Full wwPDB X-ray Structure Validation Report ⓘ

Oct 27, 2024 – 10:14 PM EDT

PDB ID	:	1N7Z
Title	:	Structure and location of gene product 8 in the bacteriophage T4 baseplate
Authors	:	Leiman, P.G.; Shneider, M.M.; Kostyuchenko, V.A.; Chipman, P.R.; Mesyanzhinov, V.V.; Rossmann, M.G.
Deposited on	:	2002-11-18
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:

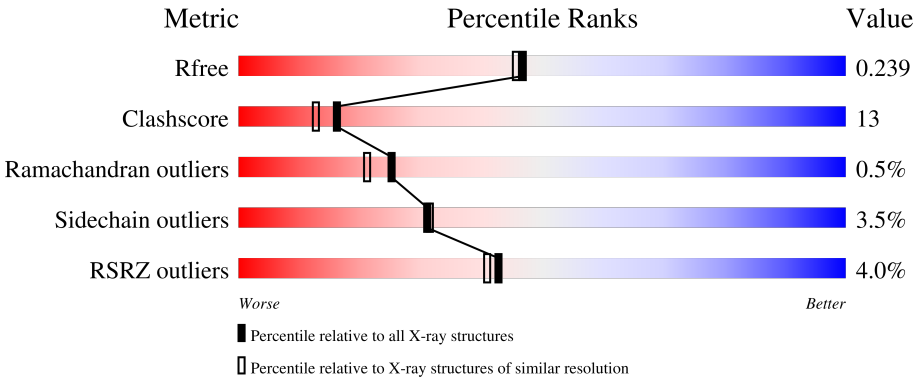
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 2.00 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}	164625	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (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 <=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	334	6% 75% 20%
1	B	334	3% 74% 22%
1	C	334	3% 75% 21%
1	D	334	3% 71% 25%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 11579 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 baseplate structural protein gp8.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	328	Total	C	N	O	S	Se	0	0	0
			2631	1677	430	507	5	12			
1	B	328	Total	C	N	O	S	Se	0	0	0
			2631	1677	430	507	5	12			
1	C	328	Total	C	N	O	S	Se	0	0	0
			2631	1677	430	507	5	12			
1	D	328	Total	C	N	O	S	Se	0	0	0
			2631	1677	430	507	5	12			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	21	MSE	MET	modified residue	UNP P19062
A	71	MSE	MET	modified residue	UNP P19062
A	75	MSE	MET	modified residue	UNP P19062
A	76	MSE	MET	modified residue	UNP P19062
A	85	MSE	MET	modified residue	UNP P19062
A	141	MSE	MET	modified residue	UNP P19062
A	167	MSE	MET	modified residue	UNP P19062
A	303	MSE	MET	modified residue	UNP P19062
A	309	MSE	MET	modified residue	UNP P19062
A	312	MSE	MET	modified residue	UNP P19062
A	320	MSE	MET	modified residue	UNP P19062
A	322	MSE	MET	modified residue	UNP P19062
B	21	MSE	MET	modified residue	UNP P19062
B	71	MSE	MET	modified residue	UNP P19062
B	75	MSE	MET	modified residue	UNP P19062
B	76	MSE	MET	modified residue	UNP P19062
B	85	MSE	MET	modified residue	UNP P19062
B	141	MSE	MET	modified residue	UNP P19062
B	167	MSE	MET	modified residue	UNP P19062
B	303	MSE	MET	modified residue	UNP P19062
B	309	MSE	MET	modified residue	UNP P19062

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	312	MSE	MET	modified residue	UNP P19062
B	320	MSE	MET	modified residue	UNP P19062
B	322	MSE	MET	modified residue	UNP P19062
C	21	MSE	MET	modified residue	UNP P19062
C	71	MSE	MET	modified residue	UNP P19062
C	75	MSE	MET	modified residue	UNP P19062
C	76	MSE	MET	modified residue	UNP P19062
C	85	MSE	MET	modified residue	UNP P19062
C	141	MSE	MET	modified residue	UNP P19062
C	167	MSE	MET	modified residue	UNP P19062
C	303	MSE	MET	modified residue	UNP P19062
C	309	MSE	MET	modified residue	UNP P19062
C	312	MSE	MET	modified residue	UNP P19062
C	320	MSE	MET	modified residue	UNP P19062
C	322	MSE	MET	modified residue	UNP P19062
D	21	MSE	MET	modified residue	UNP P19062
D	71	MSE	MET	modified residue	UNP P19062
D	75	MSE	MET	modified residue	UNP P19062
D	76	MSE	MET	modified residue	UNP P19062
D	85	MSE	MET	modified residue	UNP P19062
D	141	MSE	MET	modified residue	UNP P19062
D	167	MSE	MET	modified residue	UNP P19062
D	303	MSE	MET	modified residue	UNP P19062
D	309	MSE	MET	modified residue	UNP P19062
D	312	MSE	MET	modified residue	UNP P19062
D	320	MSE	MET	modified residue	UNP P19062
D	322	MSE	MET	modified residue	UNP P19062

- Molecule 2 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	9	Total Cl 9 9	0	0
2	B	6	Total Cl 6 6	0	0
2	C	9	Total Cl 9 9	0	0
2	D	6	Total Cl 6 6	0	0

- Molecule 3 is water.

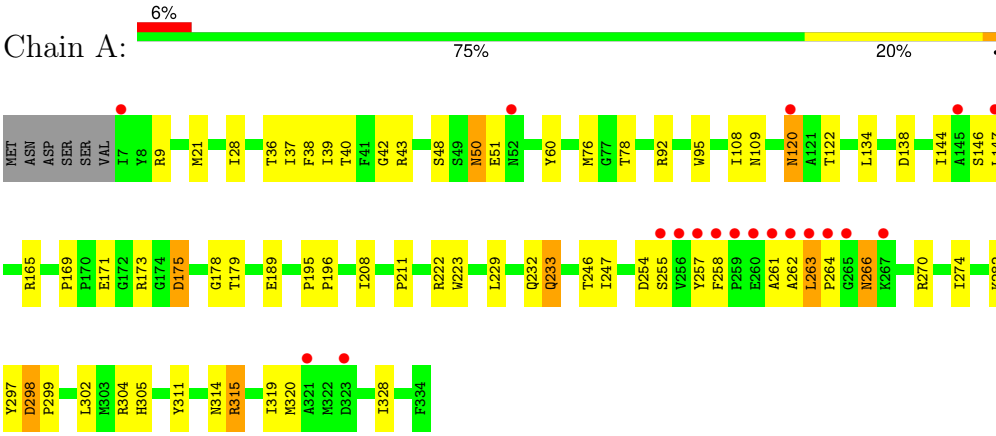
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	244	Total O 244 244	0	0
3	B	279	Total O 279 279	0	0
3	C	234	Total O 234 234	0	0
3	D	268	Total O 268 268	0	0

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.

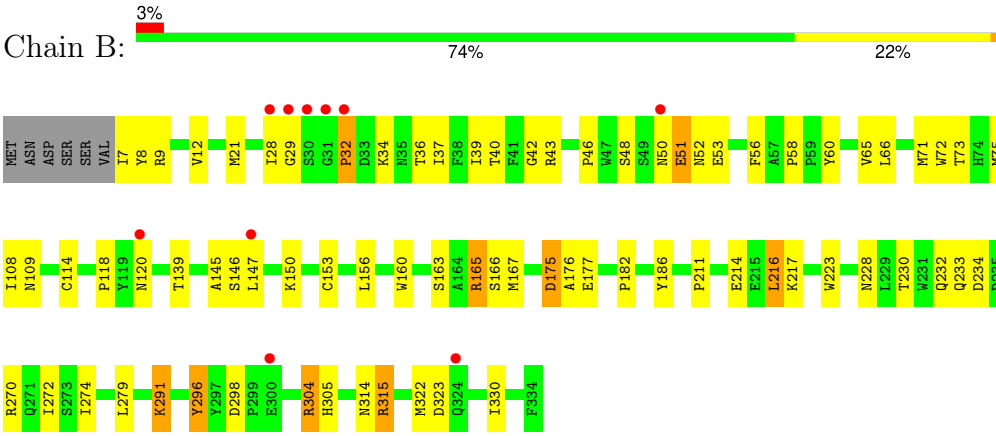
• Molecule 1: baseplate structural protein gp8

Chain A:



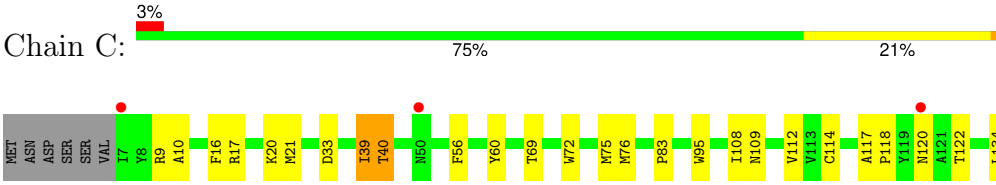
• Molecule 1: baseplate structural protein gp8

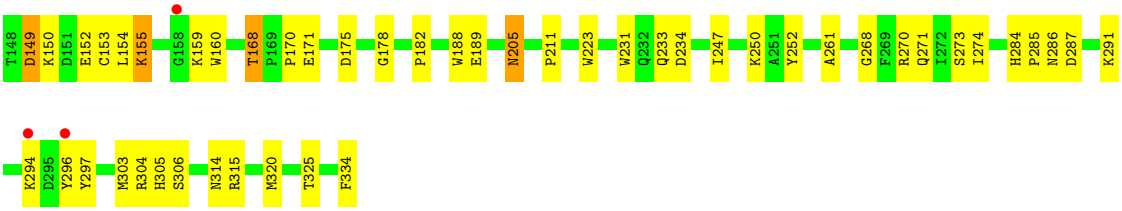
Chain B:



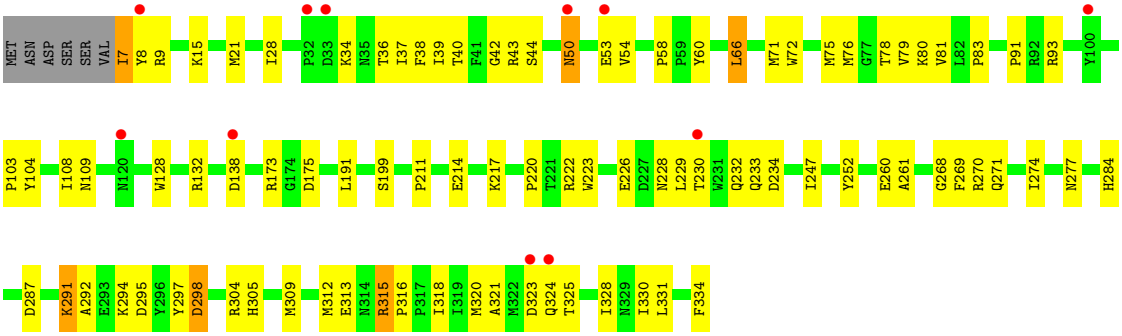
• Molecule 1: baseplate structural protein gp8

Chain C:





• Molecule 1: baseplate structural protein gp8



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	66.39Å 78.47Å 88.23Å 110.96° 97.60° 111.39°	Depositor
Resolution (Å)	27.08 – 2.00 27.08 – 2.00	Depositor EDS
% Data completeness (in resolution range)	97.4 (27.08-2.00) 97.5 (27.08-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	5.11 (at 1.99Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.213 , 0.240 0.212 , 0.239	Depositor DCC
R_{free} test set	2410 reflections (2.48%)	wwPDB-VP
Wilson B-factor (Å^2)	24.4	Xtriage
Anisotropy	0.401	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 38.4	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	11579	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.60% 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: CL

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	0.34	0/2697	0.62	0/3658
1	B	0.37	0/2697	0.65	1/3658 (0.0%)
1	C	0.34	0/2697	0.61	0/3658
1	D	0.36	0/2697	0.63	1/3658 (0.0%)
All	All	0.35	0/10788	0.63	2/14632 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	298	ASP	N-CA-C	-5.60	95.88	111.00
1	B	298	ASP	N-CA-C	-5.39	96.44	111.00

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	2631	0	2509	68	0
1	B	2631	0	2509	73	0
1	C	2631	0	2509	69	0
1	D	2631	0	2509	74	0
2	A	9	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	6	0	0	1	0
2	C	9	0	0	2	0
2	D	6	0	0	2	0
3	A	244	0	0	12	0
3	B	279	0	0	7	0
3	C	234	0	0	11	0
3	D	268	0	0	11	0
All	All	11579	0	10036	266	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 13.

All (266) 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:D:228:ASN:HD21	1:D:230:THR:HG22	1.17	1.05
1:A:95:TRP:HB3	1:A:120:ASN:HD21	1.21	1.02
1:B:28:ILE:HD11	1:B:37:ILE:HD12	1.44	0.98
1:A:266:ASN:HB3	1:A:319:ILE:HG23	1.51	0.91
1:D:217:LYS:HA	3:D:1925:HOH:O	1.72	0.88
1:D:220:PRO:HG3	3:D:1925:HOH:O	1.75	0.85
1:D:228:ASN:ND2	1:D:230:THR:HG22	1.92	0.83
1:B:228:ASN:HD21	1:B:230:THR:HG22	1.44	0.81
1:D:83:PRO:HG2	2:D:1726:CL:CL	2.18	0.81
1:C:205:ASN:H	1:C:205:ASN:HD22	1.28	0.78
1:B:147:LEU:HD21	1:B:156:LEU:HD12	1.68	0.74
1:D:315:ARG:HB2	1:D:316:PRO:HD2	1.69	0.74
1:A:254:ASP:O	3:A:1873:HOH:O	2.06	0.73
1:A:40:THR:HG22	1:A:78:THR:HG22	1.70	0.72
3:A:1831:HOH:O	1:B:232:GLN:HG2	1.90	0.71
1:A:222:ARG:HG2	1:A:222:ARG:HH21	1.56	0.71
1:A:286:ASN:HA	3:A:1925:HOH:O	1.91	0.71
1:D:229:LEU:O	1:D:232:GLN:HG3	1.92	0.70
1:B:28:ILE:HD11	1:B:37:ILE:CD1	2.22	0.69
1:A:255:SER:C	3:A:1873:HOH:O	2.32	0.68
1:D:291:LYS:HD3	3:D:1837:HOH:O	1.92	0.68
1:A:258:PHE:CD1	3:A:1873:HOH:O	2.47	0.68
1:A:258:PHE:HD2	1:A:261:ALA:HB3	1.59	0.68
1:C:10:ALA:HB2	1:D:313:GLU:HG3	1.76	0.68
1:B:40:THR:HG22	1:B:78:THR:HG22	1.76	0.67
1:D:228:ASN:HD21	1:D:230:THR:CG2	2.00	0.67

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:147:LEU:HD11	1:A:156:LEU:HD12	1.75	0.67
1:D:7:ILE:N	1:D:7:ILE:HD13	2.10	0.67
1:A:282:LYS:NZ	3:A:1831:HOH:O	2.27	0.66
1:A:95:TRP:HB3	1:A:120:ASN:ND2	2.04	0.66
1:B:228:ASN:ND2	1:B:230:THR:HG22	2.10	0.66
1:B:71:MSE:HE1	3:B:1774:HOH:O	1.94	0.65
1:B:279:LEU:HD21	1:B:291:LYS:HE2	1.78	0.65
1:C:304:ARG:HH11	1:C:304:ARG:HG3	1.61	0.65
3:C:1909:HOH:O	1:D:316:PRO:HG2	1.95	0.65
1:B:228:ASN:HD21	1:B:230:THR:CG2	2.10	0.65
1:B:36:THR:HG23	1:B:80:LYS:HE3	1.81	0.63
1:C:56:PHE:O	1:D:7:ILE:HD11	1.96	0.63
1:D:39:ILE:HG22	1:D:79:VAL:HG22	1.80	0.63
1:A:175:ASP:HB2	1:A:179:THR:H	1.64	0.63
3:A:1925:HOH:O	1:B:232:GLN:HG2	1.98	0.62
1:B:51:GLU:HA	1:B:56:PHE:CD1	2.35	0.62
1:A:262:ALA:HA	1:A:266:ASN:ND2	2.15	0.62
1:B:51:GLU:HA	1:B:56:PHE:CG	2.35	0.62
1:B:322:MSE:HE3	1:B:323:ASP:OD2	1.98	0.62
1:D:40:THR:HG22	1:D:78:THR:HG22	1.82	0.61
1:B:28:ILE:HG22	1:B:29:GLY:N	2.15	0.61
1:A:9:ARG:HD2	1:B:58:PRO:O	2.01	0.61
1:A:257:TYR:N	3:A:1873:HOH:O	2.34	0.60
1:A:262:ALA:HA	1:A:266:ASN:HD21	1.66	0.60
1:B:72:TRP:HB3	1:B:304:ARG:HD2	1.84	0.60
1:C:60:TYR:CE1	1:D:9:ARG:HD2	2.37	0.59
1:C:16:PHE:CE1	1:C:20:LYS:HE3	2.37	0.59
1:A:39:ILE:HD11	1:A:328:ILE:HG21	1.85	0.59
1:A:50:ASN:N	1:A:50:ASN:HD22	2.00	0.59
1:C:205:ASN:HD22	1:C:205:ASN:N	2.00	0.59
1:D:321:ALA:O	1:D:324:GLN:HB3	2.02	0.58
1:B:165:ARG:HD2	1:B:167:MSE:SE	2.52	0.58
1:B:66:LEU:HD12	3:B:1789:HOH:O	2.04	0.58
1:D:43:ARG:NE	3:D:1914:HOH:O	2.36	0.58
1:C:152:GLU:HA	1:C:155:LYS:HG2	1.86	0.58
1:A:108:ILE:O	1:A:109:ASN:HB2	2.04	0.57
1:B:234:ASP:OD1	1:B:241:ARG:HD2	2.05	0.57
1:C:39:ILE:HD13	1:C:274:ILE:HD11	1.85	0.57
1:B:43:ARG:HG2	1:B:270:ARG:HB2	1.86	0.57
1:C:147:LEU:HD13	1:C:153:CYS:HA	1.86	0.57
1:C:114:CYS:SG	1:C:170:PRO:HD2	2.45	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:304:ARG:NH1	3:C:1774:HOH:O	2.38	0.57
1:C:315:ARG:HB3	1:D:8:TYR:CD1	2.40	0.56
1:D:324:GLN:HG2	1:D:325:THR:N	2.20	0.56
1:D:39:ILE:CG2	1:D:79:VAL:HG22	2.35	0.56
1:D:21:MSE:HG3	1:D:247:ILE:HG13	1.88	0.56
1:D:173:ARG:HH22	1:D:226:GLU:CD	2.09	0.56
1:D:309:MSE:SE	1:D:312:MSE:HE3	2.56	0.56
1:A:222:ARG:HG2	1:A:222:ARG:NH2	2.19	0.55
1:B:50:ASN:O	1:B:53:GLU:HG2	2.06	0.55
1:C:69:THR:HA	1:C:305:HIS:HE1	1.71	0.55
1:C:315:ARG:HB3	1:D:8:TYR:CE1	2.41	0.55
1:A:50:ASN:HD22	1:A:50:ASN:H	1.53	0.55
1:D:72:TRP:HA	1:D:75:MSE:HE3	1.89	0.55
1:B:39:ILE:HA	1:B:274:ILE:HD13	1.88	0.54
1:B:72:TRP:HA	1:B:75:MSE:HE3	1.90	0.54
1:C:170:PRO:HG3	1:C:188:TRP:CD1	2.42	0.54
1:C:20:LYS:HE2	1:D:334:PHE:CD1	2.42	0.54
1:D:42:GLY:C	1:D:76:MSE:HE2	2.28	0.54
1:B:165:ARG:HD3	1:B:166:SER:O	2.08	0.54
1:C:21:MSE:HG3	1:C:247:ILE:HG13	1.89	0.53
1:C:294:LYS:HB2	1:C:297:TYR:CZ	2.44	0.53
1:B:108:ILE:O	1:B:109:ASN:HB2	2.08	0.53
1:A:258:PHE:CD2	1:A:261:ALA:HB3	2.42	0.53
1:A:42:GLY:HA2	1:A:76:MSE:HG3	1.91	0.53
1:A:315:ARG:HB3	1:B:8:TYR:CE1	2.43	0.53
1:B:114:CYS:HA	1:B:120:ASN:OD1	2.09	0.53
1:C:108:ILE:O	1:C:109:ASN:HB2	2.09	0.52
1:B:21:MSE:HG3	1:B:247:ILE:HG13	1.91	0.52
1:C:304:ARG:HG3	3:C:1774:HOH:O	2.09	0.52
1:A:258:PHE:CE2	1:A:320:MSE:SE	3.13	0.52
1:A:266:ASN:CB	1:A:319:ILE:HG23	2.33	0.52
1:D:277:ASN:OD1	1:D:291:LYS:NZ	2.33	0.52
1:B:50:ASN:O	1:B:52:ASN:N	2.43	0.51
1:D:28:ILE:HD12	1:D:37:ILE:HG23	1.92	0.51
1:C:149:ASP:OD2	1:C:149:ASP:N	2.41	0.51
1:A:258:PHE:N	3:A:1873:HOH:O	2.05	0.51
1:D:34:LYS:NZ	3:D:1992:HOH:O	2.40	0.51
1:B:270:ARG:HG3	1:B:270:ARG:HH11	1.75	0.51
1:A:144:ILE:O	1:A:144:ILE:HG22	2.10	0.50
1:D:108:ILE:O	1:D:109:ASN:HB2	2.12	0.50
1:B:147:LEU:HD12	1:B:147:LEU:N	2.26	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:147:LEU:HD23	1:B:153:CYS:HA	1.92	0.50
1:D:53:GLU:HG2	1:D:54:VAL:N	2.27	0.50
3:C:1909:HOH:O	1:D:318:ILE:HD11	2.11	0.50
1:A:134:LEU:HD11	1:A:189:GLU:HB2	1.93	0.50
1:C:76:MSE:HE3	1:C:261:ALA:HB2	1.94	0.50
1:B:304:ARG:NH1	3:B:1770:HOH:O	2.38	0.49
1:C:297:TYR:N	3:C:1932:HOH:O	2.45	0.49
1:A:292:ALA:HB1	1:A:297:TYR:CE2	2.47	0.49
1:C:134:LEU:HD11	1:C:189:GLU:HB2	1.94	0.49
1:D:36:THR:HG22	1:D:38:PHE:CE1	2.48	0.49
1:C:69:THR:HA	1:C:305:HIS:CE1	2.47	0.49
1:C:117:ALA:HB1	1:C:118:PRO:HD2	1.94	0.49
1:D:39:ILE:HG22	1:D:79:VAL:CG2	2.42	0.49
1:D:268:GLY:HA2	3:D:1916:HOH:O	2.12	0.49
1:A:178:GLY:O	1:A:189:GLU:HA	2.12	0.49
1:C:9:ARG:HD3	1:D:60:TYR:CD1	2.47	0.49
1:C:122:THR:HB	1:C:171:GLU:HG2	1.93	0.49
1:D:294:LYS:HG2	1:D:297:TYR:OH	2.13	0.49
1:C:320:MSE:HG2	3:C:1778:HOH:O	2.12	0.49
1:C:40:THR:HG21	1:C:75:MSE:HE2	1.95	0.48
1:C:40:THR:HG23	1:C:75:MSE:HG3	1.94	0.48
1:A:263:LEU:HD12	1:A:264:PRO:HD3	1.95	0.48
1:B:182:PRO:HD2	1:B:186:TYR:O	2.13	0.48
1:C:120:ASN:O	1:C:122:THR:HG23	2.13	0.48
1:D:39:ILE:HD11	1:D:328:ILE:HG21	1.96	0.48
1:A:315:ARG:HB3	1:B:8:TYR:CD1	2.48	0.48
1:B:139:THR:HG22	1:B:163:SER:OG	2.14	0.47
1:A:9:ARG:HD3	1:B:60:TYR:CD1	2.49	0.47
1:A:122:THR:HB	1:A:171:GLU:HB3	1.95	0.47
1:B:52:ASN:HB2	3:B:1896:HOH:O	2.13	0.47
1:C:303:MSE:HG3	1:C:306:SER:HB3	1.96	0.47
1:B:314:ASN:C	1:B:315:ARG:HG2	2.35	0.47
1:C:291:LYS:NZ	1:C:291:LYS:HB3	2.29	0.47
1:A:263:LEU:HD12	1:A:264:PRO:CD	2.45	0.47
1:C:271:GLN:HG2	1:C:314:ASN:OD1	2.13	0.47
1:B:48:SER:O	1:B:51:GLU:HG2	2.14	0.47
1:A:21:MSE:HG3	1:A:247:ILE:HG13	1.96	0.47
1:C:168:THR:HG23	1:C:182:PRO:HB3	1.97	0.47
1:C:143:SER:HB2	1:C:159:LYS:H	1.80	0.46
1:B:279:LEU:CD2	1:B:291:LYS:HE2	2.43	0.46
1:B:12:VAL:HG23	1:B:12:VAL:O	2.13	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:108:ILE:HD12	1:C:154:LEU:HD21	1.97	0.46
1:B:330:ILE:HG12	3:B:1902:HOH:O	2.15	0.46
1:A:229:LEU:O	1:A:232:GLN:HG3	2.16	0.46
1:A:286:ASN:ND2	3:A:1925:HOH:O	2.31	0.46
1:B:42:GLY:HA2	1:B:76:MSE:HE3	1.98	0.46
1:C:285:PRO:HG2	3:C:1927:HOH:O	2.16	0.46
1:B:214:GLU:HG2	2:B:1710:CL:CL	2.53	0.46
1:D:128:TRP:CE2	1:D:199:SER:HB2	2.51	0.46
1:A:92:ARG:HB2	1:A:208:ILE:HG23	1.98	0.46
1:B:211:PRO:HB3	1:B:223:TRP:CE2	2.50	0.46
1:C:178:GLY:O	1:C:189:GLU:HA	2.16	0.46
1:A:28:ILE:HG12	1:A:37:ILE:HD12	1.98	0.45
1:B:118:PRO:C	1:B:120:ASN:H	2.19	0.45
1:C:76:MSE:HE3	1:C:261:ALA:CB	2.45	0.45
1:C:250:LYS:NZ	2:C:1718:CL:CL	2.86	0.45
1:B:230:THR:HG23	1:B:234:ASP:OD1	2.17	0.45
1:C:72:TRP:HA	1:C:75:MSE:HE3	1.98	0.45
1:D:40:THR:CG2	1:D:78:THR:HG22	2.47	0.45
1:B:73:THR:OG1	3:B:1770:HOH:O	2.21	0.45
1:B:71:MSE:HG2	3:B:1768:HOH:O	2.16	0.45
1:D:291:LYS:O	1:D:291:LYS:HG3	2.17	0.45
1:A:60:TYR:HA	1:B:9:ARG:HB3	1.99	0.45
1:B:32:PRO:HD3	3:D:1887:HOH:O	2.16	0.45
1:C:296:TYR:HB2	3:C:1932:HOH:O	2.17	0.45
1:D:44:SER:HA	1:D:268:GLY:O	2.17	0.45
1:B:28:ILE:HG22	1:B:29:GLY:H	1.80	0.44
1:C:69:THR:HG23	3:C:1870:HOH:O	2.16	0.44
1:B:304:ARG:HG3	1:B:305:HIS:CD2	2.53	0.44
1:C:143:SER:CB	1:C:159:LYS:H	2.31	0.44
1:B:147:LEU:CD2	1:B:153:CYS:HA	2.48	0.44
1:D:211:PRO:HB3	1:D:223:TRP:CE2	2.52	0.44
1:D:270:ARG:HG3	1:D:270:ARG:HH11	1.82	0.44
1:D:230:THR:HG23	1:D:234:ASP:OD1	2.18	0.44
1:C:9:ARG:HD2	1:D:58:PRO:O	2.17	0.44
1:D:175:ASP:HB2	3:D:1838:HOH:O	2.18	0.44
1:D:284:HIS:HB2	1:D:287:ASP:OD2	2.18	0.44
1:A:36:THR:HG22	1:A:38:PHE:CE1	2.53	0.44
1:C:10:ALA:HB2	1:D:313:GLU:CG	2.47	0.44
1:C:17:ARG:HD2	1:C:334:PHE:O	2.17	0.44
1:C:304:ARG:HG3	1:C:304:ARG:NH1	2.30	0.44
3:A:1891:HOH:O	1:B:32:PRO:HG3	2.16	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:231:TRP:HA	1:C:234:ASP:OD2	2.17	0.43
1:D:53:GLU:HG2	1:D:54:VAL:H	1.82	0.43
1:D:132:ARG:HB2	1:D:191:LEU:HD11	2.00	0.43
1:D:330:ILE:HG22	1:D:331:LEU:N	2.33	0.43
1:A:39:ILE:O	1:A:39:ILE:HG23	2.18	0.43
1:A:195:PRO:HA	1:A:196:PRO:HD3	1.89	0.43
1:B:46:PRO:HA	1:B:270:ARG:NE	2.33	0.43
1:D:15:LYS:HE3	3:D:1957:HOH:O	2.17	0.43
1:B:175:ASP:OD2	1:B:176:ALA:N	2.45	0.43
1:C:286:ASN:HB2	3:C:1927:HOH:O	2.19	0.43
1:D:71:MSE:HE1	1:D:271:GLN:HB3	2.01	0.43
1:B:36:THR:CG2	1:B:80:LYS:HE3	2.48	0.43
1:C:268:GLY:HA2	3:C:1778:HOH:O	2.18	0.43
1:B:217:LYS:HG2	1:B:236:PHE:CD2	2.54	0.43
1:A:120:ASN:HD22	1:A:120:ASN:HA	1.56	0.43
1:B:65:VAL:HG23	1:B:66:LEU:N	2.34	0.42
1:C:60:TYR:CZ	1:D:9:ARG:HD2	2.54	0.42
1:D:261:ALA:O	1:D:320:MSE:HE3	2.19	0.42
1:B:150:LYS:HA	1:B:160:TRP:CE3	2.54	0.42
1:A:297:TYR:CG	1:A:302:LEU:HD21	2.54	0.42
1:D:214:GLU:HB2	2:D:1724:CL:CL	2.56	0.42
1:A:150:LYS:HG3	1:A:160:TRP:CD1	2.54	0.42
1:B:150:LYS:HG3	1:B:160:TRP:CG	2.54	0.42
1:C:83:PRO:HD2	2:C:1719:CL:CL	2.56	0.42
1:D:37:ILE:CG1	1:D:81:VAL:HB	2.50	0.42
1:A:36:THR:CG2	1:A:38:PHE:CE1	3.03	0.42
1:C:95:TRP:HB3	1:C:120:ASN:OD1	2.19	0.42
1:C:252:TYR:HB3	1:C:325:THR:CG2	2.50	0.42
1:D:50:ASN:HD21	1:D:53:GLU:CB	2.32	0.42
1:A:211:PRO:HB3	1:A:223:TRP:CE2	2.55	0.42
1:B:40:THR:O	1:B:272:ILE:HA	2.20	0.42
1:C:33:ASP:OD2	1:C:33:ASP:N	2.53	0.42
1:D:304:ARG:HG2	1:D:305:HIS:CD2	2.55	0.42
1:B:296:TYR:OH	1:D:295:ASP:HB2	2.20	0.42
1:D:91:PRO:HG2	3:D:1781:HOH:O	2.18	0.42
1:A:50:ASN:H	1:A:50:ASN:ND2	2.18	0.42
1:A:233:GLN:HE21	1:A:233:GLN:HB2	1.72	0.42
1:A:274:ILE:HB	1:A:311:TYR:HB3	2.02	0.42
1:A:314:ASN:C	1:A:315:ARG:HG3	2.38	0.42
1:D:36:THR:HG23	1:D:80:LYS:HD2	2.02	0.42
1:A:28:ILE:HD11	1:A:37:ILE:HD12	2.01	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:173:ARG:O	1:A:178:GLY:HA2	2.20	0.41
1:A:28:ILE:CD1	1:A:37:ILE:HD12	2.50	0.41
1:A:255:SER:HA	1:A:258:PHE:CZ	2.55	0.41
1:B:270:ARG:HG3	1:B:270:ARG:NH1	2.33	0.41
1:D:66:LEU:HD13	3:D:1886:HOH:O	2.19	0.41
1:B:114:CYS:HA	1:B:120:ASN:CG	2.40	0.41
1:C:170:PRO:HG3	1:C:188:TRP:CG	2.55	0.41
1:A:9:ARG:HD3	1:B:60:TYR:CE1	2.56	0.41
1:C:95:TRP:O	1:C:120:ASN:OD1	2.39	0.41
1:A:304:ARG:HG2	1:A:305:HIS:CD2	2.55	0.41
1:C:39:ILE:CD1	1:C:274:ILE:HD11	2.50	0.41
1:C:270:ARG:HH11	1:C:270:ARG:HG3	1.85	0.41
1:D:269:PHE:HE1	1:D:315:ARG:HH21	1.68	0.41
1:A:43:ARG:HG2	1:A:270:ARG:HB2	2.01	0.41
1:C:150:LYS:HG3	1:C:160:TRP:CG	2.55	0.41
1:D:9:ARG:HG3	1:D:9:ARG:HH11	1.85	0.41
1:D:103:PRO:HG2	1:D:104:TYR:CD2	2.56	0.41
1:A:138:ASP:HA	1:A:150:LYS:HE3	2.02	0.41
1:A:286:ASN:HA	1:A:286:ASN:HD22	1.61	0.41
1:A:298:ASP:O	1:A:299:PRO:C	2.59	0.41
1:B:216:LEU:HD12	1:B:216:LEU:HA	1.93	0.41
1:C:16:PHE:CZ	1:C:20:LYS:HE3	2.55	0.41
1:C:315:ARG:HD2	1:D:8:TYR:CE1	2.56	0.41
1:D:43:ARG:N	1:D:76:MSE:HE2	2.36	0.41
1:D:252:TYR:HB3	1:D:325:THR:CG2	2.51	0.41
1:A:48:SER:O	1:A:51:GLU:HB2	2.21	0.41
1:A:95:TRP:CH2	1:A:169:PRO:HD3	2.56	0.40
3:A:1891:HOH:O	1:B:34:LYS:HE2	2.21	0.40
1:C:211:PRO:HB3	1:C:223:TRP:CE2	2.55	0.40
1:C:233:GLN:HE21	1:C:233:GLN:HB2	1.70	0.40
1:D:292:ALA:HB1	1:D:297:TYR:CE2	2.57	0.40
1:B:12:VAL:O	1:B:12:VAL:CG2	2.69	0.40
1:A:296:TYR:CG	1:A:297:TYR:N	2.89	0.40
1:C:284:HIS:N	1:C:287:ASP:OD2	2.53	0.40
1:D:39:ILE:HA	1:D:274:ILE:HD13	2.03	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	326/334 (98%)	311 (95%)	13 (4%)	2 (1%)	22 17
1	B	326/334 (98%)	311 (95%)	11 (3%)	4 (1%)	11 6
1	C	326/334 (98%)	315 (97%)	11 (3%)	0	100 100
1	D	326/334 (98%)	317 (97%)	9 (3%)	0	100 100
All	All	1304/1336 (98%)	1254 (96%)	44 (3%)	6 (0%)	25 21

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	51	GLU
1	B	145	ALA
1	B	175	ASP
1	A	175	ASP
1	B	32	PRO
1	A	146	SER

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	289/283 (102%)	279 (96%)	10 (4%)	31 31
1	B	289/283 (102%)	279 (96%)	10 (4%)	31 31
1	C	289/283 (102%)	280 (97%)	9 (3%)	35 36
1	D	289/283 (102%)	277 (96%)	12 (4%)	25 24

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	1156/1132 (102%)	1115 (96%)	41 (4%)	31 31

All (41) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	50	ASN
1	A	120	ASN
1	A	165	ARG
1	A	233	GLN
1	A	246	THR
1	A	263	LEU
1	A	266	ASN
1	A	286	ASN
1	A	298	ASP
1	A	315	ARG
1	B	7	ILE
1	B	146	SER
1	B	165	ARG
1	B	177	GLU
1	B	216	LEU
1	B	233	GLN
1	B	291	LYS
1	B	296	TYR
1	B	304	ARG
1	B	315	ARG
1	C	39	ILE
1	C	40	THR
1	C	112	VAL
1	C	149	ASP
1	C	155	LYS
1	C	168	THR
1	C	175	ASP
1	C	205	ASN
1	C	273	SER
1	D	7	ILE
1	D	50	ASN
1	D	66	LEU
1	D	93	ARG
1	D	138	ASP
1	D	222	ARG
1	D	233	GLN
1	D	260	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	D	291	LYS
1	D	298	ASP
1	D	315	ARG
1	D	323	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	23	ASN
1	A	50	ASN
1	A	52	ASN
1	A	120	ASN
1	A	232	GLN
1	A	233	GLN
1	A	266	ASN
1	A	286	ASN
1	A	305	HIS
1	A	324	GLN
1	A	329	ASN
1	B	233	GLN
1	B	277	ASN
1	B	286	ASN
1	B	329	ASN
1	C	23	ASN
1	C	205	ASN
1	C	233	GLN
1	C	271	GLN
1	C	286	ASN
1	C	305	HIS
1	D	23	ASN
1	D	50	ASN
1	D	52	ASN
1	D	228	ASN
1	D	232	GLN
1	D	233	GLN
1	D	329	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 30 ligands modelled in this entry, 30 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	316/334 (94%)	0.26	19 (6%)	29	27	14, 30, 59, 69	0
1	B	316/334 (94%)	0.01	10 (3%)	50	48	14, 27, 43, 57	0
1	C	316/334 (94%)	0.20	10 (3%)	50	48	15, 31, 53, 57	0
1	D	316/334 (94%)	0.04	11 (3%)	47	45	14, 28, 46, 64	0
All	All	1264/1336 (94%)	0.13	50 (3%)	43	41	14, 29, 52, 69	0

All (50) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	31	GLY	6.1
1	D	323	ASP	6.0
1	B	32	PRO	4.8
1	A	258	PHE	3.7
1	A	7	ILE	3.7
1	D	33	ASP	3.6
1	A	261	ALA	3.4
1	C	145	ALA	3.4
1	A	264	PRO	3.4
1	A	120	ASN	3.3
1	A	321	ALA	3.2
1	D	120	ASN	3.2
1	B	120	ASN	3.2
1	C	7	ILE	3.1
1	A	262	ALA	3.0
1	A	265	GLY	3.0
1	D	53	GLU	2.7
1	A	147	LEU	2.7
1	A	323	ASP	2.7
1	A	267	LYS	2.7
1	C	50	ASN	2.6

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	257	TYR	2.6
1	D	8	TYR	2.6
1	D	50	ASN	2.6
1	A	263	LEU	2.6
1	C	158	GLY	2.6
1	B	28	ILE	2.5
1	C	120	ASN	2.5
1	B	324	GLN	2.4
1	D	32	PRO	2.4
1	B	147	LEU	2.4
1	A	256	VAL	2.4
1	A	259	PRO	2.4
1	D	100	TYR	2.4
1	A	52	ASN	2.3
1	C	146	SER	2.3
1	B	50	ASN	2.2
1	D	230	THR	2.2
1	A	145	ALA	2.2
1	B	30	SER	2.2
1	D	324	GLN	2.2
1	D	138	ASP	2.2
1	C	296	TYR	2.1
1	C	144	ILE	2.1
1	C	147	LEU	2.1
1	B	29	GLY	2.1
1	B	300	GLU	2.1
1	C	294	LYS	2.1
1	A	260	GLU	2.0
1	A	255	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, 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
2	CL	D	1728	1/1	0.89	0.09	53,53,53,53	0
2	CL	B	1714	1/1	0.90	0.09	55,55,55,55	0
2	CL	C	1730	1/1	0.90	0.15	38,38,38,38	0
2	CL	A	1708	1/1	0.90	0.16	57,57,57,57	0
2	CL	B	1711	1/1	0.92	0.07	42,42,42,42	0
2	CL	A	1707	1/1	0.94	0.10	46,46,46,46	0
2	CL	C	1722	1/1	0.95	0.21	57,57,57,57	0
2	CL	C	1720	1/1	0.95	0.07	44,44,44,44	0
2	CL	D	1725	1/1	0.95	0.06	37,37,37,37	0
2	CL	C	1721	1/1	0.95	0.07	54,54,54,54	0
2	CL	B	1712	1/1	0.96	0.06	44,44,44,44	0
2	CL	A	1704	1/1	0.96	0.12	41,41,41,41	0
2	CL	C	1718	1/1	0.96	0.10	43,43,43,43	0
2	CL	C	1719	1/1	0.96	0.06	40,40,40,40	0
2	CL	D	1726	1/1	0.96	0.10	38,38,38,38	0
2	CL	D	1727	1/1	0.96	0.06	39,39,39,39	0
2	CL	A	1703	1/1	0.96	0.18	33,33,33,33	0
2	CL	C	1715	1/1	0.97	0.07	28,28,28,28	0
2	CL	C	1716	1/1	0.97	0.09	25,25,25,25	0
2	CL	B	1713	1/1	0.97	0.09	41,41,41,41	0
2	CL	A	1729	1/1	0.97	0.07	37,37,37,37	0
2	CL	A	1706	1/1	0.98	0.12	34,34,34,34	0
2	CL	C	1717	1/1	0.98	0.08	35,35,35,35	0
2	CL	D	1723	1/1	0.98	0.06	28,28,28,28	0
2	CL	D	1724	1/1	0.98	0.14	33,33,33,33	0
2	CL	A	1701	1/1	0.98	0.09	27,27,27,27	0
2	CL	A	1702	1/1	0.98	0.04	26,26,26,26	0
2	CL	A	1705	1/1	0.98	0.04	43,43,43,43	0
2	CL	B	1709	1/1	0.98	0.06	33,33,33,33	0
2	CL	B	1710	1/1	0.99	0.13	44,44,44,44	0

6.5 Other polymers (i)

There are no such residues in this entry.