HG3	1:D:127:ILE:HG13	1.90	0.53
1:A:55:ARG:HH21	1:A:57:ALA:HA	1.73	0.53
1:A:169:ASP:OD1	1:B:38:ASN:ND2	2.41	0.53
3:I:259:THR:HG23	3:I:262:ALA:H	1.74	0.53
4:J:273:LEU:HD12	4:J:341:ALA:HB2	1.90	0.53
4:G:276:TRP:CE3	4:G:279:ILE:HD11	2.44	0.53
2:H:160:GLY:HA2	2:H:177:LYS:O	2.09	0.53
1:A:177:LYS:HA	1:A:180:ILE:HG22	1.90	0.53
3:I:325:LEU:HD11	3:I:330:TRP:CD1	2.44	0.53
3:F:230:TYR:CD1	3:F:231:GLN:N	2.77	0.53
3:I:250:ASP:OD1	3:I:251:MET:N	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:315:PHE:HA	4:J:318:VAL:HG22	1.92	0.52
1:B:75:ARG:HB3	1:B:80:ILE:HD12	1.91	0.52
1:B:145:ARG:HD3	7:E:302:NOV:O3	2.08	0.52
4:J:88:GLU:O	4:J:92:MET:HG3	2.10	0.52
2:C:161:LEU:HB2	2:C:176:GLU:HB2	1.90	0.52
3:F:63:ILE:O	3:F:67:SER:N	2.27	0.52
4:G:138:GLN:HA	4:G:143:GLY:N	2.24	0.52
1:D:50:VAL:HG22	1:D:160:LEU:HD12	1.92	0.52
1:E:61:ILE:HG22	1:E:66:ASP:HA	1.91	0.52
4:G:186:LEU:HD13	4:G:215:THR:HG22	1.92	0.52
3:I:11:THR:HG22	3:I:75:THR:HB	1.92	0.52
1:B:156:PRO:HG2	1:B:159:ILE:HD11	1.91	0.52
1:B:177:LYS:HG2	1:B:203:VAL:HG21	1.91	0.52
4:J:55:TYR:HD1	4:J:132:ALA:HB1	1.75	0.52
4:G:80:LEU:HD23	4:G:83:LEU:HD12	1.92	0.51
2:C:101:ALA:HB1	2:C:109:LEU:HD11	1.92	0.51
3:F:189:VAL:HG13	4:G:184:ARG:HD3	1.91	0.51
2:C:182:TYR:CB	2:C:186:ASN:HA	2.41	0.51
3:F:160:PHE:HE1	4:G:266:GLN:HG3	1.76	0.51
3:F:230:TYR:CZ	3:F:232:ALA:HB2	2.46	0.51
1:A:9:LEU:HD21	1:A:60:ILE:HD11	1.93	0.51
1:E:34:LEU:HD21	1:E:45:THR:HG23	1.92	0.51
3:I:212:ARG:HB3	3:I:225:THR:OG1	2.11	0.51
4:J:7:LEU:HD21	4:J:92:MET:SD	2.51	0.51
4:J:89:LEU:O	4:J:93:GLN:HG3	2.10	0.51
1:E:104:GLN:OE1	3:I:2:ILE:N	2.34	0.51
7:E:302:NOV:O6	7:E:302:NOV:N1	2.42	0.51
3:F:326:ASP:OD2	3:F:329:VAL:HG23	2.11	0.51
1:D:31:ILE:HB	1:D:204:CYS:HA	1.92	0.51
2:H:17:LEU:HD11	4:J:29:LEU:HD22	1.92	0.51
1:D:43:THR:N	5:D:301:SO4:O2	2.43	0.50
1:E:75:ARG:HB3	1:E:80:ILE:HD12	1.92	0.50
1:A:61:ILE:HD13	1:A:66:ASP:HA	1.94	0.50
2:H:121:THR:HG22	2:H:123:ASP:H	1.77	0.50
4:J:46:SER:OG	4:J:139:ALA:O	2.23	0.50
2:H:60:TYR:HE2	2:H:138:LEU:HD21	1.76	0.50
1:B:101:ALA:HB1	3:F:3:ILE:HG13	1.93	0.50
1:E:160:LEU:HD22	1:E:191:LEU:HD23	1.94	0.50
1:E:31:ILE:HD11	1:E:184:ARG:HB2	1.94	0.50
2:C:166:ASN:OD1	2:C:169:SER:N	2.40	0.50
4:G:97:PHE:CZ	4:G:101:GLN:HB3	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:G:122:GLU:OE1	4:G:250:SER:OG	2.29	0.50
3:F:160:PHE:CE2	4:G:155:LYS:HE3	2.47	0.49
1:A:104:GLN:NE2	4:G:6:VAL:HG23	2.26	0.49
1:A:235:LEU:HD11	1:A:239:PHE:CG	2.46	0.49
3:I:3:ILE:HD13	3:I:93:LEU:HD22	1.94	0.49
3:I:116:ASN:HA	3:I:120:ALA:HB3	1.95	0.49
1:A:170:PRO:HG2	1:B:235:LEU:HD23	1.94	0.49
1:E:160:LEU:HD22	1:E:191:LEU:HB3	1.93	0.49
1:D:2:ALA:HB1	1:D:28:SER:OG	2.13	0.49
1:D:34:LEU:HD21	1:D:45:THR:HG23	1.93	0.49
1:D:119:ASN:OD1	1:D:131:ARG:NH1	2.45	0.49
3:F:351:VAL:HB	3:F:352:PRO:HD3	1.95	0.49
1:D:101:ALA:HB1	4:J:7:LEU:HB2	1.95	0.49
2:H:52:TYR:HA	2:H:58:LEU:HA	1.95	0.49
4:J:276:TRP:CE3	4:J:279:ILE:HD11	2.47	0.49
1:B:92:ARG:HB2	3:F:6:TYR:HE1	1.78	0.49
1:E:60:ILE:HB	1:E:68:SER:HA	1.93	0.49
1:A:75:ARG:O	1:A:80:ILE:HB	2.13	0.48
3:F:117:VAL:HG11	3:F:269:ARG:HB3	1.95	0.48
2:C:109:LEU:HB3	2:C:136:ILE:HG23	1.94	0.48
3:F:117:VAL:CG1	3:F:269:ARG:HB3	2.44	0.48
3:F:348:TRP:HA	3:F:353:VAL:HG11	1.94	0.48
4:G:61:PRO:HA	4:G:64:VAL:HG12	1.94	0.48
3:F:174:LEU:HB2	3:F:188:VAL:CG2	2.43	0.48
1:B:122:MET:HE1	1:B:131:ARG:HG3	1.95	0.48
1:D:4:LEU:HB3	1:D:26:VAL:CG1	2.44	0.48
4:J:61:PRO:HA	4:J:64:VAL:HG22	1.96	0.48
3:F:212:ARG:HB3	3:F:225:THR:HB	1.95	0.48
1:E:66:ASP:OD1	1:E:68:SER:OG	2.28	0.48
2:C:40:PRO:HB3	2:C:70:PHE:HE1	1.78	0.48
3:I:348:TRP:HA	3:I:353:VAL:HG11	1.95	0.48
1:A:73:HIS:HA	4:G:93:GLN:O	2.14	0.48
3:F:14:SER:O	3:F:18:ILE:HG13	2.12	0.48
1:E:82:TYR:HB3	3:I:90:ALA:HB1	1.95	0.48
4:J:53:GLY:O	4:J:57:LEU:HG	2.14	0.48
3:I:64:LEU:HB2	3:I:65:PRO:HD3	1.96	0.48
3:I:347:LEU:O	3:I:350:THR:OG1	2.32	0.48
1:B:173:VAL:HG11	1:B:199:GLU:HG3	1.96	0.47
3:I:146:GLN:O	3:I:167:SER:HA	2.14	0.47
4:J:11:ILE:HD13	4:J:102:VAL:HG13	1.95	0.47
3:F:145:ALA:HB1	3:F:169:PHE:HE1	1.80	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:J:239:LEU:HA	4:J:242:VAL:HG22	1.96	0.47
1:E:67:ILE:HG13	1:E:70:LEU:HD22	1.95	0.47
3:F:12:LEU:HD23	3:F:12:LEU:HA	1.66	0.47
1:D:31:ILE:HD11	1:D:184:ARG:HB2	1.96	0.47
3:I:275:THR:HG21	3:I:310:PHE:HE1	1.77	0.47
2:C:58:LEU:HD12	2:C:59:ASN:H	1.79	0.47
4:G:25:MET:O	4:G:29:LEU:HG	2.15	0.47
4:J:295:PHE:HB3	4:J:300:LEU:HD23	1.96	0.47
2:C:58:LEU:HD12	2:C:59:ASN:N	2.30	0.47
3:F:176:GLN:O	3:F:177:LEU:HD23	2.15	0.47
3:F:282:ILE:O	3:F:285:PRO:HD2	2.15	0.47
1:D:50:VAL:O	1:D:75:ARG:HD2	2.14	0.46
1:B:31:ILE:HD12	1:B:190:VAL:HB	1.97	0.46
3:F:79:LEU:HD22	3:F:84:GLU:OE1	2.15	0.46
1:D:8:ASN:H	1:D:23:SER:HG	1.55	0.46
1:E:235:LEU:HD22	1:E:239:PHE:HZ	1.80	0.46
3:I:199:LYS:HA	3:I:199:LYS:HD3	1.67	0.46
1:D:168:VAL:HG13	1:D:172:SER:HB2	1.98	0.46
1:E:70:LEU:HD23	1:E:74:ALA:HB1	1.97	0.46
4:J:7:LEU:HD22	4:J:97:PHE:CZ	2.51	0.46
4:J:321:VAL:O	4:J:325:ILE:HG12	2.15	0.46
1:D:164:PRO:HD2	1:D:194:ASP:HB2	1.98	0.46
3:I:79:LEU:HD22	3:I:84:GLU:OE1	2.15	0.46
2:C:156:PHE:HB3	2:C:182:TYR:CE1	2.50	0.46
3:F:148:GLN:O	3:F:161:ILE:N	2.48	0.46
1:D:130:LEU:HD13	1:D:138:LEU:HD22	1.96	0.46
1:E:6:ALA:O	1:E:23:SER:HA	2.16	0.46
1:A:148:ILE:HD13	1:A:179:ILE:HG21	1.98	0.46
1:D:9:LEU:HD11	1:D:60:ILE:HD11	1.98	0.46
2:H:46:HIS:HA	2:H:64:ALA:O	2.16	0.46
4:J:55:TYR:CD1	4:J:132:ALA:HB1	2.51	0.46
4:G:22:THR:HG21	4:G:74:LEU:HB3	1.97	0.46
1:E:144:ARG:NH1	1:E:147:GLU:OE1	2.49	0.46
2:H:94:TRP:CD1	2:H:167:LEU:HB3	2.50	0.46
3:F:347:LEU:HB3	3:F:353:VAL:HG21	1.98	0.45
1:E:41:GLY:O	1:E:45:THR:HG22	2.16	0.45
1:E:62:ILE:HD11	1:E:80:ILE:HD11	1.98	0.45
3:I:179:THR:HG22	3:I:185:PRO:HD3	1.97	0.45
1:A:67:ILE:HD12	1:A:75:ARG:CG	2.46	0.45
1:D:227:ASP:HB3	1:D:230:VAL:HG12	1.98	0.45
3:I:88:MET:HB3	3:I:93:LEU:HD23	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:173:VAL:HG11	1:E:199:GLU:HG3	1.99	0.45
4:J:309:VAL:O	4:J:313:ILE:HG22	2.16	0.45
3:F:73:LEU:HD13	3:F:299:MET:HB3	1.98	0.45
4:G:336:PRO:HB2	4:G:339:ILE:HG12	1.99	0.45
1:A:235:LEU:HD11	1:A:239:PHE:CD1	2.52	0.45
1:D:84:PRO:HB2	1:D:86:GLU:OE2	2.17	0.45
3:I:351:VAL:HB	3:I:352:PRO:HD3	1.98	0.45
4:J:34:LYS:O	4:J:38:GLN:HG2	2.16	0.45
2:C:6:ARG:O	2:C:10:ILE:HG12	2.16	0.45
4:G:77:LEU:HA	4:G:296:ILE:HD11	1.98	0.45
1:D:78:ARG:O	1:D:157:LYS:NZ	2.45	0.45
2:H:117:VAL:O	2:H:128:LYS:HA	2.17	0.45
4:G:151:GLY:HA2	4:G:163:ILE:O	2.17	0.45
4:J:100:LEU:O	4:J:104:LEU:HG	2.17	0.45
4:G:58:LEU:HB2	4:G:132:ALA:HB2	2.00	0.44
1:D:9:LEU:HD21	1:D:60:ILE:HD11	1.99	0.44
1:E:88:SER:O	1:E:150:ARG:NH1	2.47	0.44
3:I:93:LEU:HD11	3:I:97:VAL:HG11	1.98	0.44
3:I:275:THR:O	3:I:279:MET:HG2	2.18	0.44
3:F:220:ARG:HB3	4:G:220:ILE:HG21	2.00	0.44
4:G:102:VAL:O	4:G:106:VAL:HG23	2.17	0.44
3:I:176:GLN:O	4:J:153:TRP:NE1	2.46	0.44
1:A:9:LEU:HB2	1:A:22:VAL:O	2.17	0.44
1:B:170:PRO:HA	1:B:173:VAL:HB	2.00	0.44
4:J:105:SER:O	4:J:109:THR:HG22	2.17	0.44
4:J:295:PHE:O	4:J:300:LEU:HB2	2.18	0.44
1:B:67:ILE:HG22	1:B:67:ILE:O	2.17	0.44
3:F:164:VAL:HG12	3:F:166:GLY:H	1.81	0.44
3:F:205:VAL:HG21	3:F:234:ILE:HD12	1.99	0.44
1:D:183:LEU:O	1:D:188:LEU:HB2	2.18	0.44
2:H:62:LEU:HB2	2:H:83:MET:HE2	2.00	0.44
1:A:207:ALA:O	1:A:218:HIS:HA	2.18	0.44
1:D:198:ARG:HG3	1:D:241:LEU:HA	1.99	0.44
1:D:198:ARG:NE	1:D:241:LEU:OXT	2.49	0.44
1:E:159:ILE:HG23	1:E:190:VAL:HG13	1.99	0.44
1:A:24:LEU:HB2	1:A:208:TYR:CD1	2.52	0.44
1:A:84:PRO:HB2	1:A:86:GLU:OE2	2.17	0.44
2:C:43:LYS:HB2	3:F:231:GLN:HB3	2.00	0.44
1:E:175:ASP:O	1:E:179:ILE:HG13	2.17	0.44
4:G:89:LEU:O	4:G:93:GLN:HG3	2.18	0.44
3:I:56:ILE:HG13	3:I:57:PRO:HD3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:40:ALA:HB1	1:A:211:SER:HA	1.99	0.43
1:E:106:ARG:NH2	1:E:155:ASN:HB2	2.33	0.43
3:I:104:ILE:O	3:I:108:PHE:HD1	2.01	0.43
3:F:88:MET:HB3	3:F:93:LEU:HD22	2.00	0.43
1:D:209:ILE:HD13	1:D:230:VAL:HG21	2.00	0.43
1:E:103:LEU:HD21	1:E:117:ARG:HB3	2.00	0.43
2:H:18:ILE:HG13	4:J:36:VAL:HG21	2.00	0.43
2:H:132:ASP:N	2:H:132:ASP:OD1	2.51	0.43
4:J:310:VAL:HA	4:J:313:ILE:HG22	1.98	0.43
1:B:35:LEU:HD21	1:B:200:THR:HG21	2.00	0.43
4:G:7:LEU:HD12	4:G:97:PHE:CG	2.53	0.43
2:C:49:THR:HG22	3:F:225:THR:HG23	2.01	0.43
3:F:268:TRP:CE2	3:F:272:LEU:HD22	2.53	0.43
1:D:175:ASP:O	1:D:179:ILE:HG13	2.19	0.43
2:H:94:TRP:CZ3	2:H:119:ALA:HB2	2.53	0.43
4:J:114:VAL:HA	4:J:117:THR:HG22	1.99	0.43
1:A:49:VAL:HG22	1:A:60:ILE:HD12	1.99	0.43
1:B:4:LEU:HB3	1:B:26:VAL:HG23	2.00	0.43
2:C:42:TYR:CZ	3:F:212:ARG:NH1	2.86	0.43
1:D:74:ALA:O	1:D:78:ARG:HG2	2.18	0.43
2:H:96:ILE:HG12	2:H:117:VAL:HG13	2.00	0.43
3:F:177:LEU:HD22	4:G:151:GLY:O	2.19	0.43
4:G:235:THR:O	4:G:238:LYS:N	2.51	0.43
4:G:315:PHE:HA	4:G:318:VAL:HG22	2.00	0.43
1:E:126:HIS:CG	7:E:302:NOV:H23	2.53	0.43
2:H:137:ASN:O	2:H:141:GLN:N	2.51	0.43
4:J:102:VAL:O	4:J:106:VAL:HG23	2.19	0.43
1:A:67:ILE:HG22	1:A:70:LEU:HD12	1.99	0.43
2:C:96:ILE:HD11	2:C:167:LEU:HD11	2.00	0.43
4:G:103:ALA:HA	4:G:293:LEU:HD21	2.01	0.43
3:I:4:ILE:HD12	3:I:4:ILE:HG23	1.75	0.43
1:D:32:VAL:O	1:D:191:LEU:HD12	2.19	0.43
1:A:24:LEU:HD23	1:A:24:LEU:H	1.83	0.43
1:A:88:SER:O	4:G:91:VAL:HG21	2.19	0.43
1:B:115:GLN:O	1:B:119:ASN:ND2	2.42	0.43
3:F:147:GLY:O	3:F:161:ILE:HD12	2.19	0.43
1:A:9:LEU:HD23	1:A:9:LEU:HA	1.85	0.42
4:G:281:GLN:N	4:G:282:PRO:HD2	2.34	0.42
1:A:31:ILE:HG23	1:A:190:VAL:HG23	2.01	0.42
2:C:44:SER:HA	3:F:229:ASN:O	2.19	0.42
1:E:200:THR:O	1:E:204:CYS:N	2.51	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:26:VAL:HG12	1:B:32:VAL:HG21	2.02	0.42
3:F:114:ALA:HB2	3:F:273:VAL:HG11	2.02	0.42
4:G:179:ALA:O	4:G:187:GLN:HA	2.18	0.42
3:I:265:GLU:O	3:I:269:ARG:HG3	2.19	0.42
1:B:194:ASP:OD1	1:B:195:HIS:N	2.48	0.42
1:D:4:LEU:HB3	1:D:26:VAL:HG13	2.00	0.42
1:D:160:LEU:HD22	1:D:191:LEU:HB3	2.02	0.42
1:A:37:PRO:HG3	1:A:234:TYR:HD1	1.85	0.42
1:B:71:PRO:HD3	3:F:351:VAL:HG22	2.01	0.42
2:C:136:ILE:HA	2:C:142:ASP:O	2.18	0.42
1:E:127:ILE:HG22	1:E:127:ILE:O	2.19	0.42
1:B:67:ILE:HG12	1:B:78:ARG:HH11	1.85	0.42
1:B:70:LEU:HD12	1:B:70:LEU:C	2.40	0.42
4:G:161:VAL:HG11	4:G:230:TRP:CZ2	2.55	0.42
1:D:59:ASN:HA	1:D:68:SER:OG	2.20	0.42
1:E:128:GLU:O	1:E:131:ARG:HG3	2.19	0.42
3:F:11:THR:HG22	3:F:75:THR:HB	2.02	0.42
4:G:318:VAL:HG23	4:G:348:PHE:HZ	1.84	0.42
1:B:5:THR:HG23	1:B:25:THR:HG22	2.02	0.42
3:F:348:TRP:HA	3:F:353:VAL:CG1	2.49	0.42
1:A:10:ALA:HB3	1:A:57:ALA:HB3	2.02	0.42
1:B:33:GLY:N	1:B:204:CYS:SG	2.93	0.42
1:B:70:LEU:HD12	1:B:70:LEU:O	2.19	0.42
2:C:46:HIS:H	2:C:65:GLN:C	2.24	0.42
3:F:80:TYR:CD2	3:F:288:VAL:HG13	2.55	0.42
1:D:87:ALA:HB2	1:D:143:ARG:NH1	2.35	0.42
4:J:314:SER:O	4:J:318:VAL:HG13	2.20	0.42
1:D:151:ALA:O	1:D:156:PRO:HD3	2.20	0.41
3:I:253:THR:O	3:I:257:THR:OG1	2.28	0.41
2:C:56:GLY:CA	4:G:220:ILE:HB	2.49	0.41
3:F:64:LEU:HB2	3:F:65:PRO:HD3	2.01	0.41
1:E:235:LEU:HD22	1:E:239:PHE:CZ	2.55	0.41
3:I:73:LEU:HG	3:I:299:MET:HG2	2.02	0.41
3:I:108:PHE:O	3:I:112:VAL:HG23	2.20	0.41
3:F:107:LEU:HA	3:F:277:PHE:CZ	2.55	0.41
1:D:230:VAL:HG22	1:D:235:LEU:HG	2.02	0.41
3:I:57:PRO:O	3:I:61:GLN:HG3	2.21	0.41
4:J:247:ASP:O	4:J:274:ASN:ND2	2.52	0.41
1:B:24:LEU:HD11	1:B:208:TYR:CD2	2.55	0.41
2:C:162:ARG:NE	2:C:176:GLU:OE2	2.54	0.41
3:F:275:THR:HG21	3:F:310:PHE:CE1	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:I:267:HIS:NE2	3:I:328:MET:HB2	2.35	0.41
4:G:53:GLY:O	4:G:57:LEU:HG	2.21	0.41
1:E:79:GLY:O	1:E:157:LYS:N	2.53	0.41
2:H:96:ILE:HG23	2:H:117:VAL:HG22	2.01	0.41
1:B:24:LEU:HA	1:B:24:LEU:HD12	1.71	0.41
2:C:57:ALA:N	4:G:219:GLN:O	2.53	0.41
1:A:183:LEU:O	1:A:188:LEU:HB2	2.21	0.41
4:J:126:PRO:HB3	4:J:249:LEU:HA	2.01	0.41
3:F:61:GLN:HB3	3:F:272:LEU:HD21	2.03	0.41
3:F:279:MET:HE2	3:F:306:TYR:HD2	1.86	0.41
2:H:60:TYR:CE2	2:H:138:LEU:HD11	2.56	0.41
1:A:5:THR:HB	1:A:25:THR:HG23	2.02	0.41
1:B:62:ILE:HD11	1:B:80:ILE:HD11	2.02	0.41
2:C:17:LEU:HD11	4:G:29:LEU:HD22	2.02	0.41
1:D:40:ALA:HB1	1:D:211:SER:HA	2.02	0.41
2:H:151:LEU:HG	2:H:174:LEU:HD21	2.03	0.41
4:J:73:LEU:HB2	4:J:288:MET:HB3	2.02	0.41
1:B:148:ILE:HD11	1:B:183:LEU:HD22	2.02	0.41
3:F:285:PRO:HG2	3:F:345:LEU:HD13	2.03	0.41
4:G:245:ASP:N	4:G:246:PRO:HD3	2.36	0.41
1:D:93:LEU:HD22	1:D:97:ASP:HB3	2.03	0.41
1:E:103:LEU:HD12	1:E:106:ARG:HD3	2.01	0.41
1:B:55:ARG:NE	1:B:68:SER:HB3	2.34	0.40
1:E:68:SER:O	1:E:75:ARG:NH2	2.54	0.40
2:H:136:ILE:HG12	2:H:143:VAL:HG22	2.02	0.40
1:B:180:ILE:HG23	1:B:180:ILE:HD12	1.81	0.40
3:F:63:ILE:HD13	3:F:63:ILE:HG21	1.77	0.40
2:H:101:ALA:HB1	2:H:109:LEU:HD11	2.03	0.40
4:G:230:TRP:NE1	4:G:232:THR:HB	2.36	0.40
4:G:298:GLY:O	4:G:301:ARG:HG3	2.21	0.40
1:D:3:THR:HG22	1:D:27:ASN:OD1	2.22	0.40
1:A:125:PHE:O	1:A:127:ILE:HG23	2.21	0.40
2:C:94:TRP:CD2	2:C:167:LEU:HD22	2.57	0.40
3:F:220:ARG:O	4:G:220:ILE:HD12	2.21	0.40
2:H:44:SER:HA	3:I:229:ASN:O	2.21	0.40
3:I:222:PHE:HD1	3:I:222:PHE:HA	1.78	0.40
1:A:104:GLN:HE22	4:G:6:VAL:HG23	1.86	0.40
3:F:84:GLU:O	3:F:87:VAL:HG12	2.21	0.40
2:H:60:TYR:CE2	2:H:138:LEU:HD21	2.55	0.40
2:H:158:SER:HA	2:H:179:ARG:O	2.21	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	238/241 (99%)	221 (93%)	16 (7%)	1 (0%)	34	69
1	B	238/241 (99%)	221 (93%)	17 (7%)	0	100	100
1	D	238/241 (99%)	219 (92%)	19 (8%)	0	100	100
1	E	236/241 (98%)	225 (95%)	11 (5%)	0	100	100
2	C	171/195 (88%)	160 (94%)	11 (6%)	0	100	100
2	H	171/195 (88%)	159 (93%)	12 (7%)	0	100	100
3	F	346/366 (94%)	328 (95%)	17 (5%)	1 (0%)	41	74
3	I	327/366 (89%)	313 (96%)	14 (4%)	0	100	100
4	G	353/360 (98%)	338 (96%)	15 (4%)	0	100	100
4	J	295/360 (82%)	284 (96%)	11 (4%)	0	100	100
All	All	2613/2806 (93%)	2468 (94%)	143 (6%)	2 (0%)	51	83

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	F	139	PRO
1	A	71	PRO

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	183/202 (91%)	182 (100%)	1 (0%)	88	95

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	179/202 (89%)	179 (100%)	0	100	100
1	D	187/202 (93%)	186 (100%)	1 (0%)	88	95
1	E	170/202 (84%)	170 (100%)	0	100	100
2	C	141/179 (79%)	140 (99%)	1 (1%)	84	94
2	H	138/179 (77%)	138 (100%)	0	100	100
3	F	261/307 (85%)	261 (100%)	0	100	100
3	I	242/307 (79%)	242 (100%)	0	100	100
4	G	266/300 (89%)	265 (100%)	1 (0%)	91	95
4	J	209/300 (70%)	209 (100%)	0	100	100
All	All	1976/2380 (83%)	1972 (100%)	4 (0%)	93	98

All (4) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	52	ILE
2	C	183	GLU
4	G	68	PHE
1	D	52	ILE

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

Mol	Chain	Res	Type
1	B	38	ASN
1	B	195	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry

Of 13 ligands modelled in this entry, 1 is monoatomic - leaving 12 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
5	SO4	A	302	-	4,4,4	0.19	0	6,6,6	0.69	0
7	NOV	E	302	-	47,47,47	1.69	7 (14%)	66,70,70	1.52	11 (16%)
5	SO4	G	402	-	4,4,4	0.30	0	6,6,6	0.88	0
5	SO4	E	301	-	4,4,4	0.20	0	6,6,6	0.29	0
5	SO4	G	401	-	4,4,4	0.20	0	6,6,6	0.44	0
5	SO4	G	403	-	4,4,4	0.17	0	6,6,6	0.23	0
5	SO4	A	301	-	4,4,4	0.17	0	6,6,6	0.20	0
5	SO4	B	301	-	4,4,4	0.14	0	6,6,6	0.26	0
5	SO4	D	301	-	4,4,4	0.16	0	6,6,6	0.69	0
5	SO4	J	401	-	4,4,4	0.11	0	6,6,6	0.66	0
5	SO4	F	401	-	4,4,4	0.20	0	6,6,6	0.42	0
5	SO4	J	402	-	4,4,4	0.22	0	6,6,6	0.44	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
7	NOV	E	302	-	-	6/23/46/46	0/4/4/4

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	E	302	NOV	O7-C31	-6.70	1.38	1.45
7	E	302	NOV	C28-C27	3.48	1.59	1.52
7	E	302	NOV	C12-N1	3.39	1.40	1.33
7	E	302	NOV	O7-C30	-3.37	1.36	1.42
7	E	302	NOV	C9-C8	-3.21	1.40	1.45
7	E	302	NOV	C31-C27	2.66	1.57	1.53
7	E	302	NOV	C29-C28	2.07	1.57	1.52

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
7	E	302	NOV	C20-C21-C22	-3.68	123.11	127.59
7	E	302	NOV	C5-O10-C6	-3.09	119.14	122.68
7	E	302	NOV	C2-C4-C3	3.00	125.19	120.69
7	E	302	NOV	C6-C7-N2	2.99	118.50	112.39
7	E	302	NOV	O7-C30-C29	-2.92	104.55	110.42
7	E	302	NOV	O10-C5-C9	2.61	124.38	121.27
7	E	302	NOV	C19-C18-C17	-2.45	117.99	120.50
7	E	302	NOV	O5-C12-N1	2.36	114.25	110.58
7	E	302	NOV	C28-O5-C12	2.34	120.47	117.12
7	E	302	NOV	O5-C12-O4	-2.28	121.38	123.69
7	E	302	NOV	C30-C29-C28	-2.18	106.23	110.07

There are no chirality outliers.

All (6) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	E	302	NOV	N1-C12-O5-C28
7	E	302	NOV	O4-C12-O5-C28
7	E	302	NOV	C27-C28-O5-C12
7	E	302	NOV	O7-C30-O8-C3
7	E	302	NOV	C4-C3-O8-C30
7	E	302	NOV	C28-C27-O1-C1

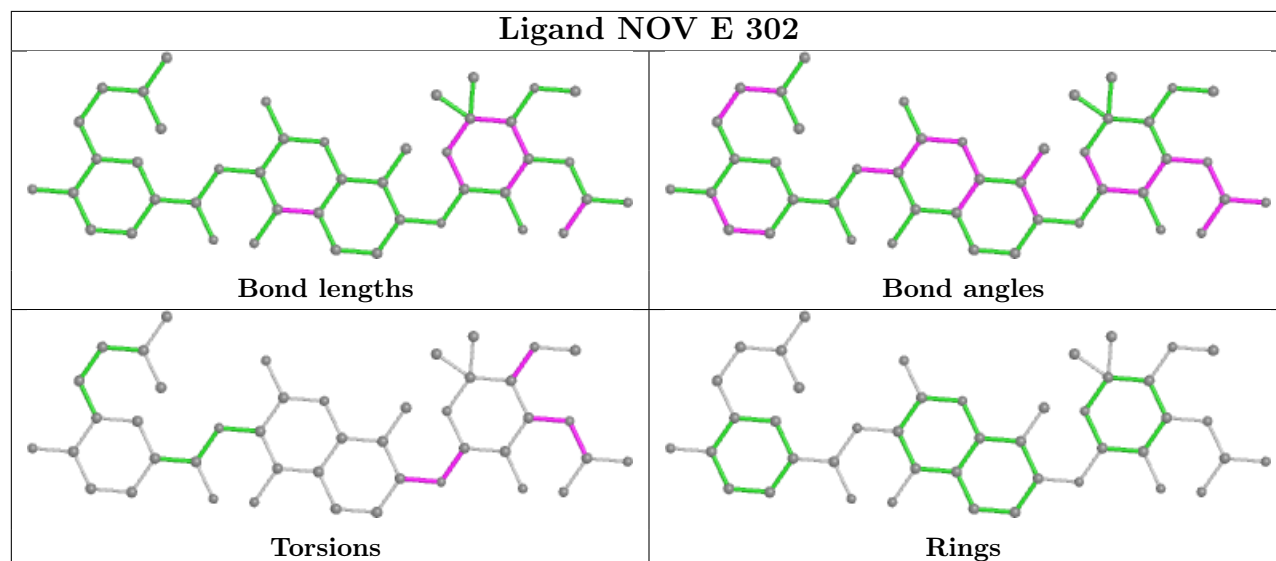
There are no ring outliers.

4 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	E	302	NOV	3	0
5	G	403	SO4	2	0
5	D	301	SO4	1	0
5	J	402	SO4	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and

any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	240/241 (99%)	0.19	11 (4%) 32 20	99, 132, 164, 180	0
1	B	240/241 (99%)	0.40	20 (8%) 11 6	93, 139, 173, 202	0
1	D	240/241 (99%)	0.13	6 (2%) 57 43	86, 120, 148, 170	0
1	E	238/241 (98%)	0.52	30 (12%) 3 2	106, 144, 181, 195	0
2	C	175/195 (89%)	0.16	15 (8%) 10 5	88, 130, 159, 173	0
2	H	175/195 (89%)	0.55	27 (15%) 2 1	95, 142, 189, 203	0
3	F	350/366 (95%)	0.27	19 (5%) 25 14	78, 123, 177, 211	0
3	I	335/366 (91%)	0.15	17 (5%) 28 16	93, 134, 195, 229	0
4	G	355/360 (98%)	0.25	22 (6%) 20 11	89, 131, 175, 203	0
4	J	309/360 (85%)	0.57	39 (12%) 3 2	94, 154, 199, 225	0
All	All	2657/2806 (94%)	0.31	206 (7%) 13 7	78, 134, 186, 229	0

All (206) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	J	263	SER	15.1
4	J	264	SER	11.0
4	J	215	THR	9.7
4	J	212	SER	7.8
4	J	262	LYS	7.6
2	H	104	THR	7.0
3	F	138	ASN	6.8
3	I	182	ASN	6.7
1	E	18	VAL	6.6
4	J	258	VAL	6.4
2	H	103	LEU	6.2
2	C	183	GLU	6.1
1	B	241	LEU	6.0

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Mol	Chain	Res	Type	RSRZ
4	J	213	ASP	5.8
4	J	214	LEU	5.8
4	J	220	ILE	5.6
4	J	256	ASN	5.5
3	I	181	GLY	5.4
1	E	17	ARG	5.3
4	J	261	LEU	5.3
4	J	216	ASN	5.1
2	H	40	PRO	5.0
4	J	219	GLN	5.0
1	E	12	ALA	5.0
3	F	349	ASP	4.8
2	H	76	SER	4.7
2	H	68	GLU	4.7
2	C	158	SER	4.5
4	G	213	ASP	4.4
4	G	147	SER	4.4
3	I	232	ALA	4.4
4	J	265	GLY	4.3
4	J	130	GLN	4.3
4	J	132	ALA	4.3
4	J	135	TYR	4.3
2	H	77	TRP	4.2
2	C	1	MET	4.2
2	H	75	ILE	4.2
1	B	238	ASP	4.1
4	J	187	GLN	4.1
4	J	255	HIS	4.1
4	J	226	VAL	4.0
4	G	215	THR	4.0
4	J	134	ASN	4.0
1	B	15	GLY	4.0
3	F	135	ALA	3.8
2	H	182	TYR	3.8
2	H	156	PHE	3.8
1	B	236	GLY	3.7
3	I	165	ASP	3.7
1	E	206	ARG	3.7
1	E	190	VAL	3.7
4	J	127	GLN	3.7
4	J	221	THR	3.6
1	E	64	ASP	3.6

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Mol	Chain	Res	Type	RSRZ
1	A	174	ILE	3.6
3	F	148	GLN	3.6
1	E	15	GLY	3.6
1	E	46	PHE	3.5
1	E	211	SER	3.5
3	F	147	GLY	3.5
4	G	271	TYR	3.5
4	G	244	LEU	3.4
3	I	193	GLY	3.4
4	J	43	GLY	3.4
1	E	2	ALA	3.4
4	J	217	PRO	3.4
3	F	137	ALA	3.4
2	C	157	ASN	3.3
4	G	50	LEU	3.3
4	G	269	GLY	3.3
2	H	102	LYS	3.3
4	G	216	ASN	3.3
4	G	359	ARG	3.3
4	G	214	LEU	3.2
1	B	64	ASP	3.2
3	F	353	VAL	3.2
1	E	80	ILE	3.2
4	G	358	LYS	3.2
1	B	229	HIS	3.2
1	A	29	GLY	3.2
1	E	32	VAL	3.2
4	G	246	PRO	3.1
1	E	213	GLY	3.1
4	J	218	LYS	3.1
4	G	169	ASP	3.1
4	G	270	ARG	3.1
1	E	107	ASP	3.0
2	H	108	MET	3.0
2	H	154	THR	3.0
4	J	257	TYR	3.0
1	E	109	LEU	3.0
2	H	50	VAL	3.0
1	B	218	HIS	3.0
2	C	153	GLY	3.0
1	D	123	GLU	3.0
1	E	82	TYR	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	207	ALA	2.9
1	E	160	LEU	2.9
2	H	109	LEU	2.9
1	B	234	TYR	2.9
2	C	156	PHE	2.9
1	E	159	ILE	2.9
1	B	230	VAL	2.9
1	D	207	ALA	2.9
4	G	357	LEU	2.8
2	H	121	THR	2.8
4	G	268	ALA	2.8
1	A	165	PHE	2.8
4	J	188	SER	2.8
4	G	267	ASP	2.7
4	J	211	GLU	2.7
4	G	21	MET	2.7
1	B	107	ASP	2.7
4	J	259	LYS	2.7
3	I	151	GLN	2.7
1	E	218	HIS	2.7
1	E	30	GLU	2.7
1	A	201	LEU	2.7
4	J	252	SER	2.6
2	H	183	GLU	2.6
1	E	16	ARG	2.6
4	J	137	ALA	2.6
2	C	154	THR	2.6
3	F	47	LEU	2.6
2	H	49	THR	2.6
3	F	356	ILE	2.6
3	F	319	ASN	2.6
3	I	127	HIS	2.6
3	F	348	TRP	2.6
1	A	141	GLY	2.6
2	C	125	GLN	2.6
3	F	196	ALA	2.6
1	B	239	PHE	2.5
1	A	181	GLU	2.5
4	J	186	LEU	2.5
2	C	152	TYR	2.5
1	B	237	GLU	2.5
4	G	247	ASP	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	240	ARG	2.5
1	B	235	LEU	2.5
2	C	159	SER	2.5
2	C	124	SER	2.5
3	I	103	MET	2.4
3	F	181	GLY	2.4
3	I	219	LEU	2.4
3	F	350	THR	2.4
1	D	165	PHE	2.4
1	B	216	ILE	2.4
2	H	39	ASP	2.4
1	B	215	LEU	2.4
1	E	189	GLY	2.4
2	H	110	TYR	2.4
3	F	46	ASN	2.4
3	I	150	GLN	2.4
2	H	69	TYR	2.4
1	D	125	PHE	2.3
2	C	160	GLY	2.3
1	E	108	ASP	2.3
1	E	105	ILE	2.3
1	D	201	LEU	2.3
4	J	239	LEU	2.3
4	G	212	SER	2.3
1	A	134	LEU	2.3
1	A	148	ILE	2.3
4	G	221	THR	2.3
1	E	216	ILE	2.3
1	D	218	HIS	2.3
1	E	34	LEU	2.3
2	H	107	ARG	2.3
2	C	184	ILE	2.3
3	I	166	GLY	2.2
3	F	80	TYR	2.2
1	B	2	ALA	2.2
4	J	192	ALA	2.2
1	E	161	LEU	2.2
3	I	155	GLY	2.2
4	J	181	ASN	2.2
2	H	79	THR	2.2
1	B	217	ALA	2.2
2	H	106	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	240	ARG	2.2
1	A	137	ALA	2.2
1	E	26	VAL	2.2
4	G	170	ASP	2.2
2	C	185	GLN	2.1
4	J	138	GLN	2.1
2	H	54	PRO	2.1
3	F	2	ILE	2.1
1	E	83	LEU	2.1
1	A	168	VAL	2.1
3	F	203	GLN	2.1
3	I	256	ASN	2.1
3	I	48	VAL	2.1
3	I	154	ASP	2.1
3	I	53	GLY	2.1
1	E	191	LEU	2.1
2	H	67	VAL	2.1
3	I	163	SER	2.1
2	H	65	GLN	2.0
3	F	179	THR	2.0
4	J	355	LEU	2.0
2	H	72	ASP	2.0
1	B	54	PRO	2.0
2	C	151	LEU	2.0
4	J	260	TYR	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](#)

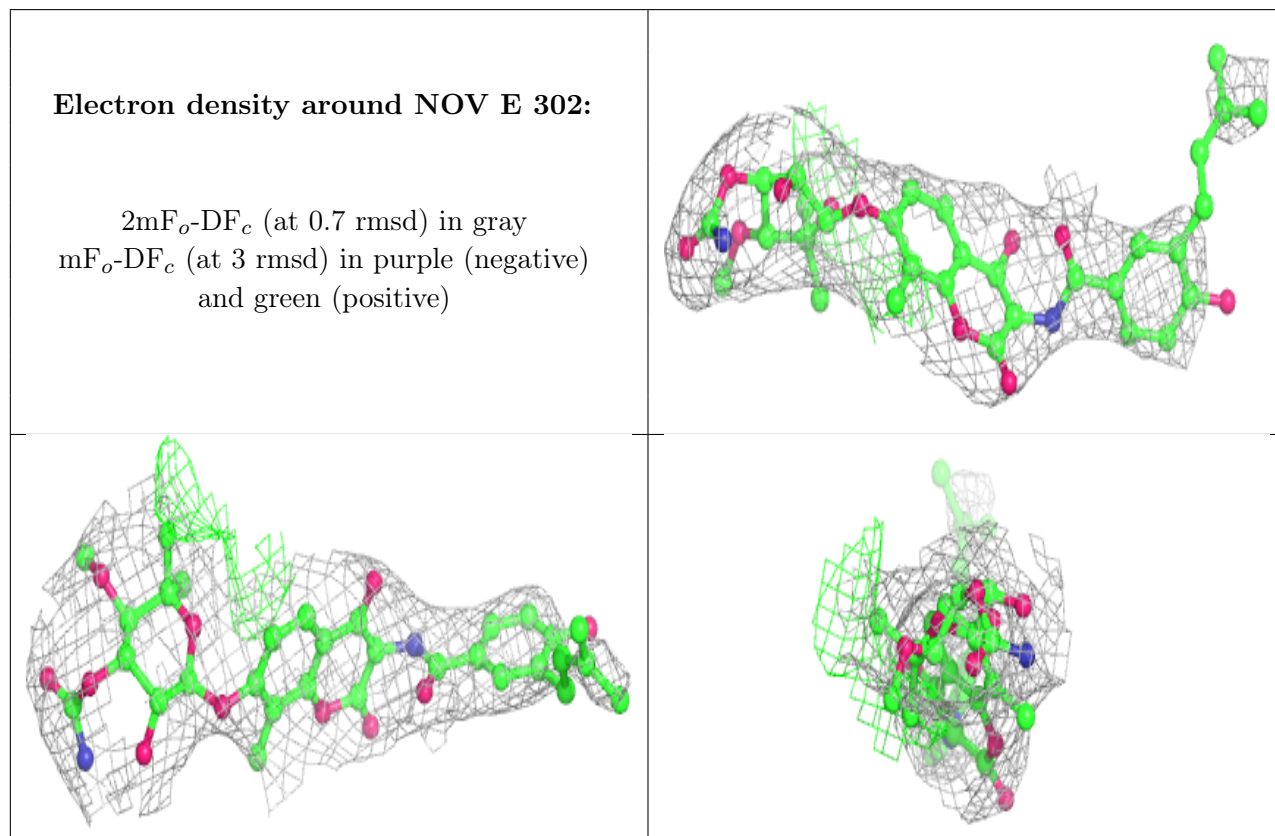
There are no monosaccharides in this entry.

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.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
6	CL	A	303	1/1	0.07	0.80	195,195,195,195	0
7	NOV	E	302	44/44	0.81	0.34	102,152,167,171	0
5	SO4	A	301	5/5	0.84	0.21	152,153,159,175	0
5	SO4	B	301	5/5	0.87	0.14	144,149,163,166	0
5	SO4	F	401	5/5	0.89	0.16	107,115,139,139	0
5	SO4	J	402	5/5	0.90	0.17	109,136,140,141	0
5	SO4	G	403	5/5	0.92	0.12	151,156,173,177	0
5	SO4	G	401	5/5	0.92	0.12	128,130,146,153	0
5	SO4	E	301	5/5	0.93	0.11	142,159,167,168	0
5	SO4	A	302	5/5	0.96	0.13	117,136,145,146	0
5	SO4	D	301	5/5	0.96	0.37	114,118,127,133	0
5	SO4	G	402	5/5	0.96	0.42	81,90,116,131	0
5	SO4	J	401	5/5	0.97	0.20	105,108,118,141	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.



6.5 Other polymers [\(i\)](#)

There are no such residues in this entry.