



Full wwPDB X-ray Structure Validation Report ⓘ

Apr 18, 2026 – 12:51 PM UTC

PDB ID : 2OAJ / pdb_00002oaj
Title : Crystal structure of Sro7 from *S. cerevisiae*
Authors : Hattendorf, D.A.; Weis, W.I.
Deposited on : 2006-12-15
Resolution : 2.40 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
Xtrriage (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

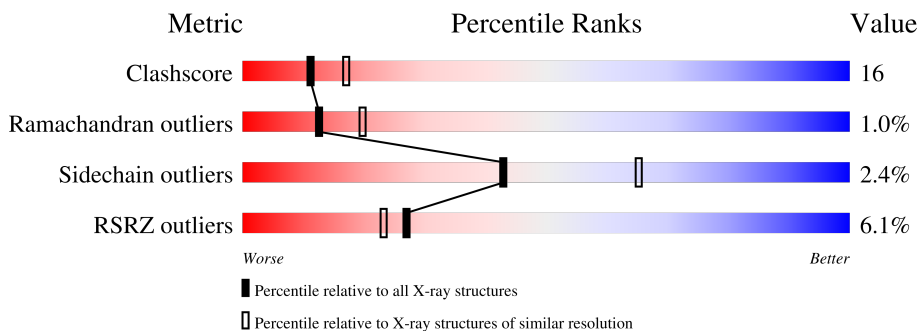
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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))
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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	902	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 7118 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 Protein SNI1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	875	6830	4367	1142	1292	29	0	0	0

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Zn	0	0
			1	1		

- Molecule 3 is SODIUM ION (CCD ID: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Na	0	0
			1	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	286	Total	O	0	0
			286	286		

3 Residue-property plots

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: Protein SNI1



4 Data and refinement statistics

Property	Value	Source
Space group	P 4 21 2	Depositor
Cell constants a, b, c, α , β , γ	130.52Å 130.52Å 116.02Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.12 – 2.40 49.12 – 2.40	Depositor EDS
% Data completeness (in resolution range)	99.4 (49.12-2.40) 99.5 (49.12-2.40)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.18 (at 2.40Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.211 , 0.262 0.205 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	24.3	Xtrriage
Anisotropy	0.333	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 38.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7118	wwPDB-VP
Average B, all atoms (Å ²)	26.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.28% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, NA

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	0.40	0/6972	0.94	30/9462 (0.3%)

There are no bond length outliers.

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	493	GLY	N-CA-C	7.38	120.45	112.33
1	A	231	TYR	N-CA-C	-6.95	99.94	109.95
1	A	945	LYS	N-CA-C	-6.62	104.14	111.82
1	A	356	SER	N-CA-C	6.54	119.16	110.53
1	A	280	HIS	N-CA-C	-6.45	101.64	109.83
1	A	737	VAL	N-CA-C	6.09	119.60	111.44
1	A	417	TYR	N-CA-C	5.84	119.41	110.36
1	A	64	LYS	N-CA-C	-5.83	106.25	113.19
1	A	411	ILE	CA-C-N	5.75	125.77	119.90
1	A	411	ILE	C-N-CA	5.75	125.77	119.90
1	A	880	GLN	N-CA-C	5.70	118.76	109.24
1	A	194	SER	N-CA-C	-5.66	106.33	113.18
1	A	517	GLY	N-CA-C	-5.65	107.31	115.27
1	A	352	ILE	N-CA-C	5.62	115.98	108.11
1	A	840	THR	N-CA-C	-5.55	102.30	110.52
1	A	558	ALA	N-CA-C	5.49	118.03	111.71
1	A	720	LEU	N-CA-C	5.48	118.19	109.64
1	A	172	TRP	N-CA-C	5.47	118.73	109.76
1	A	66	PHE	N-CA-C	5.36	117.98	109.24
1	A	299	ASP	N-CA-C	-5.34	101.08	109.25
1	A	939	ARG	CA-C-N	5.28	125.57	119.92
1	A	939	ARG	C-N-CA	5.28	125.57	119.92
1	A	874	ILE	N-CA-C	5.17	115.35	108.11
1	A	868	ARG	N-CA-C	5.15	118.34	111.75

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	639	SER	N-CA-C	-5.13	107.41	113.97
1	A	852	ILE	CA-C-N	5.12	126.24	119.84
1	A	852	ILE	C-N-CA	5.12	126.24	119.84
1	A	312	PHE	N-CA-C	5.09	119.64	113.38
1	A	699	GLY	N-CA-C	5.02	122.28	115.30
1	A	418	PHE	N-CA-C	-5.00	104.41	111.56

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	6830	0	6897	224	0
2	A	1	0	0	0	0
3	A	1	0	0	0	0
4	A	286	0	0	12	0
All	All	7118	0	6897	224	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 16.

All (224) 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:384:MET:HE2	1:A:384:MET:HA	1.42	1.00
1:A:502:LEU:H	1:A:502:LEU:HD23	1.30	0.96
1:A:401:THR:HG22	1:A:403:VAL:H	1.29	0.96
1:A:66:PHE:HB3	1:A:848:MET:HE3	1.47	0.94
1:A:830:LEU:HD21	1:A:861:ILE:HD11	1.48	0.93
1:A:379:THR:HG21	1:A:384:MET:HE3	1.48	0.93
1:A:581:GLN:O	1:A:582:PHE:HB2	1.78	0.81
1:A:435:GLU:HG2	1:A:463:LEU:HG	1.63	0.81
1:A:122:LYS:HE3	1:A:137:ALA:HA	1.66	0.77
1:A:447:THR:HG22	1:A:449:LYS:H	1.50	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:796:THR:HG22	1:A:797:HIS:H	1.51	0.74
1:A:599:ARG:H	1:A:599:ARG:HD2	1.53	0.73
1:A:394:MET:HE1	4:A:1012:HOH:O	1.89	0.71
1:A:309:ARG:HG3	1:A:309:ARG:HH11	1.57	0.70
1:A:475:LYS:HA	1:A:475:LYS:HE3	1.75	0.69
1:A:305:MET:HE3	1:A:307:MET:N	2.08	0.69
1:A:367:MET:HE1	1:A:442:PRO:HB2	1.74	0.69
1:A:182:MET:HE2	1:A:217:ILE:HD13	1.74	0.68
1:A:460:LEU:HD21	1:A:879:PHE:HB3	1.73	0.68
1:A:292:ASP:O	1:A:293:ASN:HB2	1.91	0.68
1:A:462:PRO:HG3	1:A:516:ASN:HB2	1.76	0.67
1:A:76:MET:SD	1:A:80:PRO:HG3	2.34	0.67
1:A:357:ILE:HG12	1:A:362:ASN:ND2	2.10	0.67
1:A:180:GLY:HA3	1:A:199:ASN:ND2	2.10	0.66
1:A:157:VAL:HG21	1:A:161:ILE:HD11	1.77	0.66
1:A:358:SER:O	1:A:359:ARG:HB2	1.94	0.66
1:A:356:SER:HA	1:A:362:ASN:HD22	1.60	0.66
1:A:261:ASP:HA	1:A:325:ARG:NH1	2.11	0.65
1:A:740:LYS:HD3	1:A:783:ASP:OD2	1.97	0.65
1:A:580:ASN:OD1	1:A:581:GLN:N	2.30	0.65
1:A:749:PHE:CE1	1:A:841:ILE:HD12	2.32	0.65
1:A:703:ILE:HD13	1:A:764:MET:HE2	1.79	0.65
1:A:548:GLU:HA	1:A:568:GLU:OE1	1.97	0.64
1:A:545:LYS:HE2	1:A:547:LYS:O	1.98	0.64
1:A:502:LEU:H	1:A:502:LEU:CD2	2.08	0.64
1:A:412:PRO:HG3	1:A:420:GLY:O	1.98	0.64
1:A:221:PRO:HG3	4:A:1226:HOH:O	1.98	0.63
1:A:384:MET:HA	1:A:384:MET:CE	2.25	0.63
1:A:361:ASP:HA	1:A:402:ASN:HA	1.80	0.63
1:A:435:GLU:CG	1:A:463:LEU:HG	2.28	0.62
1:A:417:TYR:HB3	4:A:1002:HOH:O	1.98	0.62
1:A:361:ASP:H	1:A:402:ASN:HB2	1.64	0.62
1:A:787:LEU:HD11	1:A:844:PHE:HE1	1.64	0.61
1:A:856:ILE:HG21	1:A:861:ILE:HD13	1.82	0.61
1:A:367:MET:HE3	1:A:397:PHE:CZ	2.35	0.61
1:A:356:SER:HB3	1:A:363:GLN:HE21	1.63	0.61
1:A:374:PRO:HD2	1:A:384:MET:HE1	1.83	0.61
1:A:356:SER:CB	1:A:363:GLN:HE21	2.14	0.60
1:A:357:ILE:O	1:A:358:SER:HB2	2.01	0.60
1:A:391:PRO:HG2	1:A:394:MET:HE2	1.83	0.60
1:A:257:ALA:O	1:A:266:THR:HG23	2.02	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:796:THR:HG22	1:A:797:HIS:N	2.16	0.60
1:A:599:ARG:HD2	1:A:599:ARG:N	2.16	0.60
1:A:230:SER:OG	1:A:277:SER:HB2	2.01	0.60
1:A:76:MET:O	1:A:880:GLN:HB2	2.02	0.59
1:A:361:ASP:H	1:A:402:ASN:CB	2.14	0.59
1:A:778:LEU:HD13	1:A:827:ILE:HD12	1.83	0.59
1:A:311:VAL:HG23	4:A:1212:HOH:O	2.02	0.59
1:A:255:PRO:HB3	1:A:267:ASN:O	2.02	0.59
1:A:367:MET:HE1	1:A:442:PRO:CB	2.32	0.59
1:A:173:MET:HE3	1:A:175:ILE:HD11	1.83	0.59
1:A:545:LYS:HZ1	1:A:569:THR:HG21	1.69	0.58
1:A:86:ASP:HB2	1:A:126:PHE:CG	2.37	0.58
1:A:153:THR:HG22	1:A:154:THR:N	2.18	0.58
1:A:309:ARG:HG3	1:A:309:ARG:NH1	2.20	0.57
1:A:703:ILE:CD1	1:A:764:MET:HE2	2.34	0.57
1:A:730:GLN:NE2	1:A:732:MET:HE1	2.19	0.57
1:A:523:ASP:OD1	1:A:525:SER:HB3	2.05	0.56
1:A:361:ASP:C	1:A:363:GLN:H	2.13	0.56
1:A:63:ASN:C	1:A:65:ILE:H	2.13	0.56
1:A:367:MET:HE2	1:A:441:TYR:CE1	2.41	0.55
1:A:497:THR:HG21	1:A:896:VAL:HG11	1.88	0.55
1:A:786:ARG:HD3	1:A:797:HIS:HB3	1.87	0.55
1:A:817:LYS:HB2	1:A:820:ASP:HB3	1.88	0.55
1:A:501:LYS:HE2	4:A:1196:HOH:O	2.07	0.55
1:A:457:LEU:O	1:A:461:ARG:HG2	2.08	0.54
1:A:401:THR:HG22	1:A:402:ASN:N	2.23	0.54
1:A:375:ARG:HD2	1:A:375:ARG:N	2.23	0.54
1:A:236:LEU:HD12	1:A:236:LEU:C	2.32	0.54
1:A:305:MET:HE2	1:A:305:MET:O	2.08	0.54
1:A:401:THR:HG22	1:A:403:VAL:N	2.11	0.54
1:A:463:LEU:HD13	1:A:878:GLU:CD	2.33	0.54
1:A:836:LEU:HD23	1:A:837:ARG:N	2.23	0.53
1:A:375:ARG:HH21	1:A:917:GLN:NE2	2.06	0.53
1:A:745:LYS:HB3	1:A:780:THR:HB	1.91	0.53
1:A:81:ILE:HD12	1:A:406:VAL:HG11	1.90	0.53
1:A:260:GLY:HA3	1:A:292:ASP:O	2.10	0.52
1:A:401:THR:CG2	1:A:403:VAL:HG23	2.38	0.52
1:A:698:ASP:HB2	4:A:1179:HOH:O	2.09	0.52
1:A:160:LYS:HB3	1:A:178:GLN:HB2	1.92	0.52
1:A:787:LEU:O	1:A:795:SER:HB2	2.10	0.51
1:A:356:SER:HB2	1:A:362:ASN:HB3	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:80:PRO:HG2	1:A:460:LEU:HD13	1.93	0.51
1:A:712:GLY:HA3	1:A:738:THR:O	2.11	0.51
1:A:581:GLN:O	1:A:582:PHE:CB	2.51	0.51
1:A:367:MET:HE3	1:A:397:PHE:HZ	1.76	0.51
1:A:523:ASP:HB3	1:A:530:GLN:HB3	1.93	0.51
1:A:285:HIS:HD2	1:A:388:TYR:OH	1.94	0.50
1:A:341:CYS:HA	1:A:348:THR:HA	1.93	0.50
1:A:914:ASN:HB2	1:A:917:GLN:HB2	1.93	0.50
1:A:178:GLN:NE2	1:A:213:PRO:HB3	2.26	0.50
1:A:307:MET:SD	1:A:309:ARG:HD2	2.51	0.50
1:A:545:LYS:NZ	1:A:569:THR:HG21	2.26	0.50
1:A:789:THR:HG21	1:A:792:LYS:HD2	1.94	0.50
1:A:817:LYS:HD2	1:A:820:ASP:CB	2.41	0.50
1:A:462:PRO:CG	1:A:516:ASN:HB2	2.42	0.49
1:A:487:LYS:O	1:A:487:LYS:HG2	2.12	0.49
1:A:351:LEU:CD2	1:A:427:ILE:HD13	2.42	0.49
1:A:399:LEU:HD21	1:A:405:ILE:HD11	1.93	0.49
1:A:580:ASN:HB2	1:A:626:MET:SD	2.53	0.49
1:A:750:SER:O	1:A:754:LYS:HA	2.11	0.49
1:A:66:PHE:HB3	1:A:848:MET:CE	2.33	0.49
1:A:787:LEU:HD11	1:A:844:PHE:CE1	2.46	0.49
1:A:537:VAL:HG23	4:A:1186:HOH:O	2.11	0.49
1:A:374:PRO:HG3	4:A:1054:HOH:O	2.12	0.48
1:A:67:SER:N	1:A:848:MET:HE2	2.28	0.48
1:A:361:ASP:OD1	1:A:361:ASP:O	2.30	0.48
1:A:375:ARG:NH2	1:A:917:GLN:NE2	2.61	0.48
1:A:568:GLU:O	1:A:637:LYS:HE2	2.14	0.48
1:A:62:LYS:HD2	1:A:845:LYS:HE2	1.95	0.48
1:A:502:LEU:HD11	1:A:891:ASP:CB	2.43	0.48
1:A:718:LYS:HB2	1:A:732:MET:HE3	1.95	0.48
1:A:942:SER:HA	4:A:1043:HOH:O	2.13	0.48
1:A:236:LEU:HD12	1:A:236:LEU:O	2.12	0.47
1:A:541:ARG:NH1	1:A:616:ARG:O	2.47	0.47
1:A:76:MET:HE2	1:A:102:HIS:CD2	2.49	0.47
1:A:255:PRO:O	1:A:256:PHE:HB2	2.14	0.47
1:A:426:LEU:HD12	1:A:427:ILE:H	1.79	0.47
1:A:502:LEU:HD23	1:A:502:LEU:N	2.12	0.47
1:A:189:ARG:NH1	1:A:940:PRO:O	2.47	0.47
1:A:204:SER:HB2	1:A:205:PHE:CE1	2.50	0.47
1:A:351:LEU:HD22	1:A:427:ILE:HD13	1.97	0.47
1:A:410:PRO:O	1:A:412:PRO:HD3	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:519:VAL:HB	1:A:537:VAL:HG12	1.96	0.47
1:A:929:GLN:O	1:A:933:LEU:HG	2.14	0.47
1:A:499:ARG:NH2	1:A:898:ASP:OD1	2.48	0.47
1:A:889:GLU:OE1	1:A:889:GLU:HA	2.14	0.47
1:A:919:ALA:O	1:A:920:ARG:HB2	2.15	0.47
1:A:836:LEU:HD23	1:A:836:LEU:C	2.40	0.46
1:A:144:LEU:CD2	1:A:151:VAL:HG22	2.45	0.46
1:A:391:PRO:CG	1:A:394:MET:HE2	2.44	0.46
1:A:63:ASN:C	1:A:65:ILE:N	2.73	0.46
1:A:307:MET:HE2	4:A:1239:HOH:O	2.16	0.46
1:A:732:MET:O	1:A:733:ASP:HB3	2.14	0.46
1:A:81:ILE:CD1	1:A:406:VAL:HG11	2.46	0.46
1:A:262:PHE:CE1	1:A:331:ALA:HB1	2.50	0.46
1:A:852:ILE:HG21	1:A:856:ILE:HD11	1.97	0.46
1:A:914:ASN:C	1:A:916:LEU:N	2.74	0.46
1:A:124:MET:HA	1:A:133:VAL:O	2.15	0.45
1:A:731:LEU:C	1:A:732:MET:HE2	2.41	0.45
1:A:786:ARG:HD3	1:A:797:HIS:CB	2.46	0.45
1:A:817:LYS:HB2	1:A:820:ASP:CB	2.46	0.45
1:A:537:VAL:HG21	1:A:575:PHE:CE2	2.52	0.45
1:A:527:GLY:O	1:A:531:ASP:HB2	2.17	0.45
1:A:285:HIS:HE1	4:A:1180:HOH:O	2.00	0.45
1:A:153:THR:CG2	1:A:154:THR:N	2.80	0.45
1:A:251:TYR:OH	1:A:253:LEU:HD21	2.17	0.44
1:A:374:PRO:CD	1:A:384:MET:HE1	2.47	0.44
1:A:621:VAL:HG12	1:A:623:GLN:O	2.18	0.44
1:A:87:PHE:HB3	1:A:416:PRO:HB3	2.00	0.44
1:A:426:LEU:HD11	1:A:438:THR:HB	1.99	0.44
1:A:374:PRO:CG	1:A:384:MET:HE1	2.47	0.44
1:A:779:ILE:HB	1:A:786:ARG:HB2	1.99	0.44
1:A:220:ASN:HA	1:A:279:TYR:CE2	2.52	0.44
1:A:375:ARG:HE	1:A:917:GLN:NE2	2.15	0.44
1:A:515:SER:HA	1:A:550:ALA:HA	2.00	0.44
1:A:802:TYR:HB2	1:A:831:GLU:OE1	2.18	0.44
1:A:475:LYS:HE3	1:A:475:LYS:CA	2.46	0.43
1:A:545:LYS:HE2	1:A:548:GLU:HB2	2.00	0.43
1:A:646:ILE:HD13	1:A:759:ALA:HB1	2.00	0.43
1:A:693:MET:HE2	4:A:1229:HOH:O	2.19	0.43
1:A:514:HIS:C	1:A:516:ASN:N	2.75	0.43
1:A:413:ARG:CZ	1:A:425:GLY:HA3	2.48	0.43
1:A:771:LEU:HD13	1:A:773:ILE:HG13	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:169:SER:HB3	1:A:907:ILE:HD11	1.99	0.43
1:A:309:ARG:NH1	1:A:310:THR:O	2.51	0.43
1:A:474:ASN:HA	1:A:477:TRP:HB3	2.01	0.43
1:A:818:ASN:O	1:A:819:ASN:HB2	2.18	0.43
1:A:115:LEU:HD12	1:A:121:ILE:HD11	2.01	0.43
1:A:375:ARG:NE	1:A:917:GLN:HE22	2.17	0.42
1:A:401:THR:CG2	1:A:402:ASN:N	2.81	0.42
1:A:730:GLN:HE21	1:A:732:MET:HE1	1.84	0.42
1:A:730:GLN:HB3	1:A:732:MET:HE3	2.01	0.42
1:A:477:TRP:CE2	1:A:481:LEU:HD11	2.54	0.42
1:A:740:LYS:HE2	1:A:740:LYS:HA	2.00	0.42
1:A:939:ARG:HA	1:A:940:PRO:HD3	1.82	0.42
1:A:662:ASP:OD1	1:A:664:ARG:HB2	2.19	0.42
1:A:335:SER:HB2	1:A:355:LYS:HG2	2.02	0.42
1:A:78:SER:OG	1:A:96:THR:HB	2.19	0.42
1:A:375:ARG:HE	1:A:917:GLN:HE22	1.68	0.42
1:A:406:VAL:HG21	1:A:432:GLY:HA2	2.01	0.42
1:A:363:GLN:O	1:A:399:LEU:HB2	2.19	0.42
1:A:709:THR:OG1	1:A:713:GLU:HB2	2.19	0.42
1:A:808:GLY:HA3	1:A:866:VAL:HB	2.02	0.42
1:A:220:ASN:HA	1:A:221:PRO:HD3	1.89	0.42
1:A:858:ALA:O	1:A:861:ILE:HG22	2.18	0.42
1:A:896:VAL:HG12	1:A:897:SER:N	2.35	0.42
1:A:415:SER:HB2	1:A:416:PRO:HD2	2.02	0.42
1:A:599:ARG:HG2	1:A:599:ARG:HH11	1.84	0.42
1:A:749:PHE:CZ	1:A:841:ILE:HD12	2.53	0.42
1:A:514:HIS:C	1:A:516:ASN:H	2.26	0.42
1:A:357:ILE:H	1:A:362:ASN:ND2	2.18	0.42
1:A:356:SER:HB3	1:A:363:GLN:HG3	2.02	0.41
1:A:658:LEU:O	1:A:671:MET:HA	2.20	0.41
1:A:542:THR:O	1:A:616:ARG:HD3	2.21	0.41
1:A:367:MET:HE2	1:A:441:TYR:CZ	2.56	0.41
1:A:228:LEU:HB2	1:A:279:TYR:CE2	2.56	0.41
1:A:372:TYR:OH	1:A:375:ARG:HD3	2.19	0.41
1:A:375:ARG:NE	1:A:917:GLN:NE2	2.69	0.41
1:A:692:ILE:HA	1:A:702:SER:O	2.21	0.41
1:A:254:PRO:HD2	1:A:257:ALA:HB2	2.01	0.41
1:A:336:LYS:HD3	1:A:338:TYR:OH	2.21	0.41
1:A:730:GLN:CG	1:A:732:MET:HE1	2.50	0.41
1:A:360:GLY:O	1:A:362:ASN:N	2.54	0.41
1:A:497:THR:HG21	1:A:896:VAL:CG1	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:79:LYS:HA	1:A:80:PRO:HD3	1.81	0.41
1:A:85:PHE:CD2	1:A:412:PRO:HD2	2.56	0.41
1:A:703:ILE:HG22	1:A:719:ILE:HD12	2.03	0.41
1:A:502:LEU:HD11	1:A:891:ASP:CG	2.46	0.41
1:A:852:ILE:HA	1:A:853:PRO:HD3	1.87	0.41
1:A:817:LYS:HD2	1:A:820:ASP:HB2	2.04	0.40
1:A:361:ASP:C	1:A:363:GLN:N	2.76	0.40
1:A:511:ILE:HD11	1:A:556:PHE:CG	2.57	0.40
1:A:431:LEU:HD11	1:A:437:GLU:OE2	2.20	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	871/902 (97%)	817 (94%)	45 (5%)	9 (1%)	12 20

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	359	ARG
1	A	817	LYS
1	A	819	ASN
1	A	63	ASN
1	A	361	ASP
1	A	362	ASN
1	A	358	SER
1	A	816	GLU
1	A	619	THR

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	762/787 (97%)	744 (98%)	18 (2%)	43 65

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	90	ASN
1	A	170	LEU
1	A	305	MET
1	A	309	ARG
1	A	399	LEU
1	A	461	ARG
1	A	475	LYS
1	A	502	LEU
1	A	537	VAL
1	A	559	GLU
1	A	563	LEU
1	A	574	LEU
1	A	643	ASN
1	A	676	GLU
1	A	731	LEU
1	A	879	PHE
1	A	889	GLU
1	A	907	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	106	GLN
1	A	178	GLN
1	A	191	GLN
1	A	285	HIS
1	A	362	ASN
1	A	386	ASN
1	A	516	ASN

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Mol	Chain	Res	Type
1	A	730	GLN
1	A	765	GLN
1	A	819	ASN
1	A	903	ASN
1	A	917	GLN

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 oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 2 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, 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	875/902 (97%)	0.11	53 (6%) 27 23	8, 22, 55, 85	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	916	LEU	5.2
1	A	818	ASN	4.5
1	A	918	TRP	4.3
1	A	893	LEU	4.0
1	A	598	PHE	4.0
1	A	62	LYS	3.9
1	A	358	SER	3.9
1	A	892	THR	3.7
1	A	360	GLY	3.6
1	A	357	ILE	3.6
1	A	891	ASP	3.6
1	A	363	GLN	3.6
1	A	581	GLN	3.5
1	A	361	ASP	3.4
1	A	819	ASN	3.4
1	A	582	PHE	3.3
1	A	359	ARG	3.2
1	A	920	ARG	3.2
1	A	951	GLU	3.2
1	A	500	GLN	3.2
1	A	914	ASN	3.1
1	A	919	ALA	3.0
1	A	915	SER	3.0
1	A	815	VAL	3.0
1	A	329	THR	2.9
1	A	63	ASN	2.9
1	A	605	ASN	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	921	GLY	2.9
1	A	619	THR	2.8
1	A	267	ASN	2.7
1	A	894	ALA	2.6
1	A	890	GLN	2.5
1	A	362	ASN	2.5
1	A	64	LYS	2.4
1	A	501	LYS	2.4
1	A	600	ARG	2.4
1	A	821	ARG	2.3
1	A	814	THR	2.3
1	A	909	TYR	2.3
1	A	889	GLU	2.3
1	A	680	ALA	2.3
1	A	264	GLU	2.3
1	A	698	ASP	2.2
1	A	599	ARG	2.2
1	A	940	PRO	2.2
1	A	917	GLN	2.2
1	A	394	MET	2.2
1	A	677	ILE	2.2
1	A	817	LYS	2.2
1	A	266	THR	2.2
1	A	820	ASP	2.2
1	A	723	SER	2.1
1	A	364	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 oligosaccharides 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(\AA^2)	Q<0.9
3	NA	A	964	1/1	0.91	0.09	33,33,33,33	0
2	ZN	A	963	1/1	0.99	0.02	32,32,32,32	0

6.5 Other polymers [i](#)

There are no such residues in this entry.