Full wwPDB X-ray Structure Validation Report ⓘ

May 22, 2020 – 09:43 am BST

PDB ID	:	4I5S
Title	:	Structure and function of sensor histidine kinase
Authors	:	Cai, Y.
Deposited on	:	2012-11-28
Resolution	:	3.30 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see references ①) were used in the production of this report:

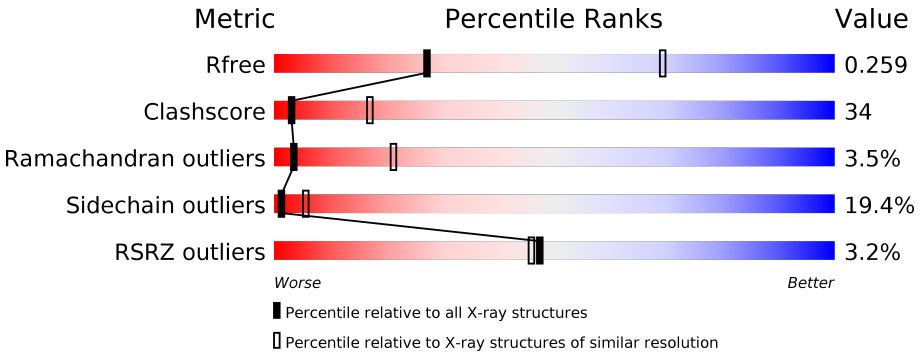
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation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

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.30 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	1149 (3.34-3.26)
Clashscore	141614	1205 (3.34-3.26)
Ramachandran outliers	138981	1183 (3.34-3.26)
Sidechain outliers	138945	1182 (3.34-3.26)
RSRZ outliers	127900	1115 (3.34-3.26)

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	450	2% 33% 38% 12% • 16%
1	B	450	4% 38% 38% 11% • 12%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 6233 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 histidine kinase CovS; VicK-like protein.

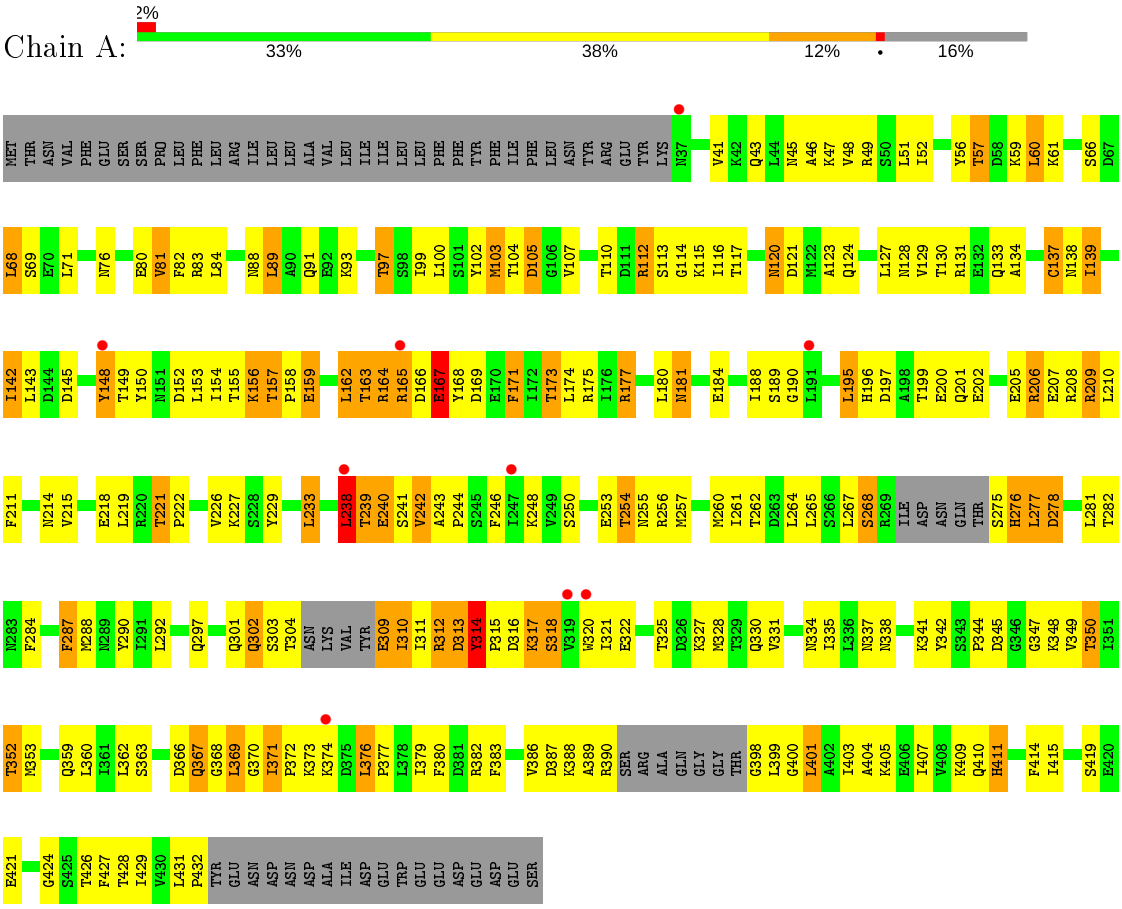
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	380	Total	C	N	O	S	0	0	0
			3045	1905	523	608	9			
1	B	395	Total	C	N	O	S	0	0	0
			3188	1999	545	635	9			

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.

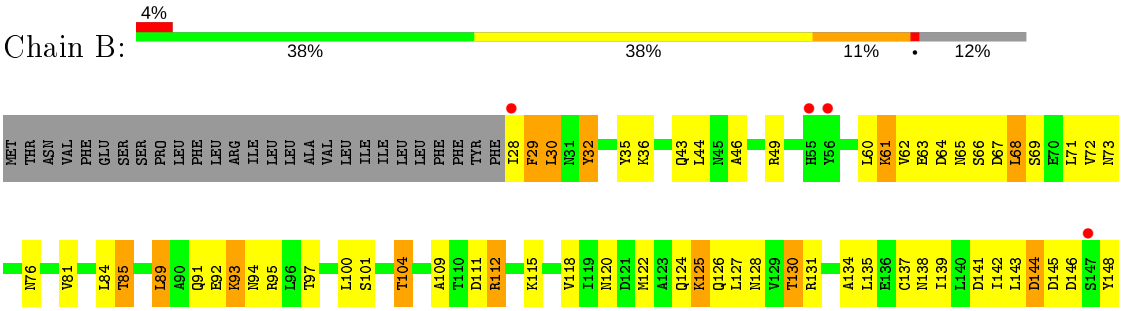
- Molecule 1: Putative histidine kinase CovS; VicK-like protein

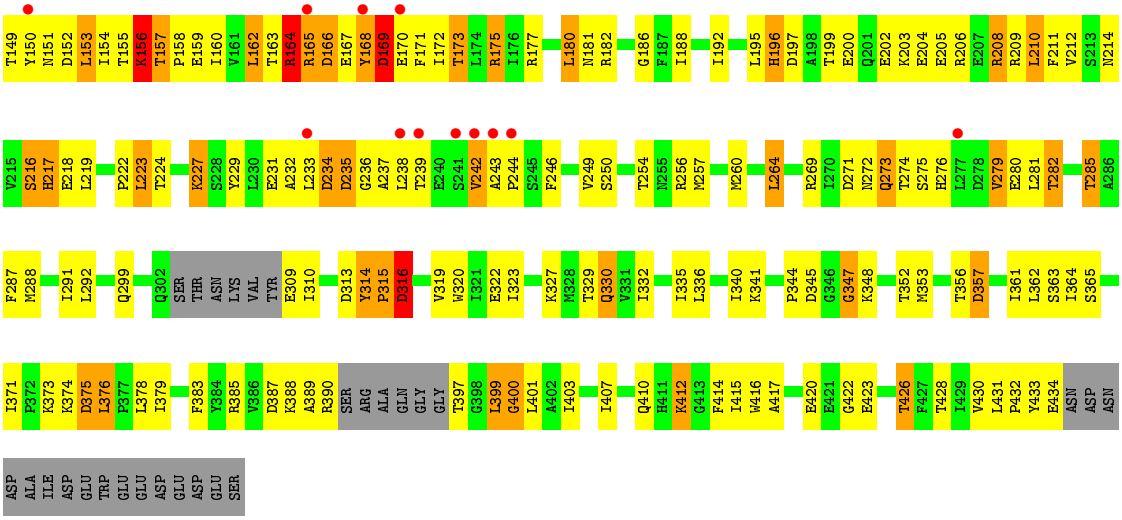
Chain A:



- Molecule 1: Putative histidine kinase CovS; VicK-like protein

Chain B:




T149 Y150 N151 D152 L153 I154 T155 K156 T157 P158 E159 I160 V161 L162 T163 R164 R165 D166 E167 Y168 D169 E170 F171 I172 T173 L174 R175 I176 R177 L180 N181 R182 G186 F187 I188 I192 L195 H196 D197 A198 T199 E200 Q201 E202 K203 E204 E205 R206 E207 R208 R209 L210 F211 V212 S213 N214
V215 S216 H217 E218 L219 P222 L223 T224 K227 S228 Y229 L230 E231 A232 L233 D234 D235 G236 A237 L238 T239 E240 S241 V242 A243 P244 S245 F246 V249 S250 T254 N255 R256 M257 M260 L264 R269 I270 D271 N272 Q273 T274 S275 H276 L277 D278 V279 E280 L281 T282 T285 A286
F287 M288 I291 L292 Q299 Q302 SER THR ASN LYS VAL TYR E309 I310 D313 Y314 P315 D316 V319 W320 I321 E322 I323 K327 N328 T329 Q330 V331 I332 I335 L336 I340 K341 P344 D345 G346 G347 K348 T352 M353 T356 D357 I361 L362 S363 I364 S365
I371 P372 K373 K374 D375 L376 P377 L378 I379 F383 Y384 R385 V386 D387 K388 A389 R390 SER ARG ALA GLN GLY GLY T397 G398 L399 G400 L401 A402 I403 I407 Q410 H411 K412 G413 F414 I415 W416 A417 E420 E421 G422 E423 T426 P427 T428 I429 V430 L431 P432 Y433 E434 ASN ASP ASN
ASP ALA ILE ASP GLU TRP GLU GLU ASP GLU ASP GLU SER

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 31 2 1	Depositor
Cell constants a, b, c, α, β, γ	153.12Å 153.12Å 125.11Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	36.62 – 3.30 36.62 – 3.30	Depositor EDS
% Data completeness (in resolution range)	99.6 (36.62-3.30) 99.6 (36.62-3.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.14 (at 3.32Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE: 1.7.1_743)	Depositor
R, R_{free}	0.230 , 0.270 0.213 , 0.259	Depositor DCC
R_{free} test set	1451 reflections (5.64%)	wwPDB-VP
Wilson B-factor (Å^2)	111.3	Xtriage
Anisotropy	0.404	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 115.5	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.025 for -h,-k,l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	6233	wwPDB-VP
Average B, all atoms (Å^2)	151.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.56% 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	0.27	0/3082	0.51	0/4164
1	B	0.28	0/3230	0.49	0/4366
All	All	0.28	0/6312	0.50	0/8530

There are no bond length outliers.

There are no bond angle outliers.

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	3045	0	3049	224	0
1	B	3188	0	3183	219	0
All	All	6233	0	6232	421	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 34.

All (421) 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:209:ARG:HH11	1:A:209:ARG:HG2	1.28	0.94
1:B:142:ILE:HG22	1:B:143:LEU:H	1.32	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:148:TYR:HD2	1:A:149:THR:H	1.16	0.92
1:B:127:LEU:HA	1:B:165:ARG:HD3	1.53	0.89
1:A:121:ASP:HA	1:A:124:GLN:HE21	1.38	0.86
1:A:311:ILE:HG22	1:A:349:VAL:HB	1.58	0.85
1:B:158:PRO:HB3	1:B:177:ARG:HA	1.58	0.85
1:B:433:TYR:CG	1:B:434:GLU:N	2.42	0.84
1:B:32:TYR:HE2	1:B:36:LYS:HG2	1.42	0.83
1:B:239:THR:HA	1:B:243:ALA:HB2	1.59	0.83
1:A:219:LEU:HD11	1:A:261:ILE:HD11	1.59	0.82
1:A:209:ARG:NH1	1:A:209:ARG:HG2	1.91	0.81
1:A:162:LEU:HD11	1:A:173:THR:HG22	1.62	0.81
1:A:314:TYR:HB3	1:A:352:THR:HA	1.62	0.81
1:A:371:ILE:HG13	1:A:372:PRO:HA	1.64	0.80
1:A:184:GLU:H	1:A:184:GLU:CD	1.85	0.79
1:A:314:TYR:HD1	1:A:314:TYR:O	1.63	0.79
1:A:110:THR:HG22	1:A:116:ILE:HA	1.65	0.78
1:B:281:LEU:HD11	1:B:320:TRP:HB3	1.66	0.78
1:B:149:THR:O	1:B:153:LEU:HD23	1.84	0.77
1:B:167:GLU:OE2	1:B:167:GLU:N	2.18	0.77
1:B:280:GLU:O	1:B:282:THR:HG22	1.85	0.77
1:B:388:LYS:HA	1:B:389:ALA:HB3	1.64	0.77
1:A:148:TYR:HD2	1:A:149:THR:N	1.83	0.76
1:A:100:LEU:HD23	1:A:103:MET:HE1	1.68	0.76
1:B:374:LYS:N	1:B:374:LYS:HD2	2.00	0.76
1:B:173:THR:H	1:B:199:THR:HG22	1.51	0.75
1:B:385:ARG:HD3	1:B:388:LYS:HD2	1.67	0.75
1:B:181:ASN:HB2	1:B:192:ILE:HG13	1.70	0.74
1:A:171:PHE:H	1:A:171:PHE:HD2	1.34	0.74
1:A:344:PRO:HD2	1:A:367:GLN:HB3	1.69	0.73
1:A:209:ARG:CG	1:A:209:ARG:HH11	2.00	0.73
1:A:382:ARG:HD2	1:A:383:PHE:CE2	2.24	0.72
1:A:229:TYR:CE1	1:A:297:GLN:HG2	2.23	0.72
1:A:177:ARG:NH1	1:B:196:HIS:HE1	1.87	0.72
1:A:371:ILE:HG23	1:A:372:PRO:HA	1.70	0.71
1:A:292:LEU:HD22	1:A:311:ILE:HD12	1.73	0.71
1:B:125:LYS:HD2	1:B:125:LYS:N	2.04	0.71
1:A:316:ASP:O	1:A:317:LYS:HE3	1.89	0.70
1:B:310:ILE:HD12	1:B:348:LYS:HG2	1.73	0.70
1:A:314:TYR:CD1	1:A:314:TYR:O	2.44	0.70
1:A:369:LEU:HB3	1:A:421:GLU:HG3	1.71	0.70
1:B:81:VAL:O	1:B:85:THR:HG23	1.92	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:208:ARG:NH2	1:B:271:ASP:OD2	2.26	0.68
1:B:412:LYS:HD3	1:B:412:LYS:O	1.94	0.68
1:A:229:TYR:O	1:A:233:LEU:HB3	1.92	0.68
1:B:264:LEU:HD12	1:B:399:LEU:HD11	1.76	0.68
1:A:281:LEU:HD23	1:A:322:GLU:HG3	1.75	0.68
1:A:334:ASN:O	1:A:337:ASN:HB2	1.94	0.68
1:A:128:ASN:HB2	1:A:165:ARG:O	1.94	0.68
1:B:388:LYS:HD3	1:B:390:ARG:HG2	1.76	0.68
1:A:255:ASN:OD1	1:B:227:LYS:NZ	2.28	0.67
1:B:101:SER:HA	1:B:120:ASN:HB2	1.77	0.67
1:A:386:VAL:HG13	1:B:272:ASN:ND2	2.10	0.67
1:A:314:TYR:N	1:A:315:PRO:HD2	2.09	0.67
1:A:229:TYR:CD1	1:A:297:GLN:HG2	2.29	0.66
1:A:277:LEU:HD12	1:A:410:GLN:HB3	1.77	0.66
1:A:371:ILE:HG23	1:A:372:PRO:CA	2.25	0.66
1:A:281:LEU:HD11	1:A:320:TRP:HB3	1.77	0.66
1:B:182:ARG:NH1	1:B:186:GLY:O	2.29	0.66
1:B:127:LEU:HA	1:B:165:ARG:CD	2.26	0.66
1:A:110:THR:O	1:A:190:GLY:HA3	1.96	0.66
1:B:224:THR:HA	1:B:227:LYS:HG2	1.76	0.66
1:B:314:TYR:H	1:B:315:PRO:HD2	1.60	0.65
1:B:403:ILE:H	1:B:403:ILE:HD12	1.61	0.65
1:B:153:LEU:HD13	1:B:180:LEU:HD21	1.77	0.65
1:B:115:LYS:HA	1:B:138:ASN:HA	1.77	0.65
1:A:250:SER:O	1:A:254:THR:HG23	1.96	0.65
1:A:41:VAL:O	1:A:45:ASN:HB2	1.96	0.65
1:B:44:LEU:HD11	1:B:72:VAL:HG22	1.79	0.65
1:A:277:LEU:HD23	1:A:278:ASP:H	1.62	0.65
1:B:269:ARG:HB3	1:B:275:SER:HB2	1.78	0.64
1:B:142:ILE:HG22	1:B:143:LEU:N	2.10	0.64
1:A:314:TYR:N	1:A:315:PRO:CD	2.60	0.64
1:A:338:ASN:HB3	1:A:399:LEU:CD2	2.27	0.64
1:B:156:LYS:O	1:B:156:LYS:HD2	1.98	0.64
1:A:163:THR:HB	1:A:165:ARG:CG	2.28	0.63
1:A:371:ILE:HD13	1:A:419:SER:O	1.98	0.63
1:B:281:LEU:HD23	1:B:322:GLU:HG2	1.80	0.63
1:B:243:ALA:HB3	1:B:244:PRO:HD3	1.81	0.63
1:B:288:MET:HE2	1:B:292:LEU:HD11	1.81	0.63
1:B:299:GLN:HE22	1:B:309:GLU:HG3	1.62	0.62
1:A:71:LEU:HD21	1:B:44:LEU:HD23	1.81	0.62
1:B:32:TYR:CE2	1:B:36:LYS:HG2	2.30	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:208:ARG:HB2	1:B:212:VAL:HG11	1.81	0.62
1:A:49:ARG:HD2	1:A:52:ILE:HD12	1.80	0.62
1:A:211:PHE:O	1:A:215:VAL:HG22	1.99	0.62
1:A:421:GLU:N	1:A:421:GLU:OE1	2.32	0.62
1:B:163:THR:O	1:B:172:ILE:HG22	1.99	0.61
1:B:232:ALA:O	1:B:237:ALA:HB3	2.01	0.61
1:B:356:THR:HG23	1:B:361:ILE:HD11	1.80	0.61
1:A:338:ASN:HB3	1:A:399:LEU:HD22	1.81	0.61
1:B:44:LEU:CD1	1:B:72:VAL:HG22	2.31	0.61
1:A:338:ASN:HA	1:A:341:LYS:HB3	1.82	0.61
1:A:114:GLY:HA3	1:A:139:ILE:HD11	1.81	0.61
1:A:148:TYR:CD2	1:A:149:THR:N	2.69	0.61
1:B:422:GLY:HA2	1:B:423:GLU:O	2.01	0.61
1:B:61:LYS:O	1:B:61:LYS:HD3	2.00	0.60
1:B:168:TYR:CG	1:B:169:ASP:N	2.65	0.60
1:A:143:LEU:HB3	1:A:145:ASP:OD2	2.01	0.60
1:B:327:LYS:O	1:B:330:GLN:HB2	2.01	0.60
1:A:102:TYR:HE2	1:B:182:ARG:HB2	1.66	0.60
1:A:316:ASP:CG	1:A:317:LYS:H	2.05	0.60
1:A:89:LEU:HD12	1:B:89:LEU:HB3	1.83	0.59
1:B:62:VAL:HG12	1:B:64:ASP:H	1.68	0.59
1:B:287:PHE:CZ	1:B:291:ILE:HD11	2.37	0.59
1:B:341:LYS:HZ3	1:B:388:LYS:HD3	1.67	0.59
1:B:422:GLY:HA2	1:B:423:GLU:C	2.21	0.59
1:A:107:VAL:H	1:A:120:ASN:ND2	1.99	0.59
1:B:66:SER:O	1:B:69:SER:HB3	2.03	0.59
1:B:373:LYS:H	1:B:373:LYS:HD2	1.68	0.58
1:A:48:VAL:O	1:A:52:ILE:HG13	2.02	0.58
1:B:371:ILE:HD13	1:B:379:ILE:HD13	1.86	0.58
1:B:142:ILE:HB	1:B:145:ASP:OD2	2.03	0.58
1:A:288:MET:HG3	1:A:292:LEU:HD12	1.85	0.58
1:A:196:HIS:HD2	1:B:175:ARG:HH12	1.51	0.58
1:B:320:TRP:N	1:B:434:GLU:HG2	2.19	0.58
1:A:93:LYS:O	1:A:97:THR:HG22	2.04	0.57
1:B:197:ASP:OD1	1:B:199:THR:HG23	2.03	0.57
1:B:383:PHE:CZ	1:B:399:LEU:HD21	2.38	0.57
1:A:100:LEU:HA	1:A:103:MET:HE2	1.86	0.57
1:A:150:TYR:O	1:A:154:ILE:HG13	2.04	0.57
1:B:73:ASN:HA	1:B:76:ASN:HB2	1.87	0.57
1:A:243:ALA:N	1:A:244:PRO:HD2	2.19	0.57
1:B:219:LEU:O	1:B:222:PRO:HD2	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:327:LYS:HB3	1:A:407:ILE:HD13	1.87	0.57
1:B:131:ARG:O	1:B:135:LEU:HG	2.04	0.57
1:A:124:GLN:OE1	1:A:131:ARG:N	2.38	0.57
1:B:32:TYR:HD2	1:B:32:TYR:O	1.88	0.57
1:B:163:THR:HG21	1:B:165:ARG:CZ	2.35	0.56
1:B:210:LEU:O	1:B:210:LEU:HG	2.02	0.56
1:A:127:LEU:HA	1:A:165:ARG:HD3	1.86	0.56
1:A:335:ILE:HG23	1:A:427:PHE:CD2	2.39	0.56
1:B:379:ILE:HD11	1:B:417:ALA:HB2	1.87	0.56
1:B:407:ILE:O	1:B:410:GLN:HB2	2.06	0.56
1:A:238:LEU:O	1:A:240:GLU:N	2.38	0.56
1:A:376:LEU:O	1:A:379:ILE:HG12	2.05	0.56
1:B:227:LYS:O	1:B:231:GLU:HB2	2.06	0.56
1:B:115:LYS:NZ	1:B:135:LEU:O	2.36	0.56
1:B:385:ARG:NE	1:B:390:ARG:HH22	2.04	0.56
1:B:314:TYR:N	1:B:315:PRO:HD2	2.21	0.56
1:A:202:GLU:O	1:A:206:ARG:HG2	2.06	0.56
1:A:60:LEU:HD12	1:A:76:ASN:OD1	2.06	0.56
1:A:102:TYR:CE2	1:B:182:ARG:HB2	2.41	0.55
1:A:181:ASN:HB3	1:A:189:SER:HB2	1.87	0.55
1:A:314:TYR:HB3	1:A:352:THR:CA	2.35	0.55
1:B:32:TYR:C	1:B:32:TYR:HD2	2.10	0.55
1:B:168:TYR:CD1	1:B:169:ASP:N	2.75	0.55
1:A:210:LEU:HA	1:A:386:VAL:HG21	1.89	0.55
1:B:250:SER:O	1:B:254:THR:HG23	2.06	0.55
1:A:110:THR:HA	1:A:117:THR:HG23	1.88	0.55
1:A:288:MET:HE1	1:A:362:LEU:HD11	1.89	0.55
1:A:164:ARG:C	1:A:166:ASP:H	2.09	0.55
1:B:142:ILE:CG2	1:B:143:LEU:H	2.15	0.55
1:A:89:LEU:CD1	1:B:89:LEU:HB3	2.37	0.55
1:A:163:THR:HB	1:A:165:ARG:HG2	1.89	0.54
1:A:214:ASN:HB3	1:A:264:LEU:HD13	1.89	0.54
1:A:180:LEU:N	1:A:180:LEU:HD22	2.22	0.54
1:A:113:SER:O	1:A:149:THR:HG21	2.06	0.54
1:A:244:PRO:HA	1:B:238:LEU:HD21	1.90	0.54
1:B:217:HIS:CD2	1:B:217:HIS:C	2.80	0.54
1:B:32:TYR:C	1:B:32:TYR:CD2	2.81	0.54
1:A:257:MET:HE3	1:B:223:LEU:HD11	1.89	0.54
1:A:380:PHE:CD1	1:A:405:LYS:HD2	2.42	0.54
1:B:203:LYS:HA	1:B:206:ARG:HH12	1.73	0.54
1:A:331:VAL:HG13	1:A:404:ALA:HB1	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:347:GLY:O	1:B:348:LYS:HB2	2.07	0.53
1:A:312:ARG:HG2	1:A:312:ARG:O	2.08	0.53
1:B:415:ILE:HA	1:B:428:THR:O	2.09	0.53
1:A:284:PHE:HE2	1:A:362:LEU:HD12	1.72	0.53
1:A:415:ILE:HG23	1:A:415:ILE:O	2.09	0.53
1:B:388:LYS:HA	1:B:389:ALA:CB	2.32	0.53
1:A:369:LEU:HD13	1:A:421:GLU:HG3	1.91	0.53
1:B:158:PRO:CB	1:B:177:ARG:HA	2.36	0.52
1:B:299:GLN:NE2	1:B:309:GLU:HG3	2.24	0.52
1:A:128:ASN:CG	1:A:128:ASN:O	2.48	0.52
1:A:238:LEU:O	1:A:239:THR:C	2.47	0.52
1:A:276:HIS:O	1:A:327:LYS:NZ	2.30	0.52
1:A:277:LEU:HD21	1:A:411:HIS:HE1	1.73	0.52
1:A:284:PHE:CE2	1:A:362:LEU:HD12	2.44	0.52
1:B:153:LEU:HD13	1:B:180:LEU:CD2	2.39	0.52
1:B:414:PHE:CD1	1:B:415:ILE:N	2.73	0.52
1:B:433:TYR:CD1	1:B:434:GLU:N	2.78	0.52
1:A:288:MET:O	1:A:292:LEU:HB2	2.10	0.52
1:A:173:THR:HG21	1:A:202:GLU:HG3	1.91	0.52
1:B:195:LEU:HD12	1:B:195:LEU:N	2.24	0.52
1:B:203:LYS:HA	1:B:206:ARG:NH1	2.24	0.52
1:B:92:GLU:HA	1:B:95:ARG:NH1	2.24	0.52
1:A:371:ILE:HD11	1:A:373:LYS:NZ	2.25	0.51
1:B:93:LYS:HE3	1:B:94:ASN:OD1	2.10	0.51
1:A:107:VAL:H	1:A:120:ASN:HD21	1.58	0.51
1:B:291:ILE:HD13	1:B:329:THR:HG23	1.92	0.51
1:B:356:THR:HG23	1:B:361:ILE:CD1	2.40	0.51
1:B:242:VAL:HB	1:B:246:PHE:CE2	2.44	0.51
1:A:390:ARG:HD3	1:B:269:ARG:HH12	1.75	0.51
1:A:310:ILE:O	1:A:312:ARG:NH2	2.43	0.51
1:B:282:THR:CG2	1:B:323:ILE:HG12	2.40	0.51
1:B:218:GLU:HG3	1:B:260:MET:HE1	1.91	0.51
1:B:188:ILE:HD12	1:B:188:ILE:N	2.26	0.51
1:A:257:MET:O	1:A:261:ILE:HG12	2.10	0.51
1:A:164:ARG:NH1	1:A:171:PHE:HB3	2.25	0.51
1:B:62:VAL:HG13	1:B:69:SER:OG	2.10	0.51
1:A:301:GLN:HA	1:A:302:GLN:HB2	1.94	0.50
1:A:162:LEU:CD1	1:A:173:THR:HG22	2.39	0.50
1:A:388:LYS:HG2	1:A:389:ALA:H	1.76	0.50
1:A:380:PHE:HB3	1:A:405:LYS:HD3	1.93	0.50
1:A:47:LYS:HD3	1:A:60:LEU:HD11	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:68:LEU:HD12	1:A:69:SER:N	2.27	0.50
1:B:112:ARG:H	1:B:112:ARG:NH1	2.09	0.50
1:B:148:TYR:O	1:B:152:ASP:HB2	2.11	0.50
1:A:164:ARG:C	1:A:166:ASP:N	2.64	0.50
1:A:288:MET:CE	1:A:362:LEU:HD11	2.41	0.50
1:B:376:LEU:HD11	1:B:417:ALA:O	2.11	0.50
1:A:157:THR:OG1	1:A:159:GLU:HG3	2.11	0.50
1:A:205:GLU:OE1	1:B:208:ARG:NH1	2.44	0.50
1:B:399:LEU:O	1:B:401:LEU:N	2.45	0.50
1:A:348:LYS:N	1:A:348:LYS:HD2	2.26	0.50
1:A:292:LEU:CD2	1:A:311:ILE:HD12	2.42	0.50
1:A:317:LYS:O	1:A:318:SER:HB3	2.12	0.50
1:A:315:PRO:HG3	1:A:353:MET:HE2	1.94	0.49
1:A:129:VAL:HG13	1:A:130:THR:O	2.12	0.49
1:A:207:GLU:HB3	1:A:268:SER:HB3	1.93	0.49
1:A:242:VAL:C	1:A:244:PRO:HD2	2.32	0.49
1:B:173:THR:H	1:B:199:THR:CG2	2.22	0.49
1:B:352:THR:HG23	1:B:363:SER:OG	2.13	0.49
1:A:102:TYR:N	1:A:102:TYR:CD1	2.80	0.49
1:B:155:THR:O	1:B:157:THR:N	2.46	0.49
1:B:162:LEU:HD22	1:B:162:LEU:O	2.13	0.49
1:B:310:ILE:HB	1:B:348:LYS:HA	1.94	0.49
1:A:197:ASP:OD1	1:A:199:THR:HG22	2.12	0.48
1:B:379:ILE:HD11	1:B:417:ALA:CB	2.43	0.48
1:A:155:THR:O	1:A:156:LYS:C	2.51	0.48
1:B:173:THR:HG23	1:B:199:THR:HA	1.94	0.48
1:A:369:LEU:HB3	1:A:421:GLU:CG	2.42	0.48
1:B:173:THR:HG23	1:B:199:THR:HG22	1.95	0.48
1:A:155:THR:OG1	1:A:157:THR:HG22	2.14	0.48
1:B:357:ASP:OD2	1:B:357:ASP:N	2.46	0.48
1:B:341:LYS:HZ3	1:B:390:ARG:HG2	1.79	0.48
1:B:92:GLU:HG2	1:B:95:ARG:HH12	1.77	0.48
1:A:221:THR:N	1:A:222:PRO:HD2	2.29	0.48
1:A:301:GLN:HA	1:A:302:GLN:CB	2.43	0.48
1:A:315:PRO:HB3	1:A:353:MET:HE3	1.96	0.48
1:A:331:VAL:HG22	1:A:404:ALA:HA	1.95	0.48
1:B:29:PHE:C	1:B:29:PHE:CD2	2.87	0.48
1:B:43:GLN:O	1:B:46:ALA:HB3	2.14	0.48
1:B:208:ARG:O	1:B:211:PHE:HB3	2.14	0.48
1:A:239:THR:HG22	1:A:241:SER:OG	2.14	0.48
1:B:154:ILE:HG13	1:B:155:THR:N	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:LYS:NZ	1:A:398:GLY:O	2.47	0.48
1:B:420:GLU:C	1:B:422:GLY:H	2.16	0.48
1:A:371:ILE:CG2	1:A:372:PRO:HA	2.39	0.47
1:A:335:ILE:CD1	1:A:429:ILE:HD11	2.44	0.47
1:A:233:LEU:O	1:A:233:LEU:HG	2.14	0.47
1:B:164:ARG:O	1:B:166:ASP:N	2.47	0.47
1:B:180:LEU:HD22	1:B:180:LEU:HA	1.63	0.47
1:B:341:LYS:NZ	1:B:390:ARG:HG2	2.29	0.47
1:B:156:LYS:HD2	1:B:156:LYS:C	2.35	0.47
1:A:257:MET:CE	1:B:223:LEU:HD11	2.45	0.47
1:A:312:ARG:HD2	1:A:350:THR:HG23	1.96	0.47
1:B:388:LYS:HB3	1:B:390:ARG:HG3	1.97	0.47
1:A:99:ILE:HD11	1:B:109:ALA:HB2	1.97	0.47
1:B:155:THR:O	1:B:156:LYS:HG3	2.14	0.47
1:A:105:ASP:N	1:A:105:ASP:OD1	2.46	0.47
1:B:403:ILE:HD12	1:B:403:ILE:N	2.28	0.47
1:A:177:ARG:NH1	1:B:196:HIS:CE1	2.75	0.47
1:A:359:GLN:HG3	1:A:432:PRO:C	2.36	0.47
1:B:222:PRO:HB2	1:B:257:MET:SD	2.55	0.47
1:A:371:ILE:HG22	1:A:421:GLU:OE2	2.14	0.47
1:B:68:LEU:HD22	1:B:68:LEU:HA	1.75	0.47
1:A:102:TYR:HD1	1:A:102:TYR:N	2.13	0.47
1:B:134:ALA:O	1:B:137:CYS:HB2	2.15	0.47
1:A:265:LEU:HD11	1:B:216:SER:OG	2.16	0.47
1:B:272:ASN:C	1:B:273:GLN:HG2	2.36	0.46
1:B:361:ILE:N	1:B:361:ILE:HD12	2.30	0.46
1:B:219:LEU:C	1:B:222:PRO:HD2	2.36	0.46
1:A:275:SER:C	1:A:276:HIS:CG	2.89	0.46
1:B:163:THR:CG2	1:B:165:ARG:HG3	2.45	0.46
1:B:400:GLY:N	1:B:403:ILE:HD13	2.30	0.46
1:A:163:THR:HB	1:A:165:ARG:HG3	1.96	0.46
1:A:200:GLU:HG2	1:A:201:GLN:N	2.31	0.45
1:A:142:ILE:HG22	1:A:142:ILE:O	2.16	0.45
1:A:371:ILE:CG1	1:A:372:PRO:HA	2.39	0.45
1:B:224:THR:HA	1:B:227:LYS:CG	2.45	0.45
1:B:233:LEU:HD11	1:B:246:PHE:HB3	1.96	0.45
1:A:371:ILE:HG23	1:A:372:PRO:N	2.31	0.45
1:B:229:TYR:CE1	1:B:249:VAL:HG11	2.51	0.45
1:B:375:ASP:N	1:B:375:ASP:OD1	2.50	0.45
1:B:168:TYR:C	1:B:170:GLU:H	2.19	0.45
1:B:155:THR:C	1:B:157:THR:N	2.70	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:315:PRO:HD3	1:B:353:MET:HG2	1.98	0.45
1:A:260:MET:HE3	1:A:330:GLN:HG2	1.99	0.45
1:B:151:ASN:HA	1:B:154:ILE:HG12	1.98	0.45
1:B:151:ASN:OD1	1:B:151:ASN:C	2.55	0.45
1:A:226:VAL:HG21	1:A:254:THR:HG22	1.98	0.45
1:B:388:LYS:CA	1:B:389:ALA:HB3	2.40	0.45
1:A:115:LYS:HG3	1:A:137:CYS:O	2.17	0.45
1:A:162:LEU:HA	1:A:162:LEU:HD13	1.64	0.45
1:A:316:ASP:CG	1:A:317:LYS:N	2.70	0.45
1:A:380:PHE:CD1	1:A:405:LYS:HB2	2.52	0.45
1:B:130:THR:O	1:B:131:ARG:C	2.55	0.45
1:B:175:ARG:HD2	1:B:196:HIS:HB3	1.99	0.45
1:B:223:LEU:HA	1:B:223:LEU:HD12	1.73	0.44
1:A:386:VAL:HG12	1:A:387:ASP:OD1	2.18	0.44
1:B:143:LEU:O	1:B:144:ASP:C	2.55	0.44
1:A:81:VAL:CG1	1:A:82:PHE:N	2.80	0.44
1:B:319:VAL:C	1:B:434:GLU:HG2	2.38	0.44
1:A:207:GLU:O	1:A:210:LEU:HB3	2.17	0.44
1:A:409:LYS:NZ	1:A:414:PHE:HA	2.32	0.44
1:A:61:LYS:NZ	1:A:61:LYS:HB2	2.32	0.44
1:A:105:ASP:OD2	1:A:196:HIS:HD2	2.01	0.44
1:A:209:ARG:HG2	1:B:272:ASN:ND2	2.32	0.44
1:A:124:GLN:HB3	1:A:129:VAL:O	2.18	0.44
1:B:104:THR:O	1:B:122:MET:HG2	2.17	0.44
1:B:335:ILE:CG2	1:B:364:ILE:HD12	2.47	0.44
1:B:412:LYS:HD3	1:B:412:LYS:C	2.38	0.44
1:A:400:GLY:O	1:A:401:LEU:HD12	2.18	0.44
1:B:109:ALA:HB3	1:B:118:VAL:HB	1.99	0.44
1:A:196:HIS:CD2	1:B:175:ARG:HH12	2.32	0.44
1:B:365:SER:HA	1:B:426:THR:HB	2.00	0.44
1:A:130:THR:OG1	1:A:133:GLN:HG3	2.18	0.44
1:A:153:LEU:HD22	1:A:188:ILE:HG21	2.00	0.44
1:A:218:GLU:O	1:A:260:MET:HE1	2.18	0.44
1:A:348:LYS:O	1:A:366:ASP:HA	2.17	0.44
1:B:214:ASN:O	1:B:218:GLU:HB2	2.18	0.44
1:A:164:ARG:O	1:A:166:ASP:N	2.51	0.43
1:B:231:GLU:O	1:B:235:ASP:HB2	2.18	0.43
1:B:91:GLN:O	1:B:95:ARG:HG3	2.18	0.43
1:A:120:ASN:O	1:A:124:GLN:HG3	2.18	0.43
1:A:56:TYR:CE1	1:A:83:ARG:HD3	2.53	0.43
1:B:62:VAL:HG12	1:B:64:ASP:N	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:28:ILE:N	1:B:30:LEU:HD12	2.32	0.43
1:B:163:THR:HG22	1:B:165:ARG:HG3	2.01	0.43
1:A:121:ASP:O	1:A:124:GLN:HB2	2.18	0.43
1:A:243:ALA:N	1:A:244:PRO:CD	2.82	0.43
1:B:214:ASN:HB3	1:B:383:PHE:CD1	2.54	0.43
1:A:150:TYR:CD1	1:A:154:ILE:HD11	2.54	0.43
1:B:153:LEU:CD1	1:B:180:LEU:HD21	2.46	0.43
1:B:385:ARG:HG2	1:B:388:LYS:NZ	2.33	0.43
1:B:145:ASP:O	1:B:146:ASP:HB2	2.19	0.43
1:B:285:THR:OG1	1:B:315:PRO:HB2	2.19	0.43
1:B:64:ASP:HA	1:B:65:ASN:HA	1.47	0.43
1:A:313:ASP:C	1:A:315:PRO:HD2	2.39	0.43
1:A:210:LEU:HA	1:A:386:VAL:CG2	2.48	0.43
1:B:175:ARG:HD3	1:B:177:ARG:HG3	2.01	0.43
1:B:224:THR:O	1:B:227:LYS:HG3	2.18	0.43
1:B:223:LEU:HD13	1:B:257:MET:SD	2.59	0.43
1:A:338:ASN:HB3	1:A:399:LEU:HD23	2.01	0.42
1:A:248:LYS:NZ	1:B:234:ASP:OD2	2.42	0.42
1:A:89:LEU:HB3	1:B:89:LEU:HD13	2.00	0.42
1:A:120:ASN:ND2	1:A:123:ALA:H	2.17	0.42
1:A:43:GLN:O	1:A:46:ALA:HB3	2.18	0.42
1:A:380:PHE:CG	1:A:405:LYS:HD2	2.54	0.42
1:A:366:ASP:O	1:A:424:GLY:HA3	2.19	0.42
1:B:111:ASP:HB2	1:B:112:ARG:NH1	2.34	0.42
1:A:105:ASP:OD2	1:A:196:HIS:CD2	2.72	0.42
1:A:287:PHE:CE1	1:A:328:MET:HB3	2.53	0.42
1:A:376:LEU:HB3	1:A:377:PRO:HD3	2.01	0.42
1:B:287:PHE:CZ	1:B:291:ILE:CD1	3.02	0.42
1:B:32:TYR:O	1:B:35:TYR:HB3	2.20	0.42
1:A:180:LEU:N	1:A:180:LEU:CD2	2.82	0.42
1:A:415:ILE:HA	1:A:428:THR:O	2.19	0.42
1:B:315:PRO:O	1:B:316:ASP:HB2	2.19	0.42
1:B:336:LEU:O	1:B:340:ILE:HD13	2.19	0.42
1:A:162:LEU:HD13	1:A:173:THR:HA	2.01	0.42
1:A:149:THR:HG22	1:A:153:LEU:HD12	2.01	0.42
1:A:233:LEU:HB2	1:A:246:PHE:HD1	1.85	0.42
1:B:142:ILE:HB	1:B:145:ASP:OD1	2.20	0.42
1:B:353:MET:HE2	1:B:353:MET:HB3	1.84	0.42
1:A:174:LEU:HD23	1:A:197:ASP:HA	2.01	0.42
1:A:431:LEU:HA	1:A:432:PRO:HD3	1.82	0.42
1:A:341:LYS:HE2	1:A:342:TYR:CE2	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:202:GLU:OE1	1:B:206:ARG:NH2	2.52	0.42
1:A:278:ASP:OD2	1:A:278:ASP:C	2.58	0.41
1:A:229:TYR:HE1	1:A:297:GLN:HG2	1.82	0.41
1:B:234:ASP:C	1:B:236:GLY:H	2.22	0.41
1:B:431:LEU:HA	1:B:432:PRO:HD3	1.94	0.41
1:A:81:VAL:HG12	1:A:82:PHE:N	2.34	0.41
1:B:163:THR:HG21	1:B:165:ARG:NE	2.35	0.41
1:A:197:ASP:C	1:A:197:ASP:OD1	2.58	0.41
1:A:405:LYS:HG3	1:A:415:ILE:CG2	2.50	0.41
1:A:68:LEU:HD12	1:A:68:LEU:C	2.41	0.41
1:B:141:ASP:O	1:B:142:ILE:HD13	2.19	0.41
1:B:401:LEU:HA	1:B:401:LEU:HD23	1.91	0.41
1:A:195:LEU:N	1:A:195:LEU:HD23	2.35	0.41
1:B:142:ILE:HB	1:B:145:ASP:CG	2.40	0.41
1:B:124:GLN:NE2	1:B:131:ARG:HG3	2.35	0.41
1:B:279:VAL:HG12	1:B:323:ILE:C	2.40	0.41
1:A:370:GLY:HA3	1:A:419:SER:OG	2.20	0.41
1:A:47:LYS:HE3	1:A:57:THR:HG23	2.02	0.41
1:A:368:GLY:C	1:A:369:LEU:HD23	2.40	0.41
1:B:166:ASP:HA	1:B:167:GLU:OE2	2.20	0.41
1:B:63:GLU:O	1:B:64:ASP:C	2.59	0.41
1:A:155:THR:O	1:A:156:LYS:HG3	2.21	0.41
1:A:281:LEU:HD22	1:A:321:ILE:C	2.41	0.41
1:A:309:GLU:HA	1:A:347:GLY:N	2.36	0.41
1:B:126:GLN:O	1:B:165:ARG:HD2	2.20	0.41
1:B:234:ASP:C	1:B:236:GLY:N	2.73	0.41
1:A:368:GLY:O	1:A:369:LEU:HD23	2.20	0.41
1:A:371:ILE:HG22	1:A:421:GLU:CD	2.41	0.41
1:A:138:ASN:OD1	1:A:139:ILE:HD12	2.21	0.41
1:A:167:GLU:HG3	1:A:167:GLU:H	1.67	0.41
1:B:44:LEU:HD12	1:B:60:LEU:HD12	2.03	0.41
1:A:371:ILE:HG13	1:A:372:PRO:CA	2.42	0.40
1:B:387:ASP:O	1:B:389:ALA:HB3	2.21	0.40
1:A:120:ASN:N	1:A:120:ASN:HD22	2.19	0.40
1:A:253:GLU:OE2	1:A:256:ARG:NH1	2.53	0.40
1:A:314:TYR:CG	1:A:352:THR:HB	2.56	0.40
1:A:59:LYS:HG2	1:A:76:ASN:HB3	2.03	0.40
1:A:112:ARG:HG2	1:A:112:ARG:H	1.62	0.40
1:A:405:LYS:HA	1:A:415:ILE:HG21	2.03	0.40
1:B:238:LEU:HD12	1:B:239:THR:HG23	2.04	0.40
1:B:272:ASN:HB2	1:B:274:THR:HG23	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:282:THR:HG23	1:B:323:ILE:HG12	2.04	0.40
1:A:277:LEU:HD23	1:A:278:ASP:N	2.33	0.40
1:B:205:GLU:O	1:B:209:ARG:HG3	2.20	0.40
1:B:209:ARG:O	1:B:212:VAL:HG22	2.22	0.40
1:B:216:SER:O	1:B:217:HIS:C	2.59	0.40
1:B:239:THR:HG22	1:B:243:ALA:HB1	2.03	0.40
1:B:332:ILE:HD11	1:B:362:LEU:HD11	2.04	0.40
1:A:129:VAL:HG11	1:A:134:ALA:HB2	2.03	0.40
1:B:264:LEU:HD12	1:B:399:LEU:CD1	2.50	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	372/450 (83%)	315 (85%)	44 (12%)	13 (4%)	3 21
1	B	389/450 (86%)	322 (83%)	53 (14%)	14 (4%)	3 20
All	All	761/900 (85%)	637 (84%)	97 (13%)	27 (4%)	3 21

All (27) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	158	PRO
1	A	167	GLU
1	A	239	THR
1	B	315	PRO
1	B	400	GLY
1	A	168	TYR
1	A	345	ASP
1	B	156	LYS
1	B	165	ARG

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Mol	Chain	Res	Type
1	B	168	TYR
1	B	347	GLY
1	A	238	LEU
1	B	169	ASP
1	A	66	SER
1	A	165	ARG
1	A	302	GLN
1	B	144	ASP
1	B	216	SER
1	B	345	ASP
1	A	227	LYS
1	A	318	SER
1	B	314	TYR
1	B	316	ASP
1	A	303	SER
1	B	164	ARG
1	B	344	PRO
1	A	314	TYR

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	348/413 (84%)	275 (79%)	73 (21%)	1 4
1	B	363/413 (88%)	298 (82%)	65 (18%)	2 8
All	All	711/826 (86%)	573 (81%)	138 (19%)	1 5

All (138) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	51	LEU
1	A	57	THR
1	A	60	LEU
1	A	68	LEU
1	A	80	GLU

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Mol	Chain	Res	Type
1	A	81	VAL
1	A	84	LEU
1	A	88	ASN
1	A	89	LEU
1	A	91	GLN
1	A	97	THR
1	A	103	MET
1	A	104	THR
1	A	105	ASP
1	A	112	ARG
1	A	120	ASN
1	A	137	CYS
1	A	139	ILE
1	A	142	ILE
1	A	148	TYR
1	A	152	ASP
1	A	156	LYS
1	A	157	THR
1	A	159	GLU
1	A	162	LEU
1	A	163	THR
1	A	164	ARG
1	A	167	GLU
1	A	169	ASP
1	A	171	PHE
1	A	173	THR
1	A	175	ARG
1	A	177	ARG
1	A	181	ASN
1	A	195	LEU
1	A	206	ARG
1	A	209	ARG
1	A	221	THR
1	A	233	LEU
1	A	238	LEU
1	A	240	GLU
1	A	242	VAL
1	A	254	THR
1	A	262	THR
1	A	267	LEU
1	A	268	SER
1	A	276	HIS

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Mol	Chain	Res	Type
1	A	277	LEU
1	A	278	ASP
1	A	282	THR
1	A	287	PHE
1	A	290	TYR
1	A	304	THR
1	A	309	GLU
1	A	310	ILE
1	A	312	ARG
1	A	313	ASP
1	A	314	TYR
1	A	317	LYS
1	A	325	THR
1	A	350	THR
1	A	352	THR
1	A	360	LEU
1	A	363	SER
1	A	367	GLN
1	A	369	LEU
1	A	371	ILE
1	A	374	LYS
1	A	376	LEU
1	A	401	LEU
1	A	403	ILE
1	A	411	HIS
1	A	426	THR
1	B	29	PHE
1	B	30	LEU
1	B	32	TYR
1	B	49	ARG
1	B	61	LYS
1	B	67	ASP
1	B	68	LEU
1	B	71	LEU
1	B	84	LEU
1	B	85	THR
1	B	89	LEU
1	B	93	LYS
1	B	97	THR
1	B	100	LEU
1	B	104	THR
1	B	112	ARG

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Mol	Chain	Res	Type
1	B	125	LYS
1	B	128	ASN
1	B	130	THR
1	B	139	ILE
1	B	150	TYR
1	B	153	LEU
1	B	156	LYS
1	B	157	THR
1	B	159	GLU
1	B	160	ILE
1	B	162	LEU
1	B	164	ARG
1	B	166	ASP
1	B	169	ASP
1	B	171	PHE
1	B	173	THR
1	B	175	ARG
1	B	180	LEU
1	B	196	HIS
1	B	200	GLU
1	B	204	GLU
1	B	208	ARG
1	B	210	LEU
1	B	217	HIS
1	B	223	LEU
1	B	227	LYS
1	B	234	ASP
1	B	235	ASP
1	B	242	VAL
1	B	256	ARG
1	B	264	LEU
1	B	273	GLN
1	B	276	HIS
1	B	279	VAL
1	B	282	THR
1	B	285	THR
1	B	313	ASP
1	B	316	ASP
1	B	330	GLN
1	B	357	ASP
1	B	375	ASP
1	B	376	LEU

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Mol	Chain	Res	Type
1	B	378	LEU
1	B	397	THR
1	B	399	LEU
1	B	412	LYS
1	B	416	TRP
1	B	426	THR
1	B	430	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	120	ASN
1	B	196	HIS
1	B	217	HIS
1	B	272	ASN
1	B	299	GLN

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	380/450 (84%)	0.04	9 (2%) 59 56	95, 152, 216, 254	0
1	B	395/450 (87%)	0.06	16 (4%) 37 35	90, 137, 221, 263	0
All	All	775/900 (86%)	0.05	25 (3%) 47 46	90, 144, 220, 263	0

All (25) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	239	THR	5.3
1	B	233	LEU	3.8
1	B	238	LEU	3.7
1	B	165	ARG	3.5
1	A	37	ASN	3.4
1	B	244	PRO	2.7
1	A	319	VAL	2.6
1	B	147	SER	2.5
1	B	243	ALA	2.5
1	B	55	HIS	2.4
1	B	277	LEU	2.4
1	A	165	ARG	2.3
1	B	56	TYR	2.3
1	B	242	VAL	2.3
1	A	247	ILE	2.3
1	A	320	TRP	2.2
1	B	241	SER	2.2
1	A	191	LEU	2.2
1	B	170	GLU	2.2
1	A	374	LYS	2.1
1	B	168	TYR	2.1
1	A	148	TYR	2.1
1	B	150	TYR	2.1
1	B	28	ILE	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	238	LEU	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.