



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 7, 2026 – 02:27 AM UTC

PDB ID : 3VYC / pdb_00003vyc
Title : Crystal structure of unliganded *Saccharomyces cerevisiae* CRM1 (Xpo1p)
Authors : Saito, N.; Matsuura, Y.
Deposited on : 2012-09-22
Resolution : 2.10 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
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

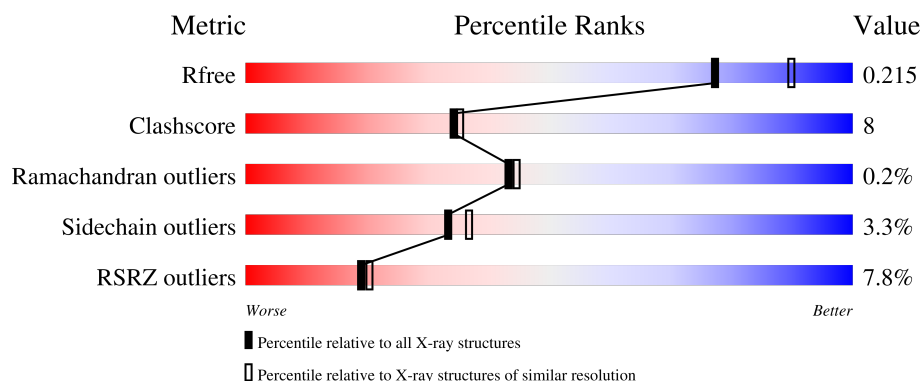
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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	1033	

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 8180 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 Exportin-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	974	Total	C	N	O	S	0	0	0
			7802	5013	1289	1461	39			

There are 51 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	VAL	deletion	UNP P30822
A	?	-	GLN	deletion	UNP P30822
A	?	-	ARG	deletion	UNP P30822
A	?	-	LEU	deletion	UNP P30822
A	?	-	PRO	deletion	UNP P30822
A	?	-	ALA	deletion	UNP P30822
A	?	-	THR	deletion	UNP P30822
A	?	-	GLU	deletion	UNP P30822
A	?	-	MET	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	PRO	deletion	UNP P30822
A	?	-	LEU	deletion	UNP P30822
A	?	-	ILE	deletion	UNP P30822
A	?	-	GLN	deletion	UNP P30822
A	?	-	LEU	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	VAL	deletion	UNP P30822
A	?	-	GLY	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	GLN	deletion	UNP P30822
A	?	-	ALA	deletion	UNP P30822
A	?	-	ILE	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	THR	deletion	UNP P30822
A	?	-	GLY	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	GLY	deletion	UNP P30822

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Chain	Residue	Modelled	Actual	Comment	Reference
A	?	-	ALA	deletion	UNP P30822
A	?	-	LEU	deletion	UNP P30822
A	?	-	ASN	deletion	UNP P30822
A	?	-	PRO	deletion	UNP P30822
A	?	-	GLU	deletion	UNP P30822
A	?	-	TYR	deletion	UNP P30822
A	?	-	MET	deletion	UNP P30822
A	?	-	LYS	deletion	UNP P30822
A	?	-	ARG	deletion	UNP P30822
A	?	-	PHE	deletion	UNP P30822
A	?	-	ILE	deletion	UNP P30822
A	?	-	SER	deletion	UNP P30822
A	?	-	VAL	deletion	UNP P30822
A	?	-	PRO	deletion	UNP P30822
A	?	-	LEU	deletion	UNP P30822
A	?	-	TYR	deletion	UNP P30822
A	?	-	GLN	deletion	UNP P30822
A	?	-	GLU	deletion	UNP P30822
A	?	-	ALA	deletion	UNP P30822
A	?	-	GLU	deletion	UNP P30822
A	?	-	VAL	deletion	UNP P30822
A	?	-	PRO	deletion	UNP P30822
A	?	-	GLN	deletion	UNP P30822
A	?	-	GLY	deletion	UNP P30822

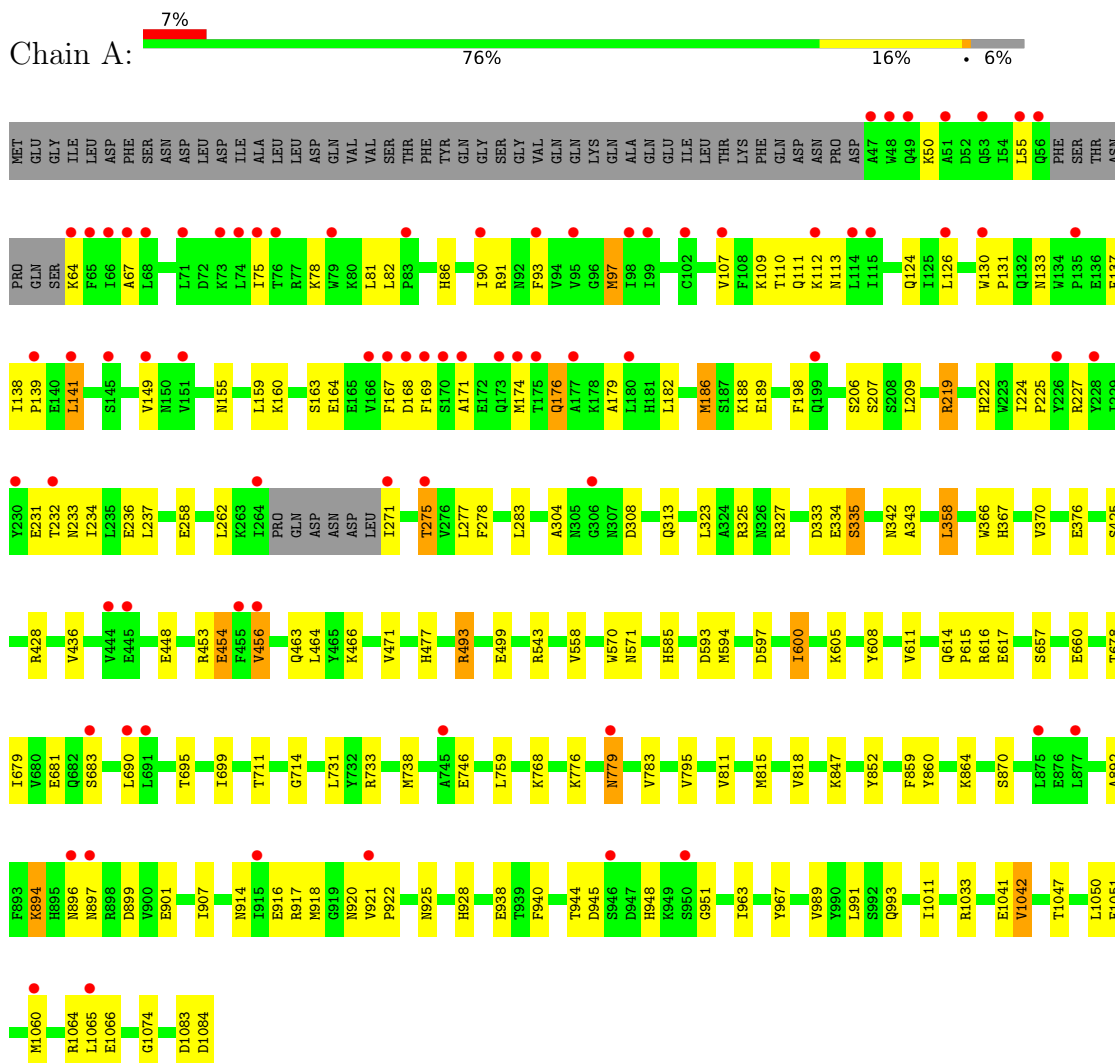
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	378	Total O 378 378	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: Exportin-1



4 Data and refinement statistics

Property	Value	Source
Space group	P 41	Depositor
Cell constants a, b, c, α , β , γ	116.78Å 116.78Å 118.98Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	41.67 – 2.10 41.67 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.5 (41.67-2.10) 99.8 (41.67-2.10)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.20 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.187 , 0.217 0.185 , 0.215	Depositor DCC
R_{free} test set	4716 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	39.2	Xtriage
Anisotropy	0.301	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 38.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.015 for -h,-l,-k 0.007 for -h,l,k 0.007 for l,-k,h 0.013 for -l,-k,-h 0.033 for h,-k,-l	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	8180	wwPDB-VP
Average B, all atoms (Å ²)	62.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.54% 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	1.02	6/7945 (0.1%)	1.12	20/10763 (0.2%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	852	TYR	N-CA	6.34	1.50	1.46
1	A	870	SER	CA-CB	5.61	1.59	1.53
1	A	818	VAL	C-O	5.33	1.30	1.24
1	A	733	ARG	CZ-NH2	5.29	1.40	1.33
1	A	779	ASN	CA-CB	5.14	1.59	1.52
1	A	859	PHE	N-CA	5.07	1.52	1.46

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	493	ARG	NE-CZ-NH2	-10.51	109.74	119.20
1	A	376	GLU	CA-C-N	9.20	129.43	119.87
1	A	376	GLU	C-N-CA	9.20	129.43	119.87
1	A	376	GLU	O-C-N	-7.79	114.41	121.34
1	A	1011	ILE	N-CA-C	-6.61	104.32	110.53
1	A	169	PHE	N-CA-C	-6.36	103.48	111.11
1	A	558	VAL	N-CA-C	5.97	116.15	110.42
1	A	493	ARG	NE-CZ-NH1	5.88	127.38	121.50
1	A	493	ARG	CG-CD-NE	-5.83	99.17	112.00
1	A	342	ASN	N-CA-C	5.77	117.25	111.07
1	A	746	GLU	CA-C-N	-5.58	116.08	122.83
1	A	746	GLU	C-N-CA	-5.58	116.08	122.83
1	A	594	MET	CG-SD-CE	-5.51	88.77	100.90
1	A	428	ARG	CG-CD-NE	-5.37	100.19	112.00
1	A	951	GLY	N-CA-C	5.30	123.06	114.90
1	A	271	ILE	CA-C-N	5.25	127.32	120.28
1	A	271	ILE	C-N-CA	5.25	127.32	120.28
1	A	456	VAL	N-CA-C	5.14	116.68	108.87

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	493	ARG	CD-NE-CZ	5.09	131.53	124.40
1	A	463	GLN	N-CA-C	5.06	116.79	111.28

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	7802	0	7865	119	0
2	A	378	0	0	14	1
All	All	8180	0	7865	119	1

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 8.

All (119) 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:1083:ASP:HA	1:A:1084:ASP:HB2	1.13	1.10
1:A:219:ARG:HH11	1:A:219:ARG:HG3	0.97	1.08
1:A:1083:ASP:HA	1:A:1084:ASP:CB	1.95	0.97
1:A:847:LYS:HE3	2:A:1310:HOH:O	1.66	0.94
1:A:219:ARG:HH11	1:A:219:ARG:CG	1.81	0.93
1:A:168:ASP:CB	1:A:219:ARG:HH12	1.86	0.87
1:A:219:ARG:HG3	1:A:219:ARG:NH1	1.76	0.86
1:A:466:LYS:HE3	2:A:1291:HOH:O	1.79	0.82
1:A:333:ASP:OD1	1:A:335:SER:HB3	1.81	0.81
1:A:1083:ASP:CA	1:A:1084:ASP:HB2	2.07	0.80
1:A:989:VAL:O	1:A:993:GLN:HG3	1.85	0.77
1:A:107:VAL:O	1:A:111:GLN:HB3	1.85	0.76
1:A:714:GLY:HA2	1:A:776:LYS:HD3	1.70	0.74
1:A:967:TYR:CE2	1:A:991:LEU:HD23	2.23	0.74
1:A:262:LEU:O	1:A:325:ARG:NH2	2.21	0.74
1:A:149:VAL:HG13	1:A:209:LEU:HD12	1.70	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:163:SER:OG	1:A:219:ARG:HG2	1.88	0.73
1:A:897:ASN:ND2	1:A:899:ASP:OD1	2.21	0.73
1:A:615:PRO:O	1:A:616:ARG:HB3	1.89	0.71
1:A:921:VAL:HG13	1:A:922:PRO:HD2	1.72	0.71
1:A:477:HIS:HD2	2:A:1426:HOH:O	1.74	0.70
1:A:597:ASP:O	1:A:600:ILE:HG22	1.92	0.70
1:A:928:HIS:HE1	2:A:1264:HOH:O	1.75	0.69
1:A:585:HIS:NE2	2:A:1397:HOH:O	2.29	0.66
1:A:901:GLU:OE2	1:A:948:HIS:NE2	2.27	0.65
1:A:945:ASP:O	2:A:1475:HOH:O	2.14	0.64
1:A:206:SER:HB3	1:A:209:LEU:HB2	1.78	0.63
1:A:227:ARG:O	1:A:231:GLU:HG3	1.97	0.63
1:A:493:ARG:HD2	1:A:499:GLU:OE1	1.98	0.62
1:A:921:VAL:O	1:A:925:ASN:ND2	2.33	0.62
1:A:277:LEU:C	1:A:277:LEU:HD23	2.26	0.60
1:A:55:LEU:CB	1:A:97:MET:HG3	2.32	0.59
1:A:155:ASN:O	1:A:159:LEU:HD23	2.05	0.56
1:A:768:LYS:CE	2:A:1358:HOH:O	2.53	0.56
1:A:477:HIS:HE1	1:A:1074:GLY:O	1.88	0.55
1:A:78:LYS:HG2	1:A:81:LEU:HD12	1.88	0.55
1:A:453:ARG:NH2	1:A:593:ASP:OD2	2.34	0.54
1:A:131:PRO:HD3	1:A:186:MET:HE3	1.89	0.54
1:A:679:ILE:HD11	1:A:695:THR:HG23	1.88	0.54
1:A:864:LYS:HA	1:A:907:ILE:HG12	1.89	0.54
1:A:899:ASP:C	2:A:1147:HOH:O	2.52	0.53
1:A:711:THR:O	1:A:776:LYS:HE2	2.09	0.53
1:A:75:ILE:HG21	1:A:124:GLN:HB3	1.91	0.53
1:A:615:PRO:O	1:A:616:ARG:CB	2.55	0.53
1:A:232:THR:HG22	1:A:233:ASN:N	2.23	0.53
1:A:916:GLU:HG3	2:A:1177:HOH:O	2.09	0.53
1:A:366:TRP:O	1:A:370:VAL:HG22	2.09	0.52
1:A:277:LEU:HD23	1:A:277:LEU:O	2.09	0.52
1:A:222:HIS:HE1	1:A:258:GLU:OE2	1.93	0.52
1:A:896:ASN:HD21	1:A:948:HIS:HA	1.74	0.52
1:A:186:MET:HG2	1:A:189:GLU:OE1	2.09	0.52
1:A:171:ALA:O	1:A:174:MET:HB2	2.10	0.51
1:A:1083:ASP:CA	1:A:1084:ASP:CB	2.76	0.51
1:A:313:GLN:HE22	1:A:358:LEU:HA	1.76	0.51
1:A:219:ARG:CG	1:A:219:ARG:NH1	2.51	0.50
1:A:436:VAL:HG21	1:A:464:LEU:HG	1.94	0.50
1:A:940:PHE:CE2	1:A:944:THR:HG21	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:860:TYR:CE1	1:A:892:ALA:HB2	2.47	0.49
1:A:860:TYR:CZ	1:A:892:ALA:HB2	2.47	0.49
1:A:678:THR:O	1:A:681:GLU:HB3	2.13	0.49
1:A:131:PRO:HG3	1:A:186:MET:HE3	1.95	0.48
1:A:605:LYS:NZ	1:A:1084:ASP:HA	2.29	0.48
1:A:597:ASP:O	1:A:600:ILE:CG2	2.60	0.47
1:A:1033:ARG:HD2	1:A:1051:PHE:CE1	2.48	0.47
1:A:304:ALA:HB1	1:A:308:ASP:HB2	1.96	0.47
1:A:608:TYR:O	1:A:611:VAL:HG12	2.14	0.47
1:A:64:LYS:HA	1:A:67:ALA:HB3	1.96	0.47
1:A:738:MET:HA	1:A:738:MET:HE3	1.95	0.47
1:A:690:LEU:O	1:A:759:LEU:HD21	2.15	0.47
1:A:894:LYS:HE3	1:A:938:GLU:OE1	2.15	0.47
1:A:224:ILE:O	1:A:225:PRO:C	2.56	0.47
1:A:283:LEU:HD11	1:A:343:ALA:HB2	1.97	0.47
1:A:333:ASP:C	1:A:335:SER:H	2.21	0.47
1:A:453:ARG:O	1:A:454:GLU:C	2.57	0.47
1:A:657:SER:OG	1:A:660:GLU:OE1	2.33	0.47
1:A:206:SER:HB3	1:A:209:LEU:CB	2.43	0.46
1:A:597:ASP:HA	1:A:600:ILE:HG22	1.97	0.46
1:A:138:ILE:HG13	1:A:189:GLU:HB2	1.97	0.46
1:A:137:PHE:CZ	1:A:141:LEU:HD23	2.50	0.46
1:A:597:ASP:C	1:A:600:ILE:HG22	2.41	0.45
1:A:699:ILE:HG21	1:A:731:LEU:HD21	1.99	0.45
1:A:570:TRP:CE2	1:A:614:GLN:HG3	2.52	0.45
1:A:779:ASN:O	1:A:783:VAL:HG23	2.16	0.45
1:A:90:ILE:HA	1:A:93:PHE:CE2	2.52	0.45
1:A:916:GLU:CG	2:A:1177:HOH:O	2.65	0.44
1:A:93:PHE:C	1:A:93:PHE:CD1	2.96	0.44
1:A:323:LEU:O	1:A:327:ARG:HB2	2.18	0.44
1:A:138:ILE:HB	1:A:139:PRO:HD3	2.01	0.43
1:A:616:ARG:HB2	1:A:616:ARG:CZ	2.48	0.43
1:A:160:LYS:HE2	1:A:164:GLU:OE2	2.19	0.43
1:A:155:ASN:O	1:A:159:LEU:CD2	2.67	0.43
1:A:109:LYS:HD3	1:A:110:THR:HG23	2.00	0.43
1:A:111:GLN:O	1:A:113:ASN:N	2.51	0.42
1:A:167:PHE:HE1	1:A:182:LEU:HD13	1.84	0.42
1:A:198:PHE:HD1	1:A:234:ILE:HD13	1.84	0.42
1:A:82:LEU:HD12	1:A:86:HIS:HB2	2.01	0.42
1:A:111:GLN:C	1:A:113:ASN:H	2.28	0.42
1:A:174:MET:C	1:A:176:GLN:H	2.27	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:899:ASP:OD1	1:A:899:ASP:N	2.52	0.42
1:A:277:LEU:C	1:A:277:LEU:CD2	2.91	0.42
1:A:1066:GLU:HA	1:A:1066:GLU:OE1	2.20	0.42
1:A:811:VAL:O	1:A:815:MET:HG2	2.20	0.41
1:A:174:MET:HG3	1:A:179:ALA:CB	2.50	0.41
1:A:275:THR:HA	1:A:278:PHE:CE2	2.56	0.41
1:A:683:SER:HB2	1:A:690:LEU:CD2	2.51	0.41
1:A:367:HIS:HA	1:A:471:VAL:HG22	2.02	0.41
1:A:768:LYS:HE3	2:A:1358:HOH:O	2.18	0.41
1:A:779:ASN:HB2	2:A:1140:HOH:O	2.19	0.41
1:A:963:ILE:HG23	1:A:967:TYR:CD2	2.55	0.41
1:A:50:LYS:H	1:A:50:LYS:HG2	1.71	0.41
1:A:232:THR:HG22	1:A:233:ASN:H	1.85	0.41
1:A:571:ASN:HB2	2:A:1347:HOH:O	2.20	0.41
1:A:1047:THR:O	1:A:1050:LEU:HB2	2.20	0.41
1:A:1041:GLU:O	1:A:1042:VAL:C	2.64	0.40
1:A:111:GLN:C	1:A:113:ASN:N	2.79	0.40
1:A:917:ARG:HB3	2:A:1321:HOH:O	2.20	0.40
1:A:130:TRP:HZ2	1:A:189:GLU:HG3	1.86	0.40
1:A:82:LEU:HD12	1:A:86:HIS:CB	2.52	0.40
1:A:91:ARG:NH1	1:A:133:ASN:O	2.54	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:1163:HOH:O	2:A:1424:HOH:O[3_555]	2.17	0.03

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	968/1033 (94%)	929 (96%)	37 (4%)	2 (0%)	43	44

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	112	LYS
1	A	334	GLU

5.3.2 Protein sidechains ⓘ

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	870/943 (92%)	841 (97%)	29 (3%)	33	37

All (29) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	97	MET
1	A	126	LEU
1	A	141	LEU
1	A	176	GLN
1	A	186	MET
1	A	188	LYS
1	A	207	SER
1	A	219	ARG
1	A	236	GLU
1	A	237	LEU
1	A	275	THR
1	A	335	SER
1	A	358	LEU
1	A	425	SER
1	A	448	GLU
1	A	454	GLU
1	A	456	VAL
1	A	543	ARG
1	A	600	ILE

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Mol	Chain	Res	Type
1	A	617	GLU
1	A	795	VAL
1	A	894	LYS
1	A	914	ASN
1	A	918	MET
1	A	920	ASN
1	A	1042	VAL
1	A	1060	MET
1	A	1064	ARG
1	A	1065	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	86	HIS
1	A	111	GLN
1	A	150	ASN
1	A	222	HIS
1	A	303	ASN
1	A	307	ASN
1	A	313	GLN
1	A	418	HIS
1	A	477	HIS
1	A	561	GLN
1	A	630	GLN
1	A	640	GLN
1	A	835	GLN
1	A	896	ASN
1	A	914	ASN
1	A	925	ASN
1	A	1057	ASN

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	974/1033 (94%)	0.35	76 (7%)	19 20	24, 54, 125, 166	0

All (76) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	271	ILE	6.0
1	A	47	ALA	4.6
1	A	264	ILE	4.5
1	A	149	VAL	4.4
1	A	455	PHE	4.3
1	A	171	ALA	4.3
1	A	456	VAL	4.2
1	A	168	ASP	4.1
1	A	169	PHE	4.0
1	A	897	ASN	3.9
1	A	875	LEU	3.9
1	A	48	TRP	3.7
1	A	102	CYS	3.7
1	A	65	PHE	3.7
1	A	445	GLU	3.5
1	A	49	GLN	3.5
1	A	173	GLN	3.5
1	A	75	ILE	3.4
1	A	53	GLN	3.4
1	A	68	LEU	3.3
1	A	66	ILE	3.2
1	A	175	THR	3.1
1	A	896	ASN	3.1
1	A	139	PRO	3.1
1	A	151	VAL	3.0
1	A	275	THR	3.0
1	A	690	LEU	3.0

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Mol	Chain	Res	Type	RSRZ
1	A	141	LEU	2.9
1	A	745	ALA	2.9
1	A	170	SER	2.8
1	A	135	PRO	2.8
1	A	99	ILE	2.8
1	A	166	VAL	2.8
1	A	946	SER	2.7
1	A	226	TYR	2.7
1	A	177	ALA	2.7
1	A	55	LEU	2.7
1	A	779	ASN	2.7
1	A	444	VAL	2.7
1	A	877	LEU	2.6
1	A	112	LYS	2.5
1	A	114	LEU	2.5
1	A	51	ALA	2.5
1	A	174	MET	2.5
1	A	79	TRP	2.5
1	A	98	ILE	2.5
1	A	180	LEU	2.4
1	A	90	ILE	2.4
1	A	107	VAL	2.4
1	A	74	LEU	2.4
1	A	73	LYS	2.4
1	A	71	LEU	2.4
1	A	1065	LEU	2.4
1	A	115	ILE	2.4
1	A	199	GLN	2.3
1	A	145	SER	2.3
1	A	232	THR	2.3
1	A	56	GLN	2.3
1	A	921	VAL	2.3
1	A	1060	MET	2.3
1	A	950	SER	2.3
1	A	126	LEU	2.3
1	A	683	SER	2.2
1	A	915	ILE	2.2
1	A	76	THR	2.2
1	A	691	LEU	2.2
1	A	230	TYR	2.2
1	A	83	PRO	2.1
1	A	167	PHE	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	95	VAL	2.1
1	A	67	ALA	2.1
1	A	228	TYR	2.1
1	A	130	TRP	2.1
1	A	64	LYS	2.0
1	A	93	PHE	2.0
1	A	306	GLY	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.