



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 07:04 AM UTC

PDB ID : 2V9P / pdb_00002v9p
Title : Crystal structure of papillomavirus E1 hexameric helicase DNA-free form
Authors : Sanders, C.M.; Kovalevskiy, O.V.; Sizov, D.; Lebedev, A.A.; Isupov, M.N.;
Antson, A.A.
Deposited on : 2007-08-24
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
Mogul : 2022.3.0, CSD as543be (2022)
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

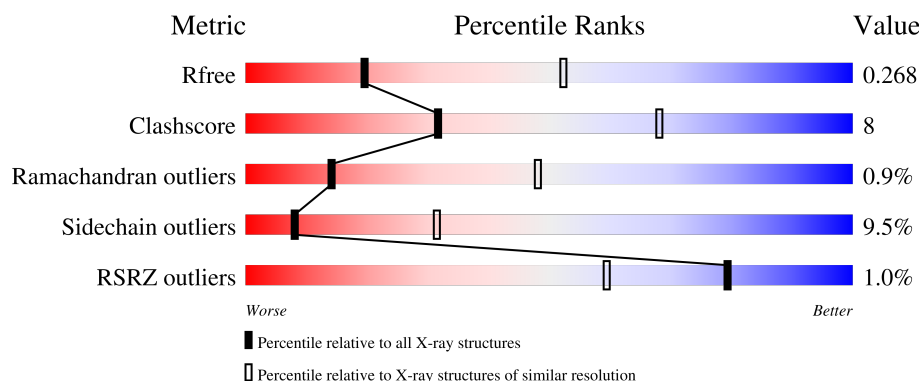
1 Overall quality at a glance

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	305	% 67% 19% • 11%
1	B	305	% 69% 17% • 12%
1	C	305	69% 17% • 12%
1	D	305	% 73% 15% • 10%
1	E	305	68% 20% • 11%

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Mol	Chain	Length	Quality of chain
1	F	305	
1	G	305	
1	H	305	
1	I	305	
1	J	305	
1	K	305	
1	L	305	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	PO4	A	1580	-	-	X	-
2	PO4	C	1579	-	X	-	-
2	PO4	G	1580	-	-	X	-
2	PO4	H	1579	-	-	X	-
2	PO4	I	1580	-	-	X	-

2 Entry composition

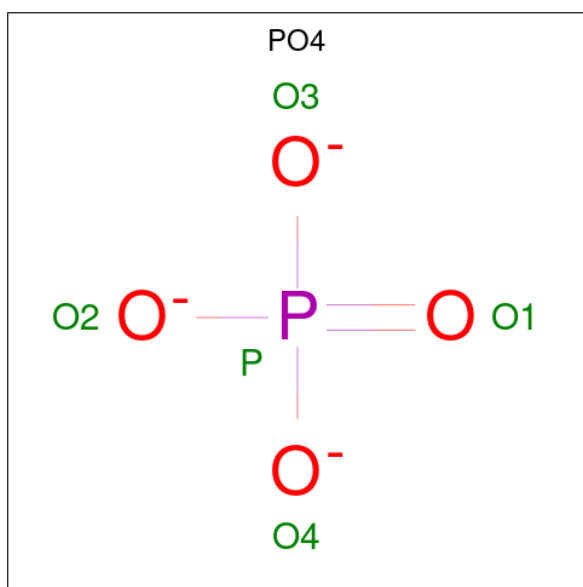
There are 4 unique types of molecules in this entry. The entry contains 26079 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 REPLICATION PROTEIN E1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	272	Total	C	N	O	S	0	0	0
			2183	1404	375	394	10			
1	B	268	Total	C	N	O	S	0	0	0
			2149	1386	370	383	10			
1	C	267	Total	C	N	O	S	0	0	0
			2142	1382	369	381	10			
1	D	274	Total	C	N	O	S	0	0	0
			2191	1409	377	395	10			
1	E	270	Total	C	N	O	S	0	0	0
			2170	1398	373	389	10			
1	F	269	Total	C	N	O	S	0	0	0
			2158	1392	372	384	10			
1	G	270	Total	C	N	O	S	0	0	0
			2163	1392	373	388	10			
1	H	268	Total	C	N	O	S	0	0	0
			2149	1386	370	383	10			
1	I	270	Total	C	N	O	S	0	0	0
			2165	1394	372	389	10			
1	J	272	Total	C	N	O	S	0	0	0
			2178	1400	375	393	10			
1	K	269	Total	C	N	O	S	0	0	0
			2158	1392	372	384	10			
1	L	267	Total	C	N	O	S	0	0	0
			2142	1382	369	381	10			

- Molecule 2 is PHOSPHATE ION (CCD ID: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	P	0	0
			5	4	1		
2	A	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		
2	B	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	D	1	Total	O	P	0	0
			5	4	1		
2	E	1	Total	O	P	0	0
			5	4	1		
2	F	1	Total	O	P	0	0
			5	4	1		
2	G	1	Total	O	P	0	0
			5	4	1		
2	G	1	Total	O	P	0	0
			5	4	1		
2	H	1	Total	O	P	0	0
			5	4	1		
2	H	1	Total	O	P	0	0
			5	4	1		
2	I	1	Total	O	P	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	I	1	Total	O	P	0	0
			5	4	1		
2	J	1	Total	O	P	0	0
			5	4	1		
2	K	1	Total	O	P	0	0
			5	4	1		
2	L	1	Total	O	P	0	0
			5	4	1		

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Mg	0	0
			1	1		
3	B	1	Total	Mg	0	0
			1	1		
3	C	1	Total	Mg	0	0
			1	1		
3	G	1	Total	Mg	0	0
			1	1		
3	H	1	Total	Mg	0	0
			1	1		
3	I	1	Total	Mg	0	0
			1	1		

- Molecule 4 is water.

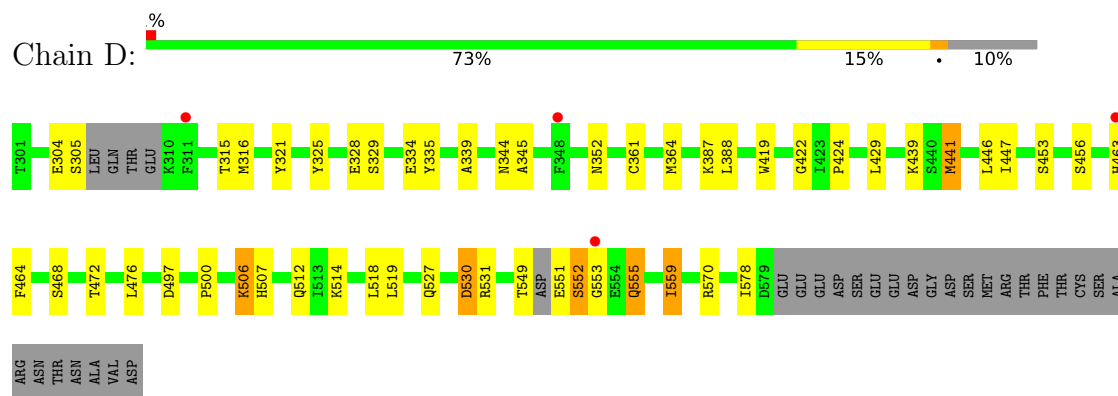
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	3	Total	O	0	0
			3	3		
4	B	3	Total	O	0	0
			3	3		
4	C	3	Total	O	0	0
			3	3		
4	D	4	Total	O	0	0
			4	4		
4	E	2	Total	O	0	0
			2	2		
4	F	3	Total	O	0	0
			3	3		
4	G	4	Total	O	0	0
			4	4		

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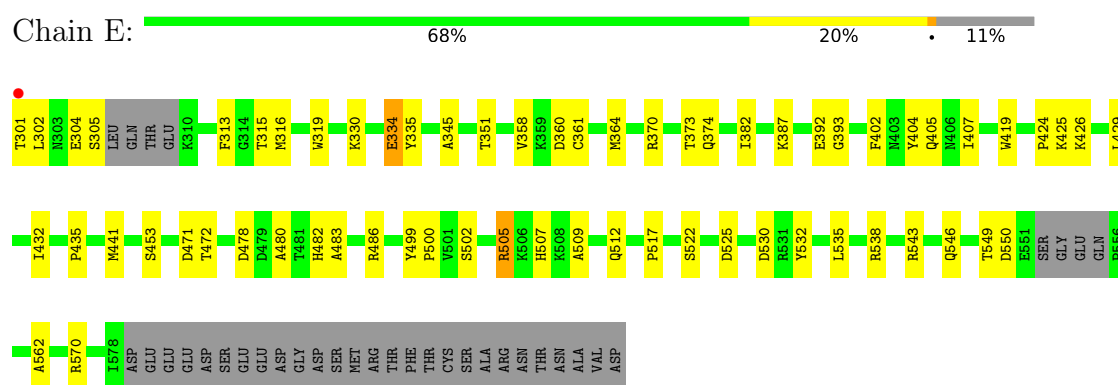
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	H	4	Total 4	O 4	0	0
4	I	4	Total 4	O 4	0	0
4	J	4	Total 4	O 4	0	0
4	L	1	Total 1	O 1	0	0

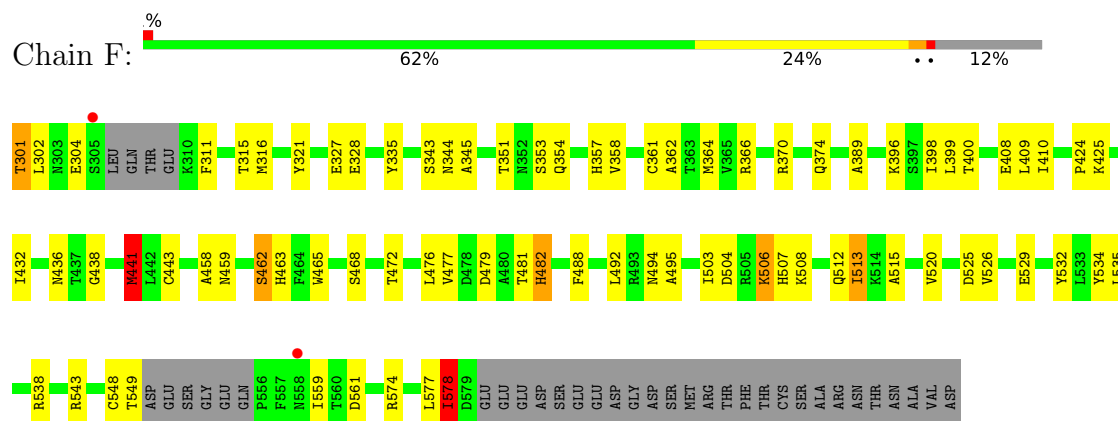
- Molecule 1: REPLICATION PROTEIN E1



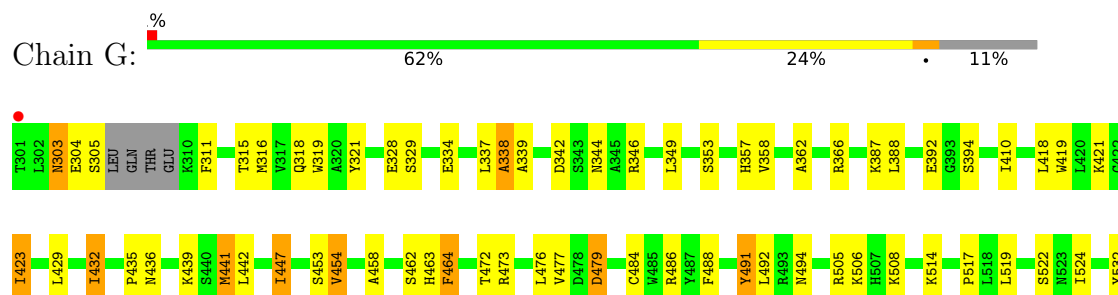
- Molecule 1: REPLICATION PROTEIN E1



- Molecule 1: REPLICATION PROTEIN E1

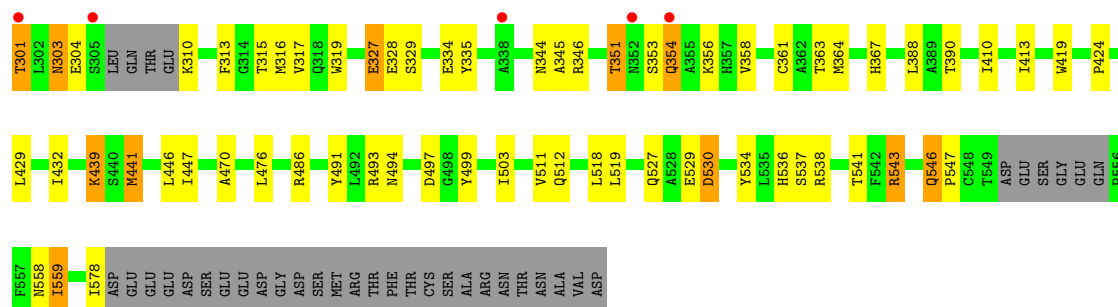


- Molecule 1: REPLICATION PROTEIN E1

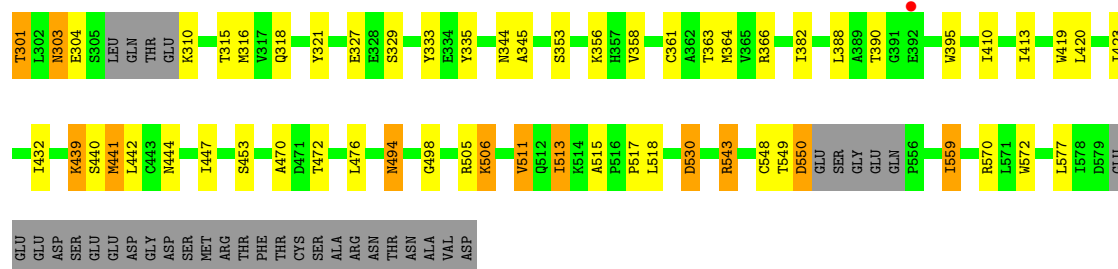




• Molecule 1: REPLICATION PROTEIN E1



• Molecule 1: REPLICATION PROTEIN E1



• Molecule 1: REPLICATION PROTEIN E1

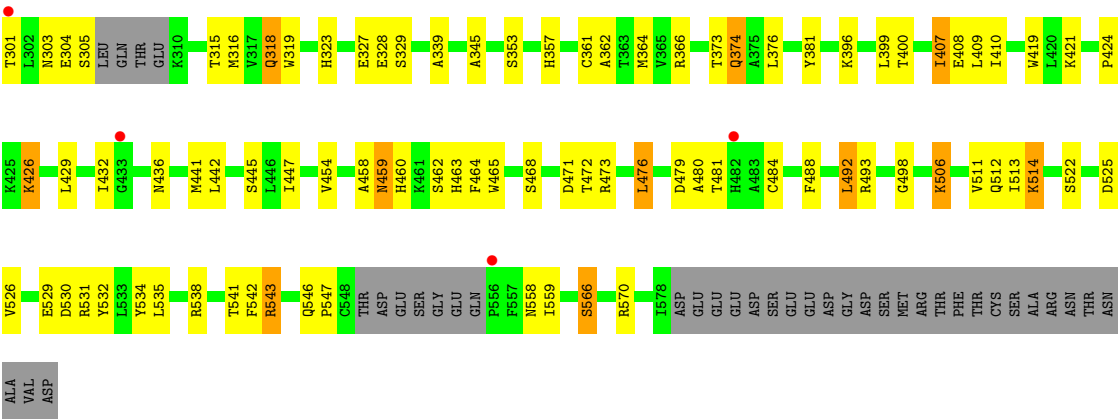


• Molecule 1: REPLICATION PROTEIN E1





● Molecule 1: REPLICATION PROTEIN E1



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	135.11Å 180.65Å 187.53Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	24.95 – 3.00 24.95 – 3.00	Depositor EDS
% Data completeness (in resolution range)	93.4 (24.95-3.00) 93.2 (24.95-3.00)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.47 (at 2.99Å)	Xtriage
Refinement program	REFMAC 5.3.0037	Depositor
R, R_{free}	0.219 , 0.271 0.216 , 0.268	Depositor DCC
R_{free} test set	853 reflections (0.99%)	wwPDB-VP
Wilson B-factor (Å ²)	66.9	Xtriage
Anisotropy	0.616	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 66.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.000 for -h,l,k	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	26079	wwPDB-VP
Average B, all atoms (Å ²)	77.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 26.95 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 2.4003e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, MG

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	0.56	0/2240	0.88	0/3037
1	B	0.57	0/2206	0.88	0/2990
1	C	0.57	0/2199	0.90	3/2980 (0.1%)
1	D	0.54	0/2248	0.90	1/3047 (0.0%)
1	E	0.58	0/2227	0.87	1/3017 (0.0%)
1	F	0.58	0/2215	0.88	0/3001
1	G	0.57	0/2220	0.87	1/3010 (0.0%)
1	H	0.59	0/2206	0.91	2/2990 (0.1%)
1	I	0.62	0/2222	0.88	1/3012 (0.0%)
1	J	0.60	1/2235 (0.0%)	0.92	1/3029 (0.0%)
1	K	0.58	0/2215	0.88	0/3001
1	L	0.57	0/2199	0.89	2/2980 (0.1%)
All	All	0.58	1/26632 (0.0%)	0.89	12/36094 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	G	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	J	310	LYS	CE-NZ	5.54	1.66	1.49

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	327	GLU	N-CA-C	7.69	121.94	109.40
1	L	471	ASP	N-CA-C	7.00	124.24	113.19
1	G	575	LEU	N-CA-C	-6.59	105.20	112.72
1	D	328	GLU	N-CA-C	5.48	117.68	111.11
1	L	558	ASN	N-CA-C	5.41	117.23	108.41
1	H	546	GLN	CA-C-N	5.40	126.58	119.84
1	H	546	GLN	C-N-CA	5.40	126.58	119.84
1	C	326	ALA	CA-C-N	-5.37	114.88	122.94
1	C	326	ALA	C-N-CA	-5.37	114.88	122.94
1	E	549	THR	N-CA-C	5.30	116.09	107.23
1	I	513	ILE	N-CA-C	5.11	117.38	108.90
1	J	513	ILE	N-CA-C	5.06	115.47	108.23

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	G	574	ARG	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	2183	0	2132	41	0
1	B	2149	0	2110	33	0
1	C	2142	0	2103	30	0
1	D	2191	0	2140	33	0
1	E	2170	0	2132	44	0
1	F	2158	0	2124	41	0
1	G	2163	0	2112	49	0
1	H	2149	0	2110	45	0
1	I	2165	0	2119	39	0
1	J	2178	0	2127	46	0
1	K	2158	0	2124	34	0
1	L	2142	0	2104	43	0
2	A	10	0	0	2	0
2	B	10	0	0	1	0
2	C	10	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	5	0	0	1	0
2	E	5	0	0	0	0
2	F	5	0	0	0	0
2	G	10	0	0	2	0
2	H	10	0	0	2	0
2	I	10	0	0	2	0
2	J	5	0	0	1	0
2	K	5	0	0	0	0
2	L	5	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
3	I	1	0	0	0	0
4	A	3	0	0	0	0
4	B	3	0	0	0	0
4	C	3	0	0	0	0
4	D	4	0	0	0	0
4	E	2	0	0	0	0
4	F	3	0	0	0	0
4	G	4	0	0	0	0
4	H	4	0	0	0	0
4	I	4	0	0	0	0
4	J	4	0	0	0	0
4	L	1	0	0	0	0
All	All	26079	0	25437	418	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 8.

All (418) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:304:GLU:HG2	1:D:305:SER:H	1.18	1.08
1:J:470:ALA:HA	1:J:513:ILE:HD11	1.47	0.95
1:A:441:MET:HE1	1:A:559:ILE:H	1.32	0.91
1:E:453:SER:HB2	1:F:512:GLN:HE22	1.32	0.90
1:J:376:LEU:O	1:J:473:ARG:NH2	2.04	0.90
1:K:312:ASP:H	1:K:344:ASN:HD21	1.17	0.90
1:G:432:ILE:HD13	1:G:541:THR:HG23	1.56	0.88

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:304:GLU:HG2	1:A:305:SER:H	1.41	0.85
1:G:441:MET:HE1	1:G:559:ILE:H	1.39	0.85
2:A:1580:PO4:O1	2:A:1581:PO4:O2	1.97	0.82
1:G:435:PRO:HD3	1:H:534:TYR:HE2	1.46	0.81
1:I:358:VAL:HG21	1:J:364:MET:HE1	1.63	0.81
1:H:363:THR:O	1:H:367:HIS:HD2	1.64	0.80
1:I:494:ASN:HD22	1:I:494:ASN:H	1.27	0.79
1:F:503:ILE:HD12	1:F:513:ILE:CD1	2.13	0.78
1:I:470:ALA:HA	1:I:513:ILE:HD11	1.66	0.77
1:L:447:ILE:HG13	1:L:476:LEU:HB2	1.68	0.76
1:J:549:THR:HG22	1:J:551:GLU:N	2.00	0.75
1:A:464:PHE:H	1:A:464:PHE:HD1	1.35	0.75
1:E:316:MET:HE3	1:E:361:CYS:HB2	1.69	0.75
1:A:316:MET:HE1	1:A:357:HIS:HB3	1.70	0.73
1:L:399:LEU:HD13	1:L:409:LEU:HD22	1.71	0.72
1:D:304:GLU:HG2	1:D:305:SER:N	1.98	0.72
1:G:311:PHE:HZ	1:G:316:MET:HE2	1.55	0.72
1:I:494:ASN:H	1:I:494:ASN:ND2	1.87	0.72
1:F:370:ARG:O	1:F:374:GLN:HG2	1.88	0.71
1:A:376:LEU:O	1:A:473:ARG:NH2	2.24	0.71
1:C:358:VAL:HG21	1:D:364:MET:HE1	1.70	0.71
1:I:498:GLY:HA2	1:I:515:ALA:HB3	1.73	0.71
1:K:453:SER:HB3	1:K:472:THR:HG21	1.71	0.71
2:B:1579:PO4:O1	2:B:1580:PO4:O2	2.09	0.71
1:A:421:LYS:HB2	1:A:423:ILE:HD12	1.71	0.71
1:D:439:LYS:NZ	2:D:1580:PO4:O4	2.24	0.70
1:A:458:ALA:HA	1:B:491:TYR:CD2	2.26	0.70
1:A:573:GLY:HA2	1:A:578:ILE:HD11	1.73	0.70
1:K:304:GLU:HG3	1:K:305:SER:H	1.55	0.69
1:B:303:ASN:HD22	1:C:318:GLN:HA	1.57	0.69
2:G:1579:PO4:O1	2:G:1580:PO4:O2	2.10	0.69
1:J:470:ALA:HA	1:J:513:ILE:CD1	2.23	0.69
2:I:1580:PO4:O1	2:I:1581:PO4:O2	2.11	0.69
1:D:352:ASN:OD1	1:E:313:PHE:HB2	1.93	0.69
1:L:462:SER:O	1:L:465:TRP:HD1	1.76	0.68
1:E:505:ARG:HH11	1:E:505:ARG:HB2	1.56	0.68
1:J:352:ASN:OD1	1:K:313:PHE:HB2	1.92	0.68
1:G:316:MET:HE1	1:G:357:HIS:HB3	1.76	0.66
1:C:316:MET:HE3	1:C:361:CYS:HB2	1.76	0.66
1:B:549:THR:HB	1:B:556:PRO:HD2	1.78	0.66
1:H:363:THR:O	1:H:367:HIS:CD2	2.50	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:462:SER:O	1:F:465:TRP:HD1	1.81	0.63
1:I:316:MET:HE3	1:I:361:CYS:HB2	1.80	0.63
1:K:453:SER:HB2	1:L:512:GLN:HE22	1.63	0.62
1:J:453:SER:HB3	1:J:472:THR:HG21	1.81	0.62
1:A:453:SER:HA	1:B:512:GLN:HE22	1.65	0.62
1:J:304:GLU:HG2	1:J:305:SER:H	1.64	0.62
1:G:532:TYR:HB3	1:G:535:LEU:HD12	1.81	0.61
1:L:362:ALA:O	1:L:366:ARG:HG3	2.01	0.61
1:A:385:ARG:HD3	1:A:449:PHE:O	2.00	0.61
1:F:482:HIS:ND1	1:F:532:TYR:OH	2.32	0.61
1:B:303:ASN:ND2	1:C:318:GLN:HA	2.15	0.60
1:D:304:GLU:CG	1:D:305:SER:H	2.02	0.60
1:L:462:SER:O	1:L:465:TRP:CD1	2.54	0.60
1:F:503:ILE:HD12	1:F:513:ILE:HD11	1.84	0.60
1:F:362:ALA:O	1:F:366:ARG:HG2	2.02	0.59
1:I:549:THR:HG23	1:I:550:ASP:H	1.67	0.59
1:H:439:LYS:N	2:H:1579:PO4:O3	2.35	0.59
1:L:316:MET:HE3	1:L:361:CYS:HB2	1.84	0.59
1:D:507:HIS:HE1	1:E:507:HIS:O	1.86	0.59
1:J:439:LYS:NZ	2:J:1578:PO4:O4	2.34	0.59
1:D:316:MET:HE3	1:D:361:CYS:HB2	1.83	0.59
1:C:453:SER:HA	1:D:512:GLN:HE22	1.68	0.58
1:F:462:SER:O	1:F:465:TRP:CD1	2.56	0.58
1:G:435:PRO:HD3	1:H:534:TYR:CE2	2.34	0.58
1:G:494:ASN:HD21	1:L:454:VAL:HG21	1.67	0.58
1:A:532:TYR:HB3	1:A:535:LEU:HD12	1.85	0.58
1:A:432:ILE:CD1	1:A:541:THR:HG23	2.34	0.57
1:E:419:TRP:CD1	1:E:429:LEU:HG	2.39	0.57
1:L:353:SER:O	1:L:357:HIS:CD2	2.58	0.57
1:A:453:SER:HB3	1:A:472:THR:HG21	1.87	0.57
1:G:432:ILE:CD1	1:G:541:THR:HG23	2.29	0.57
1:B:316:MET:HE3	1:B:361:CYS:HB2	1.86	0.56
1:D:419:TRP:CD1	1:D:429:LEU:HG	2.40	0.56
1:G:419:TRP:CD1	1:G:429:LEU:HG	2.41	0.56
1:H:316:MET:HE3	1:H:361:CYS:HB2	1.88	0.56
1:J:464:PHE:CE1	1:J:506:LYS:HA	2.40	0.56
1:D:441:MET:HA	1:E:499:TYR:OH	2.06	0.56
1:L:407:ILE:HG21	1:L:542:PHE:HD1	1.71	0.56
1:B:506:LYS:NZ	1:C:508:LYS:O	2.36	0.56
1:F:399:LEU:HD13	1:F:409:LEU:HD22	1.86	0.56
1:F:578:ILE:O	1:F:578:ILE:HG13	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:419:TRP:CD1	1:K:429:LEU:HG	2.40	0.56
1:A:311:PHE:HZ	1:A:316:MET:HE2	1.71	0.56
2:H:1579:PO4:O1	2:H:1580:PO4:O2	2.24	0.56
1:J:441:MET:HA	1:K:499:TYR:OH	2.06	0.56
1:D:551:GLU:HG3	1:D:552:SER:N	2.21	0.55
1:E:453:SER:HB3	1:E:472:THR:HG21	1.88	0.55
1:H:335:TYR:OH	1:H:344:ASN:ND2	2.38	0.55
1:L:319:TRP:O	1:L:323:HIS:HD2	1.87	0.55
1:F:424:PRO:O	1:F:425:LYS:HB2	2.06	0.55
1:A:464:PHE:N	1:A:464:PHE:CD1	2.73	0.55
1:H:301:THR:HG22	1:I:321:TYR:CE1	2.41	0.55
1:L:488:PHE:HA	1:L:492:LEU:HB2	1.88	0.55
1:E:478:ASP:OD2	1:F:494:ASN:ND2	2.40	0.55
1:H:303:ASN:HD22	1:I:318:GLN:HA	1.72	0.54
1:F:353:SER:O	1:F:357:HIS:CD2	2.61	0.54
1:G:458:ALA:HA	1:H:491:TYR:CD2	2.42	0.54
1:G:464:PHE:HD1	1:G:464:PHE:H	1.53	0.54
1:L:480:ALA:HB3	1:L:522:SER:HB2	1.90	0.54
1:B:447:ILE:HG13	1:B:476:LEU:HB2	1.89	0.54
1:K:301:THR:O	1:K:302:LEU:C	2.49	0.54
1:K:304:GLU:HG3	1:K:305:SER:N	2.23	0.54
1:G:447:ILE:HG12	1:G:519:LEU:HD12	1.90	0.54
1:A:304:GLU:HG2	1:A:305:SER:N	2.17	0.54
1:B:453:SER:HB3	1:B:472:THR:HG21	1.90	0.54
1:B:301:THR:HG22	1:C:321:TYR:CE1	2.43	0.54
1:I:505:ARG:NH2	1:I:511:VAL:HG13	2.24	0.53
1:F:438:GLY:O	1:F:441:MET:HB3	2.07	0.53
1:H:424:PRO:HA	1:H:497:ASP:O	2.09	0.53
1:F:488:PHE:HA	1:F:492:LEU:HB2	1.89	0.53
1:H:470:ALA:HB2	1:H:503:ILE:HG21	1.91	0.53
1:A:385:ARG:HD2	1:A:450:LEU:C	2.34	0.53
1:A:436:ASN:O	1:A:547:PRO:HA	2.08	0.53
1:B:304:GLU:HG2	1:B:305:SER:H	1.74	0.53
1:C:453:SER:HB3	1:C:472:THR:HG21	1.91	0.53
1:J:304:GLU:HG2	1:J:305:SER:N	2.23	0.53
1:A:385:ARG:HD2	1:A:450:LEU:O	2.08	0.53
1:E:319:TRP:HH2	1:E:334:GLU:HB3	1.74	0.53
1:H:358:VAL:HG21	1:I:364:MET:HE1	1.90	0.53
1:C:325:TYR:CE1	1:C:334:GLU:HG2	2.43	0.53
1:E:505:ARG:HH11	1:E:505:ARG:CB	2.22	0.53
1:L:534:TYR:CE2	1:L:538:ARG:CZ	2.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:432:ILE:HD13	1:F:525:ASP:HA	1.90	0.52
1:H:441:MET:CE	1:H:559:ILE:H	2.21	0.52
1:A:432:ILE:HD12	1:A:541:THR:HG23	1.89	0.52
1:J:325:TYR:CE1	1:J:334:GLU:HG2	2.45	0.52
1:F:316:MET:HE3	1:F:361:CYS:HB2	1.92	0.52
1:F:316:MET:HE1	1:F:357:HIS:HB3	1.92	0.52
1:L:316:MET:HE1	1:L:357:HIS:HB3	1.91	0.52
1:L:513:ILE:HG13	1:L:514:LYS:N	2.24	0.52
1:D:453:SER:HB2	1:E:512:GLN:OE1	2.10	0.52
1:E:425:LYS:HG2	1:E:538:ARG:HG3	1.92	0.52
1:G:491:TYR:N	1:G:491:TYR:HD1	2.08	0.51
1:H:530:ASP:OD2	1:H:530:ASP:N	2.42	0.51
1:B:358:VAL:HG21	1:C:364:MET:HE1	1.93	0.51
1:G:473:ARG:O	1:G:517:PRO:HD2	2.10	0.51
1:J:441:MET:HE2	1:J:441:MET:O	2.10	0.51
1:K:360:ASP:O	1:K:364:MET:HB2	2.11	0.51
1:A:486:ARG:NH1	1:A:531:ARG:HH11	2.09	0.51
1:G:311:PHE:CZ	1:G:316:MET:HE2	2.42	0.51
1:B:530:ASP:OD2	1:B:530:ASP:N	2.43	0.51
1:J:339:ALA:HA	1:J:345:ALA:HB3	1.93	0.51
1:A:321:TYR:CE1	1:F:301:THR:HG22	2.46	0.51
1:B:453:SER:HA	1:C:512:GLN:HE22	1.74	0.51
1:L:566:SER:O	1:L:570:ARG:HB2	2.10	0.51
1:J:488:PHE:CE1	1:J:492:LEU:HD12	2.46	0.50
1:E:505:ARG:NH1	1:E:509:ALA:O	2.44	0.50
1:G:453:SER:HB3	1:G:472:THR:HG21	1.93	0.50
1:D:441:MET:HE1	1:D:559:ILE:H	1.77	0.50
1:G:491:TYR:N	1:G:491:TYR:CD1	2.80	0.50
1:J:392:GLU:OE2	1:J:392:GLU:HA	2.10	0.50
1:G:441:MET:HE3	1:G:558:ASN:HA	1.93	0.50
1:J:498:GLY:HA2	1:J:515:ALA:HB3	1.94	0.50
1:K:432:ILE:HD12	1:K:541:THR:HG23	1.93	0.50
1:G:318:GLN:HA	1:L:303:ASN:HD22	1.77	0.50
1:H:335:TYR:CE2	1:H:345:ALA:HA	2.47	0.50
1:H:441:MET:HE1	1:H:559:ILE:H	1.77	0.50
1:I:447:ILE:HG13	1:I:476:LEU:HB2	1.94	0.49
1:I:303:ASN:ND2	1:J:318:GLN:HA	2.26	0.49
1:E:301:THR:O	1:E:302:LEU:C	2.55	0.49
1:A:513:ILE:HG22	1:A:514:LYS:O	2.12	0.49
1:C:351:THR:O	1:C:354:GLN:HG2	2.12	0.49
1:J:470:ALA:HB1	1:J:511:VAL:HG21	1.95	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:389:ALA:HB1	1:F:561:ASP:HB3	1.94	0.49
1:G:315:THR:HB	1:G:344:ASN:ND2	2.28	0.49
1:K:312:ASP:H	1:K:344:ASN:ND2	1.98	0.49
1:H:301:THR:HG22	1:I:321:TYR:CZ	2.48	0.49
1:L:493:ARG:HD3	1:L:534:TYR:CE2	2.48	0.49
1:A:419:TRP:CD1	1:A:429:LEU:HG	2.48	0.48
1:H:541:THR:HB	1:H:543:ARG:NH2	2.28	0.48
1:B:424:PRO:HA	1:B:497:ASP:O	2.14	0.48
1:G:432:ILE:HD13	1:G:541:THR:CG2	2.35	0.48
1:I:530:ASP:OD2	1:I:530:ASP:N	2.44	0.48
1:E:482:HIS:O	1:E:483:ALA:C	2.56	0.48
1:D:315:THR:HB	1:D:344:ASN:ND2	2.28	0.48
1:J:454:VAL:N	1:K:512:GLN:OE1	2.43	0.48
1:D:441:MET:CE	1:D:559:ILE:H	2.26	0.48
1:E:335:TYR:CE2	1:E:345:ALA:HA	2.48	0.48
1:G:321:TYR:CZ	1:L:301:THR:HG22	2.49	0.48
1:H:527:GLN:NE2	1:H:536:HIS:HA	2.29	0.48
1:I:304:GLU:HG3	1:J:315:THR:HA	1.95	0.48
1:J:353:SER:O	1:J:354:GLN:C	2.56	0.48
1:A:486:ARG:HH12	1:A:531:ARG:HH11	1.62	0.48
1:G:484:CYS:O	1:G:488:PHE:HD2	1.97	0.48
1:E:505:ARG:HH11	1:E:505:ARG:CG	2.26	0.47
1:E:316:MET:HE3	1:E:361:CYS:CB	2.42	0.47
1:G:338:ALA:O	1:G:342:ASP:HB3	2.14	0.47
1:I:441:MET:CE	1:I:559:ILE:H	2.27	0.47
1:B:304:GLU:HG3	1:C:315:THR:HA	1.97	0.47
1:F:327:GLU:O	1:F:328:GLU:C	2.56	0.47
1:I:363:THR:HA	1:I:366:ARG:NH1	2.29	0.47
1:K:453:SER:CB	1:K:472:THR:HG21	2.43	0.47
1:J:385:ARG:HD3	1:J:449:PHE:O	2.14	0.47
1:C:301:THR:HG22	1:D:321:TYR:CE1	2.49	0.47
1:C:446:LEU:HD23	1:C:519:LEU:HD11	1.95	0.47
1:E:393:GLY:H	1:E:562:ALA:HB1	1.79	0.47
1:B:325:TYR:CE1	1:B:334:GLU:HG2	2.49	0.47
1:E:313:PHE:CZ	1:E:360:ASP:HB3	2.49	0.47
1:F:315:THR:HB	1:F:344:ASN:ND2	2.30	0.47
1:J:335:TYR:CE2	1:J:345:ALA:HA	2.50	0.47
1:L:459:ASN:HB3	1:L:460:HIS:H	1.56	0.47
1:G:337:LEU:C	1:G:339:ALA:H	2.22	0.47
1:K:343:SER:HA	1:K:346:ARG:NH1	2.30	0.47
1:D:464:PHE:CE1	1:D:506:LYS:HA	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:351:THR:O	1:F:354:GLN:HG3	2.15	0.47
1:A:421:LYS:HB2	1:A:423:ILE:CD1	2.44	0.47
1:C:427:ASN:HB3	1:C:496:LEU:O	2.14	0.46
1:G:508:LYS:HE3	1:L:328:GLU:HB2	1.95	0.46
1:J:530:ASP:OD2	1:J:530:ASP:N	2.47	0.46
1:D:447:ILE:HG13	1:D:476:LEU:HB2	1.97	0.46
1:J:424:PRO:HA	1:J:497:ASP:O	2.15	0.46
1:L:432:ILE:HD13	1:L:525:ASP:HA	1.96	0.46
1:B:339:ALA:HA	1:B:345:ALA:HB3	1.98	0.46
1:C:346:ARG:HE	1:C:346:ARG:HB2	1.50	0.46
1:C:447:ILE:HG13	1:C:476:LEU:HB2	1.97	0.46
1:C:530:ASP:OD2	1:C:530:ASP:N	2.44	0.46
1:F:335:TYR:CE2	1:F:345:ALA:HA	2.51	0.46
1:L:419:TRP:CD1	1:L:429:LEU:HG	2.50	0.46
1:E:532:TYR:HB3	1:E:535:LEU:HD12	1.97	0.46
1:J:352:ASN:HA	1:K:313:PHE:CB	2.46	0.46
1:G:353:SER:O	1:G:357:HIS:CD2	2.69	0.46
1:J:304:GLU:HG3	1:K:315:THR:HA	1.98	0.46
1:A:470:ALA:HA	1:A:513:ILE:HD12	1.97	0.46
1:B:315:THR:HB	1:B:344:ASN:ND2	2.30	0.46
1:C:441:MET:HE2	1:C:441:MET:O	2.15	0.46
1:D:551:GLU:CG	1:D:552:SER:N	2.79	0.46
1:G:453:SER:HA	1:H:512:GLN:HE22	1.80	0.46
1:L:534:TYR:CZ	1:L:538:ARG:NH2	2.84	0.46
1:I:301:THR:HG22	1:J:321:TYR:CE1	2.50	0.46
1:I:333:TYR:CZ	1:J:372:GLU:HB3	2.50	0.46
1:A:422:GLY:HA2	1:A:427:ASN:HD22	1.81	0.46
1:C:441:MET:CE	1:C:559:ILE:H	2.29	0.45
1:E:419:TRP:CE2	1:E:517:PRO:HB3	2.51	0.45
1:G:454:VAL:HG12	1:G:476:LEU:HD23	1.97	0.45
1:L:304:GLU:HG2	1:L:305:SER:H	1.81	0.45
1:A:337:LEU:C	1:A:339:ALA:H	2.23	0.45
1:E:480:ALA:HB3	1:E:522:SER:HB2	1.97	0.45
1:I:395:TRP:NE1	1:I:570:ARG:HD2	2.31	0.45
1:I:453:SER:HA	1:J:512:GLN:HE22	1.82	0.45
1:J:446:LEU:HD23	1:J:519:LEU:HD11	1.97	0.45
1:A:417:LYS:HD2	1:A:576:ASP:HB2	1.97	0.45
1:E:304:GLU:HB3	1:E:305:SER:H	1.65	0.45
1:B:577:LEU:O	1:B:578:ILE:C	2.59	0.45
1:E:404:TYR:O	1:E:546:GLN:HG3	2.16	0.45
1:F:441:MET:HE1	1:F:559:ILE:H	1.82	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:304:GLU:HG2	1:L:318:GLN:HG3	1.98	0.45
1:L:381:TYR:CE1	1:L:473:ARG:HG3	2.51	0.45
1:C:382:ILE:HD11	1:C:420:LEU:HD22	1.98	0.45
1:H:447:ILE:HG13	1:H:476:LEU:HB2	1.99	0.45
1:D:530:ASP:OD2	1:D:530:ASP:N	2.49	0.45
1:G:436:ASN:ND2	1:H:537:SER:HB3	2.31	0.45
1:H:546:GLN:HA	1:H:547:PRO:HD2	1.65	0.45
1:J:419:TRP:CD1	1:J:429:LEU:HG	2.52	0.45
1:B:490:THR:HB	1:B:491:TYR:CD1	2.52	0.45
1:I:440:SER:O	1:I:444:ASN:HB2	2.16	0.45
1:G:421:LYS:HB2	1:G:423:ILE:HD12	1.98	0.45
1:I:439:LYS:N	2:I:1580:PO4:O3	2.50	0.45
1:L:374:GLN:HE21	1:L:374:GLN:HB3	1.60	0.45
1:B:419:TRP:CD1	1:B:429:LEU:HG	2.52	0.44
1:C:319:TRP:HH2	1:C:334:GLU:HB3	1.81	0.44
1:G:358:VAL:HG21	1:H:364:MET:HE1	2.00	0.44
1:G:435:PRO:HA	2:G:1580:PO4:O2	2.18	0.44
1:H:446:LEU:HD23	1:H:519:LEU:HD11	1.99	0.44
1:H:541:THR:HB	1:H:543:ARG:HH21	1.83	0.44
1:I:419:TRP:CE2	1:I:517:PRO:HB3	2.52	0.44
1:D:441:MET:HE2	1:D:441:MET:O	2.17	0.44
1:F:463:HIS:HE1	1:F:504:ASP:OD2	2.00	0.44
1:H:364:MET:O	1:H:367:HIS:HB2	2.18	0.44
1:J:419:TRP:CE2	1:J:517:PRO:HB3	2.52	0.44
1:E:301:THR:HG22	1:F:321:TYR:CZ	2.53	0.44
1:C:419:TRP:CE2	1:C:517:PRO:HB3	2.53	0.44
1:E:478:ASP:OD2	1:F:494:ASN:CG	2.59	0.44
1:F:503:ILE:HD12	1:F:513:ILE:HD13	1.92	0.44
1:G:316:MET:CE	1:G:357:HIS:HB3	2.45	0.44
1:G:328:GLU:HB3	1:H:367:HIS:HE1	1.82	0.44
1:H:419:TRP:CD1	1:H:429:LEU:HG	2.53	0.44
1:H:534:TYR:O	1:H:538:ARG:NH1	2.51	0.44
1:C:454:VAL:HG21	1:D:500:PRO:HB2	2.00	0.44
1:D:422:GLY:HA3	1:D:514:LYS:NZ	2.32	0.44
1:H:346:ARG:HE	1:H:346:ARG:HB2	1.62	0.44
1:E:370:ARG:O	1:E:374:GLN:HG2	2.17	0.44
1:L:339:ALA:HA	1:L:345:ALA:HB3	1.99	0.44
1:L:424:PRO:C	1:L:426:LYS:H	2.26	0.44
1:D:555:GLN:HG3	1:D:555:GLN:O	2.16	0.44
1:E:402:PHE:HD1	1:E:407:ILE:HD11	1.83	0.44
1:G:362:ALA:O	1:G:366:ARG:HG2	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:410:ILE:HA	1:H:413:ILE:HD12	2.00	0.44
1:D:453:SER:HB3	1:D:472:THR:HG21	1.99	0.44
1:D:339:ALA:HA	1:D:345:ALA:HB3	2.00	0.43
1:J:346:ARG:HE	1:J:346:ARG:HB2	1.55	0.43
1:C:339:ALA:HA	1:C:345:ALA:HB3	2.00	0.43
1:D:456:SER:HB2	1:E:502:SER:HB3	2.00	0.43
1:I:410:ILE:HA	1:I:413:ILE:HD12	2.00	0.43
1:J:551:GLU:HB3	1:J:552:SER:H	1.56	0.43
1:K:482:HIS:O	1:K:483:ALA:C	2.62	0.43
1:F:532:TYR:HB3	1:F:535:LEU:HD12	2.00	0.43
1:I:441:MET:HE1	1:I:559:ILE:H	1.83	0.43
1:L:498:GLY:O	1:L:514:LYS:HE2	2.18	0.43
1:C:464:PHE:CE1	1:C:506:LYS:HA	2.53	0.43
1:E:330:LYS:O	1:E:334:GLU:HB2	2.18	0.43
1:F:534:TYR:CE2	1:F:538:ARG:CZ	3.02	0.43
1:J:385:ARG:NH1	1:J:451:GLY:N	2.66	0.43
1:K:512:GLN:HE21	1:K:512:GLN:HB3	1.58	0.43
1:A:454:VAL:HG23	1:B:512:GLN:CD	2.44	0.43
1:E:432:ILE:HD13	1:E:525:ASP:HA	1.99	0.43
1:E:435:PRO:HB3	1:F:534:TYR:CE1	2.53	0.43
1:H:304:GLU:HG3	1:I:315:THR:HA	2.00	0.43
1:I:506:LYS:NZ	1:J:504:ASP:OD1	2.51	0.43
1:G:304:GLU:HG2	1:G:305:SER:H	1.84	0.43
1:H:313:PHE:O	1:H:317:VAL:HG23	2.19	0.43
1:K:304:GLU:OE1	1:L:315:THR:HG23	2.19	0.43
1:A:464:PHE:HE2	1:A:506:LYS:HA	1.84	0.43
1:I:441:MET:HE2	1:I:441:MET:O	2.18	0.43
1:I:505:ARG:CZ	1:I:511:VAL:HG13	2.49	0.43
1:B:470:ALA:HB2	1:B:503:ILE:HG21	2.01	0.43
1:J:432:ILE:HD13	1:J:525:ASP:HA	2.00	0.43
1:K:339:ALA:HA	1:K:345:ALA:HB3	2.01	0.43
1:K:399:LEU:HD13	1:K:409:LEU:HD22	2.01	0.43
1:K:543:ARG:H	1:K:543:ARG:HG2	1.69	0.43
1:L:532:TYR:HB3	1:L:535:LEU:HD12	2.00	0.43
1:H:432:ILE:HD12	1:H:541:THR:HG23	2.00	0.43
1:J:362:ALA:O	1:J:366:ARG:HG2	2.19	0.43
1:L:376:LEU:O	1:L:473:ARG:NH2	2.41	0.43
1:L:570:ARG:HD2	1:L:570:ARG:HA	1.87	0.43
1:A:432:ILE:HD13	1:A:541:THR:HG23	2.01	0.42
1:G:319:TRP:HH2	1:G:334:GLU:HB3	1.83	0.42
1:J:405:GLN:HG3	1:J:544:PHE:CD1	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:447:ILE:HG13	1:G:476:LEU:HB2	2.00	0.42
1:H:497:ASP:HB3	1:H:499:TYR:CD2	2.53	0.42
1:E:301:THR:HG22	1:F:321:TYR:CE1	2.55	0.42
1:F:398:ILE:HG12	1:F:559:ILE:HD12	2.02	0.42
1:H:351:THR:O	1:H:354:GLN:HG2	2.20	0.42
1:L:464:PHE:CE1	1:L:506:LYS:HA	2.54	0.42
1:D:555:GLN:HE21	1:D:555:GLN:HB2	1.66	0.42
1:H:327:GLU:O	1:H:328:GLU:C	2.63	0.42
1:L:462:SER:O	1:L:463:HIS:C	2.62	0.42
1:E:499:TYR:HB3	1:E:500:PRO:CD	2.49	0.42
1:A:478:ASP:HB3	1:B:494:ASN:HD22	1.83	0.42
1:B:374:GLN:HE22	1:B:513:ILE:HD11	1.85	0.42
1:D:424:PRO:HA	1:D:497:ASP:O	2.19	0.42
1:E:358:VAL:HG21	1:F:364:MET:HE1	2.01	0.42
1:E:405:GLN:NE2	1:E:546:GLN:HB2	2.34	0.42
1:G:321:TYR:CE1	1:L:301:THR:HG22	2.55	0.42
1:L:442:LEU:O	1:L:445:SER:OG	2.36	0.42
1:C:410:ILE:HA	1:C:413:ILE:HD12	2.02	0.42
1:B:441:MET:CE	1:B:559:ILE:H	2.32	0.42
1:G:436:ASN:O	1:G:547:PRO:HA	2.19	0.42
1:J:315:THR:HB	1:J:344:ASN:ND2	2.34	0.42
1:K:335:TYR:CE2	1:K:345:ALA:HA	2.54	0.42
1:K:453:SER:HB3	1:K:472:THR:CG2	2.44	0.42
1:G:479:ASP:CG	1:H:493:ARG:HD2	2.45	0.42
1:J:319:TRP:HH2	1:J:334:GLU:HB3	1.85	0.42
1:A:335:TYR:CE2	1:A:345:ALA:HA	2.55	0.41
1:D:325:TYR:CE1	1:D:334:GLU:HG2	2.54	0.41
1:F:577:LEU:O	1:F:578:ILE:C	2.63	0.41
1:K:393:GLY:H	1:K:562:ALA:HB1	1.85	0.41
1:A:439:LYS:N	2:A:1580:PO4:O3	2.53	0.41
1:E:374:GLN:HE22	1:E:471:ASP:HA	1.84	0.41
1:C:335:TYR:OH	1:C:344:ASN:ND2	2.52	0.41
1:G:304:GLU:HG3	1:H:315:THR:HA	2.02	0.41
1:I:335:TYR:CE2	1:I:345:ALA:HA	2.54	0.41
1:K:432:ILE:HD13	1:K:525:ASP:HA	2.02	0.41
1:C:401:PHE:HE2	1:C:544:PHE:CE2	2.38	0.41
1:E:301:THR:O	1:E:301:THR:HG23	2.21	0.41
1:E:374:GLN:NE2	1:E:471:ASP:HA	2.34	0.41
1:I:442:LEU:HD12	1:I:559:ILE:HD12	2.02	0.41
1:K:402:PHE:HD1	1:K:407:ILE:HD11	1.86	0.41
1:F:477:VAL:HB	1:F:520:VAL:HG13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:495:ALA:HB1	1:F:515:ALA:CB	2.50	0.41
1:G:303:ASN:HA	1:G:349:LEU:HD22	2.03	0.41
1:I:382:ILE:HD11	1:I:420:LEU:HD22	2.02	0.41
1:L:484:CYS:O	1:L:488:PHE:HD2	2.04	0.41
1:A:458:ALA:HB2	1:B:491:TYR:HB3	2.03	0.41
1:B:319:TRP:HH2	1:B:334:GLU:HB3	1.85	0.41
1:B:346:ARG:HE	1:B:346:ARG:HB2	1.59	0.41
1:F:443:CYS:HB3	1:F:476:LEU:HD22	2.03	0.41
1:A:501:VAL:HG22	1:A:502:SER:N	2.36	0.41
1:D:446:LEU:HD23	1:D:519:LEU:HD11	2.03	0.41
1:F:311:PHE:HZ	1:F:316:MET:HE2	1.86	0.41
1:G:392:GLU:HA	1:G:392:GLU:OE1	2.21	0.41
1:H:303:ASN:ND2	1:I:318:GLN:HA	2.35	0.41
1:H:319:TRP:HH2	1:H:334:GLU:HB3	1.86	0.41
1:I:432:ILE:O	1:I:543:ARG:HA	2.21	0.41
1:B:404:TYR:OH	1:B:547:PRO:O	2.31	0.41
1:E:424:PRO:O	1:E:425:LYS:HB2	2.20	0.41
1:I:572:TRP:NE1	1:I:577:LEU:O	2.54	0.41
1:K:374:GLN:NE2	1:K:471:ASP:HA	2.36	0.41
1:L:541:THR:HB	1:L:543:ARG:HH21	1.86	0.41
1:G:522:SER:HG	1:G:524:ILE:H	1.68	0.40
1:J:385:ARG:HH11	1:J:451:GLY:N	2.20	0.40
1:L:327:GLU:O	1:L:328:GLU:C	2.63	0.40
1:E:319:TRP:CH2	1:E:334:GLU:HB3	2.56	0.40
1:G:505:ARG:CZ	1:G:508:LYS:HD3	2.51	0.40
1:H:315:THR:HB	1:H:344:ASN:ND2	2.36	0.40
1:K:425:LYS:HG2	1:K:538:ARG:HG2	2.02	0.40
1:A:473:ARG:O	1:A:517:PRO:HD2	2.21	0.40
1:B:335:TYR:OH	1:B:344:ASN:ND2	2.52	0.40
1:I:453:SER:HB3	1:I:472:THR:HG21	2.03	0.40
1:K:342:ASP:HB3	1:K:345:ALA:HB3	2.04	0.40
1:K:436:ASN:O	1:K:547:PRO:HA	2.20	0.40
1:K:448:HIS:O	1:K:449:PHE:C	2.64	0.40
1:A:364:MET:HE1	1:F:358:VAL:HG21	2.04	0.40
1:E:453:SER:HB3	1:E:472:THR:CG2	2.50	0.40
1:G:477:VAL:HG21	1:G:488:PHE:HZ	1.87	0.40
1:H:441:MET:SD	1:H:441:MET:C	3.04	0.40
1:I:335:TYR:OH	1:I:344:ASN:ND2	2.53	0.40
1:J:405:GLN:HG3	1:J:544:PHE:CG	2.57	0.40
1:A:433:GLY:O	1:A:523:ASN:HA	2.22	0.40
1:B:534:TYR:O	1:B:538:ARG:NH1	2.54	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:335:TYR:OH	1:D:344:ASN:ND2	2.55	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	266/305 (87%)	245 (92%)	19 (7%)	2 (1%)	16	50
1	B	262/305 (86%)	251 (96%)	10 (4%)	1 (0%)	30	65
1	C	261/305 (86%)	252 (97%)	9 (3%)	0	100	100
1	D	268/305 (88%)	256 (96%)	8 (3%)	4 (2%)	8	35
1	E	264/305 (87%)	246 (93%)	18 (7%)	0	100	100
1	F	263/305 (86%)	239 (91%)	17 (6%)	7 (3%)	4	22
1	G	264/305 (87%)	241 (91%)	17 (6%)	6 (2%)	5	25
1	H	262/305 (86%)	249 (95%)	12 (5%)	1 (0%)	30	65
1	I	264/305 (87%)	250 (95%)	12 (4%)	2 (1%)	16	50
1	J	266/305 (87%)	252 (95%)	12 (4%)	2 (1%)	16	50
1	K	263/305 (86%)	251 (95%)	10 (4%)	2 (1%)	16	50
1	L	261/305 (86%)	236 (90%)	22 (8%)	3 (1%)	11	43
All	All	3164/3660 (86%)	2968 (94%)	166 (5%)	30 (1%)	14	48

All (30) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	J	506	LYS
1	D	506	LYS
1	D	553	GLY

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Mol	Chain	Res	Type
1	G	338	ALA
1	G	506	LYS
1	K	302	LEU
1	K	304	GLU
1	L	458	ALA
1	F	479	ASP
1	F	506	LYS
1	G	464	PHE
1	G	492	LEU
1	I	506	LYS
1	I	548	CYS
1	L	479	ASP
1	B	576	ASP
1	D	552	SER
1	F	458	ALA
1	F	578	ILE
1	G	576	ASP
1	H	558	ASN
1	A	338	ALA
1	A	464	PHE
1	F	459	ASN
1	F	462	SER
1	L	547	PRO
1	D	578	ILE
1	F	441	MET
1	J	553	GLY
1	G	573	GLY

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	229/259 (88%)	207 (90%)	22 (10%)	8	31
1	B	225/259 (87%)	206 (92%)	19 (8%)	10	37
1	C	224/259 (86%)	207 (92%)	17 (8%)	12	41

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	229/259 (88%)	215 (94%)	14 (6%)	17	49
1	E	228/259 (88%)	212 (93%)	16 (7%)	14	44
1	F	226/259 (87%)	201 (89%)	25 (11%)	6	25
1	G	226/259 (87%)	199 (88%)	27 (12%)	5	22
1	H	225/259 (87%)	203 (90%)	22 (10%)	7	30
1	I	227/259 (88%)	208 (92%)	19 (8%)	10	37
1	J	228/259 (88%)	203 (89%)	25 (11%)	6	25
1	K	226/259 (87%)	206 (91%)	20 (9%)	9	35
1	L	224/259 (86%)	193 (86%)	31 (14%)	3	17
All	All	2717/3108 (87%)	2460 (90%)	257 (10%)	8	31

All (257) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	303	ASN
1	A	346	ARG
1	A	351	THR
1	A	364	MET
1	A	388	LEU
1	A	408	GLU
1	A	410	ILE
1	A	423	ILE
1	A	432	ILE
1	A	441	MET
1	A	447	ILE
1	A	454	VAL
1	A	462	SER
1	A	463	HIS
1	A	464	PHE
1	A	479	ASP
1	A	506	LYS
1	A	512	GLN
1	A	514	LYS
1	A	545	GLU
1	A	548	CYS
1	A	550	ASP
1	B	301	THR
1	B	303	ASN
1	B	310	LYS

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Mol	Chain	Res	Type
1	B	327	GLU
1	B	354	GLN
1	B	356	LYS
1	B	390	THR
1	B	441	MET
1	B	486	ARG
1	B	501	VAL
1	B	508	LYS
1	B	518	LEU
1	B	527	GLN
1	B	530	ASP
1	B	543	ARG
1	B	548	CYS
1	B	549	THR
1	B	559	ILE
1	B	570	ARG
1	C	301	THR
1	C	305	SER
1	C	354	GLN
1	C	356	LYS
1	C	366	ARG
1	C	388	LEU
1	C	408	GLU
1	C	441	MET
1	C	461	LYS
1	C	469	LEU
1	C	501	VAL
1	C	507	HIS
1	C	518	LEU
1	C	530	ASP
1	C	543	ARG
1	C	548	CYS
1	C	559	ILE
1	D	329	SER
1	D	387	LYS
1	D	388	LEU
1	D	441	MET
1	D	463	HIS
1	D	468	SER
1	D	518	LEU
1	D	527	GLN
1	D	530	ASP

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Mol	Chain	Res	Type
1	D	531	ARG
1	D	549	THR
1	D	555	GLN
1	D	559	ILE
1	D	570	ARG
1	E	315	THR
1	E	334	GLU
1	E	351	THR
1	E	364	MET
1	E	373	THR
1	E	382	ILE
1	E	387	LYS
1	E	392	GLU
1	E	426	LYS
1	E	441	MET
1	E	486	ARG
1	E	505	ARG
1	E	530	ASP
1	E	543	ARG
1	E	550	ASP
1	E	570	ARG
1	F	301	THR
1	F	302	LEU
1	F	304	GLU
1	F	343	SER
1	F	396	LYS
1	F	400	THR
1	F	408	GLU
1	F	410	ILE
1	F	436	ASN
1	F	441	MET
1	F	468	SER
1	F	472	THR
1	F	481	THR
1	F	482	HIS
1	F	506	LYS
1	F	507	HIS
1	F	508	LYS
1	F	513	ILE
1	F	526	VAL
1	F	529	GLU
1	F	543	ARG

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Mol	Chain	Res	Type
1	F	548	CYS
1	F	549	THR
1	F	574	ARG
1	F	578	ILE
1	G	303	ASN
1	G	329	SER
1	G	346	ARG
1	G	387	LYS
1	G	388	LEU
1	G	394	SER
1	G	410	ILE
1	G	418	LEU
1	G	423	ILE
1	G	432	ILE
1	G	439	LYS
1	G	441	MET
1	G	442	LEU
1	G	447	ILE
1	G	454	VAL
1	G	462	SER
1	G	463	HIS
1	G	479	ASP
1	G	486	ARG
1	G	491	TYR
1	G	514	LYS
1	G	538	ARG
1	G	543	ARG
1	G	545	GLU
1	G	548	CYS
1	G	550	ASP
1	G	570	ARG
1	H	301	THR
1	H	303	ASN
1	H	310	LYS
1	H	327	GLU
1	H	329	SER
1	H	351	THR
1	H	353	SER
1	H	354	GLN
1	H	356	LYS
1	H	388	LEU
1	H	390	THR

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Mol	Chain	Res	Type
1	H	439	LYS
1	H	441	MET
1	H	486	ARG
1	H	494	ASN
1	H	511	VAL
1	H	518	LEU
1	H	529	GLU
1	H	530	ASP
1	H	543	ARG
1	H	559	ILE
1	H	578	ILE
1	I	301	THR
1	I	303	ASN
1	I	310	LYS
1	I	327	GLU
1	I	329	SER
1	I	353	SER
1	I	356	LYS
1	I	388	LEU
1	I	390	THR
1	I	423	ILE
1	I	439	LYS
1	I	441	MET
1	I	494	ASN
1	I	511	VAL
1	I	518	LEU
1	I	530	ASP
1	I	543	ARG
1	I	550	ASP
1	I	559	ILE
1	J	301	THR
1	J	303	ASN
1	J	310	LYS
1	J	329	SER
1	J	351	THR
1	J	354	GLN
1	J	364	MET
1	J	388	LEU
1	J	392	GLU
1	J	432	ILE
1	J	441	MET
1	J	461	LYS

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Mol	Chain	Res	Type
1	J	463	HIS
1	J	468	SER
1	J	502	SER
1	J	507	HIS
1	J	514	LYS
1	J	518	LEU
1	J	527	GLN
1	J	530	ASP
1	J	538	ARG
1	J	549	THR
1	J	551	GLU
1	J	555	GLN
1	J	559	ILE
1	K	303	ASN
1	K	304	GLU
1	K	305	SER
1	K	310	LYS
1	K	327	GLU
1	K	351	THR
1	K	373	THR
1	K	382	ILE
1	K	387	LYS
1	K	392	GLU
1	K	396	LYS
1	K	441	MET
1	K	461	LYS
1	K	468	SER
1	K	508	LYS
1	K	524	ILE
1	K	527	GLN
1	K	530	ASP
1	K	543	ARG
1	K	545	GLU
1	L	318	GLN
1	L	329	SER
1	L	364	MET
1	L	373	THR
1	L	374	GLN
1	L	396	LYS
1	L	400	THR
1	L	407	ILE
1	L	408	GLU

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Mol	Chain	Res	Type
1	L	410	ILE
1	L	421	LYS
1	L	426	LYS
1	L	436	ASN
1	L	441	MET
1	L	459	ASN
1	L	468	SER
1	L	472	THR
1	L	476	LEU
1	L	481	THR
1	L	492	LEU
1	L	506	LYS
1	L	511	VAL
1	L	514	LYS
1	L	526	VAL
1	L	529	GLU
1	L	530	ASP
1	L	531	ARG
1	L	543	ARG
1	L	546	GLN
1	L	559	ILE
1	L	566	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (73) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	427	ASN
1	A	463	HIS
1	A	512	GLN
1	A	540	GLN
1	B	323	HIS
1	B	352	ASN
1	B	374	GLN
1	B	403	ASN
1	B	444	ASN
1	B	523	ASN
1	C	352	ASN
1	C	427	ASN
1	C	444	ASN
1	D	357	HIS
1	D	403	ASN
1	D	459	ASN

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Mol	Chain	Res	Type
1	D	507	HIS
1	D	527	GLN
1	D	555	GLN
1	E	494	ASN
1	E	523	ASN
1	E	527	GLN
1	F	323	HIS
1	F	367	HIS
1	F	414	ASN
1	F	427	ASN
1	F	463	HIS
1	F	512	GLN
1	F	546	GLN
1	G	357	HIS
1	G	367	HIS
1	G	427	ASN
1	G	436	ASN
1	G	444	ASN
1	G	463	HIS
1	G	494	ASN
1	G	540	GLN
1	G	546	GLN
1	H	318	GLN
1	H	323	HIS
1	H	344	ASN
1	H	357	HIS
1	H	367	HIS
1	H	444	ASN
1	H	507	HIS
1	H	523	ASN
1	H	527	GLN
1	H	540	GLN
1	H	546	GLN
1	I	323	HIS
1	I	344	ASN
1	I	367	HIS
1	I	427	ASN
1	I	463	HIS
1	I	494	ASN
1	I	523	ASN
1	J	303	ASN
1	J	444	ASN

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Mol	Chain	Res	Type
1	J	540	GLN
1	J	555	GLN
1	K	344	ASN
1	K	414	ASN
1	K	436	ASN
1	K	540	GLN
1	L	323	HIS
1	L	374	GLN
1	L	414	ASN
1	L	427	ASN
1	L	436	ASN
1	L	444	ASN
1	L	494	ASN
1	L	507	HIS
1	L	540	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 oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 24 ligands modelled in this entry, 6 are monoatomic - leaving 18 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	PO4	H	1580	3	4,4,4	1.08	0	6,6,6	0.80	0
2	PO4	I	1580	3	4,4,4	1.16	0	6,6,6	0.97	0
2	PO4	C	1579	3	4,4,4	1.88	1 (25%)	6,6,6	2.53	4 (66%)
2	PO4	D	1580	-	4,4,4	0.95	0	6,6,6	0.66	0
2	PO4	B	1579	3	4,4,4	1.08	0	6,6,6	1.05	0
2	PO4	F	1580	-	4,4,4	1.00	0	6,6,6	0.46	0
2	PO4	H	1579	3	4,4,4	1.11	0	6,6,6	1.08	1 (16%)
2	PO4	L	1579	-	4,4,4	0.81	0	6,6,6	0.56	0
2	PO4	E	1579	-	4,4,4	0.86	0	6,6,6	0.48	0
2	PO4	G	1580	3	4,4,4	1.34	0	6,6,6	0.57	0
2	PO4	I	1581	3	4,4,4	1.20	0	6,6,6	0.90	0
2	PO4	C	1580	3	4,4,4	1.75	1 (25%)	6,6,6	2.64	2 (33%)
2	PO4	J	1578	-	4,4,4	1.02	0	6,6,6	0.51	0
2	PO4	G	1579	3	4,4,4	1.14	0	6,6,6	1.09	0
2	PO4	A	1581	3	4,4,4	1.32	0	6,6,6	0.76	0
2	PO4	B	1580	3	4,4,4	1.17	0	6,6,6	0.93	0
2	PO4	A	1580	3	4,4,4	1.02	0	6,6,6	0.95	0
2	PO4	K	1580	-	4,4,4	0.87	0	6,6,6	0.59	0

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1579	PO4	P-O3	-2.95	1.46	1.54
2	C	1580	PO4	P-O2	-2.93	1.46	1.54

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1580	PO4	O2-P-O1	-5.75	90.63	110.95
2	C	1579	PO4	O3-P-O1	-3.89	97.19	110.95
2	C	1579	PO4	O4-P-O3	-2.80	99.21	107.91
2	C	1579	PO4	O3-P-O2	2.72	116.37	107.91
2	C	1579	PO4	O4-P-O1	2.61	120.17	110.95
2	C	1580	PO4	O4-P-O3	2.24	114.89	107.91
2	H	1579	PO4	O3-P-O1	-2.05	103.70	110.95

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

12 monomers are involved in 11 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	H	1580	PO4	1	0
2	I	1580	PO4	2	0
2	D	1580	PO4	1	0
2	B	1579	PO4	1	0
2	H	1579	PO4	2	0
2	G	1580	PO4	2	0
2	I	1581	PO4	1	0
2	J	1578	PO4	1	0
2	G	1579	PO4	1	0
2	A	1581	PO4	1	0
2	B	1580	PO4	1	0
2	A	1580	PO4	2	0

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 ⓘ

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, 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	272/305 (89%)	-0.21	3 (1%) 78 57	65, 76, 100, 124	0
1	B	268/305 (87%)	0.03	3 (1%) 78 57	67, 76, 86, 95	0
1	C	267/305 (87%)	-0.11	1 (0%) 88 76	70, 76, 87, 98	0
1	D	274/305 (89%)	0.13	4 (1%) 72 49	70, 76, 87, 97	0
1	E	270/305 (88%)	-0.29	1 (0%) 88 76	63, 76, 91, 104	0
1	F	269/305 (88%)	-0.16	2 (0%) 84 66	53, 77, 92, 104	1 (0%)
1	G	270/305 (88%)	-0.24	2 (0%) 84 66	64, 76, 99, 121	0
1	H	268/305 (87%)	0.16	5 (1%) 66 43	68, 76, 87, 94	0
1	I	270/305 (88%)	-0.10	1 (0%) 88 76	67, 76, 88, 102	0
1	J	272/305 (89%)	0.05	6 (2%) 62 39	69, 76, 85, 102	0
1	K	269/305 (88%)	-0.31	0 100 100	62, 76, 90, 98	0
1	L	267/305 (87%)	0.14	4 (1%) 72 49	54, 77, 90, 102	1 (0%)
All	All	3236/3660 (88%)	-0.08	32 (0%) 79 59	53, 76, 90, 124	2 (0%)

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	463	HIS	4.0
1	J	355	ALA	4.0
1	B	305	SER	3.4
1	D	553	GLY	3.2
1	H	305	SER	3.1
1	I	392	GLU	3.1
1	G	550	ASP	3.0
1	H	352	ASN	2.8
1	D	348	PHE	2.7
1	F	305	SER	2.5
1	C	301	THR	2.4

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Mol	Chain	Res	Type	RSRZ
1	H	301	THR	2.4
1	L	301	THR	2.4
1	L	433	GLY	2.4
1	J	302	LEU	2.3
1	J	304	GLU	2.3
1	D	311	PHE	2.3
1	H	354	GLN	2.2
1	D	463	HIS	2.2
1	B	352	ASN	2.2
1	B	301	THR	2.2
1	H	338	ALA	2.1
1	G	301	THR	2.1
1	J	305	SER	2.1
1	J	392	GLU	2.1
1	L	556	PRO	2.1
1	F	558	ASN	2.1
1	A	302	LEU	2.1
1	A	550	ASP	2.1
1	L	482	HIS	2.1
1	A	304	GLU	2.1
1	E	301	THR	2.1

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 oligosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	PO4	G	1580	5/5	0.55	0.22	77,79,80,81	5
2	PO4	A	1581	5/5	0.72	0.20	78,79,79,79	5

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	MG	C	1581	1/1	0.81	0.12	68,68,68,68	0
3	MG	I	1582	1/1	0.83	0.09	64,64,64,64	0
2	PO4	G	1579	5/5	0.85	0.13	77,79,80,82	0
2	PO4	C	1580	5/5	0.87	0.14	82,84,85,86	0
2	PO4	I	1581	5/5	0.88	0.13	78,79,80,82	0
3	MG	H	1581	1/1	0.89	0.09	64,64,64,64	0
2	PO4	L	1579	5/5	0.89	0.14	94,95,96,97	0
2	PO4	B	1579	5/5	0.90	0.10	77,78,79,79	0
2	PO4	B	1580	5/5	0.91	0.11	80,82,83,83	0
2	PO4	H	1579	5/5	0.91	0.12	79,81,81,81	0
3	MG	B	1581	1/1	0.91	0.07	54,54,54,54	0
2	PO4	H	1580	5/5	0.92	0.13	79,80,80,82	0
3	MG	A	1582	1/1	0.92	0.08	74,74,74,74	0
2	PO4	C	1579	5/5	0.92	0.10	82,83,84,84	0
2	PO4	E	1579	5/5	0.93	0.12	86,86,88,88	0
3	MG	G	1581	1/1	0.93	0.08	67,67,67,67	0
2	PO4	K	1580	5/5	0.94	0.09	87,88,89,89	0
2	PO4	I	1580	5/5	0.94	0.10	76,77,78,78	0
2	PO4	D	1580	5/5	0.95	0.10	86,87,88,88	0
2	PO4	A	1580	5/5	0.95	0.09	76,76,79,79	0
2	PO4	F	1580	5/5	0.96	0.08	83,84,84,84	0
2	PO4	J	1578	5/5	0.96	0.10	82,82,83,83	0

6.5 Other polymers

There are no such residues in this entry.