Full wwPDB X-ray Structure Validation Report (i)

Jun 3, 2025 – 10:05 AM EDT

PDB ID	:	9BFO / pdb_00009bfo
Title	:	BCAT mutant 36E
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Deposited on	:	2024-04-18
Resolution	:	1.66 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 (i) 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 (1)) were used in the production of this report:

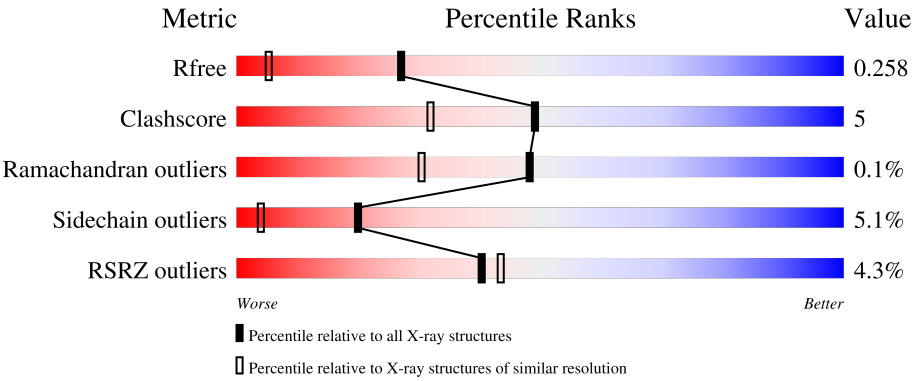
MolProbity	:	4-5-2 with Phenix2.0rc1
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

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 1.66 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}	164625	2328 (1.66-1.66)
Clashscore	180529	2515 (1.66-1.66)
Ramachandran outliers	177936	2475 (1.66-1.66)
Sidechain outliers	177891	2475 (1.66-1.66)
RSRZ outliers	164620	2328 (1.66-1.66)

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	365	6% 84% 12%
1	B	365	2% 84% 13%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 5950 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 Branched-chain-amino-acid aminotransferase, cytosolic.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	358	Total	C	N	O	P	S	0	0	0
			2822	1815	464	527	1	15			
1	B	359	Total	C	N	O	P	S	0	0	0
			2842	1828	470	528	1	15			

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	36	GLU	THR	conflict	UNP P54687
A	379	ARG	SER	conflict	UNP P54687
B	36	GLU	THR	conflict	UNP P54687
B	379	ARG	SER	conflict	UNP P54687

- Molecule 2 is water.

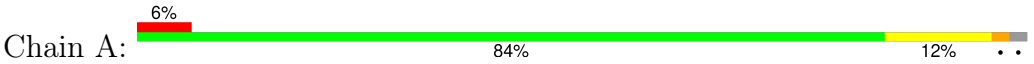
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	111	Total	O	0	0
			111	111		
2	B	175	Total	O	0	0
			175	175		

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.

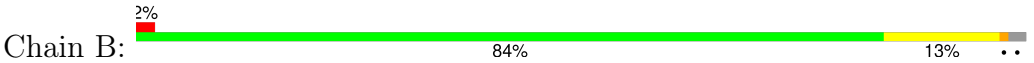
• Molecule 1: Branched-chain-amino-acid aminotransferase, cytosolic

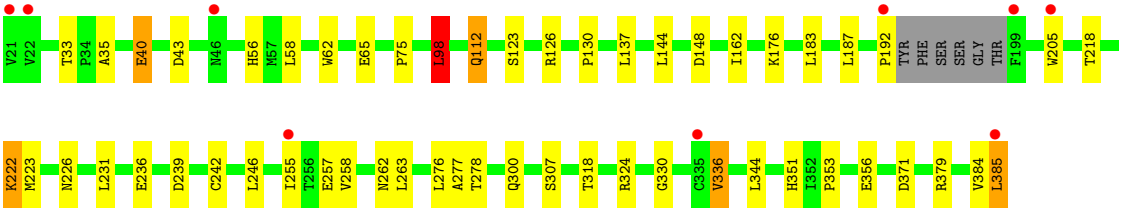
Chain A:



• Molecule 1: Branched-chain-amino-acid aminotransferase, cytosolic

Chain B:





4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	66.96Å 106.90Å 110.48Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	76.82 – 1.66 76.82 – 1.66	Depositor EDS
% Data completeness (in resolution range)	90.7 (76.82-1.66) 90.7 (76.82-1.66)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.42 (at 1.66Å)	Xtriage
Refinement program	REFMAC 5.8.0425	Depositor
R, R_{free}	0.205 , 0.247 0.215 , 0.258	Depositor DCC
R_{free} test set	4604 reflections (4.89%)	wwPDB-VP
Wilson B-factor (Å^2)	27.2	Xtriage
Anisotropy	0.269	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 27.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.006 for -h,l,k	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	5950	wwPDB-VP
Average B, all atoms (Å^2)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.75% 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: LLP

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	0.65	0/2868	1.17	5/3904 (0.1%)
1	B	0.70	0/2888	1.20	8/3928 (0.2%)
All	All	0.67	0/5756	1.18	13/7832 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	315	ASP	CA-CB-CG	6.29	118.89	112.60
1	B	324	ARG	CD-NE-CZ	6.26	133.16	124.40
1	A	166	PHE	CA-CB-CG	6.14	119.94	113.80
1	A	200	ASN	CB-CA-C	5.82	116.27	110.33
1	B	336	VAL	N-CA-CB	5.58	120.43	111.23
1	B	371	ASP	CA-CB-CG	5.55	118.16	112.60
1	A	51	THR	CA-CB-OG1	-5.52	101.31	109.60
1	B	43	ASP	CA-CB-CG	5.43	118.03	112.60
1	B	278	THR	O-C-N	-5.31	118.14	121.85
1	B	239	ASP	CA-CB-CG	5.27	117.87	112.60
1	B	98	LEU	CB-CG-CD1	5.23	126.39	110.70
1	A	238	VAL	N-CA-CB	5.22	117.64	110.54
1	B	318	THR	CA-CB-OG1	-5.05	102.03	109.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	309	ARG	Sidechain

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	2822	0	2766	22	0
1	B	2842	0	2806	38	0
2	A	111	0	0	2	0
2	B	175	0	0	3	0
All	All	5950	0	5572	60	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 (60) 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:B:246:LEU:HD11	1:B:255:ILE:HG23	1.62	0.82
1:B:192:PRO:C	2:B:531:HOH:O	2.24	0.80
1:B:126:ARG:HB3	1:B:223:MET:HE1	1.62	0.79
1:B:35:ALA:H	1:B:56:HIS:HE1	1.35	0.75
1:B:218:THR:HG23	1:B:226:ASN:OD1	1.87	0.73
1:B:384:VAL:HG12	1:B:385:LEU:CD2	2.19	0.73
1:B:126:ARG:CB	1:B:223:MET:HE1	2.25	0.67
1:B:384:VAL:HG12	1:B:385:LEU:HD22	1.77	0.66
1:B:35:ALA:H	1:B:56:HIS:CE1	2.15	0.65
1:A:222:LLP:O3	1:A:222:LLP:NZ	2.23	0.65
1:B:56:HIS:HD2	1:B:148:ASP:OD1	1.81	0.64
1:B:205:TRP:CH2	1:B:236:GLU:OE2	2.52	0.63
1:A:300:GLN:HE22	1:A:379:ARG:HH22	1.48	0.61
1:A:112:GLN:HA	1:A:112:GLN:HE21	1.65	0.61
1:B:126:ARG:CG	1:B:223:MET:HE1	2.30	0.61
1:A:336:VAL:HG12	1:A:337:VAL:HG23	1.83	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:222:LLP:N1	1:B:257:GLU:OE2	2.34	0.60
1:B:384:VAL:HG12	1:B:385:LEU:HD23	1.86	0.58
1:B:385:LEU:HB3	2:B:643:HOH:O	2.03	0.58
1:A:285:ILE:CD1	2:A:544:HOH:O	2.51	0.57
1:A:222:LLP:N1	1:A:257:GLU:OE1	2.37	0.57
1:A:284:ILE:HG13	1:A:285:ILE:HD12	1.86	0.57
1:B:246:LEU:HD11	1:B:255:ILE:CG2	2.33	0.57
1:B:40:GLU:H	1:B:40:GLU:CD	2.13	0.55
1:B:205:TRP:HH2	1:B:236:GLU:OE2	1.89	0.53
1:B:385:LEU:O	2:B:501:HOH:O	2.19	0.53
1:B:300:GLN:NE2	1:B:379:ARG:HH22	2.07	0.53
1:A:263:LEU:HD23	1:A:263:LEU:C	2.35	0.52
1:A:269:ASN:C	1:A:269:ASN:HD22	2.19	0.50
1:B:98:LEU:HD13	1:B:162:ILE:HB	1.94	0.49
1:A:339:PRO:HB3	1:A:354:THR:HG21	1.95	0.49
1:B:351:HIS:HE1	1:B:356:GLU:OE1	1.96	0.48
1:B:112:GLN:HE21	1:B:112:GLN:HA	1.78	0.48
1:A:62:TRP:CD2	1:A:130:PRO:HG3	2.49	0.48
1:A:51:THR:HG22	1:A:52:VAL:HG23	1.96	0.48
1:A:285:ILE:HD13	2:A:544:HOH:O	2.14	0.47
1:A:300:GLN:NE2	1:A:379:ARG:HH22	2.12	0.47
1:A:261:MET:SD	1:A:335:CYS:SG	3.13	0.46
1:B:258:VAL:CG2	1:B:263:LEU:HD23	2.45	0.46
1:B:126:ARG:HB3	1:B:223:MET:CE	2.41	0.46
1:B:384:VAL:CG1	1:B:385:LEU:HD22	2.45	0.46
1:B:262:ASN:O	1:B:330:GLY:HA2	2.16	0.46
1:A:56:HIS:ND1	1:A:147:LEU:HD13	2.31	0.45
1:A:286:LEU:HG	1:A:287:PRO:HD2	1.98	0.45
1:B:123:SER:O	1:B:223:MET:HE2	2.16	0.45
1:B:33:THR:O	1:B:75:PRO:HD3	2.17	0.44
1:A:234:GLN:O	1:A:237:ALA:HB3	2.17	0.44
1:B:353:PRO:O	1:B:356:GLU:HG2	2.18	0.44
1:B:263:LEU:C	1:B:263:LEU:HD13	2.44	0.43
1:B:277:ALA:HA	1:B:307:SER:O	2.18	0.43
1:A:262:ASN:O	1:A:330:GLY:HA2	2.19	0.43
1:A:316:LEU:HD21	1:A:328:MET:HE1	2.01	0.43
1:A:29:ASP:O	1:A:30:LEU:C	2.62	0.42
1:B:231:LEU:HD23	1:B:231:LEU:HA	1.88	0.42
1:B:62:TRP:CD2	1:B:130:PRO:HG3	2.55	0.42
1:A:299:HIS:CE1	1:A:306:VAL:HB	2.55	0.41
1:B:222:LLP:NZ	1:B:222:LLP:O3	2.45	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:242:CYS:SG	1:B:344:LEU:HD13	2.60	0.41
1:B:218:THR:CG2	1:B:226:ASN:OD1	2.65	0.41
1:B:144:LEU:HG	1:B:187:LEU:HD11	2.04	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	353/365 (97%)	338 (96%)	15 (4%)	0	100 100
1	B	354/365 (97%)	346 (98%)	7 (2%)	1 (0%)	37 21
All	All	707/730 (97%)	684 (97%)	22 (3%)	1 (0%)	48 30

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	336	VAL

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	304/317 (96%)	283 (93%)	21 (7%)	13 2
1	B	308/317 (97%)	298 (97%)	10 (3%)	34 11

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
All	All	612/634 (96%)	581 (95%)	31 (5%)	20 4

All (31) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	38	LEU
1	A	46	ASN
1	A	51	THR
1	A	60	VAL
1	A	112	GLN
1	A	137	LEU
1	A	144	LEU
1	A	147	LEU
1	A	182	LEU
1	A	183	LEU
1	A	203	SER
1	A	229	SER
1	A	269	ASN
1	A	276	LEU
1	A	285	ILE
1	A	286	LEU
1	A	309	ARG
1	A	356	GLU
1	A	361	LEU
1	A	363	SER
1	A	378	GLU
1	B	40	GLU
1	B	58	LEU
1	B	65	GLU
1	B	98	LEU
1	B	112	GLN
1	B	137	LEU
1	B	176	LYS
1	B	183	LEU
1	B	276	LEU
1	B	385	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	112	GLN

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Mol	Chain	Res	Type
1	A	149	GLN
1	A	244	GLN
1	A	269	ASN
1	A	299	HIS
1	A	300	GLN
1	A	351	HIS
1	B	56	HIS
1	B	78	ASN
1	B	112	GLN
1	B	149	GLN
1	B	200	ASN
1	B	254	GLN
1	B	300	GLN
1	B	351	HIS

5.3.3 RNA

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
1	LLP	B	222	1	23,24,25	0.62	0	25,32,34	1.50	6 (24%)
1	LLP	A	222	1	23,24,25	0.57	0	25,32,34	1.89	7 (28%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
1	LLP	B	222	1	-	4/16/17/19	0/1/1/1
1	LLP	A	222	1	-	8/16/17/19	0/1/1/1

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	222	LLP	O3-C3-C2	4.64	127.19	117.58
1	A	222	LLP	CD-CE-NZ	4.43	122.57	110.83
1	B	222	LLP	OP4-C5'-C5	3.96	116.77	109.36
1	B	222	LLP	CD-CE-NZ	3.07	118.97	110.83
1	A	222	LLP	OP4-C5'-C5	2.88	114.75	109.36
1	A	222	LLP	C3-C4-C4'	-2.86	115.23	120.40
1	A	222	LLP	C5-C4-C4'	2.84	125.85	121.47
1	A	222	LLP	O3-C3-C4	-2.59	112.45	119.44
1	B	222	LLP	OP2-P-OP4	-2.54	100.03	106.67
1	B	222	LLP	O3-C3-C2	2.49	122.75	117.58
1	B	222	LLP	OP3-P-OP2	2.15	115.87	107.80
1	A	222	LLP	OP3-P-OP2	2.09	115.63	107.80
1	B	222	LLP	C5-C4-C4'	2.01	124.57	121.47

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	222	LLP	C6-C5-C5'-OP4
1	A	222	LLP	C-CA-CB-CG
1	B	222	LLP	N-CA-CB-CG
1	B	222	LLP	C-CA-CB-CG
1	A	222	LLP	C4-C4'-NZ-CE
1	B	222	LLP	C4-C4'-NZ-CE
1	A	222	LLP	CG-CD-CE-NZ
1	A	222	LLP	C4-C5-C5'-OP4
1	A	222	LLP	N-CA-CB-CG
1	A	222	LLP	C5'-OP4-P-OP1
1	A	222	LLP	CD-CE-NZ-C4'
1	B	222	LLP	CG-CD-CE-NZ

There are no ring outliers.

2 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	B	222	LLP	2	0
1	A	222	LLP	2	0

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

There are no ligands in this entry.

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	357/365 (97%)	0.64	22 (6%) 28 30	23, 38, 62, 88	0
1	B	358/365 (98%)	0.18	9 (2%) 58 62	19, 29, 49, 67	0
All	All	715/730 (97%)	0.41	31 (4%) 40 43	19, 33, 55, 88	0

All (31) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	21	VAL	6.4
1	B	385	LEU	5.6
1	A	22	VAL	5.0
1	A	192	PRO	4.6
1	B	205	TRP	3.0
1	B	46	ASN	2.9
1	A	385	LEU	2.8
1	B	192	PRO	2.8
1	B	335	CYS	2.8
1	A	383	ILE	2.7
1	A	48	VAL	2.5
1	A	104	VAL	2.5
1	A	268	ILE	2.4
1	A	45	ASN	2.4
1	A	190	VAL	2.4
1	B	22	VAL	2.4
1	A	47	LEU	2.4
1	A	199	PHE	2.3
1	A	44	PRO	2.2
1	A	38	LEU	2.2
1	B	255	ILE	2.2
1	A	157	SER	2.2
1	A	358	GLY	2.2
1	A	238	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	384	VAL	2.2
1	A	156	THR	2.1
1	B	199	PHE	2.1
1	A	379	ARG	2.1
1	A	378	GLU	2.1
1	A	380	ASP	2.1
1	A	37	ILE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains (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
1	LLP	A	222	24/25	0.97	0.07	25,30,36,40	0
1	LLP	B	222	24/25	0.98	0.07	19,25,32,35	0

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.