



Full wwPDB EM Validation Report ⓘ

Jul 8, 2025 – 02:42 PM JST

PDB ID : 8XXP / pdb_00008xxp
EMDB ID : EMD-38757
Title : ASFV RNAP core complex
Authors : Zhu, G.L.; Zhu, Y.; Zhu, Z.X.; Sun, F.; Zheng, H.X.
Deposited on : 2024-01-18
Resolution : 2.60 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : **FAILED**
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

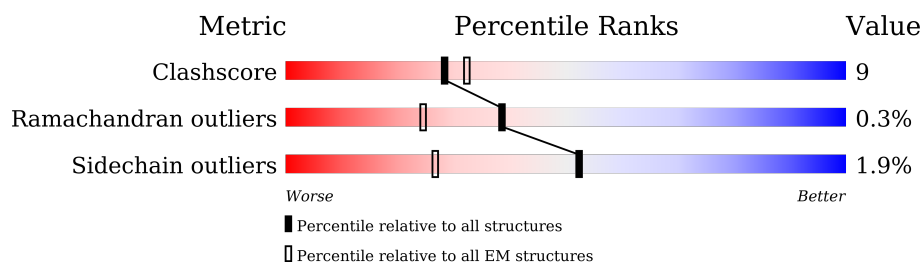
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.60 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)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	1441	
2	B	1235	
3	C	359	
4	D	205	
5	E	107	
6	F	154	
7	G	105	
8	H	80	

2 Entry composition

There are 10 unique types of molecules in this entry. The entry contains 27650 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 DNA-directed RNA polymerase subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1409	Total	C	N	O	S	0	0
			11216	7118	1952	2084	62		

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1086	Total	C	N	O	S	0	0
			8590	5435	1507	1597	51		

- Molecule 3 is a protein called DNA-directed RNA polymerase RPB3-11 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	359	Total	C	N	O	S	0	0
			2915	1890	482	530	13		

- Molecule 4 is a protein called DNA-directed RNA polymerase RPB5 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	205	Total	C	N	O	S	0	0
			1669	1088	278	295	8		

- Molecule 5 is a protein called C147L.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	107	Total	C	N	O	S	0	0
			839	533	144	157	5		

- Molecule 6 is a protein called D339L.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	134	Total	C	N	O	S	0	0
			1045	671	174	194	6		

- Molecule 7 is a protein called C122R.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	105	Total	C	N	O	S	0	0
			816	507	141	153	15		

- Molecule 8 is a protein called DNA-directed RNA polymerase RPB10 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	69	Total	C	N	O	S	0	0
			553	362	89	95	7		

- Molecule 9 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
9	A	2	Total	Zn	0
			2	2	
9	B	1	Total	Zn	0
			1	1	
9	G	2	Total	Zn	0
			2	2	
9	H	1	Total	Zn	0
			1	1	

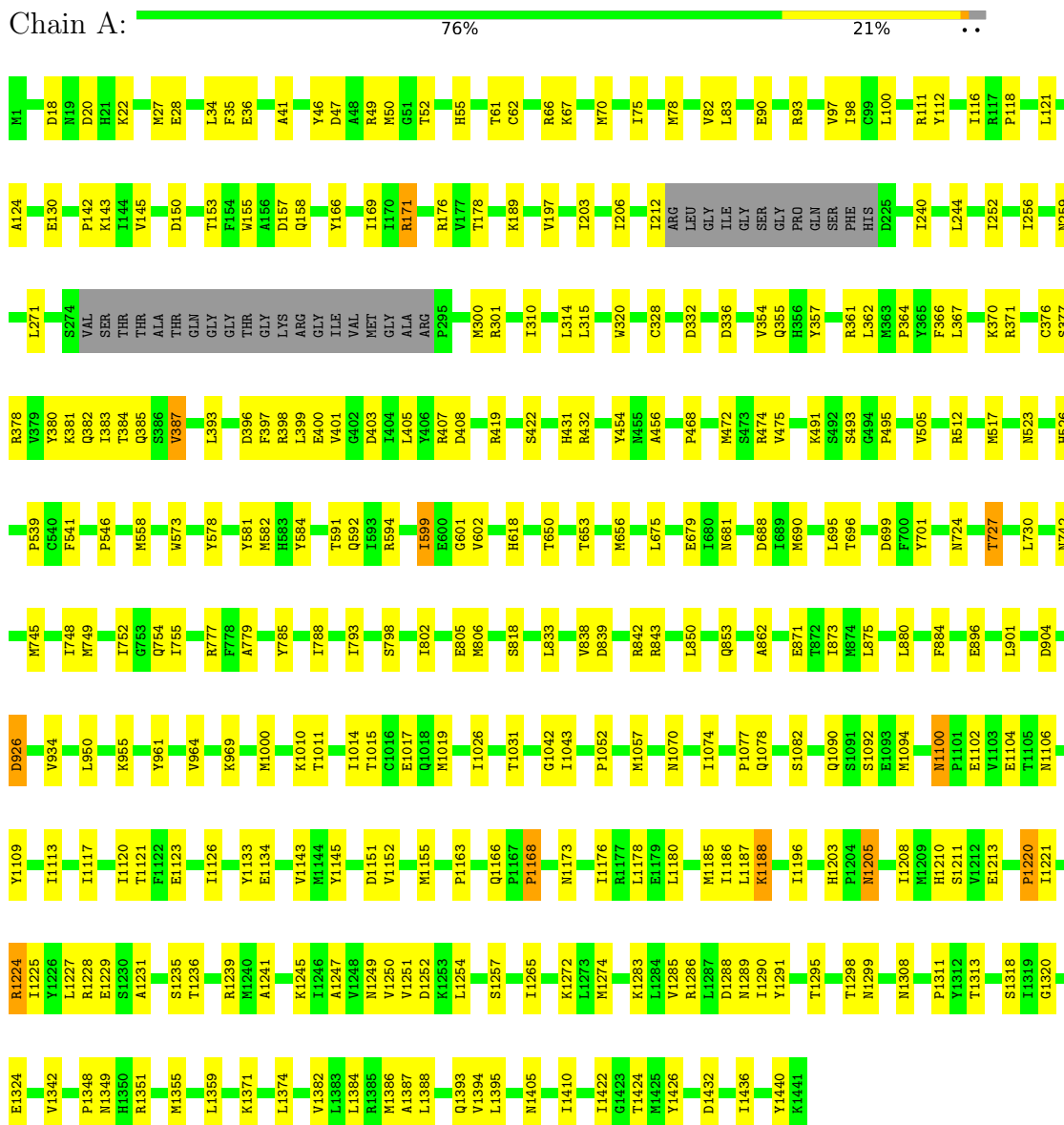
- Molecule 10 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
10	A	1	Total	Mg	0
			1	1	

3 Residue-property plots

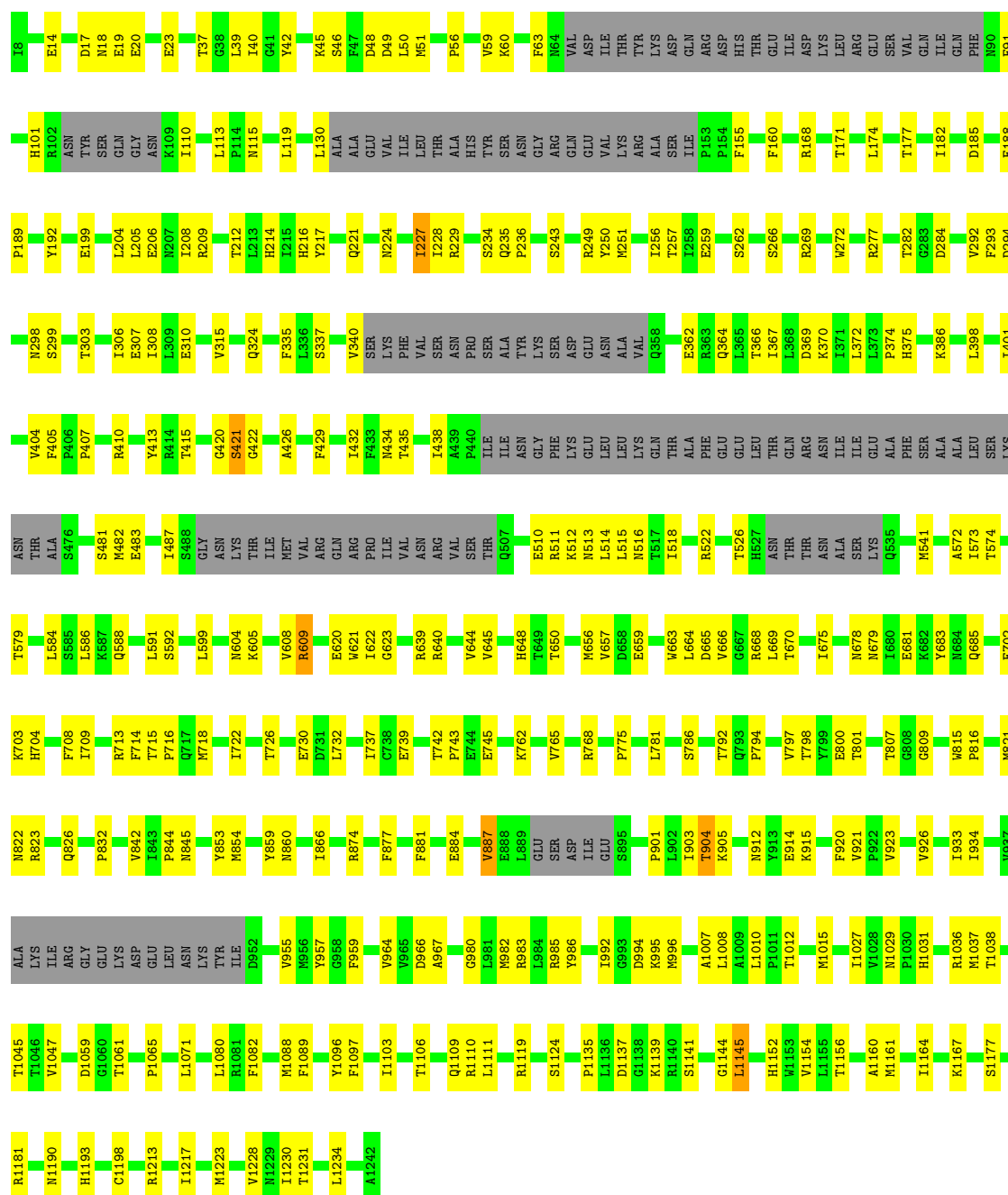
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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: DNA-directed RNA polymerase subunit



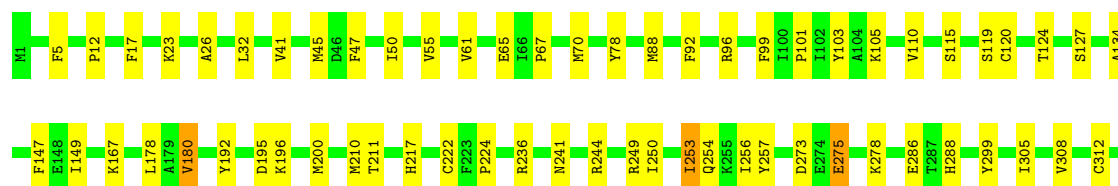
- Molecule 2: DNA-directed RNA polymerase subunit beta





• Molecule 3: DNA-directed RNA polymerase RPB3-11 homolog

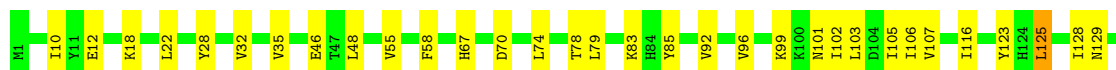
Chain C: 79% 19%





- Molecule 4: DNA-directed RNA polymerase RPB5 homolog

Chain D: 78% 20%



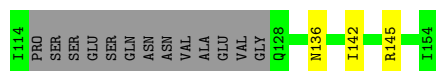
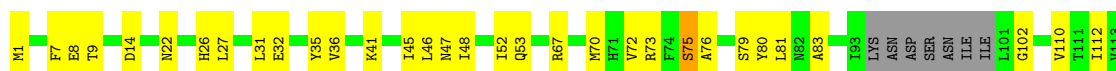
- Molecule 5: C147L

Chain E: 74% 26%



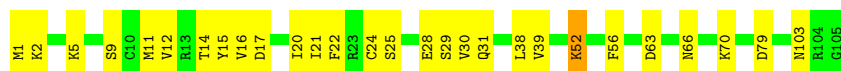
- Molecule 6: D339L

Chain F: 64% 22% 13%



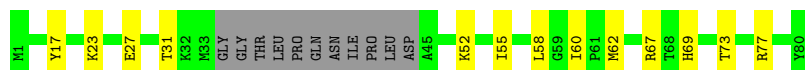
- Molecule 7: C122R

Chain G: 73% 26%



- Molecule 8: DNA-directed RNA polymerase RPB10 homolog

Chain H: 70% 16% 14%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	213003	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor

5 Model quality

5.1 Standard geometry

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

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	0.25	0/11435	0.34	2/15489 (0.0%)
2	B	0.23	0/8763	0.37	0/11851
3	C	0.26	0/2977	0.36	1/4022 (0.0%)
4	D	0.23	0/1708	0.35	2/2311 (0.1%)
5	E	0.26	0/851	0.49	2/1151 (0.2%)
6	F	0.21	0/1061	0.34	0/1438
7	G	0.21	0/828	0.43	0/1109
8	H	0.27	0/563	0.32	0/758
All	All	0.24	0/28186	0.36	7/38129 (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	A	0	1
2	B	0	1
All	All	0	2

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	125	VAL	CA-C-N	8.32	132.31	120.49
5	E	125	VAL	C-N-CA	8.32	132.31	120.49
1	A	1168	PRO	CA-N-CD	-6.18	103.35	112.00
3	C	275	GLU	CA-CB-CG	5.56	125.23	114.10
4	D	192	MET	CA-C-N	5.31	131.68	121.54
4	D	192	MET	C-N-CA	5.31	131.68	121.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1220	PRO	CA-N-CD	-5.04	104.94	112.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1422	ILE	Peptide
2	B	227	ILE	Peptide

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	11216	0	11337	203	0
2	B	8590	0	8537	206	0
3	C	2915	0	2994	50	0
4	D	1669	0	1713	25	0
5	E	839	0	883	18	0
6	F	1045	0	1068	19	0
7	G	816	0	813	27	0
8	H	553	0	580	10	0
9	A	2	0	0	0	0
9	B	1	0	0	0	0
9	G	2	0	0	0	0
9	H	1	0	0	0	0
10	A	1	0	0	0	0
All	All	27650	0	27925	516	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 9.

All (516) 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)
3:C:253:ILE:HA	3:C:256:ILE:HD12	1.63	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:431:HIS:HE2	1:A:454:TYR:HH	1.30	0.79
1:A:116:ILE:HG22	1:A:118:PRO:HD2	1.64	0.79
7:G:5:LYS:HE3	7:G:5:LYS:HA	1.65	0.77
1:A:55:HIS:HB3	1:A:66:ARG:HH21	1.51	0.76
2:B:251:MET:HE1	2:B:269:ARG:HH11	1.50	0.76
2:B:19:GLU:OE2	2:B:19:GLU:N	2.17	0.75
2:B:887:VAL:HG11	2:B:955:VAL:HG21	1.68	0.75
1:A:1213:GLU:HA	1:A:1221:ILE:HD11	1.69	0.73
2:B:18:ASN:ND2	2:B:714:PHE:O	2.19	0.73
2:B:249:ARG:NH2	2:B:259:GLU:OE1	2.22	0.72
7:G:21:ILE:HD11	7:G:29:SER:HB3	1.72	0.71
1:A:381:LYS:NZ	1:A:398:ARG:O	2.24	0.71
2:B:404:VAL:HA	7:G:52:LYS:HE2	1.73	0.70
2:B:513:ASN:HD22	2:B:845:ASN:HD21	1.39	0.70
1:A:1393:GLN:N	1:A:1393:GLN:OE1	2.25	0.69
8:H:17:TYR:HB3	8:H:58:LEU:HD22	1.74	0.69
2:B:881:PHE:HB3	2:B:986:TYR:HB2	1.72	0.69
1:A:166:TYR:H	1:A:169:ILE:HD12	1.58	0.69
2:B:294:ASP:HB2	2:B:608:VAL:HG21	1.76	0.68
6:F:8:GLU:OE2	6:F:73:ARG:NH1	2.25	0.68
1:A:1424:THR:OG1	2:B:1160:ALA:O	2.09	0.68
1:A:777:ARG:NH1	7:G:63:ASP:OD2	2.26	0.68
1:A:1235:SER:OG	1:A:1239:ARG:NH1	2.26	0.67
2:B:622:ILE:HD12	2:B:622:ILE:O	1.95	0.67
1:A:300:MET:HE2	1:A:300:MET:HA	1.76	0.67
7:G:21:ILE:HA	7:G:31:GLN:HA	1.77	0.67
2:B:786:SER:HB2	2:B:800:GLU:HG2	1.77	0.67
6:F:27:LEU:HD11	6:F:72:VAL:HG21	1.77	0.67
1:A:332:ASP:OD2	2:B:859:TYR:OH	2.12	0.66
2:B:262:SER:O	2:B:266:SER:OG	2.14	0.66
3:C:254:GLN:NE2	3:C:341:GLN:OE1	2.25	0.66
1:A:1151:ASP:OD2	1:A:1224:ARG:NH1	2.28	0.66
2:B:926:VAL:HG22	2:B:964:VAL:HG22	1.78	0.66
1:A:690:MET:HA	1:A:690:MET:HE3	1.77	0.65
1:A:523:ASN:HD22	3:C:211:THR:HA	1.62	0.65
2:B:650:THR:HB	2:B:663:TRP:HB2	1.79	0.65
1:A:950:LEU:HD11	1:A:1015:THR:HG22	1.78	0.64
1:A:656:MET:HE3	1:A:793:ILE:HD11	1.78	0.64
4:D:58:PHE:O	4:D:123:TYR:OH	2.16	0.64
2:B:792:THR:HG23	2:B:1038:THR:HA	1.79	0.64
4:D:12:GLU:OE1	4:D:129:ASN:ND2	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:644:VAL:HG23	2:B:645:VAL:HG23	1.80	0.64
2:B:709:ILE:HD11	2:B:762:LYS:HZ2	1.63	0.63
6:F:31:LEU:HD11	6:F:72:VAL:HG11	1.79	0.63
1:A:357:TYR:OH	5:E:87:LEU:O	2.15	0.63
8:H:60:ILE:O	8:H:67:ARG:NH2	2.31	0.63
1:A:431:HIS:NE2	1:A:454:TYR:OH	2.25	0.63
1:A:539:PRO:HB2	1:A:558:MET:HE2	1.81	0.63
3:C:65:GLU:OE1	3:C:249:ARG:NH2	2.25	0.63
2:B:51:MET:HE1	2:B:160:PHE:HD2	1.64	0.63
2:B:236:PRO:HG3	2:B:374:PRO:HB2	1.81	0.62
2:B:715:THR:H	2:B:718:MET:HG3	1.63	0.62
2:B:185:ASP:HB3	2:B:188:GLU:HG2	1.80	0.62
2:B:217:TYR:HD2	2:B:407:PRO:HG3	1.65	0.62
2:B:584:LEU:O	2:B:588:GLN:HG3	1.98	0.62
1:A:1078:GLN:O	1:A:1082:SER:OG	2.17	0.61
2:B:515:LEU:HD12	2:B:518:ILE:HD11	1.81	0.61
7:G:70:LYS:NZ	7:G:79:ASP:OD1	2.33	0.61
1:A:904:ASP:HB3	1:A:1000:MET:HG3	1.83	0.61
3:C:5:PHE:CE1	3:C:45:MET:HB3	2.36	0.61
3:C:127:SER:HB2	3:C:147:PHE:HB2	1.83	0.61
7:G:15:TYR:CD1	7:G:20:ILE:HD13	2.36	0.61
2:B:209:ARG:NE	2:B:212:THR:HG21	2.15	0.61
1:A:382:GLN:O	1:A:385:GLN:NE2	2.31	0.60
1:A:873:ILE:HD11	1:A:1000:MET:HE1	1.83	0.60
1:A:696:THR:HG23	1:A:699:ASP:H	1.66	0.60
1:A:1180:LEU:HB3	1:A:1185:MET:HE2	1.83	0.60
1:A:1113:ILE:HD12	1:A:1308:ASN:HB3	1.84	0.60
2:B:236:PRO:HA	2:B:375:HIS:HA	1.81	0.60
1:A:681:ASN:OD1	1:A:701:TYR:OH	2.17	0.60
2:B:23:GLU:HG3	2:B:1065:PRO:HD3	1.83	0.60
6:F:1:MET:N	6:F:80:TYR:O	2.35	0.60
1:A:748:ILE:HD11	2:B:1037:MET:HG2	1.84	0.60
2:B:59:VAL:HA	2:B:63:PHE:CD2	2.37	0.60
2:B:310:GLU:HG2	7:G:1:MET:HE2	1.82	0.60
1:A:383:ILE:HD12	1:A:384:THR:HG23	1.84	0.59
3:C:78:TYR:OH	3:C:88:MET:O	2.16	0.59
1:A:517:MET:HE2	1:A:517:MET:HA	1.84	0.59
3:C:305:ILE:HD11	3:C:323:ILE:HG23	1.84	0.59
1:A:1272:LYS:HE2	1:A:1289:ASN:HA	1.84	0.59
4:D:74:LEU:O	4:D:78:THR:HG23	2.01	0.59
2:B:434:ASN:OD1	2:B:435:THR:N	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
7:G:12:VAL:HG23	7:G:14:THR:HG23	1.83	0.59
1:A:1176:ILE:HD13	1:A:1251:VAL:HG22	1.84	0.59
2:B:877:PHE:O	2:B:1110:ARG:NH1	2.34	0.59
1:A:517:MET:HE1	3:C:192:TYR:HE2	1.68	0.58
2:B:722:ILE:HD11	2:B:732:LEU:HD11	1.86	0.58
1:A:145:VAL:HG12	1:A:155:TRP:HB2	1.85	0.58
8:H:23:LYS:O	8:H:27:GLU:HG2	2.03	0.58
2:B:579:THR:HA	2:B:666:VAL:HG23	1.86	0.58
6:F:14:ASP:HA	6:F:67:ARG:HG2	1.86	0.58
1:A:36:GLU:HG3	1:A:41:ALA:HA	1.85	0.58
2:B:17:ASP:OD1	2:B:17:ASP:N	2.36	0.58
1:A:328:CYS:HB2	2:B:1007:ALA:HB2	1.85	0.58
1:A:90:GLU:OE1	1:A:93:ARG:NH1	2.36	0.58
2:B:1152:HIS:O	2:B:1156:THR:OG1	2.13	0.58
7:G:24:CYS:SG	7:G:25:SER:N	2.77	0.58
1:A:367:LEU:O	1:A:371:ARG:NH2	2.36	0.57
1:A:1210:HIS:ND1	1:A:1211:SER:O	2.36	0.57
2:B:599:LEU:HD13	2:B:623:GLY:H	1.69	0.57
1:A:1134:GLU:OE2	1:A:1224:ARG:NH2	2.38	0.57
3:C:180:VAL:HG22	3:C:222:CYS:HB3	1.85	0.57
2:B:48:ASP:OD1	2:B:49:ASP:N	2.37	0.57
4:D:192:MET:O	4:D:193:HIS:CD2	2.58	0.57
6:F:36:VAL:HG22	6:F:47:ASN:HA	1.85	0.57
1:A:1236:THR:HA	1:A:1239:ARG:HD3	1.85	0.57
1:A:1163:PRO:O	1:A:1166:GLN:NE2	2.38	0.57
2:B:221:GLN:NE2	2:B:224:ASN:OD1	2.35	0.57
2:B:648:HIS:O	2:B:668:ARG:NH1	2.32	0.57
1:A:380:TYR:O	1:A:403:ASP:HB2	2.04	0.57
2:B:39:LEU:HD23	2:B:522:ARG:HD2	1.86	0.57
1:A:1311:PRO:HB2	4:D:128:ILE:HD12	1.86	0.57
2:B:967:ALA:HB3	2:B:983:ARG:HB3	1.87	0.56
3:C:103:TYR:HE2	3:C:105:LYS:HE3	1.70	0.56
1:A:142:PRO:HB3	1:A:158:GLN:HG2	1.88	0.56
1:A:475:VAL:HG22	5:E:103:ILE:HG23	1.88	0.56
1:A:256:ILE:HA	1:A:259:ASN:HB2	1.88	0.56
2:B:51:MET:HE1	2:B:160:PHE:CD2	2.41	0.56
1:A:1355:MET:HA	1:A:1355:MET:HE3	1.88	0.56
1:A:393:LEU:HD13	1:A:396:ASP:HB3	1.86	0.56
2:B:256:ILE:HB	2:B:272:TRP:CD1	2.41	0.56
1:A:1225:ILE:HG12	1:A:1254:LEU:HD11	1.88	0.56
6:F:9:THR:HG1	6:F:35:TYR:HH	1.54	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1031:THR:HG21	5:E:70:VAL:HG21	1.88	0.55
2:B:522:ARG:NH2	2:B:572:ALA:O	2.36	0.55
2:B:362:GLU:O	2:B:366:THR:N	2.38	0.55
2:B:903:ILE:O	2:B:905:LYS:N	2.40	0.55
2:B:209:ARG:HH21	2:B:415:THR:HG22	1.71	0.55
2:B:821:MET:HE3	2:B:884:GLU:H	1.72	0.55
2:B:315:VAL:O	2:B:324:GLN:NE2	2.39	0.55
1:A:964:VAL:HG21	1:A:1019:MET:HE3	1.89	0.55
1:A:252:ILE:HD13	1:A:256:ILE:HD12	1.89	0.54
4:D:153:ARG:NH1	4:D:154:GLU:OE2	2.39	0.54
1:A:1077:PRO:HG3	1:A:1342:VAL:HG11	1.89	0.54
2:B:46:SER:OG	2:B:421:SER:OG	2.23	0.54
2:B:483:GLU:O	2:B:487:ILE:HG12	2.07	0.54
2:B:995:LYS:HG2	2:B:1111:LEU:HD12	1.89	0.54
3:C:110:VAL:H	3:C:134:ALA:HB3	1.73	0.54
1:A:653:THR:HA	1:A:656:MET:HE2	1.89	0.54
4:D:103:LEU:O	4:D:107:VAL:HG13	2.08	0.54
2:B:257:THR:HB	2:B:269:ARG:HB3	1.89	0.54
3:C:12:PRO:HA	3:C:41:VAL:HA	1.89	0.54
2:B:513:ASN:HD22	2:B:845:ASN:ND2	2.05	0.54
2:B:877:PHE:HB3	2:B:1110:ARG:HD2	1.90	0.54
2:B:432:ILE:HD11	2:B:481:SER:HB2	1.88	0.54
1:A:1432:ASP:OD2	5:E:139:ARG:NH2	2.30	0.54
1:A:656:MET:HG2	1:A:730:LEU:HD22	1.89	0.53
2:B:815:TRP:CD1	2:B:816:PRO:HD3	2.43	0.53
1:A:1152:VAL:HA	1:A:1155:MET:HB2	1.90	0.53
1:A:355:GLN:HA	1:A:401:VAL:HG13	1.91	0.53
1:A:752:ILE:HB	1:A:788:ILE:HB	1.90	0.53
2:B:966:ASP:OD1	2:B:985:ARG:NE	2.26	0.53
3:C:119:SER:OG	3:C:120:CYS:N	2.40	0.53
1:A:472:MET:HE2	5:E:82:VAL:HA	1.91	0.53
1:A:1205:ASN:OD1	1:A:1205:ASN:N	2.40	0.53
1:A:376:CYS:SG	1:A:405:LEU:HD11	2.49	0.52
1:A:422:SER:HB3	2:B:1154:VAL:HG21	1.91	0.52
2:B:1144:GLY:O	2:B:1145:LEU:HB2	2.09	0.52
1:A:724:ASN:HB3	1:A:727:THR:HG22	1.91	0.52
3:C:288:HIS:CE1	3:C:312:CYS:HB2	2.45	0.52
8:H:69:HIS:O	8:H:73:THR:OG1	2.23	0.52
2:B:1137:ASP:OD2	2:B:1141:SER:OG	2.20	0.52
2:B:372:LEU:O	2:B:386:LYS:NZ	2.29	0.52
1:A:1382:VAL:HG13	1:A:1394:VAL:HG12	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:E:122:CYS:HA	5:E:133:VAL:HG12	1.91	0.52
1:A:650:THR:OG1	2:B:853:TYR:O	2.21	0.52
6:F:102:GLY:N	6:F:112:ILE:O	2.37	0.52
1:A:495:PRO:HG3	1:A:618:HIS:HB2	1.92	0.52
1:A:1100:ASN:OD1	1:A:1102:GLU:HG2	2.09	0.52
2:B:730:GLU:N	2:B:730:GLU:OE1	2.42	0.52
3:C:273:ASP:OD1	3:C:273:ASP:N	2.42	0.52
1:A:1094:MET:HE2	1:A:1299:ASN:H	1.75	0.52
2:B:250:TYR:OH	2:B:308:ILE:HG23	2.09	0.52
1:A:1186:ILE:HD12	1:A:1187:LEU:N	2.24	0.51
2:B:214:HIS:HE1	2:B:415:THR:HB	1.75	0.51
1:A:83:LEU:HD23	1:A:197:VAL:HG13	1.92	0.51
1:A:896:GLU:OE1	1:A:961:TYR:OH	2.29	0.51
3:C:124:THR:OG1	8:H:77:ARG:NH1	2.43	0.51
3:C:241:ASN:HD22	3:C:244:ARG:HH12	1.59	0.51
2:B:235:GLN:OE1	2:B:243:SER:HB3	2.11	0.51
8:H:52:LYS:HZ3	8:H:62:MET:HE3	1.74	0.51
1:A:320:TRP:CE2	2:B:1135:PRO:HG3	2.45	0.51
1:A:49:ARG:O	1:A:61:THR:OG1	2.24	0.51
2:B:640:ARG:HE	2:B:675:ILE:HD13	1.75	0.51
4:D:79:LEU:HD21	4:D:116:ILE:HG21	1.92	0.51
1:A:926:ASP:OD1	1:A:926:ASP:N	2.35	0.51
2:B:56:PRO:O	2:B:60:LYS:HG3	2.11	0.51
2:B:994:ASP:OD2	2:B:1110:ARG:NH2	2.44	0.51
1:A:18:ASP:OD2	1:A:171:ARG:NH2	2.45	0.50
1:A:745:MET:O	1:A:749:MET:HG3	2.11	0.50
2:B:115:ASN:O	2:B:119:LEU:HG	2.11	0.50
2:B:866:ILE:HG23	2:B:1008:LEU:HB3	1.93	0.50
1:A:50:MET:HE1	1:A:203:ILE:HG21	1.93	0.50
1:A:354:VAL:HG22	1:A:362:LEU:HD12	1.93	0.50
1:A:1120:ILE:HD12	1:A:1188:LYS:HD3	1.93	0.50
1:A:1173:ASN:OD1	1:A:1173:ASN:N	2.44	0.50
1:A:526:HIS:HB3	3:C:210:MET:HE2	1.91	0.50
2:B:822:ASN:HA	2:B:881:PHE:CZ	2.46	0.50
2:B:228:ILE:HG22	2:B:250:TYR:H	1.76	0.50
2:B:807:THR:HG21	2:B:1109:GLN:HB3	1.92	0.50
2:B:1161:MET:HE2	2:B:1161:MET:H	1.77	0.50
1:A:798:SER:HB2	2:B:775:PRO:HB3	1.94	0.50
2:B:586:LEU:HD23	2:B:664:LEU:HD11	1.93	0.50
3:C:103:TYR:CE2	3:C:105:LYS:HE3	2.46	0.50
1:A:493:SER:OG	1:A:1349:ASN:ND2	2.42	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:17:PHE:HB3	3:C:23:LYS:HD2	1.93	0.50
4:D:102:ILE:O	4:D:106:ILE:HG12	2.11	0.50
1:A:592:GLN:OE1	1:A:594:ARG:NH1	2.44	0.50
1:A:1227:LEU:HD11	1:A:1250:VAL:HG11	1.94	0.50
1:A:1265:ILE:HG23	1:A:1295:THR:HB	1.94	0.50
2:B:599:LEU:HD11	2:B:621:TRP:CE2	2.46	0.50
2:B:866:ILE:HB	2:B:1027:ILE:HB	1.94	0.50
1:A:419:ARG:HD3	1:A:456:ALA:HB2	1.94	0.50
3:C:195:ASP:OD2	3:C:196:LYS:NZ	2.41	0.50
1:A:130:GLU:HG3	1:A:143:LYS:HE2	1.94	0.49
1:A:1313:THR:O	1:A:1313:THR:HG22	2.12	0.49
4:D:146:GLU:O	4:D:149:GLU:HG3	2.12	0.49
2:B:20:GLU:HG2	2:B:716:PRO:HG2	1.94	0.49
1:A:591:THR:HA	1:A:601:GLY:HA3	1.95	0.49
2:B:188:GLU:OE1	2:B:511:ARG:NH2	2.38	0.49
2:B:703:LYS:HG2	2:B:704:HIS:HD2	1.77	0.49
4:D:58:PHE:HB2	4:D:92:VAL:HG12	1.94	0.49
1:A:1208:ILE:HG12	1:A:1225:ILE:HG13	1.94	0.49
3:C:5:PHE:O	3:C:357:LEU:HD11	2.13	0.49
1:A:320:TRP:O	2:B:1167:LYS:NZ	2.45	0.49
2:B:335:PHE:HD2	2:B:335:PHE:O	1.96	0.49
2:B:514:LEU:O	2:B:518:ILE:HG13	2.12	0.49
3:C:47:PHE:HB3	3:C:50:ILE:HG21	1.95	0.49
4:D:28:TYR:O	4:D:32:VAL:HG12	2.12	0.49
1:A:112:TYR:CZ	1:A:124:ALA:HA	2.48	0.49
2:B:20:GLU:OE1	2:B:20:GLU:N	2.41	0.49
2:B:1010:LEU:HB2	2:B:1015:MET:SD	2.53	0.49
3:C:236:ARG:HG3	3:C:358:ILE:HB	1.95	0.49
4:D:180:ASP:HB2	4:D:200:ILE:HD12	1.95	0.49
2:B:874:ARG:HG2	3:C:99:PHE:CE1	2.48	0.49
2:B:1045:THR:OG1	2:B:1106:THR:OG1	2.27	0.49
2:B:515:LEU:HA	2:B:518:ILE:HD11	1.94	0.48
3:C:249:ARG:NH1	3:C:286:GLU:OE2	2.41	0.48
1:A:675:LEU:O	1:A:679:GLU:HG2	2.13	0.48
2:B:1047:VAL:HG22	2:B:1071:LEU:HD22	1.96	0.48
3:C:241:ASN:ND2	3:C:244:ARG:HH12	2.11	0.48
2:B:1036:ARG:HG2	2:B:1036:ARG:HH11	1.78	0.48
2:B:171:THR:HA	2:B:174:LEU:HG	1.96	0.48
2:B:216:HIS:HB3	2:B:229:ARG:HG3	1.96	0.48
1:A:1043:ILE:HD11	1:A:1410:ILE:HD13	1.96	0.48
1:A:1070:ASN:HD22	1:A:1090:GLN:NE2	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:42:TYR:OH	2:B:522:ARG:HA	2.14	0.48
2:B:1161:MET:HE2	2:B:1161:MET:N	2.28	0.48
2:B:192:TYR:CD2	2:B:199:GLU:HG2	2.49	0.48
2:B:901:PRO:O	2:B:904:THR:OG1	2.29	0.48
2:B:40:ILE:HG13	2:B:189:PRO:HG2	1.96	0.48
1:A:1436:ILE:HG23	1:A:1440:TYR:HB2	1.95	0.47
2:B:656:MET:HG2	7:G:56:PHE:CD1	2.48	0.47
1:A:573:TRP:O	1:A:584:TYR:OH	2.24	0.47
2:B:37:THR:HG22	2:B:39:LEU:H	1.80	0.47
2:B:292:VAL:HG23	2:B:294:ASP:H	1.79	0.47
7:G:22:PHE:HB2	7:G:30:VAL:HG12	1.95	0.47
2:B:515:LEU:HB2	2:B:842:VAL:HG21	1.96	0.47
2:B:1059:ASP:OD1	2:B:1061:THR:OG1	2.30	0.47
4:D:67:HIS:HB2	4:D:70:ASP:OD1	2.13	0.47
6:F:22:ASN:O	6:F:26:HIS:ND1	2.47	0.47
1:A:70:MET:HB3	2:B:1217:ILE:HG21	1.97	0.47
3:C:61:VAL:HA	3:C:65:GLU:HB2	1.96	0.47
2:B:284:ASP:HB2	7:G:9:SER:HA	1.96	0.47
2:B:293:PHE:HA	2:B:604:ASN:HB3	1.96	0.47
2:B:639:ARG:HH12	2:B:745:GLU:CD	2.23	0.47
1:A:315:LEU:HD11	1:A:1387:ALA:HB1	1.97	0.47
1:A:468:PRO:HB2	1:A:474:ARG:HG3	1.96	0.47
5:E:136:TRP:HB3	5:E:141:MET:SD	2.54	0.47
6:F:52:ILE:HG22	6:F:53:GLN:HG3	1.97	0.47
1:A:754:GLN:NE2	1:A:755:ILE:O	2.42	0.47
1:A:802:ILE:O	1:A:806:MET:HG3	2.15	0.47
2:B:298:ASN:OD1	2:B:298:ASN:N	2.42	0.47
1:A:1168:PRO:HG2	1:A:1228:ARG:NE	2.30	0.47
2:B:101:HIS:HB3	2:B:110:ILE:HG13	1.97	0.47
5:E:119:VAL:HG23	5:E:138:PRO:HG3	1.97	0.47
8:H:62:MET:HE2	8:H:67:ARG:CZ	2.45	0.47
1:A:491:LYS:O	1:A:1349:ASN:N	2.42	0.46
1:A:1374:LEU:HD21	1:A:1384:LEU:HG	1.97	0.46
3:C:305:ILE:HD13	3:C:308:VAL:HB	1.96	0.46
1:A:1145:TYR:CE2	7:G:38:LEU:HB2	2.49	0.46
2:B:310:GLU:OE2	7:G:1:MET:HG3	2.14	0.46
2:B:398:LEU:O	2:B:401:ILE:HG22	2.15	0.46
2:B:859:TYR:CG	2:B:1008:LEU:HD22	2.50	0.46
6:F:81:LEU:HD11	6:F:110:VAL:HG21	1.97	0.46
2:B:14:GLU:HG3	2:B:709:ILE:HG21	1.97	0.46
7:G:2:LYS:HG3	7:G:22:PHE:CE2	2.50	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:303:THR:O	2:B:307:GLU:HG2	2.15	0.46
5:E:112:ASN:O	5:E:114:LYS:NZ	2.49	0.46
1:A:964:VAL:CG2	1:A:1019:MET:HE3	2.46	0.46
4:D:96:VAL:HA	4:D:99:LYS:HD3	1.97	0.46
1:A:66:ARG:O	1:A:66:ARG:HG2	2.15	0.46
1:A:361:ARG:HE	5:E:100:SER:HG	1.59	0.46
2:B:42:TYR:CE1	2:B:204:LEU:HD11	2.51	0.46
2:B:683:TYR:OH	7:G:79:ASP:OD1	2.32	0.46
2:B:797:VAL:O	2:B:801:THR:HG23	2.16	0.46
4:D:18:LYS:HB3	4:D:48:LEU:HD21	1.97	0.46
2:B:337:SER:HA	2:B:364:GLN:NE2	2.30	0.46
2:B:681:GLU:O	2:B:685:GLN:HG2	2.16	0.46
4:D:22:LEU:HD21	4:D:46:GLU:HB2	1.97	0.46
5:E:104:ASP:O	5:E:108:GLN:HG2	2.16	0.46
2:B:234:SER:HB3	2:B:374:PRO:HD2	1.98	0.46
2:B:1177:SER:OG	2:B:1217:ILE:HD11	2.16	0.46
1:A:1123:GLU:HA	1:A:1126:ILE:HD12	1.98	0.46
2:B:798:THR:O	2:B:801:THR:OG1	2.30	0.46
2:B:915:LYS:NZ	2:B:926:VAL:O	2.47	0.46
3:C:319:MET:HE3	3:C:319:MET:HB3	1.80	0.46
1:A:366:PHE:HE2	1:A:397:PHE:HA	1.79	0.45
2:B:765:VAL:O	2:B:768:ARG:NH1	2.47	0.45
2:B:277:ARG:HG2	2:B:282:THR:HA	1.98	0.45
1:A:150:ASP:OD1	1:A:153:THR:OG1	2.34	0.45
1:A:1205:ASN:HD22	1:A:1231:ALA:HB2	1.81	0.45
1:A:1229:GLU:OE2	1:A:1229:GLU:HA	2.17	0.45
1:A:1247:ALA:O	1:A:1250:VAL:HG12	2.15	0.45
2:B:742:THR:HG22	2:B:743:PRO:HD2	1.99	0.45
2:B:1119:ARG:O	2:B:1139:LYS:NZ	2.41	0.45
1:A:1371:LYS:HD2	1:A:1388:LEU:HD23	1.98	0.45
2:B:206:GLU:OE2	2:B:413:TYR:OH	2.31	0.45
1:A:955:LYS:HE3	1:A:955:LYS:HB3	1.64	0.45
6:F:46:LEU:HD21	6:F:79:SER:HB3	1.97	0.45
2:B:130:LEU:HB2	2:B:155:PHE:CE1	2.52	0.45
3:C:101:PRO:HD2	3:C:147:PHE:CZ	2.52	0.45
2:B:298:ASN:O	2:B:299:SER:OG	2.29	0.45
2:B:921:VAL:HG21	2:B:933:ILE:HG22	1.98	0.45
2:B:1088:MET:HE1	2:B:1103:ILE:HD12	1.98	0.45
4:D:163:GLN:HG2	4:D:201:THR:CG2	2.47	0.45
6:F:32:GLU:HG3	6:F:36:VAL:HG21	1.99	0.45
1:A:20:ASP:OD2	5:E:45:ILE:HD12	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:809:GLY:HA2	2:B:826:GLN:HB3	1.98	0.45
1:A:1245:LYS:O	1:A:1249:ASN:HB2	2.17	0.45
2:B:42:TYR:HA	2:B:45:LYS:HD2	1.98	0.45
2:B:91:PHE:HE1	2:B:438:ILE:HD11	1.82	0.45
2:B:160:PHE:HE1	2:B:482:MET:SD	2.40	0.45
1:A:407:ARG:NH1	1:A:408:ASP:O	2.47	0.44
1:A:838:VAL:HG13	1:A:842:ARG:HA	1.98	0.44
1:A:1239:ARG:HD2	1:A:1239:ARG:HA	1.73	0.44
2:B:510:GLU:HB3	2:B:516:ASN:HD21	1.82	0.44
1:A:695:LEU:HD22	1:A:699:ASP:HB3	1.98	0.44
1:A:1283:LYS:HE3	1:A:1285:VAL:HG12	1.99	0.44
2:B:512:LYS:HD2	2:B:512:LYS:HA	1.79	0.44
2:B:675:ILE:HD11	2:B:739:GLU:HB3	1.99	0.44
3:C:196:LYS:HA	3:C:196:LYS:HD3	1.79	0.44
6:F:27:LEU:HD11	6:F:72:VAL:CG2	2.46	0.44
7:G:2:LYS:HB3	7:G:11:MET:HE3	1.98	0.44
1:A:22:LYS:HA	1:A:75:ILE:HD13	1.98	0.44
1:A:97:VAL:HG13	1:A:98:ILE:HG12	2.00	0.44
2:B:933:ILE:O	2:B:955:VAL:HB	2.18	0.44
1:A:871:GLU:OE1	1:A:1010:LYS:NZ	2.50	0.44
2:B:50:LEU:HD13	2:B:426:ALA:HB2	1.99	0.44
2:B:807:THR:CG2	2:B:1109:GLN:HB3	2.47	0.44
5:E:67:THR:OG1	5:E:136:TRP:NE1	2.50	0.44
6:F:52:ILE:HD11	6:F:75:SER:HB2	2.00	0.44
2:B:340:VAL:HB	2:B:364:GLN:HE22	1.81	0.44
2:B:429:PHE:HA	2:B:432:ILE:HG22	1.98	0.44
4:D:83:LYS:HB2	4:D:85:TYR:CE2	2.52	0.44
1:A:111:ARG:HD3	1:A:112:TYR:CZ	2.52	0.44
1:A:839:ASP:HA	1:A:1426:TYR:OH	2.17	0.44
2:B:113:LEU:HD13	2:B:182:ILE:HB	1.98	0.44
5:E:98:LYS:HD2	5:E:98:LYS:HA	1.69	0.44
7:G:15:TYR:CZ	7:G:39:VAL:HG22	2.51	0.44
1:A:1203:HIS:NE2	1:A:1257:SER:OG	2.43	0.44
2:B:367:ILE:HG13	2:B:370:LYS:NZ	2.32	0.44
2:B:713:ARG:HB3	2:B:737:ILE:HD12	1.99	0.44
3:C:278:LYS:HG3	3:C:324:ILE:HG12	1.99	0.44
8:H:27:GLU:O	8:H:31:THR:HG23	2.17	0.44
1:A:143:LYS:HB3	1:A:157:ASP:HB3	1.99	0.44
1:A:512:ARG:HA	1:A:602:VAL:HG12	2.00	0.44
1:A:1106:ASN:HB3	1:A:1109:TYR:HB3	1.99	0.44
2:B:420:GLY:O	2:B:422:GLY:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:405:PHE:CE1	2:B:656:MET:HE3	2.53	0.44
2:B:405:PHE:CZ	2:B:657:VAL:HG12	2.53	0.44
3:C:178:LEU:O	3:C:224:PRO:HD3	2.18	0.44
4:D:83:LYS:HD2	4:D:85:TYR:CZ	2.53	0.44
1:A:354:VAL:HG21	1:A:399:LEU:HG	2.00	0.43
1:A:833:LEU:O	1:A:1042:GLY:HA3	2.18	0.43
2:B:39:LEU:HD21	2:B:781:LEU:HD22	2.00	0.43
2:B:1008:LEU:HD12	2:B:1008:LEU:HA	1.90	0.43
3:C:241:ASN:HD22	3:C:244:ARG:NH1	2.16	0.43
7:G:11:MET:HE3	7:G:11:MET:HB2	1.80	0.43
1:A:546:PRO:HA	3:C:299:TYR:OH	2.18	0.43
1:A:1074:ILE:HG23	1:A:1078:GLN:HG3	2.00	0.43
2:B:823:ARG:HD3	2:B:823:ARG:HA	1.71	0.43
5:E:95:LEU:HD12	5:E:105:ILE:HG23	1.98	0.43
1:A:843:ARG:HG2	1:A:853:GLN:O	2.17	0.43
1:A:1052:PRO:HG2	1:A:1348:PRO:HD3	2.01	0.43
2:B:1029:ASN:ND2	2:B:1031:HIS:HB2	2.33	0.43
6:F:48:ILE:HD13	6:F:76:ALA:HB2	2.00	0.43
6:F:142:ILE:HB	6:F:145:ARG:HG3	2.00	0.43
2:B:188:GLU:OE2	2:B:192:TYR:OH	2.34	0.43
2:B:982:MET:HE3	2:B:982:MET:HB2	1.82	0.43
3:C:275:GLU:OE2	3:C:275:GLU:O	2.37	0.43
7:G:15:TYR:CE1	7:G:20:ILE:HD13	2.54	0.43
1:A:100:LEU:O	1:A:176:ARG:NH2	2.49	0.43
2:B:854:MET:HE1	2:B:1097:PHE:CZ	2.54	0.43
2:B:920:PHE:HZ	2:B:980:GLY:HA2	1.84	0.43
2:B:923:VAL:HG13	2:B:966:ASP:HA	2.00	0.43
3:C:105:LYS:HD2	3:C:105:LYS:N	2.34	0.43
1:A:378:ARG:HD2	1:A:387:VAL:HG11	2.01	0.43
2:B:604:ASN:O	2:B:608:VAL:HG22	2.19	0.43
2:B:657:VAL:HG23	2:B:659:GLU:HG3	2.00	0.43
3:C:26:ALA:HB1	3:C:32:LEU:HB3	2.01	0.43
1:A:592:GLN:CD	1:A:599:ILE:HD11	2.44	0.43
1:A:749:MET:HE2	1:A:749:MET:HB3	1.93	0.43
2:B:815:TRP:CG	2:B:816:PRO:HD3	2.54	0.43
2:B:573:ILE:HG23	2:B:574:THR:HG23	2.01	0.43
2:B:591:LEU:HD13	2:B:591:LEU:HA	1.90	0.43
2:B:1089:PHE:HA	2:B:1096:TYR:HA	2.01	0.43
5:E:49:PHE:CZ	5:E:51:GLN:HA	2.54	0.43
7:G:16:VAL:HA	7:G:17:ASP:HA	1.72	0.43
1:A:539:PRO:HG2	1:A:541:PHE:CE1	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1405:ASN:C	1:A:1405:ASN:HD22	2.27	0.42
2:B:709:ILE:HD11	2:B:762:LYS:NZ	2.33	0.42
1:A:969:LYS:HB3	1:A:969:LYS:HE3	1.85	0.42
4:D:192:MET:O	4:D:193:HIS:CG	2.71	0.42
5:E:100:SER:O	5:E:100:SER:OG	2.35	0.42
7:G:28:GLU:OE1	7:G:29:SER:N	2.52	0.42
1:A:328:CYS:HB2	2:B:1007:ALA:CB	2.49	0.42
1:A:777:ARG:HD2	7:G:66:ASN:OD1	2.19	0.42
1:A:1011:THR:HG21	1:A:1019:MET:HE1	2.01	0.42
2:B:678:ASN:HB3	2:B:708:PHE:CE1	2.54	0.42
1:A:35:PHE:CE2	1:A:212:ILE:HG21	2.54	0.42
1:A:491:LYS:HG3	1:A:1348:PRO:HB3	2.02	0.42
2:B:375:HIS:HD2	2:B:620:GLU:HB2	1.84	0.42
4:D:163:GLN:HG2	4:D:201:THR:HG21	2.00	0.42
1:A:1196:ILE:HD13	1:A:1196:ILE:HA	1.83	0.42
1:A:1320:GLY:O	1:A:1324:GLU:HG2	2.19	0.42
2:B:860:ASN:OD1	2:B:860:ASN:N	2.53	0.42
8:H:55:ILE:HB	8:H:67:ARG:NH1	2.35	0.42
1:A:862:ALA:HB2	1:A:1351:ARG:HD2	2.01	0.42
1:A:1070:ASN:HD22	1:A:1090:GLN:HE22	1.67	0.42
1:A:1245:LYS:HA	1:A:1245:LYS:HD2	1.64	0.42
2:B:957:TYR:CZ	2:B:959:PHE:HB2	2.55	0.42
2:B:996:MET:HE3	2:B:996:MET:HB2	1.76	0.42
1:A:361:ARG:O	1:A:364:PRO:HD2	2.20	0.42
1:A:1274:MET:SD	1:A:1286:ARG:HD3	2.59	0.42
2:B:679:ASN:CG	2:B:709:ILE:HG22	2.44	0.42
2:B:1007:ALA:O	2:B:1008:LEU:HB2	2.19	0.42
3:C:67:PRO:HB3	3:C:167:LYS:HE3	2.01	0.42
3:C:250:ILE:CG2	3:C:340:ILE:HG23	2.50	0.42
1:A:336:ASP:CG	1:A:432:ARG:HH21	2.28	0.42
1:A:517:MET:HE1	3:C:192:TYR:CE2	2.51	0.42
2:B:912:ASN:C	2:B:914:GLU:H	2.28	0.42
1:A:354:VAL:HG12	1:A:401:VAL:HA	2.01	0.42
1:A:370:LYS:HG2	1:A:377:SER:HB3	2.01	0.42
2:B:204:LEU:HD23	2:B:420:GLY:HA3	2.01	0.42
3:C:315:HIS:CD2	3:C:316:LYS:HG3	2.55	0.42
1:A:34:LEU:HG	1:A:46:TYR:CE2	2.55	0.41
1:A:78:MET:HB3	1:A:78:MET:HE3	1.74	0.41
1:A:301:ARG:HD3	1:A:301:ARG:HA	1.74	0.41
1:A:1133:TYR:OH	7:G:17:ASP:O	2.31	0.41
1:A:1227:LEU:HD23	1:A:1227:LEU:HA	1.95	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:1223:MET:HE3	2:B:1230:ILE:HG13	2.02	0.41
3:C:92:PHE:O	3:C:96:ARG:HG2	2.19	0.41
1:A:1011:THR:HA	1:A:1014:ILE:HD12	2.01	0.41
2:B:669:LEU:HD23	2:B:669:LEU:HA	1.89	0.41
2:B:1190:ASN:HB3	2:B:1193:HIS:O	2.21	0.41
3:C:257:TYR:OH	3:C:336:LEU:HD13	2.19	0.41
4:D:101:ASN:O	4:D:105:ILE:HG22	2.20	0.41
1:A:34:LEU:HD12	1:A:34:LEU:HA	1.92	0.41
2:B:515:LEU:O	2:B:518:ILE:HD12	2.21	0.41
2:B:832:PRO:HD3	2:B:844:PRO:HB3	2.03	0.41
2:B:1082:PHE:HB3	3:C:200:MET:SD	2.60	0.41
8:H:52:LYS:HZ3	8:H:62:MET:CE	2.33	0.41
1:A:62:CYS:O	2:B:1190:ASN:ND2	2.37	0.41
1:A:818:SER:HA	1:A:1057:MET:SD	2.61	0.41
2:B:48:ASP:OD1	2:B:48:ASP:C	2.63	0.41
2:B:605:LYS:H	2:B:605:LYS:HG3	1.64	0.41
1:A:1221:ILE:HD13	1:A:1221:ILE:HA	1.78	0.41
3:C:127:SER:HA	3:C:149:ILE:HD11	2.03	0.41
1:A:320:TRP:HB3	2:B:1124:SER:HA	2.02	0.41
1:A:398:ARG:NH2	1:A:400:GLU:HA	2.35	0.41
1:A:1241:ALA:HB1	1:A:1245:LYS:HB3	2.03	0.41
1:A:1395:LEU:HD11	2:B:1228:VAL:HG11	2.03	0.41
2:B:251:MET:HE1	2:B:269:ARG:NH1	2.28	0.41
4:D:10:ILE:HD11	4:D:55:VAL:HG11	2.02	0.41
7:G:22:PHE:O	7:G:29:SER:HA	2.20	0.41
7:G:63:ASP:HB3	7:G:66:ASN:ND2	2.36	0.41
1:A:189:LYS:HB2	1:A:189:LYS:HE2	1.61	0.41
1:A:884:PHE:HB3	1:A:901:LEU:HD13	2.02	0.41
1:A:1386:MET:HG2	1:A:1394:VAL:HB	2.01	0.41
1:A:314:LEU:O	2:B:1213:ARG:NH2	2.54	0.41
1:A:578:TYR:OH	1:A:742:ASN:ND2	2.53	0.41
1:A:1017:GLU:H	1:A:1017:GLU:CD	2.28	0.41
1:A:1104:GLU:HG2	1:A:1290:ILE:HG23	2.03	0.41
1:A:1121:THR:HG22	1:A:1123:GLU:HG2	2.03	0.41
2:B:306:ILE:HG22	2:B:310:GLU:OE2	2.21	0.41
2:B:1181:ARG:O	2:B:1181:ARG:HG2	2.21	0.41
3:C:55:VAL:HG21	3:C:217:HIS:CD2	2.56	0.41
5:E:109:GLU:HG2	5:E:114:LYS:HG3	2.02	0.41
6:F:7:PHE:HE2	6:F:41:LYS:HB2	1.86	0.41
1:A:240:ILE:HD11	1:A:259:ASN:HB3	2.03	0.41
1:A:271:LEU:O	1:A:300:MET:HB2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:252:ILE:C	1:A:252:ILE:HD12	2.46	0.40
1:A:688:ASP:OD1	1:A:688:ASP:N	2.54	0.40
1:A:934:VAL:HG13	1:A:1026:ILE:HD11	2.03	0.40
1:A:1272:LYS:HD3	1:A:1291:TYR:CE1	2.56	0.40
2:B:168:ARG:HA	2:B:168:ARG:HD3	1.86	0.40
3:C:332:LEU:O	3:C:336:LEU:HG	2.21	0.40
1:A:310:ILE:HG21	1:A:1387:ALA:HA	2.03	0.40
1:A:779:ALA:O	1:A:785:TYR:OH	2.17	0.40
1:A:805:GLU:CD	2:B:794:PRO:HB3	2.45	0.40
2:B:234:SER:OG	2:B:375:HIS:ND1	2.41	0.40
2:B:369:ASP:OD1	2:B:370:LYS:N	2.55	0.40
2:B:513:ASN:N	2:B:513:ASN:OD1	2.53	0.40
1:A:27:MET:SD	1:A:47:ASP:HB3	2.62	0.40
1:A:366:PHE:CE2	1:A:397:PHE:HA	2.56	0.40
1:A:875:LEU:HD12	1:A:880:LEU:HD12	2.04	0.40
1:A:1220:PRO:O	1:A:1220:PRO:HD2	2.21	0.40
1:A:1272:LYS:HE2	1:A:1288:ASP:O	2.22	0.40
2:B:665:ASP:OD1	2:B:665:ASP:N	2.55	0.40
2:B:1036:ARG:HG2	2:B:1036:ARG:NH1	2.36	0.40
4:D:125:LEU:HD11	4:D:169:PRO:HA	2.02	0.40
1:A:1298:THR:HG21	1:A:1318:SER:OG	2.21	0.40
2:B:605:LYS:O	2:B:609:ARG:HB2	2.21	0.40
6:F:83:ALA:HB1	6:F:136:ASN:HA	2.04	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 PDB entries followed by that with respect to all EM entries.

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	1403/1441 (97%)	1356 (97%)	44 (3%)	3 (0%)	44 66
2	B	1066/1235 (86%)	1014 (95%)	48 (4%)	4 (0%)	30 52

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	357/359 (99%)	342 (96%)	15 (4%)	0	100	100
4	D	203/205 (99%)	197 (97%)	5 (2%)	1 (0%)	25	47
5	E	105/107 (98%)	98 (93%)	7 (7%)	0	100	100
6	F	128/154 (83%)	122 (95%)	4 (3%)	2 (2%)	8	17
7	G	103/105 (98%)	92 (89%)	11 (11%)	0	100	100
8	H	65/80 (81%)	64 (98%)	1 (2%)	0	100	100
All	All	3430/3686 (93%)	3285 (96%)	135 (4%)	10 (0%)	38	59

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	421	SER
2	B	904	THR
6	F	70	MET
1	A	582	MET
2	B	1234	LEU
4	D	193	HIS
6	F	45	ILE
1	A	1143	VAL
1	A	1100	ASN
2	B	934	ILE

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 PDB entries followed by that with respect to all EM entries.

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	1248/1270 (98%)	1224 (98%)	24 (2%)	52	75
2	B	943/1074 (88%)	923 (98%)	20 (2%)	48	73
3	C	328/328 (100%)	322 (98%)	6 (2%)	54	77
4	D	185/185 (100%)	181 (98%)	4 (2%)	47	72
5	E	97/97 (100%)	94 (97%)	3 (3%)	35	62
6	F	119/137 (87%)	118 (99%)	1 (1%)	79	91

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
7	G	96/96 (100%)	94 (98%)	2 (2%)	48	73
8	H	61/70 (87%)	61 (100%)	0	100	100
All	All	3077/3257 (94%)	3017 (98%)	60 (2%)	52	75

All (60) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	GLU
1	A	52	THR
1	A	67	LYS
1	A	82	VAL
1	A	121	LEU
1	A	171	ARG
1	A	178	THR
1	A	206	ILE
1	A	244	LEU
1	A	387	VAL
1	A	505	VAL
1	A	581	TYR
1	A	599	ILE
1	A	727	THR
1	A	850	LEU
1	A	926	ASP
1	A	1092	SER
1	A	1117	ILE
1	A	1178	LEU
1	A	1188	LYS
1	A	1205	ASN
1	A	1224	ARG
1	A	1252	ASP
1	A	1359	LEU
2	B	177	THR
2	B	205	LEU
2	B	208	ILE
2	B	227	ILE
2	B	410	ARG
2	B	526	THR
2	B	541	MET
2	B	592	SER
2	B	609	ARG
2	B	670	THR

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Mol	Chain	Res	Type
2	B	702	GLU
2	B	726	THR
2	B	887	VAL
2	B	992	ILE
2	B	1012	THR
2	B	1080	LEU
2	B	1145	LEU
2	B	1164	ILE
2	B	1198	CYS
2	B	1231	THR
3	C	70	MET
3	C	115	SER
3	C	180	VAL
3	C	253	ILE
3	C	330	GLU
3	C	340	ILE
4	D	35	VAL
4	D	125	LEU
4	D	168	ASP
4	D	203	SER
5	E	41	GLU
5	E	56	THR
5	E	128	GLU
6	F	75	SER
7	G	52	LYS
7	G	103	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (39) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	ASN
1	A	259	ASN
1	A	265	GLN
1	A	420	GLN
1	A	455	ASN
1	A	646	ASN
1	A	721	ASN
1	A	742	ASN
1	A	744	ASN
1	A	980	GLN
1	A	1036	ASN
1	A	1062	HIS

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Mol	Chain	Res	Type
1	A	1078	GLN
1	A	1090	GLN
1	A	1161	ASN
1	A	1249	ASN
1	A	1281	GLN
2	B	242	ASN
2	B	364	GLN
2	B	516	ASN
2	B	525	ASN
2	B	735	GLN
2	B	822	ASN
2	B	845	ASN
2	B	989	ASN
2	B	1134	GLN
2	B	1142	HIS
2	B	1220	GLN
3	C	19	ASN
3	C	241	ASN
3	C	259	ASN
3	C	353	ASN
4	D	37	ASN
4	D	80	ASN
4	D	148	GLN
4	D	193	HIS
5	E	130	GLN
6	F	136	ASN
7	G	75	ASN

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 7 ligands modelled in this entry, 7 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.