Full wwPDB X-ray Structure Validation Report ⓘ

Oct 22, 2023 – 02:44 PM EDT

PDB ID	:	2Z8W
Title	:	Structure of an IgNAR-AMA1 complex
Authors	:	Streltsov, V.A.; Henderson, K.A.; Batchelor, A.H.; Coley, A.M.; Nuttall, S.D.
Deposited on	:	2007-09-11
Resolution	:	2.45 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:

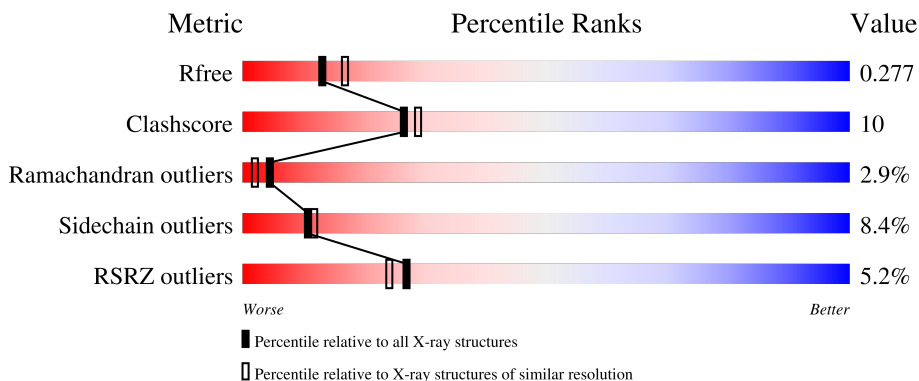|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
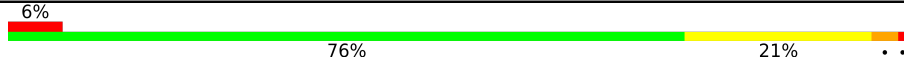*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.45 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	Percentile Ranks	Value
Rfree		0.277
Clashscore		10
Ramachandran outliers		2.9%
Sidechain outliers		8.4%
RSRZ outliers		5.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1544 (2.48-2.44)
Clashscore	141614	1613 (2.48-2.44)
Ramachandran outliers	138981	1598 (2.48-2.44)
Sidechain outliers	138945	1598 (2.48-2.44)
RSRZ outliers	127900	1523 (2.48-2.44)

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	335	6%　76%　21% ･ ･
1	B	335	6%　77%　18% ･ ･
2	C	116	2%　75%　19%　5% ･
2	D	116	3%　66%　25%　8% ･

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 7674 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 Apical membrane antigen 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	335	Total	C	N	O	S	0	0	0
			2695	1705	453	519	18			
1	B	335	Total	C	N	O	S	0	0	0
			2695	1705	453	519	18			

- Molecule 2 is a protein called New antigen receptor variable domain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	116	Total	C	N	O	S	0	0	0
			904	566	157	179	2			
2	D	116	Total	C	N	O	S	0	0	0
			904	566	157	179	2			

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	90	LEU	PRO	engineered mutation	UNP Q6X1E6
C	92	ARG	GLY	engineered mutation	UNP Q6X1E6
C	114	ALA	-	expression tag	UNP Q6X1E6
C	115	ALA	-	expression tag	UNP Q6X1E6
C	116	ALA	-	expression tag	UNP Q6X1E6
D	90	LEU	PRO	engineered mutation	UNP Q6X1E6
D	92	ARG	GLY	engineered mutation	UNP Q6X1E6
D	114	ALA	-	expression tag	UNP Q6X1E6
D	115	ALA	-	expression tag	UNP Q6X1E6
D	116	ALA	-	expression tag	UNP Q6X1E6

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	171	Total	O	0	0
			171	171		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	165	Total O 165 165		0	0
3	C	71	Total O 71 71		0	0
3	D	69	Total O 69 69		0	0

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 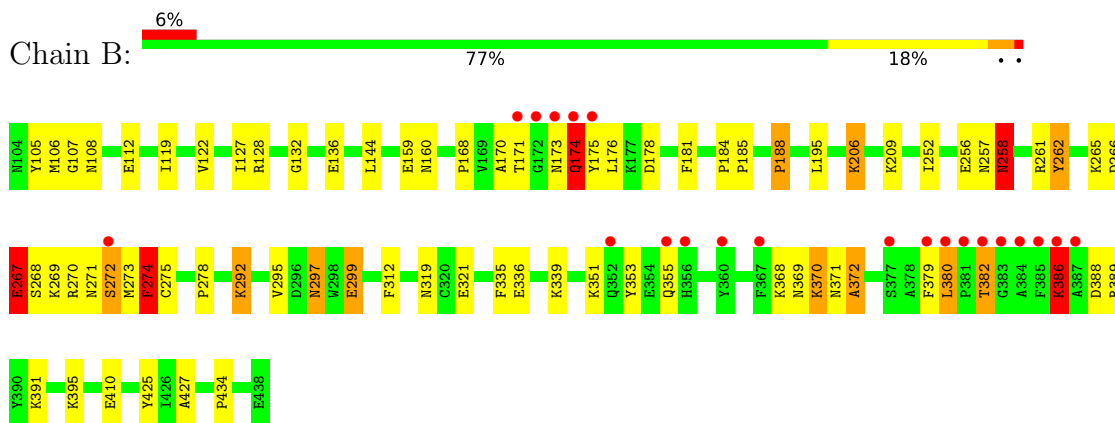indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Apical membrane antigen 1
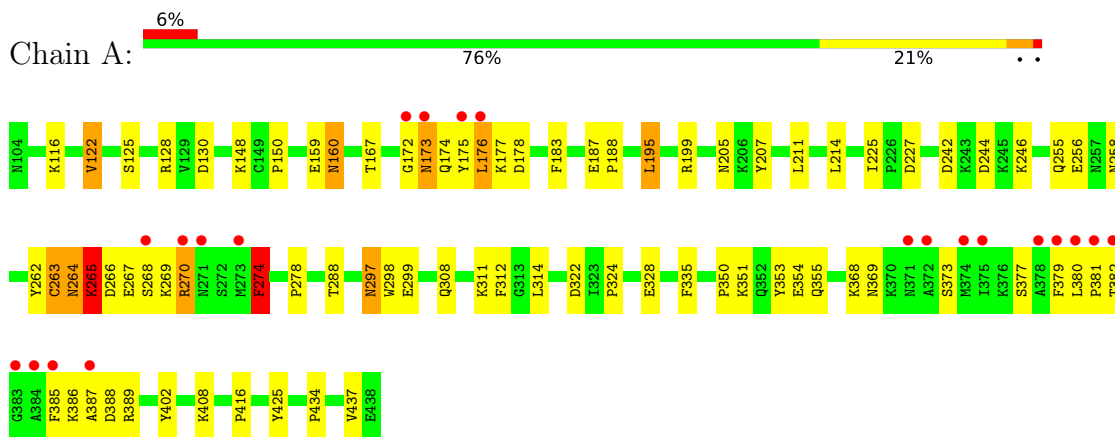
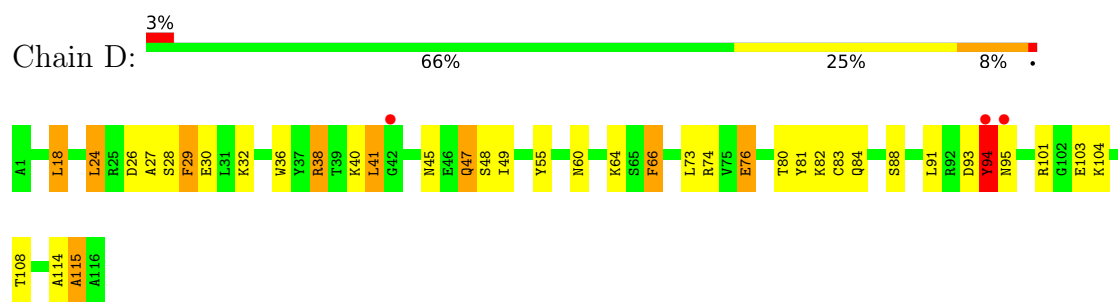• Molecule 1: Apical membrane antigen 1

• Molecule 2: New antigen receptor variable domain

• Molecule 2: New antigen receptor variable domain

Chain D:

3%

66%   25%   8%   •

A1 L18 L24 R25 D26 A27 S28 F29 E30 L31 K32 W36 Y37 R38 T39 K40 L41 G42 N45 E46 Q47 S48 I49 Y55 N60 K64 S65 F66 L73 R74 V75 E76 T80 Y81 K82 C83 Q84 S88 L91 R92 D93 Y94 N95 R101 G102 E103 K104

T108 A114 A115 A116
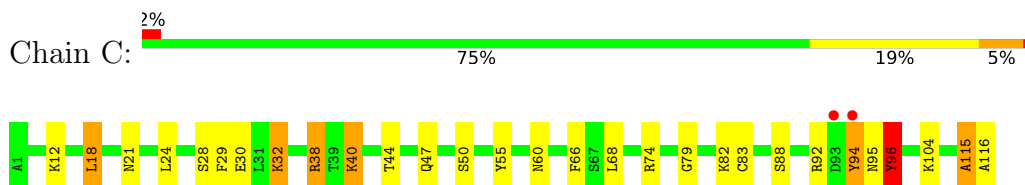
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 31	Depositor
Cell constants a, b, c, α, β, γ	76.48Å 76.48Å 140.98Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	38.33 – 2.45 38.33 – 2.45	Depositor EDS
% Data completeness (in resolution range)	93.9 (38.33-2.45) 94.0 (38.33-2.45)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.95 (at 2.45Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.189 , 0.282 0.188 , 0.277	Depositor DCC
R_{free} test set	3222 reflections (10.12%)	wwPDB-VP
Wilson B-factor (Å^2)	27.5	Xtriage
Anisotropy	0.991	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 46.3	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.478 for -h,-k,l 0.059 for h,-h-k,-l 0.057 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	7674	wwPDB-VP
Average B, all atoms (Å^2)	57.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.86% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 (i)

5.1 Standard geometry (i)

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	0.57	1/2765 (0.0%)	0.64	0/3740
1	B	0.58	0/2765	0.68	1/3740 (0.0%)
2	C	0.55	0/918	0.69	0/1238
2	D	0.54	0/918	0.70	1/1238 (0.1%)
All	All	0.57	1/7366 (0.0%)	0.67	2/9956 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	265	LYS	CE-NZ	5.59	1.63	1.49

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	188	PRO	N-CD-CG	5.77	111.85	103.20
2	D	41	LEU	CA-CB-CG	5.62	128.23	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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	2695	0	2570	56	0
1	B	2695	0	2570	55	0
2	C	904	0	898	19	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	904	0	898	24	0
3	A	171	0	0	5	1
3	B	165	0	0	2	1
3	C	71	0	0	3	0
3	D	69	0	0	4	0
All	All	7674	0	6936	146	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 10.

All (146) 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)
2:D:94:TYR:HB2	2:D:95:ASN:HA	1.11	1.04
2:D:94:TYR:CB	2:D:95:ASN:HA	1.90	1.01
2:D:32:LYS:HG3	2:D:88:SER:HB2	1.39	1.00
1:A:354:GLU:HG3	1:A:355:GLN:H	1.28	0.98
2:D:60:ASN:HB3	3:D:161:HOH:O	1.64	0.96
1:B:174:GLN:HG2	1:B:175:TYR:H	1.30	0.93
2:D:94:TYR:HB2	2:D:95:ASN:CA	2.02	0.85
1:A:159:GLU:HG3	3:A:477:HOH:O	1.79	0.83
1:B:174:GLN:HG2	1:B:175:TYR:N	1.94	0.82
1:A:264:ASN:HD22	1:A:265:LYS:H	1.28	0.82
1:B:262:TYR:HA	1:B:269:LYS:HB3	1.64	0.77
1:A:128:ARG:NH2	1:A:256:GLU:OE1	2.17	0.76
1:B:128:ARG:NH2	1:B:256:GLU:OE1	2.21	0.74
1:B:297:ASN:HD22	1:B:297:ASN:H	1.34	0.74
1:A:264:ASN:HD22	1:A:265:LYS:N	1.86	0.73
1:A:188:PRO:HG3	2:D:29:PHE:CE1	2.25	0.71
1:A:207:TYR:CZ	1:A:211:LEU:HD21	2.25	0.71
2:C:32:LYS:HG3	2:C:88:SER:HB2	1.72	0.70
1:B:321:GLU:HG3	3:B:492:HOH:O	1.91	0.69
1:A:160:ASN:HB2	1:A:266:ASP:HB3	1.76	0.68
2:C:95:ASN:O	2:C:96:TYR:HB2	1.93	0.68
1:B:174:GLN:HB2	1:B:175:TYR:HD2	1.58	0.68
1:B:379:PHE:O	1:B:380:LEU:HB2	1.98	0.63
2:C:32:LYS:CG	2:C:88:SER:HB2	2.28	0.63
2:D:38:ARG:HD2	2:D:40:LYS:HE2	1.81	0.62
2:C:38:ARG:NH2	3:C:157:HOH:O	2.31	0.62
1:A:314:LEU:HD12	1:A:324:PRO:HD3	1.82	0.62
1:B:368:LYS:NZ	1:B:369:ASN:HD21	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:12:LYS:HE3	2:C:18:LEU:HD23	1.82	0.62
1:B:386:LYS:HG3	1:B:386:LYS:O	1.99	0.61
1:B:181:PHE:HA	1:B:252:ILE:HD12	1.82	0.61
1:B:368:LYS:HZ2	1:B:369:ASN:HD21	1.47	0.60
2:C:55:TYR:HB3	2:C:68:LEU:HD11	1.83	0.60
1:A:354:GLU:HG3	1:A:355:GLN:N	2.09	0.60
1:B:271:ASN:O	1:B:272:SER:HB2	2.00	0.60
1:B:132:GLY:O	1:B:391:LYS:HD3	2.03	0.59
2:C:40:LYS:HA	2:C:79:GLY:HA3	1.86	0.58
1:B:168:PRO:HB3	1:B:184:PRO:HA	1.85	0.58
1:A:351:LYS:HE3	1:B:108:ASN:O	2.03	0.58
1:A:265:LYS:HE3	1:B:295:VAL:HG12	1.84	0.58
1:A:188:PRO:HG3	2:D:29:PHE:CZ	2.40	0.57
2:D:24:LEU:HD22	2:D:27:ALA:HB2	1.85	0.56
1:B:410:GLU:OE1	1:B:425:TYR:HE2	1.89	0.56
1:A:262:TYR:O	1:A:263:CYS:SG	2.64	0.56
1:B:261:ARG:NH1	3:B:439:HOH:O	2.39	0.56
2:D:47:GLN:NE2	3:D:141:HOH:O	2.33	0.56
1:A:177:LYS:HD3	1:A:178:ASP:H	1.72	0.55
1:B:257:ASN:O	1:B:258:ASN:HB3	2.08	0.54
1:A:389:ARG:HB2	1:B:106:MET:HG3	1.89	0.54
1:B:188:PRO:HG3	2:C:29:PHE:CE1	2.42	0.54
1:A:262:TYR:O	1:A:263:CYS:CB	2.56	0.53
1:A:297:ASN:HD22	1:A:297:ASN:H	1.56	0.52
1:B:273:MET:O	1:B:274:PHE:O	2.28	0.52
1:B:256:GLU:HB2	1:B:278:PRO:HD3	1.92	0.51
2:D:80:THR:HA	2:D:108:THR:O	2.11	0.51
1:A:377:SER:HB3	1:A:380:LEU:HD23	1.91	0.51
1:B:388:ASP:OD1	1:B:391:LYS:HE2	2.11	0.51
1:A:379:PHE:HE1	1:A:382:THR:HG1	1.59	0.51
1:A:386:LYS:HD3	1:A:388:ASP:HB2	1.92	0.51
2:C:38:ARG:CD	2:C:40:LYS:HE2	2.41	0.50
1:B:370:LYS:HE2	1:B:372:ALA:HB3	1.94	0.50
1:A:328:GLU:HG2	1:A:408:LYS:HD2	1.94	0.50
1:A:380:LEU:HB3	1:A:381:PRO:HD2	1.93	0.50
1:A:368:LYS:NZ	1:A:369:ASN:HD21	2.10	0.49
1:B:168:PRO:HB2	1:B:174:GLN:HG3	1.94	0.49
1:A:308:GLN:HB2	1:A:437:VAL:HG12	1.95	0.49
1:A:122:VAL:O	1:A:148:LYS:HB2	2.12	0.49
1:A:255:GLN:O	1:A:278:PRO:HD3	2.13	0.49
1:A:351:LYS:HG3	1:B:108:ASN:H	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:174:GLN:HB2	1:B:175:TYR:CD2	2.43	0.49
1:A:385:PHE:HD1	1:A:387:ALA:HA	1.78	0.48
1:B:379:PHE:O	1:B:380:LEU:CB	2.60	0.47
1:B:265:LYS:HB3	1:B:268:SER:H	1.79	0.47
1:A:128:ARG:HD3	3:A:446:HOH:O	2.14	0.47
2:C:40:LYS:HD3	3:C:147:HOH:O	2.15	0.47
1:A:312:PHE:HB3	1:A:416:PRO:HB3	1.97	0.47
1:A:353:TYR:HB3	3:A:461:HOH:O	2.14	0.47
1:A:122:VAL:O	1:A:148:LYS:HE3	2.15	0.47
1:A:195:LEU:O	1:A:199:ARG:HG3	2.15	0.46
1:B:271:ASN:HD22	1:B:271:ASN:N	2.13	0.46
1:B:380:LEU:HG	1:B:382:THR:HG23	1.97	0.46
1:A:214:LEU:HD12	1:A:298:TRP:CZ2	2.50	0.46
2:D:93:ASP:O	2:D:94:TYR:HB3	2.15	0.46
1:B:335:PHE:HD1	1:B:434:PRO:HB2	1.81	0.46
2:D:47:GLN:HB3	3:D:124:HOH:O	2.15	0.46
2:D:18:LEU:HB2	2:D:73:LEU:HD11	1.97	0.46
1:A:314:LEU:HD12	1:A:324:PRO:CD	2.45	0.46
1:A:244:ASP:HB3	1:A:246:LYS:HG3	1.98	0.46
2:D:76:GLU:HB3	3:D:120:HOH:O	2.14	0.46
2:C:66:PHE:CE2	2:C:83:CYS:HB2	2.51	0.45
1:B:299:GLU:H	1:B:299:GLU:HG2	1.60	0.45
1:B:410:GLU:OE1	1:B:425:TYR:CE2	2.68	0.45
1:A:311:LYS:NZ	1:A:322:ASP:OD1	2.40	0.45
1:B:119:ILE:HG21	1:B:127:ILE:HD11	1.99	0.45
1:B:160:ASN:HB2	1:B:266:ASP:HB3	1.99	0.45
2:C:38:ARG:HD3	2:C:40:LYS:HE2	1.99	0.45
2:D:49:ILE:HD11	2:D:81:TYR:CE1	2.52	0.45
2:D:82:LYS:HD3	2:D:104:LYS:HD3	1.99	0.45
1:A:269:LYS:HB3	1:A:270:ARG:H	1.61	0.44
1:B:173:ASN:O	1:B:174:GLN:HB3	2.18	0.44
1:B:159:GLU:HB2	1:B:275:CYS:HB2	1.99	0.44
1:B:265:LYS:HB2	1:B:268:SER:OG	2.17	0.44
1:A:385:PHE:CD1	1:A:387:ALA:HA	2.53	0.44
1:B:144:LEU:HD11	1:B:292:LYS:HE2	2.00	0.44
1:A:175:TYR:O	1:A:176:LEU:HB2	2.17	0.44
1:B:297:ASN:HD22	1:B:297:ASN:N	2.03	0.44
2:C:94:TYR:CG	2:C:94:TYR:O	2.70	0.44
1:A:125:SER:OG	1:A:130:ASP:OD1	2.29	0.43
1:A:354:GLU:CG	1:A:355:GLN:H	2.10	0.43
1:B:335:PHE:CD1	1:B:434:PRO:HB2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:386:LYS:HD2	1:B:389:ARG:HD2	2.01	0.43
1:B:174:GLN:HB3	1:B:185:PRO:HG2	2.01	0.43
2:D:36:TRP:CZ3	2:D:83:CYS:HB3	2.54	0.43
1:A:150:PRO:HB3	1:A:288:THR:HG21	2.00	0.43
1:A:402:TYR:O	1:A:425:TYR:HA	2.18	0.43
2:C:38:ARG:NH1	2:C:55:TYR:OH	2.52	0.43
1:A:385:PHE:C	1:A:387:ALA:H	2.22	0.43
1:A:199:ARG:NE	3:A:563:HOH:O	2.36	0.43
2:D:38:ARG:NH2	2:D:55:TYR:OH	2.52	0.42
1:A:274:PHE:HD2	1:A:274:PHE:HA	1.74	0.42
1:B:297:ASN:H	1:B:297:ASN:ND2	2.11	0.42
1:A:205:ASN:ND2	2:D:103:GLU:OE2	2.36	0.42
1:B:174:GLN:CG	1:B:175:TYR:H	2.17	0.42
1:A:167:THR:HG23	1:A:175:TYR:HB3	2.01	0.42
1:A:225:ILE:HD13	1:A:225:ILE:HA	1.92	0.42
3:A:444:HOH:O	1:B:112:GLU:HB3	2.18	0.42
2:D:66:PHE:CD1	2:D:66:PHE:N	2.88	0.42
1:B:312:PHE:CE1	1:B:427:ALA:HB1	2.55	0.42
1:B:336:GLU:OE2	1:B:339:LYS:NZ	2.52	0.42
1:A:172:GLY:HA2	1:A:177:LYS:NZ	2.35	0.41
2:C:74:ARG:HB3	3:C:162:HOH:O	2.19	0.41
1:A:335:PHE:CD2	1:A:434:PRO:HB2	2.55	0.41
1:B:105:TYR:CZ	1:B:107:GLY:HA3	2.55	0.41
1:A:227:ASP:OD1	1:A:368:LYS:NZ	2.53	0.41
2:C:94:TYR:HA	2:C:95:ASN:C	2.41	0.41
2:D:114:ALA:O	2:D:115:ALA:C	2.59	0.41
1:B:267:GLU:HG3	1:B:271:ASN:HA	2.03	0.41
2:D:84:GLN:NE2	2:D:101:ARG:HH21	2.20	0.40
1:A:173:ASN:HD22	1:A:173:ASN:HA	1.70	0.40
1:A:386:LYS:O	1:A:387:ALA:HB3	2.21	0.40
1:B:262:TYR:N	1:B:262:TYR:CD1	2.89	0.40
2:C:115:ALA:O	2:C:116:ALA:HB3	2.21	0.40
2:D:74:ARG:HB2	2:D:76:GLU:HG2	2.04	0.40
2:C:55:TYR:N	2:C:55:TYR:CD1	2.90	0.40
2:C:82:LYS:HD3	2:C:104:LYS:HD3	2.03	0.40
1:B:206:LYS:HA	1:B:209:LYS:HD3	2.04	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)
3:A:456:HOH:O	3:B:441:HOH:O[2_555]	2.19	0.01

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	333/335 (99%)	299 (90%)	28 (8%)	6 (2%)	8	6
1	B	333/335 (99%)	289 (87%)	30 (9%)	14 (4%)	3	1
2	C	114/116 (98%)	109 (96%)	2 (2%)	3 (3%)	5	3
2	D	114/116 (98%)	108 (95%)	3 (3%)	3 (3%)	5	3
All	All	894/902 (99%)	805 (90%)	63 (7%)	26 (3%)	4	2

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	176	LEU
1	A	263	CYS
1	B	170	ALA
1	B	171	THR
1	B	174	GLN
1	B	178	ASP
1	B	272	SER
1	B	274	PHE
1	B	380	LEU
2	C	96	TYR
2	C	115	ALA
2	D	94	TYR
2	D	115	ALA
1	B	270	ARG
1	B	355	GLN
2	C	94	TYR
1	A	268	SER

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Mol	Chain	Res	Type
1	B	176	LEU
1	B	258	ASN
1	B	267	GLU
1	B	386	LYS
1	A	373	SER
1	B	372	ALA
1	A	274	PHE
2	D	26	ASP
1	A	350	PRO

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	296/296 (100%)	279 (94%)	17 (6%)	20	26
1	B	296/296 (100%)	276 (93%)	20 (7%)	16	19
2	C	97/97 (100%)	83 (86%)	14 (14%)	3	2
2	D	97/97 (100%)	82 (84%)	15 (16%)	2	2
All	All	786/786 (100%)	720 (92%)	66 (8%)	11	12

All (66) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	116	LYS
1	A	122	VAL
1	A	160	ASN
1	A	173	ASN
1	A	174	GLN
1	A	183	PHE
1	A	187	GLU
1	A	195	LEU
1	A	242	ASP
1	A	258	ASN
1	A	264	ASN
1	A	265	LYS

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Mol	Chain	Res	Type
1	A	267	GLU
1	A	270	ARG
1	A	274	PHE
1	A	297	ASN
1	A	299	GLU
1	B	122	VAL
1	B	136	GLU
1	B	174	GLN
1	B	195	LEU
1	B	206	LYS
1	B	258	ASN
1	B	262	TYR
1	B	267	GLU
1	B	274	PHE
1	B	292	LYS
1	B	297	ASN
1	B	299	GLU
1	B	319	ASN
1	B	351	LYS
1	B	353	TYR
1	B	370	LYS
1	B	371	ASN
1	B	382	THR
1	B	386	LYS
1	B	395	LYS
2	C	18	LEU
2	C	21	ASN
2	C	24	LEU
2	C	28	SER
2	C	30	GLU
2	C	32	LYS
2	C	38	ARG
2	C	40	LYS
2	C	44	THR
2	C	47	GLN
2	C	50	SER
2	C	60	ASN
2	C	92	ARG
2	C	96	TYR
2	D	18	LEU
2	D	24	LEU
2	D	28	SER

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Mol	Chain	Res	Type
2	D	29	PHE
2	D	30	GLU
2	D	38	ARG
2	D	41	LEU
2	D	45	ASN
2	D	47	GLN
2	D	48	SER
2	D	64	LYS
2	D	66	PHE
2	D	76	GLU
2	D	91	LEU
2	D	94	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	160	ASN
1	A	173	ASN
1	A	210	ASN
1	A	233	ASN
1	A	258	ASN
1	A	264	ASN
1	A	297	ASN
1	A	327	ASN
1	A	355	GLN
1	A	369	ASN
1	B	141	GLN
1	B	210	ASN
1	B	233	ASN
1	B	258	ASN
1	B	271	ASN
1	B	285	GLN
1	B	297	ASN
1	B	369	ASN
1	B	421	ASN
2	C	60	ASN
2	C	84	GLN
2	C	95	ASN
2	D	84	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, 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	335/335 (100%)	0.02	21 (6%)	20	16	47, 55, 77, 88	0
1	B	335/335 (100%)	0.01	21 (6%)	20	16	50, 58, 79, 89	0
2	C	116/116 (100%)	-0.07	2 (1%)	70	67	48, 56, 64, 68	0
2	D	116/116 (100%)	-0.11	3 (2%)	56	52	46, 54, 62, 64	0
All	All	902/902 (100%)	-0.01	47 (5%)	27	24	46, 56, 76, 89	0

All (47) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	176	LEU	6.9
1	B	380	LEU	6.7
1	B	172	GLY	6.4
1	B	175	TYR	6.1
1	A	379	PHE	5.2
1	A	382	THR	5.0
1	A	385	PHE	4.7
1	B	386	LYS	4.3
1	A	380	LEU	4.3
1	B	382	THR	4.2
1	A	381	PRO	4.0
1	A	378	ALA	3.7
2	D	42	GLY	3.7
2	C	94	TYR	3.7
1	B	173	ASN	3.5
1	A	172	GLY	3.3
1	A	175	TYR	3.3
1	A	268	SER	3.2
1	A	384	ALA	3.1
1	B	383	GLY	3.0
1	B	174	GLN	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	385	PHE	2.8
1	B	387	ALA	2.8
2	D	94	TYR	2.8
1	A	173	ASN	2.7
1	B	377	SER	2.6
1	A	387	ALA	2.6
1	A	371	ASN	2.6
1	B	384	ALA	2.5
1	A	270	ARG	2.5
1	B	367	PHE	2.5
1	B	171	THR	2.5
2	C	93	ASP	2.5
1	B	356	HIS	2.4
1	A	383	GLY	2.3
1	B	379	PHE	2.3
1	B	272	SER	2.3
2	D	95	ASN	2.2
1	A	375	ILE	2.2
1	A	271	ASN	2.1
1	A	374	MET	2.1
1	B	381	PRO	2.1
1	A	273	MET	2.1
1	A	372	ALA	2.1
1	B	360	TYR	2.1
1	B	352	GLN	2.1
1	B	355	GLN	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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.