



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 1, 2026 – 05:06 PM UTC

PDB ID : 2W45 / pdb_00002w45
Title : Epstein-Barr virus alkaline nuclease
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Deposited on : 2008-11-21
Resolution : 3.00 Å(reported)

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

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<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	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

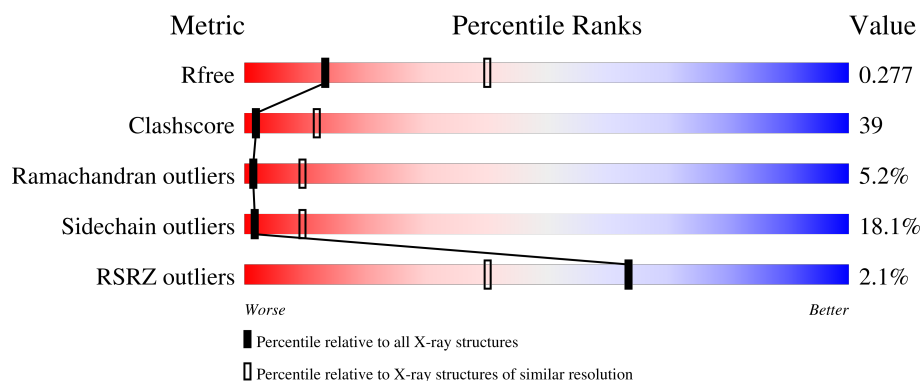
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	2672 (3.00-3.00)
Clashscore	190562	2977 (3.00-3.00)
Ramachandran outliers	187476	2877 (3.00-3.00)
Sidechain outliers	187428	2880 (3.00-3.00)
RSRZ outliers	180081	2671 (3.00-3.00)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments 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	470	2% 43% 38% 12% • •
1	B	470	2% 37% 39% 14% • 7%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 7009 atoms, of which 0 are hydrogens and 0 are deuteriums.

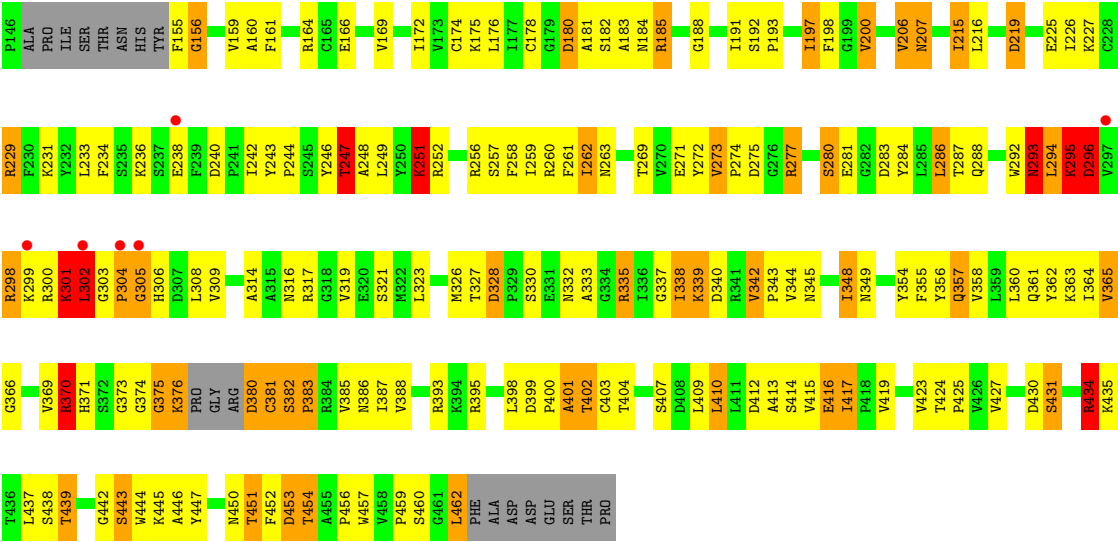
In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called ALKALINE EXONUCLEASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	449	Total	C	N	O	S	0	0	0
			3539	2257	595	665	22			
1	B	437	Total	C	N	O	S	0	0	0
			3446	2201	579	644	22			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	10	Total	O	0	0
			10	10		
2	B	14	Total	O	0	0
			14	14		



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	87.51Å 63.79Å 114.13Å 90.00° 93.59° 90.00°	Depositor
Resolution (Å)	71.43 – 3.00 71.43 – 3.00	Depositor EDS
% Data completeness (in resolution range)	94.7 (71.43-3.00) 94.5 (71.43-3.00)	Depositor EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.86 (at 3.01Å)	Xtriage
Refinement program	REFMAC 5.5.0068	Depositor
R, R_{free}	0.192 , 0.282 0.189 , 0.277	Depositor DCC
R_{free} test set	1235 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	49.5	Xtriage
Anisotropy	0.377	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 63.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	7009	wwPDB-VP
Average B, all atoms (Å ²)	35.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.67% 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

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	1.14	5/3622 (0.1%)	1.36	31/4912 (0.6%)
1	B	1.14	3/3526 (0.1%)	1.40	31/4780 (0.6%)
All	All	1.14	8/7148 (0.1%)	1.38	62/9692 (0.6%)

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	2
1	B	0	5
All	All	0	7

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	342	VAL	CA-C	6.75	1.58	1.53
1	B	365	VAL	CA-CB	6.08	1.61	1.54
1	A	423	VAL	CA-CB	-5.61	1.47	1.54
1	A	259	ILE	CA-CB	-5.59	1.48	1.54
1	A	392	PHE	CA-C	5.52	1.59	1.52
1	B	41	MET	CA-C	-5.35	1.46	1.52
1	B	319	VAL	CA-CB	-5.06	1.49	1.54
1	A	243	TYR	C-O	-5.05	1.20	1.24

All (62) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	381	CYS	N-CA-C	11.72	127.72	112.72
1	B	156	GLY	N-CA-C	9.86	127.05	111.08
1	B	453	ASP	N-CA-C	-8.55	102.91	112.57
1	A	38	PRO	CA-C-N	-8.40	112.08	120.31

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	38	PRO	C-N-CA	-8.40	112.08	120.31
1	B	328	ASP	CA-C-N	-8.37	110.32	119.19
1	B	328	ASP	C-N-CA	-8.37	110.32	119.19
1	B	342	VAL	CA-C-N	8.24	128.26	119.78
1	B	342	VAL	C-N-CA	8.24	128.26	119.78
1	B	25	SER	N-CA-C	8.19	122.12	110.40
1	A	9	ASP	CA-C-N	-8.14	112.53	120.83
1	A	9	ASP	C-N-CA	-8.14	112.53	120.83
1	B	398	LEU	N-CA-C	7.76	122.39	113.15
1	B	47	VAL	N-CA-C	-7.21	103.75	110.53
1	A	342	VAL	N-CA-C	6.96	114.78	107.76
1	A	215	ILE	CB-CA-C	-6.81	102.46	110.91
1	B	251	LYS	CA-C-N	-6.52	114.93	123.34
1	B	251	LYS	C-N-CA	-6.52	114.93	123.34
1	B	360	LEU	N-CA-C	-6.41	104.94	112.89
1	B	128	SER	N-CA-CB	-6.25	100.78	110.29
1	A	192	SER	CA-C-N	6.14	125.62	119.24
1	A	192	SER	C-N-CA	6.14	125.62	119.24
1	A	126	ILE	N-CA-C	6.12	116.67	107.80
1	B	301	LYS	N-CA-C	6.12	123.83	110.80
1	B	41	MET	CA-C-N	6.10	127.47	119.84
1	B	41	MET	C-N-CA	6.10	127.47	119.84
1	A	180	ASP	N-CA-C	6.08	120.27	112.86
1	B	335	ARG	N-CA-C	6.07	118.51	109.59
1	A	114	SER	N-CA-C	-6.00	105.45	112.89
1	A	54	LYS	N-CA-C	-5.98	104.10	111.33
1	B	193	PRO	CA-C-N	-5.94	113.33	122.60
1	B	193	PRO	C-N-CA	-5.94	113.33	122.60
1	A	316	ASN	N-CA-C	5.92	121.54	113.97
1	B	295	LYS	N-CA-C	5.90	123.37	110.80
1	A	396	SER	CA-C-N	-5.89	113.74	119.87
1	A	396	SER	C-N-CA	-5.89	113.74	119.87
1	B	64	GLY	N-CA-C	5.88	119.32	112.50
1	A	116	ASN	N-CA-C	-5.87	102.78	110.53
1	B	215	ILE	CA-C-N	-5.81	114.91	123.05
1	B	215	ILE	C-N-CA	-5.81	114.91	123.05
1	B	138	ASN	N-CA-C	5.75	122.11	114.12
1	A	240	ASP	CA-C-N	-5.65	112.77	119.84
1	A	240	ASP	C-N-CA	-5.65	112.77	119.84
1	B	132	LEU	N-CA-C	5.52	117.76	111.02
1	A	330	SER	N-CA-C	-5.46	105.98	113.30
1	A	283	ASP	N-CA-C	5.42	115.45	108.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	37	ARG	CA-C-N	-5.42	114.80	120.38
1	B	37	ARG	C-N-CA	-5.42	114.80	120.38
1	B	308	LEU	N-CA-C	-5.39	104.44	111.02
1	A	287	THR	N-CA-C	5.37	117.42	108.99
1	B	247	THR	N-CA-CB	5.37	117.80	110.01
1	A	120	ASP	N-CA-C	5.33	116.78	111.07
1	A	273	VAL	CA-C-N	5.33	125.27	119.78
1	A	273	VAL	C-N-CA	5.33	125.27	119.78
1	A	140	PRO	CA-C-N	-5.29	113.67	120.65
1	A	140	PRO	C-N-CA	-5.29	113.67	120.65
1	A	226	ILE	CB-CA-C	-5.26	104.01	111.21
1	A	345	ASN	N-CA-C	5.11	116.98	107.99
1	A	422	LEU	CA-C-N	-5.08	116.54	123.10
1	A	422	LEU	C-N-CA	-5.08	116.54	123.10
1	A	263	ASN	N-CA-C	5.08	119.11	113.02
1	B	261	PHE	N-CA-C	-5.06	105.85	111.36

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	303	GLY	Peptide
1	A	41	MET	Peptide
1	B	293	ASN	Peptide
1	B	294	LEU	Peptide
1	B	380	ASP	Peptide
1	B	41	MET	Peptide
1	B	8	GLU	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	3539	0	3493	275	0
1	B	3446	0	3413	275	0
2	A	10	0	0	1	0
2	B	14	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	7009	0	6906	544	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 39.

All (544) 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:301:LYS:HE2	1:A:301:LYS:C	1.37	1.44
1:A:294:LEU:O	1:A:295:LYS:CD	1.71	1.36
1:A:294:LEU:O	1:A:295:LYS:HD3	1.19	1.35
1:A:300:ARG:NH1	1:A:302:LEU:HD13	1.42	1.31
1:B:131:LYS:O	1:B:135:THR:HG22	1.32	1.26
1:A:301:LYS:C	1:A:301:LYS:CE	2.08	1.25
1:B:271:GLU:OE1	1:B:298:ARG:NH1	1.70	1.24
1:A:301:LYS:CE	1:A:301:LYS:O	1.90	1.19
1:B:95:THR:HG23	1:B:98:GLN:CD	1.66	1.17
1:A:278:LEU:CA	1:A:301:LYS:HB2	1.74	1.17
1:A:128:SER:HB3	1:A:131:LYS:HG3	1.15	1.15
1:A:37:ARG:HB3	1:A:38:PRO:HD2	1.30	1.13
1:B:382:SER:HB2	1:B:383:PRO:HD3	1.18	1.13
1:B:434:ARG:HG2	1:B:434:ARG:HH11	0.96	1.12
1:A:295:LYS:O	1:A:296:ASP:HB3	1.49	1.11
1:B:271:GLU:CD	1:B:298:ARG:HH12	1.59	1.11
1:A:300:ARG:NH1	1:A:302:LEU:CD1	2.14	1.11
1:A:301:LYS:O	1:A:301:LYS:HE3	1.47	1.09
1:A:128:SER:HB3	1:A:131:LYS:CG	1.82	1.08
1:B:387:ILE:HD11	1:B:424:THR:HB	1.26	1.07
1:B:302:LEU:C	1:B:304:PRO:HD3	1.79	1.07
1:A:142:LYS:HD2	1:A:142:LYS:H	1.16	1.05
1:B:95:THR:HG23	1:B:98:GLN:OE1	1.56	1.04
1:A:302:LEU:O	1:A:304:PRO:HD2	1.58	1.04
1:B:249:LEU:HA	1:B:257:SER:OG	1.58	1.04
1:B:113:GLN:HB2	1:B:116:ASN:ND2	1.74	1.02
1:A:278:LEU:CB	1:A:301:LYS:HB2	1.91	1.01
1:A:300:ARG:HH11	1:A:302:LEU:CD2	1.74	1.00
1:A:45:ARG:HH11	1:A:45:ARG:CG	1.71	1.00
1:B:387:ILE:CD1	1:B:424:THR:HB	1.92	0.99
1:A:300:ARG:HH11	1:A:302:LEU:HD22	1.22	0.99
1:A:274:PRO:HG2	1:A:277:ARG:HG3	1.42	0.99
1:B:434:ARG:HG2	1:B:434:ARG:NH1	1.62	0.98

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:37:ARG:HB3	1:A:38:PRO:CD	1.93	0.98
1:B:9:ASP:OD2	1:B:10:PRO:HD2	1.62	0.98
1:A:45:ARG:HH11	1:A:45:ARG:HG2	1.28	0.97
1:B:156:GLY:HA2	1:B:160:ALA:CB	1.94	0.96
1:A:300:ARG:CZ	1:A:302:LEU:HD13	1.95	0.96
1:B:63:THR:O	1:B:67:ASP:OD2	1.85	0.94
1:B:382:SER:HB2	1:B:383:PRO:CD	1.96	0.94
1:A:395:ARG:HG2	1:A:417:ILE:HD13	1.49	0.94
1:B:95:THR:CG2	1:B:98:GLN:CD	2.41	0.93
1:B:453:ASP:O	1:B:454:THR:HG22	1.68	0.93
1:A:175:LYS:HG2	1:A:176:LEU:CD2	1.99	0.93
1:B:271:GLU:CD	1:B:298:ARG:NH1	2.20	0.92
1:B:380:ASP:OD2	1:B:381:CYS:HB2	1.70	0.92
1:B:382:SER:CB	1:B:383:PRO:HD3	2.00	0.92
1:A:278:LEU:HB2	1:A:301:LYS:HB2	1.49	0.91
1:B:326:MET:HE1	1:B:338:ILE:HD12	1.53	0.91
1:A:321:SER:HB2	1:A:423:VAL:O	1.70	0.91
1:A:100:THR:HG21	1:A:371:HIS:HB2	1.54	0.90
1:B:156:GLY:HA2	1:B:160:ALA:HB2	1.52	0.89
1:B:434:ARG:HH11	1:B:434:ARG:CG	1.83	0.89
1:B:131:LYS:O	1:B:135:THR:CG2	2.19	0.89
1:B:128:SER:HB3	1:B:131:LYS:HG3	1.55	0.89
1:A:278:LEU:HA	1:A:301:LYS:HB2	1.54	0.88
1:B:416:GLU:N	1:B:416:GLU:OE1	2.05	0.88
1:B:277:ARG:NH2	1:B:300:ARG:HD2	1.88	0.88
1:A:458:VAL:HG13	1:A:459:PRO:HD2	1.53	0.87
1:A:376:LYS:HB2	1:A:379:ARG:HH22	1.39	0.87
1:B:303:GLY:N	1:B:304:PRO:HD3	1.86	0.87
1:A:293:ASN:C	1:A:294:LEU:HD23	1.99	0.87
1:A:301:LYS:HE2	1:A:302:LEU:N	1.90	0.87
1:A:170:LYS:HB2	1:A:185:ARG:HH11	1.40	0.86
1:A:294:LEU:O	1:A:295:LYS:CG	2.23	0.86
1:B:277:ARG:HH21	1:B:300:ARG:HD2	1.40	0.86
1:B:327:THR:CG2	1:B:339:LYS:HB2	2.04	0.86
1:B:387:ILE:HD11	1:B:424:THR:CB	2.05	0.86
1:A:465:ASP:HB2	1:B:252:ARG:NH2	1.91	0.85
1:A:45:ARG:HG2	1:A:45:ARG:NH1	1.88	0.84
1:B:114:SER:O	1:B:115:GLU:HB2	1.77	0.84
1:A:62:GLU:OE1	1:A:109:MET:HE3	1.78	0.84
1:A:113:GLN:HB2	1:A:116:ASN:HB2	1.60	0.84
1:A:457:TRP:HE3	1:A:458:VAL:H	1.25	0.83

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:206:VAL:O	1:B:207:ASN:HB2	1.75	0.83
1:B:286:LEU:HD11	1:B:349:ASN:HA	1.60	0.83
1:B:370:ARG:HD3	1:B:376:LYS:HD3	1.61	0.83
1:A:200:VAL:HG12	1:A:201:SER:N	1.93	0.81
1:B:127:ILE:HG23	1:B:135:THR:HG21	1.60	0.81
1:B:380:ASP:CG	1:B:381:CYS:N	2.36	0.81
1:B:113:GLN:CB	1:B:116:ASN:ND2	2.43	0.81
1:B:116:ASN:H	1:B:116:ASN:HD22	1.29	0.80
1:A:395:ARG:HG2	1:A:417:ILE:CD1	2.11	0.80
1:A:277:ARG:C	1:A:301:LYS:HB3	2.07	0.80
1:A:142:LYS:H	1:A:142:LYS:CD	1.95	0.79
1:B:141:THR:O	1:B:145:GLU:HG2	1.83	0.78
1:A:45:ARG:HH11	1:A:45:ARG:CB	1.96	0.78
1:A:460:SER:C	1:A:462:LEU:H	1.91	0.78
1:B:382:SER:CB	1:B:383:PRO:CD	2.57	0.78
1:B:97:GLU:O	1:B:101:VAL:HG23	1.83	0.77
1:A:45:ARG:NH1	1:A:196:GLY:O	2.16	0.77
1:A:460:SER:O	1:A:462:LEU:N	2.16	0.77
1:A:170:LYS:CB	1:A:185:ARG:HH11	1.96	0.77
1:B:40:GLN:HB2	1:B:88:TYR:OH	1.84	0.77
1:A:293:ASN:O	1:A:294:LEU:HD23	1.84	0.77
1:B:376:LYS:HA	1:B:380:ASP:OD2	1.85	0.77
1:A:465:ASP:HB2	1:B:252:ARG:HH21	1.47	0.77
1:B:327:THR:HG22	1:B:339:LYS:HB2	1.66	0.76
1:B:8:GLU:OE1	1:B:8:GLU:N	2.18	0.76
1:A:294:LEU:O	1:A:295:LYS:CB	2.34	0.76
1:B:156:GLY:HA2	1:B:160:ALA:HB3	1.66	0.76
1:B:258:PHE:CZ	1:B:262:ILE:HD12	2.20	0.76
1:B:219:ASP:HB3	1:B:381:CYS:O	1.85	0.76
1:B:453:ASP:O	1:B:454:THR:CG2	2.34	0.76
1:A:129:SER:HB3	1:A:360:LEU:HD23	1.66	0.76
1:B:61:GLY:O	1:B:63:THR:HG23	1.86	0.76
1:A:384:ARG:NH1	1:A:384:ARG:HG2	2.00	0.75
1:A:301:LYS:HE2	1:A:301:LYS:CA	2.12	0.75
1:A:142:LYS:HD2	1:A:142:LYS:N	1.97	0.75
1:A:384:ARG:HG2	1:A:384:ARG:HH11	1.51	0.75
1:B:302:LEU:C	1:B:304:PRO:CD	2.58	0.75
1:A:175:LYS:HG2	1:A:176:LEU:HD23	1.67	0.75
1:B:72:LEU:HD12	1:B:72:LEU:N	2.02	0.75
1:A:358:VAL:HG13	1:A:385:VAL:HG11	1.69	0.74
1:B:271:GLU:OE1	1:B:280:SER:HB3	1.86	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:295:LYS:O	1:A:296:ASP:CB	2.29	0.73
1:B:25:SER:HB3	1:B:27:GLU:OE1	1.87	0.73
1:B:200:VAL:HG21	1:B:361:GLN:HG2	1.71	0.73
1:B:339:LYS:HG2	1:B:340:ASP:OD2	1.89	0.72
1:B:164:ARG:NH2	1:B:416:GLU:OE2	2.18	0.72
1:A:96:ASP:O	1:A:100:THR:HG22	1.90	0.72
1:A:294:LEU:C	1:A:295:LYS:HD3	2.12	0.72
1:A:278:LEU:HB2	1:A:301:LYS:CB	2.19	0.72
1:A:435:LYS:O	1:A:439:THR:HG23	1.91	0.71
1:B:434:ARG:NH1	1:B:434:ARG:CG	2.43	0.71
1:A:300:ARG:HH11	1:A:302:LEU:CG	2.04	0.70
1:B:272:TYR:CE1	1:B:293:ASN:ND2	2.59	0.70
1:A:278:LEU:N	1:A:301:LYS:HB2	2.06	0.70
1:B:275:ASP:CG	1:B:317:ARG:HH12	1.99	0.70
1:A:294:LEU:O	1:A:295:LYS:HD2	1.87	0.69
1:B:453:ASP:C	1:B:454:THR:HG22	2.16	0.69
1:B:89:TRP:CZ2	2:B:2002:HOH:O	2.44	0.69
1:A:302:LEU:O	1:A:304:PRO:CD	2.39	0.69
1:A:45:ARG:HH11	1:A:45:ARG:HB2	1.55	0.69
1:A:296:ASP:CG	1:A:297:VAL:N	2.51	0.69
1:A:300:ARG:NE	1:A:302:LEU:HB2	2.07	0.69
1:A:202:LEU:HD23	1:A:361:GLN:HG2	1.74	0.69
1:A:454:THR:O	1:A:455:ALA:C	2.36	0.69
1:A:300:ARG:HE	1:A:302:LEU:HB2	1.58	0.68
1:B:46:PHE:HB2	1:B:91:LEU:HD13	1.75	0.68
1:A:68:PHE:HD2	1:A:102:LEU:HD21	1.59	0.68
1:A:96:ASP:O	1:A:100:THR:CG2	2.41	0.68
1:A:113:GLN:HG3	1:A:116:ASN:HB2	1.76	0.68
1:B:462:LEU:C	1:B:462:LEU:HD22	2.19	0.68
1:A:200:VAL:HG12	1:A:201:SER:O	1.93	0.68
1:B:57:GLN:C	1:B:59:PHE:H	2.01	0.68
1:B:95:THR:CG2	1:B:98:GLN:OE1	2.39	0.67
1:B:302:LEU:O	1:B:304:PRO:CD	2.42	0.67
1:B:462:LEU:C	1:B:462:LEU:CD2	2.67	0.67
1:B:301:LYS:O	1:B:304:PRO:CD	2.42	0.67
1:A:379:ARG:CB	1:A:379:ARG:HH21	2.07	0.67
1:B:399:ASP:O	1:B:400:PRO:C	2.38	0.66
1:A:158:PRO:O	1:A:161:PHE:HB3	1.96	0.66
1:A:376:LYS:HB2	1:A:379:ARG:NH2	2.10	0.66
1:A:278:LEU:CA	1:A:301:LYS:CB	2.64	0.66
1:A:379:ARG:HH21	1:A:379:ARG:HB2	1.59	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:304:PRO:O	1:B:305:GLY:C	2.37	0.66
1:A:170:LYS:HB2	1:A:185:ARG:NH1	2.10	0.66
1:B:89:TRP:CH2	2:B:2002:HOH:O	2.48	0.66
1:B:453:ASP:O	1:B:454:THR:CB	2.41	0.66
1:B:41:MET:HE3	1:B:41:MET:HA	1.77	0.66
1:A:38:PRO:HG2	1:A:457:TRP:HD1	1.58	0.65
1:A:57:GLN:NE2	1:A:63:THR:HA	2.12	0.65
1:A:113:GLN:CB	1:A:116:ASN:HB2	2.25	0.65
1:B:113:GLN:HB2	1:B:116:ASN:HD21	1.61	0.65
1:A:200:VAL:CG1	1:A:201:SER:N	2.61	0.64
1:B:277:ARG:HH21	1:B:300:ARG:CD	2.09	0.64
1:A:175:LYS:HG2	1:A:176:LEU:HD21	1.76	0.64
1:A:272:TYR:CE1	1:A:274:PRO:HD3	2.32	0.64
1:A:170:LYS:CB	1:A:185:ARG:NH1	2.59	0.64
1:A:300:ARG:NH1	1:A:302:LEU:HD22	2.05	0.64
1:A:169:VAL:HG11	1:A:226:ILE:HG23	1.79	0.63
1:A:412:ASP:OD2	1:A:414:SER:OG	2.16	0.63
1:A:140:PRO:HG2	1:A:447:TYR:HB2	1.80	0.63
1:B:95:THR:HG23	1:B:98:GLN:CG	2.29	0.63
1:A:82:PRO:HG2	1:A:87:ILE:CD1	2.29	0.63
1:A:301:LYS:CE	1:A:302:LEU:N	2.57	0.63
1:B:404:THR:HG22	1:B:410:LEU:HA	1.80	0.63
1:A:460:SER:C	1:A:462:LEU:N	2.48	0.63
1:A:40:GLN:HB2	1:A:92:GLN:NE2	2.14	0.63
1:B:29:GLU:OE1	1:B:33:ARG:NH1	2.30	0.63
1:A:278:LEU:N	1:A:301:LYS:CB	2.61	0.62
1:A:278:LEU:HD13	1:A:306:HIS:CE1	2.34	0.62
1:A:465:ASP:CB	1:B:252:ARG:NH2	2.61	0.62
1:B:249:LEU:HA	1:B:257:SER:HG	1.63	0.62
1:A:464:ALA:O	1:A:465:ASP:HB2	1.98	0.62
1:A:229:ARG:NH2	1:A:283:ASP:OD1	2.32	0.62
1:B:327:THR:CG2	1:B:339:LYS:CB	2.78	0.62
1:B:41:MET:HE3	1:B:41:MET:CA	2.30	0.62
1:B:41:MET:HB2	1:B:456:PRO:HB2	1.81	0.62
1:B:72:LEU:N	1:B:72:LEU:CD1	2.62	0.62
1:B:327:THR:HG23	1:B:339:LYS:HB2	1.81	0.62
1:B:400:PRO:O	1:B:402:THR:N	2.31	0.61
1:A:321:SER:CB	1:A:423:VAL:O	2.47	0.61
1:B:380:ASP:OD2	1:B:381:CYS:CB	2.46	0.61
1:B:140:PRO:HD3	1:B:443:SER:HB2	1.81	0.61
1:B:110:THR:O	1:B:119:TRP:CZ3	2.54	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:430:ASP:O	1:B:434:ARG:HB2	2.01	0.61
1:A:291:ALA:C	1:A:293:ASN:H	2.09	0.61
1:B:107:GLU:OE1	1:B:111:ARG:HG3	2.00	0.61
1:B:40:GLN:HB2	1:B:88:TYR:HH	1.64	0.60
1:A:113:GLN:CG	1:A:116:ASN:HB2	2.31	0.60
1:B:169:VAL:HA	1:B:172:ILE:HD12	1.83	0.60
1:A:178:CYS:O	1:A:179:GLY:C	2.43	0.60
1:A:280:SER:OG	1:A:281:GLU:N	2.32	0.60
1:A:290:GLU:OE1	1:A:290:GLU:HA	2.02	0.60
1:A:362:TYR:CG	1:A:428:LEU:HD12	2.37	0.60
1:A:387:ILE:HG22	1:A:424:THR:HB	1.84	0.60
1:A:34:ASN:N	1:A:34:ASN:OD1	2.35	0.60
1:B:182:SER:O	1:B:183:ALA:C	2.45	0.60
1:A:303:GLY:HA3	1:A:306:HIS:HB2	1.83	0.59
1:B:68:PHE:O	1:B:72:LEU:CD1	2.50	0.59
1:B:246:TYR:O	1:B:249:LEU:HB3	2.02	0.59
1:B:430:ASP:O	1:B:431:SER:C	2.44	0.59
1:A:278:LEU:HA	1:A:301:LYS:CB	2.30	0.59
1:B:369:VAL:O	1:B:370:ARG:C	2.45	0.59
1:A:236:LYS:HA	1:A:243:TYR:CD2	2.37	0.59
1:A:100:THR:HG21	1:A:371:HIS:CB	2.31	0.59
1:A:277:ARG:C	1:A:301:LYS:CB	2.76	0.59
1:B:301:LYS:O	1:B:304:PRO:CG	2.50	0.59
1:B:327:THR:HG23	1:B:339:LYS:CB	2.33	0.59
1:A:83:SER:O	1:A:84:LEU:C	2.45	0.59
1:A:82:PRO:HG2	1:A:87:ILE:HD12	1.83	0.58
1:A:301:LYS:O	1:A:301:LYS:CG	2.51	0.58
1:B:229:ARG:NH2	1:B:269:THR:OG1	2.36	0.58
1:A:328:ASP:C	1:A:330:SER:H	2.10	0.58
1:A:458:VAL:HG13	1:A:459:PRO:CD	2.31	0.58
1:B:321:SER:HB3	1:B:423:VAL:O	2.03	0.58
1:B:370:ARG:O	1:B:374:GLY:HA2	2.03	0.58
1:A:25:SER:O	1:A:26:PRO:C	2.47	0.58
1:A:31:PHE:CE2	1:A:35:LEU:HD23	2.37	0.58
1:A:306:HIS:O	1:A:308:LEU:N	2.37	0.58
1:B:57:GLN:O	1:B:59:PHE:N	2.37	0.58
1:B:443:SER:HA	1:B:446:ALA:HB3	1.83	0.58
1:A:362:TYR:HB2	1:A:385:VAL:HG21	1.86	0.58
1:B:343:PRO:O	1:B:344:VAL:HG13	2.04	0.58
1:A:286:LEU:HG	1:A:349:ASN:HB2	1.84	0.57
1:B:286:LEU:CD1	1:B:349:ASN:HA	2.31	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:246:TYR:CE1	1:B:419:VAL:HG13	2.40	0.57
1:B:386:ASN:HD22	1:B:425:PRO:HA	1.69	0.57
1:A:200:VAL:HG23	1:A:364:ILE:HD12	1.86	0.57
1:B:227:LYS:HE3	1:B:354:TYR:CD1	2.40	0.57
1:B:302:LEU:O	1:B:304:PRO:HD2	2.05	0.57
1:B:400:PRO:C	1:B:402:THR:N	2.61	0.57
1:A:38:PRO:CG	1:A:457:TRP:HD1	2.18	0.57
1:A:236:LYS:HB3	1:A:243:TYR:CZ	2.40	0.57
1:B:9:ASP:OD2	1:B:10:PRO:CD	2.47	0.57
1:A:223:ILE:HD12	1:A:385:VAL:HG22	1.86	0.56
1:B:240:ASP:OD1	1:B:243:TYR:N	2.37	0.56
1:B:443:SER:O	1:B:444:TRP:C	2.47	0.56
1:B:73:VAL:HG13	1:B:90:GLY:HA3	1.86	0.56
1:A:287:THR:HG21	1:A:292:TRP:CG	2.41	0.56
1:B:41:MET:HE1	1:B:45:ARG:H	1.70	0.56
1:A:87:ILE:HG23	1:A:91:LEU:HD12	1.87	0.56
1:B:10:PRO:HG2	1:B:59:PHE:CE2	2.41	0.56
1:B:41:MET:HE3	1:B:41:MET:C	2.31	0.56
1:B:415:VAL:HG12	1:B:416:GLU:O	2.06	0.55
1:B:304:PRO:HD2	1:B:306:HIS:HB2	1.88	0.55
1:A:294:LEU:O	1:A:295:LYS:HB3	2.05	0.55
1:A:38:PRO:HG2	1:A:457:TRP:CD1	2.39	0.55
1:A:301:LYS:NZ	1:A:302:LEU:HD12	2.21	0.55
1:A:306:HIS:O	1:A:307:ASP:C	2.49	0.55
1:A:301:LYS:O	1:A:301:LYS:CD	2.54	0.55
1:A:202:LEU:CD2	1:A:361:GLN:HG2	2.37	0.55
1:A:328:ASP:OD1	1:A:330:SER:HB2	2.06	0.55
1:B:57:GLN:C	1:B:59:PHE:N	2.62	0.55
1:B:387:ILE:CG1	1:B:424:THR:HB	2.37	0.55
1:B:180:ASP:OD1	1:B:180:ASP:N	2.27	0.55
1:A:93:GLU:OE2	1:B:335:ARG:HD3	2.07	0.54
1:A:128:SER:HB3	1:A:131:LYS:CD	2.37	0.54
1:A:278:LEU:HB2	1:A:301:LYS:CA	2.36	0.54
1:B:106:VAL:O	1:B:109:MET:HB3	2.07	0.54
1:B:10:PRO:HG2	1:B:59:PHE:HE2	1.71	0.54
1:B:287:THR:HG21	1:B:292:TRP:CD1	2.42	0.54
1:B:8:GLU:N	1:B:8:GLU:CD	2.66	0.54
1:B:175:LYS:HG3	1:B:181:ALA:HB2	1.90	0.54
1:A:359:LEU:O	1:A:362:TYR:HB3	2.08	0.54
1:B:380:ASP:CG	1:B:381:CYS:H	2.12	0.54
1:A:277:ARG:HA	1:A:301:LYS:H	1.73	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:238:GLU:HB2	2:B:2009:HOH:O	2.08	0.54
1:A:460:SER:HA	1:A:463:PHE:CD2	2.43	0.53
1:A:40:GLN:CB	1:A:92:GLN:NE2	2.71	0.53
1:A:300:ARG:NH1	1:A:302:LEU:CG	2.66	0.53
1:A:170:LYS:HB3	1:A:185:ARG:NH1	2.22	0.53
1:A:364:ILE:O	1:A:367:ASP:HB2	2.08	0.53
1:B:56:ILE:HA	1:B:59:PHE:CE1	2.43	0.53
1:B:110:THR:O	1:B:119:TRP:HZ3	1.91	0.53
1:B:132:LEU:O	1:B:135:THR:HG23	2.09	0.53
1:A:308:LEU:HD23	1:A:308:LEU:C	2.33	0.53
1:B:395:ARG:HG2	1:B:417:ILE:HD12	1.91	0.53
1:B:41:MET:O	1:B:459:PRO:HD3	2.08	0.53
1:A:31:PHE:C	1:A:31:PHE:CD2	2.87	0.53
1:A:301:LYS:HZ3	1:A:302:LEU:HD12	1.74	0.53
1:B:234:PHE:HB3	1:B:242:ILE:HD12	1.89	0.53
1:A:300:ARG:NH1	1:A:302:LEU:CD2	2.58	0.52
1:B:16:SER:O	1:B:21:ARG:HD3	2.08	0.52
1:B:107:GLU:OE1	1:B:188:GLY:N	2.39	0.52
1:A:89:TRP:CE3	1:A:89:TRP:HA	2.44	0.52
1:A:173:VAL:HA	1:A:177:ILE:CG1	2.40	0.52
1:A:411:LEU:HD12	1:A:412:ASP:N	2.24	0.52
1:B:72:LEU:CD1	1:B:72:LEU:H	2.22	0.52
1:B:180:ASP:C	1:B:182:SER:H	2.17	0.52
1:B:277:ARG:HD3	1:B:298:ARG:O	2.09	0.52
1:B:299:LYS:C	1:B:300:ARG:O	2.51	0.52
1:B:330:SER:HB3	1:B:399:ASP:OD1	2.09	0.52
1:A:300:ARG:HH11	1:A:302:LEU:CD1	2.03	0.52
1:B:113:GLN:CB	1:B:116:ASN:CG	2.83	0.52
1:A:438:SER:HB3	1:A:464:ALA:HB2	1.90	0.52
1:B:68:PHE:O	1:B:72:LEU:HD13	2.10	0.52
1:B:105:TYR:O	1:B:109:MET:HB2	2.08	0.52
1:B:272:TYR:CZ	1:B:293:ASN:ND2	2.77	0.52
1:B:107:GLU:OE2	1:B:111:ARG:NH2	2.42	0.52
1:A:114:SER:HA	1:A:119:TRP:CE3	2.45	0.52
1:A:53:CYS:O	1:A:54:LYS:C	2.53	0.52
1:A:249:LEU:HA	1:A:257:SER:OG	2.09	0.52
1:B:453:ASP:O	1:B:454:THR:HB	2.07	0.52
1:A:31:PHE:HE2	1:A:35:LEU:HD23	1.75	0.52
1:A:301:LYS:O	1:A:301:LYS:HG2	2.10	0.52
1:B:386:ASN:ND2	1:B:425:PRO:HA	2.25	0.52
1:B:246:TYR:CE1	1:B:419:VAL:CG1	2.93	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:ASN:HB2	1:A:220:ARG:O	2.10	0.51
1:A:412:ASP:OD2	1:A:414:SER:N	2.35	0.51
1:B:240:ASP:HB3	1:B:243:TYR:HB3	1.91	0.51
1:B:43:ALA:O	1:B:47:VAL:HG23	2.10	0.51
1:A:278:LEU:HB2	1:A:301:LYS:HA	1.92	0.51
1:B:140:PRO:HG2	1:B:447:TYR:CB	2.40	0.51
1:B:293:ASN:O	1:B:294:LEU:HG	2.11	0.51
1:A:411:LEU:HD12	1:A:412:ASP:H	1.74	0.51
1:B:192:SER:HB2	1:B:364:ILE:HG12	1.91	0.51
1:A:47:VAL:O	1:A:50:TYR:HB3	2.11	0.51
1:B:19:PHE:CG	1:B:45:ARG:NH1	2.78	0.51
1:B:355:PHE:O	1:B:358:VAL:HG12	2.10	0.51
1:A:306:HIS:C	1:A:308:LEU:N	2.67	0.50
1:B:256:ARG:HG2	1:B:260:ARG:HH21	1.75	0.50
1:B:273:VAL:HG11	1:B:286:LEU:HD22	1.93	0.50
1:B:445:LYS:HE2	1:B:456:PRO:O	2.11	0.50
1:A:45:ARG:NH1	1:A:45:ARG:HB2	2.24	0.50
1:B:206:VAL:O	1:B:207:ASN:CB	2.48	0.50
1:B:453:ASP:C	1:B:454:THR:CG2	2.83	0.50
1:A:112:GLY:O	1:A:113:GLN:C	2.55	0.50
1:B:400:PRO:HG2	1:B:403:CYS:SG	2.51	0.50
1:B:59:PHE:O	1:B:59:PHE:CD2	2.64	0.50
1:A:200:VAL:CG1	1:A:201:SER:O	2.59	0.50
1:A:301:LYS:C	1:A:301:LYS:HE3	2.07	0.50
1:B:269:THR:HA	1:B:283:ASP:OD2	2.12	0.50
1:A:400:PRO:O	1:A:401:ALA:C	2.55	0.50
1:A:46:PHE:HB3	1:A:91:LEU:HD22	1.93	0.49
1:A:261:PHE:O	1:A:262:ILE:C	2.52	0.49
1:A:291:ALA:C	1:A:293:ASN:N	2.70	0.49
1:B:47:VAL:HG22	1:B:91:LEU:HD12	1.94	0.49
1:B:69:VAL:O	1:B:72:LEU:HD13	2.12	0.49
1:A:29:GLU:O	1:A:30:ALA:C	2.54	0.49
1:A:112:GLY:C	1:A:113:GLN:HG2	2.37	0.49
1:B:338:ILE:N	1:B:338:ILE:HD13	2.28	0.49
1:A:129:SER:CB	1:A:360:LEU:HD23	2.41	0.49
1:A:272:TYR:CD1	1:A:274:PRO:HD3	2.48	0.49
1:A:73:VAL:O	1:A:74:GLN:C	2.55	0.49
1:A:362:TYR:OH	1:A:382:SER:HB3	2.13	0.49
1:B:284:TYR:O	1:B:348:ILE:HD12	2.13	0.49
1:B:451:THR:O	1:B:451:THR:CG2	2.59	0.49
1:A:273:VAL:HG11	1:A:286:LEU:HD22	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:393:ARG:NH2	1:A:399:ASP:OD1	2.46	0.48
1:B:114:SER:O	1:B:115:GLU:CB	2.54	0.48
1:A:140:PRO:O	1:A:141:THR:C	2.53	0.48
1:A:384:ARG:HH11	1:A:384:ARG:CG	2.15	0.48
1:B:47:VAL:O	1:B:48:TYR:C	2.55	0.48
1:B:400:PRO:C	1:B:402:THR:H	2.20	0.48
1:A:119:TRP:O	1:A:123:ARG:HG3	2.13	0.48
1:A:277:ARG:HD2	1:A:298:ARG:O	2.14	0.48
1:B:295:LYS:O	1:B:296:ASP:OD1	2.31	0.48
1:A:207:ASN:CB	1:A:220:ARG:O	2.62	0.48
1:A:421:VAL:HG12	1:A:421:VAL:O	2.13	0.48
1:B:303:GLY:N	1:B:304:PRO:CD	2.68	0.48
1:B:127:ILE:CG2	1:B:135:THR:HG21	2.35	0.48
1:B:258:PHE:CZ	1:B:262:ILE:CD1	2.93	0.48
1:A:460:SER:O	1:A:461:GLY:C	2.55	0.48
1:B:40:GLN:CB	1:B:88:TYR:OH	2.58	0.48
1:B:141:THR:C	1:B:143:VAL:H	2.21	0.48
1:A:68:PHE:HD2	1:A:102:LEU:CD2	2.26	0.48
1:A:441:ALA:O	1:A:444:TRP:HB3	2.13	0.48
1:B:200:VAL:CG2	1:B:361:GLN:HG2	2.43	0.48
1:B:197:ILE:HG22	1:B:198:PHE:CG	2.49	0.48
1:A:192:SER:OG	1:A:195:ASP:OD1	2.30	0.48
1:B:41:MET:SD	1:B:44:MET:HB2	2.53	0.48
1:A:83:SER:O	1:A:85:LYS:N	2.47	0.47
1:A:173:VAL:HA	1:A:177:ILE:HG13	1.95	0.47
1:B:234:PHE:HB2	1:B:240:ASP:OD2	2.14	0.47
1:B:332:ASN:O	1:B:333:ALA:C	2.57	0.47
1:B:365:VAL:O	1:B:369:VAL:HG23	2.14	0.47
1:A:87:ILE:O	1:A:88:TYR:C	2.57	0.47
1:A:96:ASP:O	1:A:100:THR:HG23	2.14	0.47
1:A:227:LYS:HE3	1:A:354:TYR:CE1	2.50	0.47
1:B:337:GLY:O	1:B:338:ILE:C	2.54	0.47
1:B:380:ASP:CG	1:B:381:CYS:CB	2.87	0.47
1:B:452:PHE:C	1:B:454:THR:H	2.20	0.47
1:B:161:PHE:CZ	1:B:233:LEU:HD13	2.49	0.47
1:B:258:PHE:CE1	1:B:262:ILE:HD12	2.50	0.47
1:A:175:LYS:CG	1:A:176:LEU:HD23	2.41	0.47
1:A:254:CYS:O	1:A:255:LYS:C	2.58	0.47
1:B:259:ILE:O	1:B:263:ASN:HB2	2.14	0.47
1:B:404:THR:HG22	1:B:410:LEU:CA	2.45	0.47
1:A:23:LEU:HD12	1:A:23:LEU:HA	1.60	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:140:PRO:HG2	1:A:447:TYR:CB	2.43	0.47
1:B:247:THR:O	1:B:248:ALA:C	2.56	0.47
1:B:172:ILE:HG23	1:B:176:LEU:HD12	1.97	0.46
1:B:301:LYS:O	1:B:304:PRO:HG2	2.15	0.46
1:A:276:GLY:HA2	1:A:301:LYS:HZ3	1.80	0.46
1:A:287:THR:HG21	1:A:292:TRP:CB	2.46	0.46
1:B:251:LYS:HE3	1:B:251:LYS:HB3	1.85	0.46
1:A:45:ARG:CG	1:A:45:ARG:NH1	2.43	0.46
1:A:219:ASP:HB2	1:A:381:CYS:HB3	1.98	0.46
1:B:301:LYS:O	1:B:304:PRO:HD3	2.14	0.46
1:B:302:LEU:HB3	1:B:303:GLY:H	1.47	0.46
1:B:316:ASN:OD1	1:B:427:VAL:N	2.43	0.46
1:A:328:ASP:O	1:A:330:SER:N	2.48	0.46
1:A:116:ASN:OD1	1:A:117:LEU:N	2.48	0.46
1:A:296:ASP:OD2	1:A:297:VAL:O	2.34	0.46
1:A:387:ILE:CG2	1:A:424:THR:HB	2.46	0.46
1:B:73:VAL:CG1	1:B:90:GLY:HA3	2.46	0.46
1:B:100:THR:HG21	1:B:371:HIS:HB2	1.98	0.46
1:B:328:ASP:C	1:B:328:ASP:OD1	2.59	0.46
1:B:327:THR:HG22	1:B:339:LYS:CB	2.41	0.46
1:A:82:PRO:HB2	1:A:86:SER:HB2	1.98	0.46
1:A:294:LEU:C	1:A:295:LYS:CG	2.87	0.46
1:A:365:VAL:HA	1:A:368:TYR:HD1	1.81	0.46
1:A:435:LYS:HD3	1:A:439:THR:CG2	2.45	0.46
1:A:447:TYR:O	1:A:448:ALA:C	2.58	0.46
1:B:361:GLN:O	1:B:362:TYR:C	2.59	0.46
1:A:238:GLU:HG2	1:A:239:PHE:CE2	2.51	0.45
1:B:295:LYS:HB3	1:B:296:ASP:H	1.50	0.45
1:A:399:ASP:HA	1:A:400:PRO:HD2	1.79	0.45
1:A:460:SER:HA	1:A:463:PHE:CG	2.52	0.45
1:A:251:LYS:C	1:A:253:PRO:HD3	2.42	0.45
1:B:226:ILE:O	1:B:227:LYS:HD2	2.17	0.45
1:B:357:GLN:O	1:B:361:GLN:HG3	2.17	0.45
1:B:404:THR:HB	1:B:409:LEU:H	1.82	0.45
1:A:30:ALA:O	1:A:33:ARG:N	2.48	0.45
1:A:11:MET:HE1	1:A:121:ILE:HD12	1.99	0.45
1:B:40:GLN:N	1:B:88:TYR:OH	2.47	0.45
1:B:133:LEU:HD22	1:B:356:TYR:CD1	2.52	0.44
1:B:197:ILE:HG21	1:B:197:ILE:HD13	1.69	0.44
1:B:400:PRO:O	1:B:401:ALA:C	2.59	0.44
1:A:250:TYR:HE2	1:A:326:MET:O	2.01	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:379:ARG:NH2	1:A:379:ARG:HB2	2.27	0.44
1:A:393:ARG:NH2	1:A:399:ASP:CG	2.75	0.44
1:B:180:ASP:C	1:B:182:SER:N	2.75	0.44
1:A:273:VAL:HA	1:A:274:PRO:HD2	1.67	0.44
1:B:316:ASN:OD1	1:B:427:VAL:HB	2.18	0.44
1:B:174:CYS:SG	1:B:183:ALA:HB3	2.57	0.44
1:B:435:LYS:O	1:B:439:THR:CG2	2.66	0.44
1:A:65:PHE:CE1	1:A:102:LEU:HB3	2.52	0.44
1:B:273:VAL:HA	1:B:274:PRO:HD3	1.81	0.44
1:A:46:PHE:CB	1:A:91:LEU:HD22	2.47	0.44
1:A:68:PHE:CD2	1:A:102:LEU:HD21	2.47	0.44
1:A:183:ALA:HB1	1:A:205:CYS:O	2.18	0.44
1:A:381:CYS:O	1:A:382:SER:C	2.61	0.44
1:B:256:ARG:CG	1:B:260:ARG:HH21	2.31	0.44
1:B:46:PHE:CB	1:B:91:LEU:HD13	2.47	0.43
1:B:61:GLY:O	1:B:62:GLU:C	2.61	0.43
1:B:227:LYS:HE3	1:B:354:TYR:CE1	2.53	0.43
1:A:402:THR:HG22	1:A:403:CYS:N	2.32	0.43
1:B:40:GLN:OE1	1:B:40:GLN:HA	2.09	0.43
1:B:243:TYR:N	1:B:244:PRO:CD	2.81	0.43
1:B:243:TYR:CD2	1:B:243:TYR:C	2.96	0.43
1:B:344:VAL:O	1:B:344:VAL:HG23	2.19	0.43
1:A:83:SER:C	1:A:85:LYS:N	2.76	0.43
1:B:227:LYS:N	1:B:388:VAL:O	2.49	0.43
1:A:255:LYS:HE2	2:A:2008:HOH:O	2.19	0.43
1:B:56:ILE:HA	1:B:59:PHE:CD1	2.53	0.43
1:B:61:GLY:O	1:B:63:THR:N	2.52	0.43
1:B:412:ASP:CG	1:B:413:ALA:N	2.76	0.43
1:A:95:THR:HG21	1:B:178:CYS:O	2.19	0.43
1:A:226:ILE:HG22	1:A:227:LYS:N	2.33	0.43
1:A:113:GLN:HB2	1:A:116:ASN:CB	2.41	0.43
1:A:200:VAL:HG12	1:A:201:SER:C	2.43	0.43
1:B:37:ARG:HB2	1:B:38:PRO:CD	2.49	0.43
1:A:37:ARG:CB	1:A:38:PRO:CD	2.74	0.42
1:A:199:GLY:C	1:A:200:VAL:HG23	2.42	0.42
1:A:238:GLU:CD	1:A:239:PHE:CZ	2.97	0.42
1:B:185:ARG:HA	1:B:185:ARG:HD3	1.45	0.42
1:B:197:ILE:HG22	1:B:198:PHE:CD2	2.54	0.42
1:A:68:PHE:CD2	1:A:102:LEU:CD2	3.02	0.42
1:B:335:ARG:NH1	1:B:407:SER:OG	2.52	0.42
1:B:393:ARG:HG2	1:B:419:VAL:CG2	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25:SER:HA	1:A:26:PRO:HD2	1.66	0.42
1:A:429:PRO:HG2	1:A:432:VAL:CG2	2.50	0.42
1:B:249:LEU:HD13	1:B:258:PHE:HA	2.01	0.42
1:B:316:ASN:CG	1:B:427:VAL:HB	2.44	0.42
1:B:326:MET:N	1:B:326:MET:HE2	2.33	0.42
1:B:434:ARG:O	1:B:435:LYS:C	2.62	0.42
1:A:171:ASP:O	1:A:172:ILE:C	2.62	0.42
1:A:184:ASN:ND2	1:A:186:GLN:O	2.50	0.42
1:A:244:PRO:O	1:A:245:SER:C	2.63	0.42
1:B:343:PRO:O	1:B:344:VAL:CG1	2.68	0.42
1:B:376:LYS:HE2	1:B:376:LYS:HB2	1.68	0.42
1:B:11:MET:HB3	1:B:11:MET:HE3	1.51	0.42
1:B:225:GLU:OE2	1:B:225:GLU:HA	2.20	0.42
1:A:57:GLN:HA	1:A:60:SER:O	2.20	0.42
1:B:240:ASP:O	1:B:244:PRO:HD3	2.20	0.42
1:B:294:LEU:HA	1:B:294:LEU:HD23	1.51	0.42
1:A:31:PHE:HB3	1:A:84:LEU:HD12	2.01	0.42
1:A:53:CYS:C	1:A:55:GLN:N	2.75	0.42
1:A:387:ILE:HG22	1:A:387:ILE:O	2.20	0.42
1:B:102:LEU:HD23	1:B:102:LEU:HA	1.77	0.41
1:B:183:ALA:O	1:B:185:ARG:NE	2.44	0.41
1:B:437:LEU:HD23	1:B:437:LEU:HA	1.74	0.41
1:A:133:LEU:HD13	1:A:356:TYR:CE1	2.55	0.41
1:B:141:THR:C	1:B:143:VAL:N	2.78	0.41
1:B:375:GLY:O	1:B:380:ASP:HA	2.20	0.41
1:A:119:TRP:CH2	1:A:188:GLY:HA2	2.55	0.41
1:A:229:ARG:NH2	1:A:269:THR:OG1	2.52	0.41
1:B:31:PHE:O	1:B:32:VAL:C	2.62	0.41
1:A:60:SER:O	1:A:60:SER:OG	2.38	0.41
1:A:246:TYR:CD1	1:A:246:TYR:C	2.93	0.41
1:A:306:HIS:C	1:A:308:LEU:H	2.28	0.41
1:A:275:ASP:C	1:A:277:ARG:H	2.29	0.41
1:A:369:VAL:O	1:A:370:ARG:C	2.62	0.41
1:B:451:THR:O	1:B:451:THR:HG22	2.19	0.41
1:A:424:THR:HA	1:A:425:PRO:HD2	1.94	0.41
1:A:324:TYR:CD1	1:A:324:TYR:N	2.88	0.41
1:B:156:GLY:CA	1:B:160:ALA:HB2	2.36	0.41
1:B:229:ARG:HH12	1:B:231:LYS:HE2	1.84	0.41
1:A:405:LEU:HB2	1:A:409:LEU:HD23	2.02	0.41
1:A:465:ASP:CB	1:B:252:ARG:HH22	2.33	0.41
1:B:287:THR:HG21	1:B:292:TRP:CG	2.56	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:415:VAL:HG12	1:A:416:GLU:O	2.20	0.41
1:B:113:GLN:HB3	1:B:116:ASN:CG	2.46	0.41
1:B:140:PRO:HG2	1:B:447:TYR:CG	2.56	0.41
1:B:280:SER:OG	1:B:281:GLU:N	2.54	0.41
1:B:363:LYS:HD3	1:B:363:LYS:C	2.46	0.41
1:A:161:PHE:CG	1:A:230:PHE:HD1	2.39	0.40
1:A:348:ILE:HD12	1:A:348:ILE:HA	1.94	0.40
1:A:412:ASP:HB3	1:A:415:VAL:HG23	2.03	0.40
1:B:197:ILE:HG22	1:B:198:PHE:N	2.37	0.40
1:A:30:ALA:O	1:A:33:ARG:HB3	2.22	0.40
1:A:262:ILE:HG21	1:A:270:VAL:CG2	2.51	0.40
1:A:300:ARG:HG3	1:A:302:LEU:H	1.87	0.40
1:A:41:MET:CB	1:A:457:TRP:O	2.70	0.40
1:A:247:THR:HG22	1:A:251:LYS:HD2	2.03	0.40
1:B:256:ARG:HG2	1:B:260:ARG:NH2	2.37	0.40
1:B:365:VAL:O	1:B:366:GLY:C	2.65	0.40
1:B:386:ASN:HD22	1:B:425:PRO:CA	2.34	0.40
1:B:73:VAL:CG1	1:B:90:GLY:CA	3.00	0.40
1:B:107:GLU:HG2	1:B:188:GLY:C	2.46	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	443/470 (94%)	364 (82%)	57 (13%)	22 (5%)	1	10
1	B	429/470 (91%)	347 (81%)	59 (14%)	23 (5%)	1	9
All	All	872/940 (93%)	711 (82%)	116 (13%)	45 (5%)	1	9

All (45) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	42	PRO
1	A	295	LYS
1	A	296	ASP
1	A	465	ASP
1	B	42	PRO
1	B	115	GLU
1	B	295	LYS
1	B	454	THR
1	A	84	LEU
1	A	112	GLY
1	A	113	GLN
1	A	244	PRO
1	A	280	SER
1	A	461	GLY
1	B	58	GLU
1	B	62	GLU
1	B	114	SER
1	B	207	ASN
1	B	296	ASP
1	B	302	LEU
1	B	304	PRO
1	B	370	ARG
1	B	401	ALA
1	B	442	GLY
1	A	146	PRO
1	A	245	SER
1	B	314	ALA
1	B	383	PRO
1	B	434	ARG
1	A	26	PRO
1	A	37	ARG
1	B	9	ASP
1	B	373	GLY
1	A	282	GLY
1	A	400	PRO
1	A	455	ALA
1	B	382	SER
1	A	255	LYS
1	A	421	VAL
1	B	375	GLY
1	B	431	SER
1	B	305	GLY
1	A	61	GLY

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Mol	Chain	Res	Type
1	A	179	GLY
1	A	329	PRO

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	394/414 (95%)	330 (84%)	64 (16%)	2	12
1	B	385/414 (93%)	308 (80%)	77 (20%)	1	7
All	All	779/828 (94%)	638 (82%)	141 (18%)	2	9

All (141) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	23	LEU
1	A	25	SER
1	A	27	GLU
1	A	31	PHE
1	A	33	ARG
1	A	34	ASN
1	A	35	LEU
1	A	44	MET
1	A	45	ARG
1	A	63	THR
1	A	72	LEU
1	A	73	VAL
1	A	84	LEU
1	A	87	ILE
1	A	100	THR
1	A	104	SER
1	A	113	GLN
1	A	126	ILE
1	A	130	SER
1	A	131	LYS

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Mol	Chain	Res	Type
1	A	136	ILE
1	A	138	ASN
1	A	142	LYS
1	A	176	LEU
1	A	184	ASN
1	A	206	VAL
1	A	216	LEU
1	A	221	SER
1	A	222	CYS
1	A	227	LYS
1	A	236	LYS
1	A	252	ARG
1	A	255	LYS
1	A	260	ARG
1	A	262	ILE
1	A	273	VAL
1	A	277	ARG
1	A	280	SER
1	A	290	GLU
1	A	294	LEU
1	A	295	LYS
1	A	296	ASP
1	A	297	VAL
1	A	301	LYS
1	A	302	LEU
1	A	307	ASP
1	A	309	VAL
1	A	320	GLU
1	A	330	SER
1	A	358	VAL
1	A	376	LYS
1	A	379	ARG
1	A	384	ARG
1	A	387	ILE
1	A	393	ARG
1	A	396	SER
1	A	419	VAL
1	A	421	VAL
1	A	435	LYS
1	A	439	THR
1	A	449	ASP
1	A	457	TRP

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Mol	Chain	Res	Type
1	A	465	ASP
1	B	8	GLU
1	B	11	MET
1	B	23	LEU
1	B	24	ARG
1	B	37	ARG
1	B	40	GLN
1	B	58	GLU
1	B	70	SER
1	B	72	LEU
1	B	84	LEU
1	B	92	GLN
1	B	95	THR
1	B	97	GLU
1	B	100	THR
1	B	113	GLN
1	B	116	ASN
1	B	126	ILE
1	B	130	SER
1	B	131	LYS
1	B	133	LEU
1	B	134	SER
1	B	135	THR
1	B	142	LYS
1	B	143	VAL
1	B	155	PHE
1	B	159	VAL
1	B	166	GLU
1	B	180	ASP
1	B	184	ASN
1	B	185	ARG
1	B	191	ILE
1	B	197	ILE
1	B	200	VAL
1	B	206	VAL
1	B	215	ILE
1	B	216	LEU
1	B	219	ASP
1	B	229	ARG
1	B	236	LYS
1	B	247	THR
1	B	251	LYS

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Mol	Chain	Res	Type
1	B	262	ILE
1	B	273	VAL
1	B	277	ARG
1	B	280	SER
1	B	286	LEU
1	B	288	GLN
1	B	293	ASN
1	B	296	ASP
1	B	298	ARG
1	B	301	LYS
1	B	302	LEU
1	B	309	VAL
1	B	323	LEU
1	B	338	ILE
1	B	339	LYS
1	B	342	VAL
1	B	345	ASN
1	B	348	ILE
1	B	357	GLN
1	B	370	ARG
1	B	376	LYS
1	B	385	VAL
1	B	402	THR
1	B	410	LEU
1	B	414	SER
1	B	416	GLU
1	B	417	ILE
1	B	434	ARG
1	B	438	SER
1	B	439	THR
1	B	443	SER
1	B	450	ASN
1	B	451	THR
1	B	457	TRP
1	B	460	SER
1	B	462	LEU

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	55	GLN
1	A	57	GLN

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Mol	Chain	Res	Type
1	A	92	GLN
1	A	113	GLN
1	A	138	ASN
1	A	293	ASN
1	A	345	ASN
1	A	353	ASN
1	A	361	GLN
1	A	450	ASN
1	B	55	GLN
1	B	92	GLN
1	B	113	GLN
1	B	116	ASN
1	B	211	GLN
1	B	306	HIS
1	B	357	GLN
1	B	386	ASN

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 oligosaccharides 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 ⓘ

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	449/470 (95%)	-0.20	8 (1%) 67 44	14, 31, 60, 87	0
1	B	437/470 (92%)	-0.16	11 (2%) 58 35	16, 34, 60, 77	0
All	All	886/940 (94%)	-0.18	19 (2%) 63 40	14, 33, 60, 87	0

All (19) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	296	ASP	4.1
1	B	302	LEU	3.9
1	A	304	PRO	3.8
1	A	303	GLY	3.5
1	B	297	VAL	2.9
1	B	114	SER	2.8
1	B	238	GLU	2.8
1	A	7	LEU	2.7
1	A	297	VAL	2.5
1	B	113	GLN	2.5
1	B	61	GLY	2.3
1	B	299	LYS	2.3
1	A	305	GLY	2.3
1	A	36	ASP	2.3
1	B	304	PRO	2.3
1	B	305	GLY	2.3
1	B	62	GLU	2.1
1	A	306	HIS	2.1
1	B	60	SER	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 oligosaccharides 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.