Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2020 – 01:10 pm BST

PDB ID	:	5KHS
Title	:	Crystal structures of the Burkholderia multivorans hopanoid transporter HpnN
Authors	:	Su, C.-C.; Yu, E.W.
Deposited on	:	2016-06-15
Resolution	:	3.76 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 ⓘ) were used in the production of this report:

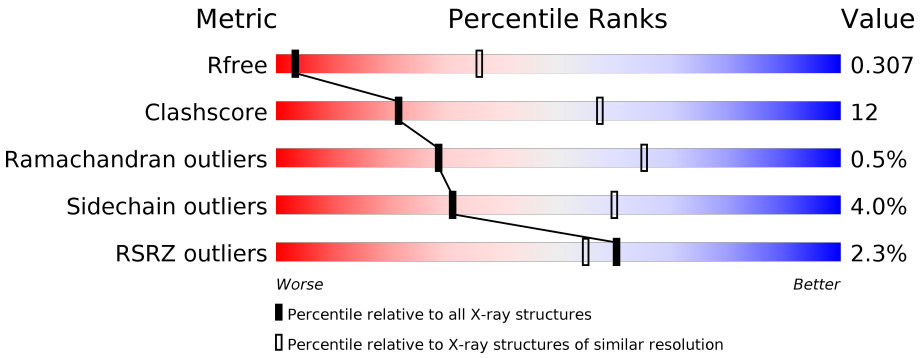
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 3.76 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	1039 (3.94-3.58)
Clashscore	141614	1051 (3.92-3.60)
Ramachandran outliers	138981	1015 (3.92-3.60)
Sidechain outliers	138945	1011 (3.92-3.60)
RSRZ outliers	127900	1050 (3.96-3.56)

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	883	2% 69% 25%
1	B	883	2% 71% 24%

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 12679 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 Putative RND superfamily efflux pump membrane protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	853	Total	C	N	O	S	0	0	0
			6342	4094	1087	1143	18			
1	A	852	Total	C	N	O	S	0	0	0
			6337	4091	1086	1142	18			

There are 18 discrepancies between the modelled and reference sequences:

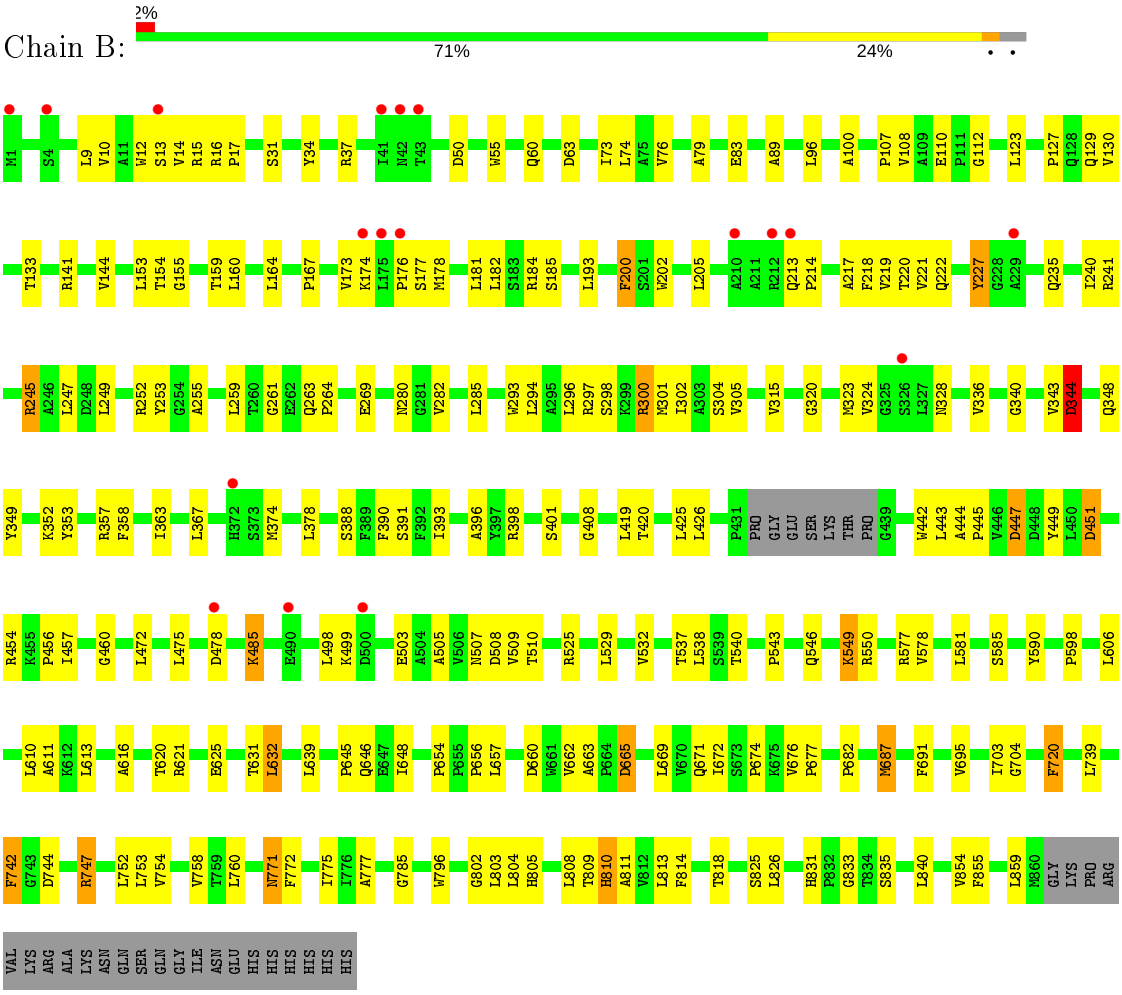
Chain	Residue	Modelled	Actual	Comment	Reference
B	360	GLY	ASP	engineered mutation	UNP A0A0H3KP92
B	362	ALA	ARG	engineered mutation	UNP A0A0H3KP92
B	365	ALA	HIS	engineered mutation	UNP A0A0H3KP92
B	878	HIS	-	expression tag	UNP A0A0H3KP92
B	879	HIS	-	expression tag	UNP A0A0H3KP92
B	880	HIS	-	expression tag	UNP A0A0H3KP92
B	881	HIS	-	expression tag	UNP A0A0H3KP92
B	882	HIS	-	expression tag	UNP A0A0H3KP92
B	883	HIS	-	expression tag	UNP A0A0H3KP92
A	360	GLY	ASP	engineered mutation	UNP A0A0H3KP92
A	362	ALA	ARG	engineered mutation	UNP A0A0H3KP92
A	365	ALA	HIS	engineered mutation	UNP A0A0H3KP92
A	878	HIS	-	expression tag	UNP A0A0H3KP92
A	879	HIS	-	expression tag	UNP A0A0H3KP92
A	880	HIS	-	expression tag	UNP A0A0H3KP92
A	881	HIS	-	expression tag	UNP A0A0H3KP92
A	882	HIS	-	expression tag	UNP A0A0H3KP92
A	883	HIS	-	expression tag	UNP A0A0H3KP92

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.

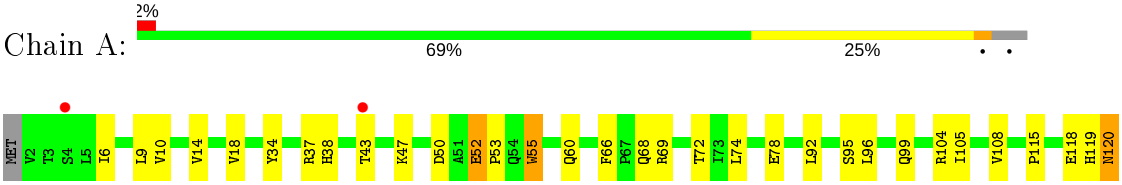
- Molecule 1: Putative RND superfamily efflux pump membrane protein

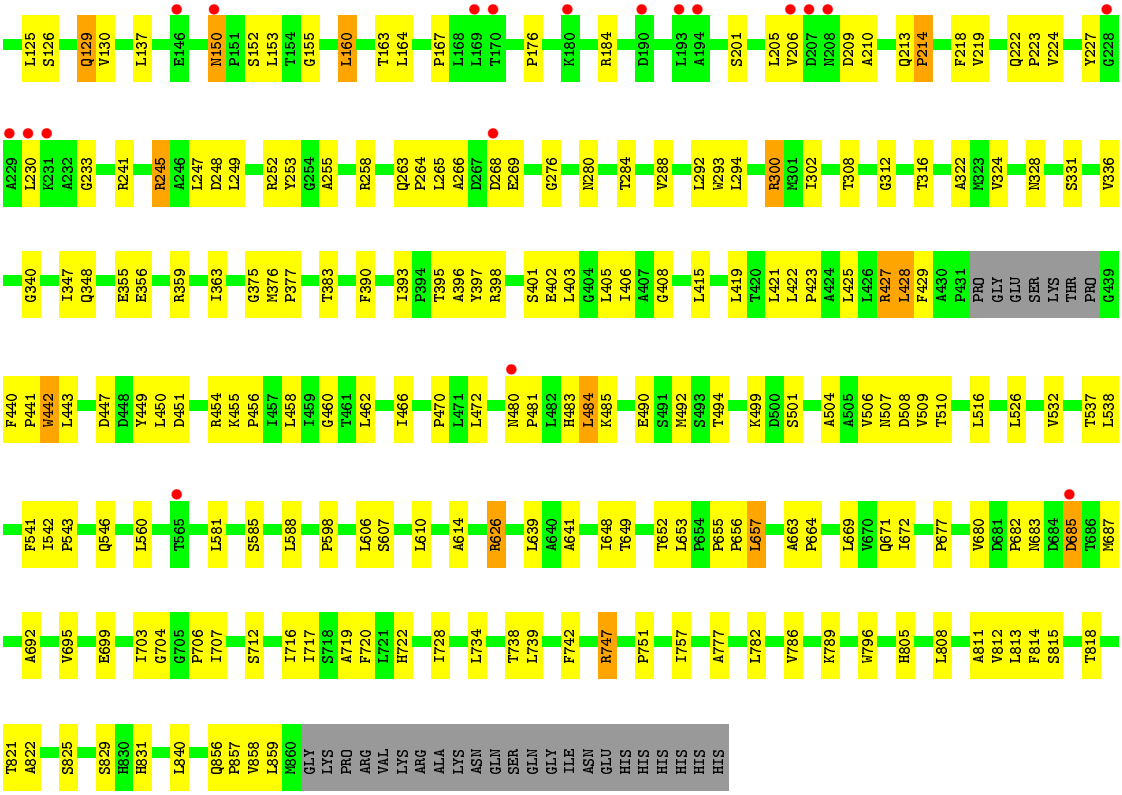
Chain B:



- Molecule 1: Putative RND superfamily efflux pump membrane protein

Chain A:




L125 S126 Q129 V130 L137 E146 N150 P151 S152 L153 T154 G155 L160 T163 L164 P167 L168 L169 T170 P176 K180 R184 D190 L193 A194 S201 L205 V206 D207 N208 D209 A210 Q213 P214 F218 V219 Q222 P223 V224 Y227 G228
A229 L230 K231 A232 G233 R241 R245 A246 L247 D248 L249 R252 Y253 G254 A255 R258 Q263 P264 L265 A266 D267 D268 E269 G276 N280 T284 V288 L292 W293 L294 R300 M301 I302 T308 G312 T316 A322 M323 V324 N328 S331 V336
G340 I347 Q348 E355 E356 R359 I363 G375 M376 P377 T383 F390 I393 P394 T395 A396 Y397 R398 S401 E402 L403 G404 L405 I406 A407 G408 L415 L419 T420 L421 L422 P423 A424 L425 L426 R427 L428 F429 A430 P431 PRO GLY GLU SER LYS THR PRO G439
F440 P441 W442 L443 D447 D448 Y449 L450 D451 R454 K455 P456 I457 L458 I459 G460 T461 L462 I466 P470 L471 L472 N480 P481 L482 H483 L484 K485 E490 S491 M492 S493 T494 K499 D500 S501 A504 A505 V506 N507 D508 V509 T510 L516 L526 V532 T537 L538
F541 I542 P543 Q546 L560 T565 L581 S585 L588 P598 L606 S607 L610 A614 R626 L639 A640 A641 I648 T649 T652 L653 P654 P655 P656 L657 A663 P664 L669 V670 Q671 I672 P677 V680 D681 P682 N683 D684 D685 T686 M687
A692 V695 E699 I703 G704 G705 P706 I707 S712 I716 I717 S718 A719 F720 L721 H722 I728 L734 T738 L739 F742 R747 P751 I757 A777 L782 V786 K789 W796 H805 L808 A811 V812 L813 F814 S815 T818
T821 A822 S825 S829 H830 H831 L840 Q856 P857 V858 L859 M860 GLY LYS PRO ARG VAL LYS ARG ALA LYS ASN GLN SER GLN GLY ILE ASN GLU HIS HIS HIS HIS HIS HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	112.16Å 143.37Å 112.66Å 90.00° 114.10° 90.00°	Depositor
Resolution (Å)	83.57 – 3.76 83.57 – 3.76	Depositor EDS
% Data completeness (in resolution range)	83.0 (83.57-3.76) 82.8 (83.57-3.76)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.80 (at 3.78Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, R_{free}	0.263 , 0.307 0.263 , 0.307	Depositor DCC
R_{free} test set	1390 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	10.9	Xtriage
Anisotropy	1.444	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , -7.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.47$, $< L^2 > = 0.30$	Xtriage
Estimated twinning fraction	0.387 for l,-k,h	Xtriage
F_o,F_c correlation	0.82	EDS
Total number of atoms	12679	wwPDB-VP
Average B, all atoms (Å^2)	45.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.19% 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	0.25	0/6472	0.45	0/8852
1	B	0.26	1/6477 (0.0%)	0.44	1/8859 (0.0%)
All	All	0.25	1/12949 (0.0%)	0.45	1/17711 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	485	LYS	CE-NZ	-5.12	1.36	1.49

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	344	ASP	CB-CG-OD2	6.05	123.75	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	6337	0	6566	164	1
1	B	6342	0	6571	151	1
All	All	12679	0	13137	308	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 12.

All (308) 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:269:GLU:HG2	1:A:485:LYS:HE3	1.48	0.95
1:B:127:PRO:HA	1:B:549:LYS:HE2	1.60	0.82
1:A:751:PRO:HG3	1:A:859:LEU:HD13	1.65	0.78
1:A:395:THR:HG21	1:A:719:ALA:HA	1.65	0.76
1:A:751:PRO:HB2	1:A:789:LYS:HE3	1.67	0.74
1:B:616:ALA:HB3	1:B:620:THR:HG21	1.72	0.72
1:B:777:ALA:HB3	1:B:840:LEU:HD12	1.73	0.70
1:B:300:ARG:H	1:B:300:ARG:HD2	1.56	0.69
1:A:808:LEU:HD23	1:A:813:LEU:HD21	1.75	0.69
1:A:276:GLY:O	1:A:280:ASN:N	2.23	0.68
1:A:66:PHE:HE2	1:A:669:LEU:HB3	1.59	0.68
1:B:549:LYS:HD2	1:B:549:LYS:N	2.08	0.68
1:B:74:LEU:HD21	1:B:218:PHE:HB3	1.77	0.67
1:A:47:LYS:HE3	1:A:328:ASN:HB3	1.77	0.67
1:B:193:LEU:HD21	1:B:613:LEU:HA	1.77	0.67
1:B:76:VAL:HG11	1:B:498:LEU:HD11	1.77	0.66
1:A:150:ASN:HB2	1:A:155:GLY:HA3	1.77	0.66
1:B:447:ASP:OD2	1:B:805:HIS:ND1	2.30	0.65
1:A:355:GLU:OE1	1:A:359:ARG:NH1	2.29	0.65
1:B:108:VAL:HG13	1:B:221:VAL:HG12	1.78	0.65
1:B:472:LEU:HD13	1:A:472:LEU:HD13	1.78	0.65
1:B:546:GLN:HB3	1:B:549:LYS:HB2	1.77	0.65
1:B:456:PRO:O	1:B:460:GLY:N	2.18	0.64
1:B:181:LEU:O	1:B:185:SER:OG	2.11	0.63
1:A:363:ILE:HD11	1:A:427:ARG:HG2	1.80	0.63
1:B:74:LEU:HD23	1:B:220:THR:HG23	1.81	0.63
1:B:79:ALA:HB2	1:B:255:ALA:HB2	1.81	0.62
1:B:112:GLY:HA2	1:B:503:GLU:HG2	1.81	0.62
1:B:343:VAL:HB	1:B:818:THR:HG21	1.82	0.62
1:B:50:ASP:HB2	1:B:396:ALA:HB1	1.82	0.62
1:A:356:GLU:HG2	1:A:359:ARG:HH21	1.66	0.61
1:A:777:ALA:HB3	1:A:840:LEU:HD12	1.83	0.61
1:B:107:PRO:HG2	1:B:222:GLN:HE21	1.65	0.61
1:A:796:TRP:HZ3	1:A:856:GLN:HG3	1.66	0.60
1:A:786:VAL:HA	1:A:789:LYS:HD2	1.82	0.60
1:A:312:GLY:O	1:A:316:THR:OG1	2.18	0.60
1:A:542:ILE:HD11	1:A:653:LEU:HD11	1.83	0.60
1:B:227:TYR:HE1	1:B:235:GLN:HG3	1.67	0.60
1:A:728:ILE:HG23	1:A:782:LEU:HD13	1.84	0.59
1:A:126:SER:H	1:A:129:GLN:NE2	2.00	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:543:PRO:HG2	1:A:546:GLN:HG2	1.84	0.59
1:A:440:PHE:CZ	1:A:808:LEU:HD12	2.38	0.58
1:A:300:ARG:HD2	1:A:300:ARG:H	1.69	0.58
1:A:510:THR:HG22	1:A:671:GLN:HG2	1.84	0.58
1:A:581:LEU:HB3	1:A:614:ALA:HB2	1.86	0.57
1:A:796:TRP:CZ3	1:A:856:GLN:HG3	2.39	0.57
1:A:6:ILE:HG23	1:A:419:LEU:HD21	1.86	0.57
1:A:164:LEU:HD13	1:A:588:LEU:HG	1.87	0.57
1:A:440:PHE:CE2	1:A:808:LEU:HD12	2.38	0.57
1:B:739:LEU:HD22	1:B:744:ASP:HB3	1.86	0.57
1:B:73:ILE:HG22	1:B:261:GLY:HA3	1.85	0.57
1:A:265:LEU:HD12	1:A:266:ALA:N	2.20	0.57
1:A:856:GLN:NE2	1:A:859:LEU:O	2.35	0.57
1:B:83:GLU:HG3	1:B:631:THR:HG23	1.87	0.57
1:A:150:ASN:HD22	1:A:152:SER:H	1.53	0.57
1:B:357:ARG:HH21	1:B:358:PHE:HE1	1.53	0.56
1:B:509:VAL:HG21	1:B:695:VAL:HG11	1.86	0.56
1:A:115:PRO:HA	1:A:118:GLU:HB2	1.86	0.56
1:B:720:PHE:CZ	1:A:470:PRO:HB3	2.41	0.56
1:A:829:SER:O	1:A:831:HIS:N	2.37	0.56
1:B:174:LYS:O	1:B:177:SER:OG	2.24	0.56
1:A:509:VAL:HG11	1:A:707:ILE:HG13	1.87	0.55
1:A:856:GLN:H	1:A:857:PRO:HD2	1.71	0.55
1:A:456:PRO:O	1:A:460:GLY:N	2.37	0.55
1:A:581:LEU:HG	1:A:610:LEU:HD22	1.89	0.55
1:B:808:LEU:HA	1:B:813:LEU:HB2	1.87	0.55
1:A:348:GLN:OE1	1:A:815:SER:OG	2.13	0.55
1:B:200:PHE:O	1:B:631:THR:HG21	2.06	0.55
1:B:340:GLY:HA2	1:B:818:THR:HG22	1.89	0.55
1:A:34:TYR:HE2	1:A:322:ALA:HB2	1.71	0.55
1:A:348:GLN:NE2	1:A:811:ALA:O	2.40	0.54
1:B:123:LEU:HD23	1:B:648:ILE:HG22	1.88	0.54
1:A:537:THR:HG22	1:A:538:LEU:H	1.72	0.54
1:A:247:LEU:O	1:A:249:LEU:N	2.34	0.54
1:B:13:SER:OG	1:B:420:THR:O	2.23	0.54
1:B:89:ALA:HB2	1:B:217:ALA:HB1	1.90	0.54
1:B:654:PRO:HB2	1:B:656:PRO:HD2	1.88	0.54
1:B:129:GLN:N	1:B:129:GLN:OE1	2.37	0.53
1:B:300:ARG:CD	1:B:300:ARG:H	2.20	0.53
1:B:720:PHE:HZ	1:A:470:PRO:HB3	1.73	0.53
1:B:367:LEU:HD11	1:B:426:LEU:HD12	1.91	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:543:PRO:HD2	1:B:648:ILE:HB	1.90	0.53
1:B:753:LEU:HD11	1:A:757:ILE:HD13	1.89	0.53
1:B:34:TYR:HA	1:B:37:ARG:HG2	1.90	0.53
1:A:43:THR:OG1	1:A:266:ALA:O	2.26	0.53
1:B:742:PHE:CD1	1:A:455:LYS:HD2	2.42	0.53
1:B:390:PHE:HA	1:B:393:ILE:HG12	1.89	0.53
1:A:441:PRO:HD2	1:A:442:TRP:CD1	2.43	0.53
1:A:588:LEU:HD13	1:A:606:LEU:HB3	1.91	0.53
1:A:695:VAL:HG13	1:A:707:ILE:HD11	1.89	0.53
1:A:526:LEU:HD22	1:A:695:VAL:HG23	1.90	0.53
1:A:812:VAL:O	1:A:815:SER:HB2	2.09	0.53
1:B:269:GLU:HB2	1:B:485:LYS:NZ	2.24	0.53
1:A:747:ARG:HG3	1:A:859:LEU:HB3	1.91	0.52
1:B:669:LEU:HD21	1:B:671:GLN:HG3	1.91	0.52
1:A:398:ARG:HA	1:A:401:SER:HB2	1.90	0.52
1:A:50:ASP:HB2	1:A:396:ALA:HB1	1.90	0.52
1:A:209:ASP:OD1	1:A:210:ALA:N	2.43	0.52
1:A:340:GLY:HA3	1:A:822:ALA:HB2	1.91	0.52
1:B:96:LEU:HB3	1:B:108:VAL:HG21	1.92	0.52
1:B:240:ILE:HB	1:B:259:LEU:HD21	1.92	0.52
1:A:99:GLN:HB3	1:A:104:ARG:HB2	1.92	0.52
1:B:176:PRO:HB3	1:B:598:PRO:HG2	1.91	0.52
1:B:282:VAL:HA	1:B:285:LEU:HD12	1.90	0.52
1:A:184:ARG:HD3	1:A:205:LEU:HG	1.92	0.51
1:B:499:LYS:HB2	1:B:682:PRO:HB2	1.92	0.51
1:B:336:VAL:HG21	1:B:825:SER:HB3	1.92	0.51
1:B:123:LEU:HD13	1:B:645:PRO:CB	2.41	0.51
1:A:247:LEU:C	1:A:249:LEU:H	2.15	0.51
1:B:12:TRP:CD1	1:B:16:ARG:HD2	2.45	0.51
1:B:398:ARG:HA	1:B:401:SER:HB2	1.93	0.51
1:A:66:PHE:CD1	1:A:663:ALA:HB2	2.46	0.51
1:B:130:VAL:HA	1:B:133:THR:HB	1.93	0.51
1:A:292:LEU:HG	1:A:347:ILE:HD11	1.93	0.50
1:B:154:THR:HG22	1:B:577:ARG:HA	1.93	0.50
1:B:796:TRP:NE1	1:B:803:LEU:HB2	2.26	0.50
1:A:655:PRO:HG2	1:A:656:PRO:HD3	1.94	0.50
1:B:676:VAL:HG13	1:B:687:MET:HE1	1.94	0.50
1:A:213:GLN:HB2	1:A:214:PRO:HD3	1.92	0.50
1:A:542:ILE:HG13	1:A:648:ILE:HG22	1.93	0.50
1:B:14:VAL:HG12	1:B:15:ARG:H	1.77	0.50
1:B:178:MET:HB3	1:B:182:LEU:HG	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:176:PRO:HG3	1:B:598:PRO:HD2	1.92	0.50
1:B:752:LEU:HD21	1:B:785:GLY:HA3	1.93	0.50
1:B:654:PRO:HG2	1:B:657:LEU:HD13	1.94	0.50
1:A:269:GLU:HG2	1:A:485:LYS:HB3	1.92	0.50
1:A:324:VAL:HG21	1:A:406:ILE:HD11	1.94	0.49
1:B:110:GLU:HA	1:B:219:VAL:HA	1.94	0.49
1:A:499:LYS:HA	1:A:506:VAL:HG21	1.95	0.49
1:A:284:THR:HG23	1:A:821:THR:HG22	1.94	0.49
1:B:96:LEU:HD13	1:B:221:VAL:HG11	1.93	0.49
1:A:263:GLN:N	1:A:264:PRO:HD2	2.26	0.49
1:A:265:LEU:HD12	1:A:266:ALA:H	1.78	0.49
1:A:340:GLY:HA2	1:A:818:THR:HG22	1.94	0.49
1:B:296:LEU:HD13	1:B:301:MET:HB3	1.94	0.49
1:B:677:PRO:HB3	1:A:677:PRO:HB2	1.95	0.49
1:A:703:ILE:HG12	1:A:704:GLY:H	1.76	0.49
1:B:809:THR:HG23	1:B:810:HIS:ND1	2.28	0.49
1:B:390:PHE:CE1	1:B:408:GLY:HA3	2.48	0.49
1:B:73:ILE:HG21	1:B:264:PRO:HG2	1.94	0.49
1:A:10:VAL:O	1:A:14:VAL:HG23	2.13	0.49
1:A:375:GLY:H	1:A:377:PRO:HD2	1.78	0.49
1:A:541:PHE:HD2	1:A:657:LEU:HD21	1.78	0.49
1:A:92:LEU:HD12	1:A:219:VAL:HG11	1.94	0.48
1:A:585:SER:O	1:A:607:SER:OG	2.28	0.48
1:A:66:PHE:CE2	1:A:669:LEU:HB3	2.46	0.48
1:A:249:LEU:HD22	1:A:253:TYR:HE1	1.78	0.48
1:B:805:HIS:O	1:B:809:THR:HG22	2.14	0.48
1:A:692:ALA:HB2	1:A:706:PRO:HB2	1.95	0.48
1:A:96:LEU:HB3	1:A:108:VAL:HG21	1.96	0.48
1:A:328:ASN:ND2	1:A:402:GLU:OE1	2.45	0.48
1:B:241:ARG:O	1:B:245:ARG:HB2	2.13	0.48
1:B:247:LEU:O	1:B:249:LEU:N	2.37	0.48
1:B:457:ILE:HG22	1:B:854:VAL:HG13	1.96	0.48
1:A:516:LEU:HD11	1:A:538:LEU:HB3	1.96	0.47
1:B:249:LEU:O	1:B:253:TYR:N	2.25	0.47
1:A:649:THR:N	1:A:652:THR:OG1	2.36	0.47
1:B:585:SER:OG	1:B:611:ALA:HB2	2.15	0.47
1:B:771:ASN:O	1:B:775:ILE:HB	2.15	0.47
1:A:355:GLU:HB3	1:A:359:ARG:NH2	2.29	0.47
1:B:200:PHE:CZ	1:B:205:LEU:HD22	2.50	0.47
1:B:153:LEU:HD11	1:B:625:GLU:HB2	1.95	0.47
1:A:751:PRO:HD3	1:A:859:LEU:HD22	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:578:VAL:HG23	1:B:621:ARG:NH2	2.30	0.47
1:A:176:PRO:HB3	1:A:598:PRO:HG2	1.96	0.46
1:B:184:ARG:HB2	1:B:205:LEU:HD21	1.97	0.46
1:B:357:ARG:NH1	1:B:363:ILE:HG23	2.30	0.46
1:B:754:VAL:O	1:B:758:VAL:HG23	2.15	0.46
1:B:202:TRP:CD1	1:B:631:THR:HG22	2.50	0.46
1:A:293:TRP:HD1	1:A:302:ILE:HD11	1.79	0.46
1:A:585:SER:HB2	1:A:610:LEU:HB3	1.97	0.46
1:B:353:TYR:CZ	1:B:426:LEU:HD11	2.50	0.46
1:B:451:ASP:OD2	1:B:802:GLY:N	2.30	0.46
1:B:537:THR:O	1:B:540:THR:OG1	2.25	0.46
1:B:505:ALA:HB1	1:B:508:ASP:CG	2.36	0.46
1:B:60:GLN:NE2	1:B:63:ASP:OD2	2.48	0.46
1:B:374:MET:HB3	1:B:378:LEU:HD13	1.97	0.46
1:B:10:VAL:O	1:B:14:VAL:HG23	2.16	0.46
1:A:712:SER:O	1:A:716:ILE:HG12	2.16	0.46
1:A:481:PRO:HA	1:A:484:LEU:HD21	1.98	0.45
1:B:352:LYS:HB2	1:B:374:MET:HE1	1.98	0.45
1:A:37:ARG:HG3	1:A:38:HIS:CD2	2.51	0.45
1:A:458:LEU:HD11	1:A:858:VAL:CG2	2.46	0.45
1:B:31:SER:OG	1:B:315:VAL:HA	2.17	0.45
1:B:703:ILE:HG12	1:B:704:GLY:H	1.82	0.45
1:B:803:LEU:H	1:B:803:LEU:HD23	1.80	0.45
1:B:550:ARG:HD3	1:B:646:GLN:O	2.16	0.45
1:A:390:PHE:CE1	1:A:408:GLY:HA3	2.51	0.45
1:B:581:LEU:HD22	1:B:610:LEU:HD21	1.98	0.45
1:A:747:ARG:HA	1:A:859:LEU:HD23	1.98	0.45
1:A:252:ARG:O	1:A:626:ARG:NH1	2.48	0.45
1:A:507:ASN:HD21	1:A:683:ASN:ND2	2.14	0.45
1:A:78:GLU:O	1:A:255:ALA:HA	2.17	0.45
1:A:455:LYS:HB3	1:A:456:PRO:HD3	1.99	0.45
1:B:202:TRP:CE2	1:B:632:LEU:HG	2.52	0.45
1:B:509:VAL:HG23	1:B:672:ILE:HD13	1.98	0.45
1:A:480:ASN:HD21	1:A:483:HIS:CE1	2.35	0.45
1:B:662:VAL:HG12	1:B:663:ALA:H	1.81	0.45
1:B:665:ASP:OD1	1:B:665:ASP:N	2.50	0.45
1:A:18:VAL:HG22	1:A:428:LEU:HD21	1.98	0.45
1:A:66:PHE:HD1	1:A:663:ALA:HB2	1.81	0.45
1:A:69:ARG:NH1	1:A:671:GLN:OE1	2.49	0.45
1:A:808:LEU:CD2	1:A:813:LEU:HD21	2.45	0.45
1:A:492:MET:HB3	1:A:492:MET:HE3	1.88	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:546:GLN:NE2	1:A:648:ILE:O	2.31	0.44
1:B:320:GLY:O	1:B:324:VAL:HG22	2.17	0.44
1:A:119:HIS:ND1	1:A:641:ALA:O	2.51	0.44
1:A:507:ASN:ND2	1:A:682:PRO:O	2.51	0.44
1:A:747:ARG:HE	1:A:859:LEU:HA	1.83	0.44
1:B:510:THR:OG1	1:B:510:THR:O	2.33	0.44
1:A:393:ILE:HD11	1:A:405:LEU:HB2	1.98	0.44
1:B:294:LEU:HB3	1:B:814:PHE:CE1	2.53	0.44
1:B:744:ASP:HA	1:B:747:ARG:HB2	1.99	0.44
1:A:160:LEU:HD22	1:A:164:LEU:HD11	2.00	0.44
1:A:222:GLN:HB3	1:A:223:PRO:HD2	2.00	0.44
1:A:480:ASN:HD21	1:A:483:HIS:HE1	1.66	0.44
1:A:230:LEU:HB2	1:A:233:GLY:H	1.82	0.44
1:A:52:GLU:OE2	1:A:55:TRP:HB2	2.17	0.44
1:B:202:TRP:HD1	1:B:631:THR:HG22	1.82	0.44
1:A:125:LEU:HB2	1:A:130:VAL:HG23	2.00	0.44
1:A:258:ARG:HB3	1:A:494:THR:HG21	2.00	0.44
1:A:532:VAL:HG13	1:A:672:ILE:HG23	1.99	0.44
1:A:95:SER:OG	1:A:247:LEU:HD11	2.17	0.43
1:B:83:GLU:CD	1:B:83:GLU:H	2.22	0.43
1:A:440:PHE:HB3	1:A:443:LEU:HD23	2.00	0.43
1:B:654:PRO:HD2	1:B:657:LEU:HD22	2.00	0.43
1:B:577:ARG:HD2	1:B:621:ARG:HD2	1.99	0.43
1:B:677:PRO:CB	1:A:677:PRO:HB2	2.47	0.43
1:A:685:ASP:OD1	1:A:685:ASP:N	2.51	0.43
1:B:296:LEU:HD21	1:B:305:VAL:HG21	2.00	0.43
1:B:221:VAL:HG21	1:B:240:ILE:HD11	2.00	0.43
1:A:288:VAL:O	1:A:292:LEU:HB2	2.19	0.43
1:B:451:ASP:HA	1:B:454:ARG:NH2	2.34	0.43
1:B:808:LEU:HB2	1:B:813:LEU:HD22	2.01	0.43
1:B:9:LEU:HD23	1:B:419:LEU:HB3	1.99	0.43
1:A:738:THR:OG1	1:A:739:LEU:HD12	2.19	0.43
1:A:9:LEU:HD22	1:A:419:LEU:HD23	2.01	0.43
1:B:155:GLY:O	1:B:159:THR:HG23	2.19	0.43
1:B:123:LEU:HD13	1:B:645:PRO:HB2	1.99	0.43
1:B:425:LEU:HD23	1:B:425:LEU:HA	1.86	0.43
1:B:674:PRO:HG3	1:B:691:PHE:CE2	2.54	0.42
1:B:772:PHE:O	1:B:775:ILE:HG22	2.18	0.42
1:A:480:ASN:OD1	1:A:483:HIS:ND1	2.52	0.42
1:B:388:SER:O	1:B:391:SER:OG	2.32	0.42
1:A:74:LEU:HD21	1:A:218:PHE:HB3	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:293:TRP:HD1	1:B:302:ILE:HD11	1.83	0.42
1:B:475:LEU:HD21	1:B:760:LEU:HD22	2.00	0.42
1:A:363:ILE:HD11	1:A:427:ARG:CG	2.49	0.42
1:A:450:LEU:O	1:A:454:ARG:N	2.52	0.42
1:A:52:GLU:HB2	1:A:53:PRO:HD2	2.00	0.42
1:B:107:PRO:HG2	1:B:222:GLN:NE2	2.33	0.42
1:B:831:HIS:CD2	1:B:833:GLY:H	2.37	0.42
1:A:241:ARG:O	1:A:245:ARG:HB2	2.20	0.42
1:A:425:LEU:HD22	1:A:429:PHE:HE2	1.84	0.42
1:B:296:LEU:O	1:B:298:SER:N	2.53	0.42
1:B:739:LEU:O	1:B:739:LEU:HD12	2.20	0.42
1:B:213:GLN:HB3	1:B:214:PRO:HD3	2.01	0.42
1:A:717:ILE:HA	1:A:720:PHE:CE1	2.54	0.42
1:B:184:ARG:HD2	1:B:205:LEU:HG	2.02	0.42
1:B:529:LEU:HB2	1:B:532:VAL:HG23	2.02	0.42
1:B:537:THR:HG22	1:B:538:LEU:H	1.84	0.42
1:A:458:LEU:HD11	1:A:858:VAL:HG22	2.01	0.41
1:B:153:LEU:HD13	1:B:577:ARG:HD3	2.02	0.41
1:B:202:TRP:CZ2	1:B:632:LEU:HG	2.55	0.41
1:B:263:GLN:HB3	1:B:264:PRO:HD3	2.01	0.41
1:B:300:ARG:O	1:B:304:SER:OG	2.27	0.41
1:A:105:ILE:HA	1:A:224:VAL:HG22	2.01	0.41
1:A:300:ARG:CD	1:A:300:ARG:H	2.33	0.41
1:B:167:PRO:HB2	1:B:173:VAL:HG12	2.02	0.41
1:A:163:THR:HA	1:A:167:PRO:HG2	2.01	0.41
1:A:680:VAL:HG11	1:A:687:MET:HG2	2.01	0.41
1:A:153:LEU:CD1	1:A:581:LEU:HD11	2.50	0.41
1:A:264:PRO:O	1:A:268:ASP:HB2	2.21	0.41
1:A:336:VAL:HG11	1:A:825:SER:HB3	2.03	0.41
1:B:160:LEU:O	1:B:164:LEU:HG	2.20	0.41
1:B:344:ASP:O	1:B:348:GLN:HG2	2.21	0.41
1:B:752:LEU:HD23	1:B:752:LEU:HA	1.86	0.41
1:B:754:VAL:HG11	1:B:855:PHE:CZ	2.56	0.41
1:A:419:LEU:HD12	1:A:419:LEU:HA	1.94	0.41
1:A:501:SER:HB3	1:A:504:ALA:HB3	2.03	0.41
1:A:610:LEU:HA	1:A:610:LEU:HD23	1.90	0.41
1:B:444:ALA:HB3	1:B:445:PRO:HD3	2.02	0.41
1:A:247:LEU:C	1:A:249:LEU:N	2.74	0.41
1:A:663:ALA:HB1	1:A:664:PRO:HD2	2.03	0.41
1:A:458:LEU:HD12	1:A:857:PRO:HB2	2.02	0.41
1:B:227:TYR:CE1	1:B:235:GLN:HG3	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:331:SER:HA	1:A:403:LEU:HD12	2.03	0.41
1:A:462:LEU:O	1:A:466:ILE:HG13	2.21	0.41
1:A:655:PRO:CG	1:A:656:PRO:HD3	2.50	0.41
1:B:83:GLU:CG	1:B:631:THR:HG23	2.50	0.41
1:B:826:LEU:O	1:B:835:SER:HA	2.21	0.41
1:A:68:GLN:O	1:A:72:THR:HG23	2.21	0.41
1:A:308:THR:HG22	1:A:421:LEU:HB3	2.03	0.40
1:B:141:ARG:HA	1:B:144:VAL:HG12	2.02	0.40
1:A:447:ASP:OD2	1:A:805:HIS:ND1	2.55	0.40
1:A:383:THR:HB	1:A:734:LEU:HD11	2.03	0.40
1:B:182:LEU:HA	1:B:606:LEU:HD12	2.02	0.40
1:A:294:LEU:HB3	1:A:814:PHE:CE1	2.57	0.40
1:A:422:LEU:HB3	1:A:423:PRO:HD3	2.04	0.40
1:A:481:PRO:O	1:A:485:LYS:HG3	2.22	0.40
1:A:526:LEU:HD21	1:A:699:GLU:HG2	2.03	0.40
1:A:120:ASN:N	1:A:120:ASN:OD1	2.55	0.40
1:A:201:SER:O	1:A:205:LEU:HD13	2.21	0.40
1:B:349:TYR:OH	1:B:367:LEU:O	2.39	0.40
1:A:137:LEU:HB3	1:A:560:LEU:HD11	2.02	0.40
1:B:100:ALA:HB2	1:B:108:VAL:HG23	2.03	0.40
1:B:747:ARG:HA	1:B:747:ARG:HD2	1.90	0.40
1:B:443:LEU:CD1	1:B:804:LEU:HB3	2.52	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:B:590:TYR:OH	1:A:451:ASP:OD2[1_554]	2.16	0.04

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	848/883 (96%)	787 (93%)	58 (7%)	3 (0%)	34 69
1	B	849/883 (96%)	791 (93%)	52 (6%)	6 (1%)	22 59
All	All	1697/1766 (96%)	1578 (93%)	110 (6%)	9 (0%)	29 65

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	297	ARG
1	B	811	ALA
1	B	859	LEU
1	B	771	ASN
1	A	214	PRO
1	B	17	PRO
1	B	328	ASN
1	A	248	ASP
1	A	206	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	662/690 (96%)	635 (96%)	27 (4%)	30 59
1	B	662/690 (96%)	636 (96%)	26 (4%)	32 61
All	All	1324/1380 (96%)	1271 (96%)	53 (4%)	31 60

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	55	TRP
1	B	200	PHE
1	B	227	TYR
1	B	245	ARG
1	B	252	ARG
1	B	280	ASN
1	B	300	ARG

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Mol	Chain	Res	Type
1	B	323	MET
1	B	344	ASP
1	B	442	TRP
1	B	447	ASP
1	B	449	TYR
1	B	451	ASP
1	B	478	ASP
1	B	507	ASN
1	B	525	ARG
1	B	549	LYS
1	B	632	LEU
1	B	639	LEU
1	B	660	ASP
1	B	665	ASP
1	B	687	MET
1	B	720	PHE
1	B	742	PHE
1	B	747	ARG
1	B	810	HIS
1	A	52	GLU
1	A	55	TRP
1	A	60	GLN
1	A	120	ASN
1	A	129	GLN
1	A	150	ASN
1	A	160	LEU
1	A	227	TYR
1	A	245	ARG
1	A	300	ARG
1	A	376	MET
1	A	397	TYR
1	A	415	LEU
1	A	427	ARG
1	A	428	LEU
1	A	442	TRP
1	A	449	TYR
1	A	484	LEU
1	A	490	GLU
1	A	508	ASP
1	A	626	ARG
1	A	639	LEU
1	A	657	LEU

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Mol	Chain	Res	Type
1	A	685	ASP
1	A	722	HIS
1	A	742	PHE
1	A	747	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	222	GLN
1	A	150	ASN
1	A	480	ASN
1	A	683	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	852/883 (96%)	-0.04	21 (2%)	57	51	6, 46, 81, 112	0
1	B	853/883 (96%)	-0.01	18 (2%)	63	58	6, 44, 82, 112	0
All	All	1705/1766 (96%)	-0.02	39 (2%)	60	55	6, 45, 82, 112	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	207	ASP	5.8
1	A	170	THR	4.8
1	A	190	ASP	4.4
1	B	174	LYS	3.6
1	A	229	ALA	3.5
1	A	206	VAL	3.5
1	B	213	GLN	3.2
1	B	212	ARG	3.1
1	B	175	LEU	3.1
1	A	193	LEU	3.1
1	A	194	ALA	3.0
1	B	1	MET	2.9
1	B	500	ASP	2.9
1	A	4	SER	2.8
1	A	150	ASN	2.8
1	A	43	THR	2.8
1	A	565	THR	2.6
1	A	230	LEU	2.5
1	A	208	ASN	2.5
1	B	490	GLU	2.5
1	B	4	SER	2.4
1	A	268	ASP	2.4
1	A	685	ASP	2.3
1	B	372	HIS	2.3

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Mol	Chain	Res	Type	RSRZ
1	B	13	SER	2.3
1	A	480	ASN	2.2
1	B	478	ASP	2.2
1	B	41	ILE	2.2
1	A	169	LEU	2.2
1	B	210	ALA	2.2
1	A	231	LYS	2.1
1	B	43	THR	2.1
1	A	228	GLY	2.1
1	B	326	SER	2.1
1	A	180	LYS	2.1
1	B	229	ALA	2.0
1	B	42	ASN	2.0
1	A	146	GLU	2.0
1	B	176	PRO	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 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.