Full wwPDB X-ray Structure Validation Report ⓘ

Nov 14, 2023 – 02:24 AM JST

PDB ID	:	5YVH
Title	:	Crystal structure of Karyopherin beta2 in complex with FUS(371-526)
Authors	:	Yoshizawa, T.; Fung, H.Y.J.; Chook, Y.M.
Deposited on	:	2017-11-25
Resolution	:	3.15 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:

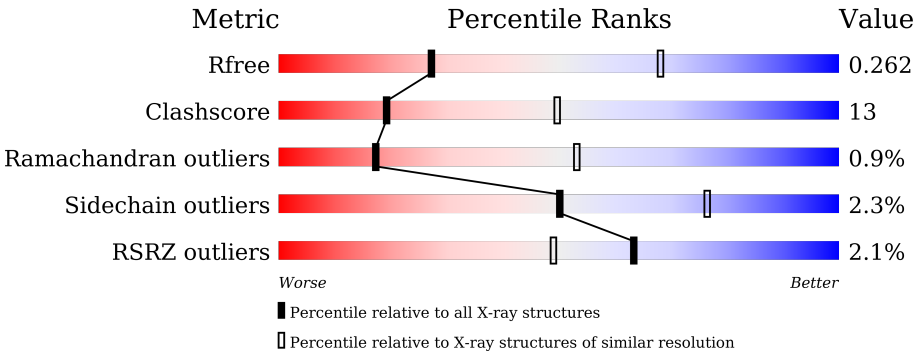
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 3.15 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1665 (3.20-3.12)
Clashscore	141614	1804 (3.20-3.12)
Ramachandran outliers	138981	1770 (3.20-3.12)
Sidechain outliers	138945	1769 (3.20-3.12)
RSRZ outliers	127900	1616 (3.20-3.12)

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	868	2% 69% 22% · 7%
2	B	158	8% · 88%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 6621 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 Transportin-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	809	6455	4143	1078	1184	50	0	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	GLY	-	expression tag	UNP Q92973
A	0	SER	-	expression tag	UNP Q92973
A	361	GLY	-	linker	UNP Q92973
A	362	GLY	-	linker	UNP Q92973
A	363	SER	-	linker	UNP Q92973
A	364	GLY	-	linker	UNP Q92973
A	365	GLY	-	linker	UNP Q92973
A	366	SER	-	linker	UNP Q92973
A	367	GLY	-	linker	UNP Q92973

- Molecule 2 is a protein called RNA-binding protein FUS.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	19	166	96	38	31	1	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

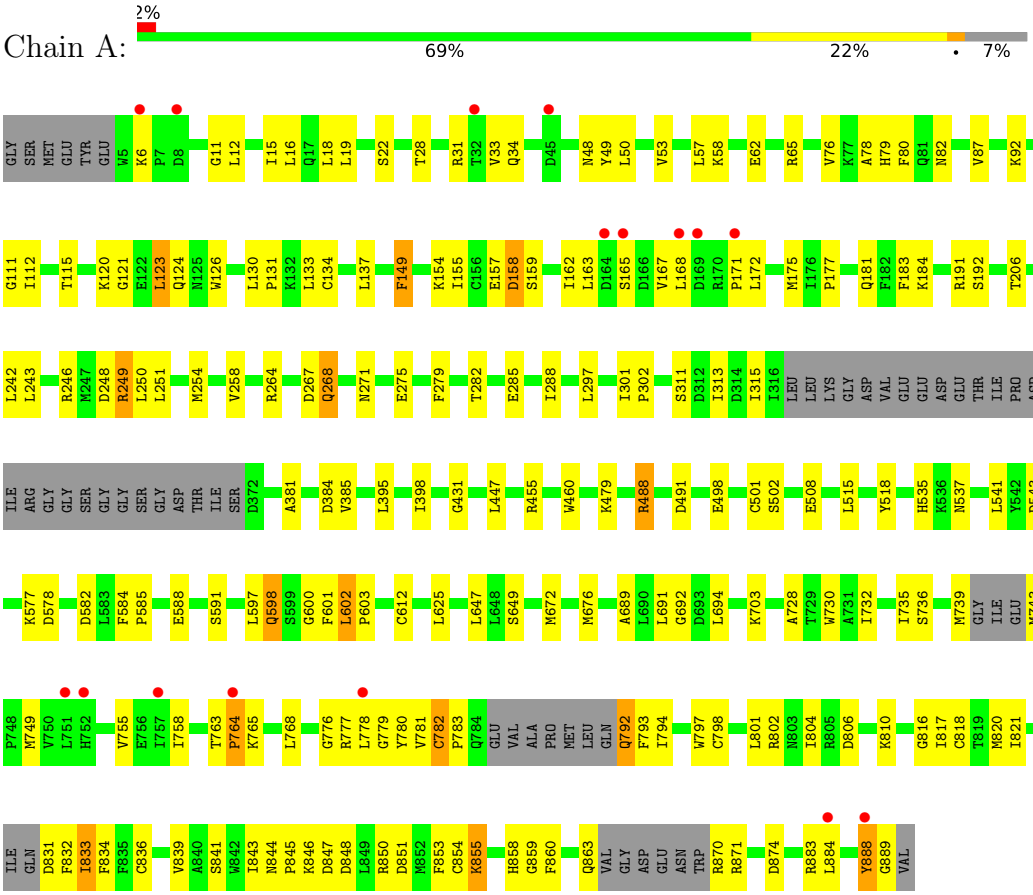
Chain	Residue	Modelled	Actual	Comment	Reference
B	369	GLY	-	expression tag	UNP P35637
B	370	SER	-	expression tag	UNP P35637

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.

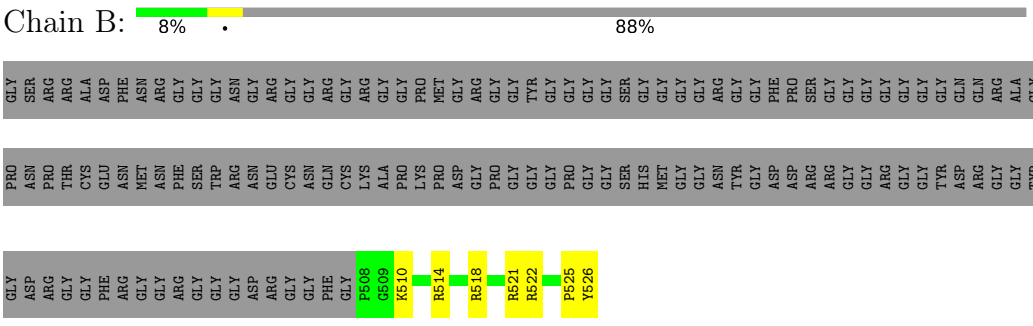
- Molecule 1: Transportin-1

Chain A:



- Molecule 2: RNA-binding protein FUS

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α, β, γ	129.43Å 156.53Å 67.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	41.35 – 3.15 48.39 – 3.13	Depositor EDS
% Data completeness (in resolution range)	87.3 (41.35-3.15) 85.9 (48.39-3.13)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.01 (at 3.12Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.213 , 0.262 0.213 , 0.262	Depositor DCC
R_{free} test set	1075 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	56.5	Xtriage
Anisotropy	0.136	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 47.0	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	0.89	EDS
Total number of atoms	6621	wwPDB-VP
Average B, all atoms (Å^2)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.19% 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

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	0/6591	0.61	7/8945 (0.1%)
2	B	0.39	0/169	0.56	0/220
All	All	0.40	0/6760	0.60	7/9165 (0.1%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	834	PHE	C-N-CA	7.81	141.22	121.70
1	A	250	LEU	CA-CB-CG	6.21	129.58	115.30
1	A	602	LEU	CB-CG-CD1	6.13	121.42	111.00
1	A	602	LEU	CB-CG-CD2	-5.93	100.91	111.00
1	A	121	GLY	N-CA-C	-5.81	98.58	113.10
1	A	735	ILE	CG1-CB-CG2	-5.61	99.05	111.40
1	A	843	ILE	C-N-CA	5.38	135.15	121.70

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	6455	0	6518	172	0
2	B	166	0	156	9	0
All	All	6621	0	6674	172	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 (172) 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:162:ILE:CG2	1:A:171:PRO:HG2	1.61	1.30
1:A:781:VAL:O	1:A:783:PRO:HD3	1.53	1.09
1:A:162:ILE:HG22	1:A:171:PRO:HG2	1.14	1.08
1:A:162:ILE:CG2	1:A:171:PRO:CG	2.32	1.05
1:A:884:LEU:O	1:A:889:GLY:HA2	1.57	1.03
1:A:162:ILE:HG23	1:A:171:PRO:CG	1.88	1.02
1:A:124:GLN:HA	1:A:168:LEU:HD21	1.42	1.01
1:A:854:CYS:HB3	1:A:888:TYR:HB3	1.43	0.99
1:A:781:VAL:O	1:A:783:PRO:CD	2.10	0.97
1:A:163:LEU:HB2	1:A:172:LEU:HD22	1.50	0.92
1:A:600:GLY:O	1:A:603:PRO:HD2	1.69	0.91
1:A:171:PRO:O	1:A:175:MET:SD	2.33	0.87
1:A:162:ILE:HG22	1:A:172:LEU:CD1	2.05	0.86
1:A:588:GLU:OE1	2:B:521:ARG:NH2	2.09	0.86
1:A:763:THR:O	1:A:765:LYS:N	2.11	0.83
1:A:163:LEU:HG	1:A:206:THR:HG23	1.62	0.82
1:A:781:VAL:HG12	1:A:782:CYS:N	1.96	0.80
1:A:124:GLN:CA	1:A:168:LEU:HD21	2.14	0.78
1:A:794:ILE:CD1	1:A:817:ILE:HD11	2.15	0.77
1:A:747:ILE:CD1	1:A:781:VAL:HG21	2.16	0.76
1:A:802:ARG:HB2	1:A:839:VAL:HG22	1.69	0.75
1:A:847:ASP:HA	1:A:850:ARG:HD3	1.66	0.75
1:A:798:CYS:HB3	1:A:839:VAL:HG21	1.70	0.74
1:A:845:PRO:HG2	1:A:850:ARG:HG2	1.69	0.74
1:A:154:LYS:O	1:A:158:ASP:OD1	2.06	0.74
1:A:600:GLY:O	1:A:603:PRO:CD	2.35	0.73
1:A:158:ASP:OD1	1:A:158:ASP:N	2.22	0.73
1:A:488:ARG:NH1	1:A:491:ASP:OD1	2.21	0.72
1:A:781:VAL:C	1:A:783:PRO:HD3	2.09	0.72
1:A:162:ILE:HG23	1:A:171:PRO:HG3	1.70	0.71
1:A:123:LEU:HB3	1:A:168:LEU:HD11	1.74	0.69
1:A:764:PRO:HA	1:A:768:LEU:HD12	1.73	0.69
1:A:191:ARG:NH1	1:A:226:ASP:OD2	2.25	0.68
1:A:747:ILE:HD11	1:A:781:VAL:HG21	1.74	0.68
1:A:162:ILE:CG2	1:A:172:LEU:CD1	2.72	0.68
1:A:781:VAL:O	1:A:783:PRO:HD2	1.93	0.67
1:A:841:SER:HB2	1:A:883:ARG:HD2	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:689:ALA:HB1	2:B:510:LYS:HD2	1.78	0.66
1:A:550:ASP:OD2	2:B:518:ARG:NH2	2.29	0.66
1:A:781:VAL:CG1	1:A:782:CYS:N	2.59	0.65
1:A:781:VAL:HG12	1:A:782:CYS:H	1.63	0.64
1:A:854:CYS:CB	1:A:888:TYR:HB3	2.25	0.63
1:A:884:LEU:O	1:A:889:GLY:CA	2.39	0.63
1:A:384:ASP:OD2	2:B:526:TYR:OH	2.15	0.63
1:A:171:PRO:C	1:A:172:LEU:HD12	2.20	0.62
1:A:502:SER:HB3	2:B:522:ARG:HG2	1.82	0.62
1:A:777:ARG:C	1:A:779:GLY:H	2.03	0.62
1:A:584:PHE:HB2	1:A:585:PRO:HD3	1.82	0.62
1:A:163:LEU:C	1:A:163:LEU:HD13	2.20	0.61
1:A:22:SER:HB3	1:A:33:VAL:HG11	1.81	0.61
1:A:597:LEU:O	1:A:598:GLN:C	2.39	0.60
1:A:781:VAL:CG1	1:A:782:CYS:H	2.12	0.60
1:A:794:ILE:HD12	1:A:817:ILE:HD11	1.85	0.59
1:A:92:LYS:HD3	1:A:126:TRP:CD2	2.37	0.59
1:A:543:ASP:OD1	2:B:521:ARG:NH1	2.35	0.59
1:A:804:ILE:HG13	1:A:810:LYS:HD2	1.85	0.59
1:A:162:ILE:CG2	1:A:172:LEU:HD11	2.33	0.58
1:A:817:ILE:HA	1:A:820:MET:HE3	1.84	0.58
1:A:155:ILE:O	1:A:159:SER:HB2	2.04	0.58
1:A:859:GLY:O	1:A:863:GLN:HG3	2.03	0.57
1:A:248:ASP:OD1	1:A:249:ARG:N	2.38	0.57
1:A:844:ASN:O	1:A:844:ASN:ND2	2.37	0.57
1:A:124:GLN:N	1:A:124:GLN:OE1	2.35	0.57
1:A:728:ALA:O	1:A:732:ILE:HG13	2.05	0.56
1:A:108:ALA:O	1:A:112:ILE:HG12	2.06	0.55
1:A:845:PRO:HG2	1:A:850:ARG:CG	2.34	0.55
1:A:162:ILE:HB	1:A:172:LEU:HD11	1.89	0.55
1:A:591:SER:OG	2:B:514:ARG:NH2	2.40	0.55
1:A:447:LEU:O	1:A:455:ARG:HG2	2.06	0.54
1:A:268:GLN:H	1:A:268:GLN:CD	2.05	0.54
1:A:162:ILE:CG2	1:A:171:PRO:CB	2.85	0.54
1:A:535:HIS:NE2	1:A:582:ASP:OD2	2.39	0.54
1:A:780:TYR:CD1	1:A:780:TYR:N	2.76	0.54
1:A:80:PHE:HB3	1:A:120:LYS:HD2	1.90	0.53
1:A:159:SER:O	1:A:162:ILE:HG13	2.08	0.53
1:A:12:LEU:HD21	1:A:57:LEU:HD11	1.89	0.53
1:A:798:CYS:CB	1:A:839:VAL:HG21	2.39	0.53
1:A:165:SER:HB2	1:A:167:VAL:HG23	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:PRO:O	1:A:172:LEU:HD12	2.09	0.52
1:A:793:PHE:CD1	1:A:793:PHE:C	2.82	0.52
1:A:888:TYR:CD1	1:A:888:TYR:N	2.78	0.52
1:A:846:LYS:HD2	1:A:847:ASP:H	1.75	0.52
1:A:806:ASP:OD1	1:A:810:LYS:NZ	2.36	0.52
1:A:577:LYS:HD2	1:A:578:ASP:H	1.74	0.51
1:A:395:LEU:HA	1:A:398:ILE:HG22	1.93	0.51
1:A:162:ILE:O	1:A:171:PRO:HG2	2.10	0.51
1:A:183:PHE:HD2	1:A:219:ASN:HB3	1.76	0.50
1:A:311:SER:O	1:A:315:ILE:HD12	2.12	0.50
1:A:851:ASP:O	1:A:855:LYS:HB2	2.12	0.50
1:A:460:TRP:CD2	2:B:525:PRO:HG3	2.47	0.49
1:A:601:PHE:O	1:A:602:LEU:C	2.51	0.49
1:A:676:MET:HE1	1:A:691:LEU:HD22	1.95	0.49
1:A:854:CYS:O	1:A:858:HIS:HB2	2.13	0.49
1:A:251:LEU:HD21	1:A:288:ILE:HD13	1.94	0.49
1:A:780:TYR:N	1:A:780:TYR:HD1	2.09	0.49
1:A:818:CYS:O	1:A:821:ILE:HG22	2.13	0.49
1:A:703:LYS:HD3	1:A:739:MET:HE3	1.95	0.48
1:A:395:LEU:HD11	1:A:431:GLY:HA3	1.94	0.48
1:A:853:PHE:HB2	1:A:888:TYR:HE2	1.77	0.48
1:A:746:TYR:HB3	1:A:749:MET:HE2	1.95	0.48
1:A:78:ALA:O	1:A:79:HIS:ND1	2.47	0.47
1:A:460:TRP:CE3	2:B:525:PRO:HG3	2.49	0.47
1:A:763:THR:O	1:A:763:THR:HG22	2.13	0.47
1:A:479:LYS:HE3	1:A:518:TYR:HE1	1.80	0.47
1:A:53:VAL:O	1:A:65:ARG:HG2	2.14	0.47
1:A:381:ALA:O	1:A:385:VAL:HG23	2.15	0.47
1:A:62:GLU:N	1:A:62:GLU:OE1	2.48	0.46
1:A:76:VAL:HG13	1:A:80:PHE:CD1	2.50	0.46
1:A:49:TYR:O	1:A:53:VAL:HG23	2.15	0.46
1:A:848:ASP:OD1	1:A:848:ASP:N	2.49	0.46
1:A:853:PHE:CB	1:A:888:TYR:CE2	2.99	0.46
1:A:313:ILE:O	1:A:313:ILE:HG22	2.15	0.46
1:A:162:ILE:HG22	1:A:172:LEU:HD12	1.92	0.46
1:A:301:ILE:HB	1:A:302:PRO:HD3	1.98	0.46
1:A:315:ILE:O	1:A:315:ILE:HG22	2.15	0.45
1:A:871:ARG:O	1:A:874:ASP:HB2	2.16	0.45
1:A:15:ILE:HD11	1:A:50:LEU:HD23	1.97	0.45
1:A:162:ILE:CB	1:A:172:LEU:HD11	2.47	0.45
1:A:508:GLU:HA	1:A:515:LEU:HD11	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:162:ILE:CG2	1:A:171:PRO:HB2	2.46	0.45
1:A:853:PHE:HB2	1:A:888:TYR:CE2	2.51	0.45
1:A:860:PHE:HA	1:A:863:GLN:OE1	2.16	0.45
1:A:831:ASP:O	1:A:833:ILE:N	2.42	0.45
1:A:541:LEU:O	1:A:545:ILE:HG12	2.17	0.45
1:A:793:PHE:CD1	1:A:793:PHE:O	2.70	0.45
1:A:755:VAL:O	1:A:758:ILE:HG22	2.16	0.45
1:A:793:PHE:O	1:A:793:PHE:HD1	2.01	0.44
1:A:31:ARG:O	1:A:34:GLN:HB3	2.18	0.44
1:A:845:PRO:O	1:A:850:ARG:HD2	2.18	0.44
1:A:854:CYS:HB3	1:A:888:TYR:CB	2.30	0.44
1:A:133:LEU:HD12	1:A:133:LEU:HA	1.86	0.43
1:A:181:GLN:O	1:A:184:LYS:HG2	2.18	0.43
1:A:264:ARG:O	1:A:267:ASP:HB2	2.18	0.43
1:A:797:TRP:CZ2	1:A:801:LEU:HD12	2.54	0.43
1:A:28:THR:HG23	1:A:31:ARG:HH21	1.82	0.43
1:A:851:ASP:HA	1:A:854:CYS:SG	2.59	0.43
1:A:254:MET:O	1:A:258:VAL:HG23	2.19	0.43
1:A:130:LEU:HB2	1:A:131:PRO:HD3	2.01	0.43
1:A:776:GLY:O	1:A:816:GLY:HA3	2.18	0.43
1:A:243:LEU:HD13	1:A:279:PHE:CE1	2.53	0.43
1:A:672:MET:HE1	1:A:694:LEU:HD12	2.00	0.43
1:A:16:LEU:HD11	1:A:57:LEU:HD21	2.00	0.43
1:A:612:CYS:SG	1:A:647:LEU:HD23	2.58	0.43
1:A:124:GLN:HA	1:A:168:LEU:CD2	2.31	0.42
1:A:792:GLN:HB3	1:A:793:PHE:H	1.48	0.42
1:A:271:ASN:O	1:A:275:GLU:HG2	2.19	0.42
1:A:498:GLU:HB3	1:A:537:ASN:OD1	2.19	0.42
1:A:777:ARG:C	1:A:779:GLY:N	2.71	0.42
1:A:242:LEU:HD23	1:A:242:LEU:HA	1.90	0.42
1:A:162:ILE:O	1:A:171:PRO:CG	2.68	0.42
1:A:111:GLY:O	1:A:115:THR:HG23	2.20	0.42
1:A:137:LEU:HG	1:A:149:PHE:CE2	2.54	0.42
1:A:736:SER:HA	1:A:743:MET:SD	2.60	0.42
1:A:692:GLY:HA3	1:A:730:TRP:CZ3	2.54	0.42
1:A:744:GLN:N	1:A:745:PRO:HD2	2.35	0.42
1:A:18:LEU:HD12	1:A:18:LEU:HA	1.92	0.42
1:A:597:LEU:HA	1:A:597:LEU:HD23	1.69	0.41
1:A:781:VAL:C	1:A:783:PRO:CD	2.78	0.41
1:A:11:GLY:O	1:A:15:ILE:HG22	2.21	0.41
1:A:58:LYS:H	1:A:58:LYS:HG2	1.69	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:177:PRO:O	1:A:181:GLN:HG3	2.20	0.41
1:A:6:LYS:HE2	1:A:6:LYS:HB3	1.85	0.41
1:A:297:LEU:HD11	1:A:301:ILE:HD11	2.03	0.41
1:A:841:SER:O	1:A:841:SER:OG	2.38	0.41
1:A:19:LEU:O	1:A:22:SER:OG	2.30	0.41
1:A:246:ARG:NH1	1:A:248:ASP:OD2	2.54	0.40
1:A:48:ASN:OD1	1:A:87:VAL:HG13	2.21	0.40
1:A:162:ILE:HG21	1:A:171:PRO:HB2	2.04	0.40
1:A:313:ILE:O	1:A:313:ILE:CG2	2.68	0.40
1:A:282:THR:O	1:A:285:GLU:HG2	2.20	0.40
1:A:854:CYS:HB3	1:A:888:TYR:CD2	2.57	0.40
1:A:123:LEU:O	1:A:168:LEU:HD11	2.22	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	797/868 (92%)	743 (93%)	47 (6%)	7 (1%)	17 53
2	B	17/158 (11%)	17 (100%)	0	0	100 100
All	All	814/1026 (79%)	760 (93%)	47 (6%)	7 (1%)	17 53

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	598	GLN
1	A	782	CYS
1	A	833	ILE
1	A	764	PRO
1	A	778	LEU
1	A	123	LEU

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Mol	Chain	Res	Type
1	A	832	PHE

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	728/776 (94%)	711 (98%)	17 (2%)	50 76
2	B	17/94 (18%)	17 (100%)	0	100 100
All	All	745/870 (86%)	728 (98%)	17 (2%)	50 76

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	82	ASN
1	A	134	CYS
1	A	149	PHE
1	A	157	GLU
1	A	158	ASP
1	A	192	SER
1	A	249	ARG
1	A	268	GLN
1	A	488	ARG
1	A	501	CYS
1	A	625	LEU
1	A	649	SER
1	A	792	GLN
1	A	836	CYS
1	A	855	LYS
1	A	870	ARG
1	A	888	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	598	GLN

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

There are no monosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	809/868 (93%)	0.05	17 (2%) 63 49	15, 54, 111, 182	0
2	B	19/158 (12%)	-0.25	0 100 100	14, 43, 85, 96	0
All	All	828/1026 (80%)	0.04	17 (2%) 63 49	14, 54, 111, 182	0

All (17) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	764	PRO	6.6
1	A	888	TYR	3.5
1	A	752	HIS	3.5
1	A	164	ASP	3.4
1	A	751	LEU	3.1
1	A	32	THR	2.6
1	A	165	SER	2.5
1	A	6	LYS	2.3
1	A	171	PRO	2.2
1	A	168	LEU	2.2
1	A	884	LEU	2.2
1	A	757	ILE	2.2
1	A	169	ASP	2.1
1	A	45	ASP	2.1
1	A	96	LEU	2.1
1	A	8	ASP	2.1
1	A	778	LEU	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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)

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.