



Full wwPDB EM Validation Report ⓘ

Jul 15, 2025 – 10:36 AM JST

PDB ID : 8IFG / pdb_00008ifg
EMDB ID : EMD-35416
Title : Cryo-EM structure of the Clr6S (Clr6-HDAC) complex from *S. pombe*
Authors : Zhang, H.Q.; Wang, X.; Wang, Y.N.; Liu, S.M.; Zhang, Y.; Xu, K.; Ji, L.T.; Kornberg, R.D.
Deposited on : 2023-02-17
Resolution : 3.20 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

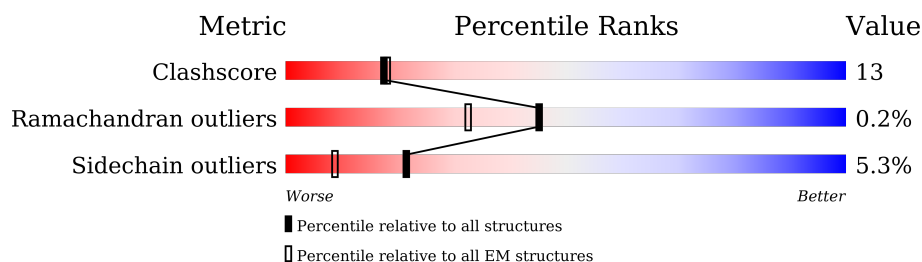
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.20 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	B	431	
2	A	1075	
3	C	401	
4	D	337	
4	E	337	
5	F	404	
6	P	607	

2 Entry composition [i](#)

There are 8 unique types of molecules in this entry. The entry contains 19068 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 RbAp48-related WD40 repeat-containing protein prw1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	386	Total	C	N	O	S	0	0
			3090	1948	531	595	16		

- Molecule 2 is a protein called Paired amphipathic helix protein pst2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	A	879	Total	C	N	O	S	0	0
			7260	4674	1219	1343	24		

- Molecule 3 is a protein called Histone deacetylase clr6.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	370	Total	C	N	O	S	0	0
			2963	1882	504	558	19		

- Molecule 4 is a protein called Chromatin modification-related protein eaf3.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	176	Total	C	N	O	S	0	0
			1466	945	242	272	7		
4	D	168	Total	C	N	O	S	0	0
			1401	903	233	258	7		

- Molecule 5 is a protein called Cph1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	F	120	Total	C	N	O	S	0	0
			963	622	166	172	3		

- Molecule 6 is a protein called Cph2.

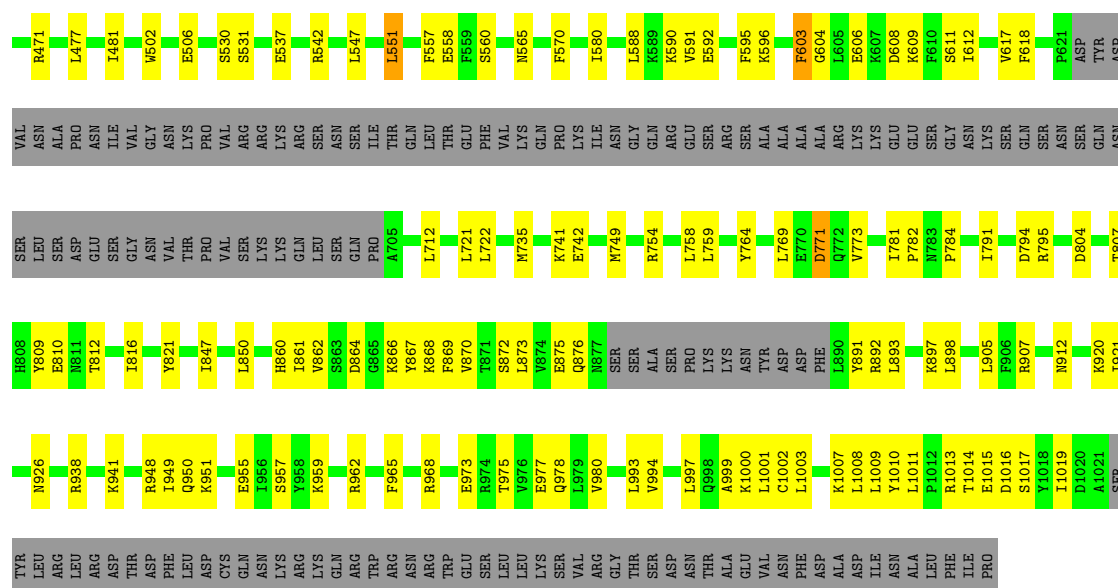
Mol	Chain	Residues	Atoms					AltConf	Trace
6	P	239	Total	C	N	O	S	0	0
			1921	1220	336	351	14		

- Molecule 7 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

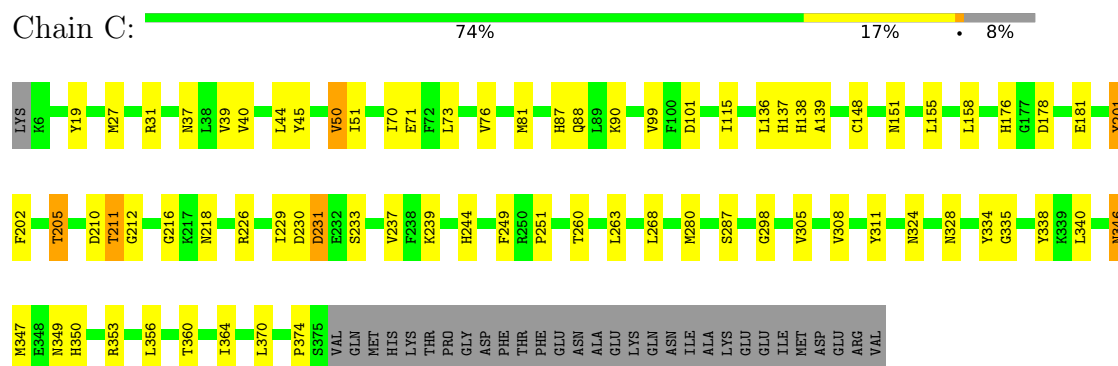
Mol	Chain	Residues	Atoms		AltConf
7	C	1	Total	Zn	0
			1	1	
7	P	2	Total	Zn	0
			2	2	

- Molecule 8 is water.

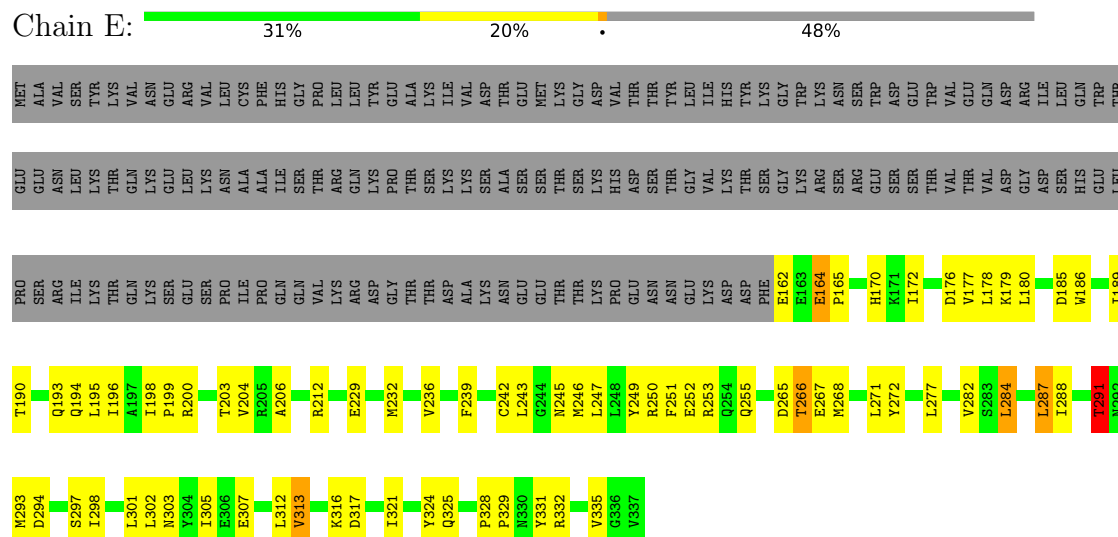
Mol	Chain	Residues	Atoms		AltConf
8	C	1	Total	O	0
			1	1	



- Molecule 3: Histone deacetylase clr6



- Molecule 4: Chromatin modification-related protein eaf3



- Molecule 4: Chromatin modification-related protein eaf3

- Molecule 5: Cph1

- Molecule 6: Cph2





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	721645	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)	1200	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (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: 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	B	0.16	0/3175	0.39	0/4325
2	A	0.26	0/7435	0.42	0/10048
3	C	0.32	0/3042	0.39	0/4127
4	D	0.22	0/1432	0.38	0/1941
4	E	0.28	0/1500	0.52	2/2035 (0.1%)
5	F	0.69	2/992 (0.2%)	0.95	4/1348 (0.3%)
6	P	0.29	0/1966	0.47	1/2667 (0.0%)
All	All	0.30	2/19542 (0.0%)	0.46	7/26491 (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
2	A	0	2
5	F	0	1
6	P	0	2
All	All	0	5

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	F	176	PRO	N-CA	18.09	1.70	1.47
5	F	175	HIS	C-N	5.02	1.45	1.33

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	175	HIS	CA-C-N	15.81	139.61	119.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	175	HIS	C-N-CA	15.81	139.61	119.84
5	F	176	PRO	CA-N-CD	-8.46	100.15	112.00
5	F	332	PRO	N-CA-CB	6.98	110.67	103.00
6	P	514	PRO	N-CA-CB	6.85	110.44	103.25
4	E	291	THR	CA-C-N	5.07	131.22	121.54
4	E	291	THR	C-N-CA	5.07	131.22	121.54

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	A	72	VAL	Peptide
2	A	98	PHE	Peptide
5	F	375	PRO	Peptide
6	P	595	VAL	Peptide
6	P	597	ALA	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	B	3090	0	2947	142	0
2	A	7260	0	7194	178	0
3	C	2963	0	2816	53	0
4	D	1401	0	1391	28	0
4	E	1466	0	1454	65	0
5	F	963	0	952	56	0
6	P	1921	0	1888	43	0
7	C	1	0	0	0	0
7	P	2	0	0	0	0
8	C	1	0	0	0	0
All	All	19068	0	18642	501	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 13.

All (501) 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)
5:F:176:PRO:N	5:F:176:PRO:CA	1.70	1.39
4:E:288:ILE:CG2	4:E:298:ILE:HD12	1.87	1.03
4:E:288:ILE:HG21	4:E:298:ILE:HD12	1.55	0.89
4:E:284:LEU:O	4:E:288:ILE:HG12	1.81	0.81
1:B:129:PRO:HD2	1:B:173:PRO:HB3	1.63	0.80
3:C:263:LEU:HD11	3:C:308:VAL:HG21	1.62	0.79
4:E:250:ARG:NH1	5:F:211:GLY:O	2.17	0.78
2:A:893:LEU:O	2:A:897:LYS:NZ	2.20	0.75
2:A:364:LEU:HD21	3:C:158:LEU:HD11	1.69	0.74
1:B:337:GLU:HG3	1:B:339:PRO:HD2	1.68	0.74
2:A:427:LEU:HD12	2:A:428:PRO:HD2	1.69	0.74
4:E:243:LEU:HD23	4:E:268:MET:HB3	1.69	0.74
4:E:242:CYS:CB	5:F:179:ILE:HD11	2.17	0.73
4:E:242:CYS:HB2	5:F:179:ILE:HD11	1.71	0.73
3:C:211:THR:HG22	3:C:218:ASN:HA	1.71	0.71
1:B:378:HIS:CD2	1:B:380:GLY:H	2.07	0.71
5:F:183:LEU:HD22	5:F:183:LEU:O	1.90	0.71
4:E:198:ILE:HD12	4:E:199:PRO:HA	1.72	0.71
4:E:288:ILE:HG23	4:E:298:ILE:HD12	1.69	0.71
4:E:253:ARG:NH1	5:F:211:GLY:O	2.24	0.70
5:F:177:LEU:HD12	5:F:177:LEU:O	1.91	0.70
1:B:237:VAL:HA	1:B:254:SER:HA	1.74	0.70
4:E:288:ILE:CG2	4:E:298:ILE:CD1	2.69	0.70
5:F:183:LEU:O	5:F:183:LEU:HD13	1.91	0.70
6:P:568:ASN:OD1	6:P:593:GLN:NE2	2.25	0.70
2:A:84:ILE:O	2:A:86:ARG:N	2.23	0.70
1:B:378:HIS:HD2	1:B:380:GLY:H	1.39	0.69
1:B:50:GLU:HG2	1:B:51:TRP:HD1	1.55	0.69
1:B:265:ARG:HG3	1:B:266:ARG:HD3	1.74	0.69
1:B:53:CYS:SG	1:B:54:MET:N	2.66	0.68
1:B:24:LYS:HE2	2:A:941:LYS:HZ3	1.59	0.67
1:B:133:CYS:H	1:B:149:GLY:HA2	1.59	0.67
2:A:146:ILE:HG12	6:P:563:LEU:HD11	1.76	0.67
2:A:431:GLU:O	2:A:435:TYR:HB2	1.95	0.67
2:A:973:GLU:HB3	2:A:978:GLN:HE22	1.60	0.67
4:D:295:SER:HA	4:D:298:ILE:HD12	1.77	0.67
4:D:205:ARG:NH2	4:D:269:CYS:SG	2.65	0.67
2:A:807:THR:HG22	2:A:809:TYR:H	1.58	0.66
3:C:374:PRO:HB3	5:F:378:VAL:HG22	1.78	0.66
5:F:213:THR:HG22	5:F:214:GLY:H	1.61	0.66
1:B:35:LYS:HA	2:A:950:GLN:HE21	1.60	0.66
1:B:153:ASN:HA	1:B:186:PRO:HA	1.78	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:860:HIS:O	2:A:864:ASP:HB3	1.96	0.65
1:B:394:TYR:O	1:B:397:THR:OG1	2.12	0.65
4:E:293:MET:HB2	4:E:298:ILE:HD11	1.78	0.65
1:B:207:ALA:HA	1:B:236:GLN:HA	1.78	0.65
4:E:329:PRO:HA	4:E:332:ARG:HE	1.61	0.65
1:B:50:GLU:OE1	1:B:51:TRP:N	2.29	0.64
2:A:245:ASP:OD2	2:A:310:ARG:NH2	2.30	0.64
1:B:157:VAL:HB	1:B:178:TYR:HB2	1.78	0.64
4:E:287:LEU:N	4:E:287:LEU:HD23	2.11	0.64
3:C:115:ILE:HD11	3:C:155:LEU:HD23	1.79	0.64
1:B:63:GLN:HG2	1:B:72:GLU:HB3	1.80	0.64
2:A:231:THR:HG21	2:A:236:SER:HB2	1.79	0.64
2:A:537:GLU:OE1	2:A:754:ARG:NH2	2.31	0.63
5:F:183:LEU:HD13	5:F:183:LEU:C	2.23	0.63
4:D:327:ALA:O	4:D:332:ARG:NH2	2.31	0.63
2:A:429:GLU:HA	2:A:432:ARG:HB2	1.80	0.63
4:E:255:GLN:N	4:E:331:TYR:OH	2.32	0.63
1:B:217:TYR:HA	1:B:225:VAL:HG12	1.80	0.63
1:B:50:GLU:HG2	1:B:51:TRP:CD1	2.34	0.62
4:E:193:GLN:HA	4:E:251:PHE:HE2	1.65	0.62
2:A:551:LEU:HD11	6:P:526:ASN:HB3	1.80	0.62
2:A:742:GLU:OE2	2:A:907:ARG:NE	2.25	0.62
3:C:349:ASN:OD1	3:C:350:HIS:N	2.33	0.62
5:F:208:ILE:HD11	5:F:212:ASP:HA	1.82	0.62
2:A:282:ASN:HD21	6:P:483:ASN:HD21	1.48	0.62
1:B:22:GLN:O	1:B:26:ILE:HG12	2.00	0.61
1:B:306:ILE:HB	1:B:321:LEU:HB3	1.83	0.61
1:B:67:GLU:OE1	1:B:68:HIS:ND1	2.31	0.61
2:A:84:ILE:HG23	2:A:85:LEU:H	1.66	0.61
5:F:202:VAL:HG12	5:F:203:HIS:H	1.66	0.60
1:B:241:ARG:HE	1:B:288:ALA:HA	1.65	0.60
4:D:240:ASN:ND2	4:D:269:CYS:SG	2.75	0.60
2:A:99:LEU:HB3	2:A:101:SER:OG	2.00	0.60
2:A:101:SER:HA	2:A:118:PHE:HB3	1.84	0.60
1:B:275:ARG:NH1	1:B:276:SER:O	2.35	0.60
1:B:284:ILE:HD12	1:B:301:SER:HB2	1.83	0.60
1:B:57:GLN:NE2	1:B:135:ALA:O	2.35	0.59
1:B:235:LYS:HG3	1:B:255:TYR:HB3	1.84	0.59
3:C:31:ARG:NH1	3:C:298:GLY:O	2.35	0.59
3:C:374:PRO:HD3	5:F:378:VAL:HG13	1.85	0.59
2:A:116:LEU:HD23	2:A:116:LEU:H	1.66	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:188:ASP:OD1	5:F:190:GLN:N	2.26	0.59
6:P:354:HIS:O	6:P:354:HIS:ND1	2.32	0.59
1:B:163:PHE:HA	1:B:174:LEU:HD11	1.85	0.58
4:E:253:ARG:HH12	5:F:212:ASP:HB2	1.68	0.58
5:F:179:ILE:HG22	5:F:180:TRP:CD1	2.38	0.58
1:B:128:HIS:ND1	1:B:130:GLU:O	2.33	0.58
1:B:328:VAL:HA	1:B:345:SER:HA	1.85	0.58
6:P:574:ASP:O	6:P:578:LEU:HD13	2.04	0.58
2:A:997:LEU:O	2:A:1014:THR:OG1	2.17	0.58
2:A:421:GLN:HB2	2:A:477:LEU:HD13	1.86	0.58
3:C:39:VAL:HG13	3:C:44:LEU:HB2	1.86	0.58
5:F:341:LYS:HE2	6:P:492:ASN:HB2	1.87	0.57
5:F:387:THR:O	5:F:391:LEU:HB2	2.05	0.57
3:C:87:HIS:HA	3:C:90:LYS:HD2	1.86	0.57
4:E:246:MET:HE1	5:F:179:ILE:HG21	1.87	0.57
4:D:223:ILE:HD12	4:D:223:ILE:H	1.70	0.57
2:A:261:PHE:HE2	5:F:352:LEU:HD21	1.70	0.57
4:E:164:GLU:HG2	4:E:165:PRO:HD2	1.87	0.57
6:P:333:THR:OG1	6:P:334:MET:N	2.37	0.56
4:D:327:ALA:HB3	4:D:332:ARG:HH12	1.70	0.56
1:B:208:THR:HB	1:B:229:HIS:HE1	1.69	0.56
2:A:948:ARG:HG2	2:A:951:LYS:HB3	1.88	0.56
2:A:206:PRO:HB3	6:P:553:THR:HG22	1.86	0.56
1:B:353:TRP:CD1	1:B:373:GLU:HG2	2.40	0.56
2:A:580:ILE:HG21	2:A:591:VAL:HG21	1.87	0.56
3:C:311:TYR:HB2	3:C:340:LEU:HD21	1.86	0.56
1:B:119:ARG:HH21	2:A:1015:GLU:HG2	1.71	0.56
1:B:238:SER:N	1:B:253:VAL:O	2.27	0.56
1:B:282:GLY:O	1:B:301:SER:OG	2.24	0.56
2:A:118:PHE:HD1	2:A:119:THR:H	1.54	0.56
2:A:769:LEU:O	2:A:773:VAL:HG23	2.06	0.56
4:E:253:ARG:NH2	5:F:210:ARG:O	2.37	0.56
2:A:99:LEU:C	2:A:101:SER:H	2.14	0.56
3:C:27:MET:SD	3:C:31:ARG:NH2	2.78	0.56
4:E:195:LEU:HD12	4:E:196:ILE:H	1.70	0.56
1:B:321:LEU:HD21	1:B:353:TRP:CE2	2.41	0.55
6:P:491:GLU:N	6:P:491:GLU:OE1	2.39	0.55
2:A:173:PHE:HB2	6:P:561:ARG:HG3	1.89	0.55
2:A:975:THR:O	2:A:978:GLN:HG3	2.07	0.55
2:A:159:ASN:OD1	2:A:159:ASN:N	2.20	0.55
2:A:1001:LEU:HD11	2:A:1011:LEU:HD22	1.89	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:386:ARG:NH2	5:F:390:ASN:HD21	2.04	0.55
1:B:125:LEU:HD23	1:B:125:LEU:H	1.72	0.55
1:B:154:ASP:HB2	1:B:181:THR:HA	1.88	0.55
5:F:182:GLN:HE21	5:F:182:GLN:HA	1.72	0.55
1:B:391:CYS:HB3	1:B:397:THR:OG1	2.06	0.55
2:A:804:ASP:N	2:A:804:ASP:OD1	2.38	0.55
2:A:926:ASN:OD1	2:A:957:SER:N	2.37	0.55
1:B:279:ALA:O	1:B:317:ARG:NH2	2.40	0.54
2:A:382:ILE:O	2:A:382:ILE:HG13	2.08	0.54
4:E:242:CYS:SG	5:F:179:ILE:HD11	2.47	0.54
1:B:347:ASP:HB2	2:A:962:ARG:HH12	1.72	0.54
2:A:371:HIS:CD2	2:A:375:ALA:H	2.25	0.54
2:A:941:LYS:HE2	2:A:955:GLU:HG3	1.89	0.54
2:A:1007:LYS:HD3	2:A:1008:LEU:H	1.72	0.54
2:A:938:ARG:HH12	2:A:1003:LEU:HD22	1.73	0.54
4:D:187:GLU:OE1	6:P:465:ARG:NH2	2.41	0.54
5:F:188:ASP:OD1	5:F:189:SER:N	2.40	0.54
4:E:176:ASP:N	4:E:176:ASP:OD1	2.38	0.54
1:B:40:LEU:HD21	2:A:965:PHE:HB3	1.90	0.54
5:F:203:HIS:ND1	5:F:206:HIS:O	2.27	0.53
1:B:93:ILE:HG13	1:B:120:VAL:HG23	1.89	0.53
2:A:371:HIS:NE2	2:A:377:GLU:O	2.38	0.53
2:A:580:ILE:HG21	2:A:591:VAL:HG11	1.89	0.53
4:E:176:ASP:O	4:E:180:LEU:HG	2.08	0.53
6:P:489:ILE:HG13	6:P:490:ASP:H	1.72	0.53
2:A:450:LYS:HA	2:A:466:PHE:HZ	1.71	0.53
1:B:128:HIS:CE1	1:B:130:GLU:HB3	2.43	0.53
1:B:310:ASP:OD1	1:B:312:ARG:HG3	2.08	0.53
2:A:282:ASN:HB2	5:F:347:LEU:HD11	1.89	0.53
2:A:471:ARG:NH1	2:A:471:ARG:HA	2.24	0.53
4:E:172:ILE:HD11	4:E:302:LEU:HD22	1.91	0.53
5:F:190:GLN:HE22	5:F:343:SER:HB3	1.74	0.53
2:A:759:LEU:HD13	2:A:850:LEU:HD23	1.90	0.53
4:E:249:TYR:HB2	4:E:252:GLU:OE1	2.09	0.53
4:D:293:MET:HG3	4:D:294:ASP:H	1.73	0.53
4:D:335:VAL:HG13	4:D:336:GLY:H	1.74	0.52
2:A:402:GLU:OE2	2:A:405:ARG:NH2	2.38	0.52
2:A:606:GLU:HG2	2:A:609:LYS:HD3	1.91	0.52
2:A:867:TYR:CE2	2:A:868:LYS:HG2	2.43	0.52
1:B:227:LYS:HG3	1:B:228:VAL:HG23	1.92	0.52
1:B:159:ASP:O	1:B:162:SER:OG	2.19	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:136:LEU:HB3	3:C:148:CYS:HB3	1.91	0.52
2:A:570:PHE:HZ	2:A:721:LEU:HB2	1.74	0.52
4:D:220:ASN:OD1	4:D:220:ASN:N	2.38	0.52
1:B:58:TRP:CE2	1:B:75:MET:HE1	2.45	0.52
2:A:430:GLU:O	2:A:434:THR:HG22	2.09	0.52
2:A:771:ASP:OD1	2:A:771:ASP:N	2.42	0.52
4:E:185:ASP:OD2	4:E:324:TYR:OH	2.28	0.52
4:E:203:THR:HG23	4:E:206:ALA:H	1.74	0.52
5:F:386:ARG:HH22	5:F:390:ASN:HD21	1.58	0.52
1:B:239:ASP:HB3	1:B:287:VAL:HG12	1.92	0.52
4:D:193:GLN:HB3	4:D:332:ARG:NH1	2.25	0.52
2:A:231:THR:C	2:A:233:SER:H	2.18	0.51
2:A:243:ARG:HD2	2:A:244:PRO:HD2	1.92	0.51
3:C:260:THR:OG1	3:C:305:VAL:HG22	2.10	0.51
4:E:204:VAL:HG13	4:E:277:LEU:HD22	1.91	0.51
2:A:596:LYS:HE3	2:A:611:SER:HA	1.93	0.51
5:F:179:ILE:HG22	5:F:180:TRP:HD1	1.75	0.51
1:B:76:PHE:HZ	1:B:88:LEU:HD23	1.74	0.51
1:B:187:CYS:HA	1:B:204:SER:HA	1.93	0.51
2:A:458:THR:HB	2:A:460:GLU:H	1.75	0.51
1:B:345:SER:OG	1:B:346:ALA:N	2.43	0.51
2:A:63:VAL:HG12	2:A:77:PHE:HD1	1.75	0.51
2:A:99:LEU:C	2:A:101:SER:N	2.67	0.51
2:A:565:ASN:HD22	2:A:764:TYR:HE1	1.59	0.51
3:C:178:ASP:OD1	3:C:178:ASP:N	2.44	0.51
3:C:230:ASP:OD1	3:C:230:ASP:N	2.44	0.51
6:P:464:TYR:CE2	6:P:486:ASN:HB2	2.46	0.51
4:E:193:GLN:HA	4:E:251:PHE:CE2	2.46	0.51
5:F:186:TRP:CD1	5:F:186:TRP:C	2.89	0.51
1:B:294:ASP:N	1:B:294:ASP:OD1	2.43	0.51
2:A:358:ASP:OD1	2:A:358:ASP:N	2.41	0.50
2:A:547:LEU:HD13	6:P:408:LEU:HD12	1.92	0.50
4:E:303:ASN:O	4:E:307:GLU:HG2	2.11	0.50
1:B:334:SER:HB3	1:B:340:ILE:HB	1.93	0.50
1:B:362:GLN:HE21	2:A:968:ARG:HH22	1.58	0.50
1:B:75:MET:HB3	1:B:91:ALA:HB3	1.94	0.50
1:B:90:VAL:HG12	1:B:124:ASN:HB2	1.94	0.50
5:F:393:ILE:HD12	5:F:393:ILE:H	1.75	0.50
1:B:158:PHE:HD2	1:B:174:LEU:HD22	1.77	0.50
2:A:749:MET:HA	2:A:861:ILE:HD11	1.92	0.50
1:B:210:SER:OG	1:B:212:TRP:NE1	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:293:ASN:HB2	1:B:296:ILE:HG13	1.93	0.50
2:A:608:ASP:O	2:A:612:ILE:HG12	2.11	0.50
1:B:254:SER:OG	1:B:256:ASP:OD1	2.20	0.49
2:A:608:ASP:OD1	2:A:608:ASP:N	2.43	0.49
3:C:201:TYR:OH	3:C:268:LEU:O	2.28	0.49
4:E:232:MET:O	4:E:236:VAL:HG23	2.12	0.49
2:A:87:ASP:OD1	2:A:87:ASP:N	2.44	0.49
5:F:380:SER:OG	5:F:381:ALA:N	2.43	0.49
2:A:371:HIS:HB2	2:A:374:TRP:NE1	2.27	0.49
1:B:133:CYS:N	1:B:148:VAL:O	2.45	0.49
1:B:30:TYR:HE2	6:P:516:LYS:HD3	1.78	0.49
2:A:784:PRO:HD2	3:C:324:ASN:HD22	1.78	0.49
2:A:866:LYS:O	2:A:870:VAL:HG22	2.12	0.49
2:A:949:ILE:HG23	6:P:518:ASN:HA	1.94	0.49
3:C:328:ASN:HD21	3:C:334:TYR:HE2	1.61	0.49
4:E:243:LEU:HD21	4:E:272:TYR:CD1	2.47	0.49
5:F:182:GLN:O	5:F:185:ASP:N	2.45	0.49
2:A:380:GLY:H	3:C:202:PHE:HA	1.77	0.49
3:C:239:LYS:HE3	3:C:280:MET:HE2	1.94	0.49
5:F:337:SER:O	5:F:337:SER:OG	2.25	0.49
2:A:88:TYR:HB2	2:A:89:PRO:HD3	1.94	0.49
2:A:399:GLU:HG2	2:A:502:TRP:CZ2	2.47	0.49
3:C:226:ARG:NH2	6:P:435:ASP:OD1	2.27	0.49
2:A:340:SER:OG	3:C:210:ASP:OD2	2.30	0.49
2:A:994:VAL:N	2:A:1017:SER:OG	2.39	0.49
4:E:294:ASP:O	4:E:298:ILE:HG12	2.13	0.49
1:B:140:GLN:N	1:B:140:GLN:OE1	2.46	0.49
1:B:290:ASN:HB3	1:B:296:ILE:HB	1.95	0.49
2:A:892:ARG:HG3	2:A:893:LEU:N	2.28	0.49
3:C:81:MET:HB2	3:C:88:GLN:HE22	1.78	0.49
2:A:142:TYR:O	2:A:146:ILE:HG13	2.13	0.49
2:A:588:LEU:O	2:A:592:GLU:HG3	2.13	0.49
4:E:291:THR:OG1	5:F:183:LEU:HD12	2.13	0.49
3:C:45:TYR:CZ	3:C:50:VAL:HG21	2.48	0.48
3:C:346:ASN:N	3:C:346:ASN:OD1	2.45	0.48
4:E:265:ASP:OD1	4:E:265:ASP:N	2.46	0.48
2:A:1013:ARG:O	2:A:1014:THR:OG1	2.31	0.48
3:C:360:THR:O	3:C:364:ILE:HG12	2.14	0.48
2:A:220:PHE:HB3	2:A:221:PRO:HD2	1.96	0.48
3:C:233:SER:O	3:C:237:VAL:HG23	2.14	0.48
6:P:524:ARG:O	6:P:528:ILE:HG12	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:188:THR:OG1	1:B:203:GLY:O	2.30	0.48
1:B:182:LYS:HE2	1:B:226:LEU:HD11	1.96	0.48
1:B:192:TRP:CZ2	1:B:200:LEU:HD12	2.49	0.48
1:B:414:ARG:HG2	1:B:417:TRP:CZ2	2.48	0.48
2:A:84:ILE:C	2:A:86:ARG:H	2.20	0.48
2:A:173:PHE:CD1	6:P:558:LEU:HD22	2.48	0.48
2:A:341:TYR:OH	3:C:181:GLU:OE1	2.24	0.48
4:D:195:LEU:HD21	4:D:251:PHE:HD2	1.78	0.48
6:P:457:SER:O	6:P:461:THR:HG23	2.14	0.48
2:A:259:ASP:HA	2:A:262:LYS:HE2	1.95	0.47
4:E:186:TRP:O	4:E:190:THR:HG22	2.14	0.47
1:B:193:ASN:HD22	1:B:242:PHE:HB3	1.79	0.47
4:E:242:CYS:HB2	5:F:179:ILE:CD1	2.42	0.47
2:A:217:LEU:O	3:C:287:SER:OG	2.32	0.47
2:A:258:SER:O	2:A:262:LYS:HG2	2.14	0.47
3:C:139:ALA:O	3:C:151:ASN:ND2	2.47	0.47
1:B:162:SER:HB2	1:B:174:LEU:HD21	1.96	0.47
3:C:249:PHE:O	3:C:251:PRO:HD3	2.14	0.47
4:E:313:VAL:O	4:E:316:LYS:HG2	2.13	0.47
2:A:590:LYS:HB3	2:A:862:VAL:HG11	1.97	0.47
3:C:176:HIS:ND1	3:C:205:THR:OG1	2.42	0.47
4:E:245:ASN:O	5:F:173:PRO:HA	2.14	0.47
1:B:235:LYS:HD2	1:B:235:LYS:HA	1.64	0.47
4:E:239:PHE:CE1	4:E:243:LEU:HD22	2.50	0.47
1:B:209:LEU:HB2	1:B:230:ILE:HB	1.97	0.47
1:B:188:THR:HG21	1:B:236:GLN:HE21	1.80	0.47
4:D:265:ASP:OD1	4:D:265:ASP:N	2.44	0.47
1:B:28:GLU:O	1:B:32:ILE:HG12	2.15	0.46
1:B:300:CYS:HB3	1:B:331:ILE:HD13	1.97	0.46
2:A:78:ILE:HD13	2:A:78:ILE:HA	1.73	0.46
1:B:156:LEU:HB3	1:B:176:PRO:HG3	1.97	0.46
2:A:413:THR:OG1	2:A:452:THR:HG21	2.15	0.46
4:E:239:PHE:HE1	4:E:243:LEU:HD22	1.80	0.46
4:E:288:ILE:HG21	4:E:298:ILE:HG23	1.97	0.46
5:F:170:HIS:O	5:F:171:HIS:ND1	2.48	0.46
2:A:424:ILE:HD11	2:A:477:LEU:HD12	1.97	0.46
4:E:253:ARG:NH1	5:F:212:ASP:HB2	2.29	0.46
1:B:211:CYS:O	1:B:227:LYS:N	2.48	0.46
4:E:250:ARG:HH22	5:F:213:THR:HA	1.78	0.46
1:B:42:ASP:CG	1:B:413:SER:HA	2.41	0.46
1:B:403:GLU:N	1:B:403:GLU:OE2	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:198:ILE:HG21	4:D:259:ILE:HG13	1.98	0.46
4:D:198:ILE:HG13	4:D:259:ILE:HG13	1.97	0.46
2:A:609:LYS:HE3	2:A:721:LEU:HG	1.96	0.46
3:C:37:ASN:HA	3:C:40:VAL:HG12	1.98	0.46
3:C:328:ASN:OD1	3:C:328:ASN:N	2.48	0.46
4:E:212:ARG:HE	4:E:229:GLU:CD	2.22	0.46
1:B:308:LEU:HD13	1:B:319:HIS:HB3	1.98	0.46
2:A:173:PHE:HD2	6:P:561:ARG:HE	1.64	0.46
2:A:794:ASP:OD1	2:A:795:ARG:N	2.49	0.46
2:A:977:GLU:O	2:A:980:VAL:HG22	2.15	0.46
2:A:1001:LEU:HB2	2:A:1009:LEU:HB2	1.96	0.46
1:B:100:GLN:OE1	1:B:100:GLN:N	2.49	0.46
1:B:344:THR:HB	1:B:385:THR:OG1	2.16	0.46
2:A:90:ASP:OD2	2:A:105:TYR:OH	2.22	0.46
2:A:371:HIS:O	2:A:371:HIS:CG	2.69	0.46
2:A:477:LEU:O	2:A:481:ILE:HG13	2.16	0.46
4:D:331:TYR:O	4:D:335:VAL:HG12	2.16	0.46
1:B:219:GLU:CD	1:B:219:GLU:H	2.24	0.45
2:A:722:LEU:HD11	2:A:912:ASN:HD21	1.81	0.45
6:P:334:MET:HA	6:P:337:VAL:HG23	1.97	0.45
1:B:60:PRO:HA	1:B:392:PRO:HG3	1.98	0.45
2:A:133:ALA:HB1	2:A:135:TYR:HE1	1.81	0.45
2:A:712:LEU:HD21	2:A:821:TYR:CE1	2.51	0.45
2:A:1016:ASP:HB3	2:A:1019:ILE:HD11	1.97	0.45
2:A:872:SER:HA	2:A:875:GLU:HG3	1.98	0.45
3:C:218:ASN:HB2	3:C:370:LEU:HD21	1.99	0.45
2:A:172:LYS:HG3	2:A:183:LEU:HD22	1.98	0.45
2:A:471:ARG:HA	2:A:471:ARG:HH11	1.82	0.45
1:B:286:SER:HB3	1:B:300:CYS:SG	2.57	0.45
4:E:316:LYS:HG3	4:E:317:ASP:H	1.82	0.45
6:P:461:THR:HB	6:P:486:ASN:CG	2.42	0.45
4:E:284:LEU:HD11	5:F:186:TRP:HZ3	1.82	0.45
6:P:335:VAL:O	6:P:339:MET:HG2	2.17	0.45
6:P:592:ASN:OD1	6:P:593:GLN:N	2.42	0.45
2:A:712:LEU:HD23	2:A:712:LEU:HA	1.71	0.45
2:A:938:ARG:NH2	2:A:1002:CYS:HB2	2.32	0.45
4:D:238:TYR:CE1	6:P:341:LEU:HB3	2.52	0.45
5:F:372:GLU:N	5:F:372:GLU:OE2	2.50	0.45
1:B:34:LYS:HG2	6:P:518:ASN:HD22	1.83	0.44
1:B:43:LEU:HB3	1:B:411:THR:HB	1.99	0.44
3:C:137:HIS:CD2	3:C:137:HIS:H	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:447:SER:OG	3:C:101:ASP:HB3	2.17	0.44
3:C:212:GLY:HA3	3:C:216:GLY:O	2.17	0.44
1:B:72:GLU:CD	1:B:92:SER:HB2	2.43	0.44
1:B:378:HIS:CD2	1:B:378:HIS:C	2.95	0.44
2:A:322:GLU:O	2:A:326:VAL:HG23	2.16	0.44
4:E:242:CYS:SG	5:F:179:ILE:CD1	3.05	0.44
6:P:545:PHE:C	6:P:547:LYS:H	2.26	0.44
1:B:124:ASN:HB3	1:B:126:TYR:CZ	2.52	0.44
1:B:255:TYR:CE1	1:B:283:PRO:HB3	2.53	0.44
1:B:383:SER:HB3	1:B:404:ASP:OD1	2.18	0.44
2:A:221:PRO:HG3	3:C:244:HIS:CE1	2.53	0.44
2:A:233:SER:O	2:A:233:SER:OG	2.35	0.44
2:A:530:SER:OG	2:A:531:SER:N	2.51	0.44
2:A:238:LEU:HB3	2:A:299:PHE:CZ	2.52	0.44
1:B:373:GLU:OE1	1:B:374:LEU:N	2.51	0.44
4:E:288:ILE:HG23	4:E:298:ILE:CD1	2.43	0.44
4:D:275:GLU:H	4:D:275:GLU:CD	2.26	0.44
3:C:231:ASP:OD1	3:C:231:ASP:N	2.50	0.43
2:A:441:LEU:HB2	2:A:443:LEU:HD13	2.00	0.43
5:F:379:LYS:HE3	6:P:578:LEU:HD11	1.99	0.43
2:A:105:TYR:HE1	2:A:115:THR:HB	1.84	0.43
3:C:353:ARG:HD2	3:C:353:ARG:HA	1.74	0.43
1:B:228:VAL:HG21	1:B:264:ILE:HG23	2.00	0.43
1:B:235:LYS:HE3	1:B:255:TYR:HD2	1.84	0.43
2:A:288:ILE:HG21	6:P:462:PRO:HD3	1.99	0.43
2:A:557:PHE:CD1	2:A:920:LYS:HB2	2.54	0.43
2:A:873:LEU:O	2:A:876:GLN:NE2	2.51	0.43
5:F:200:ASP:O	5:F:201:LEU:HD23	2.19	0.43
1:B:158:PHE:CE1	1:B:176:PRO:HB3	2.54	0.43
2:A:104:LYS:HB3	2:A:116:LEU:O	2.19	0.43
2:A:876:GLN:HE22	2:A:891:TYR:HE2	1.67	0.43
4:E:178:LEU:HD23	4:E:178:LEU:HA	1.83	0.43
6:P:472:VAL:HG11	6:P:489:ILE:HG21	2.01	0.43
1:B:257:GLN:HB2	1:B:278:HIS:HE1	1.84	0.43
2:A:45:LYS:HE3	2:A:735:MET:HB2	1.99	0.43
2:A:243:ARG:O	2:A:310:ARG:NH1	2.51	0.43
2:A:866:LYS:HG2	2:A:869:PHE:HD2	1.84	0.43
4:E:267:GLU:OE1	4:E:268:MET:N	2.52	0.43
1:B:248:ASP:OD1	1:B:264:ILE:N	2.49	0.43
2:A:115:THR:HG23	2:A:126:SER:OG	2.19	0.43
2:A:265:LYS:HE3	2:A:265:LYS:HB2	1.80	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:154:ASP:HB3	1:B:180:LEU:O	2.19	0.43
2:A:812:THR:O	2:A:816:ILE:HG13	2.19	0.43
3:C:237:VAL:HG21	3:C:356:LEU:HD22	1.99	0.43
6:P:573:ASN:O	6:P:577:VAL:HG23	2.19	0.43
1:B:24:LYS:NZ	2:A:941:LYS:HD2	2.34	0.43
1:B:284:ILE:HD11	1:B:299:THR:OG1	2.17	0.43
2:A:143:HIS:NE2	6:P:578:LEU:HD23	2.33	0.43
2:A:178:CYS:SG	2:A:181:SER:OG	2.59	0.43
4:E:266:THR:HB	4:E:271:LEU:HD21	2.00	0.43
4:D:173:SER:N	4:D:306:GLU:OE2	2.49	0.43
4:D:212:ARG:O	4:D:216:ILE:HG12	2.18	0.43
6:P:489:ILE:HG13	6:P:490:ASP:N	2.34	0.43
6:P:517:LEU:HB3	6:P:519:PHE:CZ	2.54	0.43
1:B:58:TRP:CE2	1:B:391:CYS:HB2	2.54	0.43
2:A:973:GLU:HB3	2:A:978:GLN:NE2	2.29	0.43
1:B:351:LEU:HD12	1:B:353:TRP:CH2	2.53	0.42
1:B:382:THR:OG1	2:A:1010:TYR:OH	2.35	0.42
4:E:176:ASP:HA	4:E:179:LYS:HG3	2.01	0.42
4:E:328:PRO:HG2	4:E:331:TYR:HB2	2.00	0.42
2:A:445:SER:OG	3:C:19:TYR:OH	2.35	0.42
2:A:94:TYR:CE1	2:A:103:TYR:HB2	2.55	0.42
2:A:120:THR:HB	2:A:121:PRO:HD3	2.01	0.42
2:A:217:LEU:HD12	2:A:217:LEU:HA	1.76	0.42
2:A:374:TRP:HE3	4:D:332:ARG:HE	1.66	0.42
5:F:336:VAL:HG11	6:P:484:LYS:HD2	2.00	0.42
1:B:136:LYS:HD2	1:B:136:LYS:HA	1.85	0.42
1:B:205:GLN:HA	1:B:236:GLN:HG3	2.00	0.42
1:B:352:VAL:O	1:B:375:LEU:HB3	2.20	0.42
2:A:959:LYS:HB3	2:A:959:LYS:HE2	1.83	0.42
3:C:81:MET:O	3:C:88:GLN:NE2	2.52	0.42
4:D:224:ASP:HA	4:D:227:VAL:HG22	2.00	0.42
5:F:383:LEU:HD23	5:F:383:LEU:HA	1.86	0.42
1:B:310:ASP:OD1	1:B:311:LEU:N	2.53	0.42
2:A:450:LYS:HA	2:A:466:PHE:CZ	2.53	0.42
2:A:807:THR:HB	2:A:810:GLU:HG3	2.00	0.42
4:E:196:ILE:C	4:E:325:GLN:HE22	2.28	0.42
4:E:301:LEU:O	4:E:305:ILE:HG12	2.18	0.42
4:E:325:GLN:OE1	4:E:325:GLN:N	2.52	0.42
2:A:994:VAL:HG23	2:A:1017:SER:HB3	2.01	0.42
4:E:189:ILE:HG13	4:E:194:GLN:O	2.20	0.42
1:B:59:TYR:CD2	1:B:74:LYS:HD3	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:227:LYS:HA	1:B:227:LYS:HD2	1.94	0.42
2:A:420:ILE:O	2:A:424:ILE:HG12	2.19	0.42
2:A:506:GLU:CD	3:C:335:GLY:HA2	2.45	0.42
3:C:138:HIS:ND1	3:C:178:ASP:OD1	2.53	0.42
1:B:59:TYR:HB3	1:B:61:GLU:OE2	2.20	0.42
1:B:202:SER:OG	1:B:210:SER:OG	2.38	0.42
1:B:353:TRP:HD1	1:B:373:GLU:HG2	1.81	0.42
2:A:94:TYR:HE1	2:A:103:TYR:HB2	1.85	0.42
4:E:162:GLU:HB3	6:P:469:LYS:NZ	2.34	0.42
4:E:332:ARG:HA	4:E:335:VAL:HG22	2.01	0.42
5:F:374:ILE:HG13	5:F:374:ILE:O	2.19	0.42
1:B:33:TRP:NE1	1:B:41:TYR:OH	2.42	0.42
1:B:68:HIS:HB2	1:B:70:TYR:CE1	2.54	0.42
1:B:200:LEU:HD23	1:B:201:VAL:N	2.34	0.42
1:B:384:CYS:HB2	1:B:403:GLU:OE1	2.20	0.42
2:A:230:PHE:O	6:P:414:LYS:HE3	2.20	0.42
2:A:588:LEU:O	2:A:591:VAL:HG12	2.20	0.42
3:C:347:MET:HE3	3:C:347:MET:HB2	1.79	0.42
5:F:175:HIS:HA	5:F:176:PRO:HD2	1.87	0.42
1:B:193:ASN:HB3	1:B:199:THR:OG1	2.20	0.42
2:A:101:SER:HB2	2:A:117:GLN:NE2	2.35	0.42
2:A:118:PHE:O	2:A:119:THR:HG23	2.19	0.42
2:A:431:GLU:H	2:A:431:GLU:CD	2.28	0.42
2:A:603:PHE:HD1	2:A:603:PHE:HA	1.76	0.42
4:E:195:LEU:HD11	4:E:255:GLN:HG3	2.01	0.42
4:E:246:MET:C	4:E:247:LEU:HD12	2.45	0.42
1:B:85:LYS:C	1:B:86:TYR:HD1	2.28	0.41
1:B:366:GLU:OE1	2:A:968:ARG:NH2	2.53	0.41
2:A:570:PHE:CZ	2:A:721:LEU:HD13	2.55	0.41
2:A:781:ILE:HG23	2:A:782:PRO:HD2	2.02	0.41
2:A:999:ALA:HB1	2:A:1009:LEU:O	2.19	0.41
5:F:174:LYS:O	5:F:176:PRO:HD3	2.19	0.41
5:F:182:GLN:HE21	5:F:182:GLN:CA	2.31	0.41
1:B:26:ILE:HD12	1:B:348:ARG:NE	2.35	0.41
1:B:87:LEU:HD23	1:B:125:LEU:HB2	2.02	0.41
1:B:336:HIS:ND1	1:B:395:ASN:HB3	2.35	0.41
1:B:391:CYS:SG	1:B:394:TYR:HB2	2.60	0.41
2:A:477:LEU:HD23	2:A:477:LEU:HA	1.91	0.41
1:B:143:SER:OG	1:B:160:LYS:N	2.53	0.41
1:B:253:VAL:HB	1:B:284:ILE:HG12	2.02	0.41
1:B:285:HIS:NE2	1:B:327:ILE:HD11	2.36	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:324:ASN:OD1	3:C:324:ASN:N	2.53	0.41
4:D:198:ILE:HD13	4:D:198:ILE:HA	1.83	0.41
1:B:262:HIS:HA	1:B:274:ALA:HB3	2.02	0.41
2:A:130:THR:O	2:A:132:VAL:HG13	2.20	0.41
2:A:162:GLN:O	2:A:166:LEU:HG	2.20	0.41
4:D:286:GLU:O	4:D:289:ASP:HB3	2.20	0.41
3:C:70:ILE:HD13	3:C:70:ILE:HA	1.90	0.41
1:B:141:ASP:HB3	1:B:144:CYS:HB3	2.03	0.41
1:B:246:HIS:ND1	1:B:249:LEU:HG	2.35	0.41
2:A:542:ARG:HB2	2:A:558:GLU:OE1	2.21	0.41
4:E:200:ARG:CZ	4:E:321:ILE:HG23	2.51	0.41
6:P:559:PRO:HA	6:P:562:ILE:HG12	2.03	0.41
1:B:158:PHE:CD2	1:B:174:LEU:HD22	2.56	0.41
2:A:791:ILE:HD12	3:C:338:TYR:CZ	2.56	0.41
2:A:892:ARG:HG3	2:A:893:LEU:H	1.86	0.41
2:A:1000:LYS:HD3	6:P:513:LYS:N	2.36	0.41
4:D:185:ASP:HB2	4:D:324:TYR:OH	2.20	0.41
5:F:374:ILE:N	5:F:375:PRO:HD3	2.36	0.41
6:P:584:LEU:HD23	6:P:584:LEU:HA	1.90	0.41
6:P:586:ILE:HG13	6:P:587:SER:H	1.85	0.41
1:B:73:GLN:HB2	1:B:93:ILE:HB	2.02	0.41
2:A:81:ILE:C	2:A:83:VAL:N	2.78	0.41
2:A:560:SER:O	2:A:560:SER:OG	2.38	0.41
2:A:604:GLY:HA2	2:A:741:LYS:HE3	2.03	0.41
2:A:876:GLN:H	2:A:876:GLN:HG3	1.71	0.41
2:A:949:ILE:HG22	2:A:950:GLN:HG3	2.02	0.41
4:D:200:ARG:NE	4:D:275:GLU:OE1	2.51	0.41
1:B:131:SER:O	1:B:149:GLY:HA3	2.21	0.41
1:B:368:GLN:H	1:B:368:GLN:CD	2.29	0.41
1:B:406:ILE:HD13	1:B:406:ILE:HA	1.96	0.41
2:A:84:ILE:O	2:A:86:ARG:HG2	2.21	0.41
2:A:245:ASP:OD1	2:A:246:ASN:ND2	2.54	0.41
3:C:73:LEU:HD23	3:C:73:LEU:HA	1.89	0.41
1:B:82:ASP:HB3	1:B:85:LYS:NZ	2.36	0.40
1:B:138:MET:HE2	1:B:198:GLY:H	1.85	0.40
1:B:185:GLN:HB2	1:B:205:GLN:HB3	2.04	0.40
1:B:72:GLU:OE2	1:B:92:SER:HB2	2.22	0.40
2:A:396:LEU:HD11	2:A:502:TRP:HA	2.02	0.40
1:B:302:THR:HG23	1:B:327:ILE:HD12	2.03	0.40
2:A:580:ILE:CG2	2:A:591:VAL:HG11	2.51	0.40
4:D:195:LEU:HD21	4:D:251:PHE:CD2	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:301:LEU:O	4:D:305:ILE:HG12	2.21	0.40
1:B:51:TRP:CG	1:B:81:ALA:HA	2.57	0.40
2:A:161:GLU:H	2:A:161:GLU:HG2	1.69	0.40
2:A:281:LEU:HD23	2:A:294:LEU:HD11	2.02	0.40
2:A:344:LEU:HD23	2:A:344:LEU:HA	1.94	0.40
2:A:784:PRO:HD2	3:C:324:ASN:ND2	2.36	0.40
4:E:297:SER:HB3	5:F:187:ILE:HG21	2.03	0.40
5:F:339:LEU:HD23	5:F:339:LEU:HA	1.84	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 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	B	382/431 (89%)	353 (92%)	29 (8%)	0	100	100
2	A	869/1075 (81%)	788 (91%)	77 (9%)	4 (0%)	25	60
3	C	368/401 (92%)	345 (94%)	23 (6%)	0	100	100
4	D	166/337 (49%)	158 (95%)	8 (5%)	0	100	100
4	E	174/337 (52%)	166 (95%)	8 (5%)	0	100	100
5	F	116/404 (29%)	100 (86%)	16 (14%)	0	100	100
6	P	233/607 (38%)	201 (86%)	32 (14%)	0	100	100
All	All	2308/3592 (64%)	2111 (92%)	193 (8%)	4 (0%)	45	75

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	85	LEU
2	A	73	ASP
2	A	216	PRO

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Mol	Chain	Res	Type
2	A	74	PHE

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	B	347/382 (91%)	331 (95%)	16 (5%)	23	56
2	A	815/994 (82%)	780 (96%)	35 (4%)	25	57
3	C	321/349 (92%)	310 (97%)	11 (3%)	32	63
4	D	156/312 (50%)	150 (96%)	6 (4%)	28	60
4	E	164/312 (53%)	154 (94%)	10 (6%)	15	47
5	F	107/365 (29%)	95 (89%)	12 (11%)	5	22
6	P	219/553 (40%)	197 (90%)	22 (10%)	6	26
All	All	2129/3267 (65%)	2017 (95%)	112 (5%)	21	52

All (112) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	50	GLU
1	B	90	VAL
1	B	132	VAL
1	B	156	LEU
1	B	206	ASP
1	B	225	VAL
1	B	228	VAL
1	B	236	GLN
1	B	261	VAL
1	B	278	HIS
1	B	302	THR
1	B	316	GLN
1	B	373	GLU
1	B	403	GLU
1	B	405	ASN
1	B	406	ILE

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Mol	Chain	Res	Type
2	A	78	ILE
2	A	83	VAL
2	A	87	ASP
2	A	91	LEU
2	A	94	TYR
2	A	95	LEU
2	A	116	LEU
2	A	118	PHE
2	A	119	THR
2	A	132	VAL
2	A	141	THR
2	A	159	ASN
2	A	162	GLN
2	A	219	SER
2	A	235	ILE
2	A	238	LEU
2	A	315	LEU
2	A	358	ASP
2	A	364	LEU
2	A	371	HIS
2	A	430	GLU
2	A	455	LEU
2	A	458	THR
2	A	551	LEU
2	A	595	PHE
2	A	603	PHE
2	A	617	VAL
2	A	618	PHE
2	A	758	LEU
2	A	771	ASP
2	A	847	ILE
2	A	898	LEU
2	A	905	LEU
2	A	921	ILE
2	A	993	LEU
3	C	50	VAL
3	C	51	ILE
3	C	71	GLU
3	C	76	VAL
3	C	99	VAL
3	C	201	TYR
3	C	205	THR

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Mol	Chain	Res	Type
3	C	211	THR
3	C	229	ILE
3	C	231	ASP
3	C	346	ASN
4	E	164	GLU
4	E	170	HIS
4	E	177	VAL
4	E	266	THR
4	E	282	VAL
4	E	284	LEU
4	E	287	LEU
4	E	291	THR
4	E	312	LEU
4	E	313	VAL
4	D	185	ASP
4	D	190	THR
4	D	220	ASN
4	D	247	LEU
4	D	287	LEU
4	D	314	LEU
5	F	163	VAL
5	F	170	HIS
5	F	177	LEU
5	F	179	ILE
5	F	182	GLN
5	F	202	VAL
5	F	336	VAL
5	F	338	CYS
5	F	355	ILE
5	F	372	GLU
5	F	378	VAL
5	F	380	SER
6	P	333	THR
6	P	352	GLN
6	P	354	HIS
6	P	355	LEU
6	P	377	THR
6	P	435	ASP
6	P	469	LYS
6	P	475	VAL
6	P	484	LYS
6	P	486	ASN

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Mol	Chain	Res	Type
6	P	491	GLU
6	P	519	PHE
6	P	527	VAL
6	P	534	VAL
6	P	544	THR
6	P	551	TYR
6	P	560	LEU
6	P	564	CYS
6	P	566	VAL
6	P	572	GLU
6	P	585	ARG
6	P	586	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (41) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	229	HIS
1	B	316	GLN
1	B	378	HIS
2	A	44	GLN
2	A	52	HIS
2	A	117	GLN
2	A	246	ASN
2	A	255	ASN
2	A	282	ASN
2	A	425	ASN
2	A	565	ASN
2	A	724	HIS
2	A	725	GLN
2	A	767	GLN
2	A	797	ASN
2	A	912	ASN
2	A	950	GLN
2	A	969	ASN
2	A	978	GLN
3	C	30	HIS
3	C	85	GLN
3	C	88	GLN
3	C	137	HIS
3	C	151	ASN
3	C	164	HIS
3	C	244	HIS

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Mol	Chain	Res	Type
3	C	247	GLN
3	C	289	ASN
3	C	369	ASN
4	E	255	GLN
4	E	326	ASN
4	D	192	ASN
4	D	303	ASN
4	D	326	ASN
5	F	182	GLN
5	F	191	ASN
5	F	206	HIS
5	F	363	ASN
5	F	390	ASN
6	P	568	ASN
6	P	593	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 3 ligands modelled in this entry, 3 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 [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.