Full wwPDB X-ray Structure Validation Report ⓘ

Sep 25, 2023 – 01:27 AM EDT

PDB ID	:	5VNI
Title	:	Crystal structure of Sec23a/Sec24a/Sec22 complexed with a C-terminal FA sorting motif
Authors	:	Ma, W.; Goldberg, J.
Deposited on	:	2017-04-30
Resolution	:	2.79 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:

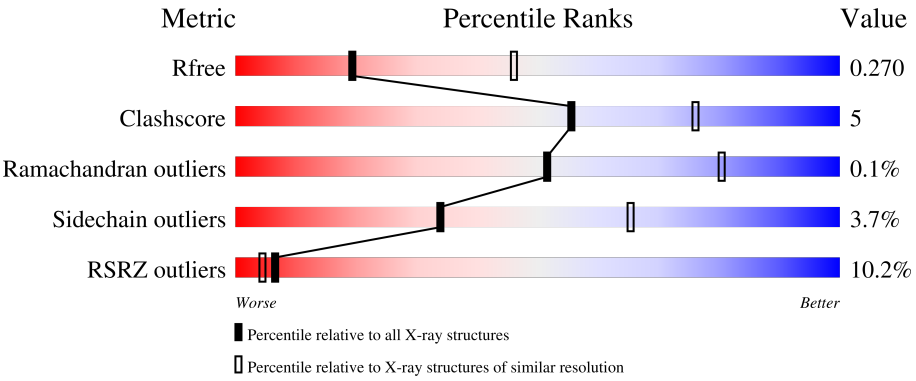
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.35.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35.1

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 2.79 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	4107 (2.80-2.76)
Clashscore	141614	4575 (2.80-2.76)
Ramachandran outliers	138981	4487 (2.80-2.76)
Sidechain outliers	138945	4489 (2.80-2.76)
RSRZ outliers	127900	4027 (2.80-2.76)

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	764	10% 79% 13% 7%
2	B	748	7% 82% 14%
3	C	157	20% 64% 21% 14%
4	D	5	20% 40% 20% 40%

2 Entry composition (i)

There are 6 unique types of molecules in this entry. The entry contains 12515 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 transport protein Sec23A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	707	Total	C	N	O	S	0	0	0
			5617	3580	964	1033	40			

- Molecule 2 is a protein called Protein transport protein Sec24A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	727	Total	C	N	O	S	0	0	0
			5745	3665	979	1067	34			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	1056	ALA	ARG	conflict	UNP O95486

- Molecule 3 is a protein called Vesicle-trafficking protein SEC22b.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	135	Total	C	N	O	S	0	0	0
			1084	696	177	203	8			

- Molecule 4 is a protein called C-terminal FA.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	D	3	Total	C	N	O	0	0	0
			22	15	3	4			

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

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

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	B	1	Total Zn 1 1	0	0

- Molecule 6 is water.

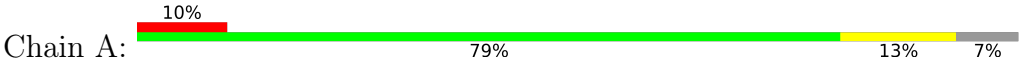
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	19	Total O 19 19	0	0
6	B	22	Total O 22 22	0	0
6	C	4	Total O 4 4	0	0

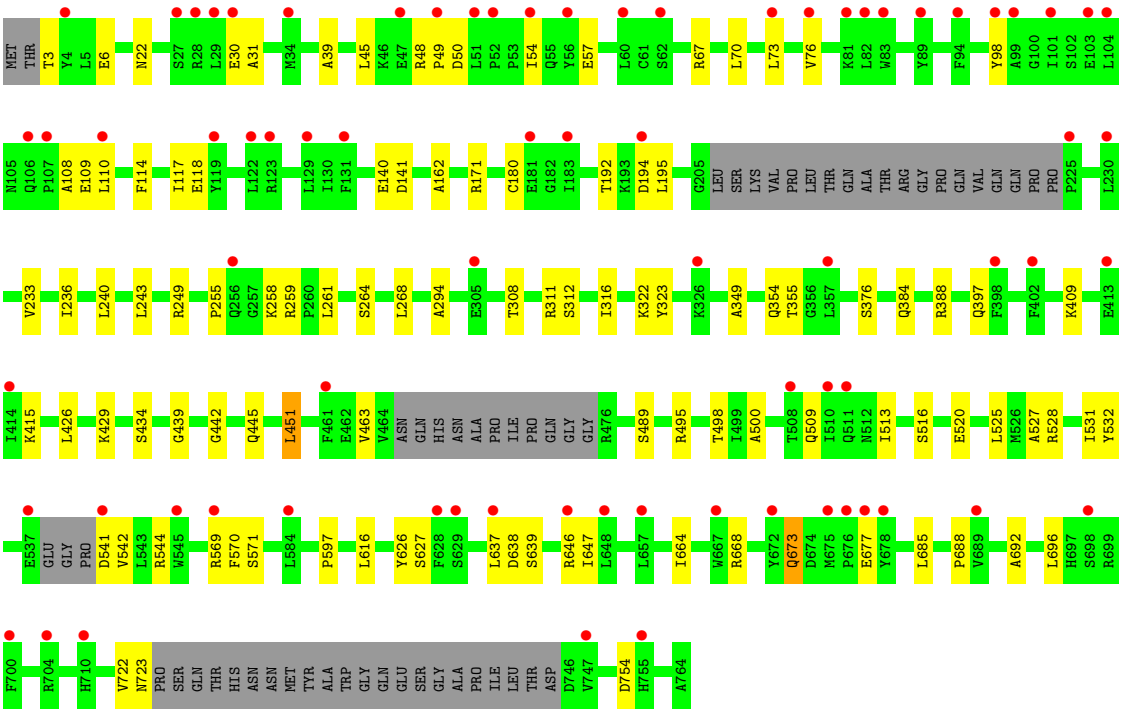
3 Residue-property plots (i)

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: Protein transport protein Sec23A

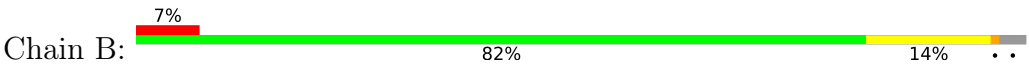
Chain A:

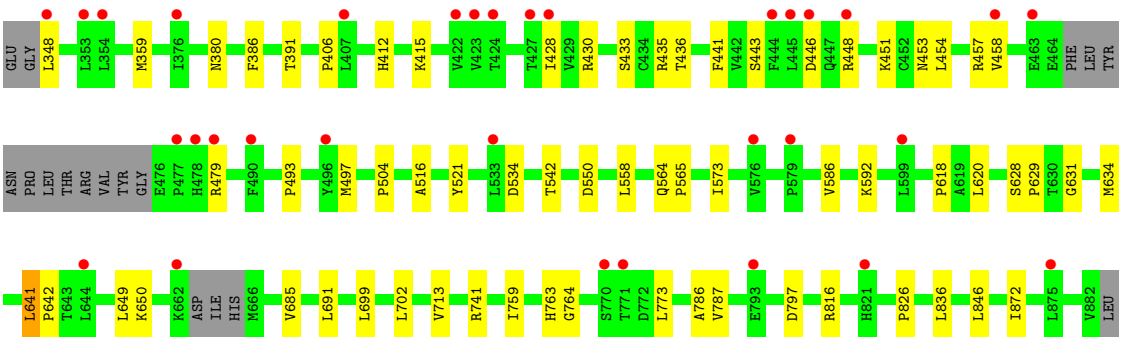


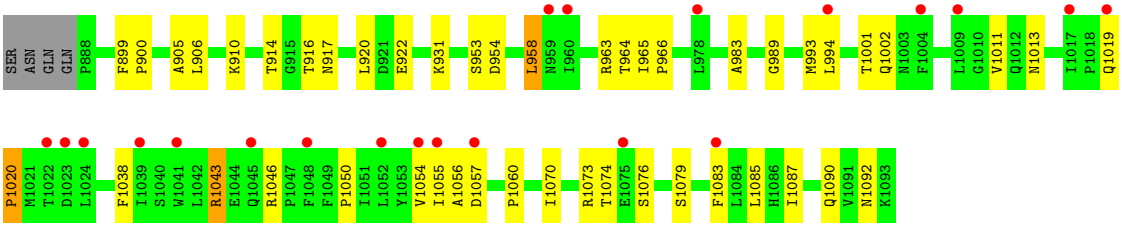


• Molecule 2: Protein transport protein Sec24A

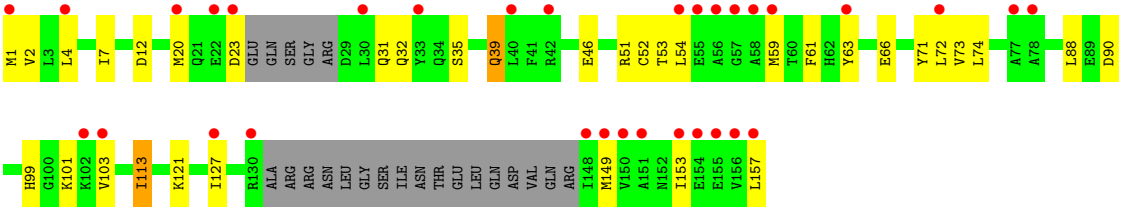
Chain B:







• Molecule 3: Vesicle-trafficking protein SEC22b



• Molecule 4: C-terminal FA

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	147.61Å 96.06Å 130.00Å 90.00° 90.06° 90.00°	Depositor
Resolution (Å)	48.80 – 2.79 48.80 – 2.79	Depositor EDS
% Data completeness (in resolution range)	87.9 (48.80-2.79) 87.9 (48.80-2.79)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.26 (at 2.77Å)	Xtriage
Refinement program	PHENIX (1.11.1_2575: ???)	Depositor
R, R_{free}	0.212 , 0.270 0.213 , 0.270	Depositor DCC
R_{free} test set	2001 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	75.7	Xtriage
Anisotropy	0.235	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 45.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.000 for -h,-k,l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	12515	wwPDB-VP
Average B, all atoms (Å^2)	90.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.26% 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: ZN

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	0.24	0/5748	0.42	0/7783
2	B	0.25	0/5868	0.43	0/7976
3	C	0.24	0/1103	0.43	0/1485
4	D	0.25	0/22	0.33	0/27
All	All	0.24	0/12741	0.42	0/17271

There are no bond length outliers.

There are no bond angle outliers.

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	5617	0	5560	49	0
2	B	5745	0	5797	56	0
3	C	1084	0	1082	24	0
4	D	22	0	15	0	0
5	A	1	0	0	0	0
5	B	1	0	0	0	0
6	A	19	0	0	0	0
6	B	22	0	0	1	0
6	C	4	0	0	0	0
All	All	12515	0	12454	127	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 5.

All (127) 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)
3:C:4:LEU:HB3	3:C:74:LEU:HB3	1.64	0.79
2:B:629:PRO:HG3	3:C:23:ASP:HB2	1.67	0.77
1:A:54:ILE:HG13	1:A:117:ILE:HD11	1.69	0.72
3:C:59:MET:HB3	3:C:74:LEU:HD11	1.72	0.70
2:B:1057:ASP:H	2:B:1060:PRO:HG3	1.57	0.69
1:A:259:ARG:NH2	1:A:308:THR:O	2.26	0.68
2:B:1055:ILE:O	2:B:1056:ALA:C	2.29	0.68
2:B:905:ALA:HB2	2:B:1070:ILE:HD13	1.75	0.68
3:C:1:MET:O	3:C:127:ILE:HG21	1.97	0.65
3:C:54:LEU:HD13	3:C:153:ILE:HD13	1.76	0.65
2:B:1074:THR:HG23	2:B:1076:SER:H	1.64	0.62
2:B:631:GLY:HA2	2:B:685:VAL:HG22	1.81	0.62
1:A:67:ARG:O	1:A:409:LYS:NZ	2.33	0.61
1:A:673:GLN:HG2	1:A:685:LEU:HD12	1.80	0.61
2:B:558:LEU:HB2	2:B:586:VAL:HG11	1.83	0.60
2:B:1055:ILE:O	2:B:1057:ASP:N	2.35	0.59
2:B:741:ARG:NH2	6:B:1202:HOH:O	2.36	0.59
2:B:872:ILE:HD12	2:B:1090:GLN:HB2	1.85	0.58
2:B:965:ILE:O	2:B:965:ILE:HG22	2.02	0.58
2:B:1019:GLN:HB3	2:B:1020:PRO:HD3	1.85	0.58
1:A:255:PRO:HB3	3:C:1:MET:HB3	1.85	0.57
1:A:647:ILE:HD11	1:A:664:ILE:HG21	1.85	0.57
2:B:558:LEU:HD23	2:B:565:PRO:HB3	1.86	0.56
2:B:436:THR:HG21	2:B:454:LEU:HD13	1.87	0.56
1:A:349:ALA:HB1	1:A:355:THR:HG21	1.86	0.56
3:C:39:GLN:HB2	3:C:157:LEU:HD22	1.88	0.55
1:A:22:ASN:HB2	1:A:516:SER:HB2	1.89	0.55
2:B:1054:VAL:O	2:B:1054:VAL:HG12	2.07	0.54
2:B:691:LEU:HD22	2:B:699:LEU:HD13	1.89	0.54
1:A:627:SER:HB3	1:A:646:ARG:HG3	1.89	0.54
2:B:428:ILE:HG22	2:B:430:ARG:HG3	1.90	0.54
1:A:626:TYR:HB2	1:A:647:ILE:HB	1.91	0.53
2:B:989:GLY:O	2:B:1046:ARG:NH1	2.41	0.53
2:B:642:PRO:HG2	2:B:702:LEU:HD21	1.91	0.53
3:C:7:ILE:HD12	3:C:71:TYR:HD2	1.72	0.53
3:C:51:ARG:NH2	3:C:66:GLU:OE2	2.42	0.53
2:B:763:HIS:HB2	2:B:786:ALA:HB3	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:ARG:HD2	1:A:261:LEU:HD12	1.92	0.52
2:B:380:ASN:HA	2:B:441:PHE:HZ	1.74	0.52
1:A:39:ALA:HB3	1:A:525:LEU:HD13	1.93	0.50
1:A:415:LYS:HB3	1:A:434:SER:HB2	1.94	0.50
3:C:1:MET:O	3:C:127:ILE:CG2	2.60	0.50
1:A:264:SER:HB2	1:A:294:ALA:HB2	1.94	0.50
1:A:3:THR:HG22	1:A:6:GLU:H	1.77	0.50
2:B:428:ILE:HD13	2:B:493:PRO:HD3	1.94	0.49
1:A:439:GLY:HA2	1:A:532:TYR:CZ	2.47	0.49
2:B:516:ALA:HB1	2:B:521:TYR:HE1	1.76	0.49
2:B:1043:ARG:HB3	2:B:1050:PRO:HD2	1.93	0.49
1:A:426:LEU:HD12	1:A:445:GLN:HB3	1.94	0.49
1:A:255:PRO:HG2	1:A:258:LYS:HG3	1.94	0.49
3:C:12:ASP:OD1	3:C:12:ASP:N	2.46	0.49
1:A:312:SER:O	1:A:316:ILE:HG12	2.12	0.48
3:C:7:ILE:HD12	3:C:71:TYR:CD2	2.48	0.48
1:A:647:ILE:HG21	1:A:688:PRO:HG3	1.95	0.48
2:B:564:GLN:HB2	2:B:565:PRO:HD2	1.96	0.48
1:A:140:GLU:HA	1:A:249:ARG:HH21	1.78	0.48
2:B:1073:ARG:HB3	2:B:1079:SER:HB3	1.96	0.47
1:A:541:ASP:OD1	1:A:542:VAL:N	2.47	0.47
2:B:453:ASN:OD1	2:B:453:ASN:N	2.42	0.47
1:A:45:LEU:HD11	1:A:451:LEU:HD13	1.97	0.47
2:B:348:LEU:HD13	2:B:836:LEU:HD11	1.96	0.47
1:A:73:LEU:HD11	1:A:500:ALA:HB2	1.97	0.46
2:B:446:ASP:C	2:B:448:ARG:H	2.19	0.46
3:C:35:SER:O	3:C:39:GLN:HG2	2.15	0.46
1:A:429:LYS:NZ	1:A:442:GLY:O	2.42	0.46
3:C:46:GLU:OE1	3:C:46:GLU:N	2.48	0.46
1:A:384:GLN:O	1:A:388:ARG:HG2	2.15	0.46
3:C:61:PHE:HB3	3:C:72:LEU:HD11	1.96	0.46
1:A:108:ALA:HB1	1:A:114:PHE:CD2	2.51	0.46
1:A:322:LYS:HE3	1:A:323:TYR:CZ	2.51	0.46
2:B:430:ARG:HD3	2:B:435:ARG:HH21	1.81	0.46
2:B:764:GLY:HA2	2:B:931:LYS:O	2.16	0.46
1:A:415:LYS:HD3	1:A:434:SER:HA	1.97	0.46
2:B:406:PRO:HB2	2:B:846:LEU:HD23	1.98	0.46
2:B:983:ALA:HB1	2:B:994:LEU:HD11	1.98	0.46
1:A:194:ASP:OD1	1:A:195:LEU:N	2.48	0.45
2:B:433:SER:OG	2:B:457:ARG:HD3	2.16	0.45
1:A:48:ARG:HB2	1:A:49:PRO:HD2	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:722:VAL:HG22	1:A:723:ASN:H	1.81	0.45
2:B:899:PHE:HB3	2:B:900:PRO:HD3	1.98	0.45
1:A:509:GLN:O	1:A:513:ILE:HG13	2.17	0.45
2:B:1083:PHE:O	2:B:1087:ILE:HG12	2.16	0.45
1:A:118:GLU:HB2	1:A:495:ARG:HG3	1.99	0.45
1:A:527:ALA:O	1:A:531:ILE:HG12	2.17	0.44
1:A:638:ASP:OD1	1:A:639:SER:N	2.50	0.44
2:B:412:HIS:CE1	2:B:415:LYS:HB2	2.51	0.44
3:C:99:HIS:O	3:C:103:VAL:HG23	2.17	0.44
1:A:70:LEU:HD11	1:A:110:LEU:HD21	1.99	0.44
2:B:958:LEU:H	2:B:958:LEU:HD13	1.82	0.44
1:A:98:TYR:OH	1:A:109:GLU:OE1	2.25	0.44
2:B:534:ASP:OD1	2:B:592:LYS:NZ	2.39	0.44
2:B:958:LEU:HA	2:B:964:THR:HA	1.98	0.44
1:A:48:ARG:O	1:A:50:ASP:N	2.48	0.43
2:B:457:ARG:HG3	2:B:458:VAL:N	2.34	0.43
1:A:354:GLN:HE22	1:A:597:PRO:HD2	1.83	0.43
1:A:397:GLN:HE22	1:A:489:SER:HB3	1.82	0.43
1:A:677:GLU:H	1:A:677:GLU:HG3	1.60	0.42
1:A:57:GLU:N	1:A:57:GLU:OE2	2.51	0.42
1:A:76:VAL:HG21	1:A:110:LEU:HD13	2.00	0.42
2:B:443:SER:HB2	2:B:451:LYS:HB3	2.01	0.42
2:B:573:ILE:HG23	2:B:618:PRO:HG2	2.01	0.42
3:C:73:VAL:HG12	3:C:88:LEU:HD11	2.01	0.42
2:B:504:PRO:HG2	2:B:542:THR:HA	2.02	0.42
2:B:910:LYS:HD3	2:B:922:GLU:HB3	2.01	0.42
2:B:391:THR:O	2:B:826:PRO:HD2	2.20	0.42
3:C:39:GLN:HG2	3:C:39:GLN:H	1.58	0.42
2:B:497:MET:HB3	2:B:816:ARG:HG3	2.01	0.42
3:C:4:LEU:HD12	3:C:20:MET:HG2	2.02	0.42
1:A:108:ALA:HB1	1:A:114:PHE:HD2	1.85	0.41
1:A:520:GLU:HB3	1:A:616:LEU:HD11	2.01	0.41
2:B:759:ILE:HG23	2:B:787:VAL:HG13	2.01	0.41
2:B:1011:VAL:HG12	2:B:1013:ASN:H	1.85	0.41
2:B:564:GLN:HE21	2:B:564:GLN:HB3	1.64	0.41
2:B:816:ARG:HA	2:B:816:ARG:HD2	1.91	0.41
2:B:872:ILE:HD13	2:B:1087:ILE:HG23	2.03	0.41
3:C:52:CYS:SG	3:C:53:THR:N	2.93	0.41
2:B:966:PRO:HG2	2:B:1038:PHE:HB2	2.03	0.41
3:C:53:THR:N	3:C:149:MET:O	2.50	0.41
1:A:692:ALA:O	1:A:696:LEU:HB2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:162:ALA:O	1:A:233:VAL:HG23	2.21	0.40
2:B:641:LEU:HD22	2:B:649:LEU:HB2	2.02	0.40
2:B:953:SER:HB2	2:B:954:ASP:H	1.72	0.40
3:C:32:GLN:O	3:C:35:SER:OG	2.37	0.40
1:A:31:ALA:HB1	1:A:463:VAL:HB	2.04	0.40
3:C:63:TYR:HA	3:C:71:TYR:O	2.21	0.40
3:C:113:ILE:H	3:C:113:ILE:HD13	1.85	0.40
2:B:620:LEU:HD22	2:B:634:MET:HE3	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	697/764 (91%)	668 (96%)	29 (4%)	0	100	100
2	B	719/748 (96%)	676 (94%)	42 (6%)	1 (0%)	51	80
3	C	129/157 (82%)	122 (95%)	7 (5%)	0	100	100
4	D	1/5 (20%)	1 (100%)	0	0	100	100
All	All	1546/1674 (92%)	1467 (95%)	78 (5%)	1 (0%)	51	80

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	1020	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	618/666 (93%)	597 (97%)	21 (3%)	37 68
2	B	658/678 (97%)	635 (96%)	23 (4%)	36 67
3	C	118/138 (86%)	111 (94%)	7 (6%)	19 46
4	D	1/4 (25%)	0	1 (100%)	0 0
All	All	1395/1486 (94%)	1343 (96%)	52 (4%)	34 65

All (52) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	30	GLU
1	A	141	ASP
1	A	180	CYS
1	A	192	THR
1	A	236	ILE
1	A	240	LEU
1	A	243	LEU
1	A	268	LEU
1	A	311	ARG
1	A	376	SER
1	A	451	LEU
1	A	498	THR
1	A	528	ARG
1	A	544	ARG
1	A	569	ARG
1	A	570	PHE
1	A	571	SER
1	A	637	LEU
1	A	668	ARG
1	A	673	GLN
1	A	754	ASP
2	B	359	MET
2	B	386	PHE
2	B	479	ARG
2	B	550	ASP
2	B	628	SER
2	B	641	LEU
2	B	650	LYS
2	B	713	VAL
2	B	773	LEU

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Mol	Chain	Res	Type
2	B	797	ASP
2	B	906	LEU
2	B	914	THR
2	B	916	THR
2	B	917	ASN
2	B	920	LEU
2	B	958	LEU
2	B	963	ARG
2	B	993	MET
2	B	1001	THR
2	B	1002	GLN
2	B	1043	ARG
2	B	1085	LEU
2	B	1092	ASN
3	C	2	VAL
3	C	31	GLN
3	C	39	GLN
3	C	90	ASP
3	C	101	LYS
3	C	113	ILE
3	C	121	LYS
4	D	102	PHE

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

Mol	Chain	Res	Type
2	B	564	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 monosaccharides 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, 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	707/764 (92%)	0.61	75 (10%) 6 4	49, 84, 150, 212	0
2	B	727/748 (97%)	0.49	53 (7%) 15 10	50, 77, 134, 201	0
3	C	135/157 (85%)	1.28	32 (23%) 0 0	70, 112, 183, 227	0
4	D	3/5 (60%)	1.97	1 (33%) 0 0	128, 128, 137, 139	0
All	All	1572/1674 (93%)	0.62	161 (10%) 6 4	49, 82, 150, 227	0

All (161) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	153	ILE	11.4
2	B	1055	ILE	8.7
2	B	424	THR	8.3
3	C	148	ILE	8.2
3	C	157	LEU	7.6
1	A	672	TYR	7.5
3	C	1	MET	6.6
3	C	103	VAL	6.5
1	A	123	ARG	6.3
3	C	155	GLU	5.6
3	C	57	GLY	4.9
3	C	56	ALA	4.9
1	A	52	PRO	4.7
3	C	20	MET	4.6
1	A	107	PRO	4.5
1	A	657	LEU	4.4
3	C	54	LEU	4.3
1	A	122	LEU	4.3
2	B	1057	ASP	4.2
3	C	33	TYR	4.2
3	C	23	ASP	4.2

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Mol	Chain	Res	Type	RSRZ
1	A	56	TYR	4.1
3	C	154	GLU	4.0
1	A	104	LEU	3.9
1	A	60	LEU	3.9
2	B	427	THR	3.9
2	B	423	VAL	3.9
1	A	94	PHE	3.9
1	A	82	LEU	3.9
1	A	101	ILE	3.8
2	B	496	TYR	3.8
1	A	357	LEU	3.8
1	A	76	VAL	3.8
1	A	584	LEU	3.7
2	B	1052	LEU	3.7
1	A	537	GLU	3.7
1	A	413	GLU	3.6
3	C	150	VAL	3.5
2	B	959	ASN	3.5
3	C	77	ALA	3.5
1	A	648	LEU	3.5
2	B	428	ILE	3.5
2	B	1054	VAL	3.4
1	A	461	PHE	3.4
1	A	28	ARG	3.4
1	A	194	ASP	3.3
1	A	510	ILE	3.2
1	A	414	ILE	3.2
2	B	445	LEU	3.2
1	A	34	MET	3.2
1	A	51	LEU	3.1
1	A	676	PRO	3.1
2	B	793	GLU	3.1
4	D	103	ALA	3.1
1	A	4	TYR	3.1
1	A	678	TYR	3.1
1	A	700	PHE	3.1
1	A	698	SER	3.1
1	A	569	ARG	3.0
1	A	62	SER	3.0
2	B	490	PHE	3.0
2	B	479	ARG	3.0
3	C	59	MET	3.0

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Mol	Chain	Res	Type	RSRZ
2	B	448	ARG	3.0
3	C	149	MET	2.9
2	B	1045	GLN	2.9
3	C	127	ILE	2.9
2	B	478	HIS	2.9
2	B	662	LYS	2.9
2	B	353	LEU	2.9
1	A	667	TRP	2.9
2	B	348	LEU	2.9
3	C	30	LEU	2.9
2	B	770	SER	2.8
2	B	1017	ILE	2.8
1	A	225	PRO	2.8
2	B	422	VAL	2.8
1	A	628	PHE	2.7
1	A	637	LEU	2.7
2	B	960	ILE	2.7
1	A	47	GLU	2.7
2	B	1022	THR	2.7
3	C	55	GLU	2.7
2	B	1023	ASP	2.7
1	A	710	HIS	2.7
1	A	29	LEU	2.7
1	A	398	PHE	2.7
2	B	444	PHE	2.7
2	B	1041	TRP	2.7
3	C	102	LYS	2.7
1	A	89	TYR	2.6
1	A	675	MET	2.6
3	C	58	ALA	2.6
3	C	78	ALA	2.6
3	C	4	LEU	2.6
1	A	83	TRP	2.6
2	B	771	THR	2.6
2	B	1004	PHE	2.6
2	B	1083	PHE	2.6
1	A	54	ILE	2.5
1	A	755	HIS	2.5
1	A	81	LYS	2.5
2	B	599	LEU	2.5
1	A	98	TYR	2.5
3	C	63	TYR	2.4

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Mol	Chain	Res	Type	RSRZ
2	B	644	LEU	2.4
2	B	875	LEU	2.4
2	B	1048	PHE	2.4
1	A	508	THR	2.4
2	B	994	LEU	2.4
3	C	130	ARG	2.4
2	B	576	VAL	2.4
1	A	511	GLN	2.4
2	B	1075	GLU	2.4
1	A	541	ASP	2.4
1	A	402	PHE	2.3
3	C	40	LEU	2.3
1	A	677	GLU	2.3
1	A	183	ILE	2.3
2	B	477	PRO	2.3
3	C	22	GLU	2.3
1	A	27	SER	2.3
1	A	49	PRO	2.3
2	B	821	HIS	2.3
1	A	704	ARG	2.3
1	A	106	GLN	2.3
2	B	1009	LEU	2.3
3	C	42	ARG	2.3
1	A	689	VAL	2.2
1	A	99	ALA	2.2
1	A	30	GLU	2.2
2	B	463	GLU	2.2
2	B	978	LEU	2.2
2	B	376	ILE	2.2
2	B	458	VAL	2.2
2	B	533	LEU	2.2
2	B	1024	LEU	2.2
1	A	129	LEU	2.2
1	A	326	LYS	2.2
1	A	305	GLU	2.1
1	A	747	VAL	2.1
1	A	119	TYR	2.1
1	A	230	LEU	2.1
1	A	646	ARG	2.1
1	A	256	GLN	2.1
2	B	1019	GLN	2.1
1	A	629	SER	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	73	LEU	2.1
3	C	151	ALA	2.1
2	B	579	PRO	2.1
1	A	181	GLU	2.1
2	B	354	LEU	2.0
2	B	407	LEU	2.0
2	B	446	ASP	2.0
1	A	545	TRP	2.0
3	C	72	LEU	2.0
1	A	110	LEU	2.0
3	C	156	VAL	2.0
2	B	1039	ILE	2.0
1	A	131	PHE	2.0
1	A	103	GLU	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
5	ZN	A	801	1/1	0.89	0.27	251,251,251,251	0
5	ZN	B	1101	1/1	0.93	0.13	97,97,97,97	0

6.5 Other polymers (i)

There are no such residues in this entry.