



Full wwPDB X-ray Structure Validation Report ⓘ

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PDB ID : 2JGT
Title : LOW RESOLUTION STRUCTURE OF SPT
Authors : Yard, B.A.; Carter, L.G.; Johnson, K.A.; Overton, I.M.; McMahon, S.A.;
Dorward, M.; Liu, H.; Puech, D.; Oke, M.; Barton, G.J.; Naismith, J.H.;
Campopiano, D.J.
Deposited on : 2007-02-14
Resolution : 3.00 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

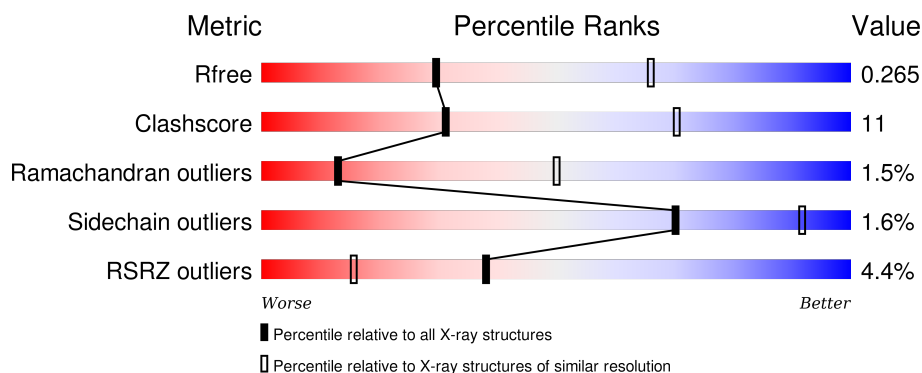
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 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}	91344	1578 (3.00-3.00)
Clashscore	102246	1912 (3.00-3.00)
Ramachandran outliers	100387	1853 (3.00-3.00)
Sidechain outliers	100360	1856 (3.00-3.00)
RSRZ outliers	91569	1592 (3.00-3.00)

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. 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 $\leq 5\%$. 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	422	<div> <div>3%</div> <div>70%</div> <div>14%</div> <div>••</div> <div>13%</div> </div>
1	B	422	<div> <div>5%</div> <div>69%</div> <div>15%</div> <div>•</div> <div>14%</div> </div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 5563 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 SERINE PALMITOYLTRANSFERASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	369	Total	C	N	O	S	0	0	0
			2787	1767	481	518	21			
1	B	363	Total	C	N	O	S	0	0	0
			2737	1735	472	509	21			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	45	GLU	ASP	CONFLICT	UNP Q93UV0
B	45	GLU	ASP	CONFLICT	UNP Q93UV0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	20	Total	O	0	0
			20	20		
2	B	19	Total	O	0	0
			19	19		

4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	93.87Å 109.54Å 187.03Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	19.99 – 3.00 19.99 – 3.00	Depositor EDS
% Data completeness (in resolution range)	99.5 (19.99-3.00) 99.5 (19.99-3.00)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.32 (at 2.98Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.250 , 0.276 0.241 , 0.265	Depositor DCC
R_{free} test set	996 reflections (5.38%)	DCC
Wilson B-factor (Å ²)	84.5	Xtriage
Anisotropy	0.063	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 70.7	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 19540 reflections	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	5563	wwPDB-VP
Average B, all atoms (Å ²)	85.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.37% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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	0.42	1/2840 (0.0%)	0.64	5/3839 (0.1%)
1	B	0.49	1/2788 (0.0%)	0.65	5/3768 (0.1%)
All	All	0.46	2/5628 (0.0%)	0.65	10/7607 (0.1%)

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	3
1	B	0	3
All	All	0	6

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	379	PRO	N-CD	-13.69	1.28	1.47
1	A	290	PRO	C-N	-6.90	1.18	1.34

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	379	PRO	CA-N-CD	11.47	127.76	111.70
1	A	290	PRO	C-N-CA	10.15	147.07	121.70
1	A	290	PRO	O-C-N	-10.09	106.56	122.70
1	B	381	ALA	CB-CA-C	7.44	121.26	110.10
1	A	290	PRO	CA-C-N	7.25	133.15	117.20
1	B	378	ARG	C-N-CD	-7.03	105.13	120.60
1	B	379	PRO	N-CA-CB	-7.01	94.88	103.30
1	A	70	LEU	CA-CB-CG	6.16	129.47	115.30
1	B	381	ALA	N-CA-C	-5.84	95.24	111.00
1	A	291	TYR	N-CA-CB	-5.66	100.42	110.60

There are no chirality outliers.

All (6) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	290	PRO	Peptide
1	A	292	ILE	Peptide
1	A	379	PRO	Peptide
1	B	292	ILE	Peptide
1	B	379	PRO	Peptide
1	B	380	PRO	Peptide

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	2787	0	2784	68	1
1	B	2737	0	2740	57	1
2	A	20	0	0	3	0
2	B	19	0	0	1	0
All	All	5563	0	5524	119	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 11.

All (119) 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:70:LEU:HD11	1:A:391:CYS:HB3	1.20	1.14
1:B:379:PRO:HD3	1:B:382:THR:OG1	1.48	1.11
1:B:378:ARG:CB	1:B:379:PRO:HD2	1.98	0.93
1:A:136:MET:HG3	1:B:293:PHE:CZ	2.07	0.90
1:B:375:ASN:HB3	2:B:2017:HOH:O	1.72	0.90
1:A:70:LEU:HD11	1:A:391:CYS:CB	2.02	0.89
1:A:159:HIS:O	1:A:162:ILE:N	2.07	0.88
1:B:379:PRO:HD3	1:B:382:THR:HG1	1.34	0.87
1:B:378:ARG:HB2	1:B:379:PRO:HD2	1.60	0.81
1:A:70:LEU:CD1	1:A:391:CYS:HB3	2.08	0.80
1:A:131:PHE:HE2	1:A:274:VAL:HG23	1.46	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:357:GLN:NE2	1:B:378:ARG:NH2	2.32	0.77
1:B:357:GLN:HE21	1:B:378:ARG:NH2	1.84	0.75
1:A:70:LEU:O	1:A:70:LEU:CD1	2.35	0.74
1:A:70:LEU:O	1:A:70:LEU:HD12	1.87	0.73
1:B:285:ARG:O	1:B:292:ILE:HG21	1.88	0.73
1:A:136:MET:HG3	1:B:293:PHE:HZ	1.51	0.73
1:A:136:MET:CE	1:A:293:PHE:O	2.38	0.72
1:B:131:PHE:HE2	1:B:274:VAL:HG23	1.55	0.70
1:B:357:GLN:NE2	1:B:378:ARG:HH22	1.92	0.68
1:B:357:GLN:HE21	1:B:378:ARG:HH22	1.43	0.67
1:B:99:THR:HG22	1:B:100:ASN:N	2.11	0.66
1:A:293:PHE:CG	1:A:293:PHE:O	2.49	0.65
1:B:379:PRO:CD	1:B:382:THR:OG1	2.36	0.64
1:A:107:GLY:O	1:A:285:ARG:HD3	1.96	0.64
1:B:99:THR:HG22	1:B:100:ASN:H	1.63	0.63
1:A:135:TYR:HB3	1:B:293:PHE:CD1	2.34	0.62
1:B:214:LEU:HD12	1:B:246:VAL:HG12	1.82	0.61
1:A:378:ARG:CB	1:A:379:PRO:HD2	2.32	0.60
1:B:137:ALA:O	1:B:141:ILE:HG22	2.02	0.60
1:A:111:ASP:O	1:A:302:VAL:HG11	2.01	0.60
1:A:70:LEU:CD1	1:A:391:CYS:CB	2.76	0.60
1:A:214:LEU:HD12	1:A:246:VAL:HG12	1.85	0.59
1:A:136:MET:CG	1:B:293:PHE:HZ	2.15	0.58
1:A:207:MET:HG3	2:A:2018:HOH:O	2.03	0.58
1:A:322:LEU:CD1	1:A:393:ILE:HG22	2.33	0.58
1:A:285:ARG:O	1:A:291:TYR:HD2	1.87	0.57
1:A:136:MET:HE1	1:A:293:PHE:O	2.04	0.57
1:B:135:TYR:HA	1:B:138:ASN:HB2	1.86	0.57
1:A:354:LEU:HD13	1:A:360:ALA:HA	1.88	0.56
1:A:56:SER:HB2	1:A:57:PRO:CD	2.36	0.56
1:A:214:LEU:O	1:A:218:VAL:HG23	2.06	0.56
1:B:56:SER:HB2	1:B:57:PRO:CD	2.36	0.56
1:A:106:ASN:O	1:A:108:THR:N	2.38	0.56
1:A:70:LEU:HD12	1:A:391:CYS:HA	1.86	0.56
1:A:137:ALA:O	1:A:141:ILE:HG22	2.05	0.56
1:B:322:LEU:CD1	1:B:393:ILE:HG22	2.36	0.55
1:B:354:LEU:HD13	1:B:360:ALA:HA	1.88	0.55
1:A:131:PHE:CE2	1:A:274:VAL:HG23	2.36	0.55
1:A:285:ARG:O	1:A:291:TYR:CD2	2.59	0.55
1:A:379:PRO:HA	1:A:382:THR:H	1.71	0.54
1:A:292:ILE:O	1:A:292:ILE:HG22	2.08	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:70:LEU:O	1:A:70:LEU:HD13	2.09	0.53
1:A:154:LEU:HD12	1:A:162:ILE:HG22	1.90	0.53
1:B:278:HIS:HB3	1:B:281:PHE:HB2	1.90	0.52
1:A:377:ALA:HB3	1:A:388:LEU:HB2	1.91	0.52
1:A:278:HIS:HB3	1:A:281:PHE:HB2	1.91	0.52
1:B:289:ARG:HB2	1:B:290:PRO:HD3	1.90	0.52
1:B:240:GLY:O	1:B:319:ARG:NH1	2.40	0.52
1:B:136:MET:HE1	1:B:294:THR:HA	1.90	0.52
1:B:106:ASN:O	1:B:108:THR:N	2.36	0.51
1:B:287:ALA:O	1:B:292:ILE:HG23	2.11	0.51
1:A:379:PRO:N	1:A:382:THR:OG1	2.44	0.51
1:A:70:LEU:CD1	1:A:391:CYS:HA	2.42	0.50
1:A:135:TYR:HA	1:A:138:ASN:HB2	1.93	0.50
1:B:377:ALA:HB3	1:B:388:LEU:HB2	1.91	0.50
1:A:322:LEU:HD12	1:A:393:ILE:HG22	1.94	0.50
1:A:289:ARG:H	1:A:290:PRO:HD3	1.76	0.50
1:B:211:ILE:HG12	1:B:346:ASP:HB3	1.94	0.49
1:B:132:SER:OG	1:B:295:ALA:N	2.42	0.49
1:B:367:LEU:HD22	1:B:372:LEU:HD23	1.95	0.48
1:B:104:MET:HG3	1:B:104:MET:O	2.14	0.48
1:A:49:ILE:HG13	1:A:373:TYR:CE1	2.49	0.48
1:B:293:PHE:C	1:B:293:PHE:CD1	2.87	0.47
1:B:378:ARG:HB2	1:B:379:PRO:CD	2.30	0.47
1:B:49:ILE:HG13	1:B:373:TYR:CE1	2.50	0.47
1:A:115:VAL:HG13	1:A:130:VAL:HG21	1.97	0.47
1:A:70:LEU:CD1	1:A:391:CYS:CA	2.93	0.46
1:B:292:ILE:O	1:B:292:ILE:HG12	2.15	0.46
1:A:159:HIS:O	1:A:161:SER:N	2.49	0.45
1:B:210:ASP:OD1	1:B:210:ASP:N	2.50	0.45
1:A:56:SER:HB2	1:A:57:PRO:HD2	1.99	0.45
1:B:269:THR:HG21	1:B:305:ALA:HB2	1.99	0.45
1:A:158:SER:O	1:A:163:TYR:N	2.50	0.44
1:B:260:VAL:HG22	1:B:261:GLY:N	2.33	0.44
1:A:116:GLU:CD	1:A:285:ARG:HH12	2.21	0.44
1:A:281:PHE:O	1:A:281:PHE:CD2	2.70	0.44
1:B:46:PRO:HG2	1:B:47:PHE:H	1.82	0.44
1:B:379:PRO:HA	1:B:381:ALA:H	1.82	0.44
1:B:99:THR:CG2	1:B:100:ASN:N	2.81	0.44
1:B:132:SER:OG	1:B:294:THR:HG23	2.17	0.43
1:B:233:ALA:HB1	1:B:265:LYS:HD3	1.99	0.43
1:A:184:LEU:O	1:A:188:LEU:HG	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:322:LEU:HD12	1:B:393:ILE:HG22	2.00	0.43
1:B:214:LEU:O	1:B:218:VAL:HG23	2.18	0.43
1:B:115:VAL:HG13	1:B:130:VAL:HG21	2.00	0.43
1:B:201:LEU:O	1:B:230:VAL:HA	2.18	0.43
1:A:378:ARG:HB2	1:A:379:PRO:HD2	2.01	0.42
1:A:260:VAL:HG22	1:A:261:GLY:N	2.34	0.42
1:B:56:SER:HB2	1:B:57:PRO:HD2	2.00	0.42
1:A:159:HIS:C	1:A:161:SER:N	2.73	0.42
1:B:149:GLY:O	1:B:150:GLU:HG3	2.20	0.42
1:A:79:THR:HA	1:B:97:SER:OG	2.20	0.42
1:A:46:PRO:HG2	1:A:47:PHE:H	1.84	0.42
1:A:186:LYS:HB3	2:A:2009:HOH:O	2.20	0.41
1:A:201:LEU:O	1:A:230:VAL:HA	2.20	0.41
1:A:136:MET:CG	1:B:293:PHE:CZ	2.88	0.41
1:A:112:HIS:NE2	1:A:296:SER:HA	2.35	0.41
1:A:293:PHE:O	1:A:293:PHE:CD2	2.74	0.41
1:A:379:PRO:HD3	1:A:382:THR:OG1	2.21	0.41
1:A:72:THR:O	1:A:392:SER:OG	2.31	0.41
1:A:367:LEU:HD22	1:A:372:LEU:HD23	2.03	0.41
1:A:368:LEU:HA	1:A:372:LEU:O	2.21	0.41
1:B:293:PHE:CD1	1:B:294:THR:N	2.89	0.41
1:A:322:LEU:HD12	1:A:393:ILE:CG2	2.51	0.41
1:A:211:ILE:HG12	1:A:346:ASP:HB3	2.03	0.41
1:A:375:ASN:HB3	2:A:2017:HOH:O	2.21	0.40
1:B:235:SER:HB2	1:B:239:PHE:CD2	2.56	0.40
1:A:356:ASP:HB3	1:A:359:GLN:HB3	2.03	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)
1:A:378:ARG:NH1	1:B:358:GLU:OE2[5_445]	1.90	0.30

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	363/422 (86%)	338 (93%)	19 (5%)	6 (2%)	11	46
1	B	357/422 (85%)	331 (93%)	21 (6%)	5 (1%)	14	51
All	All	720/844 (85%)	669 (93%)	40 (6%)	11 (2%)	13	50

All (11) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	159	HIS
1	B	380	PRO
1	A	107	GLY
1	A	46	PRO
1	A	170	ASN
1	A	289	ARG
1	B	105	LEU
1	B	291	TYR
1	B	46	PRO
1	B	107	GLY
1	A	292	ILE

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	290/330 (88%)	286 (99%)	4 (1%)	74	93
1	B	285/330 (86%)	280 (98%)	5 (2%)	66	91
All	All	575/660 (87%)	566 (98%)	9 (2%)	70	92

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	70	LEU
1	A	103	ARG

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Mol	Chain	Res	Type
1	A	302	VAL
1	A	378	ARG
1	B	108	THR
1	B	188	LEU
1	B	194	GLU
1	B	292	ILE
1	B	293	PHE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	74	ASN
1	B	74	ASN
1	B	357	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 carbohydrates 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, 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	369/422 (87%)	-0.04	13 (3%)	48 21	73, 84, 98, 105	0
1	B	363/422 (86%)	0.07	19 (5%)	31 12	73, 84, 99, 105	0
All	All	732/844 (86%)	0.01	32 (4%)	38 16	73, 84, 99, 105	0

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	161	SER	5.9
1	A	288	CYS	5.2
1	B	289	ARG	5.2
1	B	290	PRO	3.8
1	B	45	GLU	3.6
1	B	105	LEU	3.4
1	A	160	ALA	3.4
1	B	194	GLU	3.2
1	A	294	THR	3.2
1	B	190	ARG	3.2
1	A	194	GLU	3.2
1	B	196	ALA	3.2
1	B	53	GLN	3.1
1	B	288	CYS	3.1
1	A	105	LEU	3.1
1	A	385	GLY	3.0
1	B	52	GLU	2.9
1	A	170	ASN	2.9
1	B	100	ASN	2.9
1	B	291	TYR	2.8
1	A	52	GLU	2.8
1	A	135	TYR	2.7
1	B	293	PHE	2.6
1	B	355	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	175	ARG	2.2
1	B	383	PRO	2.2
1	B	151	TYR	2.2
1	A	384	ALA	2.2
1	B	135	TYR	2.1
1	A	196	ALA	2.1
1	B	195	PRO	2.1
1	A	159	HIS	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 carbohydrates 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.