



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 11:53 AM UTC

PDB ID : 5CQS / pdb_00005cqs
Title : Dimerization of Elp1 is essential for Elongator complex assembly
Authors : Lin, Z.; Xu, H.; Li, F.; Diao, W.; Long, J.; Shen, Y.
Deposited on : 2015-07-22
Resolution : 2.70 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

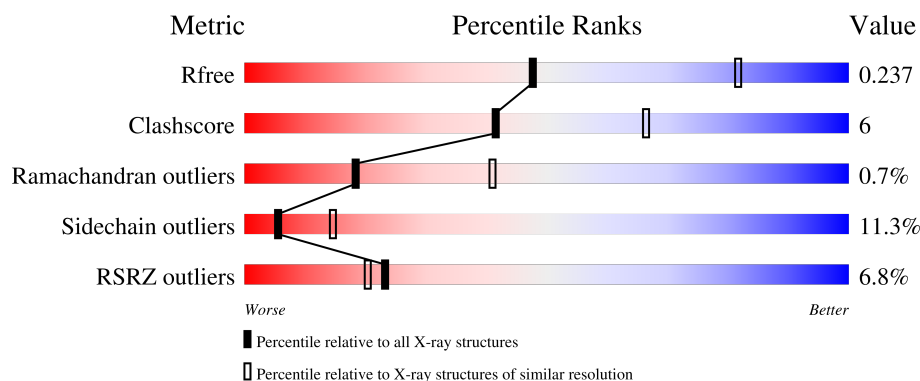
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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	435	<div> <div>5%</div> <div> <div>54%</div> <div>18%</div> <div>•</div> <div>25%</div> </div> </div>
1	B	435	<div> <div>5%</div> <div> <div>57%</div> <div>15%</div> <div>•</div> <div>26%</div> </div> </div>
1	C	435	<div> <div>5%</div> <div> <div>57%</div> <div>13%</div> <div>•</div> <div>28%</div> </div> </div>
1	D	435	<div> <div>5%</div> <div> <div>61%</div> <div>12%</div> <div>•</div> <div>26%</div> </div> </div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 9999 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 Elongator complex protein 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	325	Total	C	N	O	S	Se	0	0	0
			2515	1594	421	491	3	6			
1	B	323	Total	C	N	O	S	Se	0	0	0
			2492	1580	414	489	3	6			
1	C	313	Total	C	N	O	S	Se	0	0	0
			2450	1556	405	480	3	6			
1	D	324	Total	C	N	O	S	Se	0	0	0
			2521	1601	417	494	3	6			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	915	GLY	-	expression tag	UNP Q06706
A	916	PRO	-	expression tag	UNP Q06706
A	917	GLY	-	expression tag	UNP Q06706
A	918	SER	-	expression tag	UNP Q06706
B	915	GLY	-	expression tag	UNP Q06706
B	916	PRO	-	expression tag	UNP Q06706
B	917	GLY	-	expression tag	UNP Q06706
B	918	SER	-	expression tag	UNP Q06706
C	915	GLY	-	expression tag	UNP Q06706
C	916	PRO	-	expression tag	UNP Q06706
C	917	GLY	-	expression tag	UNP Q06706
C	918	SER	-	expression tag	UNP Q06706
D	915	GLY	-	expression tag	UNP Q06706
D	916	PRO	-	expression tag	UNP Q06706
D	917	GLY	-	expression tag	UNP Q06706
D	918	SER	-	expression tag	UNP Q06706

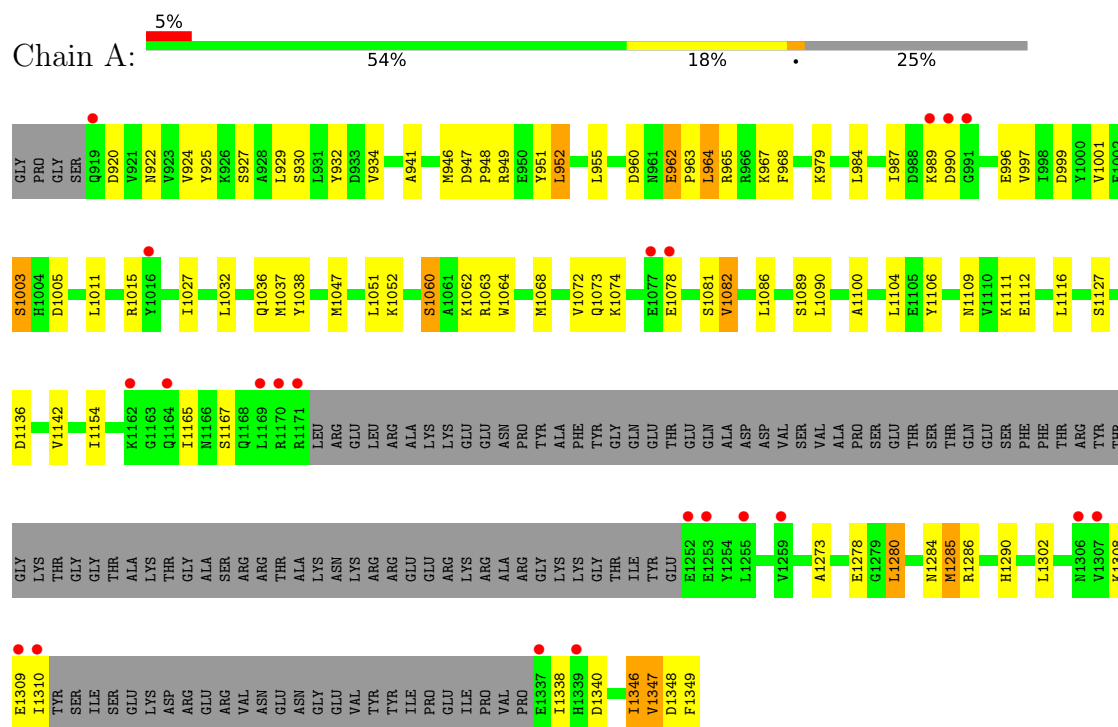
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	5	Total 5	O 5	0	0
2	B	1	Total 1	O 1	0	0
2	C	7	Total 7	O 7	0	0
2	D	8	Total 8	O 8	0	0

3 Residue-property plots [i](#)

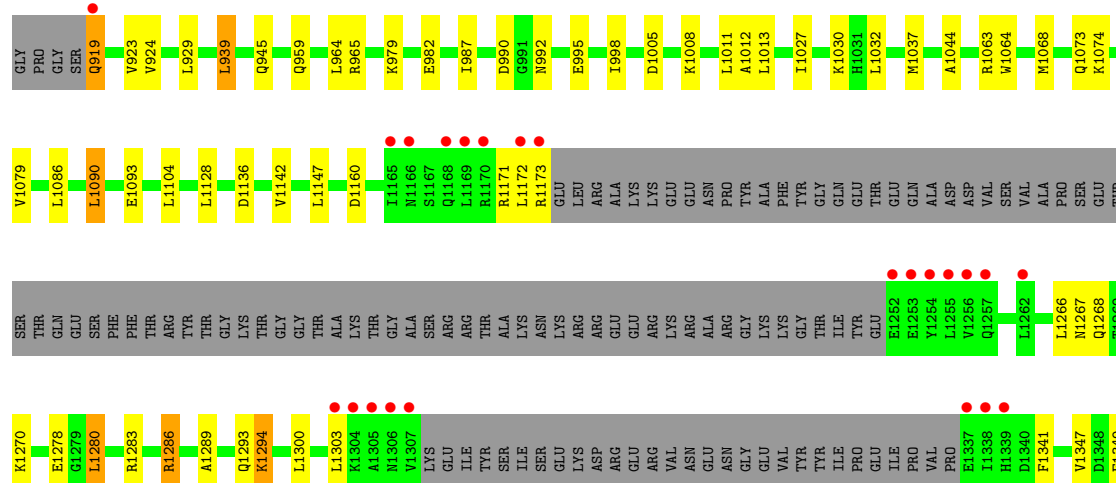
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Elongator complex protein 1



• Molecule 1: Elongator complex protein 1





4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	127.75Å 157.74Å 139.26Å 90.00° 93.09° 90.00°	Depositor
Resolution (Å)	45.79 – 2.70 45.79 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.3 (45.79-2.70) 98.9 (45.79-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.00 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.8.2_1309	Depositor
R, R_{free}	0.234 , 0.256 0.241 , 0.237	Depositor DCC
R_{free} test set	7553 reflections (9.95%)	wwPDB-VP
Wilson B-factor (Å ²)	60.5	Xtriage
Anisotropy	0.808	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 51.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	9999	wwPDB-VP
Average B, all atoms (Å ²)	70.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.01% 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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\# Z > 5$	RMSZ	$\# Z > 5$
1	A	0.49	0/2550	0.87	2/3446 (0.1%)
1	B	0.50	0/2526	0.88	2/3413 (0.1%)
1	C	0.50	0/2484	0.92	5/3353 (0.1%)
1	D	0.56	0/2555	0.89	1/3449 (0.0%)
All	All	0.51	0/10115	0.89	10/13661 (0.1%)

There are no bond length outliers.

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1073	GLN	N-CA-C	6.32	120.25	112.54
1	A	1142	VAL	N-CA-C	5.76	116.17	111.62
1	C	992	ASN	N-CA-C	5.53	115.58	108.34
1	C	1265	ARG	N-CA-C	-5.29	105.41	111.07
1	B	1142	VAL	N-CA-C	5.29	116.11	111.56
1	C	966	ARG	N-CA-C	-5.21	105.28	111.69
1	A	1338	ILE	N-CA-C	5.20	115.84	107.73
1	C	970	ILE	CB-CA-C	-5.19	105.32	111.97
1	D	1142	VAL	N-CA-C	5.12	115.67	111.62
1	C	934	VAL	CB-CA-C	-5.10	105.26	112.14

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	2515	0	2379	46	0
1	B	2492	0	2349	37	0
1	C	2450	0	2342	33	0
1	D	2521	0	2406	29	0
2	A	5	0	0	0	0
2	B	1	0	0	0	0
2	C	7	0	0	0	0
2	D	8	0	0	0	0
All	All	9999	0	9476	124	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 (124) 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:A:1073:GLN:NE2	1:D:1136:ASP:OD2	2.19	0.72
1:B:988:ASP:OD1	1:B:988:ASP:N	2.24	0.69
1:C:941:ALA:HA	1:C:946:MSE:HE3	1.73	0.68
1:B:1128:LEU:HD21	1:C:1065:ARG:HB3	1.76	0.67
1:B:998:ILE:HG23	1:B:1027:ILE:HD12	1.75	0.67
1:A:922:ASN:ND2	1:A:946:MSE:HE2	2.09	0.67
1:B:981:LEU:HD12	1:B:1006:LEU:HD13	1.76	0.67
1:A:925:TYR:HB2	1:A:946:MSE:HE1	1.76	0.67
1:A:1052:LYS:NZ	1:A:1078:GLU:OE2	2.29	0.66
1:A:1348:ASP:OD2	1:D:1008:LYS:NZ	2.26	0.66
1:B:1303:LEU:HB3	1:B:1338:ILE:HD13	1.78	0.66
1:B:1065:ARG:HB3	1:C:1128:LEU:HD13	1.78	0.64
1:A:1278:GLU:OE1	1:D:1063:ARG:NH2	2.33	0.62
1:C:961:ASN:O	1:C:966:ARG:NH2	2.33	0.61
1:D:998:ILE:HG23	1:D:1027:ILE:HD13	1.83	0.61
1:C:1124:ASP:O	1:C:1128:LEU:HB2	2.01	0.60
1:A:1063:ARG:NH2	1:D:1278:GLU:OE1	2.33	0.60
1:C:988:ASP:HB3	1:C:990:ASP:HB2	1.83	0.59
1:A:941:ALA:HA	1:A:946:MSE:HE3	1.85	0.58
1:A:1051:LEU:HD12	1:A:1074:LYS:HG3	1.86	0.58
1:C:1288:GLN:OE1	1:C:1288:GLN:N	2.34	0.57
1:B:1286:ARG:HE	1:C:1047:MSE:HE2	1.69	0.57
1:B:1055:MSE:HE1	1:B:1075:PHE:HB2	1.85	0.57
1:B:1043:VAL:O	1:B:1047:MSE:HG3	2.05	0.57
1:C:955:LEU:HD23	1:C:958:LEU:HD12	1.87	0.56
1:A:984:LEU:HD11	1:A:996:GLU:HG2	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:922:ASN:HD21	1:A:946:MSE:HE2	1.71	0.56
1:D:1068:MSE:HE1	1:D:1079:VAL:HG13	1.87	0.55
1:A:1136:ASP:OD2	1:D:1073:GLN:NE2	2.41	0.54
1:D:1147:LEU:HD22	1:D:1280:LEU:HD13	1.89	0.54
1:B:1047:MSE:HE3	1:C:1281:CYS:O	2.08	0.53
1:A:1106:TYR:OH	1:D:1128:LEU:HD11	2.09	0.53
1:B:1270:LYS:HB3	1:B:1271:PRO:HD3	1.89	0.53
1:C:1075:PHE:HB3	1:C:1078:GLU:HG3	1.91	0.51
1:A:1109:ASN:HB3	1:A:1112:GLU:CG	2.41	0.50
1:A:1109:ASN:HB3	1:A:1112:GLU:HG3	1.93	0.50
1:B:1076:PRO:O	1:B:1078:GLU:N	2.44	0.50
1:C:968:PHE:CD1	1:C:984:LEU:HB2	2.47	0.50
1:B:1276:VAL:HG12	1:B:1280:LEU:HD22	1.94	0.49
1:B:989:LYS:N	1:B:990:ASP:HA	2.27	0.49
1:A:1047:MSE:HE1	1:D:1286:ARG:HB3	1.95	0.49
1:A:1285:MSE:HE2	1:A:1285:MSE:HB3	1.75	0.48
1:B:932:TYR:HD1	1:B:970:ILE:HD12	1.77	0.48
1:B:936:LEU:O	1:B:940:VAL:HG23	2.13	0.48
1:B:1064:TRP:HB2	1:B:1086:LEU:HD13	1.96	0.48
1:B:1286:ARG:NE	1:C:1047:MSE:HE2	2.27	0.48
1:B:1065:ARG:HB3	1:C:1128:LEU:CD1	2.44	0.47
1:A:947:ASP:OD2	1:A:949:ARG:NH1	2.48	0.47
1:A:984:LEU:HD12	1:A:987:ILE:HD12	1.96	0.47
1:B:981:LEU:HD11	1:B:1001:VAL:HG22	1.95	0.47
1:C:1032:LEU:HD12	1:C:1037:MSE:HG3	1.96	0.47
1:B:1052:LYS:HD3	1:B:1075:PHE:CE2	2.49	0.47
1:A:1064:TRP:HB2	1:A:1086:LEU:HD13	1.97	0.47
1:C:1096:TYR:HB2	1:C:1120:ALA:HB2	1.96	0.47
1:B:1069:SER:HB2	1:C:1128:LEU:HD21	1.96	0.46
1:B:1263:ILE:O	1:B:1267:ASN:HB2	2.15	0.46
1:D:919:GLN:HB2	1:D:945:GLN:O	2.15	0.46
1:D:965:ARG:NH1	1:D:987:ILE:HD13	2.31	0.46
1:A:1047:MSE:HE2	1:D:1286:ARG:HE	1.81	0.46
1:A:1064:TRP:O	1:A:1068:MSE:HG2	2.17	0.45
1:C:931:LEU:HD23	1:C:931:LEU:HA	1.76	0.45
1:A:1308:LYS:C	1:A:1310:ILE:H	2.24	0.45
1:A:968:PHE:CD1	1:A:984:LEU:HB2	2.52	0.45
1:A:951:TYR:CE1	1:A:952:LEU:HD13	2.52	0.45
1:C:982:GLU:HA	1:C:1013:LEU:HD11	1.98	0.45
1:B:1128:LEU:CD2	1:C:1065:ARG:HB3	2.46	0.45
1:D:1280:LEU:HB3	1:D:1289:ALA:HB2	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1063:ARG:HH22	1:D:1278:GLU:CD	2.24	0.45
1:A:1165:ILE:HG21	1:A:1302:LEU:HD21	1.99	0.45
1:C:1086:LEU:O	1:C:1090:LEU:HB2	2.17	0.45
1:B:968:PHE:CD1	1:B:984:LEU:HB2	2.51	0.44
1:A:948:PRO:O	1:A:952:LEU:HB2	2.18	0.44
1:A:999:ASP:O	1:A:1003:SER:OG	2.27	0.44
1:C:1270:LYS:HE2	1:C:1342:PRO:HG3	2.00	0.44
1:A:1038:TYR:CG	1:A:1060:SER:HB2	2.53	0.43
1:A:952:LEU:HD12	1:A:952:LEU:HA	1.91	0.43
1:B:1278:GLU:O	1:B:1282:ARG:HG3	2.18	0.43
1:D:1171:ARG:O	1:D:1173:ARG:N	2.50	0.43
1:A:1346:ILE:HD11	1:D:1044:ALA:HB2	2.01	0.43
1:D:1293:GLN:HG3	1:D:1341:PHE:HE2	1.83	0.43
1:B:1341:PHE:HA	1:B:1342:PRO:HD3	1.85	0.43
1:A:932:TYR:CD1	1:A:967:LYS:HG2	2.54	0.43
1:B:1037:MSE:HB3	1:B:1037:MSE:HE2	1.73	0.43
1:D:990:ASP:OD2	1:D:992:ASN:ND2	2.40	0.43
1:D:982:GLU:HG2	1:D:1013:LEU:HD21	2.01	0.42
1:B:951:TYR:HD1	1:B:955:LEU:HD12	1.85	0.42
1:B:1065:ARG:C	1:C:1128:LEU:HD11	2.44	0.42
1:C:988:ASP:HB3	1:C:990:ASP:H	1.84	0.42
1:A:934:VAL:HG13	1:A:955:LEU:HD22	2.01	0.42
1:B:1052:LYS:HB2	1:B:1075:PHE:CZ	2.55	0.42
1:A:941:ALA:HA	1:A:946:MSE:CE	2.49	0.42
1:B:1280:LEU:HB3	1:B:1289:ALA:HB2	2.02	0.42
1:D:939:LEU:HD23	1:D:939:LEU:HA	1.85	0.42
1:A:997:VAL:O	1:A:1001:VAL:HG23	2.20	0.42
1:A:1078:GLU:O	1:A:1082:VAL:HG23	2.18	0.42
1:A:962:GLU:HG2	1:A:963:PRO:N	2.33	0.42
1:B:1036:GLN:C	1:B:1037:MSE:HG2	2.45	0.42
1:C:1136:ASP:N	1:C:1136:ASP:OD1	2.53	0.42
1:B:963:PRO:O	1:B:967:LYS:HG3	2.20	0.42
1:B:1076:PRO:C	1:B:1078:GLU:H	2.28	0.42
1:C:1030:LYS:HA	1:C:1030:LYS:HD2	1.78	0.42
1:D:1074:LYS:HA	1:D:1074:LYS:HD3	1.93	0.42
1:D:1294:LYS:HB3	1:D:1294:LYS:HE2	1.78	0.42
1:C:1114:VAL:HG13	1:C:1126:ALA:HB1	2.02	0.42
1:D:1064:TRP:HB2	1:D:1086:LEU:HD13	2.01	0.41
1:A:1280:LEU:HD12	1:A:1280:LEU:HA	1.91	0.41
1:A:1290:HIS:HB2	1:A:1347:VAL:HG22	2.01	0.41
1:A:964:LEU:HD12	1:A:964:LEU:HA	1.78	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1015:ARG:HH11	1:D:1349:PHE:HE1	1.67	0.41
1:B:971:ASP:OD2	1:B:983:HIS:HD2	2.02	0.41
1:C:1028:TYR:O	1:C:1032:LEU:HB2	2.20	0.41
1:A:989:LYS:HA	1:A:990:ASP:HA	1.72	0.41
1:A:1154:ILE:HD13	1:A:1273:ALA:HA	2.02	0.41
1:B:1109:ASN:HB3	1:B:1112:GLU:OE1	2.20	0.41
1:A:1100:ALA:HB2	1:A:1116:LEU:HB2	2.03	0.41
1:A:1349:PHE:HB2	1:D:1012:ALA:HB2	2.03	0.41
1:D:1283:ARG:HD2	1:D:1283:ARG:HA	1.85	0.41
1:C:932:TYR:HD1	1:C:970:ILE:HD12	1.86	0.40
1:C:1024:ILE:HA	1:C:1027:ILE:HG12	2.03	0.40
1:C:1037:MSE:HB3	1:C:1037:MSE:HE2	1.48	0.40
1:C:1066:GLU:OE1	1:C:1066:GLU:N	2.49	0.40
1:C:1280:LEU:HB3	1:C:1289:ALA:HB2	2.03	0.40
1:D:1090:LEU:HD12	1:D:1090:LEU:HA	1.86	0.40
1:D:1030:LYS:HA	1:D:1030:LYS:HD3	1.81	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	319/435 (73%)	304 (95%)	13 (4%)	2 (1%)	21	44
1	B	317/435 (73%)	292 (92%)	22 (7%)	3 (1%)	14	35
1	C	307/435 (71%)	287 (94%)	17 (6%)	3 (1%)	12	32
1	D	318/435 (73%)	301 (95%)	16 (5%)	1 (0%)	36	60
All	All	1261/1740 (72%)	1184 (94%)	68 (5%)	9 (1%)	18	41

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	1077	GLU
1	C	965	ARG
1	D	1172	LEU
1	A	1309	GLU
1	C	963	PRO
1	C	987	ILE
1	A	1089	SER
1	B	1342	PRO
1	B	963	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	255/371 (69%)	220 (86%)	35 (14%)	3	9
1	B	251/371 (68%)	223 (89%)	28 (11%)	6	15
1	C	252/371 (68%)	227 (90%)	25 (10%)	7	19
1	D	258/371 (70%)	231 (90%)	27 (10%)	6	17
All	All	1016/1484 (68%)	901 (89%)	115 (11%)	5	14

All (115) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	920	ASP
1	A	924	VAL
1	A	927	SER
1	A	929	LEU
1	A	930	SER
1	A	952	LEU
1	A	960	ASP
1	A	962	GLU
1	A	964	LEU
1	A	965	ARG
1	A	979	LYS
1	A	1003	SER
1	A	1005	ASP

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Mol	Chain	Res	Type
1	A	1011	LEU
1	A	1027	ILE
1	A	1032	LEU
1	A	1036	GLN
1	A	1037	MSE
1	A	1060	SER
1	A	1062	LYS
1	A	1072	VAL
1	A	1081	SER
1	A	1082	VAL
1	A	1090	LEU
1	A	1104	LEU
1	A	1111	LYS
1	A	1127	SER
1	A	1167	SER
1	A	1280	LEU
1	A	1284	ASN
1	A	1285	MSE
1	A	1286	ARG
1	A	1340	ASP
1	A	1346	ILE
1	A	1347	VAL
1	B	924	VAL
1	B	929	LEU
1	B	930	SER
1	B	939	LEU
1	B	960	ASP
1	B	964	LEU
1	B	988	ASP
1	B	1013	LEU
1	B	1021	GLN
1	B	1027	ILE
1	B	1032	LEU
1	B	1037	MSE
1	B	1062	LYS
1	B	1080	GLU
1	B	1084	GLU
1	B	1090	LEU
1	B	1093	GLU
1	B	1104	LEU
1	B	1128	LEU
1	B	1134	LYS

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Mol	Chain	Res	Type
1	B	1138	LEU
1	B	1140	GLU
1	B	1267	ASN
1	B	1280	LEU
1	B	1302	LEU
1	B	1303	LEU
1	B	1340	ASP
1	B	1347	VAL
1	C	924	VAL
1	C	929	LEU
1	C	990	ASP
1	C	1011	LEU
1	C	1013	LEU
1	C	1032	LEU
1	C	1037	MSE
1	C	1060	SER
1	C	1084	GLU
1	C	1090	LEU
1	C	1104	LEU
1	C	1105	GLU
1	C	1109	ASN
1	C	1128	LEU
1	C	1129	VAL
1	C	1132	LYS
1	C	1156	GLU
1	C	1165	ILE
1	C	1266	LEU
1	C	1269	THR
1	C	1280	LEU
1	C	1284	ASN
1	C	1302	LEU
1	C	1303	LEU
1	C	1347	VAL
1	D	919	GLN
1	D	923	VAL
1	D	924	VAL
1	D	929	LEU
1	D	939	LEU
1	D	959	GLN
1	D	964	LEU
1	D	979	LYS
1	D	995	GLU

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Mol	Chain	Res	Type
1	D	1005	ASP
1	D	1011	LEU
1	D	1032	LEU
1	D	1037	MSE
1	D	1090	LEU
1	D	1093	GLU
1	D	1104	LEU
1	D	1160	ASP
1	D	1266	LEU
1	D	1267	ASN
1	D	1268	GLN
1	D	1270	LYS
1	D	1280	LEU
1	D	1286	ARG
1	D	1294	LYS
1	D	1300	LEU
1	D	1303	LEU
1	D	1347	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1168	GLN
1	A	1345	HIS
1	B	983	HIS
1	B	1031	HIS
1	C	961	ASN
1	C	992	ASN
1	D	959	GLN
1	D	961	ASN
1	D	1035	ASN
1	D	1290	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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](#)

There are no ligands in this entry.

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	319/435 (73%)	0.43	22 (6%) 23 20	40, 74, 124, 147	0
1	B	317/435 (72%)	0.44	21 (6%) 24 21	40, 73, 130, 147	0
1	C	307/435 (70%)	0.57	20 (6%) 25 22	42, 68, 115, 137	0
1	D	318/435 (73%)	0.24	23 (7%) 21 18	38, 53, 116, 152	0
All	All	1261/1740 (72%)	0.42	86 (6%) 23 20	38, 68, 123, 152	0

All (86) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	1259	VAL	7.3
1	C	1306	ASN	7.0
1	B	920	ASP	6.9
1	C	1165	ILE	6.4
1	B	1253	GLU	6.0
1	C	1254	TYR	5.5
1	A	1252	GLU	4.6
1	D	1166	ASN	4.6
1	B	1172	LEU	4.5
1	B	1305	ALA	4.5
1	D	1337	GLU	4.3
1	B	1309	GLU	4.2
1	D	1305	ALA	4.2
1	D	1307	VAL	4.2
1	C	1339	HIS	4.2
1	A	1337	GLU	4.1
1	D	1252	GLU	4.1
1	B	1255	LEU	4.1
1	A	919	GLN	4.1
1	D	1173	ARG	4.1
1	A	1310	ILE	4.0

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Mol	Chain	Res	Type	RSRZ
1	B	1254	TYR	4.0
1	C	1255	LEU	3.9
1	D	1339	HIS	3.8
1	C	1267	ASN	3.8
1	A	1170	ARG	3.8
1	A	989	LYS	3.7
1	A	1171	ARG	3.7
1	B	1259	VAL	3.6
1	D	1253	GLU	3.5
1	B	1307	VAL	3.5
1	A	1253	GLU	3.2
1	D	1165	ILE	3.2
1	C	1337	GLU	3.2
1	C	1258	SER	3.1
1	D	1172	LEU	3.1
1	C	1257	GLN	3.1
1	B	1306	ASN	3.1
1	C	964	LEU	3.0
1	A	1306	ASN	2.9
1	D	1306	ASN	2.9
1	C	1162	LYS	2.8
1	A	990	ASP	2.8
1	D	1338	ILE	2.7
1	B	990	ASP	2.7
1	D	1168	GLN	2.7
1	A	1255	LEU	2.7
1	D	1254	TYR	2.7
1	B	1337	GLU	2.7
1	D	1255	LEU	2.6
1	B	1075	PHE	2.6
1	A	1309	GLU	2.5
1	C	1338	ILE	2.5
1	A	1339	HIS	2.5
1	B	1339	HIS	2.5
1	C	1305	ALA	2.5
1	D	919	GLN	2.5
1	D	1303	LEU	2.5
1	B	950	GLU	2.5
1	D	1257	GLN	2.5
1	D	1170	ARG	2.4
1	D	1169	LEU	2.4
1	A	991	GLY	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	921	VAL	2.4
1	C	1302	LEU	2.3
1	C	1256	VAL	2.3
1	B	1170	ARG	2.3
1	B	1168	GLN	2.3
1	C	1270	LYS	2.2
1	C	1263	ILE	2.2
1	B	1256	VAL	2.2
1	B	1077	GLU	2.2
1	A	1078	GLU	2.1
1	A	1164	GLN	2.1
1	A	1169	LEU	2.1
1	A	1162	LYS	2.1
1	A	1016	TYR	2.1
1	D	1262	LEU	2.1
1	D	1256	VAL	2.1
1	A	1077	GLU	2.0
1	B	1303	LEU	2.0
1	C	991	GLY	2.0
1	C	1294	LYS	2.0
1	D	1304	LYS	2.0
1	A	1259	VAL	2.0
1	A	1307	VAL	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.