



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 17, 2022 – 01:04 PM EDT

PDB ID : 3WVO
Title : Crystal structure of Thermobifida fusca Cse1
Authors : Yuan, Y.A.; Tay, M.
Deposited on : 2014-06-02
Resolution : 3.31 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 : 2.29
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) : 2.29

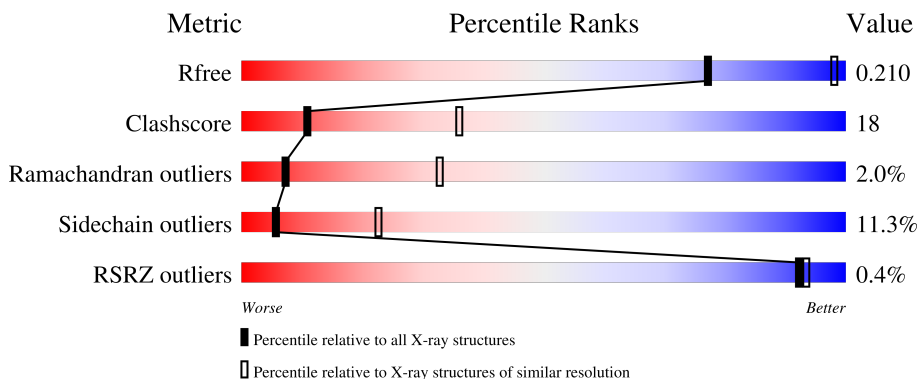
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.31 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	1089 (3.36-3.28)
Clashscore	141614	1137 (3.36-3.28)
Ramachandran outliers	138981	1115 (3.36-3.28)
Sidechain outliers	138945	1114 (3.36-3.28)
RSRZ outliers	127900	1059 (3.36-3.28)

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 $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	558	 57% 34% 7% .
1	B	558	 63% 30% . .
1	C	558	 60% 31% 5% .

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 12784 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 CRISPR-associated protein, Cse1 family.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	543	Total 4261	C 2697	N 763	O 793	S 8	0	0	0
1	B	542	Total 4255	C 2693	N 763	O 791	S 8	0	0	0
1	C	540	Total 4240	C 2684	N 760	O 788	S 8	0	0	0

There are 9 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP Q47PI4
A	-1	SER	-	expression tag	UNP Q47PI4
A	0	HIS	-	expression tag	UNP Q47PI4
B	-2	GLY	-	expression tag	UNP Q47PI4
B	-1	SER	-	expression tag	UNP Q47PI4
B	0	HIS	-	expression tag	UNP Q47PI4
C	-2	GLY	-	expression tag	UNP Q47PI4
C	-1	SER	-	expression tag	UNP Q47PI4
C	0	HIS	-	expression tag	UNP Q47PI4

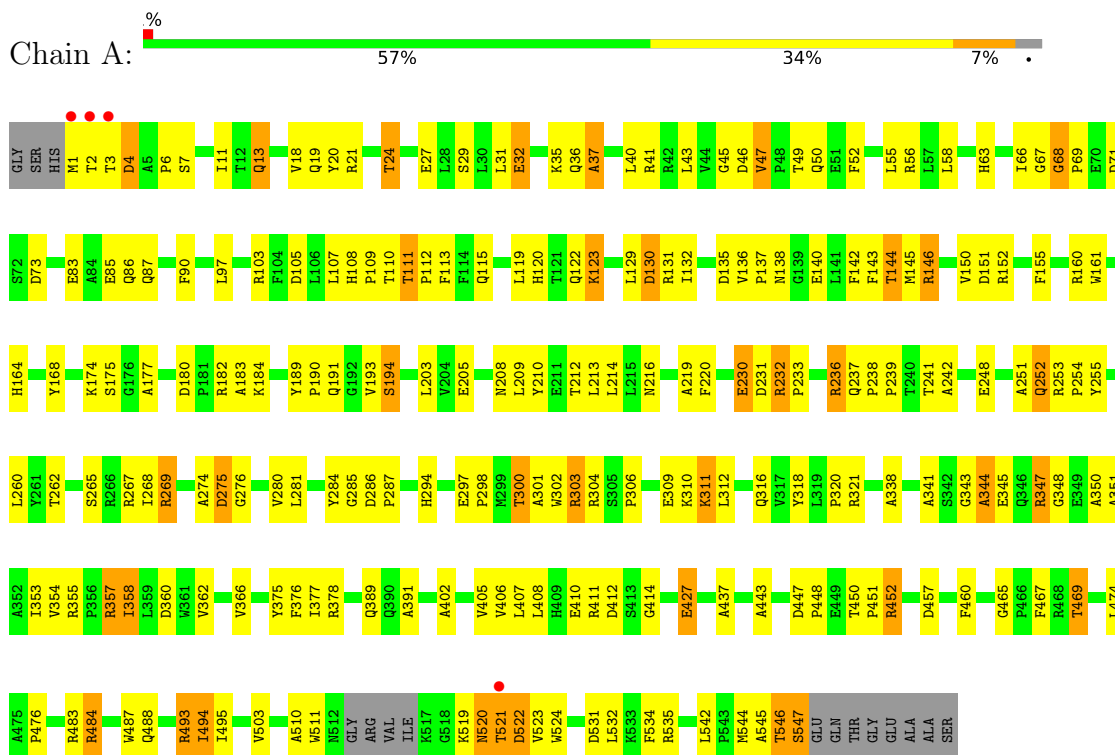
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	7	Total 7	O 7	0	0
2	B	13	Total 13	O 13	0	0
2	C	8	Total 8	O 8	0	0

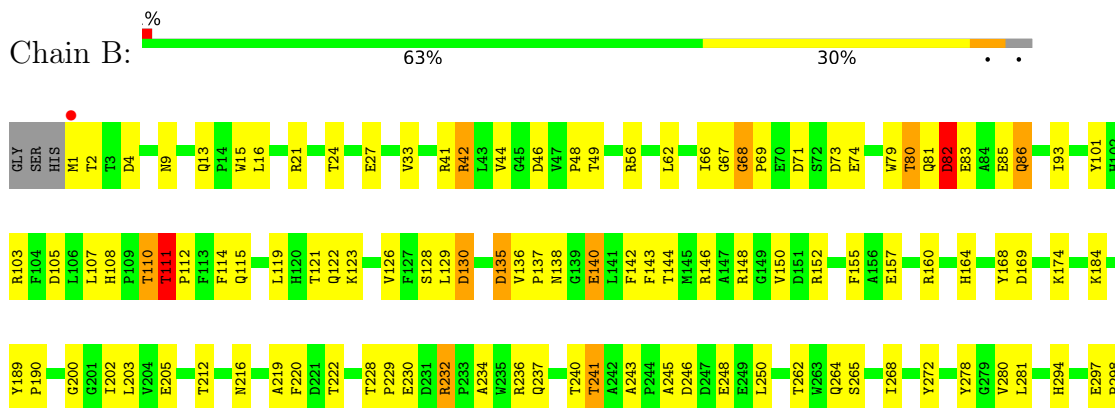
3 Residue-property plots i

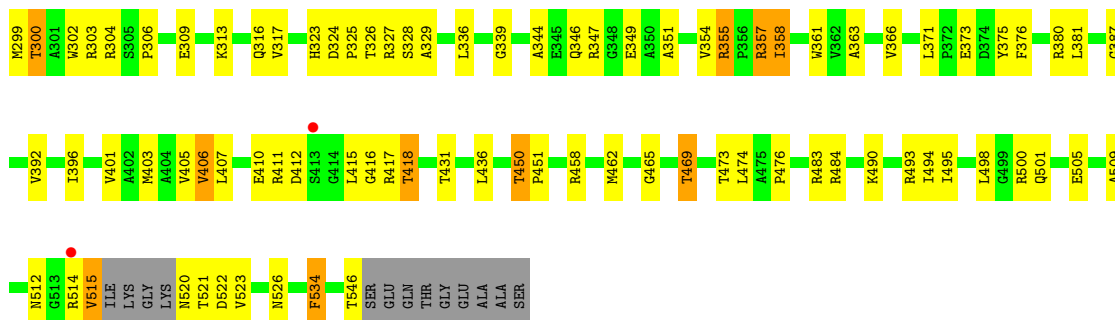
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: CRISPR-associated protein, Cse1 family

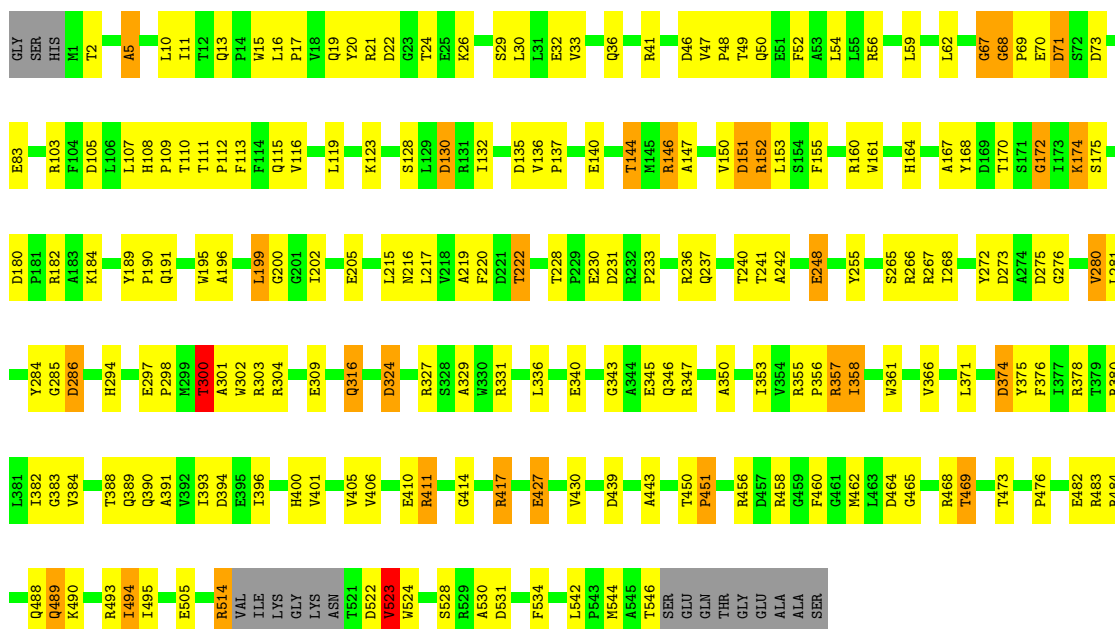


- Molecule 1: CRISPR-associated protein, Cse1 family





● Molecule 1: CRISPR-associated protein, Cse1 family



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	207.30Å 132.53Å 102.96Å 90.00° 93.75° 90.00°	Depositor
Resolution (Å)	48.37 – 3.31 47.46 – 3.31	Depositor EDS
% Data completeness (in resolution range)	89.4 (48.37-3.31) 89.5 (47.46-3.31)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.61 (at 3.33Å)	Xtrriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.156 , 0.210 0.156 , 0.210	Depositor DCC
R_{free} test set	1873 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	69.4	Xtrriage
Anisotropy	0.163	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 52.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	12784	wwPDB-VP
Average B, all atoms (Å ²)	73.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.85% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality i

5.1 Standard geometry i

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	0.66	0/4365	0.91	3/5942 (0.1%)
1	B	0.60	0/4359	0.84	1/5936 (0.0%)
1	C	0.69	1/4344 (0.0%)	0.92	8/5915 (0.1%)
All	All	0.65	1/13068 (0.0%)	0.89	12/17793 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	2
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	195	TRP	CB-CG	-5.38	1.40	1.50

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	203	LEU	CB-CA-C	-6.83	97.23	110.20
1	C	280	VAL	CB-CA-C	-6.36	99.31	111.40
1	C	394	ASP	CB-CG-OD1	6.00	123.70	118.30
1	A	452	ARG	NE-CZ-NH1	-5.56	117.52	120.30
1	C	300	THR	CB-CA-C	-5.54	96.65	111.60
1	C	523	VAL	CB-CA-C	-5.37	101.21	111.40
1	A	493	ARG	NE-CZ-NH2	-5.32	117.64	120.30
1	B	458	ARG	NE-CZ-NH2	-5.30	117.65	120.30
1	C	67	GLY	N-CA-C	-5.16	100.20	113.10
1	C	394	ASP	CB-CG-OD2	-5.04	113.77	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	152	ARG	NE-CZ-NH2	-5.03	117.78	120.30
1	C	59	LEU	CA-CB-CG	-5.00	103.79	115.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	344	ALA	Peptide
1	C	172	GLY	Peptide
1	C	199	LEU	Peptide

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4261	0	4181	176	0
1	B	4255	0	4172	139	0
1	C	4240	0	4157	147	0
2	A	7	0	0	0	0
2	B	13	0	0	1	0
2	C	8	0	0	1	0
All	All	12784	0	12510	459	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 18.

All (459) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:366:VAL:HG21	1:B:405:VAL:CG1	1.73	1.18
1:B:366:VAL:HG21	1:B:405:VAL:HG11	1.26	1.11
1:A:49:THR:HG22	1:A:168:TYR:CE1	1.90	1.06
1:C:132:ILE:HG22	1:C:161:TRP:HB3	1.39	1.05
1:C:103:ARG:NH2	1:C:237:GLN:O	1.93	1.01
1:B:366:VAL:CG2	1:B:405:VAL:HG11	1.91	1.01

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:501:GLN:O	1:B:505:GLU:HG3	1.63	0.99
1:A:132:ILE:HG22	1:A:161:TRP:HB3	1.47	0.95
1:B:103:ARG:NH2	1:B:237:GLN:O	1.99	0.94
1:A:110:THR:O	1:A:112:PRO:HD3	1.66	0.94
1:C:128:SER:HB3	1:C:130:ASP:OD1	1.69	0.92
1:A:103:ARG:HD3	1:A:111:THR:HG21	1.53	0.90
1:C:241:THR:HG22	1:C:242:ALA:H	1.36	0.88
1:B:339:GLY:O	1:B:354:VAL:HG21	1.74	0.88
1:B:169:ASP:OD2	1:B:174:LYS:NZ	2.08	0.87
1:A:49:THR:HG22	1:A:168:TYR:CD1	2.10	0.87
1:A:4:ASP:O	1:A:7:SER:HB3	1.76	0.85
1:B:115:GLN:HB2	1:B:268:ILE:O	1.75	0.85
1:C:46:ASP:OD2	1:C:160:ARG:NH1	2.10	0.84
1:A:182:ARG:HD2	1:A:191:GLN:HE22	1.42	0.83
1:C:132:ILE:CG2	1:C:161:TRP:HB3	2.07	0.83
1:A:103:ARG:CD	1:A:111:THR:HG21	2.09	0.82
1:B:309:GLU:HG3	1:B:317:VAL:HG23	1.60	0.81
1:C:108:HIS:HD2	1:C:110:THR:H	1.28	0.81
1:B:56:ARG:HH22	1:B:297:GLU:CD	1.83	0.81
1:C:343:GLY:O	1:C:346:GLN:HB2	1.82	0.80
1:A:2:THR:O	1:A:6:PRO:CD	2.30	0.79
1:C:170:THR:O	1:C:174:LYS:NZ	2.13	0.78
1:B:366:VAL:HG21	1:B:405:VAL:HG12	1.66	0.77
1:C:366:VAL:HG21	1:C:405:VAL:HG12	1.63	0.77
1:C:49:THR:HB	1:C:164:HIS:HE1	1.50	0.77
1:C:49:THR:CG2	1:C:168:TYR:CE1	2.68	0.76
1:A:484:ARG:HG2	1:A:484:ARG:HH11	1.50	0.76
1:C:366:VAL:HG21	1:C:405:VAL:CG1	2.16	0.76
1:A:108:HIS:HD2	1:A:110:THR:H	1.34	0.75
1:A:316:GLN:HE21	1:A:318:TYR:HE2	1.34	0.75
1:A:2:THR:O	1:A:6:PRO:HD2	1.88	0.74
1:A:49:THR:CG2	1:A:168:TYR:CE1	2.69	0.74
1:A:37:ALA:HA	1:A:40:LEU:HD12	1.68	0.74
1:B:121:THR:HG22	1:B:122:GLN:H	1.53	0.74
1:B:484:ARG:HG2	1:B:484:ARG:HH11	1.52	0.73
1:A:21:ARG:O	1:A:41:ARG:NH2	2.20	0.73
1:B:108:HIS:HD2	1:B:110:THR:H	1.37	0.73
1:A:103:ARG:HD2	1:A:111:THR:CG2	2.18	0.73
1:B:1:MET:O	1:B:4:ASP:HB2	1.86	0.73
1:B:373:GLU:HB3	1:B:406:VAL:HG22	1.70	0.72
1:B:351:ALA:HA	1:B:354:VAL:HG22	1.69	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:304:ARG:HH21	1:B:316:GLN:HA	1.54	0.72
1:C:19:GLN:NE2	1:C:41:ARG:HH11	1.88	0.72
1:C:56:ARG:NH2	1:C:297:GLU:OE2	2.20	0.72
1:A:545:ALA:O	1:A:547:SER:N	2.22	0.72
1:A:488:GLN:OE1	1:A:544:MET:HB2	1.88	0.71
1:C:410:GLU:HB3	1:C:414:GLY:HA3	1.73	0.71
1:B:339:GLY:CA	1:B:354:VAL:HG23	2.21	0.71
1:C:62:LEU:HD23	1:C:217:LEU:HD13	1.71	0.71
1:A:32:GLU:HG2	1:A:36:GLN:HE21	1.54	0.70
1:B:103:ARG:HD3	1:B:111:THR:HG21	1.72	0.70
1:A:152:ARG:NH1	1:A:276:GLY:HA3	2.06	0.70
1:C:411:ARG:O	1:C:417:ARG:NH1	2.24	0.70
1:A:132:ILE:CG2	1:A:161:TRP:HB3	2.21	0.70
1:A:2:THR:O	1:A:6:PRO:HD3	1.91	0.70
1:B:56:ARG:NH2	1:B:297:GLU:OE1	2.26	0.69
1:B:121:THR:HG22	1:B:122:GLN:N	2.07	0.69
1:B:309:GLU:OE2	1:B:316:GLN:HA	1.93	0.69
1:C:108:HIS:CD2	1:C:111:THR:H	2.10	0.69
1:B:339:GLY:O	1:B:354:VAL:CG2	2.41	0.69
1:A:316:GLN:NE2	1:A:318:TYR:HE2	1.90	0.68
1:C:19:GLN:HE22	1:C:41:ARG:HH11	1.40	0.68
1:C:473:THR:HG21	1:C:483:ARG:NH1	2.08	0.68
1:A:108:HIS:CD2	1:A:110:THR:H	2.11	0.68
1:B:49:THR:CG2	1:B:168:TYR:CD1	2.76	0.68
1:A:130:ASP:OD1	1:A:130:ASP:N	2.26	0.68
1:A:103:ARG:CD	1:A:111:THR:CG2	2.72	0.68
1:C:49:THR:HG22	1:C:168:TYR:CE1	2.28	0.68
1:C:108:HIS:CD2	1:C:110:THR:H	2.09	0.68
1:A:510:ALA:HB1	1:A:523:VAL:CG2	2.25	0.67
1:A:103:ARG:NH2	1:A:237:GLN:O	2.26	0.67
1:C:147:ALA:HA	2:C:603:HOH:O	1.95	0.67
1:C:439:ASP:HB3	1:C:530:ALA:HB1	1.75	0.67
1:B:49:THR:HG23	1:B:168:TYR:CD1	2.30	0.66
1:C:355:ARG:O	1:C:357:ARG:NH1	2.29	0.66
1:B:49:THR:HG23	1:B:168:TYR:CE1	2.31	0.66
1:A:174:LYS:HG3	1:A:284:TYR:CE1	2.31	0.66
1:B:339:GLY:HA3	1:B:354:VAL:HG23	1.77	0.66
1:A:410:GLU:HB3	1:A:414:GLY:HA3	1.79	0.65
1:C:174:LYS:HG3	1:C:284:TYR:CE1	2.30	0.65
1:B:27:GLU:OE2	1:B:160:ARG:NH2	2.29	0.65
1:A:294:HIS:HA	1:A:302:TRP:CZ2	2.31	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:298:PRO:HA	1:C:357:ARG:HB2	1.78	0.65
1:A:231:ASP:HA	1:A:255:TYR:HB2	1.78	0.65
1:C:49:THR:CG2	1:C:168:TYR:CD1	2.79	0.65
1:A:443:ALA:O	1:A:523:VAL:HG12	1.97	0.65
1:B:241:THR:HB	1:B:243:ALA:H	1.62	0.65
1:A:47:VAL:O	1:A:50:GLN:HB2	1.97	0.65
1:A:6:PRO:HA	1:A:107:LEU:HB2	1.80	0.64
1:A:111:THR:HG22	1:A:111:THR:O	1.96	0.64
1:C:450:THR:HB	1:C:451:PRO:CD	2.28	0.64
1:A:294:HIS:HA	1:A:302:TRP:CE2	2.33	0.63
1:B:9:ASN:HA	1:B:105:ASP:HA	1.80	0.63
1:C:231:ASP:HA	1:C:255:TYR:HB2	1.80	0.63
1:B:128:SER:HB3	1:B:130:ASP:OD1	1.99	0.63
1:B:294:HIS:HA	1:B:302:TRP:CE2	2.34	0.63
1:A:108:HIS:HD2	1:A:110:THR:N	1.97	0.63
1:B:108:HIS:CD2	1:B:110:THR:H	2.17	0.63
1:B:298:PRO:HA	1:B:357:ARG:HB2	1.80	0.62
1:B:138:ASN:ND2	1:B:140:GLU:HG3	2.13	0.62
1:C:49:THR:HG22	1:C:168:TYR:CD1	2.34	0.62
1:A:107:LEU:HD11	1:A:155:PHE:CE2	2.35	0.62
1:A:113:PHE:O	1:A:115:GLN:HG2	2.00	0.62
1:B:473:THR:HG21	1:B:483:ARG:NE	2.14	0.62
1:B:68:GLY:HA3	1:B:220:PHE:CZ	2.35	0.61
1:A:355:ARG:HH21	1:A:408:LEU:HB3	1.66	0.61
1:A:108:HIS:CD2	1:A:111:THR:H	2.19	0.61
1:B:230:GLU:O	1:B:232:ARG:HG3	2.01	0.61
1:C:105:ASP:HB3	1:C:108:HIS:HB2	1.83	0.61
1:B:71:ASP:HB3	1:B:73:ASP:H	1.64	0.60
1:C:130:ASP:OD1	1:C:130:ASP:N	2.30	0.60
1:C:20:TYR:HB3	1:C:22:ASP:OD1	2.00	0.60
1:C:152:ARG:NH2	1:C:273:ASP:OD2	2.35	0.60
1:B:234:ALA:H	1:B:262:THR:HG21	1.67	0.60
1:C:11:ILE:HA	1:C:30:LEU:HB2	1.84	0.60
1:C:49:THR:HB	1:C:164:HIS:CE1	2.35	0.60
1:B:110:THR:O	1:B:112:PRO:HD3	2.01	0.59
1:C:46:ASP:HB2	1:C:50:GLN:NE2	2.17	0.59
1:A:32:GLU:HG2	1:A:36:GLN:NE2	2.17	0.59
1:C:10:LEU:HD22	1:C:15:TRP:CE2	2.37	0.59
1:A:510:ALA:CB	1:A:523:VAL:CG2	2.81	0.59
1:C:29:SER:O	1:C:33:VAL:HG23	2.03	0.59
1:A:105:ASP:HB3	1:A:108:HIS:HB2	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:49:THR:CG2	1:A:168:TYR:CD1	2.86	0.58
1:A:232:ARG:HB2	1:A:236:ARG:HD2	1.86	0.58
1:B:41:ARG:HD3	1:B:42:ARG:HD3	1.86	0.58
1:A:355:ARG:NH2	1:A:408:LEU:HB3	2.19	0.58
1:B:130:ASP:OD1	1:B:130:ASP:N	2.17	0.58
1:B:202:ILE:O	1:B:299:MET:HG2	2.04	0.58
1:A:56:ARG:NH2	1:A:297:GLU:OE2	2.34	0.58
1:A:216:ASN:HA	1:A:358:ILE:HD11	1.86	0.58
1:A:20:TYR:HD1	1:A:24:THR:HB	1.68	0.58
1:B:56:ARG:NH2	1:B:297:GLU:CD	2.56	0.58
1:B:200:GLY:O	1:B:300:THR:HG23	2.04	0.58
1:A:11:ILE:HG22	1:A:31:LEU:HG	1.86	0.57
1:A:182:ARG:O	1:A:184:LYS:N	2.36	0.57
1:C:2:THR:HA	1:C:5:ALA:HB3	1.86	0.57
1:A:362:VAL:O	1:A:366:VAL:HG23	2.04	0.57
1:A:510:ALA:CB	1:A:523:VAL:HG21	2.34	0.57
1:A:144:THR:HG21	1:B:135:ASP:OD1	2.03	0.57
1:A:306:PRO:HA	1:A:309:GLU:OE1	2.05	0.57
1:A:251:ALA:HB3	1:A:252:GLN:NE2	2.20	0.57
1:C:189:TYR:O	1:C:191:GLN:HG3	2.04	0.57
1:C:294:HIS:HA	1:C:302:TRP:CZ2	2.40	0.56
1:A:231:ASP:HA	1:A:255:TYR:CB	2.35	0.56
1:A:11:ILE:O	1:A:29:SER:HB2	2.05	0.56
1:A:302:TRP:O	1:A:354:VAL:HG13	2.05	0.56
1:A:465:GLY:O	1:A:469:THR:HG23	2.05	0.56
1:C:108:HIS:CD2	1:C:109:PRO:HD2	2.41	0.56
1:B:358:ILE:O	1:B:361:TRP:HB3	2.05	0.56
1:C:151:ASP:OD1	1:C:151:ASP:N	2.38	0.56
1:C:443:ALA:O	1:C:523:VAL:HA	2.05	0.56
1:C:375:TYR:O	1:C:405:VAL:HG23	2.04	0.56
1:B:484:ARG:HG2	1:B:484:ARG:NH1	2.21	0.56
1:C:20:TYR:OH	1:C:36:GLN:NE2	2.38	0.56
1:C:331:ARG:HD2	1:C:427:GLU:OE2	2.05	0.56
1:B:490:LYS:HG3	1:B:494:ILE:HD12	1.88	0.55
1:C:108:HIS:HD2	1:C:110:THR:N	2.01	0.55
1:C:115:GLN:HB2	1:C:268:ILE:O	2.07	0.55
1:C:119:LEU:HD23	1:C:281:LEU:HD23	1.88	0.55
1:A:474:LEU:CD2	1:A:483:ARG:HG3	2.37	0.55
1:B:406:VAL:HG21	1:B:476:PRO:HG3	1.87	0.55
1:A:108:HIS:HB3	1:A:112:PRO:HA	1.89	0.55
1:C:241:THR:HG22	1:C:242:ALA:N	2.14	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:457:ASP:OD2	1:B:189:TYR:HE2	1.90	0.55
1:C:272:TYR:HB2	1:C:276:GLY:O	2.07	0.55
1:A:112:PRO:HG2	1:A:115:GLN:HG3	1.89	0.54
1:A:230:GLU:CD	1:A:230:GLU:H	2.11	0.54
1:C:219:ALA:O	1:C:222:THR:HB	2.08	0.54
1:A:520:ASN:O	1:A:523:VAL:HG22	2.07	0.54
1:C:113:PHE:O	1:C:115:GLN:HG2	2.07	0.54
1:C:115:GLN:CB	1:C:268:ILE:O	2.55	0.54
1:C:266:ARG:HA	1:C:285:GLY:N	2.23	0.54
1:C:430:VAL:HG11	1:C:460:PHE:CE1	2.42	0.53
1:A:233:PRO:HG2	1:A:236:ARG:HB2	1.89	0.53
1:B:406:VAL:CG2	1:B:476:PRO:HG3	2.38	0.53
1:B:406:VAL:HG21	1:B:476:PRO:HD3	1.90	0.53
1:C:464:ASP:OD1	1:C:464:ASP:C	2.46	0.53
1:A:484:ARG:HH11	1:A:484:ARG:CG	2.20	0.53
1:C:343:GLY:HA3	1:C:347:ARG:NH2	2.23	0.53
1:C:48:PRO:HG2	1:C:396:ILE:HG21	1.91	0.53
1:B:115:GLN:CB	1:B:268:ILE:O	2.54	0.52
1:B:142:PHE:O	1:B:143:PHE:HB2	2.08	0.52
1:B:49:THR:CG2	1:B:164:HIS:CE1	2.92	0.52
1:A:427:GLU:HG3	1:A:460:PHE:HZ	1.74	0.52
1:A:405:VAL:O	1:A:406:VAL:C	2.45	0.52
1:C:430:VAL:HG12	1:C:456:ARG:HG2	1.89	0.52
1:A:71:ASP:HB3	1:A:73:ASP:H	1.75	0.52
1:B:80:THR:HB	1:B:82:ASP:H	1.73	0.52
1:A:510:ALA:HB1	1:A:523:VAL:HG23	1.92	0.52
1:B:79:TRP:CH2	1:B:371:LEU:HD22	2.45	0.52
1:B:462:MET:HG3	1:B:498:LEU:HD22	1.90	0.52
1:A:298:PRO:HA	1:A:357:ARG:HB2	1.91	0.52
1:A:209:LEU:HD12	1:A:209:LEU:O	2.10	0.52
1:B:262:THR:O	1:B:262:THR:HG22	2.10	0.52
1:B:13:GLN:OE1	1:B:13:GLN:HA	2.10	0.51
1:B:294:HIS:HA	1:B:302:TRP:CZ2	2.45	0.51
1:B:418:THR:CG2	1:B:484:ARG:HB2	2.39	0.51
1:C:180:ASP:OD1	1:C:182:ARG:HB2	2.11	0.51
1:A:20:TYR:CD2	1:A:40:LEU:HD23	2.45	0.51
1:A:194:SER:HB3	1:A:265:SER:HB3	1.91	0.51
1:A:437:ALA:HB3	1:A:452:ARG:HA	1.92	0.51
1:C:71:ASP:HB2	1:C:73:ASP:H	1.76	0.51
1:C:189:TYR:HB3	1:C:190:PRO:CD	2.41	0.51
1:C:172:GLY:H	1:C:174:LYS:HE3	1.75	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:406:VAL:HG21	1:B:476:PRO:CD	2.40	0.51
1:B:323:HIS:CE1	1:B:381:LEU:HD22	2.46	0.51
1:C:69:PRO:O	1:C:219:ALA:HA	2.11	0.51
1:C:167:ALA:O	1:C:196:ALA:HB3	2.11	0.51
1:A:350:ALA:HB3	1:A:353:ILE:HD12	1.93	0.51
1:C:112:PRO:HG2	1:C:115:GLN:HG3	1.93	0.51
1:C:152:ARG:O	1:C:153:LEU:HD23	2.11	0.51
1:B:436:LEU:HD13	1:B:534:PHE:HB3	1.93	0.50
1:C:450:THR:HB	1:C:451:PRO:HD2	1.92	0.50
1:C:465:GLY:O	1:C:469:THR:HG22	2.11	0.50
1:A:142:PHE:O	1:A:143:PHE:HB2	2.10	0.50
1:C:524:TRP:HA	1:C:524:TRP:CE3	2.46	0.50
1:B:415:LEU:HD22	1:B:474:LEU:HB3	1.93	0.50
1:A:304:ARG:NH1	1:A:348:GLY:O	2.44	0.50
1:A:484:ARG:HG2	1:A:484:ARG:NH1	2.22	0.50
1:A:484:ARG:CG	1:A:484:ARG:NH1	2.75	0.50
1:B:129:LEU:HD11	1:B:278:TYR:O	2.11	0.50
1:C:439:ASP:HB3	1:C:530:ALA:CB	2.39	0.50
1:C:389:GLN:OE1	1:C:389:GLN:HA	2.12	0.50
1:A:182:ARG:HD2	1:A:191:GLN:NE2	2.20	0.50
1:A:300:THR:HG21	1:A:320:PRO:HB3	1.93	0.50
1:B:490:LYS:HG3	1:B:494:ILE:CD1	2.42	0.50
1:C:128:SER:CB	1:C:130:ASP:OD1	2.52	0.50
1:C:488:GLN:OE1	1:C:544:MET:HB2	2.12	0.50
1:A:343:GLY:HA3	1:A:347:ARG:NH2	2.27	0.49
1:C:107:LEU:HD11	1:C:155:PHE:CE2	2.47	0.49
1:C:205:GLU:OE2	1:C:380:ARG:HD2	2.12	0.49
1:A:35:LYS:HB2	1:A:90:PHE:CE1	2.48	0.49
1:B:232:ARG:HD2	1:B:237:GLN:HG3	1.95	0.49
1:B:520:ASN:N	2:B:608:HOH:O	2.44	0.49
1:B:121:THR:CG2	1:B:122:GLN:H	2.24	0.49
1:B:212:THR:O	1:B:216:ASN:ND2	2.46	0.49
1:B:355:ARG:HH21	1:B:363:ALA:HB2	1.77	0.49
1:B:514:ARG:O	1:B:515:VAL:HG23	2.13	0.49
1:C:297:GLU:OE1	1:C:298:PRO:HD2	2.12	0.49
1:A:146:ARG:NH1	1:B:157:GLU:OE2	2.46	0.49
1:B:79:TRP:CH2	1:B:371:LEU:CD2	2.96	0.49
1:B:189:TYR:HB3	1:B:190:PRO:CD	2.42	0.48
1:A:194:SER:HB3	1:A:265:SER:CB	2.43	0.48
1:C:21:ARG:O	1:C:41:ARG:NH2	2.46	0.48
1:C:19:GLN:NE2	1:C:41:ARG:NH1	2.57	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:376:PHE:HE2	1:A:402:ALA:HB1	1.79	0.48
1:B:189:TYR:HB3	1:B:190:PRO:HD3	1.95	0.48
1:B:245:ALA:HB3	1:B:250:LEU:HD21	1.95	0.48
1:C:146:ARG:O	1:C:146:ARG:HG2	2.14	0.48
1:B:71:ASP:HB2	1:B:74:GLU:H	1.78	0.48
1:A:355:ARG:O	1:A:357:ARG:NH1	2.45	0.48
1:A:375:TYR:HB3	1:A:405:VAL:HG21	1.95	0.48
1:C:300:THR:HG22	1:C:301:ALA:N	2.29	0.48
1:A:338:ALA:HB2	1:A:411:ARG:HB2	1.96	0.48
1:C:228:THR:C	1:C:230:GLU:H	2.17	0.48
1:C:366:VAL:CG2	1:C:405:VAL:CG1	2.90	0.48
1:A:49:THR:HB	1:A:164:HIS:HE1	1.79	0.47
1:A:66:ILE:HG22	1:A:66:ILE:O	2.14	0.47
1:B:522:ASP:O	1:B:526:ASN:HB2	2.14	0.47
1:A:280:VAL:HG12	1:A:281:LEU:N	2.28	0.47
1:B:473:THR:HG21	1:B:483:ARG:HE	1.79	0.47
1:C:21:ARG:HH22	1:C:83:GLU:HG2	1.79	0.47
1:C:119:LEU:CD2	1:C:281:LEU:HD23	2.43	0.47
1:C:374:ASP:HB3	1:C:476:PRO:HD2	1.97	0.47
1:C:382:ILE:HG22	1:C:383:GLY:N	2.29	0.47
1:A:85:GLU:O	1:A:86:GLN:C	2.53	0.47
1:B:69:PRO:O	1:B:219:ALA:HA	2.15	0.47
1:C:56:ARG:NH2	1:C:297:GLU:CD	2.68	0.47
1:C:340:GLU:OE2	1:C:417:ARG:NH2	2.48	0.47
1:C:357:ARG:HA	1:C:357:ARG:HD3	1.75	0.47
1:A:253:ARG:HA	1:A:254:PRO:C	2.36	0.47
1:A:532:LEU:HA	1:A:535:ARG:HD2	1.97	0.47
1:C:241:THR:CG2	1:C:242:ALA:H	2.16	0.47
1:A:37:ALA:HA	1:A:40:LEU:CD1	2.43	0.46
1:A:205:GLU:HA	1:A:212:THR:HG23	1.97	0.46
1:C:524:TRP:HA	1:C:524:TRP:HE3	1.81	0.46
1:C:54:LEU:HA	1:C:54:LEU:HD23	1.58	0.46
1:C:233:PRO:HD2	1:C:236:ARG:HD3	1.95	0.46
1:A:357:ARG:O	1:A:360:ASP:HB2	2.15	0.46
1:A:503:VAL:HG21	1:A:531:ASP:HB2	1.96	0.46
1:B:9:ASN:ND2	1:B:101:TYR:CZ	2.84	0.46
1:B:85:GLU:O	1:B:86:GLN:C	2.53	0.46
1:C:462:MET:HB3	1:C:494:ILE:HG23	1.97	0.46
1:A:267:ARG:HG2	1:A:285:GLY:HA2	1.98	0.46
1:A:511:TRP:O	1:A:511:TRP:CD1	2.69	0.46
1:B:79:TRP:HH2	1:B:81:GLN:HE21	1.61	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:306:PRO:HA	1:B:309:GLU:OE1	2.16	0.46
1:C:67:GLY:O	1:C:68:GLY:O	2.32	0.46
1:A:49:THR:CG2	1:A:168:TYR:CZ	2.98	0.46
1:A:67:GLY:O	1:A:68:GLY:O	2.33	0.46
1:C:49:THR:HG21	1:C:168:TYR:CD1	2.50	0.46
1:C:180:ASP:C	1:C:182:ARG:H	2.18	0.46
1:C:294:HIS:HA	1:C:302:TRP:CE2	2.51	0.46
1:C:384:VAL:HG11	1:C:393:ILE:HG12	1.97	0.46
1:A:521:THR:HG23	1:A:524:TRP:HE3	1.81	0.46
1:B:297:GLU:HA	1:B:298:PRO:HD2	1.88	0.46
1:C:56:ARG:HH22	1:C:297:GLU:CD	2.18	0.46
1:A:230:GLU:CD	1:A:230:GLU:N	2.69	0.45
1:A:366:VAL:HG21	1:A:405:VAL:HG12	1.97	0.45
1:A:45:GLY:C	1:A:47:VAL:H	2.20	0.45
1:B:465:GLY:O	1:B:469:THR:HG23	2.16	0.45
1:C:68:GLY:HA3	1:C:220:PHE:CZ	2.51	0.45
1:C:152:ARG:HH22	1:C:273:ASP:CG	2.18	0.45
1:C:202:ILE:HD11	1:C:336:LEU:HD21	1.97	0.45
1:B:108:HIS:CD2	1:B:111:THR:H	2.34	0.45
1:B:262:THR:O	1:B:264:GLN:NE2	2.48	0.45
1:C:170:THR:HB	1:C:391:ALA:HA	1.99	0.45
1:B:232:ARG:HB3	1:B:236:ARG:NH2	2.31	0.45
1:C:144:THR:HG22	1:C:146:ARG:HB3	1.99	0.45
1:B:329:ALA:HB3	1:B:401:VAL:HG23	1.99	0.45
1:B:357:ARG:HD3	1:B:357:ARG:HA	1.80	0.45
1:B:373:GLU:HB3	1:B:476:PRO:HG3	1.99	0.45
1:B:403:MET:HB2	1:B:407:LEU:HD12	1.99	0.45
1:B:304:ARG:HB3	1:B:349:GLU:CG	2.47	0.45
1:B:417:ARG:HA	1:B:417:ARG:HD3	1.69	0.45
1:C:350:ALA:HB3	1:C:353:ILE:HD12	1.99	0.45
1:B:49:THR:HG21	1:B:164:HIS:CE1	2.52	0.45
1:C:358:ILE:O	1:C:361:TRP:HB3	2.17	0.45
1:C:366:VAL:CG2	1:C:405:VAL:HG11	2.46	0.45
1:C:458:ARG:NH2	1:C:505:GLU:OE1	2.44	0.45
1:A:119:LEU:O	1:A:269:ARG:NH1	2.50	0.44
1:A:519:LYS:O	1:A:522:ASP:HB2	2.17	0.44
1:B:48:PRO:HG2	1:B:396:ILE:HG21	1.98	0.44
1:B:324:ASP:HA	1:B:325:PRO:HD3	1.83	0.44
1:A:55:LEU:HA	1:A:55:LEU:HD23	1.70	0.44
1:B:406:VAL:HG21	1:B:476:PRO:CG	2.47	0.44
1:B:82:ASP:HB3	1:B:85:GLU:HB2	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:121:THR:CG2	1:B:122:GLN:N	2.75	0.44
1:C:136:VAL:HG21	1:C:150:VAL:HG21	2.00	0.44
1:C:267:ARG:NH2	1:C:286:ASP:OD1	2.48	0.44
1:C:329:ALA:HB1	1:C:401:VAL:HG23	1.97	0.44
1:B:41:ARG:HD3	1:B:42:ARG:HG2	1.98	0.44
1:C:11:ILE:O	1:C:29:SER:HB2	2.17	0.44
1:A:120:HIS:ND1	1:A:120:HIS:N	2.66	0.44
1:B:9:ASN:ND2	1:B:101:TYR:CE2	2.85	0.44
1:B:355:ARG:O	1:B:357:ARG:NH1	2.42	0.44
1:C:343:GLY:HA3	1:C:347:ARG:CZ	2.47	0.44
1:B:129:LEU:HD11	1:B:278:TYR:C	2.38	0.44
1:A:18:VAL:HG12	1:A:43:LEU:HD23	1.99	0.43
1:B:339:GLY:CA	1:B:354:VAL:CG2	2.94	0.43
1:C:136:VAL:HA	1:C:137:PRO:HD2	1.48	0.43
1:C:52:PHE:CE2	1:C:56:ARG:HD2	2.53	0.43
1:C:216:ASN:HA	1:C:358:ILE:HD11	2.01	0.43
1:C:514:ARG:HB3	1:C:514:ARG:NH1	2.32	0.43
1:B:387:GLY:N	1:B:392:VAL:O	2.42	0.43
1:A:11:ILE:HG23	1:A:97:LEU:HD13	2.00	0.43
1:A:27:GLU:OE2	1:A:160:ARG:NH2	2.51	0.43
1:A:68:GLY:HA3	1:A:220:PHE:CZ	2.54	0.43
1:B:41:ARG:HD3	1:B:42:ARG:CD	2.47	0.43
1:B:205:GLU:OE1	1:B:380:ARG:HD2	2.19	0.43
1:B:329:ALA:HB2	1:B:381:LEU:HD12	2.01	0.43
1:C:71:ASP:HB2	1:C:73:ASP:N	2.33	0.43
1:C:489:GLN:HE21	1:C:546:THR:H	1.65	0.43
1:A:357:ARG:HA	1:A:357:ARG:HD3	1.80	0.43
1:A:389:GLN:O	1:A:391:ALA:N	2.52	0.43
1:C:105:ASP:O	1:C:112:PRO:HA	2.19	0.43
1:A:4:ASP:O	1:A:7:SER:CB	2.59	0.43
1:A:189:TYR:HB3	1:A:190:PRO:CD	2.49	0.43
1:B:46:ASP:OD2	1:B:160:ARG:NH1	2.46	0.43
1:A:49:THR:HB	1:A:164:HIS:CE1	2.53	0.43
1:A:311:LYS:HD3	1:A:312:LEU:HD23	2.01	0.43
1:A:375:TYR:O	1:A:405:VAL:HG23	2.18	0.43
1:A:450:THR:N	1:A:451:PRO:HD2	2.33	0.43
1:C:300:THR:O	1:C:356:PRO:HA	2.19	0.43
1:A:377:ILE:HD12	1:A:405:VAL:HG22	2.01	0.43
1:B:110:THR:C	1:B:112:PRO:HD3	2.38	0.43
1:C:16:LEU:HA	1:C:17:PRO:HD3	1.94	0.43
1:C:400:HIS:O	1:C:468:ARG:NH1	2.50	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:87:GLN:O	1:A:210:TYR:HE1	2.01	0.42
1:B:272:TYR:C	1:B:278:TYR:HE2	2.22	0.42
1:C:16:LEU:HD23	1:C:54:LEU:HD13	2.01	0.42
1:C:514:ARG:HB3	1:C:514:ARG:HH11	1.84	0.42
1:A:136:VAL:HA	1:A:137:PRO:HD2	1.58	0.42
1:A:341:ALA:O	1:A:344:ALA:HB2	2.19	0.42
1:C:304:ARG:NE	1:C:309:GLU:OE2	2.52	0.42
1:A:304:ARG:HD3	1:A:347:ARG:O	2.19	0.42
1:A:6:PRO:HB3	1:A:109:PRO:HD3	2.01	0.42
1:A:123:LYS:HE2	1:A:123:LYS:HB3	1.77	0.42
1:A:150:VAL:HG12	1:A:150:VAL:O	2.18	0.42
1:A:447:ASP:HA	1:A:448:PRO:HD3	1.86	0.42
1:A:520:ASN:C	1:A:522:ASP:H	2.22	0.42
1:B:411:ARG:HA	1:B:416:GLY:HA3	2.02	0.42
1:C:248:GLU:H	1:C:248:GLU:HG3	1.56	0.42
1:C:406:VAL:HG21	1:C:476:PRO:HD3	2.00	0.42
1:C:484:ARG:HG2	1:C:484:ARG:HH11	1.84	0.42
1:A:40:LEU:HD12	1:A:209:LEU:HD23	2.02	0.42
1:A:45:GLY:C	1:A:47:VAL:N	2.72	0.42
1:A:115:GLN:CB	1:A:268:ILE:O	2.67	0.42
1:B:272:TYR:CD2	1:B:272:TYR:N	2.87	0.42
1:C:304:ARG:HH21	1:C:316:GLN:HA	1.84	0.42
1:A:63:HIS:O	1:A:68:GLY:N	2.50	0.42
1:A:214:LEU:HD23	1:A:214:LEU:HA	1.84	0.42
1:A:262:THR:HG22	1:A:262:THR:O	2.20	0.42
1:A:303:ARG:HB2	1:A:321:ARG:NH1	2.34	0.42
1:A:155:PHE:HE1	1:A:275:ASP:HA	1.83	0.42
1:C:116:VAL:HG12	1:C:119:LEU:HB2	2.02	0.42
1:A:182:ARG:CD	1:A:191:GLN:HE22	2.20	0.42
1:B:62:LEU:CD1	1:B:93:ILE:HD11	2.49	0.42
1:B:136:VAL:HA	1:B:137:PRO:HD3	1.91	0.42
1:B:294:HIS:ND1	1:B:294:HIS:N	2.67	0.42
1:B:304:ARG:HB3	1:B:349:GLU:HG3	2.02	0.42
1:A:510:ALA:CA	1:A:523:VAL:HG21	2.49	0.42
1:B:280:VAL:HG12	1:B:281:LEU:N	2.35	0.42
1:A:52:PHE:CE2	1:A:56:ARG:HD2	2.55	0.42
1:A:241:THR:HB	1:A:242:ALA:H	1.71	0.42
1:A:452:ARG:HH11	1:A:452:ARG:HD2	1.62	0.41
1:A:142:PHE:CD1	1:A:142:PHE:N	2.88	0.41
1:A:484:ARG:HD2	1:A:484:ARG:HA	1.63	0.41
1:B:67:GLY:O	1:B:68:GLY:O	2.37	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:510:ALA:HA	1:A:523:VAL:HG21	2.02	0.41
1:C:388:THR:C	1:C:390:GLN:N	2.72	0.41
1:B:152:ARG:HD3	1:B:152:ARG:HA	1.89	0.41
1:A:338:ALA:O	1:A:351:ALA:HB1	2.20	0.41
1:A:343:GLY:H	1:A:347:ARG:NH2	2.19	0.41
1:B:450:THR:N	1:B:451:PRO:HD2	2.35	0.41
1:C:528:SER:O	1:C:531:ASP:HB3	2.20	0.41
1:A:41:ARG:HA	1:A:208:ASN:HA	2.01	0.41
1:A:69:PRO:O	1:A:219:ALA:HA	2.21	0.41
1:A:129:LEU:C	1:A:131:ARG:N	2.74	0.41
1:A:32:GLU:O	1:A:36:GLN:HG3	2.21	0.41
1:A:260:LEU:C	1:A:262:THR:H	2.23	0.41
1:A:531:ASP:O	1:A:534:PHE:HB3	2.21	0.41
1:B:107:LEU:HD11	1:B:155:PHE:CE2	2.56	0.41
1:B:138:ASN:HD22	1:B:140:GLU:HG3	1.84	0.41
1:B:324:ASP:C	1:B:324:ASP:OD1	2.58	0.41
1:B:375:TYR:O	1:B:405:VAL:HG23	2.21	0.41
1:A:7:SER:O	1:A:13:GLN:NE2	2.54	0.41
1:A:103:ARG:HA	1:A:111:THR:HG22	2.03	0.41
1:A:177:ALA:HB3	1:A:180:ASP:HB2	2.03	0.41
1:A:427:GLU:HG3	1:A:460:PHE:CZ	2.55	0.41
1:A:510:ALA:CB	1:A:523:VAL:HG23	2.49	0.41
1:B:16:LEU:HD12	1:B:33:VAL:HG21	2.03	0.41
1:B:140:GLU:H	1:B:140:GLU:HG2	1.44	0.41
1:B:323:HIS:HE1	1:B:381:LEU:HD22	1.83	0.41
1:C:324:ASP:OD1	1:C:324:ASP:C	2.60	0.41
1:A:238:PRO:HA	1:A:239:PRO:HD3	1.95	0.40
1:A:494:ILE:HG22	1:A:495:ILE:N	2.35	0.40
1:C:215:LEU:HD23	1:C:215:LEU:HA	1.83	0.40
1:C:371:LEU:HD23	1:C:371:LEU:HA	1.91	0.40
1:A:213:LEU:HD23	1:A:213:LEU:HA	1.91	0.40
1:A:405:VAL:O	1:A:407:LEU:N	2.55	0.40
1:A:467:PHE:HA	1:A:487:TRP:CZ3	2.56	0.40
1:C:490:LYS:HD2	1:C:490:LYS:HA	1.95	0.40
1:A:286:ASP:HA	1:A:287:PRO:HD2	1.96	0.40
1:B:62:LEU:HD12	1:B:62:LEU:HA	1.87	0.40
1:C:13:GLN:H	1:C:13:GLN:HG2	1.73	0.40
1:A:58:LEU:HA	1:A:58:LEU:HD23	1.82	0.40
1:B:228:THR:HB	1:B:230:GLU:OE1	2.21	0.40
1:B:336:LEU:O	1:B:355:ARG:HD2	2.21	0.40
1:C:112:PRO:CG	1:C:115:GLN:HG3	2.50	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:355:ARG:HG3	1:C:356:PRO:HD2	2.04	0.40
1:A:300:THR:HG22	1:A:301:ALA:N	2.36	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	539/558 (97%)	485 (90%)	43 (8%)	11 (2%)	7	33
1	B	538/558 (96%)	477 (89%)	47 (9%)	14 (3%)	5	28
1	C	536/558 (96%)	482 (90%)	47 (9%)	7 (1%)	12	40
All	All	1613/1674 (96%)	1444 (90%)	137 (8%)	32 (2%)	7	33

All (32) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	68	GLY
1	A	111	THR
1	A	183	ALA
1	A	345	GLU
1	A	546	THR
1	B	68	GLY
1	B	344	ALA
1	C	68	GLY
1	C	523	VAL
1	A	274	ALA
1	B	15	TRP
1	B	86	GLN
1	B	184	LYS
1	B	412	ASP
1	B	509	ALA

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Mol	Chain	Res	Type
1	C	146	ARG
1	C	200	GLY
1	A	412	ASP
1	A	140	GLU
1	A	520	ASN
1	B	82	ASP
1	B	114	PHE
1	B	410	GLU
1	C	5	ALA
1	C	451	PRO
1	A	46	ASP
1	B	83	GLU
1	B	229	PRO
1	A	37	ALA
1	B	111	THR
1	C	494	ILE
1	B	406	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	433/443 (98%)	386 (89%)	47 (11%)	6	25
1	B	432/443 (98%)	379 (88%)	53 (12%)	4	20
1	C	430/443 (97%)	384 (89%)	46 (11%)	6	25
All	All	1295/1329 (97%)	1149 (89%)	146 (11%)	6	23

All (146) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	3	THR
1	A	4	ASP
1	A	13	GLN
1	A	19	GLN

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Mol	Chain	Res	Type
1	A	24	THR
1	A	32	GLU
1	A	47	VAL
1	A	83	GLU
1	A	122	GLN
1	A	123	LYS
1	A	130	ASP
1	A	135	ASP
1	A	138	ASN
1	A	144	THR
1	A	145	MET
1	A	146	ARG
1	A	151	ASP
1	A	175	SER
1	A	193	VAL
1	A	194	SER
1	A	230	GLU
1	A	232	ARG
1	A	236	ARG
1	A	248	GLU
1	A	252	GLN
1	A	269	ARG
1	A	275	ASP
1	A	300	THR
1	A	303	ARG
1	A	310	LYS
1	A	311	LYS
1	A	347	ARG
1	A	357	ARG
1	A	358	ILE
1	A	378	ARG
1	A	427	GLU
1	A	469	THR
1	A	476	PRO
1	A	484	ARG
1	A	493	ARG
1	A	494	ILE
1	A	521	THR
1	A	522	ASP
1	A	542	LEU
1	A	546	THR
1	A	547	SER

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Mol	Chain	Res	Type
1	B	2	THR
1	B	21	ARG
1	B	24	THR
1	B	42	ARG
1	B	44	VAL
1	B	66	ILE
1	B	80	THR
1	B	82	ASP
1	B	110	THR
1	B	111	THR
1	B	119	LEU
1	B	123	LYS
1	B	126	VAL
1	B	130	ASP
1	B	135	ASP
1	B	140	GLU
1	B	144	THR
1	B	146	ARG
1	B	148	ARG
1	B	150	VAL
1	B	203	LEU
1	B	222	THR
1	B	232	ARG
1	B	240	THR
1	B	241	THR
1	B	246	ASP
1	B	248	GLU
1	B	265	SER
1	B	300	THR
1	B	303	ARG
1	B	313	LYS
1	B	326	THR
1	B	327	ARG
1	B	328	SER
1	B	346	GLN
1	B	347	ARG
1	B	355	ARG
1	B	357	ARG
1	B	358	ILE
1	B	376	PHE
1	B	418	THR
1	B	431	THR

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Mol	Chain	Res	Type
1	B	450	THR
1	B	469	THR
1	B	493	ARG
1	B	495	ILE
1	B	500	ARG
1	B	512	ASN
1	B	515	VAL
1	B	521	THR
1	B	523	VAL
1	B	534	PHE
1	B	546	THR
1	C	24	THR
1	C	26	LYS
1	C	32	GLU
1	C	47	VAL
1	C	70	GLU
1	C	71	ASP
1	C	123	LYS
1	C	130	ASP
1	C	135	ASP
1	C	140	GLU
1	C	144	THR
1	C	151	ASP
1	C	174	LYS
1	C	175	SER
1	C	184	LYS
1	C	199	LEU
1	C	222	THR
1	C	240	THR
1	C	248	GLU
1	C	265	SER
1	C	275	ASP
1	C	280	VAL
1	C	286	ASP
1	C	300	THR
1	C	303	ARG
1	C	316	GLN
1	C	324	ASP
1	C	327	ARG
1	C	345	GLU
1	C	357	ARG
1	C	358	ILE

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Mol	Chain	Res	Type
1	C	374	ASP
1	C	376	PHE
1	C	378	ARG
1	C	411	ARG
1	C	417	ARG
1	C	427	GLU
1	C	469	THR
1	C	482	GLU
1	C	489	GLN
1	C	493	ARG
1	C	495	ILE
1	C	514	ARG
1	C	522	ASP
1	C	534	PHE
1	C	542	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	86	GLN
1	A	108	HIS
1	A	164	HIS
1	A	191	GLN
1	A	252	GLN
1	A	409	HIS
1	A	520	ASN
1	B	36	GLN
1	B	108	HIS
1	B	124	ASN
1	B	138	ASN
1	B	164	HIS
1	B	291	HIS
1	B	296	HIS
1	B	400	HIS
1	B	512	ASN
1	C	19	GLN
1	C	36	GLN
1	C	108	HIS
1	C	164	HIS
1	C	308	GLN
1	C	367	ASN
1	C	409	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	543/558 (97%)	-0.28	4 (0%) 87 89	37, 67, 107, 185	0
1	B	542/558 (97%)	-0.19	3 (0%) 89 90	43, 81, 116, 184	0
1	C	540/558 (96%)	-0.39	0 100 100	30, 62, 105, 170	0
All	All	1625/1674 (97%)	-0.29	7 (0%) 92 93	30, 70, 112, 185	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1	MET	2.9
1	B	413	SER	2.6
1	A	521	THR	2.5
1	B	1	MET	2.3
1	A	2	THR	2.2
1	A	3	THR	2.2
1	B	514	ARG	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 [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.