Full wwPDB X-ray Structure Validation Report ⓘ

Oct 15, 2023 – 12:17 AM EDT

PDB ID	:	7KQV
Title	:	Crystal Structure of aldehyde dehydrogenase (ChALDH) from Cladosporium herbarum
Authors	:	Lee, S.G.; Jez, J.M.
Deposited on	:	2020-11-17
Resolution	:	3.18 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:

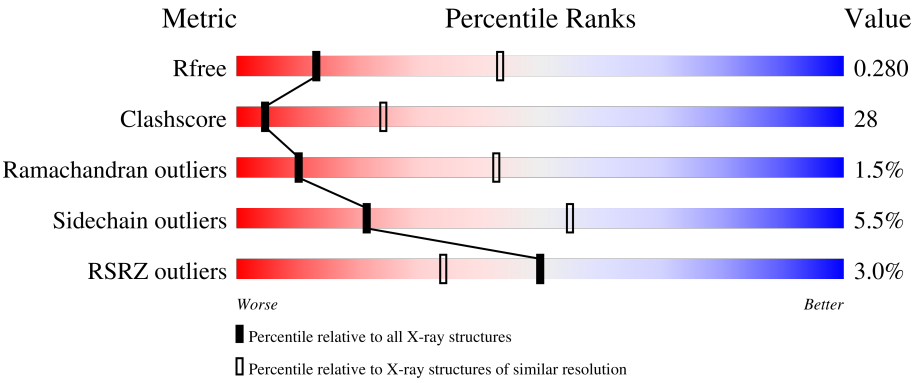
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.18 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	1467 (3.20-3.16)
Clashscore	141614	1599 (3.20-3.16)
Ramachandran outliers	138981	1574 (3.20-3.16)
Sidechain outliers	138945	1573 (3.20-3.16)
RSRZ outliers	127900	1423 (3.20-3.16)

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	496	2% 45% 42% • 9%
1	B	496	3% 50% 40% • 7%
1	C	496	3% 42% 34% • 20%
1	D	496	3% 49% 43% • 5%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 13484 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 Aldehyde dehydrogenase.

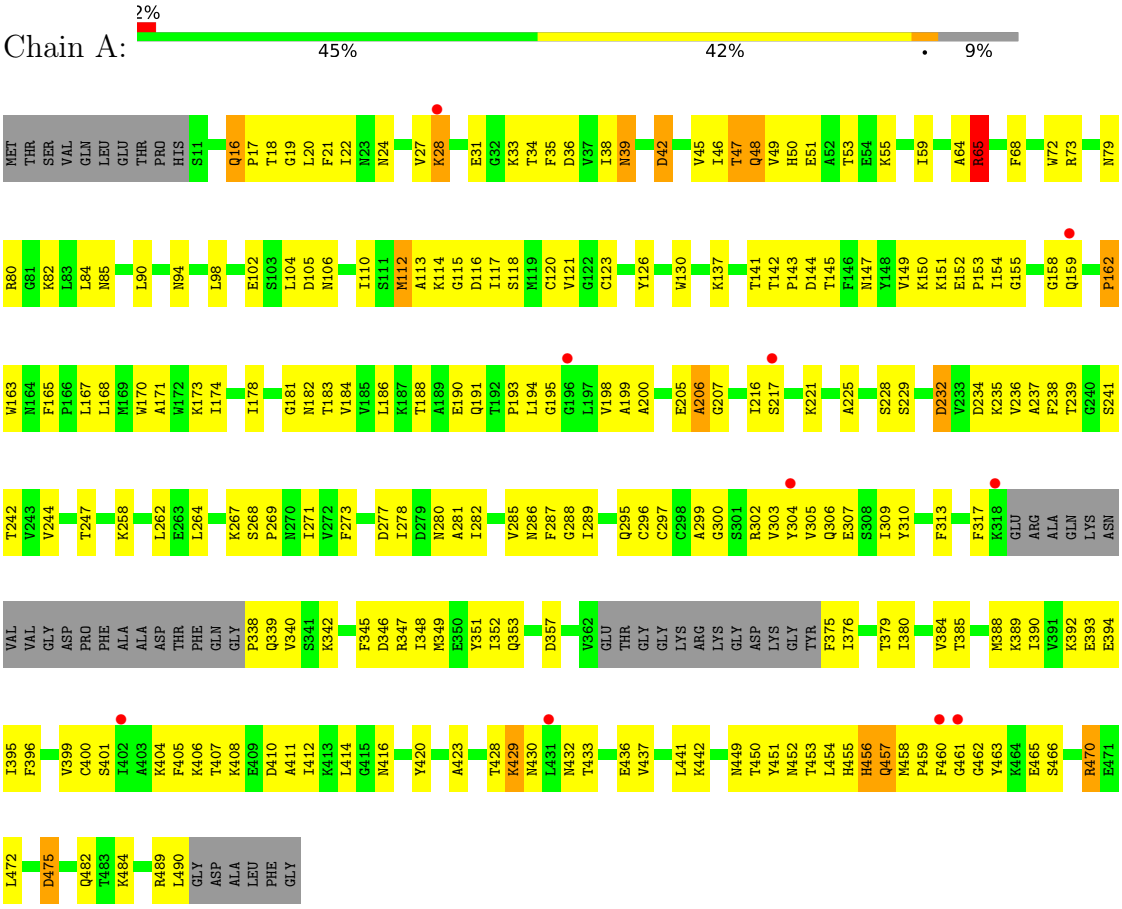
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	449	Total	C	N	O	S	0	0	0
			3418	2181	572	650	15			
1	B	460	Total	C	N	O	S	0	0	0
			3485	2219	582	669	15			
1	C	399	Total	C	N	O	S	0	0	0
			3016	1923	507	573	13			
1	D	469	Total	C	N	O	S	0	0	0
			3565	2269	601	680	15			

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.

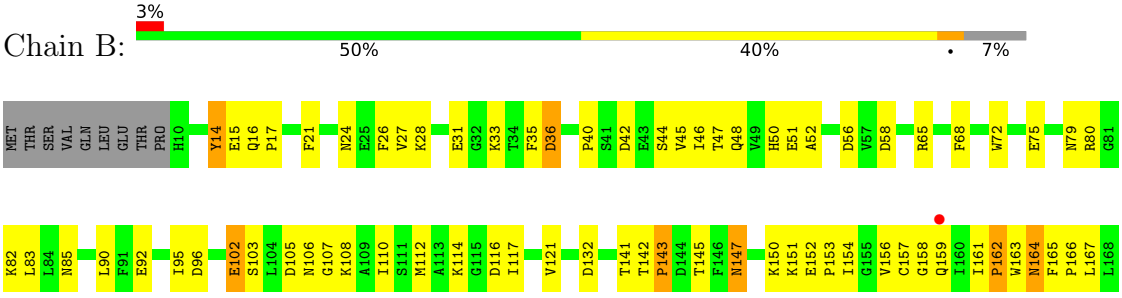
- Molecule 1: Aldehyde dehydrogenase

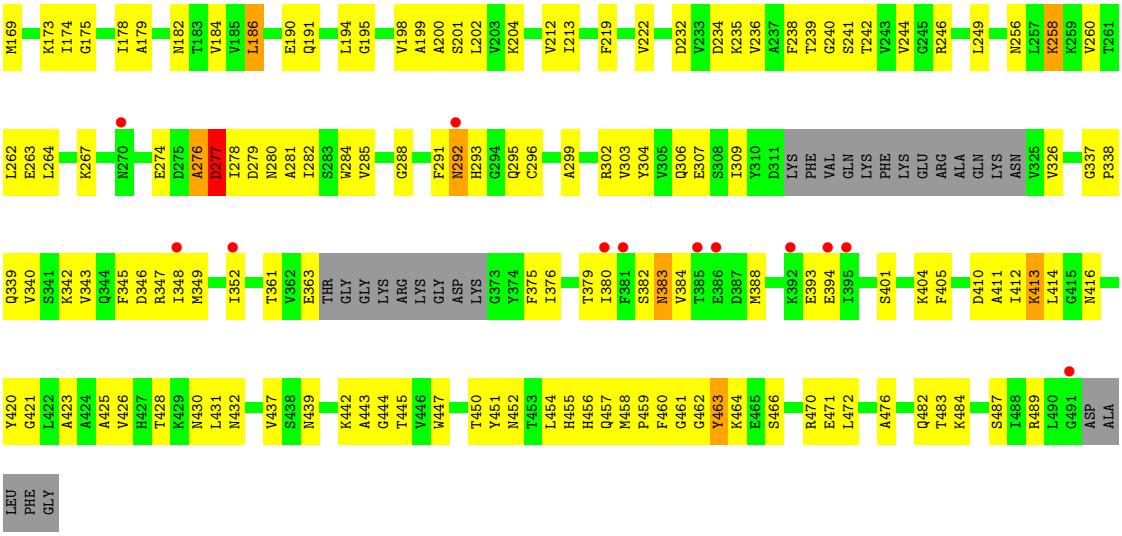
Chain A:



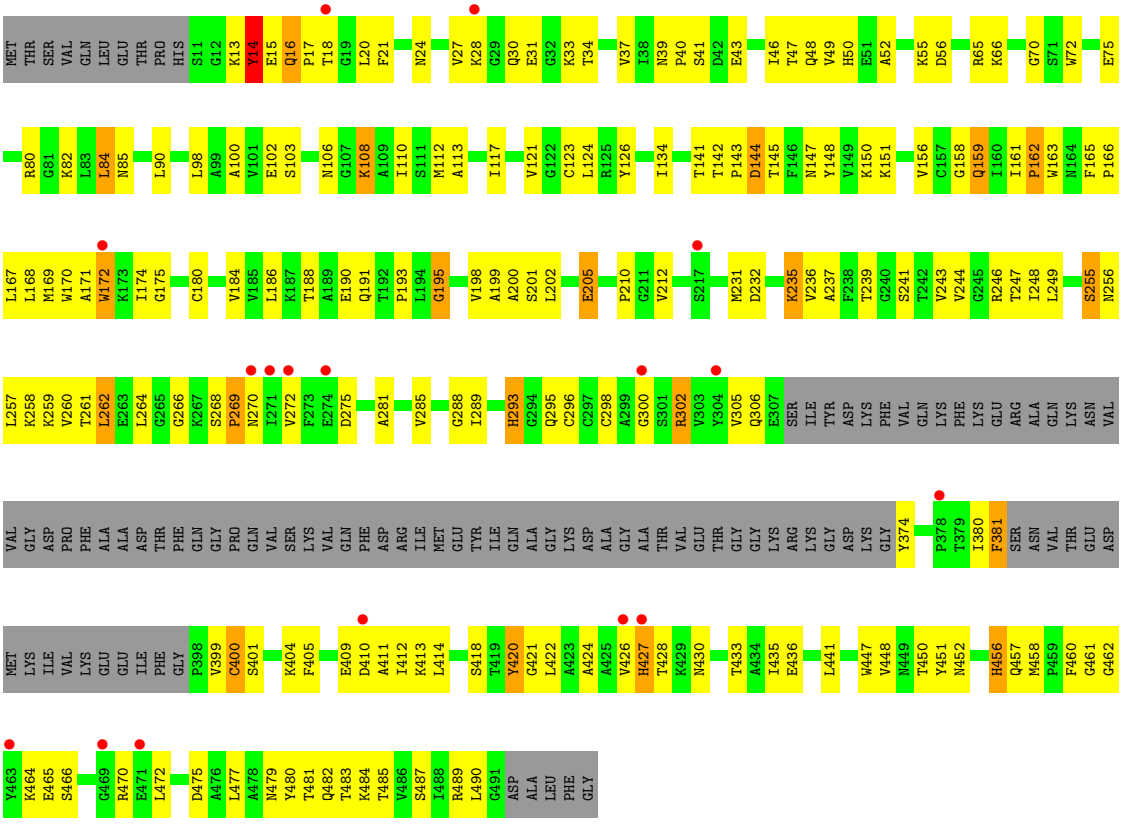
- Molecule 1: Aldehyde dehydrogenase

Chain B:

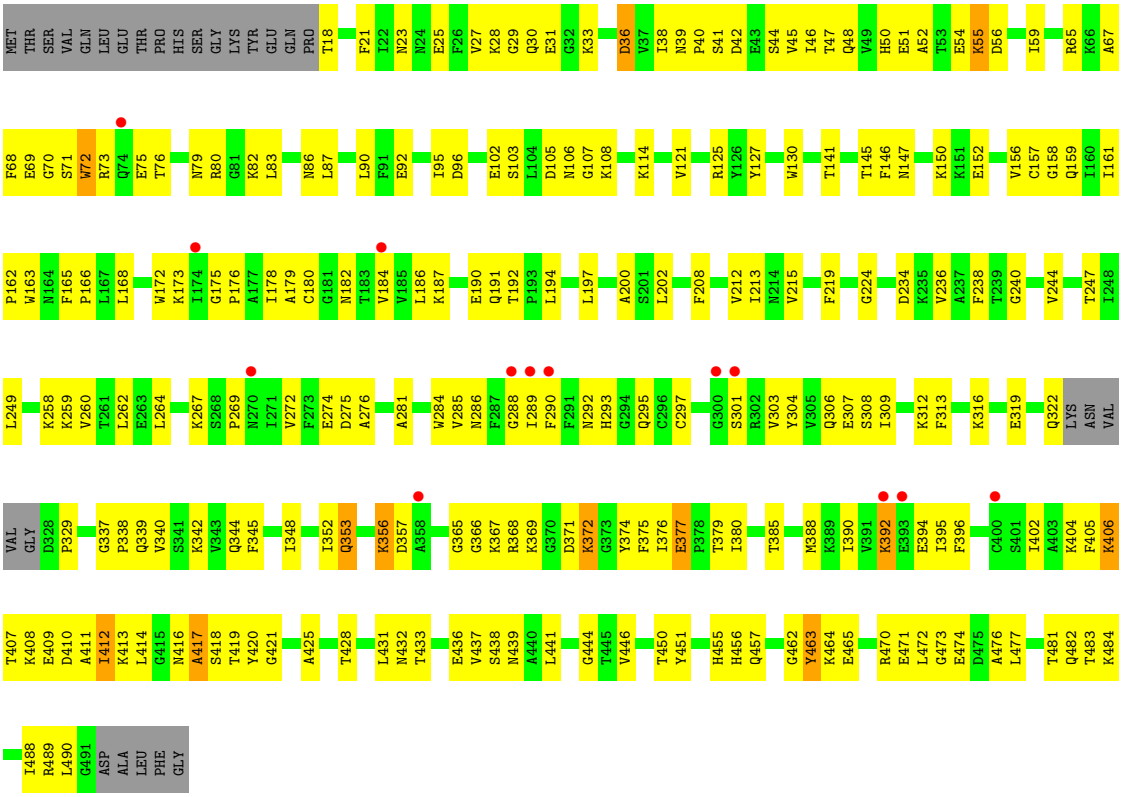




• Molecule 1: Aldehyde dehydrogenase



• Molecule 1: Aldehyde dehydrogenase


MET THR SER VAL GLN LEU GLU THR PRO HIS SER GLY LYS TYR GLU GLN PRO T18 F21 I22 N23 N24 E25 F26 V27 K28 G29 Q30 E31 G32 K33 D36 V37 I38 N39 P40 S41 D42 E43 S44 V45 I46 T47 Q48 V49 H50 E51 A52 T53 E54 K55 D56 I59 R65 K66 A67
F68 E69 G70 S71 W72 R73 Q74 E75 T76 N79 R80 G81 K82 L83 N86 L87 L90 F91 E92 I95 D96 E102 S103 L104 D105 N106 G107 K108 K114 V121 R125 Y126 Y127 W130 T141 T145 F146 N147 K150 K151 E152 V156 C157 G158 Q159 I160 I161
P162 W163 N164 F165 P166 L167 L168 W172 K173 I174 G175 P176 A177 I178 A179 C180 G181 N182 T183 V184 V185 L186 K187 E190 Q191 T192 P193 L194 L197 A200 S201 L202 F208 V212 I213 N214 V215 F219 G224 D234 K235 V236 A237 F238 T239 G240 V244 T247 I248
L249 K258 K259 V260 T261 L262 E263 L264 K267 S268 P269 N270 I271 V272 F273 E274 D275 A276 A281 W284 V285 N286 F287 G288 I289 F290 F291 N292 H293 G294 Q295 G296 C297 G300 S301 R302 V303 Y304 V305 Q306 E307 S308 I309 K312 F313 K316 E319 Q322 LYS ASN VAL
VAL GLY D328 P329 G337 P338 Q339 V340 S341 K342 V343 Q344 F345 I348 I352 Q353 K356 D357 A358 G365 G366 K367 R368 K369 G370 D371 K372 G373 Y374 F375 I376 E377 P378 T379 I380 T385 M388 K389 I390 V391 K392 E393 E394 I395 F396 G400 S401 I402 A403 K404 F405 K406
T407 K408 E409 D410 A411 T412 K413 L414 G415 N416 A417 S418 T419 Y420 G421 A425 T428 L431 N432 T433 E436 V437 S438 N439 A440 L441 G444 T445 V446 T450 Y451 H455 H456 Q457 G462 Y463 K464 E465 R470 E471 L472 G473 E474 D475 A476 L477 T481 Q482 T483 K484
I488 R489 L490 G491 ASP ALA LEU PHE GLY

4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 4	Depositor
Cell constants a, b, c, α, β, γ	157.18Å 157.18Å 164.62Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.70 – 3.18 49.70 – 3.18	Depositor EDS
% Data completeness (in resolution range)	99.5 (49.70-3.18) 99.5 (49.70-3.18)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.27 (at 3.19Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.233 , 0.281 0.233 , 0.280	Depositor DCC
R_{free} test set	1692 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	79.3	Xtriage
Anisotropy	0.517	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 53.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.009 for l,-k,h 0.014 for -l,-k,-h 0.008 for -h,-l,-k 0.005 for -h,l,k 0.458 for -h,k,-l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	13484	wwPDB-VP
Average B, all atoms (Å^2)	83.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.63% 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	0.52	1/3484 (0.0%)	0.78	4/4716 (0.1%)
1	B	0.55	0/3554	0.74	0/4817
1	C	0.55	2/3076 (0.1%)	0.75	0/4170
1	D	0.55	1/3634 (0.0%)	0.73	2/4917 (0.0%)
All	All	0.54	4/13748 (0.0%)	0.75	6/18620 (0.0%)

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	B	0	2

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	65	ARG	CZ-NH1	6.17	1.41	1.33
1	C	172	TRP	CB-CG	-5.99	1.39	1.50
1	C	485	THR	CB-CG2	5.23	1.69	1.52
1	D	377	GLU	CD-OE1	-5.09	1.20	1.25

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	65	ARG	NE-CZ-NH1	11.13	125.87	120.30
1	A	28	LYS	CD-CE-NZ	9.54	133.64	111.70
1	A	232	ASP	CB-CG-OD1	6.48	124.13	118.30
1	A	429	LYS	CD-CE-NZ	-5.49	99.07	111.70
1	D	431	LEU	CA-CB-CG	5.28	127.44	115.30
1	D	392	LYS	CD-CE-NZ	-5.11	99.96	111.70

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	276	ALA	Peptide
1	B	277	ASP	Peptide

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	3418	0	3422	216	1
1	B	3485	0	3457	194	1
1	C	3016	0	3011	175	0
1	D	3565	0	3557	198	0
All	All	13484	0	13447	754	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 28.

All (754) 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:D:356:LYS:NZ	1:D:357:ASP:OD1	1.74	1.20
1:D:353:GLN:HG3	1:D:356:LYS:CE	1.77	1.15
1:B:343:VAL:O	1:B:347:ARG:HD3	1.50	1.09
1:D:353:GLN:HG3	1:D:356:LYS:HE3	1.28	1.08
1:D:353:GLN:CG	1:D:356:LYS:HE3	1.84	1.08
1:A:416:ASN:HD22	1:A:442:LYS:HD2	1.20	1.06
1:A:33:LYS:NZ	1:B:51:GLU:OE2	1.91	1.02
1:A:102:GLU:HG3	1:A:167:LEU:HD12	1.44	0.97
1:D:353:GLN:HG3	1:D:356:LYS:NZ	1.78	0.97
1:C:141:THR:OG1	1:C:147:ASN:OD1	1.83	0.96
1:B:163:TRP:HZ3	1:B:295:GLN:HG2	1.28	0.96
1:C:39:ASN:HB2	1:C:46:ILE:HD11	1.48	0.93
1:B:163:TRP:CZ3	1:B:295:GLN:HG2	2.04	0.92
1:B:343:VAL:HG12	1:B:347:ARG:HE	1.33	0.92
1:D:267:LYS:NZ	1:D:301:SER:OG	2.00	0.92
1:D:353:GLN:OE1	1:D:356:LYS:HE2	1.69	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:154:ILE:HA	1:A:482:GLN:HE21	1.34	0.92
1:C:165:PHE:HB3	1:C:168:LEU:HB3	1.53	0.91
1:D:267:LYS:HE3	1:D:301:SER:OG	1.70	0.91
1:B:47:THR:HG22	1:B:48:GLN:H	1.36	0.91
1:B:96:ASP:OD1	1:B:114:LYS:NZ	2.03	0.90
1:C:256:ASN:OD1	1:C:258:LYS:NZ	2.04	0.90
1:B:141:THR:OG1	1:C:457:GLN:OE1	1.88	0.90
1:A:79:ASN:HA	1:A:82:LYS:HB2	1.54	0.89
1:D:267:LYS:CE	1:D:301:SER:OG	2.20	0.89
1:D:353:GLN:OE1	1:D:356:LYS:CE	2.20	0.89
1:A:35:PHE:O	1:A:48:GLN:NE2	2.06	0.88
1:D:353:GLN:HG3	1:D:356:LYS:HZ1	1.32	0.88
1:A:18:THR:HG22	1:A:49:VAL:HG13	1.55	0.88
1:B:142:THR:HG21	1:B:147:ASN:HD21	1.35	0.88
1:B:256:ASN:OD1	1:B:258:LYS:NZ	2.08	0.87
1:A:35:PHE:C	1:A:48:GLN:NE2	2.28	0.86
1:D:65:ARG:NH2	1:D:234:ASP:OD2	2.09	0.86
1:A:141:THR:OG1	1:A:147:ASN:ND2	2.07	0.86
1:B:338:PRO:HB3	1:B:375:PHE:CE1	2.10	0.86
1:C:34:THR:HG22	1:C:50:HIS:CD2	2.11	0.86
1:D:96:ASP:OD1	1:D:114:LYS:NZ	2.11	0.84
1:A:35:PHE:C	1:A:48:GLN:HE21	1.82	0.83
1:A:150:LYS:NZ	1:D:439:ASN:OD1	2.12	0.83
1:B:304:TYR:HE2	1:B:414:LEU:HB3	1.44	0.83
1:A:28:LYS:HG3	1:A:50:HIS:CD2	2.14	0.83
1:A:19:GLY:HA2	1:A:50:HIS:CD2	2.14	0.82
1:A:159:GLN:OE1	1:A:173:LYS:HB3	1.80	0.81
1:D:353:GLN:CG	1:D:356:LYS:CE	2.49	0.81
1:D:471:GLU:O	1:D:476:ALA:HB2	1.81	0.81
1:D:173:LYS:NZ	1:D:471:GLU:OE2	2.10	0.81
1:A:188:THR:HG21	1:A:193:PRO:HA	1.63	0.80
1:A:306:GLN:NE2	1:A:406:LYS:O	2.13	0.80
1:A:393:GLU:HG2	1:A:394:GLU:H	1.45	0.80
1:A:461:GLY:HA3	1:A:470:ARG:HD3	1.61	0.80
1:C:159:GLN:HB2	1:C:186:LEU:HD12	1.62	0.80
1:B:142:THR:HB	1:B:145:THR:OG1	1.82	0.80
1:A:159:GLN:HB2	1:A:186:LEU:HD12	1.64	0.79
1:C:18:THR:HG22	1:C:49:VAL:HG13	1.62	0.79
1:C:46:ILE:HG22	1:C:47:THR:HG22	1.63	0.79
1:D:406:LYS:HD3	1:D:410:ASP:OD2	1.82	0.79
1:C:148:TYR:HE2	1:C:150:LYS:HE3	1.48	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:144:ASP:HB2	1:A:490:LEU:HD13	1.65	0.79
1:C:28:LYS:HE3	1:C:50:HIS:CE1	2.17	0.78
1:A:462:GLY:HA3	1:A:466:SER:HB2	1.66	0.77
1:B:145:THR:HG22	1:B:489:ARG:HA	1.65	0.77
1:D:46:ILE:HG22	1:D:47:THR:HG22	1.67	0.77
1:D:295:GLN:NE2	1:D:339:GLN:OE1	2.17	0.77
1:A:16:GLN:HB2	1:A:17:PRO:HD2	1.67	0.77
1:B:307:GLU:HG2	1:B:404:LYS:HD2	1.67	0.77
1:C:430:ASN:HB3	1:C:433:THR:HB	1.65	0.76
1:A:39:ASN:HD22	1:A:104:LEU:HD12	1.51	0.76
1:D:103:SER:OG	1:D:108:LYS:O	2.02	0.76
1:D:28:LYS:HB3	1:D:50:HIS:CD2	2.20	0.76
1:D:304:TYR:HE2	1:D:414:LEU:HB3	1.51	0.75
1:D:425:ALA:HB2	1:D:451:TYR:HD2	1.52	0.75
1:B:178:ILE:HG13	1:B:213:ILE:HD11	1.67	0.75
1:D:368:ARG:NH1	1:D:371:ASP:O	2.19	0.75
1:A:65:ARG:NH1	1:A:232:ASP:OD1	2.18	0.75
1:A:144:ASP:OD1	1:A:145:THR:N	2.19	0.75
1:D:444:GLY:HA3	1:D:470:ARG:HH12	1.52	0.75
1:A:416:ASN:HB2	1:A:442:LYS:HB2	1.69	0.74
1:B:461:GLY:HA3	1:B:470:ARG:HE	1.52	0.74
1:D:367:LYS:HG3	1:D:377:GLU:OE1	1.87	0.74
1:C:31:GLU:HB3	1:C:33:LYS:HG3	1.67	0.74
1:C:16:GLN:HG2	1:C:17:PRO:HD3	1.69	0.74
1:D:432:ASN:O	1:D:436:GLU:HG3	1.87	0.74
1:B:456:HIS:HA	1:B:472:LEU:HG	1.68	0.74
1:B:302:ARG:HB2	1:B:304:TYR:HE1	1.50	0.74
1:C:161:ILE:HD11	1:C:186:LEU:HD11	1.70	0.74
1:B:65:ARG:HH11	1:B:156:VAL:HG23	1.53	0.73
1:A:106:ASN:ND2	1:A:163:TRP:O	2.21	0.73
1:C:13:LYS:HG2	1:C:14:TYR:HD1	1.52	0.73
1:B:470:ARG:HD2	1:C:483:THR:HB	1.69	0.73
1:C:262:LEU:HD12	1:C:264:LEU:HD21	1.69	0.73
1:B:421:GLY:O	1:B:463:TYR:HB2	1.88	0.73
1:D:267:LYS:HE3	1:D:301:SER:CB	2.20	0.72
1:A:72:TRP:HZ3	1:A:182:ASN:C	1.93	0.72
1:D:191:GLN:OE1	1:D:191:GLN:N	2.22	0.72
1:A:46:ILE:HG22	1:A:47:THR:HG22	1.70	0.72
1:C:470:ARG:O	1:C:479:ASN:ND2	2.23	0.72
1:D:425:ALA:HB2	1:D:451:TYR:CD2	2.25	0.72
1:A:31:GLU:OE2	1:A:53:THR:OG1	2.07	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:282:ILE:HG22	1:A:313:PHE:CE1	2.25	0.71
1:B:246:ARG:NH2	1:C:255:SER:O	2.22	0.71
1:C:72:TRP:HZ3	1:C:75:GLU:HG2	1.55	0.71
1:C:21:PHE:CD2	1:C:200:ALA:HB1	2.25	0.71
1:D:367:LYS:N	1:D:377:GLU:OE1	2.20	0.71
1:A:165:PHE:HB3	1:A:168:LEU:HB3	1.73	0.71
1:A:105:ASP:HB2	1:A:194:LEU:HD12	1.73	0.70
1:D:455:HIS:CE1	1:D:457:GLN:HG3	2.27	0.70
1:C:106:ASN:ND2	1:C:163:TRP:O	2.24	0.70
1:B:338:PRO:HB3	1:B:375:PHE:HE1	1.57	0.70
1:A:163:TRP:CZ3	1:A:295:GLN:OE1	2.45	0.69
1:A:286:ASN:HB3	1:A:317:PHE:HE1	1.56	0.69
1:A:34:THR:HB	1:A:48:GLN:OE1	1.92	0.69
1:B:142:THR:CG2	1:B:147:ASN:HD21	2.03	0.69
1:D:90:LEU:HB3	1:D:202:LEU:HD22	1.73	0.69
1:A:19:GLY:HA2	1:A:50:HIS:HD2	1.53	0.69
1:D:353:GLN:CD	1:D:356:LYS:CE	2.60	0.69
1:D:353:GLN:CD	1:D:356:LYS:HE3	2.12	0.69
1:B:425:ALA:HB2	1:B:451:TYR:CD1	2.27	0.69
1:B:383:ASN:O	1:B:383:ASN:ND2	2.24	0.69
1:D:274:GLU:HB3	1:D:306:GLN:OE1	1.93	0.69
1:B:425:ALA:HB2	1:B:451:TYR:HD1	1.56	0.69
1:D:163:TRP:CE3	1:D:340:VAL:HG21	2.27	0.69
1:D:293:HIS:HB2	1:D:295:GLN:HG3	1.75	0.69
1:B:304:TYR:CE2	1:B:414:LEU:HB3	2.29	0.68
1:C:464:LYS:HG3	1:C:465:GLU:H	1.59	0.68
1:D:353:GLN:OE1	1:D:356:LYS:HE3	1.92	0.68
1:B:343:VAL:CG1	1:B:347:ARG:HE	2.07	0.68
1:A:352:ILE:HD11	1:A:379:THR:HG21	1.76	0.68
1:C:231:MET:O	1:C:256:ASN:ND2	2.26	0.68
1:C:268:SER:HB2	1:C:300:GLY:HA2	1.76	0.67
1:C:13:LYS:HG2	1:C:14:TYR:CD1	2.28	0.67
1:C:98:LEU:HD22	1:C:198:VAL:HG21	1.76	0.67
1:C:481:THR:HG22	1:C:482:GLN:H	1.59	0.67
1:A:154:ILE:HA	1:A:482:GLN:NE2	2.09	0.67
1:A:28:LYS:HG3	1:A:50:HIS:CE1	2.30	0.67
1:C:305:VAL:HB	1:C:404:LYS:NZ	2.09	0.67
1:D:31:GLU:OE1	1:D:33:LYS:NZ	2.26	0.67
1:D:345:PHE:HD1	1:D:376:ILE:HD11	1.60	0.67
1:D:304:TYR:CE2	1:D:414:LEU:HB3	2.28	0.67
1:B:46:ILE:O	1:B:47:THR:OG1	2.12	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:267:LYS:HE3	1:A:392:LYS:HA	1.77	0.66
1:D:274:GLU:HA	1:D:309:ILE:HD11	1.77	0.66
1:B:410:ASP:OD1	1:B:410:ASP:N	2.26	0.66
1:B:163:TRP:CZ3	1:B:340:VAL:HG21	2.31	0.65
1:A:39:ASN:OD1	1:A:42:ASP:N	2.29	0.65
1:A:489:ARG:HD3	1:A:490:LEU:HB2	1.78	0.65
1:D:212:VAL:HG12	1:D:213:ILE:HG13	1.78	0.65
1:C:162:PRO:HD3	1:C:239:THR:HB	1.78	0.65
1:A:112:MET:SD	1:A:112:MET:N	2.70	0.64
1:A:110:ILE:HD12	1:A:110:ILE:H	1.61	0.64
1:D:106:ASN:ND2	1:D:192:THR:HG21	2.11	0.64
1:A:28:LYS:HG3	1:A:50:HIS:NE2	2.13	0.64
1:B:281:ALA:O	1:B:285:VAL:HG12	1.97	0.64
1:A:28:LYS:NZ	1:A:50:HIS:ND1	2.43	0.64
1:A:162:PRO:HD3	1:A:239:THR:HB	1.80	0.64
1:D:342:LYS:HA	1:D:345:PHE:HB3	1.78	0.64
1:C:20:LEU:N	1:C:27:VAL:O	2.31	0.64
1:C:190:GLU:HG3	1:C:191:GLN:OE1	1.98	0.64
1:D:54:GLU:CD	1:D:54:GLU:H	2.00	0.64
1:B:52:ALA:HA	1:B:56:ASP:OD2	1.97	0.64
1:B:212:VAL:HG12	1:B:213:ILE:HG13	1.79	0.64
1:B:343:VAL:HG12	1:B:347:ARG:NE	2.11	0.64
1:C:34:THR:HA	1:C:50:HIS:HA	1.80	0.64
1:C:256:ASN:CG	1:C:258:LYS:NZ	2.51	0.64
1:C:281:ALA:HA	1:C:427:HIS:HD2	1.61	0.64
1:A:28:LYS:NZ	1:A:50:HIS:CE1	2.66	0.64
1:D:145:THR:HB	1:D:489:ARG:HA	1.79	0.64
1:D:236:VAL:HG13	1:D:260:VAL:HG13	1.80	0.64
1:B:162:PRO:HD2	1:B:169:MET:HG3	1.78	0.63
1:C:461:GLY:HA3	1:C:470:ARG:HG2	1.79	0.63
1:D:249:LEU:HD13	1:D:262:LEU:HD11	1.78	0.63
1:D:80:ARG:NH2	1:D:179:ALA:O	2.30	0.63
1:C:243:VAL:O	1:C:247:THR:HG23	1.99	0.63
1:D:281:ALA:O	1:D:285:VAL:HG12	1.98	0.63
1:B:147:ASN:OD1	1:B:487:SER:OG	2.12	0.63
1:B:167:LEU:HD11	1:B:195:GLY:HA3	1.79	0.63
1:A:385:THR:O	1:A:388:MET:HE1	1.99	0.63
1:D:372:LYS:H	1:D:372:LYS:HD3	1.64	0.63
1:A:286:ASN:OD1	1:A:287:PHE:N	2.31	0.63
1:C:410:ASP:HA	1:C:413:LYS:HG2	1.80	0.63
1:D:105:ASP:HB2	1:D:194:LEU:HD12	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:24:ASN:O	1:B:204:LYS:NZ	2.28	0.63
1:C:159:GLN:HE22	1:C:480:TYR:HE2	1.46	0.62
1:C:262:LEU:HD12	1:C:264:LEU:HD11	1.80	0.62
1:A:395:ILE:HD12	1:A:399:VAL:HG12	1.81	0.62
1:A:163:TRP:HZ3	1:A:295:GLN:OE1	1.82	0.62
1:A:242:THR:HG23	1:A:264:LEU:HD13	1.81	0.62
1:C:161:ILE:HD11	1:C:186:LEU:HD21	1.81	0.62
1:B:295:GLN:HE22	1:B:339:GLN:HE21	1.47	0.62
1:C:110:ILE:H	1:C:110:ILE:HD12	1.65	0.62
1:C:266:GLY:HA3	1:C:420:TYR:CE1	2.35	0.62
1:A:489:ARG:HB2	1:D:450:THR:OG1	2.00	0.62
1:B:462:GLY:N	1:B:470:ARG:HH21	1.98	0.62
1:C:102:GLU:OE1	1:C:167:LEU:HB2	2.00	0.62
1:A:442:LYS:HA	1:A:463:TYR:OH	1.99	0.61
1:D:72:TRP:CH2	1:D:178:ILE:HG23	2.35	0.61
1:B:163:TRP:CE3	1:B:340:VAL:HG21	2.35	0.61
1:B:412:ILE:O	1:B:416:ASN:HB2	2.01	0.61
1:C:158:GLY:C	1:C:159:GLN:HG2	2.19	0.61
1:C:413:LYS:HG3	1:C:414:LEU:HD23	1.82	0.61
1:A:28:LYS:HG3	1:A:50:HIS:CG	2.34	0.61
1:B:426:VAL:HG21	1:B:437:VAL:HG11	1.81	0.61
1:C:21:PHE:CE1	1:C:24:ASN:HA	2.35	0.61
1:A:36:ASP:N	1:A:48:GLN:HE21	1.97	0.61
1:A:228:SER:O	1:A:258:LYS:NZ	2.30	0.61
1:A:351:TYR:HE1	1:A:389:LYS:HG3	1.66	0.61
1:D:353:GLN:HA	1:D:356:LYS:HE3	1.83	0.61
1:B:483:THR:O	1:C:470:ARG:NH1	2.33	0.61
1:D:165:PHE:HB3	1:D:168:LEU:HB3	1.83	0.61
1:A:28:LYS:HZ2	1:A:50:HIS:CE1	2.19	0.60
1:B:463:TYR:HB3	1:B:464:LYS:HG3	1.82	0.60
1:D:365:GLY:HA3	1:D:379:THR:HG23	1.83	0.60
1:A:489:ARG:HD3	1:A:490:LEU:CB	2.31	0.60
1:A:79:ASN:HA	1:A:82:LYS:HE3	1.84	0.60
1:B:198:VAL:O	1:B:201:SER:OG	2.16	0.60
1:D:356:LYS:HD2	1:D:357:ASP:N	2.16	0.60
1:A:102:GLU:OE2	1:A:167:LEU:N	2.33	0.60
1:A:395:ILE:CD1	1:A:399:VAL:HG12	2.31	0.60
1:B:394:GLU:OE1	1:B:394:GLU:N	2.29	0.60
1:D:152:GLU:OE2	1:D:484:LYS:NZ	2.33	0.60
1:A:305:VAL:HG21	1:A:313:PHE:CD2	2.37	0.60
1:A:455:HIS:HB3	1:A:458:MET:HG3	1.84	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:72:TRP:NE1	1:C:212:VAL:HG22	2.16	0.60
1:B:31:GLU:OE1	1:B:33:LYS:NZ	2.35	0.59
1:C:272:VAL:HG22	1:C:427:HIS:HB2	1.84	0.59
1:A:346:ASP:O	1:A:349:MET:HG2	2.01	0.59
1:A:416:ASN:ND2	1:A:442:LYS:HD2	2.04	0.59
1:C:305:VAL:HG12	1:C:306:GLN:H	1.67	0.59
1:C:39:ASN:CB	1:C:46:ILE:HD11	2.28	0.59
1:C:47:THR:OG1	1:C:48:GLN:N	2.35	0.59
1:D:249:LEU:CD1	1:D:262:LEU:HD11	2.32	0.59
1:A:345:PHE:HE1	1:A:376:ILE:HG13	1.67	0.59
1:B:190:GLU:HG2	1:B:219:PHE:CD1	2.37	0.59
1:C:258:LYS:HE2	1:C:258:LYS:H	1.67	0.59
1:C:72:TRP:CZ3	1:C:75:GLU:HG2	2.37	0.59
1:C:256:ASN:CG	1:C:258:LYS:HZ3	2.01	0.59
1:A:47:THR:OG1	1:A:48:GLN:N	2.34	0.58
1:A:296:CYS:SG	1:A:299:ALA:HB2	2.43	0.58
1:D:385:THR:H	1:D:388:MET:HE3	1.67	0.58
1:B:65:ARG:NH1	1:B:234:ASP:OD2	2.37	0.58
1:B:405:PHE:CD2	1:B:411:ALA:HB2	2.38	0.58
1:A:82:LYS:HA	1:A:85:ASN:OD1	2.03	0.58
1:D:353:GLN:HA	1:D:356:LYS:HG3	1.84	0.58
1:D:406:LYS:NZ	1:D:410:ASP:OD2	2.34	0.58
1:A:385:THR:C	1:A:388:MET:HE1	2.24	0.58
1:B:278:ILE:HD12	1:B:279:ASP:H	1.68	0.58
1:A:28:LYS:HZ1	1:A:34:THR:CG2	2.17	0.58
1:A:153:PRO:O	1:A:482:GLN:NE2	2.37	0.58
1:B:79:ASN:OD1	1:B:82:LYS:NZ	2.18	0.58
1:C:269:PRO:HD2	1:C:424:ALA:HA	1.86	0.58
1:A:154:ILE:N	1:A:182:ASN:OD1	2.37	0.58
1:D:40:PRO:HB2	1:D:338:PRO:HB2	1.85	0.58
1:B:278:ILE:HD12	1:B:279:ASP:N	2.18	0.57
1:A:21:PHE:CD2	1:A:200:ALA:HB1	2.39	0.57
1:A:113:ALA:HA	1:A:117:ILE:HD13	1.86	0.57
1:B:80:ARG:NH2	1:B:179:ALA:O	2.36	0.57
1:A:141:THR:HG1	1:A:147:ASN:HD22	1.50	0.57
1:A:338:PRO:HB3	1:A:375:PHE:CE1	2.40	0.57
1:B:238:PHE:HB3	1:B:262:LEU:HD22	1.86	0.57
1:C:39:ASN:OD1	1:C:41:SER:N	2.37	0.57
1:A:152:GLU:OE1	1:A:484:LYS:NZ	2.33	0.57
1:B:65:ARG:HD2	1:B:232:ASP:OD2	2.04	0.57
1:B:236:VAL:HG12	1:B:260:VAL:HG22	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:72:TRP:HZ3	1:D:182:ASN:O	1.88	0.57
1:A:304:TYR:HE2	1:A:414:LEU:HD22	1.69	0.57
1:B:349:MET:SD	1:B:376:ILE:HD12	2.45	0.57
1:D:408:LYS:HD3	1:D:433:THR:HG22	1.87	0.57
1:A:154:ILE:CA	1:A:482:GLN:HE21	2.12	0.57
1:A:244:VAL:O	1:A:247:THR:HB	2.04	0.57
1:C:52:ALA:HA	1:C:56:ASP:OD2	2.03	0.57
1:A:271:ILE:HD13	1:A:411:ALA:HB1	1.86	0.56
1:D:352:ILE:HG21	1:D:366:GLY:HA2	1.85	0.56
1:B:483:THR:OG1	1:C:470:ARG:CZ	2.54	0.56
1:A:339:GLN:OE1	1:A:339:GLN:N	2.38	0.56
1:C:37:VAL:HG23	1:C:46:ILE:HB	1.87	0.56
1:C:170:TRP:O	1:C:174:ILE:HG13	2.05	0.56
1:D:29:GLY:H	1:D:50:HIS:HD2	1.52	0.56
1:D:290:PHE:HZ	1:D:380:ILE:HD11	1.70	0.56
1:A:159:GLN:HE21	1:A:184:VAL:HB	1.70	0.56
1:A:48:GLN:OE1	1:A:49:VAL:N	2.38	0.56
1:D:75:GLU:HG3	1:D:76:THR:N	2.20	0.56
1:B:241:SER:OG	1:B:244:VAL:HG23	2.06	0.56
1:D:444:GLY:CA	1:D:470:ARG:HH12	2.16	0.56
1:B:471:GLU:O	1:B:476:ALA:HB2	2.06	0.56
1:A:221:LYS:HE3	1:B:222:VAL:HA	1.87	0.56
1:A:304:TYR:CE2	1:A:414:LEU:HB3	2.41	0.56
1:D:158:GLY:O	1:D:236:VAL:HA	2.06	0.56
1:D:159:GLN:HG3	1:D:173:LYS:HB3	1.87	0.56
1:A:307:GLU:N	1:A:405:PHE:O	2.36	0.56
1:C:103:SER:HB3	1:C:108:LYS:O	2.05	0.56
1:D:416:ASN:O	1:D:418:SER:N	2.39	0.56
1:C:170:TRP:CZ3	1:C:174:ILE:HG12	2.41	0.55
1:C:305:VAL:O	1:C:404:LYS:HD3	2.07	0.55
1:B:293:HIS:CD2	1:B:337:GLY:H	2.24	0.55
1:B:455:HIS:CE1	1:B:457:GLN:HG3	2.42	0.55
1:C:302:ARG:NH1	1:C:418:SER:HB2	2.22	0.55
1:B:72:TRP:NE1	1:B:75:GLU:OE1	2.39	0.55
1:B:107:GLY:HA3	1:B:338:PRO:HG2	1.89	0.55
1:B:463:TYR:CE1	1:C:482:GLN:OE1	2.59	0.55
1:B:102:GLU:OE1	1:B:166:PRO:HG2	2.07	0.55
1:C:302:ARG:HH12	1:C:418:SER:HB2	1.72	0.55
1:D:172:TRP:O	1:D:176:PRO:HD2	2.07	0.55
1:C:305:VAL:HB	1:C:404:LYS:HZ2	1.71	0.55
1:A:353:GLN:NE2	1:A:357:ASP:OD2	2.39	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:459:PRO:HA	1:A:472:LEU:HB3	1.89	0.54
1:B:47:THR:HG22	1:B:48:GLN:N	2.15	0.54
1:B:463:TYR:HE1	1:C:482:GLN:OE1	1.88	0.54
1:D:402:ILE:N	1:D:402:ILE:HD12	2.21	0.54
1:A:288:GLY:HA2	1:A:452:ASN:HD22	1.73	0.54
1:A:412:ILE:HD11	1:A:437:VAL:HG13	1.89	0.54
1:C:159:GLN:HG3	1:C:184:VAL:HG23	1.89	0.54
1:A:289:ILE:HG12	1:A:400:CYS:HB2	1.88	0.54
1:B:277:ASP:OD2	1:B:280:ASN:OD1	2.25	0.54
1:C:126:TYR:HB2	1:C:456:HIS:CD2	2.42	0.54
1:C:198:VAL:O	1:C:201:SER:OG	2.17	0.54
1:A:278:ILE:HD11	1:A:309:ILE:HD12	1.90	0.54
1:D:72:TRP:HH2	1:D:178:ILE:HG23	1.71	0.54
1:D:244:VAL:O	1:D:247:THR:HB	2.08	0.54
1:B:393:GLU:HG2	1:B:394:GLU:OE1	2.06	0.54
1:B:484:LYS:HA	1:C:470:ARG:HH22	1.73	0.54
1:B:15:GLU:O	1:B:17:PRO:HD3	2.07	0.54
1:D:39:ASN:OD1	1:D:41:SER:OG	2.20	0.54
1:D:21:PHE:CG	1:D:200:ALA:HB1	2.43	0.54
1:C:33:LYS:NZ	1:D:51:GLU:OE2	2.38	0.53
1:B:190:GLU:HG2	1:B:219:PHE:HD1	1.73	0.53
1:B:263:GLU:OE2	1:B:471:GLU:HB2	2.09	0.53
1:B:16:GLN:NE2	1:B:194:LEU:HB3	2.22	0.53
1:B:450:THR:HB	1:C:489:ARG:HB2	1.90	0.53
1:D:52:ALA:HA	1:D:56:ASP:OD2	2.09	0.53
1:A:39:ASN:HD22	1:A:104:LEU:CD1	2.20	0.53
1:C:258:LYS:HE2	1:C:258:LYS:N	2.23	0.53
1:C:305:VAL:HG12	1:C:306:GLN:N	2.24	0.53
1:A:277:ASP:OD2	1:A:280:ASN:ND2	2.36	0.53
1:A:288:GLY:O	1:A:452:ASN:ND2	2.42	0.52
1:B:342:LYS:O	1:B:346:ASP:N	2.34	0.52
1:C:65:ARG:NH1	1:C:156:VAL:HG23	2.24	0.52
1:D:353:GLN:CG	1:D:356:LYS:HZ1	2.14	0.52
1:D:456:HIS:O	1:D:473:GLY:N	2.41	0.52
1:A:65:ARG:NH2	1:A:234:ASP:OD2	2.42	0.52
1:A:277:ASP:OD2	1:A:280:ASN:HB2	2.09	0.52
1:B:291:PHE:O	1:B:292:ASN:ND2	2.43	0.52
1:A:18:THR:CG2	1:A:49:VAL:HG13	2.33	0.52
1:C:195:GLY:O	1:C:198:VAL:HG22	2.10	0.52
1:B:292:ASN:ND2	1:B:296:CYS:SG	2.77	0.52
1:B:249:LEU:HD12	1:B:262:LEU:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:303:VAL:C	1:D:304:TYR:HD1	2.13	0.52
1:A:489:ARG:HH11	1:A:490:LEU:HB3	1.74	0.52
1:C:180:CYS:SG	1:C:477:LEU:HD23	2.49	0.52
1:C:422:LEU:HD21	1:C:460:PHE:HZ	1.74	0.52
1:D:65:ARG:NH2	1:D:156:VAL:HG23	2.25	0.52
1:A:450:THR:HG1	1:A:453:THR:HG1	1.54	0.52
1:D:47:THR:OG1	1:D:48:GLN:N	2.42	0.52
1:B:92:GLU:HB2	1:B:121:VAL:HG11	1.92	0.52
1:D:79:ASN:HA	1:D:82:LYS:HE3	1.92	0.52
1:D:107:GLY:C	1:D:108:LYS:HE2	2.31	0.52
1:D:407:THR:HG22	1:D:409:GLU:H	1.75	0.52
1:D:289:ILE:HD13	1:D:301:SER:HA	1.92	0.51
1:C:28:LYS:HE3	1:C:50:HIS:NE2	2.26	0.51
1:D:303:VAL:O	1:D:402:ILE:HA	2.11	0.51
1:B:280:ASN:OD1	1:B:280:ASN:N	2.41	0.51
1:A:163:TRP:CH2	1:A:295:GLN:OE1	2.64	0.51
1:B:361:THR:H	1:B:383:ASN:HB3	1.74	0.51
1:B:462:GLY:O	1:B:470:ARG:NH2	2.43	0.51
1:A:238:PHE:HB3	1:A:262:LEU:HD23	1.93	0.51
1:B:47:THR:CG2	1:B:48:GLN:H	2.18	0.51
1:D:353:GLN:CG	1:D:356:LYS:NZ	2.65	0.51
1:A:188:THR:CG2	1:A:193:PRO:HA	2.38	0.51
1:C:188:THR:HG21	1:C:193:PRO:HA	1.93	0.51
1:A:21:PHE:CZ	1:A:24:ASN:HA	2.46	0.50
1:A:282:ILE:HG22	1:A:313:PHE:HE1	1.71	0.50
1:A:349:MET:HA	1:A:352:ILE:HG22	1.93	0.50
1:B:439:ASN:OD1	1:C:150:LYS:NZ	2.33	0.50
1:A:105:ASP:CB	1:A:194:LEU:HD12	2.40	0.50
1:C:123:CYS:HG	1:C:172:TRP:HD1	1.59	0.50
1:D:68:PHE:O	1:D:73:ARG:HG2	2.11	0.50
1:A:126:TYR:CE1	1:A:130:TRP:CD1	2.99	0.50
1:B:102:GLU:HG2	1:B:167:LEU:HD13	1.93	0.50
1:D:267:LYS:HD3	1:D:394:GLU:HA	1.93	0.50
1:D:421:GLY:O	1:D:463:TYR:HB2	2.11	0.50
1:A:16:GLN:HB2	1:A:17:PRO:CD	2.40	0.50
1:B:191:GLN:OE1	1:B:191:GLN:N	2.35	0.50
1:C:33:LYS:NZ	1:D:219:PHE:HE2	2.09	0.50
1:D:55:LYS:O	1:D:59:ILE:HG22	2.11	0.50
1:D:412:ILE:O	1:D:416:ASN:OD1	2.29	0.50
1:A:35:PHE:N	1:A:48:GLN:NE2	2.59	0.50
1:A:285:VAL:O	1:A:289:ILE:HG22	2.10	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:346:ASP:OD1	1:A:347:ARG:N	2.45	0.50
1:A:80:ARG:O	1:A:84:LEU:HD12	2.11	0.50
1:D:353:GLN:CA	1:D:356:LYS:HE3	2.42	0.50
1:C:174:ILE:HD12	1:C:175:GLY:N	2.27	0.50
1:A:154:ILE:HG12	1:A:482:GLN:HG3	1.94	0.49
1:C:428:THR:HG21	1:C:433:THR:HG22	1.93	0.49
1:A:35:PHE:H	1:A:48:GLN:NE2	2.10	0.49
1:A:348:ILE:HG21	1:A:376:ILE:CD1	2.42	0.49
1:D:344:GLN:O	1:D:348:ILE:HG13	2.13	0.49
1:C:462:GLY:HA3	1:C:466:SER:HB2	1.93	0.49
1:D:87:LEU:HD22	1:D:208:PHE:HE2	1.76	0.49
1:A:281:ALA:O	1:A:285:VAL:HG22	2.12	0.49
1:B:412:ILE:HD11	1:B:437:VAL:HG22	1.95	0.49
1:A:428:THR:OG1	1:A:429:LYS:N	2.45	0.49
1:D:23:ASN:O	1:D:25:GLU:HG2	2.11	0.49
1:A:72:TRP:CZ3	1:A:181:GLY:C	2.86	0.49
1:A:33:LYS:HE3	1:B:33:LYS:HD2	1.94	0.49
1:B:413:LYS:HE2	1:B:413:LYS:HA	1.95	0.49
1:C:266:GLY:HA3	1:C:420:TYR:CD1	2.47	0.49
1:B:17:PRO:HB2	1:B:26:PHE:CE2	2.47	0.49
1:B:428:THR:OG1	1:B:430:ASN:HB3	2.12	0.49
1:C:405:PHE:CE2	1:C:411:ALA:HB2	2.48	0.49
1:D:385:THR:H	1:D:388:MET:CE	2.24	0.49
1:A:117:ILE:HD12	1:A:117:ILE:H	1.77	0.48
1:B:489:ARG:HB2	1:C:450:THR:HB	1.95	0.48
1:B:307:GLU:CG	1:B:404:LYS:HD2	2.39	0.48
1:C:289:ILE:HD13	1:C:300:GLY:C	2.34	0.48
1:C:409:GLU:O	1:C:412:ILE:HG13	2.13	0.48
1:C:43:GLU:N	1:C:43:GLU:OE1	2.46	0.48
1:C:98:LEU:HD11	1:C:202:LEU:HD11	1.95	0.48
1:D:102:GLU:OE1	1:D:166:PRO:HG2	2.13	0.48
1:A:195:GLY:O	1:A:198:VAL:HG12	2.13	0.48
1:B:173:LYS:NZ	1:B:471:GLU:OE1	2.45	0.48
1:C:161:ILE:CD1	1:C:186:LEU:HD21	2.43	0.48
1:D:342:LYS:HB3	1:D:374:TYR:HE2	1.79	0.48
1:D:474:GLU:O	1:D:477:LEU:HB2	2.13	0.48
1:A:352:ILE:CD1	1:A:379:THR:HG21	2.43	0.48
1:C:405:PHE:CD2	1:C:411:ALA:HB2	2.48	0.48
1:D:345:PHE:CD1	1:D:376:ILE:HD11	2.45	0.48
1:A:68:PHE:CE2	1:A:155:GLY:HA2	2.49	0.48
1:A:158:GLY:O	1:A:236:VAL:HA	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:237:ALA:HA	1:C:261:THR:O	2.14	0.48
1:C:305:VAL:C	1:C:404:LYS:HD3	2.34	0.48
1:D:413:LYS:O	1:D:417:ALA:HB2	2.13	0.48
1:A:484:LYS:HE3	1:D:438:SER:O	2.14	0.48
1:C:305:VAL:HB	1:C:404:LYS:HZ3	1.79	0.48
1:B:145:THR:CG2	1:B:489:ARG:HD2	2.43	0.48
1:A:191:GLN:HB3	1:A:340:VAL:CG2	2.44	0.47
1:A:388:MET:HB3	1:A:390:ILE:HG22	1.95	0.47
1:B:95:ILE:HG23	1:B:117:ILE:HB	1.94	0.47
1:C:82:LYS:HA	1:C:85:ASN:HD21	1.79	0.47
1:C:102:GLU:OE1	1:C:166:PRO:HG2	2.14	0.47
1:D:309:ILE:HD12	1:D:309:ILE:N	2.28	0.47
1:A:305:VAL:HG21	1:A:313:PHE:HD2	1.77	0.47
1:A:405:PHE:CD2	1:A:411:ALA:HB2	2.49	0.47
1:B:42:ASP:OD1	1:B:44:SER:HB3	2.13	0.47
1:C:281:ALA:HA	1:C:427:HIS:CD2	2.46	0.47
1:D:102:GLU:CD	1:D:166:PRO:HG2	2.35	0.47
1:D:289:ILE:HG23	1:D:290:PHE:CD1	2.49	0.47
1:A:379:THR:HB	1:A:399:VAL:HG23	1.96	0.47
1:B:190:GLU:CG	1:B:219:PHE:HA	2.44	0.47
1:B:458:MET:CE	1:C:487:SER:OG	2.62	0.47
1:D:106:ASN:HD22	1:D:192:THR:HG21	1.77	0.47
1:A:55:LYS:O	1:A:59:ILE:HG12	2.14	0.47
1:A:241:SER:OG	1:A:244:VAL:HG23	2.14	0.47
1:C:142:THR:OG1	1:C:143:PRO:HD3	2.14	0.47
1:A:430:ASN:HB3	1:A:433:THR:HB	1.96	0.47
1:D:38:ILE:HG22	1:D:45:VAL:HG22	1.97	0.47
1:A:393:GLU:HG2	1:A:394:GLU:N	2.23	0.47
1:B:103:SER:HB2	1:B:110:ILE:HD12	1.97	0.47
1:C:145:THR:HG22	1:C:489:ARG:HA	1.96	0.47
1:D:67:ALA:O	1:D:71:SER:HB3	2.14	0.47
1:D:288:GLY:HA2	1:D:451:TYR:CD1	2.49	0.47
1:D:307:GLU:HG2	1:D:308:SER:N	2.29	0.47
1:D:419:THR:HG23	1:D:420:TYR:CD1	2.49	0.47
1:D:406:LYS:CD	1:D:410:ASP:OD2	2.60	0.47
1:A:273:PHE:HA	1:A:306:GLN:HG3	1.97	0.47
1:B:51:GLU:HG3	1:B:52:ALA:N	2.30	0.47
1:B:132:ASP:OD1	1:B:132:ASP:N	2.48	0.47
1:B:277:ASP:OD1	1:B:278:ILE:N	2.47	0.47
1:B:306:GLN:HA	1:B:405:PHE:O	2.14	0.47
1:D:180:CYS:SG	1:D:481:THR:HG23	2.54	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:423:ALA:HA	1:B:445:THR:O	2.15	0.47
1:C:37:VAL:HG22	1:C:47:THR:O	2.16	0.47
1:B:291:PHE:HD2	1:B:452:ASN:HD22	1.64	0.46
1:C:117:ILE:O	1:C:121:VAL:HG23	2.14	0.46
1:A:269:PRO:HD2	1:A:423:ALA:O	2.15	0.46
1:A:342:LYS:O	1:A:345:PHE:HB3	2.16	0.46
1:B:21:PHE:CD2	1:B:200:ALA:HB1	2.50	0.46
1:B:65:ARG:NH1	1:B:156:VAL:HG23	2.25	0.46
1:B:471:GLU:O	1:B:471:GLU:HG3	2.15	0.46
1:D:163:TRP:CH2	1:D:396:PHE:HE2	2.32	0.46
1:D:392:LYS:NZ	1:D:420:TYR:H	2.13	0.46
1:D:405:PHE:CE2	1:D:411:ALA:HB2	2.51	0.46
1:A:98:LEU:HD22	1:A:198:VAL:HG11	1.97	0.46
1:B:338:PRO:HA	1:B:375:PHE:CD1	2.50	0.46
1:B:463:TYR:CE1	1:C:482:GLN:CD	2.88	0.46
1:C:113:ALA:O	1:C:117:ILE:HG12	2.15	0.46
1:A:235:LYS:NZ	1:A:237:ALA:HB2	2.30	0.46
1:B:14:TYR:CE1	1:B:16:GLN:HB2	2.51	0.46
1:D:28:LYS:HB3	1:D:50:HIS:NE2	2.29	0.46
1:D:72:TRP:CZ3	1:D:182:ASN:O	2.68	0.46
1:D:157:CYS:O	1:D:184:VAL:HA	2.16	0.46
1:A:379:THR:O	1:A:380:ILE:HD13	2.15	0.46
1:C:151:LYS:HB3	1:C:481:THR:HG21	1.98	0.46
1:B:190:GLU:HG2	1:B:219:PHE:HA	1.97	0.46
1:B:343:VAL:CG1	1:B:347:ARG:NE	2.77	0.46
1:C:191:GLN:OE1	1:C:191:GLN:N	2.44	0.46
1:C:244:VAL:O	1:C:248:ILE:HG12	2.15	0.46
1:D:33:LYS:HB2	1:D:51:GLU:HB3	1.97	0.46
1:D:272:VAL:HG21	1:D:313:PHE:CE2	2.50	0.46
1:D:390:ILE:HB	1:D:395:ILE:HD11	1.97	0.46
1:C:33:LYS:HZ2	1:D:219:PHE:HE2	1.64	0.45
1:C:198:VAL:O	1:C:201:SER:N	2.49	0.45
1:C:475:ASP:N	1:C:475:ASP:OD1	2.49	0.45
1:A:303:VAL:C	1:A:304:TYR:HD1	2.19	0.45
1:A:406:LYS:HD2	1:A:406:LYS:HA	1.74	0.45
1:B:277:ASP:OD2	1:B:280:ASN:ND2	2.49	0.45
1:A:349:MET:O	1:A:352:ILE:HG22	2.16	0.45
1:B:199:ALA:O	1:B:202:LEU:N	2.49	0.45
1:C:134:ILE:HD11	1:C:477:LEU:HD22	1.98	0.45
1:D:240:GLY:O	1:D:264:LEU:HA	2.16	0.45
1:D:274:GLU:HA	1:D:309:ILE:CD1	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:ASP:CA	1:A:48:GLN:HE21	2.30	0.45
1:A:126:TYR:CE2	1:A:457:GLN:HB3	2.51	0.45
1:C:159:GLN:HG3	1:C:184:VAL:CG2	2.47	0.45
1:A:90:LEU:HD12	1:A:206:ALA:HB2	1.99	0.45
1:A:225:ALA:O	1:A:229:SER:OG	2.35	0.45
1:B:90:LEU:HA	1:B:90:LEU:HD23	1.81	0.45
1:B:142:THR:HA	1:B:143:PRO:HD3	1.85	0.45
1:C:28:LYS:HD2	1:C:50:HIS:ND1	2.32	0.45
1:D:276:ALA:HB2	1:D:428:THR:HA	1.99	0.45
1:A:264:LEU:HD12	1:A:465:GLU:O	2.17	0.45
1:A:450:THR:OG1	1:A:453:THR:OG1	2.32	0.45
1:A:482:GLN:OE1	1:D:463:TYR:CE2	2.69	0.45
1:C:80:ARG:O	1:C:84:LEU:HD12	2.17	0.45
1:C:256:ASN:O	1:C:257:LEU:HB2	2.17	0.45
1:D:450:THR:HG22	1:D:451:TYR:N	2.31	0.45
1:A:268:SER:OG	1:A:299:ALA:N	2.50	0.45
1:B:51:GLU:OE2	1:B:219:PHE:HE2	2.00	0.45
1:C:144:ASP:O	1:C:490:LEU:HB2	2.16	0.45
1:C:298:CYS:SG	1:C:460:PHE:CE1	3.10	0.45
1:C:400:CYS:SG	1:C:401:SER:N	2.90	0.45
1:D:42:ASP:OD1	1:D:44:SER:OG	2.29	0.45
1:D:161:ILE:HG12	1:D:186:LEU:HD21	1.98	0.45
1:D:365:GLY:HA3	1:D:379:THR:HA	1.98	0.45
1:D:438:SER:CB	1:D:446:VAL:HG11	2.46	0.45
1:A:28:LYS:HZ1	1:A:34:THR:HG22	1.82	0.45
1:A:28:LYS:CG	1:A:50:HIS:CG	2.99	0.45
1:B:342:LYS:HA	1:B:345:PHE:HB3	1.99	0.45
1:C:435:ILE:HG13	1:C:436:GLU:N	2.31	0.45
1:D:159:GLN:HG3	1:D:173:LYS:CB	2.47	0.45
1:B:444:GLY:HA3	1:B:461:GLY:O	2.17	0.44
1:D:21:PHE:HB3	1:D:215:VAL:H	1.82	0.44
1:D:127:TYR:CD2	1:D:176:PRO:HD3	2.52	0.44
1:B:164:ASN:OD1	1:B:164:ASN:N	2.50	0.44
1:B:267:LYS:O	1:B:302:ARG:NH2	2.37	0.44
1:B:348:ILE:O	1:B:352:ILE:HG22	2.17	0.44
1:C:171:ALA:HA	1:C:174:ILE:HD11	1.97	0.44
1:B:105:ASP:HB2	1:B:194:LEU:HD12	1.99	0.44
1:C:24:ASN:ND2	1:C:210:PRO:HA	2.32	0.44
1:D:102:GLU:OE2	1:D:166:PRO:HG2	2.17	0.44
1:A:170:TRP:CZ3	1:A:174:ILE:HG13	2.52	0.44
1:A:305:VAL:O	1:A:404:LYS:HA	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:158:GLY:O	1:B:236:VAL:HA	2.18	0.44
1:B:462:GLY:HA3	1:B:466:SER:HB2	1.99	0.44
1:C:13:LYS:HZ2	1:C:14:TYR:HE1	1.64	0.44
1:C:289:ILE:HD13	1:C:300:GLY:O	2.17	0.44
1:A:22:ILE:HD11	1:A:216:ILE:HD11	1.98	0.44
1:A:353:GLN:HE22	1:A:357:ASP:CG	2.20	0.44
1:B:304:TYR:N	1:B:304:TYR:CD1	2.85	0.44
1:C:72:TRP:HE3	1:C:75:GLU:HB3	1.81	0.44
1:B:28:LYS:HG2	1:B:50:HIS:CD2	2.53	0.44
1:B:83:LEU:HD23	1:B:83:LEU:HA	1.77	0.44
1:B:443:ALA:O	1:C:484:LYS:HG3	2.18	0.44
1:C:420:TYR:OH	1:C:466:SER:HA	2.17	0.44
1:C:464:LYS:CG	1:C:465:GLU:H	2.29	0.44
1:A:456:HIS:HA	1:A:472:LEU:HG	2.00	0.44
1:C:17:PRO:O	1:C:28:LYS:NZ	2.47	0.44
1:D:464:LYS:HG3	1:D:465:GLU:H	1.82	0.44
1:C:31:GLU:O	1:D:36:ASP:HB2	2.17	0.44
1:A:38:ILE:HG22	1:A:45:VAL:HG12	2.00	0.44
1:A:105:ASP:CG	1:A:194:LEU:HD12	2.38	0.44
1:A:159:GLN:HB2	1:A:186:LEU:CD1	2.43	0.44
1:C:198:VAL:HG23	1:C:199:ALA:N	2.33	0.44
1:D:259:LYS:HD3	1:D:259:LYS:N	2.33	0.44
1:D:286:ASN:OD1	1:D:290:PHE:HD2	2.00	0.44
1:A:36:ASP:HA	1:A:48:GLN:HE21	1.82	0.43
1:A:80:ARG:HD3	1:A:178:ILE:O	2.18	0.43
1:B:103:SER:OG	1:B:108:LYS:O	2.18	0.43
1:B:167:LEU:N	1:B:167:LEU:HD12	2.33	0.43
1:B:288:GLY:HA2	1:B:451:TYR:CD2	2.52	0.43
1:B:382:SER:OG	1:B:383:ASN:N	2.52	0.43
1:A:21:PHE:CE1	1:A:24:ASN:HA	2.54	0.43
1:A:120:CYS:HB3	1:A:171:ALA:HB2	2.00	0.43
1:A:310:TYR:HB2	1:A:404:LYS:HE2	2.00	0.43
1:A:375:PHE:N	1:A:375:PHE:CD1	2.86	0.43
1:B:40:PRO:HB2	1:B:338:PRO:HB2	2.00	0.43
1:D:87:LEU:HD12	1:D:87:LEU:HA	1.84	0.43
1:A:48:GLN:OE1	1:A:48:GLN:C	2.57	0.43
1:B:14:TYR:HE1	1:B:16:GLN:HB2	1.83	0.43
1:C:174:ILE:HG13	1:C:174:ILE:H	1.64	0.43
1:C:420:TYR:HD1	1:C:421:GLY:N	2.17	0.43
1:C:451:TYR:CD1	1:C:452:ASN:N	2.86	0.43
1:D:87:LEU:HD22	1:D:208:PHE:CE2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:393:GLU:CG	1:A:394:GLU:H	2.25	0.43
1:B:447:TRP:HB3	1:B:450:THR:O	2.19	0.43
1:D:312:LYS:HB2	1:D:312:LYS:HE3	1.80	0.43
1:A:72:TRP:HZ3	1:A:182:ASN:O	2.00	0.43
1:A:384:VAL:HG12	1:A:388:MET:CE	2.48	0.43
1:B:304:TYR:N	1:B:304:TYR:HD1	2.16	0.43
1:C:447:TRP:HB3	1:C:450:THR:O	2.19	0.43
1:A:267:LYS:HG2	1:A:420:TYR:HB2	2.00	0.43
1:B:161:ILE:HD13	1:B:186:LEU:HD21	2.01	0.43
1:C:40:PRO:O	1:C:374:TYR:HB2	2.19	0.43
1:C:124:LEU:HD21	1:C:174:ILE:CD1	2.48	0.43
1:D:309:ILE:HD12	1:D:309:ILE:H	1.83	0.43
1:D:472:LEU:HD23	1:D:472:LEU:HA	1.80	0.43
1:A:118:SER:HA	1:A:121:VAL:HG23	2.00	0.43
1:A:395:ILE:HG21	1:A:399:VAL:HG11	2.00	0.43
1:B:102:GLU:CG	1:B:167:LEU:HD13	2.49	0.43
1:B:108:LYS:NZ	1:B:165:PHE:HD1	2.17	0.43
1:D:75:GLU:HG3	1:D:76:THR:H	1.82	0.43
1:A:475:ASP:OD1	1:A:475:ASP:N	2.52	0.43
1:B:157:CYS:HB2	1:B:184:VAL:HG12	2.01	0.43
1:D:69:GLU:O	1:D:71:SER:N	2.51	0.43
1:D:165:PHE:CE1	1:D:292:ASN:ND2	2.86	0.43
1:A:395:ILE:HD13	1:A:399:VAL:CG1	2.48	0.43
1:B:383:ASN:HD22	1:B:383:ASN:C	2.16	0.43
1:C:293:HIS:O	1:C:295:GLN:HG2	2.18	0.43
1:D:329:PRO:HG3	1:D:338:PRO:HD2	2.00	0.43
1:B:352:ILE:HD11	1:B:379:THR:HG21	2.00	0.42
1:B:394:GLU:OE1	1:B:420:TYR:CE2	2.72	0.42
1:D:353:GLN:CD	1:D:356:LYS:HE2	2.32	0.42
1:D:385:THR:HG22	1:D:388:MET:CE	2.49	0.42
1:A:20:LEU:N	1:A:27:VAL:O	2.52	0.42
1:C:241:SER:OG	1:C:244:VAL:HG23	2.19	0.42
1:C:380:ILE:HG22	1:C:381:PHE:H	1.84	0.42
1:D:238:PHE:HB3	1:D:262:LEU:CD2	2.49	0.42
1:A:142:THR:HB	1:A:143:PRO:HD2	2.01	0.42
1:B:338:PRO:HB3	1:B:375:PHE:CD1	2.52	0.42
1:C:30:GLN:HG2	1:C:56:ASP:OD1	2.19	0.42
1:D:190:GLU:OE1	1:D:190:GLU:N	2.39	0.42
1:D:406:LYS:HD3	1:D:406:LYS:H	1.84	0.42
1:B:279:ASP:O	1:B:282:ILE:HG22	2.19	0.42
1:C:246:ARG:HH11	1:C:246:ARG:HD3	1.72	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:305:VAL:H	1:C:404:LYS:HZ3	1.67	0.42
1:A:388:MET:CB	1:A:390:ILE:HG22	2.49	0.42
1:A:449:ASN:HD22	1:D:490:LEU:HD13	1.85	0.42
1:B:21:PHE:CG	1:B:200:ALA:HB1	2.55	0.42
1:B:51:GLU:OE2	1:B:219:PHE:CE2	2.72	0.42
1:B:274:GLU:CB	1:B:309:ILE:HD11	2.50	0.42
1:B:375:PHE:CD1	1:B:375:PHE:N	2.87	0.42
1:B:430:ASN:OD1	1:B:432:ASN:OD1	2.37	0.42
1:C:281:ALA:O	1:C:285:VAL:HG12	2.19	0.42
1:C:410:ASP:O	1:C:414:LEU:HG	2.19	0.42
1:D:130:TRP:CZ2	1:D:474:GLU:HB2	2.55	0.42
1:B:174:ILE:HD13	1:B:184:VAL:HG21	2.02	0.42
1:C:165:PHE:HB2	1:C:169:MET:HG2	2.00	0.42
1:C:462:GLY:CA	1:C:466:SER:HB2	2.50	0.42
1:D:293:HIS:CE1	1:D:337:GLY:N	2.88	0.42
1:B:159:GLN:CD	1:B:173:LYS:HB3	2.39	0.42
1:B:164:ASN:ND2	1:B:295:GLN:O	2.31	0.42
1:C:259:LYS:HB3	1:C:259:LYS:HE3	1.76	0.42
1:C:262:LEU:CD1	1:C:264:LEU:HD11	2.49	0.42
1:D:284:TRP:HA	1:D:284:TRP:CE3	2.54	0.42
1:D:392:LYS:HE3	1:D:392:LYS:HB3	1.97	0.42
1:A:451:TYR:CD1	1:A:452:ASN:N	2.88	0.42
1:A:470:ARG:HH22	1:D:482:GLN:HB2	1.85	0.42
1:B:36:ASP:OD2	1:B:45:VAL:HG21	2.20	0.42
1:B:296:CYS:SG	1:B:299:ALA:HB2	2.59	0.42
1:B:342:LYS:O	1:B:346:ASP:HB2	2.20	0.42
1:C:235:LYS:HE3	1:C:479:ASN:O	2.20	0.42
1:C:399:VAL:HG12	1:C:400:CYS:H	1.85	0.42
1:D:146:PHE:O	1:D:488:ILE:N	2.49	0.42
1:D:365:GLY:HA2	1:D:377:GLU:HG3	2.02	0.42
1:D:483:THR:O	1:D:483:THR:OG1	2.36	0.42
1:A:205:GLU:C	1:A:207:GLY:H	2.23	0.42
1:B:68:PHE:CE1	1:B:153:PRO:HB2	2.55	0.42
1:C:65:ARG:NE	1:C:232:ASP:OD1	2.47	0.42
1:C:236:VAL:CG1	1:C:260:VAL:HG13	2.50	0.42
1:C:489:ARG:O	1:C:490:LEU:HD23	2.20	0.42
1:D:159:GLN:NE2	1:D:173:LYS:HB3	2.34	0.42
1:A:205:GLU:O	1:A:207:GLY:N	2.52	0.42
1:A:441:LEU:HD23	1:A:441:LEU:HA	1.72	0.42
1:B:384:VAL:HA	1:B:388:MET:HE1	2.00	0.42
1:C:65:ARG:CZ	1:C:156:VAL:HG23	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:426:VAL:O	1:C:448:VAL:HA	2.20	0.42
1:D:379:THR:O	1:D:380:ILE:HD13	2.20	0.42
1:A:268:SER:O	1:A:300:GLY:HA2	2.20	0.41
1:A:345:PHE:CE1	1:A:376:ILE:HG13	2.50	0.41
1:D:27:VAL:O	1:D:28:LYS:HD3	2.19	0.41
1:A:94:ASN:O	1:A:98:LEU:HG	2.20	0.41
1:B:303:VAL:C	1:B:304:TYR:HD1	2.23	0.41
1:C:90:LEU:CD1	1:C:205:GLU:HB3	2.50	0.41
1:C:108:LYS:HZ1	1:C:112:MET:C	2.24	0.41
1:B:442:LYS:HG3	1:B:463:TYR:CD2	2.55	0.41
1:D:150:LYS:O	1:D:483:THR:HA	2.20	0.41
1:A:454:LEU:HD12	1:A:455:HIS:H	1.86	0.41
1:B:151:LYS:HA	1:B:482:GLN:O	2.20	0.41
1:B:363:GLU:HB3	1:B:380:ILE:HB	2.02	0.41
1:B:405:PHE:HB2	1:B:410:ASP:OD2	2.20	0.41
1:D:29:GLY:H	1:D:50:HIS:CD2	2.36	0.41
1:D:92:GLU:O	1:D:95:ILE:CD1	2.68	0.41
1:D:455:HIS:ND1	1:D:457:GLN:HG3	2.34	0.41
1:A:34:THR:HB	1:A:48:GLN:CD	2.41	0.41
1:A:137:LYS:HB2	1:A:149:VAL:HB	2.03	0.41
1:A:384:VAL:HG21	1:A:401:SER:HB2	2.02	0.41
1:B:106:ASN:ND2	1:B:163:TRP:O	2.53	0.41
1:B:394:GLU:OE1	1:B:420:TYR:HE2	2.04	0.41
1:C:481:THR:HG22	1:C:482:GLN:N	2.33	0.41
1:D:107:GLY:HA3	1:D:338:PRO:HG2	2.01	0.41
1:D:462:GLY:C	1:D:470:ARG:NH2	2.74	0.41
1:A:33:LYS:NZ	1:B:51:GLU:CD	2.71	0.41
1:A:346:ASP:HA	1:A:349:MET:SD	2.60	0.41
1:B:162:PRO:HD3	1:B:239:THR:HB	2.03	0.41
1:D:385:THR:HG22	1:D:388:MET:HE2	2.03	0.41
1:A:303:VAL:C	1:A:304:TYR:CD1	2.94	0.41
1:B:280:ASN:O	1:B:284:TRP:N	2.46	0.41
1:C:46:ILE:HD12	1:C:46:ILE:N	2.35	0.41
1:C:404:LYS:HB2	1:C:404:LYS:HE2	1.39	0.41
1:C:460:PHE:H	1:C:472:LEU:HB3	1.86	0.41
1:D:18:THR:HB	1:D:197:LEU:HD13	2.02	0.41
1:D:141:THR:CG2	1:D:147:ASN:HD21	2.33	0.41
1:D:380:ILE:CG2	1:D:402:ILE:HD11	2.51	0.41
1:A:64:ALA:HB1	1:A:183:THR:OG1	2.21	0.41
1:A:198:VAL:HG13	1:A:199:ALA:N	2.35	0.41
1:A:407:THR:HG23	1:A:410:ASP:H	1.86	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:432:ASN:O	1:A:436:GLU:HG3	2.20	0.41
1:B:27:VAL:HB	1:B:28:LYS:H	1.79	0.41
1:B:293:HIS:NE2	1:B:337:GLY:N	2.67	0.41
1:B:421:GLY:N	1:B:466:SER:OG	2.53	0.41
1:B:460:PHE:H	1:B:472:LEU:H	1.68	0.41
1:C:159:GLN:CB	1:C:186:LEU:HD12	2.43	0.41
1:D:83:LEU:O	1:D:86:ASN:HB2	2.21	0.41
1:D:375:PHE:CD1	1:D:375:PHE:N	2.88	0.41
1:D:408:LYS:O	1:D:412:ILE:HD13	2.20	0.41
1:A:98:LEU:HD22	1:A:198:VAL:CG1	2.51	0.41
1:A:351:TYR:OH	1:A:393:GLU:HB3	2.21	0.41
1:A:352:ILE:HD12	1:A:352:ILE:HA	1.82	0.41
1:B:249:LEU:CD1	1:B:262:LEU:HD11	2.51	0.41
1:B:426:VAL:HG21	1:B:437:VAL:CG1	2.50	0.41
1:B:458:MET:HA	1:B:459:PRO:HD3	1.62	0.41
1:C:75:GLU:OE1	1:C:75:GLU:HA	2.19	0.41
1:D:267:LYS:HZ2	1:D:301:SER:HG	1.58	0.41
1:A:154:ILE:HG12	1:A:482:GLN:CG	2.51	0.40
1:A:170:TRP:CE3	1:A:174:ILE:HG13	2.56	0.40
1:A:449:ASN:HD22	1:D:490:LEU:CD1	2.34	0.40
1:B:159:GLN:NE2	1:B:173:LYS:HB3	2.35	0.40
1:B:242:THR:O	1:B:246:ARG:HG3	2.21	0.40
1:D:121:VAL:O	1:D:125:ARG:HB3	2.21	0.40
1:D:274:GLU:HG2	1:D:275:ASP:N	2.37	0.40
1:A:55:LYS:HE2	1:A:55:LYS:HB3	1.74	0.40
1:A:190:GLU:HG3	1:A:191:GLN:OE1	2.21	0.40
1:B:222:VAL:H	1:B:222:VAL:HG23	1.68	0.40
1:D:450:THR:HG22	1:D:451:TYR:H	1.86	0.40
1:B:150:LYS:O	1:B:484:LYS:N	2.55	0.40
1:A:191:GLN:HB3	1:A:340:VAL:HG22	2.03	0.40
1:B:442:LYS:HE2	1:B:442:LYS:HB2	1.95	0.40
1:C:249:LEU:HD12	1:C:249:LEU:HA	1.82	0.40
1:C:441:LEU:HD23	1:C:441:LEU:HA	1.87	0.40
1:D:374:TYR:CD1	1:D:374:TYR:N	2.89	0.40
1:D:437:VAL:O	1:D:441:LEU:N	2.51	0.40
1:A:123:CYS:HA	1:A:456:HIS:CD2	2.56	0.40
1:B:152:GLU:OE2	1:B:484:LYS:NZ	2.47	0.40
1:B:154:ILE:N	1:B:182:ASN:OD1	2.55	0.40
1:B:240:GLY:O	1:B:264:LEU:HA	2.22	0.40
1:C:100:ALA:HA	1:C:103:SER:OG	2.22	0.40
1:D:90:LEU:HA	1:D:90:LEU:HD23	1.87	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:429:LYS:NZ	1:B:432:ASN:OD1[6_455]	2.05	0.15

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	443/496 (89%)	401 (90%)	36 (8%)	6 (1%)	11	44
1	B	454/496 (92%)	411 (90%)	38 (8%)	5 (1%)	14	50
1	C	393/496 (79%)	351 (89%)	34 (9%)	8 (2%)	7	35
1	D	465/496 (94%)	428 (92%)	30 (6%)	7 (2%)	10	43
All	All	1755/1984 (88%)	1591 (91%)	138 (8%)	26 (2%)	10	43

All (26) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	16	GLN
1	B	276	ALA
1	B	326	VAL
1	D	70	GLY
1	A	115	GLY
1	A	206	ALA
1	C	16	GLN
1	D	412	ILE
1	D	417	ALA
1	A	162	PRO
1	C	255	SER
1	D	224	GLY
1	A	47	THR
1	A	114	LYS
1	C	14	TYR

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Mol	Chain	Res	Type
1	C	288	GLY
1	D	162	PRO
1	B	162	PRO
1	C	162	PRO
1	C	269	PRO
1	B	143	PRO
1	C	195	GLY
1	B	175	GLY
1	D	269	PRO
1	C	70	GLY
1	D	175	GLY

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	365/400 (91%)	346 (95%)	19 (5%)	23	56
1	B	370/400 (92%)	349 (94%)	21 (6%)	20	54
1	C	320/400 (80%)	298 (93%)	22 (7%)	15	46
1	D	377/400 (94%)	360 (96%)	17 (4%)	27	61
All	All	1432/1600 (90%)	1353 (94%)	79 (6%)	21	55

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	39	ASN
1	A	42	ASP
1	A	48	GLN
1	A	51	GLU
1	A	65	ARG
1	A	73	ARG
1	A	112	MET
1	A	116	ASP
1	A	151	LYS
1	A	217	SER

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Mol	Chain	Res	Type
1	A	297	CYS
1	A	302	ARG
1	A	396	PHE
1	A	408	LYS
1	A	456	HIS
1	A	457	GLN
1	A	460	PHE
1	A	470	ARG
1	A	475	ASP
1	B	14	TYR
1	B	35	PHE
1	B	36	ASP
1	B	58	ASP
1	B	85	ASN
1	B	102	GLU
1	B	112	MET
1	B	116	ASP
1	B	147	ASN
1	B	164	ASN
1	B	186	LEU
1	B	235	LYS
1	B	258	LYS
1	B	277	ASP
1	B	292	ASN
1	B	383	ASN
1	B	401	SER
1	B	413	LYS
1	B	431	LEU
1	B	454	LEU
1	B	463	TYR
1	C	14	TYR
1	C	15	GLU
1	C	55	LYS
1	C	66	LYS
1	C	84	LEU
1	C	108	LYS
1	C	144	ASP
1	C	159	GLN
1	C	205	GLU
1	C	235	LYS
1	C	262	LEU
1	C	270	ASN

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Mol	Chain	Res	Type
1	C	275	ASP
1	C	293	HIS
1	C	296	CYS
1	C	302	ARG
1	C	381	PHE
1	C	400	CYS
1	C	420	TYR
1	C	427	HIS
1	C	456	HIS
1	C	458	MET
1	D	30	GLN
1	D	36	ASP
1	D	55	LYS
1	D	72	TRP
1	D	187	LYS
1	D	258	LYS
1	D	297	CYS
1	D	316	LYS
1	D	319	GLU
1	D	322	GLN
1	D	353	GLN
1	D	356	LYS
1	D	369	LYS
1	D	372	LYS
1	D	404	LYS
1	D	406	LYS
1	D	463	TYR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	48	GLN
1	A	106	ASN
1	A	147	ASN
1	A	159	GLN
1	A	292	ASN
1	A	416	ASN
1	A	449	ASN
1	A	452	ASN
1	A	482	GLN
1	B	16	GLN
1	B	295	GLN

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Mol	Chain	Res	Type
1	B	383	ASN
1	C	159	GLN
1	C	427	HIS
1	D	50	HIS
1	D	159	GLN
1	D	293	HIS
1	D	456	HIS

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, 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	449/496 (90%)	0.12	10 (2%)	62	48	54, 85, 137, 251	0
1	B	460/496 (92%)	0.06	13 (2%)	53	37	48, 74, 118, 222	0
1	C	399/496 (80%)	0.17	17 (4%)	35	21	54, 79, 130, 177	0
1	D	469/496 (94%)	0.09	13 (2%)	53	37	47, 74, 119, 195	0
All	All	1777/1984 (89%)	0.11	53 (2%)	50	34	47, 78, 129, 251	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	385	THR	5.1
1	A	460	PHE	4.7
1	B	392	LYS	4.5
1	C	271	ILE	4.1
1	C	300	GLY	4.1
1	C	270	ASN	4.0
1	D	301	SER	3.8
1	C	378	PRO	3.6
1	D	358	ALA	3.6
1	B	352	ILE	3.6
1	C	427	HIS	3.5
1	C	28	LYS	3.4
1	A	196	GLY	3.3
1	B	292	ASN	3.3
1	D	184	VAL	3.2
1	D	392	LYS	3.2
1	C	18	THR	3.1
1	C	410	ASP	3.1
1	B	270	ASN	3.1
1	A	318	LYS	3.1
1	D	270	ASN	3.0

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Mol	Chain	Res	Type	RSRZ
1	B	381	PHE	3.0
1	A	159	GLN	3.0
1	B	380	ILE	3.0
1	D	289	ILE	3.0
1	C	304	TYR	2.9
1	A	304	TYR	2.7
1	C	471	GLU	2.7
1	C	426	VAL	2.7
1	B	159	GLN	2.7
1	C	172	TRP	2.6
1	C	272	VAL	2.6
1	C	469	GLY	2.6
1	B	394	GLU	2.5
1	D	300	GLY	2.5
1	A	28	LYS	2.5
1	B	491	GLY	2.5
1	C	274	GLU	2.5
1	B	386	GLU	2.5
1	D	400	CYS	2.3
1	C	217	SER	2.3
1	D	290	PHE	2.2
1	D	74	GLN	2.2
1	D	393	GLU	2.1
1	C	463	TYR	2.1
1	A	431	LEU	2.1
1	A	217	SER	2.0
1	A	461	GLY	2.0
1	A	402	ILE	2.0
1	B	348	ILE	2.0
1	B	395	ILE	2.0
1	D	174	ILE	2.0
1	D	288	GLY	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 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.