Full wwPDB X-ray Structure Validation Report ⓘ

May 15, 2020 – 06:05 am BST

PDB ID	:	2FKJ
Title	:	The crystal structure of engineered OspA
Authors	:	Makabe, K.; Terechko, V.; Gawlak, G.; Yan, S.; Koide, S.
Deposited on	:	2006-01-04
Resolution	:	3.10 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 following versions of software and data (see references ①) were used in the production of this report:

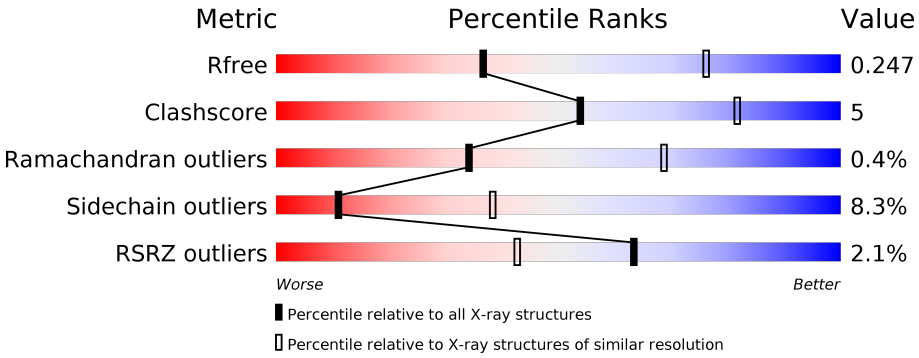
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 3.10 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}	130704	1094 (3.10-3.10)
Clashscore	141614	1184 (3.10-3.10)
Ramachandran outliers	138981	1141 (3.10-3.10)
Sidechain outliers	138945	1141 (3.10-3.10)
RSRZ outliers	127900	1067 (3.10-3.10)

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 on 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	366	77% 19%
1	B	366	72% 23%
1	C	366	6% 81% 16%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 8334 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 Outer Surface Protein A.

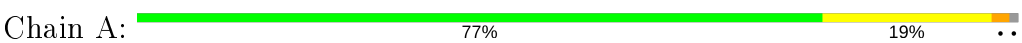
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	361	Total	C	N	O	S	0	0	0
			2778	1706	467	604	1			
1	B	361	Total	C	N	O	S	0	0	0
			2778	1706	467	604	1			
1	C	361	Total	C	N	O	S	0	0	0
			2778	1706	467	604	1			

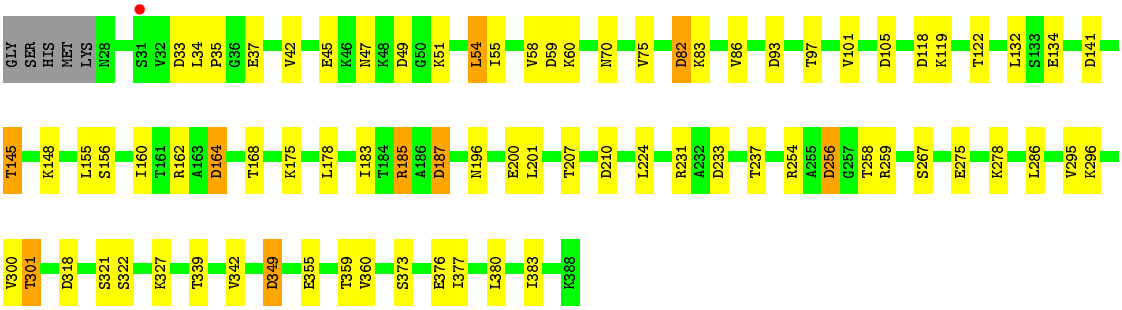
3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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: Outer Surface Protein A

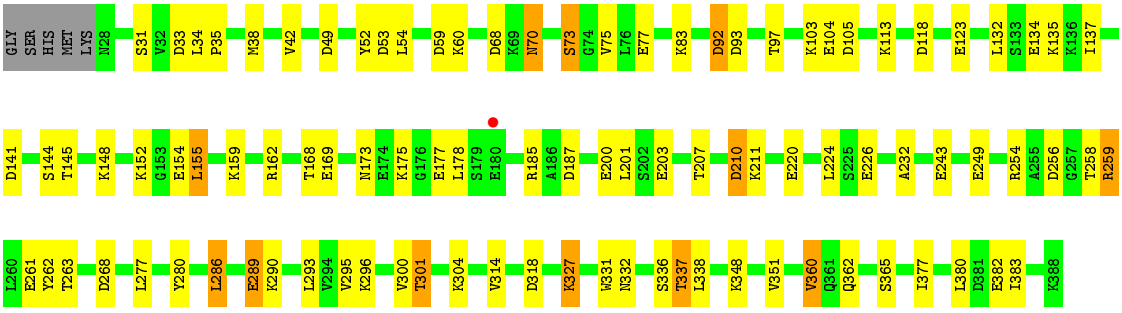
Chain A:





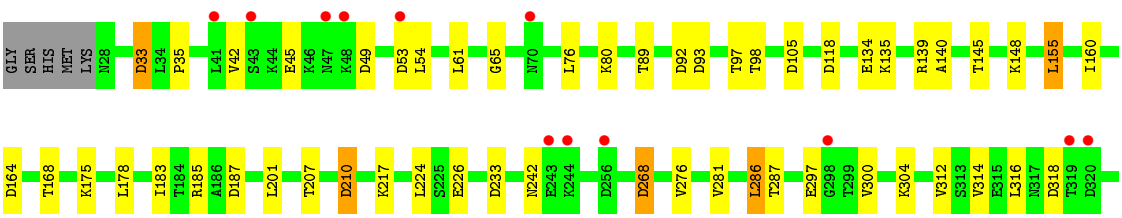
- Molecule 1: Outer Surface Protein A

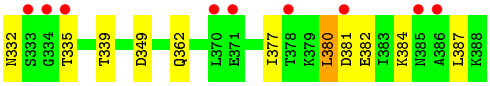
Chain B:



- Molecule 1: Outer Surface Protein A

Chain C:




N332
S333
G334
T335
T339
D349
Q362
L370
E371
I377
T378
K379
L380
D381
E382
I383
K384
N385
A386
L387
K388

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	72.15Å 105.50Å 88.98Å 90.00° 93.24° 90.00°	Depositor
Resolution (Å)	20.00 – 3.10 19.97 – 3.10	Depositor EDS
% Data completeness (in resolution range)	98.5 (20.00-3.10) 98.5 (19.97-3.10)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	8.90 (at 3.09Å)	Xtriage
Refinement program	REFMAC 5.1.9999	Depositor
R, R_{free}	0.247 , 0.282 0.247 , 0.247	Depositor DCC
R_{free} test set	1189 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å^2)	71.6	Xtriage
Anisotropy	0.031	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.20 , 51.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.90	EDS
Total number of atoms	8334	wwPDB-VP
Average B, all atoms (Å^2)	79.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.79% 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	0.39	0/2792	0.93	13/3722 (0.3%)
1	B	0.40	0/2792	0.93	13/3722 (0.3%)
1	C	0.39	0/2792	0.91	14/3722 (0.4%)
All	All	0.39	0/8376	0.93	40/11166 (0.4%)

There are no bond length outliers.

All (40) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	210	ASP	CB-CG-OD2	6.90	124.51	118.30
1	B	210	ASP	CB-CG-OD2	6.72	124.35	118.30
1	A	105	ASP	CB-CG-OD2	6.60	124.24	118.30
1	A	49	ASP	CB-CG-OD2	6.51	124.16	118.30
1	B	49	ASP	CB-CG-OD2	6.46	124.12	118.30
1	C	33	ASP	CB-CG-OD2	6.38	124.05	118.30
1	C	318	ASP	CB-CG-OD2	6.29	123.96	118.30
1	B	33	ASP	CB-CG-OD2	6.24	123.92	118.30
1	A	93	ASP	CB-CG-OD2	6.15	123.83	118.30
1	C	210	ASP	CB-CG-OD2	5.99	123.69	118.30
1	B	141	ASP	CB-CG-OD2	5.96	123.67	118.30
1	C	49	ASP	CB-CG-OD2	5.91	123.62	118.30
1	B	93	ASP	CB-CG-OD2	5.90	123.61	118.30
1	C	349	ASP	CB-CG-OD2	5.84	123.56	118.30
1	C	105	ASP	CB-CG-OD2	5.83	123.55	118.30
1	A	164	ASP	CB-CG-OD2	5.77	123.49	118.30
1	B	118	ASP	CB-CG-OD2	5.76	123.49	118.30
1	B	105	ASP	CB-CG-OD2	5.71	123.44	118.30
1	B	318	ASP	CB-CG-OD2	5.68	123.41	118.30
1	C	92	ASP	CB-CG-OD2	5.49	123.24	118.30
1	C	233	ASP	CB-CG-OD2	5.49	123.24	118.30
1	A	233	ASP	CB-CG-OD2	5.47	123.22	118.30
1	B	59	ASP	CB-CG-OD2	5.46	123.21	118.30
1	C	164	ASP	CB-CG-OD2	5.46	123.21	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	53	ASP	CB-CG-OD2	5.42	123.18	118.30
1	A	187	ASP	CB-CG-OD2	5.42	123.18	118.30
1	B	92	ASP	CB-CG-OD2	5.42	123.17	118.30
1	A	349	ASP	CB-CG-OD2	5.39	123.15	118.30
1	A	256	ASP	CB-CG-OD2	5.38	123.15	118.30
1	C	268	ASP	CB-CG-OD2	5.35	123.11	118.30
1	B	68	ASP	CB-CG-OD2	5.33	123.10	118.30
1	C	53	ASP	CB-CG-OD2	5.33	123.09	118.30
1	A	318	ASP	CB-CG-OD2	5.30	123.07	118.30
1	B	268	ASP	CB-CG-OD2	5.29	123.06	118.30
1	A	82	ASP	CB-CG-OD2	5.21	122.99	118.30
1	C	93	ASP	CB-CG-OD2	5.21	122.99	118.30
1	A	33	ASP	CB-CG-OD2	5.16	122.94	118.30
1	C	187	ASP	CB-CG-OD2	5.06	122.85	118.30
1	A	141	ASP	CB-CG-OD2	5.05	122.85	118.30
1	C	118	ASP	CB-CG-OD2	5.03	122.83	118.30

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	2778	0	2856	27	0
1	B	2778	0	2856	40	0
1	C	2778	0	2856	24	0
All	All	8334	0	8568	89	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 (89) 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:C:42:VAL:HG12	1:C:54:LEU:HD22	1.47	0.96

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:286:LEU:HD22	1:C:287:THR:N	1.99	0.78
1:B:70:ASN:HD22	1:B:70:ASN:H	1.35	0.73
1:C:377:ILE:HG23	1:C:382:GLU:HB2	1.74	0.69
1:A:34:LEU:HB3	1:A:35:PRO:HD2	1.74	0.69
1:B:360:VAL:HG22	1:B:377:ILE:HD11	1.77	0.67
1:B:289:GLU:HG3	1:B:290:LYS:H	1.62	0.65
1:C:217:LYS:HB2	1:C:226:GLU:HB3	1.79	0.65
1:C:65:GLY:HA3	1:C:76:LEU:HG	1.79	0.65
1:C:286:LEU:HD22	1:C:286:LEU:C	2.19	0.63
1:B:377:ILE:HG23	1:B:382:GLU:HB2	1.81	0.62
1:C:145:THR:HG22	1:C:160:ILE:HG23	1.81	0.62
1:A:296:LYS:HG2	1:A:301:THR:HB	1.82	0.61
1:B:73:SER:HB2	1:B:92:ASP:HA	1.81	0.61
1:B:249:GLU:HG2	1:B:263:THR:HA	1.83	0.60
1:C:168:THR:HG22	1:C:183:ILE:HG12	1.85	0.59
1:A:196:ASN:HD21	1:A:200:GLU:HB3	1.68	0.58
1:A:42:VAL:HG12	1:A:54:LEU:HD22	1.86	0.58
1:A:118:ASP:O	1:A:119:LYS:HB2	2.04	0.57
1:A:134:GLU:OE1	1:A:148:LYS:HE3	2.05	0.57
1:C:89:THR:HB	1:C:98:THR:HB	1.87	0.57
1:A:168:THR:HG22	1:A:183:ILE:HG12	1.88	0.56
1:C:139:ARG:HH22	1:C:145:THR:HG23	1.70	0.56
1:A:134:GLU:HG3	1:A:148:LYS:HG2	1.87	0.55
1:C:276:VAL:HA	1:C:281:VAL:HG22	1.89	0.55
1:A:185:ARG:HB3	1:A:187:ASP:OD2	2.07	0.54
1:B:337:THR:HB	1:B:351:VAL:HG22	1.89	0.54
1:B:377:ILE:HG21	1:B:383:ILE:HG13	1.90	0.54
1:B:42:VAL:HG12	1:B:54:LEU:CD2	2.37	0.54
1:C:134:GLU:HG2	1:C:148:LYS:HG2	1.90	0.53
1:C:35:PRO:HG2	1:C:97:THR:HG23	1.89	0.53
1:A:162:ARG:HH22	1:A:168:THR:CG2	2.22	0.53
1:B:277:LEU:HD13	1:B:280:TYR:CE1	2.45	0.52
1:A:254:ARG:NH2	1:A:275:GLU:OE1	2.43	0.51
1:C:297:GLU:HB3	1:C:387:LEU:HB2	1.92	0.51
1:C:380:LEU:HD22	1:C:384:LYS:HE3	1.92	0.51
1:A:327:LYS:HG3	1:A:342:VAL:HG22	1.92	0.51
1:A:196:ASN:ND2	1:A:200:GLU:HB3	2.25	0.51
1:A:35:PRO:HG2	1:A:97:THR:HG23	1.93	0.51
1:B:159:LYS:HG3	1:B:169:GLU:HG2	1.94	0.50
1:C:286:LEU:HD22	1:C:287:THR:O	2.12	0.50
1:A:86:VAL:HG22	1:A:101:VAL:HG22	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:ASP:HB2	1:C:155:LEU:HD12	1.94	0.49
1:A:231:ARG:NH2	1:A:237:THR:OG1	2.46	0.48
1:C:286:LEU:HD13	1:C:286:LEU:O	2.14	0.48
1:B:259:ARG:NH1	1:B:261:GLU:OE2	2.47	0.48
1:A:339:THR:HG22	1:A:349:ASP:OD2	2.14	0.48
1:B:300:VAL:HG21	1:B:327:LYS:HD2	1.95	0.48
1:C:300:VAL:HG13	1:C:316:LEU:HD21	1.96	0.47
1:B:293:LEU:HB2	1:B:304:LYS:HB3	1.96	0.47
1:B:35:PRO:HG2	1:B:97:THR:HG23	1.96	0.47
1:B:243:GLU:H	1:B:243:GLU:CD	2.17	0.47
1:B:262:TYR:CD2	1:B:286:LEU:HG	2.50	0.47
1:B:348:LYS:HG2	1:B:362:GLN:NE2	2.30	0.47
1:B:210:ASP:HB3	1:B:232:ALA:HB2	1.96	0.47
1:A:254:ARG:NH1	1:A:258:THR:OG1	2.46	0.46
1:B:134:GLU:HG2	1:B:148:LYS:HG2	1.97	0.46
1:B:173:ASN:HD21	1:B:177:GLU:HB2	1.79	0.46
1:B:289:GLU:HG3	1:B:290:LYS:N	2.28	0.46
1:A:377:ILE:HG21	1:A:383:ILE:HG13	1.98	0.46
1:B:220:GLU:CD	1:B:220:GLU:H	2.19	0.46
1:B:152:LYS:HE2	1:B:154:GLU:HG3	1.98	0.46
1:B:210:ASP:O	1:B:211:LYS:HB2	2.17	0.45
1:B:296:LYS:HG2	1:B:301:THR:HB	1.97	0.45
1:A:162:ARG:HH22	1:A:168:THR:HG21	1.81	0.45
1:B:258:THR:HG22	1:B:277:LEU:HA	1.99	0.45
1:A:300:VAL:HG21	1:A:327:LYS:HD2	1.97	0.44
1:C:61:LEU:HD11	1:C:80:LYS:HA	1.99	0.44
1:B:52:TYR:CZ	1:B:70:ASN:HB3	2.53	0.44
1:C:268:ASP:N	1:C:268:ASP:OD1	2.51	0.44
1:B:70:ASN:HD22	1:B:70:ASN:N	2.03	0.43
1:B:348:LYS:HG2	1:B:362:GLN:HE22	1.82	0.43
1:B:83:LYS:HB3	1:B:104:GLU:HG3	2.00	0.43
1:B:137:ILE:O	1:B:144:SER:HA	2.19	0.43
1:B:70:ASN:ND2	1:B:70:ASN:H	2.09	0.42
1:B:162:ARG:HH12	1:B:168:THR:HG23	1.84	0.42
1:A:145:THR:HG22	1:A:160:ILE:HG12	2.00	0.42
1:C:304:LYS:HE3	1:C:312:VAL:HG23	2.02	0.42
1:B:314:VAL:HB	1:B:331:TRP:CZ3	2.54	0.41
1:B:155:LEU:HD12	1:C:140:ALA:HB1	2.02	0.41
1:A:47:ASN:HD21	1:A:51:LYS:HB2	1.85	0.41
1:B:113:LYS:HG3	1:B:123:GLU:HG2	2.01	0.41
1:A:82:ASP:O	1:A:83:LYS:HB2	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:314:VAL:HG12	1:B:338:LEU:HD13	2.02	0.41
1:C:304:LYS:HA	1:C:314:VAL:HG22	2.02	0.41
1:A:359:THR:HG22	1:A:376:GLU:HA	2.02	0.41
1:A:58:VAL:O	1:A:59:ASP:C	2.60	0.40
1:B:254:ARG:NH1	1:B:258:THR:OG1	2.54	0.40
1:B:34:LEU:N	1:B:38:MET:O	2.49	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	359/366 (98%)	337 (94%)	21 (6%)	1 (0%)	41 73
1	B	359/366 (98%)	325 (90%)	31 (9%)	3 (1%)	19 54
1	C	359/366 (98%)	329 (92%)	30 (8%)	0	100 100
All	All	1077/1098 (98%)	991 (92%)	82 (8%)	4 (0%)	34 69

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	322	SER
1	B	336	SER
1	B	289	GLU
1	B	103	LYS

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	320/324 (99%)	290 (91%)	30 (9%)	8 32
1	B	320/324 (99%)	289 (90%)	31 (10%)	8 30
1	C	320/324 (99%)	301 (94%)	19 (6%)	19 50
All	All	960/972 (99%)	880 (92%)	80 (8%)	11 38

All (80) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	37	GLU
1	A	45	GLU
1	A	54	LEU
1	A	55	ILE
1	A	60	LYS
1	A	70	ASN
1	A	75	VAL
1	A	122	THR
1	A	132	LEU
1	A	145	THR
1	A	155	LEU
1	A	156	SER
1	A	175	LYS
1	A	178	LEU
1	A	185	ARG
1	A	201	LEU
1	A	207	THR
1	A	224	LEU
1	A	256	ASP
1	A	259	ARG
1	A	267	SER
1	A	278	LYS
1	A	286	LEU
1	A	295	VAL
1	A	301	THR
1	A	321	SER
1	A	355	GLU
1	A	360	VAL
1	A	373	SER
1	A	380	LEU
1	B	31	SER

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Mol	Chain	Res	Type
1	B	60	LYS
1	B	70	ASN
1	B	73	SER
1	B	75	VAL
1	B	77	GLU
1	B	132	LEU
1	B	135	LYS
1	B	145	THR
1	B	155	LEU
1	B	175	LYS
1	B	178	LEU
1	B	185	ARG
1	B	187	ASP
1	B	200	GLU
1	B	201	LEU
1	B	203	GLU
1	B	207	THR
1	B	224	LEU
1	B	226	GLU
1	B	256	ASP
1	B	259	ARG
1	B	286	LEU
1	B	295	VAL
1	B	301	THR
1	B	327	LYS
1	B	332	ASN
1	B	337	THR
1	B	360	VAL
1	B	365	SER
1	B	380	LEU
1	C	33	ASP
1	C	45	GLU
1	C	135	LYS
1	C	155	LEU
1	C	175	LYS
1	C	178	LEU
1	C	185	ARG
1	C	201	LEU
1	C	207	THR
1	C	210	ASP
1	C	224	LEU
1	C	242	ASN

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Mol	Chain	Res	Type
1	C	286	LEU
1	C	332	ASN
1	C	335	THR
1	C	339	THR
1	C	362	GLN
1	C	380	LEU
1	C	381	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	ASN
1	B	70	ASN
1	B	332	ASN
1	B	362	GLN
1	C	242	ASN
1	C	332	ASN
1	C	385	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

There are no carbohydrates 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	361/366 (98%)	-0.21	1 (0%) 94 88	63, 77, 86, 90	27 (7%)
1	B	361/366 (98%)	-0.18	1 (0%) 94 88	70, 80, 91, 93	24 (6%)
1	C	361/366 (98%)	0.28	21 (5%) 23 10	68, 82, 93, 100	46 (12%)
All	All	1083/1098 (98%)	-0.04	23 (2%) 63 43	63, 78, 91, 100	97 (8%)

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	41	LEU	3.9
1	C	370	LEU	3.2
1	C	70	ASN	3.1
1	C	256	ASP	2.9
1	C	244	LYS	2.9
1	C	385	ASN	2.8
1	C	320	ASP	2.7
1	C	43	SER	2.6
1	C	298	GLY	2.6
1	C	334	GLY	2.6
1	B	180	GLU	2.6
1	C	386	ALA	2.5
1	C	47	ASN	2.5
1	C	48	LYS	2.4
1	C	333	SER	2.4
1	C	319	THR	2.3
1	C	378	THR	2.3
1	C	371	GLU	2.2
1	C	335	THR	2.2
1	C	381	ASP	2.2
1	A	31	SER	2.1
1	C	53	ASP	2.1
1	C	243	GLU	2.1

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 carbohydrates 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.